



# Evaluation of Prevented Planting Program

## Contract Number D13PD001146

A Report for  
Acquisition Services Directorate  
and  
Risk Management Agency





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TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... 1

    Recommendations ..... 1

    Adequacy of RMA’s prevented planting payments ..... 3

    Other approaches considered ..... 5

    Impact of recommendations on indemnities ..... 6

    Updating of prevented planting factors ..... 9

1. INTRODUCTION ..... 10

    1.1. Objectives of this study ..... 10

    1.2. History of the prevented planting program ..... 12

    1.3. Current rules on prevented planting ..... 12

    1.4. Philosophy underlying current methodology ..... 14

    1.5. Recent history of prevented planting indemnities ..... 15

2. METHODOLOGY ..... 18

    2.1. Cost of production concepts ..... 18

    2.2. Sources of production cost information ..... 20

        2.2.1. USDA production cost estimates ..... 20

        2.2.2. Extension service crop budgets ..... 21

    2.3. Complicating factors ..... 22

        2.3.1. Nature of the guarantee ..... 22

        2.3.2. The production cost metric ..... 24

    2.4. USDA studies of prevented planting costs ..... 25

    2.5. Alternative methodologies ..... 26

        2.5.1. Payment equal to average pre-planting costs ..... 27

        2.5.2. Capping payments ..... 27

    2.6. Agralytica’s methodology ..... 28



2.6.1.	Determining total costs.....	29
2.6.2.	Determining costs incurred prior to planting .....	30
2.7.	Our initial expectations .....	33
<b>3.</b>	<b>ANALYSIS AND CONCLUSIONS .....</b>	<b>35</b>
3.1.	Analysis of production cost data .....	35
3.2.	Adequacy of prevented planting payment amounts .....	42
3.3.	The case for differentiation .....	45
3.4.	Appropriateness of additional 5% or 10% coverage.....	45
3.5.	Impact analysis .....	48
3.5.1.	Methodology.....	49
3.5.2.	Estimated change in PP payments by crop .....	49
3.5.3.	Estimated change in PP payments by region.....	51
3.6.	Pros and cons of recommendations.....	53
3.7.	Updating of prevented planting factors .....	55
<b>4.</b>	<b>REVIEW OF CORN, WHEAT, SOYBEANS AND COTTON.....</b>	<b>56</b>
4.1.	Corn.....	57
4.2.	Wheat .....	74
4.3.	Soybeans .....	96
4.4.	Cotton .....	115
4.5.	ELS cotton .....	132
4.6.	Cottonseed .....	139
<b>5.</b>	<b>ADDITIONAL CROPS COVERED BY THE ARMS SURVEYS .....</b>	<b>154</b>
5.1.	Barley.....	156
5.2.	Grain sorghum .....	170
5.3.	Oats.....	182
5.4.	Peanuts.....	194
5.5.	Rice .....	204
5.6.	Popcorn .....	216
5.7.	Silage sorghum .....	222
5.8.	Hybrid corn seed.....	228
5.9.	Hybrid sorghum seed.....	237
<b>6.</b>	<b>CROPS FOR WHICH ANALYSIS IS BUDGET BASED.....</b>	<b>243</b>
6.1.	Buckwheat.....	247
6.2.	Canola .....	253
6.3.	Dry beans .....	259
6.4.	Dry peas.....	269
6.5.	Flaxseed.....	281
6.6.	Green peas .....	287
6.7.	Millet .....	296
6.8.	Mustard.....	302

6.9.	Onions .....	308
6.10.	Potatoes.....	319
6.11.	Processing beans.....	329
6.12.	Processing sweet corn .....	338
6.13.	Rye.....	344
6.14.	Safflower.....	356
6.15.	Sugar beets .....	365
6.16.	Sunflower seed.....	377
6.17.	Tobacco .....	387
<b>APPENDIX A: RATIOS OF RMA PREVENTED PLANTING PAYMENTS TO ESTIMATED PP PRODUCTION COSTS BY CROP AND REGION .....</b>		<b>396</b>
Appendices B, C and D are contained in the pdf version only		
Appendix B: 2007 Economic Research Service Analysis		417
Appendix C: 2013 Economic Research Service Analysis		436
Appendix D: Section 508c Data		451

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## EXECUTIVE SUMMARY

For this project the assignment has been to develop recommendations that improve, and simplify if possible, the prevented planting coverage in current crop insurance plans. We have analyzed the current prevented planting methodology and were not able to identify an alternative methodology that is both preferable and administratively feasible. We concluded that RMA's existing methodology for dealing with prevented planting is generally appropriate.

The initial research for this study examined the production costs for all crops eligible for prevented planting coverage and estimated the share of those costs that is actually incurred in a prevented planting (PP) situation. To the degree that those shares differed from the current PP coverage levels in RMA insurance plans, this indicated a need to make changes in the coverage levels. However, given the shortcomings of some of the production cost data, we also analyzed the adequacy of the PP indemnities actually paid by crop and region during the 2003-2012 period, comparing the indemnity to our estimate of preplanting costs.

## Recommendations

We have three main recommendations: continue to use the same methodology for prevented planting coverage, adjust the coverage factors as shown in Table 1, and differentiate the coverage levels geographically only for onions. The proposed adjustments in Table 1 are based on estimates of the actual share of production costs incurred prior to planting.

**Table 1: Recommended changes in prevented planting payment factors**

Recommended Change	Crops	Current factor	New factor	Change in payment
% points		%	%	%
+15	Potatoes - northern and southern	25	40	60.0%
+10	Green peas	40	50	25.0%
+5	Oats	60	65	8.3%
0	Wheat, soybeans, grain sorghum, barley, rye, safflower	60		
0	Peanuts	50		
0	Rice, sugar beets	45		
0	Processing beans and sweet corn	40		
0	Onions - northern (storage)	35		
-5	Silage sorghum, hybrid sorghum seed	60	55	-8.3%
-5	Tobacco	35	30	-14.3%
-10	Corn, buckwheat, millet, popcorn	60	50	-16.7%
-10	Hybrid corn seed	50	40	-20.0%
-15	Canola, flax, mustard, sunflower seed	60	45	-25.0%
-15	Cotton with cottonseed endorsement	50	35	-30.0%
-20	Dry beans, dry peas	60	40	-33.3%
-20	Cotton and ELS cotton	50	30	-40.0%
-20	Onions - southern (fresh)	35	15	-57.1%

Corn, soybeans, wheat and cotton accounted for 80% of PP indemnities between 1994 and 2013. We determined that the 60% coverage level for wheat and soybeans is still appropriate, but that the level for corn should be reduced to 50%. For cotton we recommend a reduction from 50% to 30%, or to 35% if the producer elects the cottonseed coverage option. For oats, green peas and potatoes we recommend higher coverage levels. For ten other crops we recommend no change, and for the remainder, reductions in the PP factor of 5% to 20% that would reduce indemnity payments by mostly 8% to 33%.

For onions there are significant differences in the costs for those going into storage and those going more directly to the fresh market. The former tend to be produced in northern states and the latter in southern states. Coverage levels should be lower in the southern states.

### Applying the PP factor to the policy guarantee

There are three principles underlying RMA's historic practice of defining prevented planting indemnities as a percentage of the guarantee (or liability) under each policy. First, RMA's insurance plans try to rely on a farmer's individual situation and historical experience as much as possible in specifying an insurance guarantee. This is most easily accomplished when there are good records of a farmer's historical yields and/or revenues. However, there is necessarily a great deal of reliance on average measures of yield and price. This is evident in the use of transitional yields (based on county average yields) and the use of average cash or futures market prices. There is inevitably substantial variation around any measurement of an average related to crop production, whether it refers to yield, price received, or production cost.

A second principle that is at the heart of most RMA plans is that the guarantee should be based on that season's expected revenue. For crops with futures markets, this is comparatively easy to accomplish because there is a very immediate public indicator of what market participants think the price will be at harvest time. But RMA also adjusts plan prices for many other crops each year in response to the changing market outlook.

A third principle applicable to situations in which the farmer is not able to plant the crop is that the guarantee and indemnity should be adjusted to reflect the fact that farmers do not incur some portion of their normal production costs if they cannot plant. This is different from how the insurance treats damage to a planted crop. In that case the indemnity is the same regardless of whether the damage occurs the week after emergence of the crop or the week before harvest.

The portion of costs actually incurred before planting can be highly variable, however, depending on what conditions prevented planting and when they occurred. This can affect whether various pre-planting operations were ever undertaken. Consequently the insurance plans have to assume some sort of average outcome.

RMA's current methodology appears to assume that all normal pre-planting expenses, plus various fixed overhead costs, have been incurred and that this figure should be the basis of the prevented planting coverage. We agree with that methodology. Indemnities are also affected by the main coverage level that a farmer has chosen. If the farmer has a plan with 75% coverage and a prevented planting factor of 60%, he will receive an indemnity of 45% of expected revenue if he is prevented from planting by an acceptable cause of loss. If the farmer only has CAT coverage, he will receive 60% of the 27.5% of expected revenue that such policies provide as an indemnity, i.e. 16.5% of expected revenue.

### Options for additional coverage

Our assignment also required us to assess the appropriateness of allowing an additional 5% or 10% coverage. In theory, the prevented planting coverage should aim to cover the average costs incurred by all producers



of the crop in a prevented planting situation. There will inevitably be some variability among farmers, among regions, and over time in the success of achieving that, but this is true of the underlying insurance plans as well. Those plans use average county yields, average prices, and other components that are averages for all producers. If a farmer wants higher prevented planting coverage, he or she can also select a higher coverage level in the underlying plan.

Over the last 20 years, 46% of the PP indemnities have been associated with policies for which the additional 10% coverage was elected. Almost no producers elect the additional 5% coverage. The logic behind offering this additional coverage was originally to allow growers with higher than average PP costs to have appropriate insurance coverage.

Some argue that these buy-up options should be eliminated and only the average pre-planting costs should be covered in a prevented planting situation. However, as the insurance plans evolved and experience data accumulated, selection of the buy-up options has proven to be an indicator of greater risk, and the rating system collects added premium in proportion to that risk. This keeps rates lower for the farmers who are less likely to file a prevented planting claim. The buy-up options could certainly be eliminated, but this would probably result in an increase in the prevented planting component of the rate for the basic coverage. For now, we recommend that prevented planting rating be periodically reviewed to insure that there is an appropriate balance in premium collected for the basic PP coverage and for the optional additional 5% or 10% coverage.

### Adequacy of RMA's prevented planting payments

In addition to forming a judgment on the adequacy of the RMA methodology, we used RMA Summary of Business data to determine how the resulting PP payments compare to our estimates of PP costs.

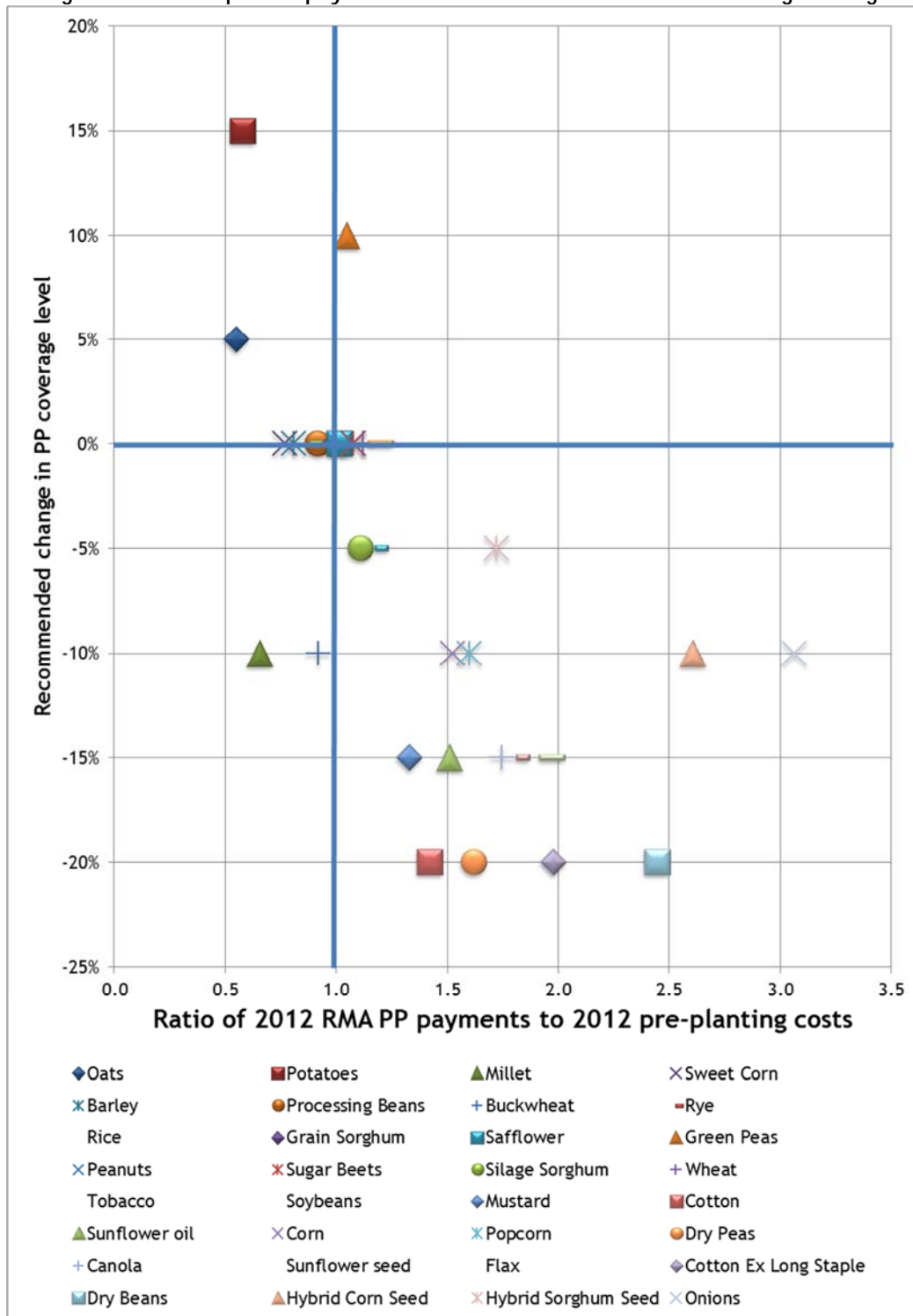
If the ratio of PP payments to costs is above 1, this may indicate that farmers are being overcompensated (PP payments > estimated PP costs). If, on the other hand, the ratio is below 1 (estimated PP costs > PP payments), then farmers may be undercompensated. Ideally, the ratio of PP payments to costs would be 1.0, i.e. farmers would be precisely compensated for costs they have incurred prior to a prevented planting claim.

For each coverage level, including CAT coverage, RMA's Summary of Business data provides total liabilities and acres insured. For the years 2003-2012, we divided the liabilities at each Buy-up coverage level by the coverage level to estimate the guarantee at 100% of expected revenue. This assumes that all growers take 100% of the price. For CAT we also adjusted for the lower price coverage of 55%. We then multiplied that total liability by the RMA PP factor and divided the result by the total acres in each region for that crop. The result of those calculations is an estimate of the base level PP payment for each crop and region over the ten-year period.

We then divided those PP payments by the estimated PP costs reviewed in the Evaluation Report. Overall, we found results mostly consistent with the findings from the analysis of PP costs. Figure 1 presents a scatterplot of the recommended changes in coverage levels from Table 1, versus the ratio of 2012 RMA payment rates to production costs incurred in a prevented planting situation.

As one would expect, the recommended increases in coverage levels are for crops where the ratio is less than or close to one. And the recommended decreases generally get progressively larger as the ratios get larger.

Figure 1: Scatterplot of payment ratio versus recommended coverage change



## Other approaches considered

In the course of our research and analysis, we were not able to identify a practical alternative method of dealing with prevented planting, nor did we find any studies that explored other approaches. In our view, adjusting the crop payment factors and assigning a yield to the crop that was not planted would address most of the issues with this insurance coverage. (The assigned yield issue was raised in an Office of Inspector General audit report discussed below but is not further addressed in this study.)

We did investigate two alternative approaches: basing the indemnity on actual preplanting costs, or capping the indemnity at some percentage of actual preplanting costs.

In one sense, using the actual average of pre-planting costs for farmers in a specific region as the basis for an indemnity would be an appealing method of dealing with situations in which a farmer is not able to plant the crop. However, it is not a practical solution to the problem for three reasons.

First, the research undertaken for this project confirms that suitable production cost information for most of the crops eligible for prevented planting coverage is simply not widely available. We had great difficulty identifying acceptable extension budgets for use in the current study. Moreover, the extension budgets that are available may not be statistically representative of average grower costs even though the percentage of costs identified as preplanting may be representative.

Second, even when production cost data are available, updating them each year would be administratively very burdensome.

Third, this would be a departure from RMA's general approach of basing the guarantee on expected revenue. When market prices are high, a prevented planting indemnity based on actual costs would probably be seen by growers as undercompensation and a marked departure from past RMA practice. When prices are low, there would be a stronger incentive to claim prevented planting rather than to try to produce a crop that would yield low returns.

Capping the indemnity is a second way of preventing overcompensation of producers when market prices are high. One could include a restriction in the actuarial documents that says the payment per acre cannot exceed a certain figure derived from production cost data. The mechanics of doing this would be influenced by a number of considerations:

- Is there a single national PP factor or is it differentiated by state or region? Currently all factors are national, and we do not recommend departing from that approach.
- How frequently will the production cost data per acre be updated? This can be done annually using price indexes in between more thorough periodic reviews of actual cost data.
- Does one set the dollar amount at the actual PP costs, or apply the coverage level to that figure?
- If the buy-up options remain in effect, does one set the figure at 117% of PP costs when the PP factor is 60% since that is the coverage that RMA has permitted?
- Does one pick some dollar amount above the average in order to reflect the costs of more than half of the producers?

Given that there are regional production costs for the major crops, the simplest and most restrictive procedure might be to set a national cap equal, for example, to 117% of the highest PP costs of any region and apply the coverage level to that figure. However, this may not significantly constrain PP indemnities.

An example in Section 2.5.2 illustrates the challenge in establishing parameters for a cap that are perceived as reasonable by farmers, but still keep PP indemnity payments from significantly exceeding actual preplanting costs. One would probably have to regionalize the caps to make them actually have an impact.

If one is going to do that, one might as well just use regional cost of production as the basis for the indemnity. But the objections to that are discussed above.

### Impact of recommendations on indemnities

We analyzed the impact of our recommendations on indemnities under two scenarios: implementation of our recommended changes in PP coverage factors, and elimination of the options for additional coverage in addition to adopting our recommended changes. This analysis assumes “all else equal”, i.e., it assumes that farmer selection of coverage and behavior would remain the same, both under changed factors and under changed factors with no additional coverage options. Although these assumptions cannot be accurate, we expect the marginal effect of these policy changes on behavior would be limited, and would if anything result in additional reductions in indemnities beyond what we estimate. Since in most circumstances the PP rate is too high, the net effect of these two changes would likely be more planting and fewer claims - in addition to lower indemnity payments per policy.

From 2008 to 2012, total prevented planting indemnities were over \$4.82 billion - just over \$960 million per year, on average. Total indemnities over this five year period, by crop, are shown in the second column of Table 2. Note that this figure includes “all other crops”. That data actually covers the same individual crops listed but is presented in this line for confidentiality purposes. We assumed an average reduction of 5% in the coverage level for the policies included in this category. Crops for which we recommend increased coverage levels (green peas, oats and potatoes) have increased costs, shown in brackets in the table.

If the PP factors we propose had been in effect for the period 2008-2012, then PP indemnity payments under Scenario #1 would have been \$4.36 billion. This is shown in column 3 of Table 2. This would have represented a \$465 million reduction in PP payments (\$93 million less per year). A little more than 60% of the reduction on the individual crops listed would have been on corn claims.

If the PP factors we propose had been in effect, and no buy-up options had been available, PP indemnity payments would have been \$4.01 billion, as shown in column 4. This would have represented an \$813 million reduction in PP payments (\$162 million less per year). The share of the reduction attributable to corn would have been about 54%.

The final column of Table 2 shows the share of Scenario #2 indemnity reductions attributable to elimination of the buy-up options by crop. This is 100% for the crops for which we recommended no change in the basic coverage level.

Table 3 shows PP indemnities by region for each of the five years. The Northern Plains region accounted for \$2.85 billion (59.1%) of the total, and the Corn Belt for an additional \$940 million (19.5%). Table 4 and Table 5 show our estimates of indemnities under Scenario #1 and Scenario #2 by region. With revised coverage levels and with the ability to continue to purchase an additional 10% coverage, reductions in indemnities over the five years would again have been \$465 million, with 59% of that occurring in the Northern Plains region. If the buy-up options are eliminated, the reductions rise to \$813 million, with about \$500 million of that in the Northern Plains. Reductions in the Corn Belt would be \$152 million, and these two regions together would account for 80% of the total, about the same proportion as their share of historic indemnities in Table 3.

Table 2: Potential change in indemnities by crop

	Total Actual	Total Scenario #1	Total Scenario #2	Indemnity Reduction #1	Indemnity Reduction #2	10% buy-up percent
	-----\$1,000-----					%
All Other Crops	784,742	723,217	676,774	61,525	107,969	43%
Barley	88,973	88,973	82,369	0	6,603	100%
Buckwheat	88	73	72	14	15	6%
Burley Tobacco	467	400	400	67	67	0%
Canola	147,709	113,939	101,309	33,770	46,400	27%
Corn	1,608,981	1,363,075	1,229,531	245,906	379,450	35%
Cotton	37,018	23,429	20,383	13,589	16,635	18%
ELS cotton	82,563	52,514	45,074	30,049	37,490	20%
Dry beans	56,870	39,683	34,375	17,187	22,495	24%
Dry peas	36,284	24,553	23,461	11,731	12,823	9%
Flax	17,193	13,192	12,005	4,002	5,189	23%
Flue cured tobacco	186	159	159	27	27	0%
Grain sorghum	29,031	29,031	28,207	0	824	100%
Green peas	316	395	395	(79)	(79)	0%
Hybrid corn seed	666	555	555	111	111	0%
Hybrid sorghum seed	41	34	34	7	7	0%
Millet	2,573	2,147	2,132	426	441	3%
Mustard	799	613	558	186	241	23%
Oats	3,482	3,764	3,663	(282)	(181)	-55%
Onions	12,975	9,268	9,268	3,707	3,707	0%
Peanuts	1,611	1,611	1,604	0	6	100%
Popcorn	1,376	1,154	1,109	222	267	17%
Potatoes	7,785	11,034	9,680	(3,249)	(1,896)	-71%
Processing beans	645	645	611	0	34	100%
Rice	87,316	87,316	78,741	0	8,575	100%
Rye	23	23	23	0	0	0%
Safflower	1,582	1,582	1,573	0	9	100%
Silage sorghum	356	326	326	30	30	0%
Soybeans	664,888	664,888	617,107	0	47,781	100%
Sugar beets	2,292	2,292	2,120	0	172	100%
Sunflower seed	199,879	153,660	138,657	46,219	61,222	25%
Sweet corn	271	271	256	0	14	100%
Wheat	944,535	944,535	888,430	0	56,105	100%
<b>Total</b>	<b>4,823,514</b>	<b>4,358,351</b>	<b>4,010,963</b>	<b>465,163</b>	<b>812,551</b>	<b>43%</b>

Premium revenue would also be reduced in Scenario #2 where the 5% and 10% buy-up options are eliminated, unless fixed rates are adjusted upward for all growers to offset the loss of the option premiums. However, the study did not include a full review or the rating for prevented planting and we did not have the five years of policy records and rate factors necessary to calculate the premium reduction and any net savings.

Table 3: PP indemnities by region

Actual	2008	2009	2010	2011	2012	Total
	-----\$1,000,000-----					
Appalachian	6	17	53	37	4	117
Corn Belt	193	162	270	292	23	940
Delta	10	37	41	78	10	176
Mountain	11	14	15	128	49	219
Northeast	1	4	6	21	4	36
Northern Plains	136	437	734	1,485	63	2,854
Pacific	5	57	33	13	14	123
Southeast	1	5	9	3	1	18
Southern Plains	7	14	36	13	52	122
Upper Midwest	12	48	32	123	4	218
Total	382	795	1,229	2,192	225	4,824

Table 4: Potential indemnity reduction by region under Scenario #1

Scenario #1	2008	2009	2010	2011	2012	Total	Indemnity Reduction	% of total	
	-----\$1,000,000-----								%
Appalachian	5	15	51	34	4	108	9	2%	
Corn Belt	174	146	250	262	22	855	86	18%	
Delta	9	35	39	71	9	164	12	3%	
Mountain	10	13	14	122	44	203	15	3%	
Northeast	1	4	6	19	4	33	3	1%	
Northern Plains	123	388	657	1,355	57	2,581	274	59%	
Pacific	4	37	24	12	10	87	36	8%	
Southeast	1	5	9	2	1	17	1	0%	
Southern Plains	6	12	33	12	50	114	8	2%	
Upper Midwest	11	44	29	109	4	196	22	5%	
Total	344	699	1,112	1,998	206	4,358	465	100%	

Table 5: Potential indemnity reduction by region under Scenario #2

Scenario #2	2008	2009	2010	2011	2012	Total	Indemnity Reduction	% of total	
	-----\$1,000,000-----								%
Appalachian	5	14	48	32	3	103	15	2%	
Corn Belt	161	135	229	243	21	788	152	19%	
Delta	9	33	36	67	9	155	21	3%	
Mountain	10	12	13	119	42	196	23	3%	
Northeast	1	3	5	18	4	31	5	1%	
Northern Plains	114	347	592	1,251	52	2,355	499	61%	
Pacific	3	33	20	11	9	77	46	6%	
Southeast	1	5	9	2	1	17	2	0%	
Southern Plains	6	11	30	12	44	103	18	2%	
Upper Midwest	10	40	27	105	4	186	32	4%	
Total	318	634	1,010	1,861	188	4,011	813	100%	

### Updating of prevented planting factors

The production cost analysis in this report was based on data up through the 2012 crop year. While costs for individual inputs can change significantly over the course of a few years, the share of costs that occurs before planting changes more slowly and to a lesser degree.

We recommend periodic monitoring of developments every two to three years. RMA should apply the percentage cost allocations we developed to the production cost estimates and forecasts for major crops published by ERS to see if the preplanting share of costs is changing. For the ARMS crops, ERS publishes forecasts two years into the future twice a year. For the crops not covered by statistically representative ARMS surveys, RMA should use the procedure we describe to update the cost estimates using price indexes published by USDA's National Agricultural Statistics Service.

Every five years we recommend a more formal review for all crops. This evaluation began in 2013 using data up through 2012. A five-year review could be undertaken in 2018 using production cost data for the year 2013-2017. For the ARMS crops, we recommend that USDA contract with ERS to do the same cost analysis as in their 2007 and 2013 studies cited later in this report. The analysis should cover any crops for which survey data was published in the interim. This will include 2012 crop soybeans and 2013 crop peanuts and rice. Surveys are also scheduled for 2015 crop cotton and oats, and 2016 crop corn. This is the most important component of any updating because the crops covered by ARMS surveys account for 88 percent of prevented planting claims. For the other crops, the formal review should involve collection of current state-level crop budgets and a fresh analysis of the portion of operating costs incurred prior to planting.

## 1. INTRODUCTION

Farmers plant annual crops in full knowledge that those crops may be subject to a variety of perils that will reduce actual production. The Federal Crop Insurance Corporation makes available insurance plans that protect the farmer's income to varying degrees should his or her crops experience those perils. The conventional list of perils included in many of those plans includes adverse weather, fire, insects, disease, wildlife, earthquake, volcanic eruption, or failure of the irrigation water supply due to one of the preceding perils.

While any of these perils can affect a growing or maturing crop, some of them can result in the crop not being planted in the first case. Excessive soil moisture is the most common cause of a crop not getting planted, but certainly other perils such as irrigation failure or drought can also prevent planting. To deal with situations of prevented planting, RMA developed rules that try to adjust the guarantee and indemnity to reflect the fact that farmers do not incur some portion of their normal production costs if they cannot plant. This can vary significantly from crop to crop.

### 1.1. Objectives of this study

The solicitation for this study noted that it has been more than a decade since the last review of prevented planting (PP) payments, and during that period there have been changes in technology, production practices, and input costs. It also stated the following: "Some industry representatives suggest payments may be excessive and are not reflective of the costs the payments are designed to cover." The specific requirements for the program evaluation report were identified in the solicitation as follows:

"A program evaluation shall be performed to ensure that relevant provisions of the Act are met as effectively and efficiently as possible while providing risk management tools that meet the needs of agricultural producers. The contractor shall review RMA's current policy and procedures for PP. The review shall include a determination of whether RMA's current policy adequately addresses producers' needs for PP coverage for all PP eligible crops. PP is available for all states and counties for which the following crops have insurance available: barley, buckwheat, canola/rapeseed, corn, cotton, cottonseed, extra-long staple cotton, dry beans, dry peas, flax, grain sorghum, green peas, hybrid sorghum seed, hybrid seed corn, millet, mustard, oats, popcorn, onions, peanuts, southern potatoes, northern potatoes, processing sweet corn, processing beans, rice, rye, safflowers, silage sorghum, soybeans, sugar beets, sunflower seeds, tobacco, and wheat. Keeping in mind that PP payments should compensate producers adequately but not excessively, the contractor must:

1. Analyze and document, by eligible crop, segregated by growing region, all costs producers incur when prevented from planting a crop.
2. Determine what costs should be included in determining PP payments and explain why.
3. Determine, by eligible crop, segregated by growing region, the degree to which current PP payments (without an additional 5 or 10 percent of coverage) are adequate as determined in item 2.
4. Given the results of item 3, determine the appropriateness of allowing an additional 5 or 10 percent PP coverage under existing policy in general, and also by eligible crop, segregated by growing region.
5. Given the results of items 1-4, document the pros and cons of any recommended changes to existing PP payment amounts for eligible crops, segregated by growing region.
6. List the components that are appropriate to consider when establishing PP payment amounts, as it relates to how adequately the policy covers costs by eligible crop, segregated by growing region, and document why each component is appropriate or inadequate to cover those applicable costs."



This report presents the results of our review of policy and procedures for prevented planting, the costs incurred by producers in a PP situation, the degree to which PP indemnities cover those costs, and alternative approaches to providing prevented planting coverage. Section 2 of the report describes our methodology. Section 3 summarizes the results of our research and analysis. Sections 4 to 6 present a crop by crop review of production costs. Appendices A and B provide the 2007 and 2013 ERS studies that serve as part of the basis for our analysis.

This study is also responsive to some of the recommendations in a recent report on prevented planting by USDA's Office of Inspector General (OIG).<sup>1</sup> In early 2013 the OIG audited the management controls, policies, and procedures related to the prevented planting provisions of the Federal Crop Insurance Program. RMA responded to OIG's recommendations on August 12, 2013. The final report, including OIG's findings, RMA responses, and OIG's position on each response, was published on September 3, 2013.

OIG's first finding is the one that relates directly to the evaluation at hand. OIG found that prevented planting policy results in payments significantly in excess of producers' costs. It found that RMA set indemnity levels too high, in order to adequately compensate most producers, rather than "average" producers. OIG also found the policy to be inequitable because it overcompensates some crops relative to others. We note, however, that much of the OIG analysis relied on an outdated 1996 USDA study and did not explicitly address which cost elements should be covered in a prevented planting situation.

OIG made two recommendations in relation to this finding.

- (1) *Obtain updated pre-planting cost information and use it to reevaluate the current coverage levels provided for prevented planting. Make any necessary changes to reduce program costs, where possible, and bring the coverage levels consistently in line with preplanting costs for each crop.*

This Prevented Planting Evaluation addresses this recommendation directly, by calculating historical and up-to-date estimates of prevented planting costs for each crop.

- (2) *Establish a schedule by which prevented planting coverage levels will periodically be reevaluated to ensure that the levels remain in an appropriate and consistent relationship with preplanting costs.*

This evaluation does provide input that will be useful in future reevaluations of costs. In separate documents and spreadsheets we do the following:

- We identify the source and frequency of published information that is relevant to determining prevented planting costs for each crop
- We provide contact information for individuals that can provide unpublished information.
- We document how production budgets were built for each crop, indicating the procedure used for determining prevented planting costs.

The budgets are built so that RMA can use published USDA price indices to calculate an updated estimate of prevented planting costs each year, without the need for an annual (re)evaluation.

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<sup>1</sup> Office of Inspector General, "RMA: Controls Over Prevented Planting", Audit Report 05601-0001-31, U.S. Department of Agriculture, September 2013.

In Section 3.7 we recommend an updating schedule. However, RMA will have to make the final determination of an update schedule, based on the resources (time and effort) it gauges will be needed to update the information.

The OIG report had other findings and recommendations, but they are not germane to this evaluation.

## 1.2. History of the prevented planting program

The early history of the treatment of prevented planting (PP) payments was summarized in a 1996 study by USDA's Economic Research Service (ERS).<sup>2</sup> They were first introduced in the 1973 farm bill, the Agriculture and Consumer Protection Act of 1973, as part of the disaster assistance provisions. Payments were linked to other program provisions such as the farmer's program yield and the target price. A few modifications were made in the 1977 farm bill.

The Federal Crop Insurance Act of 1980 expanded coverage to more crops and more production areas and introduced premium subsidies. It also took prevented planting out of the disaster assistance realm and into the crop insurance realm. But the coverage was offered at additional cost in a limited geographic area, and only for wheat, feed grains, cotton and rice. In 1986, FCIC expanded the geographic coverage and set the payment rate at 35 percent of the guarantee, but there was not a lot of use of this option. The Congress was repeatedly passing ad hoc disaster assistance programs that diluted interest in crop insurance.

The Federal Crop Insurance Reform Act of 1994 required participation in crop insurance for producers to be eligible for deficiency payments and other programs. This stimulated greater interest in crop insurance products. In 1995, FCIC incorporated prevented planting into the basic multi-peril insurance plans, with payment rates differentiated by crop based on an assessment of the relative importance of pre-planting costs. Coverage mostly ranged from 25 to 75 percent of the guarantee.

The 1996 farm bill, the Federal Agriculture Improvement and Reform Act of 1996, eliminated required participation in crop insurance as a condition for other commodity program benefits, but without crop insurance a farmer was not eligible for disaster payments.

In the last half of the 1990s, prevented planting payment rates settled closer to where they are today. RMA reviewed them in 2002 and commissioned another study<sup>3</sup> by ERS in mid-decade as another check on the rates, which have been largely unchanged since then. It is attached as Appendix A. RMA asked ERS to do another update in 2013 to reflect the most recent surveys of production costs and practices.<sup>4</sup> This is attached as Appendix B.

## 1.3. Current rules on prevented planting

Table 6 reproduces the 2014 Crop Insurance Handbook's summary of prevented planting coverages. (For onions, coverage was 45% up through 2012.) Both CAT and Buy-up policies include a prevented planting

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<sup>2</sup> ERS Risk Analysis Team, "Report Estimating Crop- and Region-Specific Prevented Planting Payment Rates", Economic Research Service, USDA, December 12, 1996, pages 5-6.

<sup>3</sup> Linda Foreman et al, "Estimation of the Preplanting and Planting Costs by Crop", Economic Research Service, May 29, 2007.

<sup>4</sup> Linda Foreman and Mir Ali, "Estimation of the Preplanting and Planting Costs by Crop", ERS Staff Analysis #13-468, December 2013.

benefit for these crops. For all but onions and tobacco, farmers with buy-up policies also have the option of paying an additional premium to increase the coverage level by either 5% or 10%. This permits farmers with higher than average production costs to have prevented planting coverage that is more in line with their individual costs. However, it also generates useful information for setting rates at the county level.

As discussed below, the 5% additional coverage level is seldom elected. Of the \$10 billion of prevented planting indemnities paid over the last 20 years, 44.8% have been for policies that selected the additional 10% PP coverage while only 0.3% selected the additional 5% PP coverage. Using only the RMA Cause of Loss data we cannot actually test whether adverse selection is taking place because we do not have information on farmers who select the additional coverage and do not have a PP indemnity.

**Table 6: Prevented planting coverage for 2014**

Prevented Planting Guidelines		
The insured crop is...	The coverage elected is ...	Available prevented planting coverage is ...
Canola/Rapeseed, Coarse Grains (Corn, Grain Sorghum, and Soybeans), Dry Beans, Dry Peas, Hybrid Sorghum Seed, Millet, Mustard, Popcorn, Safflower, Silage Sorghum, Small Grains (Barley, Buckwheat, Flax, Oats, Rye, Wheat), or Sunflower Seed	Additional	60, *65, or *70%
	CAT	60%
Green Peas, Processing Sweet Corn or Processing Beans	Additional	40, *45, or *50%
	CAT	40%
Rice, or Sugar Beets <sup>5</sup>	Additional	45, *50, or *55% of <sup>6</sup>
	CAT	45% of <sup>6</sup>
Cotton, ELS Cotton, Cottonseed, Hybrid Seed Corn, or Peanuts	Additional	50, *55, or *60% <sup>7</sup>
	CAT	50%
Potatoes	Additional	25, *30, or *35%
	CAT	25%
Onions or Tobacco	Additional	35%
	CAT	35%

\* If additional levels of coverage are available and elected. Refer to actuarial documents

<sup>5</sup> PP is not available in California counties with an April 30 contract change date and a July 15 cancellation date.

<sup>6</sup> For Onions and Sugar Beets, the percentage listed is multiplied times the final stage production guarantee.

<sup>7</sup> For Cotton and ELS Cotton and other crops with skip-row planting, PP production guarantees are based on solid planted approved APH yields (for Cotton and ELS cotton, do not apply the skip-row yield conversion factor).

The conditions for making a prevented planting claim are straightforward in theory but not in practice. The farmer must have been unable to plant before the final planting date specified in the policy due to an insured cause of loss. In addition, other farmers in the area generally must also have been unable to plant using good farming practices. There is an exception for certain drought situations, e.g., when farmers may or may not choose to plant, gambling on the chance of timely rain.

Farmers experiencing bad weather at planting time have a number of options if they have crop insurance. They can plant after the final planting date with an insurance guarantee that declines progressively the later they plant. They can plant a different insured crop with a later final planting date, like soybeans instead of corn. They can file a claim for prevented planting and not grow a marketable crop, leaving the

land fallow or with a subsequently planted cover crop. Or they can claim prevented planting and then plant a second insured crop. In that case they initially receive 35% of the PP indemnity. If there is no claim on the second crop, they then receive the other 65% of the indemnity. If there is a loss claim on the second crop, they can choose between that claim and taking the other 65% of the PP indemnity on the first crop.

An important consideration in a PP situation is how the farmer's Actual Production History (APH) will be affected. If a second crop is planted, a yield for the first crop for that year is recorded as 60% of the APH, which reduces the farmer's guarantee for subsequent years by approximately four percent. If no second crop is planted, no yield is recorded. Consequently, almost no farmers plant a second crop if they file for prevented planting.

In practice, the rules on prevented planting are much more complicated than the brief summary above, covering 5 pages in the Basic Provisions, 15 pages in the Crop Insurance Handbook, and almost 100 pages in the Prevented Planting Loss Adjustment Standards Handbook. These materials cover the factors that determine eligibility, the amount of land covered, treatment of double cropping, inspection requirements, and claim procedures.

#### 1.4. Philosophy underlying current methodology

RMA's insurance plans try to rely on a farmer's individual situation and historical experience as much as possible in specifying an insurance guarantee. This is most easily accomplished when there are good records of a farmer's historical yields and/or revenues. However, there is necessarily a great deal of reliance on average measures of yield and price. This is evident in the use of transitional yields (based on county average yields) by farmers without their own yield history, and in the use of average cash or futures market prices. There is substantial variation around any measurement of an average related to crop production, whether it refers to yield, price received, or production cost.

A second principle that is at the heart of most RMA plans is that the guarantee should be based on that season's expected revenue. For crops with futures markets, this is comparatively easy to accomplish because there is a very immediate public indicator of what market participants think the price will be at harvest time. But RMA also adjusts plan prices for many other crops each year in response to the changing market outlook.

A third principle applicable to situations in which the farmer is not able to plant the crop is that the guarantee and indemnity should be adjusted to reflect the fact that farmers do not incur some portion of their normal production costs if they cannot plant. This is different from how the insurance treats damage to a planted crop. In that case the indemnity is the same regardless of whether the damage occurs the week after emergence of the crop or the week before harvest.

The portion of costs actually incurred before planting can be highly variable, however, depending on what conditions prevented planting and when they occurred. This can affect whether various pre-planting operations were ever undertaken. Consequently the insurance plans have to assume a particular average outcome.

RMA's current methodology appears to assume that all normal pre-planting expenses, plus various fixed overhead costs, have been incurred and that this figure should be the basis of the prevented planting coverage. We agree with that methodology. Indemnities are also affected by the main coverage level that a farmer has chosen. If the farmer has a plan with 75% coverage and a prevented planting factor of 60%, he will receive an indemnity of 45% of expected revenue if he is prevented from planting by an acceptable

cause of loss. If the farmer only has CAT coverage, he will receive 60% of the 27.5% of expected revenue that such policies provide as an indemnity, i.e. 16.5% of expected revenue.

### 1.5. Recent history of prevented planting indemnities

We downloaded the Cause of Loss data on December 31, 2013 from the RMA website in order to assess the relative amount of prevented planting indemnities compared to total indemnities. Figure 2 shows the PP indemnities as a percentage of total indemnities by year for the last 20 years. Since 1994, PP indemnities have comprised 11.6% of total indemnities. This amount varies greatly by year with a high of almost 30% in 2010 and 2013. The ratio for 2013 may decrease since not all claims had been paid as of December 31, 2013 but the majority of PP claims should have been paid. If we exclude crops that do not have prevented planting coverage, the prevented planting indemnities were 12.2% of all indemnities.

Figure 2: PP indemnities as a percentage of total indemnities

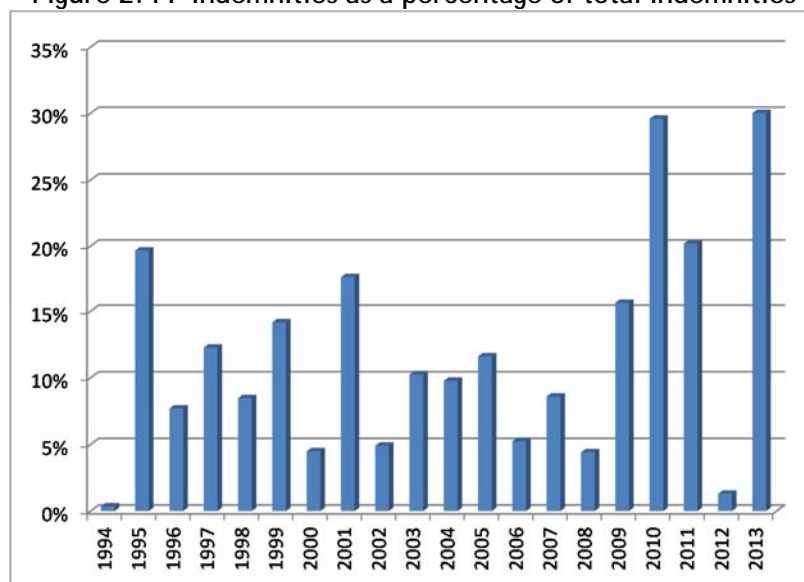


Table 7 displays PP indemnities by crop for the major crops (in \$Million). For some crops, the prevented planting indemnities are greater than all other indemnities (e.g. canola, ELS cotton and rice) and for some other crops they are simply very large dollar amounts (corn, soybeans and wheat). Some policies are listed as “All Other Crops” in the Cause of Loss data from RMA due to confidentiality concerns. We believe that the distribution of crops in that category is close to the distribution of crops separately identified.

Table 8 summarizes the prevented planting indemnities by state. There are large differences in PP indemnities among states, with the Dakotas having significantly higher absolute and relative PP indemnities compared to other states. Together, North and South Dakota accounted for over 50% of all PP indemnities paid in the 1994-2013 period.

Table 9 summarizes the prevented planting indemnities by cause of loss. Prevented planting coverage protects against excess moisture, cold wet weather, floods, drought, failure of the irrigation water supply, failure or breakdown of irrigation equipment or facilities, or the inability to prepare the land for irrigation using your established irrigation method. For non-irrigated acreage, this may mean that the affected area has had insufficient soil moisture due to a prolonged period of dry weather. For irrigated acreage it means that adequate water is unavailable to carry out an irrigated practice, the policy holder is unable to prepare

the land for irrigation using the established irrigation method, or irrigation equipment or facilities have failed or broken down due to an insured cause of loss.

Additional causes of loss may be found in the Crop Provisions. These causes of loss are generally only valid if other insureds in the area are prevented from planting as well.

Excess moisture is by far the greatest cause of loss. The low amount of PP indemnities due to drought may be attributable to the lower level of PP guarantee for some crops (e.g. cotton) in the more drought exposed regions (e.g. Southern Plains). Also, in excess moisture situations a farmer may be unable to physically plant a crop, whereas in a drought a farmer could usually plant in order to receive the full insurance guarantee (in case of a total loss) rather than the smaller PP amount.

Table 7: PP indemnities by crop - 1994-2013

Crop	Prevented Planting Indemnities (\$1,000,000)	Total Indemnities (\$1,000,000)	PP as percentage of Total Indemnities
Barley	194	632	30.7%
Canola	322	574	56.0%
Corn	3,478	26,424	13.2%
Cotton	192	8,554	2.2%
Cotton Ex Long Staple	152	185	82.0%
Dry Beans	206	661	31.2%
Dry Peas	47	195	24.0%
Flax	35	89	39.0%
Grain Sorghum	74	2,055	3.6%
Oats	15	96	15.3%
Onions	55	251	22.0%
Peanuts	6	677	0.8%
Potatoes	55	451	12.1%
Rice	240	429	55.8%
Rye	0	3	1.5%
Soybeans	1,419	10,887	13.0%
Sugar Beets	37	437	8.6%
Sunflowers	479	1,016	47.1%
Wheat	1,826	12,808	14.3%
All Other	1,242	20,071	6.2%
<b>Grand Total</b>	<b>10,072</b>	<b>86,497</b>	<b>11.6%</b>

Table 8: PP indemnities by state - 1994-2013

State	Prevented Planting Indemnities (\$1,000,000)	Total Indemnities (\$1,000,000)	PP as percentage of Total Indemnities
Arkansas	230	924	24.9%
California	254	1,895	13.4%
Illinois	447	6,286	7.1%
Indiana	260	3,352	7.8%
Iowa	542	5,702	9.5%
Kansas	106	6,603	1.6%
Minnesota	695	3,933	17.7%
Missouri	439	3,152	13.9%
Montana	114	1,578	7.2%
Nebraska	103	4,377	2.4%
North Dakota	3,502	7,763	45.1%
Ohio	234	1,831	12.8%
Oklahoma	51	2,237	2.3%
South Dakota	1,565	5,186	30.2%
Texas	326	12,097	2.7%
Wisconsin	175	1,749	10.0%
All Other	1,028	17,832	5.8%
<b>Grand Total</b>	<b>10,072</b>	<b>86,497</b>	<b>11.6%</b>

Table 9: PP indemnities by cause of loss

Cause of Loss	Prevented Planting Indemnities (\$1,000,000)	Percentage of Total
Cold Wet Weather	229	2%
Drought	140	1%
Excess Moisture/Precipitation/Rain	8,874	88%
Failure of Irrigation Supply	586	6%
Flood	160	2%
All Other	82	1%
<b>Grand Total</b>	<b>10,072</b>	<b>100%</b>

## 2. METHODOLOGY

### 2.1. Cost of production concepts

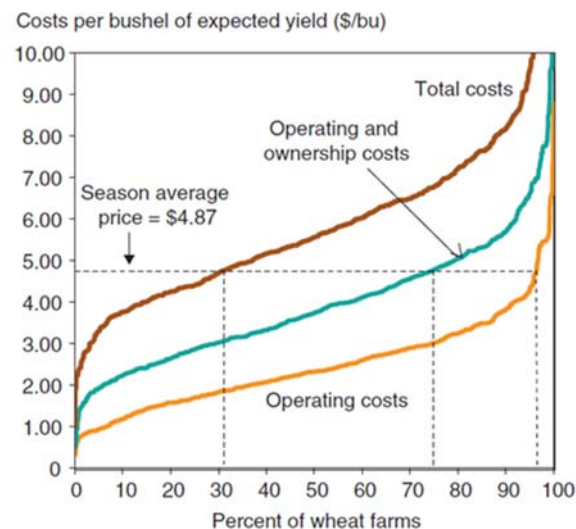
Production cost can be a challenging concept and can differ according to the perspective from which it is approached. A farmer may think of it solely in terms of the checks he has to write over the course of a season. If he owns his own land, a rental payment will not figure into his thinking about costs. His accountant will be factoring in depreciation and state and federal tax treatment. And the economist watching from a distance will be thinking about the opportunity cost of some of the factors of production.

Generally there are two broad classes of costs. Farmers incur actual out-of-pocket operating expenses when they buy inputs or hire people to assist with the production process for a specific crop. They also have other costs associated with the total farming operation that can be allocated among the various farm enterprises. In some cases these are out of pocket costs for things like taxes and insurance, and in other cases they are opportunity or capital recovery costs rather than actual expenditures. Historically agricultural economists at USDA and land grant universities have used the opportunity cost concept to estimate the implicit costs of farmers using assets they own, whether land, capital, or their own management and labor.

It is important to remember that production costs can be highly variable from farmer to farmer, and from year to year for any individual farmer. There is clearly a lot of variation around the mean or median. Moreover, an individual farmer can be in different parts of the distribution in different years, depending on weather or other factors.

One can see the degree of variation in a recent study by USDA's Economic Research Service based on survey data covering the 2009 wheat crop.<sup>5</sup> Figure 3 is reproduced from page 15 of that report and shows the range of production costs per bushel across the whole wheat farm population.

**Figure 3: Wheat production cost distribution**  
Cumulative distribution of wheat farms by cost levels using expected yield, 2009



<sup>5</sup> Gary Vocke and Mir Ali, "U.S. Wheat Production Practices, Costs, and Yields: Variations Across Regions", Economic Information Bulletin Number 116, Economic Research Service, USDA, August 2013.



The cumulative distribution across wheat production is similar to that for wheat farms, and costs per acre are skewed in much the same manner. Earlier studies for wheat and other crops show similarly wide distributions of costs. The main implication for purposes of the present study is that any estimate of average costs incurred in a prevented planting situation will disguise a great deal of inherent variability among growers.

In this particular ERS study, the expected yields for 2009 at the actual season average price would have covered "operating costs" for most farms, but only 75% would have had "ownership costs" also covered, and only about 30% would have covered total enterprise costs. Here are the definitions from that report that ERS uses in categorizing different types of cost:

"Enterprise costs are the value of resources used in the production of wheat, classified into three categories for this analysis:

**Operating costs** are the short-run costs incurred in planting, growing, and harvesting the wheat crop. They include items such as seed, fertilizer, and chemicals, custom operations, fuel, electricity, purchased water, baling straw, and hired labor. The farmer expects that the returns from the crop will at least cover these expenses, or else it would not be worthwhile to plant the crop.

**Ownership costs** include repairs, the annualized cost of maintaining the capital investment (depreciation and interest) in farm machinery, equipment, and facilities, and property taxes and insurance. Ownership costs do not need to be covered in one crop cycle but will have to be covered in the medium-term for the farm to remain profitable.

**Opportunity costs** reflect the loss of potential gains from alternative opportunities when one alternative is chosen. They can include unpaid labor for the time spent by a farmer in the production of a commodity, the rental rate of the land (should the farmer have chosen to rent the land to another producer), and the enterprise share of general farm overhead. General farm overhead includes the expenses for items such as farm supplies, marketing containers, hand tools, power equipment, maintenance and repair of farm buildings, farm utilities, and general business expenses that cannot be directly attributed to a single farm enterprise. Costs of general farm overhead items are allocated to each commodity produced on the farm based on its relative contribution to total farm operating margin (i.e., value of production less operating costs). In the long run, if the opportunity cost for these resources, such as labor and land, is not covered, then those resources will be moved to other activities that provide a higher return."<sup>6</sup>

In its ongoing tracking of production costs, ERS combines the last two categories into a grouping called "allocated overhead". All of USDA's work on production cost has a strong theoretical underpinning as a result of earlier work by agricultural economists. In the 1990s, the American Agricultural Economics Association decided to form a task force "to recommend standardized practices for generating costs and returns estimates for agricultural commodities after a careful examination of the relevant economic theory and the merits of alternative methods." The result was publication of a 566-page handbook on estimating commodity costs and returns.<sup>7</sup>

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<sup>6</sup> Ibid, page 13.

<sup>7</sup> AAEA Task Force on Commodity Costs and Returns, "Commodity Costs and Returns Estimation Handbook", Ames Iowa, February 1, 2000.

## 2.2. Sources of production cost information

USDA has collected production cost data for the major program crops for decades in connection with price support programs, and these data were at times used by the Congress to establish loan rates and target prices for the main program crops. Cost data for the less important crops is generally compiled or estimated by state cooperative extension staff, but these have some shortcomings as discussed below.

### 2.2.1. USDA production cost estimates

Currently the USDA data collection is accomplished through the Agricultural Resource Management Survey (ARMS) which currently deals with 9 of the 32 crops covered by this study (or 30 if one lumps together upland and ELS cotton and cottonseed). This annual survey is conducted jointly by ERS and NASS, and covers production practices, input use, costs, returns, and financial status of the enterprise.<sup>8</sup>

Each year these agencies typically collect more detailed information on production practices and costs for one or two crops in order to update cost and return (CAR) models. The most recent surveys covered wheat in 2009, corn in 2010, barley and oats in 2011, and soybeans in 2012. Data on peanuts and rice for 2013 will be collected this year. The survey history since 2000 is shown in Table 10. The survey design aims to cover 90 percent of production. For wheat, corn and soybeans the survey covers 15-20 states. Sample sizes are only 1,500 to 4,000, so at the regional level many of the data elements are not statistically significant.

**Table 10: Crop Years Covered by ARMS Data**

Rice	2013, 2006, 2000
Peanuts	2013, 2004
Soybeans	2012, 2006, 2002
Barley	2011, 2003
Sorghum	2011, 2003
Corn	2010, 2005, 2001
Wheat	2009, 2004
Cotton	2007, 2003
Oats	2005

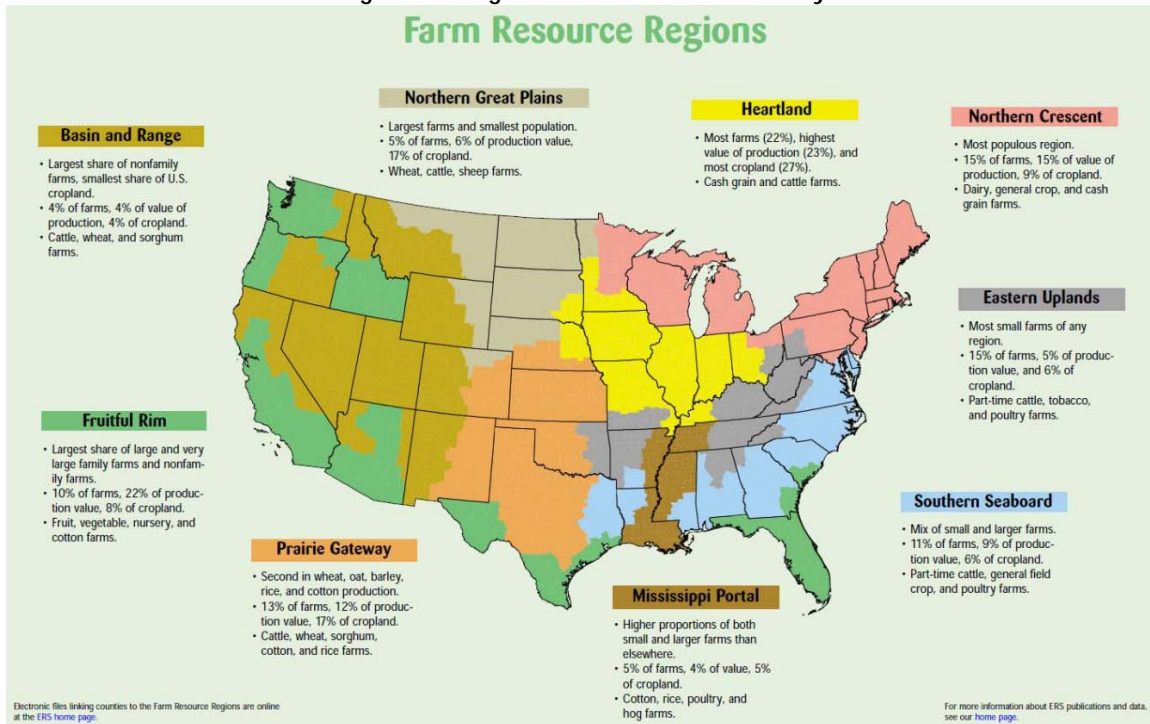
Using that data, ERS publishes annual estimates of production cost by region for those crops using price indexes and other information to update the estimates. Tobacco was also covered through 2004 and sugar beets through 2007. The regions used are the ERS Farm Resource Regions - Heartland, Northern Crescent, Northern Great Plains, Prairie Gateway, Eastern Uplands, Southern Seaboard, Mississippi Portal, Basin and Range, and Fruitful Rim. These are shown in Figure 4.

Some of the detailed ARMS data on production practices is available online. For the more recent surveys, this includes the seasonal timing of fertilizer application, weed control practices, tillage practices, and number of treatments for pests or disease. However, at the regional level much of the information is not statistically significant. Nevertheless the underlying survey information does contain a great deal of useful information for allocating cost elements to different phases of the production process: preplanting,

<sup>8</sup> Cost and return estimates for crops covered by ARMS surveys are available at <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>

planting, growing, and harvest. This includes information on number of field operations, and use of labor, machinery and other inputs at each stage.

Figure 4: Regions used for ARMS survey



### 2.2.2. Extension service crop budgets

In contrast to the major crops, most cost estimation for minor crops has historically been done on a somewhat ad hoc basis by extension staff at the various land grant universities. The crop coverage and frequency of such studies has been highly variable. Over the last decade, budget pressures have led many states to reduce or eliminate financing for this activity. In some cases, however, grower or industry groups have stepped up to provide funding for continuation of cost estimation programs.

One positive attribute of these state crop budgets is that they should be fairly up to date with respect to production methods and unit costs. A few also show the timing of field operations, which facilitates identification of some of the preplanting costs.

However, there are five main problems with these estimates. First, their availability is very limited for crops other than the major field crops. Many states do not produce such estimates, and those that do may do it only every few years.

Second, they are not statistically representative examples of actual production costs. They are mostly prospective budgets that are prepared as a planning tool for farmers in the state or region. They are typically based on interviews of representative commercial farmers, and sometimes on data collected through farm management services in which farmers may voluntarily participate. So they tend to represent costs of the larger scale, better managed, commercial farming operations.

Third, some states produce crop budgets for different regions within the state rather than an average for the state. The budgets may or may not take into account different practices, such as irrigated versus non-

irrigated, GMO versus conventional, different tillage systems, etc. In these cases there is no way to easily determine an average for the state that takes into account all the various combinations.

Fourth, the methodologies used around the country are highly variable. Many omit overhead costs or treat returns to land and management as a residual. Some budgets aggregate costs in the same format as is used by the Economic Research Service. Some are partly disaggregated, showing each type of input used and its costs. Some are completely disaggregated with quantities of inputs and prices for each field operation. And some are a blend of the three approaches.

Finally, while many are in Excel format, which allows farmers to plug in their own numbers and facilitates updating, many are available only in Adobe format and show only the results of calculations and would not be updatable without reconstructing a spreadsheet.

Given these limitations, we concluded that there is limited benefit in providing elaborate detail on production costs in our tables for each crop. It would not be something that RMA could reliably and economically update in the future because the sources for actual input costs at the state or county levels are seldom provided. Moreover, there is no assurance that the crop budgets we used for this project will be updated in the future (or in the same format if they are updated). Where possible we have instead usually presented cost data in a format similar to that used by ERS and indicated how it can be updated using price indices if extension budgets or ERS estimates are unavailable.

## 2.3. Complicating factors

### 2.3.1. Nature of the guarantee

RMA's crop insurance products offer a guarantee of a certain amount of revenue that is based on expected revenue. Expected revenue is a function of expected yields and expected prices. For some crops, futures markets tell us what the expected market price is. For others, one has to make an educated guess by drawing on industry experts or simply basing the projected price on the historical price data. RMA insurance plans use all these methods. Then the producer's historic average yields can be used to calculate the expected revenue. Alternatively, some revenue insurance plans use an average of the producer's historic revenues as the basis for the guarantee.

Risk sharing is an important concept in setting the actual guarantee to the producer. All recognize that in agriculture there is year-to-year variability in weather, in yields, in prices, and in crop quality. Risk is a normal part of the business, and a farmer must be able to survive the occasional bad year to be successful over time. The insurance products therefore require that in a bad year the producer must absorb some of the loss before the insurance kicks in. Thus most of RMA's plans do not guarantee 100 percent of expected revenue. Rather, they offer choices ranging between 50 and 90 percent of expected revenue. (The CAT endorsement only guarantees 27.5 percent of expected revenue.)

The lower the percentage guarantee is, the lower the cost to the farmer per dollar of guarantee because the probability of hitting that threshold of loss declines.

In a prevented planting situation, current RMA methodology applies the same risk-sharing theory. The producer is paid a fixed percentage of his individual guarantee, typically 60%, that reflects the estimated share of total production costs incurred in a prevented planting situation. Thus if the producer took out coverage at the 50% level, the PP payment would only cover half his incurred production costs. If the producer takes 85% coverage and elects an additional 10% PP payment, almost all of the incurred production

costs would be covered. This is an important point to keep in mind because it has implications for producer decision making in a prevented planting situation.

One problem is that today's federal insurance guarantees are for the most part not related to production costs. For the major field crops the guarantee is based on expected market prices and revenues, and those may be well above or well below actual production costs.

However, some crops, like dry beans or hybrid seed, have a guarantee based on a processor contract, and that typically is more reflective of production costs. Other minor crops may have plans that are implicitly based on production costs. These base the price component on some moving average of historic prices or revenues that presumably approximates the return to all factors of production that is necessary if farmers are to keep producing the crop.

For the major crops, the relationship between the PP payment and total production costs will vary depending on the coverage level chosen by the producer, whether expected revenue is above or below production costs, and whether the producer buys higher PP coverage. Table 11 illustrates the potential range of variation. At selected coverage levels, and for revenue per acre that is either 33 percent higher or 20% lower than production costs of \$600 per acre, the first two data columns show the basic 60 percent PP payment per acre and the share of production costs that it represents. The last two columns show the results when the producer has paid for the additional 10 percent PP payment.

Table 11: Comparison of PP payment's production cost coverage

		Basic PP Coverage		PP +10% Coverage	
		%	60	60	70
Prevented planting factor	%	60	60	70	70
Expected revenue/acre		\$800	\$480	\$800	\$480
Production cost/acre		\$600	\$600	\$600	\$600
Guarantee	85	\$680	\$408	\$680	\$408
	75	\$600	\$360	\$600	\$360
	65	\$520	\$312	\$520	\$312
	50	\$400	\$240	\$400	\$240
PP payment/acre	85	\$408	\$245	\$476	\$286
	75	\$360	\$216	\$420	\$252
	65	\$312	\$187	\$364	\$218
	50	\$240	\$144	\$280	\$168
PP as % of production cost	85	68%	41%	79%	48%
	75	60%	36%	70%	42%
	65	52%	31%	61%	36%
	50	40%	24%	47%	28%

For example, if expected revenue is 80 percent of total production cost, the coverage level is 50 percent, and prevented planting is 60 percent, then the indemnity will be 24% of production cost. But if expected

revenue is 133 percent of costs, coverage is at 85 percent, and the producer bought the additional 10 percent PP coverage, then the PP indemnity will be 79 percent of total production costs.

With the de facto “deductibles” built into the permitted coverage levels, and a multiplicative factor for prevented planting, this variation in cost coverage is inevitable. But similar variability of guarantee in relation to costs exists when a crop is successfully planted. If it is hailed out or frozen a week after the crop is up, the farmer will avoid incurring costs for cultivation, chemical applications and harvesting, yet the indemnity will be 100 percent of his guarantee. In another year with lighter damage, the farmer will incur all his production and harvesting costs, have some production to count, and get a smaller or perhaps no indemnity. And in both cases, the relationship between the indemnity and production costs will also hinge on the factors discussed above.

In theory the size of the prevented planting payment in and of itself should not affect behavior. If you are able to plant using good farming practices by the final planting date, you are generally required to plant. If you cannot plant, you get the payment. However, in practice it can be difficult to definitively determine whether it was possible to plant.

Growers may also have the option of planting a different crop with a later final planting date, e.g. soybeans after corn, or using the late planting option for the original crop, under which the guarantee is reduced one or two percent for each day beyond the final planting date. Current rules then give the grower a percentage of the prevented planting payment on the first crop that depends on whether there is a loss claim on the second crop. As discussed above, willingness to take a chance on the second crop or late planting can be affected not only by the amount of the prevented planting payment on the first crop, but by rules on the yield to be recorded in the farmer’s APH database. In practice, virtually no growers who claim prevented planting use the option of planting a second crop due to the adverse impact on the APH yield of the first crop.

### 2.3.2. The production cost metric

There are different definitions of what a farmer needs to survive a poor crop and come back to farm the following year. This is inherent in the alternative timeframes over which various costs are incurred, as discussed in Section 2.1.

One recent example of the various ways in which farm sector observers think about crop insurance is an analysis by Ohio State professor Carl Zulauf that was published via the University of Illinois’ online “Farmdocdaily” report.<sup>9</sup> It calculated the ratio of insurance coverage at the 85% level to the sum of cash expenses and land rent since 1980 for corn and soybeans. The rationale for including just cash expenses and land rent was that these expenses are mostly prior to harvest and are often financed by banks and other credit providers like input suppliers. There were a number of simplifying assumptions made in order to model purchase of the harvest price option over the period, and the national average cash basis was subtracted from the futures price to get to a farm level value.

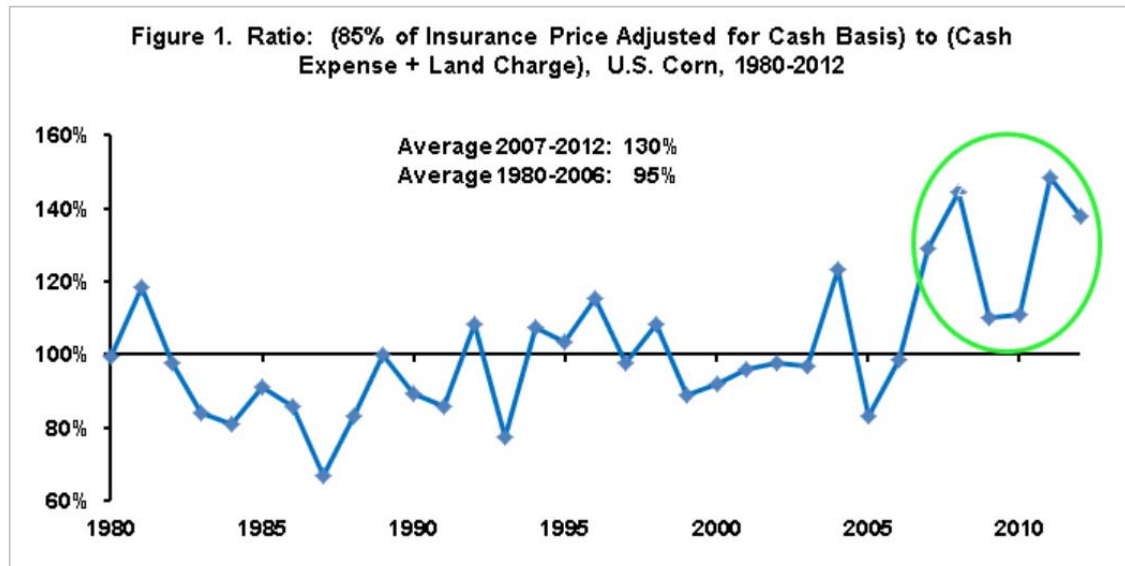
Zulauf’s Figure 1 for corn is reproduced below as Figure 5. From 1980 to 2006, insurance at the 85% level covered an average of 95% of cash expenses and a land charge. In the more recent higher priced years of 2007 to 2012, it covered an average of 130% of those costs. The story was similar for soybeans except that the coverage of costs during those two time periods was 106% and 151%, respectively.

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<sup>9</sup> Carl Zulauf, “Insurance Coverage of Corn and Soybean Production Cost since 1980”, farmdocdaily, Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign, November 27, 2013

If covering variable operating costs and land rent is the key to surviving another year, one could argue that the same standard should be applied in the case of prevented planting. As the review of ERS studies in Section 2.4 will reveal, even USDA has been of mixed minds over time about what costs to include as the benchmark.

Figure 5: Comparison of PP payment's production cost coverage



Source: Carl Zulauf

#### 2.4. USDA studies of prevented planting costs

The 1996 and 2007 ERS studies referred to earlier provided much of the support for the prevented planting factors that RMA has included in insurance plans.<sup>10</sup> Both studies divided the year into four periods: pre-planting, planting, growing, and harvesting. But the studies took somewhat different approaches on costs to include in the pre-planting period. The 1996 study had three scenarios defined by the percentage of pre-planting costs actually completed - 100%, 60% and 25%. It examined costs on a national and regional basis for corn, wheat, barley, cotton and grain sorghum using survey data from 1990-1994. It included variable cash costs, and the year's fixed cash costs for general farm overhead, taxes and insurance. It also included costs for capital replacement, operating capital, and non-land capital for the pre-planting period only. Land costs and returns to operator labor were not included.

The 2007 ERS study added soybeans and rice to the five crops covered in 1996 but only tabulated national average costs. It included the following costs in the pre-planting period: variable cash costs, and the interest, capital recovery, and operator labor costs relevant to activities undertaken in the pre-planting period. General farm overhead, taxes, insurance and land costs were allocated in proportion to the number of months in the pre-planting period. The estimates were based on ARMS surveys for the 1998-2003 crop years and were updated to a 2005 basis using price indexes.

Since both of these studies are rather dated, in 2013 RMA contracted with ERS to update estimates for corn, winter wheat, spring wheat, soybeans and cotton using the same methodology as in 2007 so that ERS'

<sup>10</sup> ERS Analysis Team, op cit, and Linda Foreman et al, op cit.

existing data compilation models could be applied.<sup>11</sup> Those five crops accounted for 80% of prevented planting indemnity payments between 1994 and 2013. While cotton has not had a lot of PP payments, it was included to get a fix on timing of field operations in the more southern production areas. The number of crops analyzed was limited to permit timely completion of the work. The analysis was based on ARMS surveys covering the 2006 soybean crop, 2007 cotton crop, 2009 wheat crop, and 2010 corn crop. While a survey was conducted for the 2012 soybean crop that data had not yet been compiled in a form amenable to analysis.

The 1996 ERS study was a serious effort to get a better understanding of the actual costs incurred before planting for some of the major crops. It divided the PP costs for the relevant year for that crop by the average 1991-94 guarantee at the 65% coverage level to get a PP factor. However, in retrospect it seems inconsistent to pay 100% of preplanting costs when the crop insurance plans have a co-insurance component, or deductible, that requires the farmer to shoulder part of the risk. Moreover, RMA's PP factor at the time was explicitly applicable to the farmer's guarantee, regardless of the coverage level chosen.

RMA does not appear to have based its PP factors directly on any of the ERS studies. The second column of Table 12 shows the percentage of a 65% guarantee reported in the 1996 study. In columns 3-5 it shows the PP percentage of total production costs from all three studies. Those percentages are all in a relatively narrow range of 16-34 percent. If one sets aside cotton, the range is 25-34 percent, and there is no general trend upward or downward over the 17-year period. Current PP factors for these crops range from 45% to 60%, roughly double the preplanting costs identified in the ERS studies.

Table 12: ERS share of costs before planting

	1996 % of 65% guarantee	1996 % of total production cost	2007	2013
Barley	57	26	29	
Corn	46	27	30	34
Cotton	35	22	21	16
Grain sorghum	58	28	32	
Rice			26	
Soybeans			32	31
Wheat	57	26	35	
Winter wheat				26
Spring wheat				25

RMA did not provide a discussion of how current PP factors were determined, nor were we able to find one in our research. Two things are clear, however. First, in current RMA practice, factors are applied to the insurance guarantee and therefore the indemnity is subject to the deductible implied by the coverage level. Second, and as a result, the only way the factors can be as high as they are is if a significant portion of the fixed costs are included as preplanting costs. We agree with that methodology.

## 2.5. Alternative methodologies

In the course of our research and analysis, we were not able to identify a practical alternative method of dealing with prevented planting, nor did we find any studies that explored other approaches. In our view,

<sup>11</sup> Linda Foreman and Mir Ali, op cit.



adjusting some of the crop payment factors and assigning a yield to the crop that was not planted would address most of the issues with this insurance coverage. (The assigned yield issue was raised in an Office of Inspector General audit report but is not further addressed in this study.)<sup>12</sup>

We did investigate two alternative approaches: basing the indemnity on actual preplanting costs, or capping the indemnity as some percentage of actual preplanting costs.

### 2.5.1. Payment equal to average pre-planting costs

In one sense, using the actual average of pre-planting costs for farmers in a specific region as the basis for an indemnity would be an appealing method of dealing with situations in which a farmer is not able to plant the crop. However, it is not a practical solution to the problem for three reasons.

First, the research undertaken for this project confirms that suitable production cost information for most of the crops eligible for prevented planting coverage is simply not widely available. We had great difficulty identifying acceptable extension budgets for use in the current study. Moreover, the extension budgets that are available are often not statistically representative of average grower costs, even when the percentage of costs identified as preplanting may be representative.

Second, even when production cost data are available, updating them each year would be administratively very burdensome.

Third, this would be a departure from RMA's general approach of basing insurance guarantees on expected revenue. When market prices are high, a prevented planting indemnity based on actual costs would probably be seen by growers as undercompensation. When prices are low, there would be a stronger incentive to claim prevented planting rather than to try to produce a crop that would yield low returns.

### 2.5.2. Capping payments

Capping the indemnity is a second way of preventing overcompensation of producers when market prices are high. One could include a restriction in the actuarial documents that says the payment per acre cannot exceed a certain figure derived from production cost data. The mechanics of doing this would be influenced by a number of considerations:

- Is there a single national PP factor or is it differentiated by state or region? Currently all factors are national, and we do not recommend departing from that approach.
- How frequently will the production cost data per acre be updated? This can be done annually using price indexes in between more thorough periodic reviews of actual cost data.
- Does one set the dollar amount at the actual PP costs, or apply the coverage level to that figure?
- If the buy-up options remain in effect, does one set the figure at 117% of PP costs when the PP factor is 60% since that is the coverage that one has permitted?
- Does one pick some dollar amount above the average in order to reflect the costs of more than half of the producers?

Given that there are regional production costs for the major crops, the simplest and most restrictive procedure might be to set a national cap equal to some amount more than 100% of the highest PP costs of

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<sup>12</sup> Office of Inspector General, "RMA: Controls Over Prevented Planting", Audit Report 05601-0001-31, U.S. Department of Agriculture, September 2013.

any region and apply the coverage level to that figure. However, this may not significantly constrain PP indemnities.

One can look at corn in 2012 as an example, assuming our recommended 50% factor for corn is implemented. The highest estimated PP costs were \$326 per acre in the Prairie Gateway region, and 110% of that figure is \$359. (If farmers argue that RMA has to allow for 10% buy-up, one would have to use 120% of actual costs, or \$391.)

The estimated PP indemnity at the 50% and 60% levels in 2012 is shown in Table 13, along with what a 60% PP factor would result in at coverage levels of 65% and 85%. This type of cap would indeed have limited indemnities in some cases (highlighted in the table) as long as the grower took the 10% buy-up option. However with the 50% base PP factor, only Heartland growers with high coverage levels would have been affected in this high price year (calculation not shown).

**Table 13: Prevented Planting Indemnity for Corn in 2012 (\$/acre)**

	PP factor		Coverage Level x 0.6	
	50%	60%	65%	85%
Eastern Uplands	344	413	269	351
Heartland	485	583	379	495
Northern Crescent	419	503	327	427
Northern Great Plains	348	418	271	355
Prairie Gateway	399	479	312	407
Southern Seaboard	337	405	263	344

This illustrates the challenge in establishing parameters for a cap that are perceived as reasonable by farmers, but that still keep PP indemnity payments from significantly exceeding actual preplanting costs. One would probably have to regionalize the caps to make them actually have an impact. If one is going to do that, one might as well just use regional cost of production as the basis for the indemnity. But the objections to that are discussed above.

## 2.6. Agralytica’s methodology

In most cases we have structured the cost tables in accordance with the Economic Research Service’s normal aggregated cost framework used in the agency’s ongoing work on commodity costs and returns. In some cases this required us to estimate overhead costs that were not explicitly identified in state extension service production cost budgets. We have also separately included part of the cost of crop insurance to the farmer under operating costs since this is not included in the ERS cost tables. We included that portion of the farmer-paid premium per acre from RMA’s Summary of Business data that one can attribute to prevented planting protection.

For each crop the cost data for the 2003-2012 crops is assembled in an Excel file. The first sheet shows total production costs. The second sheet contains factors that represent the percentage of each cost line item that is estimated to be incurred in a prevented planting situation. The third sheet contains the product of the total costs in the first sheet and the percentage factors in the second sheet. It also calculates the percentage of total costs that is incurred in a PP situation, which can then be compared to the current RMA coverage levels for prevented planting.

2.6.1. Determining total costs

For the nine crops covered by ARMS surveys, the production costs by farm resource region for the ten-year time period are available on the ERS website. Our only modification was to add part of the cost of crop insurance. For these crops the regions for which there are production cost estimates are shown in Table 14. (For rice, ERS has California, Gulf Coast, Arkansas Non-Delta, and Mississippi River Delta, which more or less align with the regions shown in the table.) We also used farm resource regions for similar or related crops that have costs based on extension budgets, or in the case of cottonseed, costs based on joint production with a covered crop. Those crops are included at the bottom of Table 14.

Table 14: Production cost budgets by farm resource region

	Northern Great Plains	Heartland	Northern Crescent	Eastern Uplands	Southern Seaboard	Mississippi Portal	Prairie Gateway	Fruitful Rim	Basin & Range
Barley	■	■	■	■				■	■
Corn	■	■	■	■	■	■	■		
Cotton		■		■	■	■	■	■	
ELS cotton				■	■	■	■	■	
Grain sorghum	■	■	■				■	■	
Oats	■	■	■				■		
Peanuts					■	■	■	■	
Rice				■	■	■	■	■	
Soybeans	■	■	■	■	■	■	■	■	■
Wheat	■	■	■	■	■	■	■	■	■
Cottonseed		■	■	■	■	■	■	■	■
Hy. corn seed		■	■	■					
Popcorn		■	■						
Silage sorghum							■		
Hy. Sorg. seed							■		

For the other crops (including hybrid corn and sorghum seed, popcorn, and silage sorghum) we first researched where they are grown and then searched for budgets for those states covering the ten-year timeframe. A few state extension services regularly produce budgets for multiple crops each year that are archived online. More commonly only the current year is available or a budget is published every few years. And for some states and crops there are no budgets available. For years for which no budget was available, we used price indexes from USDA's National Agricultural Statistics Service and other sources to derive the missing data from the years for which data was found.

The available budgets dictated the degree to which we could differentiate costs by region. Regions had to be defined in order to eventually compare the calculated PP costs to the indemnities paid as indicated by Summary of Business data.

Table 15 shows the states included in various regions for which we judged the available budgets to be representative.

Table 15: Region definitions on a state basis

Crop	States in Region
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<b>Buckwheat</b>	MN, ND, SD
<b>Canola</b>	ND
<b>Dry beans</b>	ND, MN
<b>Dry beans</b>	NE
<b>Dry peas</b>	ID, MT, ND, WA
<b>Flax</b>	ND
<b>Green peas</b>	IA, IL, MN, WI
<b>Hybrid sorghum seed</b>	TX
<b>Millet</b>	CO, KS, ND, SD
<b>Mustard</b>	ND, MT
<b>Onions</b>	ID, OR, WA
<b>Onions</b>	CA, GA, NM, NV, TX
<b>Potatoes</b>	ID, OR, WA
<b>Potatoes</b>	AL, AZ, FL, GA, TX
<b>Processing beans</b>	DE, MD, NJ, NY, PA
<b>Processing sweet corn</b>	WA, OR, ID
<b>Rye</b>	ND, SD, MN
<b>Rye</b>	KS, OK, TX
<b>Rye</b>	WI, MI, IL
<b>Safflower</b>	CA
<b>Safflower</b>	MT, ND, SD
<b>Sugar beets</b>	MI
<b>Sugar beets</b>	CO, MN, ND, NE
<b>Sugar beets</b>	ID, MT, OR, WY
<b>Sunflower seed</b>	MN, ND, SD
<b>Tobacco</b>	KY, TN
<b>Tobacco</b>	NC, SC, VA

### 2.6.2. Determining costs incurred prior to planting

Our methodology for this step differed slightly for operating costs and overhead costs. For operating costs we either used the percentages that the ERS studies have developed as allocable to the pre-planting period, or we developed our own estimates based on extension service crop budgets and interviews with those who prepared them or with other experts.

For several of the cost elements, the estimates were based on the percentage of field operations that occur prior to planting. Unfortunately there is not a clear dividing line. When fields are too wet to plant, farmers may also have been unable to complete the seed bed preparation, weed control and/or fertilization operations they would normally undertake just prior to planting. The 1996 ERS study recognized this possibility and looked at three scenarios that differed in the degree of completion of these steps. In our analysis we have generally given producers the benefit of the doubt and assumed all steps are completed. For overhead costs we include 100% of all except labor. Farmers have to pay taxes, insurance, and general farm overhead costs even if they are unable to plant a particular crop. Land rent must also be paid, or funds tied up in owned land could have generated a return elsewhere. Similarly, machinery replacement costs are typically accrued each year for tax purposes via depreciation schedules and are not likely to be

affected much by inability to plant a particular crop. Most farmers diversify their crop production and will still be using equipment on the acreage that is unaffected.

In the case of labor, we concluded that farm operators and their hired labor typically have plenty of other ways to profitably use their time over the course of a season and we count only the labor input prior to planting. ERS includes hired labor under overhead costs, while many state extension budgets list it under variable operating costs. We treat it the same way in both cases.

One cost that farmers can incur in a PP situation that may not be part of the normal cost structure is the cost of weed control on the unplanted land. There are three options - tillage, chemical control, or planting a cover crop. The typical cost per acre for tillage or chemical control is about \$15. Planting a cover crop like annual ryegrass, radishes, or oats depends on the cost of the seed but costs were variously reported as between \$20 and \$35 per acre (but only 1.5-2.0 million acres are planted to cover crops annually). However, a farmer may have weed control expenses or plant a cover crop after a spring-planted crop in any case. And cover crops add value in terms of soil fertility and structure. One recent study found that corn and soybean yields are 10% higher when following a cover crop.<sup>13</sup> Since our decisions on treatment of overhead costs are overwhelmingly in favor of farmers, and since cover crops provide a benefit, we chose not to include incremental cover crop costs in our calculation of costs farmers incur in a PP situation.

Below we provide additional comments on our treatment of each cost category.

### Seed

If the crop was not planted, the seed was not used. In general we found that most farmers are able to either carry the seed over for a year or return it for credit or a refund. However, there are some crops, like potatoes or tobacco, where the seed is usually a total loss if not planted. The ERS studies cited earlier do not include seed as a preplanting cost.

### Fertilizer

Most fertilizer for the major field crops is applied prior to planting. There are reasonably good data from the ARMS surveys and extension budgets about timing of fertilizer application, and the latter provide the total costs per acre of the different types. Our simplifying assumption for a prevented planting situation is that all nitrogen applied before planting is degraded before it can be used and is therefore a sunk cost, while all phosphorous, potassium and other soil amendments remain in the soil and can be used by subsequent crops.

### Chemicals

Crop protection chemicals are mostly applied after planting, but soil fumigants and glyphosate "burndown" are the exceptions. We adopted whatever percentage factors for pre-planting expenses were available in the various source materials.

### Custom operations

The ERS studies cited earlier provide the factors for selected crops. Extension budgets varied in the degree to which they revealed timing of custom operations. In the absence of information, we used the percentage of all field operations occurring before planting.

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<sup>13</sup> January 23, 2013 webinar on cover crops and crop insurance hosted by the National Center for Appropriate Technology and the National Sustainable Agriculture Coalition

### Fuel, lube and electricity

For dryland production, the allocation to the pre-planting period was based on the percentage of field operations in that period. For irrigated production, energy inputs were allocated primarily to the post-planting period.

### Repairs

Repair costs were allocated in proportion to the percentage of field operations in the pre-planting period.

### Crop insurance

The ERS production costs do not include crop insurance because the revenue side of their cost and returns tables includes only market returns from the sale of the crop at average yields. State extension budgets sometimes do include the cost of crop insurance. We concluded that the appropriate method for this study was to include that portion of the average farmer-paid premium per acre from RMA's Summary of Business data that one can attribute to prevented planting protection. For this purpose we used the ratio of prevented planting indemnities to total indemnities for the 1994-2013 period. That factor ranged from 1% for a few crops to more than 50% for canola, ELS cotton, burley tobacco, and rice.

### Interest on operating costs

ERS included interest only on those costs incurred prior to planting. The simple average of the shares for the eight crops covered in the 2007 and 2013 ERS studies is 25% and we have used that percentage for all other crops.

### Other variable costs

Depending on the crop, these may be separately identified as purchased irrigation water, ginning (for cotton), straw baling (oats), transload (potatoes), etc. Some extension budgets also just have a "miscellaneous" category. For the most part these are costs that come only after a crop is planted, so a zero factor is applied for calculating the PP portion.

### Labor

As discussed above, whether for hired labor or the opportunity cost of unpaid operator labor, we only include the labor costs associated with activities prior to planting.

### Opportunity cost of land

Some farmers own all the land they farm, some own part and rent part, and some are just renters. The 2007 Census of Agriculture reported that 20% of the harvested cropland was on farms that are fully owned, 12% was on farms that fully rented, and 68% was on a mix of owned and rented land. If one owns the land, there is no rental payment that has to be covered when a crop is not planted. And even rental contracts may have provisions that adjust the payment in a prevented planting situation. Nevertheless, if a farmer or landowner did not have money tied up in land, it could be earning something elsewhere, so we have followed the ERS model of using land rental rates as the opportunity cost of the land resource. We include 100% of that rental rate as a pre-planting cost.

### Capital recovery of machinery and equipment

This is part of the ownership costs described in Section 2.1. In this case it is the annualized cost of maintaining the capital investment (depreciation and interest) in farm machinery, equipment, and facilities. Since it is a cost that does not actually have to be covered in any particular year, there is a stronger argument than for land costs for not including it at all as a pre-planting cost. However, we chose to include 100% as a pre-planting cost because the guarantee in RMA insurance plans is generally based on some concept of full cost of production over time.

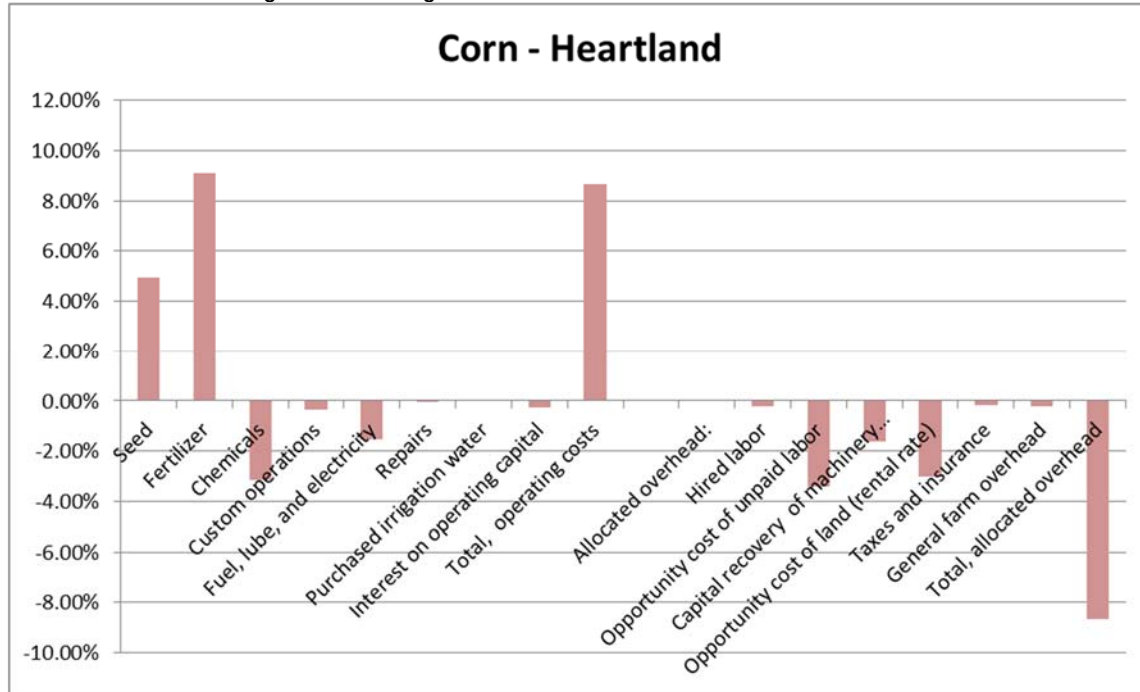
### Taxes and insurance, and general farm overhead

These are all cash outlays that must be paid on a timely basis. In cost of production budgeting, these costs are allocated among the various farm enterprises on the basis of the contribution of each enterprise to net returns. We include 100% of these costs as pre-planting costs.

## 2.7. Our initial expectations

As a prelude to the individual crop analysis we thought it would be useful to look at some basic data on whether the relative importance of different cost elements had changed over the past decade, using the USDA cost data for wheat, corn, soybeans, cotton and rice. For each crop and region we calculated the shares of total cost for 2002, 2003 and 2004 and then averaged those shares. We did the same for 2010, 2011 and 2012 and then calculated the change in the share of each cost component between the two periods and graphed it. Figure 6 shows the results for corn in the Heartland region as an example.

Figure 6: Change in share of costs 2002-04 to 2010-12



Our main conclusion was that since fixed overhead costs were generally down as a percentage of total costs while the variable operating cost share was up by several percentage points on average, it suggested that

prevented planting payments could be reduced (on average) by several percentage points. Here are our other observations at the beginning of the study on the changing structure of costs:

### Cost changes overall

- Operating costs as a share of overall costs had increased for all commodities, on average by 5 percentage points.
- The figure was higher for corn (8 points) and wheat (6), and less for cotton (4), rice (4), and soybeans (2.5).
- Cost changes by region:
  - Changes in costs were pretty consistent across regions for corn and cotton;
  - For wheat, soybeans, and rice, there were slight variations in cost changes across regions.

### Operating cost changes

- Fertilizer and seed were each up 3 points, and fuel is up 2 points.
- Chemicals were down 2-3 points.

### Overhead cost changes

- Opportunity cost of both hired and unpaid labor was down 2-3 points across most commodities.
- Opportunity cost of machinery had varied, up in most regions but not all.
- Interestingly, land rental rates declined in importance between the two periods, except for rice.

In Section 3 we summarize the results of our analysis of production costs for the various crops. In the three sections that follow, we discuss the individual crops. Some follow this general pattern but others do not.

Each crop discussion begins with a general overview and a map of production areas. This is followed by descriptions of sources of production cost information, production practices, and prevented planting experience. An analysis section summarizes the prevented planting cost estimates for the regions covered, and presents the results graphically. Following the production cost analysis, we show how RMA prevented planting payments per acre compared to our estimates of PP costs over the decade, and we recommend whether RMA's PP factor for that crop should be increased, decreased, or left unchanged. Then we provide the tables showing regional production costs, the PP percentage factors, and the regional estimates of costs incurred in a prevented planting situation.



### 3. ANALYSIS AND CONCLUSIONS

For this study, the contract required the following results:

- Determine the degree to which current base level PP payments are adequate;
- Determine the appropriateness of allowing an additional 5 or 10 percent PP coverage under existing policy;
- Compare our estimates of costs incurred per acre in a PP situation to what RMA's insurance plans have actually paid out.
- Document the pros and cons of any recommended changes to existing PP payment amounts for eligible crops.
- Explore and discuss alternative approaches

#### 3.1. Analysis of production cost data

Our overall conclusion is that current base level PP payments are more than adequate, and for most crops are in fact excessive. By base level we mean without the additional 5 or 10 percent coverage available for all of the crops except onions and tobacco.

As intimated in the solicitation, and evident in our initial analysis, the share of production costs that is incurred by farmers in a prevented planting situation has declined for most crops over the past decade.

Figure 7 shows the changes that occurred between 2003 and 2012 in the prevented planting share of total production cost, using the simple average for the regions analyzed for each crop. For most crops the PP share fell by several percentage points. For example, for wheat it fell by five percentage points.

Our research also indicates that the percentages of guarantee that RMA pays for prevented planting were mostly too high to begin with in 2003. Figure 8 shows the combined effect of this and of the decline in PP share over the subsequent decade by plotting the difference between the percentages in the insurance plans and our estimates of the appropriate percentages in 2012. Again using wheat as an example, the difference between RMA's 60% and the 2012 average of 58% for the six wheat regions is 2 percentage points.

The dashed lines in the two figures divide the crops into three groups. The first includes those crops for which ERS recently updated its estimates of how costs are allocated across the production cycle. The second includes those crops for which there are earlier ERS estimates of those allocations (barley, sorghum, oats, peanuts and rice) and crops for which we relied heavily on ERS estimates (popcorn, silage sorghum, and hybrid corn seed). The third group includes all the remaining crops, for which we relied primarily on state extension service crop budgets for the analysis.

Table 16 and Table 17 provide our estimates of the share of total costs that farmers incur in a prevented planting situation, by crop, region, and year. These are reproduced from the detailed tables in each crop discussion in Sections 4-6. The tables include averages of the regions for each year and for the ten-year period as a whole. The final columns show the current percentages in the insurance plans, and the differences between those percentages and our 2012 estimates.

The recommended changes in individual crop discussions assume that a single percentage applies to each crop, except for onions. We discuss this issue below in Section 3.3. Table 16 includes the crops with ERS-related estimates. Table 17 includes the crops for which we relied on extension budgets.

Figure 7: Change in PP share of total cost from 2003 to 2012

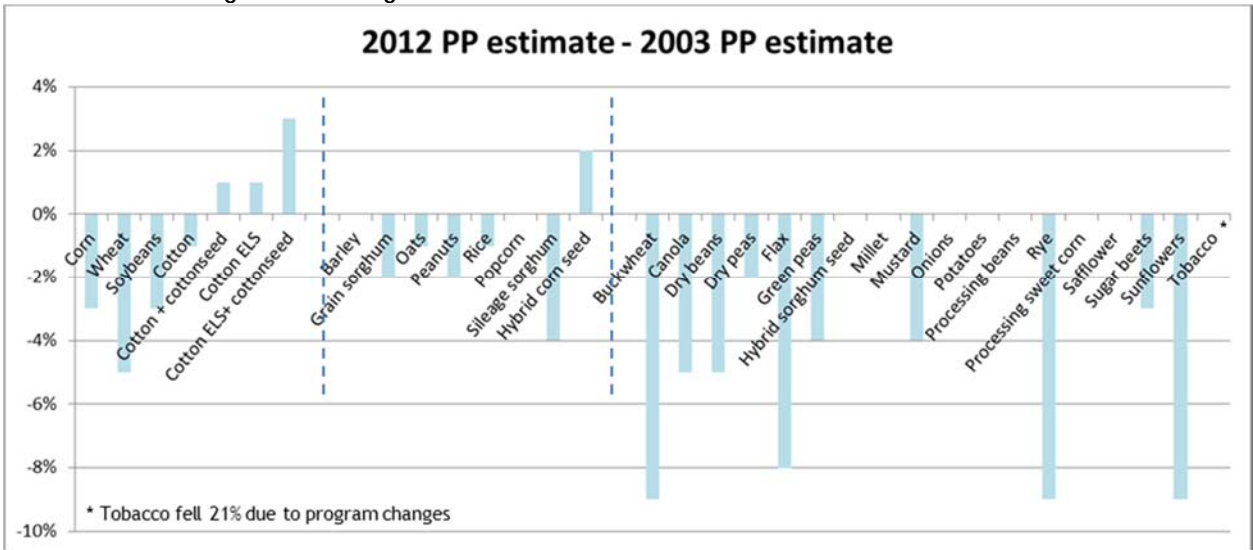


Figure 8: Difference between what RMA allows and actual PP costs

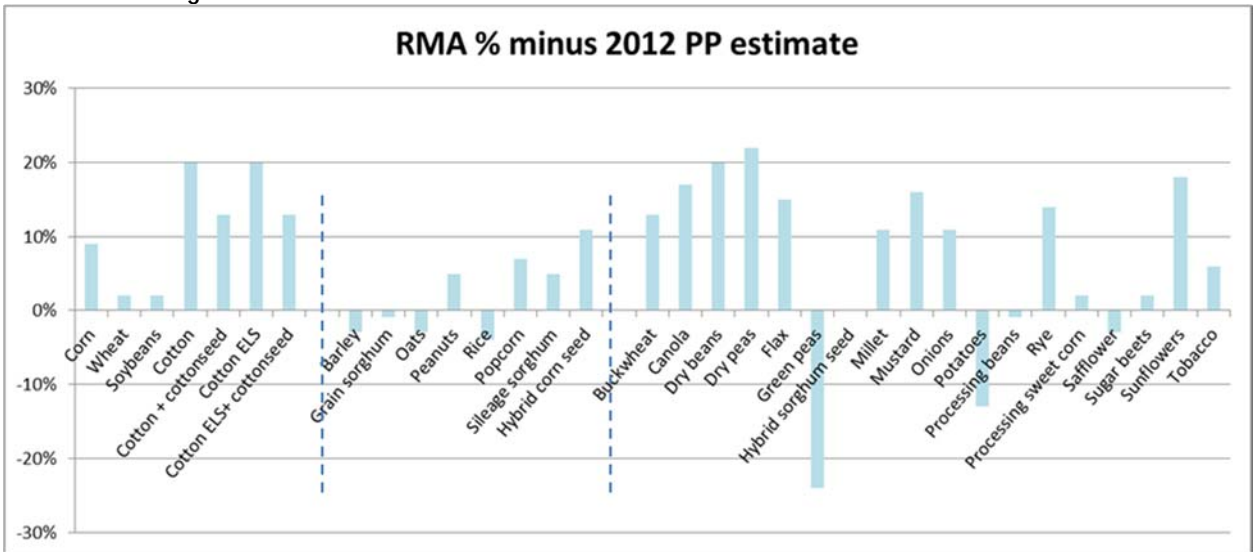


Table 16: Summary of preplanting cost ratios for crops using ERS data

Crop	ERS Region	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average	RMA	2012- RMA
Corn	Heartland	58%	58%	58%	56%	55%	52%	54%	55%	54%	55%	56%	60%	-5%
Corn	Northern Crescent Northern Great Plains	54%	54%	54%	53%	52%	49%	50%	49%	48%	48%	51%	60%	-12%
Corn	Prairie Gateway	54%	53%	54%	53%	52%	49%	50%	51%	50%	50%	52%	60%	-10%
Corn	Eastern Uplands	50%	50%	51%	50%	49%	47%	47%	51%	49%	49%	49%	60%	-7%
Corn	Southern Seaboard	52%	53%	54%	53%	52%	50%	50%	50%	49%	49%	51%	60%	-11%
Corn	Average	54%	53%	54%	53%	52%	49%	50%	52%	50%	51%	52%	60%	-9%
Soybeans	Heartland	68%	67%	67%	67%	66%	63%	65%	67%	67%	66%	66%	60%	6%
Soybeans	Northern Crescent Northern Great Plains	62%	61%	60%	61%	59%	55%	57%	60%	59%	59%	59%	60%	-1%
Soybeans	Prairie Gateway	60%	59%	59%	62%	60%	57%	59%	60%	60%	60%	60%	60%	0%
Soybeans	Eastern Uplands	60%	60%	59%	61%	60%	57%	60%	61%	60%	60%	60%	60%	0%
Soybeans	Southern Seaboard	59%	58%	57%	59%	57%	53%	55%	57%	57%	56%	57%	60%	-4%
Soybeans	Mississippi Portal	54%	52%	52%	52%	50%	46%	47%	50%	49%	49%	50%	60%	-11%
Soybeans	Average	62%	62%	60%	59%	57%	55%	57%	58%	58%	58%	59%	60%	-2%
Soybeans	Average	61%	60%	59%	60%	58%	55%	57%	59%	59%	58%	59%	60%	-2%
Wheat	Heartland	63%	62%	62%	61%	59%	53%	55%	60%	57%	56%	59%	60%	-4%
Wheat	Northern Crescent Northern Great Plains	62%	60%	59%	59%	58%	52%	55%	60%	57%	55%	58%	60%	-5%
Wheat	Prairie Gateway	65%	61%	62%	61%	60%	56%	58%	61%	59%	59%	60%	60%	-1%
Wheat	Fruitful Rim	63%	60%	59%	59%	58%	54%	58%	61%	59%	58%	59%	60%	-2%
Wheat	Basin and Range	62%	63%	63%	62%	61%	58%	61%	64%	62%	61%	62%	60%	1%
Wheat	Average	64%	62%	62%	61%	60%	55%	59%	63%	61%	60%	61%	60%	0%
Wheat	Average	63%	61%	61%	60%	59%	55%	58%	62%	59%	58%	60%	60%	-2%

Evaluation of Prevented Planting Program  
Prepared for: AOD and RMA

Crop	ERS Region	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average	RMA	2012- RMA
Cotton	Heartland	32%	30%	30%	29%	32%	30%	32%	32%	31%	31%	31%	50%	-19%
Cotton	Prairie Gateway	34%	30%	29%	31%	29%	31%	32%	30%	33%	32%	31%	50%	-18%
Cotton	Eastern Uplands	28%	28%	27%	28%	27%	25%	26%	26%	26%	26%	27%	50%	-24%
Cotton	Southern Seaboard	30%	30%	29%	29%	31%	29%	30%	31%	30%	29%	30%	50%	-21%
Cotton	Fruitful Rim	31%	29%	29%	28%	28%	28%	29%	28%	30%	29%	29%	50%	-21%
Cotton	Mississippi Portal	30%	30%	30%	29%	32%	30%	32%	31%	31%	30%	30%	50%	-20%
	Average	31%	29%	29%	29%	30%	29%	30%	30%	30%	30%	30%	50%	-20%
Cotton + cottonseed	Heartland	37%	35%	36%	34%	38%	37%	40%	39%	39%	39%	37%	50%	-11%
Cotton + cottonseed	Prairie Gateway	40%	36%	34%	36%	34%	38%	40%	37%	41%	40%	38%	50%	-10%
Cotton + cottonseed	Eastern Uplands	33%	34%	32%	33%	33%	31%	33%	33%	33%	33%	33%	50%	-17%
Cotton + cottonseed	Southern Seaboard	35%	35%	34%	34%	37%	36%	37%	38%	37%	36%	36%	50%	-14%
Cotton + cottonseed	Fruitful Rim	37%	34%	35%	32%	33%	34%	36%	35%	37%	36%	35%	50%	-14%
Cotton + cottonseed	Mississippi Portal	35%	35%	35%	34%	37%	38%	39%	39%	38%	37%	37%	50%	-13%
	Average	36%	35%	34%	34%	35%	36%	37%	37%	37%	37%	36%	50%	-13%
Cotton Ex Long Staple	Fruitful Rim	29%	29%	29%	29%	29%	27%	29%	30%	30%	30%	29%	50%	-20%
Cotton ELS + cottonseed	Fruitful Rim	34%	34%	34%	34%	34%	34%	36%	37%	37%	37%	35%	50%	-13%
Rice	Eastern Uplands	52%	52%	49%	50%	50%	49%	52%	52%	50%	50%	51%	45%	5%
Rice	Southern Seaboard	48%	48%	45%	45%	45%	43%	47%	46%	45%	45%	46%	45%	0%
Rice	Fruitful Rim	50%	49%	50%	52%	52%	52%	54%	54%	54%	54%	52%	45%	9%
Rice	Mississippi Portal	50%	50%	48%	48%	48%	47%	49%	49%	48%	48%	49%	45%	3%
	Average	50%	50%	48%	49%	49%	48%	50%	50%	49%	49%	49%	45%	4%
Grain Sorghum	Heartland	68%	67%	66%	65%	64%	62%	64%	65%	64%	63%	65%	60%	3%
Grain Sorghum	Northern Great Plains	73%	74%	73%	75%	76%	77%	79%	78%	77%	79%	76%	60%	19%
Grain Sorghum	Prairie Gateway	65%	64%	64%	63%	62%	60%	63%	64%	62%	62%	63%	60%	2%
Grain Sorghum	Fruitful Rim	59%	59%	58%	58%	56%	55%	58%	58%	57%	56%	57%	60%	-4%
	Average	66%	66%	65%	65%	65%	63%	66%	66%	65%	65%	65%	60%	5%

Evaluation of Prevented Planting Program  
Prepared for: AOD and RMA

Crop	ERS Region	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average	RMA	2012- RMA
Silage Sorghum	Prairie Gateway	59%	59%	55%	55%	54%	53%	56%	55%	55%	55%	56%	60%	-5%
Barley	Heartland	64%	63%	63%	62%	63%	60%	64%	66%	64%	63%	63%	60%	3%
Barley	Northern Crescent Northern Great Plains	60%	60%	59%	58%	59%	57%	60%	62%	60%	59%	59%	60%	-1%
Barley	Fruitful Rim	65%	65%	65%	64%	65%	62%	65%	67%	65%	65%	65%	60%	5%
Barley	Basin and Range	63%	63%	62%	61%	62%	60%	64%	65%	63%	63%	63%	60%	3%
Barley	Average	65%	64%	63%	63%	64%	61%	64%	66%	64%	64%	64%	60%	4%
	Average	63%	63%	62%	62%	63%	60%	63%	65%	63%	63%	63%	60%	3%
Oats	Heartland	67%	68%	67%	66%	66%	64%	68%	69%	68%	67%	67%	60%	7%
Oats	Northern Crescent Northern Great Plains	60%	61%	60%	60%	59%	56%	60%	62%	60%	60%	60%	60%	0%
Oats	Prairie Gateway	69%	70%	69%	69%	68%	65%	69%	70%	69%	68%	69%	60%	8%
Oats	Average	60%	61%	59%	59%	58%	54%	57%	60%	58%	58%	58%	60%	-2%
	Average	64%	65%	64%	64%	63%	60%	64%	65%	64%	63%	63%	60%	3%
Peanuts	Prairie Gateway	47%	47%	46%	46%	46%	43%	47%	47%	46%	45%	46%	50%	-5%
Peanuts	Southern Seaboard	48%	48%	47%	47%	47%	43%	46%	48%	46%	45%	47%	50%	-5%
Peanuts	Fruitful Rim	46%	46%	45%	45%	45%	41%	44%	45%	44%	43%	44%	50%	-7%
	Average	47%	47%	46%	46%	46%	42%	46%	47%	45%	45%	46%	50%	-5%
Hybrid Corn Seed	Heartland	38%	38%	38%	38%	38%	39%	40%	42%	42%	43%	40%	50%	-7%
	Northern Crescent	35%	36%	36%	35%	35%	36%	37%	35%	35%	36%	36%	50%	-14%
	Average	37%	37%	37%	37%	37%	37%	39%	38%	39%	39%	38%	50%	-11%
Popcorn	Heartland	53%	53%	53%	52%	52%	50%	54%	54%	53%	53%	53%	60%	-7%

Evaluation of Prevented Planting Program  
Prepared for: AOD and RMA

Table 17: Summary of preplanting cost ratios for crops using extension budget data

Crop	States	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average	RMA	2012- RMA
Buckwheat	ND SD MN	56%	56%	54%	54%	50%	48%	46%	48%	45%	47%	50%	60%	-13%
	ND	48%	48%	47%	46%	46%	45%	43%	46%	44%	43%	46%	60%	-17%
Dry Beans	ND MN	48%	49%	45%	46%	46%	46%	42%	43%	42%	41%	45%	60%	-19%
	NE	43%	42%	45%	46%	45%	40%	42%	40%	40%	40%	42%	60%	-20%
Dry Peas - Field	Total	45%	46%	45%	46%	45%	43%	42%	41%	41%	40%	44%	60%	-20%
	ND MT ID WA	50%	49%	51%	50%	48%	43%	45%	47%	47%	45%	47%	60%	-15%
Dry Peas - Lentils	ND MT ID WA	42%	42%	42%	42%	41%	39%	38%	39%	39%	39%	40%	60%	-21%
	ND MT ID WA	27%	27%	25%	26%	26%	26%	26%	31%	32%	30%	28%	60%	-30%
Flax	Total	40%	39%	39%	39%	38%	36%	36%	39%	39%	38%	38%	60%	-22%
	ND	53%	53%	50%	50%	49%	44%	47%	49%	46%	45%	49%	60%	-15%
Green Peas	MN WI IA IL	68%	64%	67%	66%	65%	63%	67%	65%	65%	64%	65%	40%	24%
	TX	53%	53%	53%	52%	53%	53%	54%	54%	54%	54%	53%	60%	-11%
Millet	CO KS NE SD	49%	50%	51%	50%	50%	48%	53%	54%	51%	49%	51%	60%	-11%
	ND MT	48%	49%	46%	47%	46%	45%	45%	46%	45%	44%	46%	60%	-16%
Onions	ID OR WA	38%	38%	38%	38%	38%	39%	39%	39%	39%	38%	38%	35%	3%
	TX GA CA NV NM	10%	10%	10%	11%	10%	10%	10%	9%	9%	9%	10%	35%	-26%
Potatoes	Total	24%	24%	24%	25%	24%	25%	25%	24%	24%	24%	24%	35%	-12%
	ID OR WA	46%	46%	46%	46%	47%	43%	48%	46%	46%	44%	46%	25%	19%
Processing Beans	AL AZ FL GA TX	30%	30%	30%	30%	31%	31%	31%	31%	31%	31%	31%	25%	6%
	Total	38%	38%	38%	38%	39%	37%	40%	39%	39%	38%	38%	25%	13%
Processing Sweet Corn	NY PA DE MD NJ	41%	41%	42%	42%	41%	38%	39%	41%	41%	41%	41%	40%	1%
	WA OR ID	40%	41%	41%	41%	41%	40%	41%	42%	42%	42%	41%	40%	2%
Processing Sweet Corn	Total	41%	41%	42%	42%	41%	39%	40%	42%	42%	42%	41%	40%	2%
	WA OR ID	38%	38%	37%	37%	37%	34%	38%	39%	38%	38%	38%	40%	-2%

## Evaluation of Prevented Planting Program

Prepared for: AOD and RMA

Crop	States	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average	RMA	2012- RMA
Rye	WI MI IL	51%	51%	50%	51%	50%	47%	50%	51%	50%	50%	50%	60%	-10%
Rye	ND SD MN	59%	58%	54%	51%	52%	45%	43%	50%	44%	42%	50%	60%	-18%
Rye	KS OK TX	45%	43%	42%	41%	41%	42%	42%	42%	41%	39%	42%	60%	-21%
	Total	52%	51%	49%	48%	48%	45%	45%	48%	45%	44%	47%	60%	-16%
Safflower	ND SD MT	62%	62%	63%	63%	64%	67%	57%	57%	58%	58%	61%	60%	-2%
Safflower	CA	64%	65%	66%	65%	67%	71%	66%	66%	68%	68%	67%	60%	8%
	Total	63%	64%	65%	64%	66%	69%	62%	62%	63%	63%	64%	60%	3%
Sugar Beets	MI	49%	48%	48%	47%	47%	46%	48%	49%	49%	49%	48%	45%	4%
Sugar Beets	MN ND NE CO	45%	45%	45%	44%	44%	36%	38%	39%	39%	39%	41%	45%	-6%
Sugar Beets	ID OR MT WY	43%	43%	42%	41%	41%	38%	41%	41%	42%	42%	41%	45%	-3%
	Total	46%	45%	45%	44%	44%	40%	42%	43%	43%	43%	44%	45%	-2%
Sunflowers-oil	ND SD MN	54%	54%	51%	50%	50%	45%	44%	46%	44%	44%	48%	60%	-16%
Sunflower-confectionery	ND SD MN	49%	49%	47%	46%	45%	42%	40%	42%	41%	41%	44%	60%	-19%
	Total	51%	51%	49%	48%	48%	43%	42%	44%	42%	42%	46%	60%	-18%
Tobacco	KY TN	48%	47%	27%	28%	28%	25%	25%	26%	26%	26%	31%	35%	-9%
Tobacco	VA NC SC	51%	52%	32%	32%	32%	29%	30%	32%	32%	32%	35%	35%	-3%
	Total	50%	50%	30%	30%	30%	27%	28%	29%	29%	29%	33%	35%	-6%

### 3.2. Adequacy of prevented planting payment amounts

In addition to forming a judgment on the adequacy of the RMA methodology, we used RMA Summary of Business data to determine how the resulting PP payments compare to our estimates of PP costs.

If the ratio of PP payments to costs is above 1, this may indicate that farmers are being overcompensated (PP payments > estimated PP costs). If, on the other hand, the ratio is below 1 (estimated PP costs > PP payments), then farmers may be undercompensated. Ideally, the ratio of PP payments to costs would be 1, i.e. farmers would be precisely compensated for costs they have incurred prior to a prevented planting claim. However, one must keep in mind that payments are also affected by market prices and by the coverage levels the farmers elect.

For each coverage level, including CAT coverage, RMA's Summary of Business data provides total liabilities and acres insured. We divided the liabilities at each Buy-up coverage level by the coverage level to estimate the guarantee at 100% of expected revenue. This assumes that all growers take 100% of the price. For CAT we also adjusted for the lower price coverage of 55%. We then multiplied that total liability by the RMA PP factor and divided the result by the total acres in each region for that crop.

The result of those calculations is an estimate of the base level PP payment for each crop and region if producers were able to have 100% coverage. We then divided those PP payments by the estimated PP costs reviewed in the Evaluation Report. The calculated payments, estimated costs, and the ratio between the two are provided in Appendix A.

Overall, we found results mostly consistent with the findings from our analysis of prevented planting costs:

- Many crops have ratios well above 1, i.e., consistent with the recommendation that the PP payment rate ought to be lowered;
- Quite a few crops have ratios close enough to 1 to support leaving the rate unchanged; and
- There are a few exceptions where the ratio is below 1, indicating that an increase in the PP rate may be warranted.

Our recommended changes, considering both the production cost analysis and a review of the ratio of actual payments to estimated costs, are shown in Table 18.

We recommend the following:

- Factor reductions for silage sorghum, tobacco, corn, hybrid sorghum seed, buckwheat, millet, popcorn, hybrid corn seed, canola, flax, mustard, sunflower seed, upland and ELS cotton, cotton with cottonseed endorsement, dry beans, dry peas, and southern onions.
- Keeping the factor the same for wheat, soybeans, grain sorghum, barley, rye, safflower, peanuts, rice, sugar beets, processing beans, processing sweet corn, and northern onions.
- Increasing the factors for potatoes, green peas, and oats.

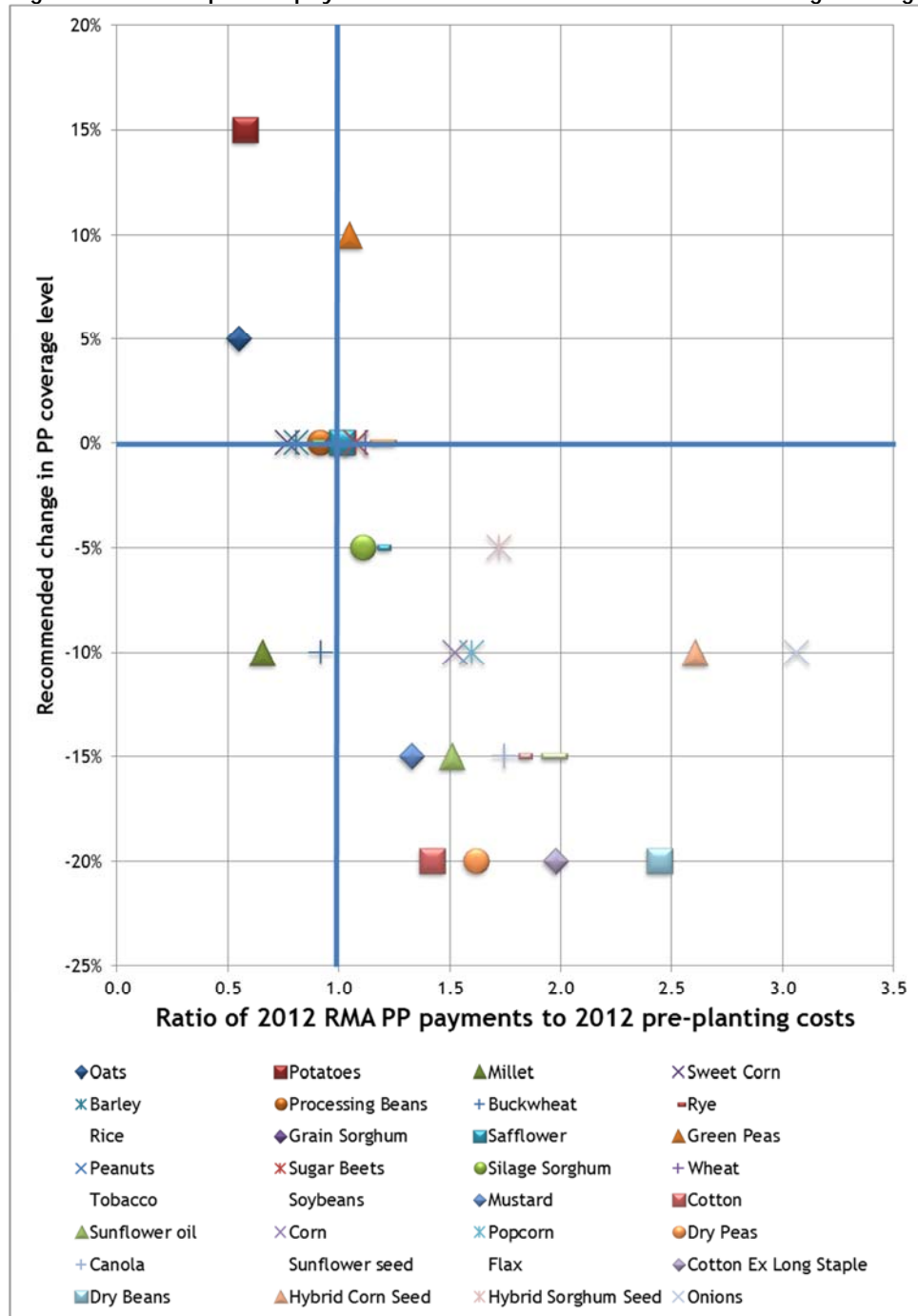
Table 18: Recommended changes in prevented planting factors



Recommended Change % points	Crops	Current factor %	New factor %	Change in payment %
+15	Potatoes - northern and southern	25	40	60.0%
+10	Green peas	40	50	25.0%
+5	Oats	60	65	8.3%
0	Wheat, soybeans, grain sorghum, barley, rye, safflower	60		
0	Peanuts	50		
0	Rice, sugar beets	45		
0	Processing beans and sweet corn	40		
0	Onions - northern (storage)	35		
-5	Silage sorghum, hybrid sorghum seed	60	55	-8.3%
-5	Tobacco	35	30	-14.3%
-10	Corn, buckwheat, millet, popcorn	60	50	-16.7%
-10	Hybrid corn seed	50	40	-20.0%
-15	Canola, flax, mustard, sunflower seed	60	45	-25.0%
-15	Cotton with cottonseed endorsement	50	35	-30.0%
-20	Dry beans, dry peas	60	40	-33.3%
-20	Cotton and ELS cotton	50	30	-40.0%
-20	Onions - southern (fresh)	35	15	-57.1%

Figure 9 presents a scatterplot of these recommended changes in coverage levels, versus the ratio of 2012 RMA payment rates to production costs incurred in a prevented planting situation. As one would expect, the recommended increases in coverage levels are for crops where the ratio is less than or close to one. And the recommended decreases generally get progressively larger as the ratios get larger.

Figure 9: Scatterplot of payment ratio versus recommended coverage change



### 3.3. The case for differentiation

In our recommendations regarding changes in prevented planting factors, we adhered to RMA's current practice of specifying a single percentage for each commodity. However, in the case of cotton and cottonseed the practical effect will be two percentages within the cotton plan - 30% when just the fiber is insured and 35% when a grower adds the cottonseed endorsement.

More generally, one could make a case for differentiating the percentages for various reasons. For example, for the crops in Table 16 and Table 17 that have multiple regions, one can readily see that there is typically a range of plus or minus a few percent around our recommended percentages. Sometimes the deviation is up to a tenth of the base percentage, e.g. plus or minus 5 percentage points for a crop with a 50% factor. As a practical matter, however, it would be challenging to differentiate treatment in the insurance plans based on the current study because the ERS resource regions do not use state boundaries. Moreover, as discussed earlier, there is no perfect percentage factor. There will always be a fairly wide distribution of prevented planting costs among any farmer population being served. We think that in most cases the recommended percentages are good enough to meet the risk management objectives of both farmers and the Federal Crop Insurance Corporation.

There is one crop though for which differentiation may be advisable: onions. The percentage of costs that could be considered unavoidable pre-planting expenses varies significantly between fresh market onions (spring and summer non-storage) and storage onions. Using a single PP rate for all onions will likely overestimate the costs incurred by producers of fresh market onions (and if changed, will underestimate the costs faced by storage onion producers). This single figure may thus encourage fresh market onion producers to file prevented planting claims. Based on our crop budget review, it would be more appropriate to maintain the 35% figure for storage onion producers, but to lower the PP rate for fresh market onion producers to 15%.

This would have to be done on a geographic basis because the insurance plan does not distinguish storage and non-storage types. The following states should be classified as producers of fresh market onions: Georgia, Nevada, New Mexico, and Texas. All others should be treated as producers of storage onions. California does produce fresh market onions (13,200 of 43,300 planted acres in 2012), but only processing (storage) onions are insured. It should thus be treated as a storage onion state. Production in Washington State in 2012 was over 90% storage onions (22,000 of 24,000 planted acres). Also, there were no prevented planting indemnities for onions in Washington from 2003 through 2012. Classifying Washington as a storage onion state (and thus maintaining the current 35% PP rate there) thus appears appropriate.

### 3.4. Appropriateness of additional 5% or 10% coverage

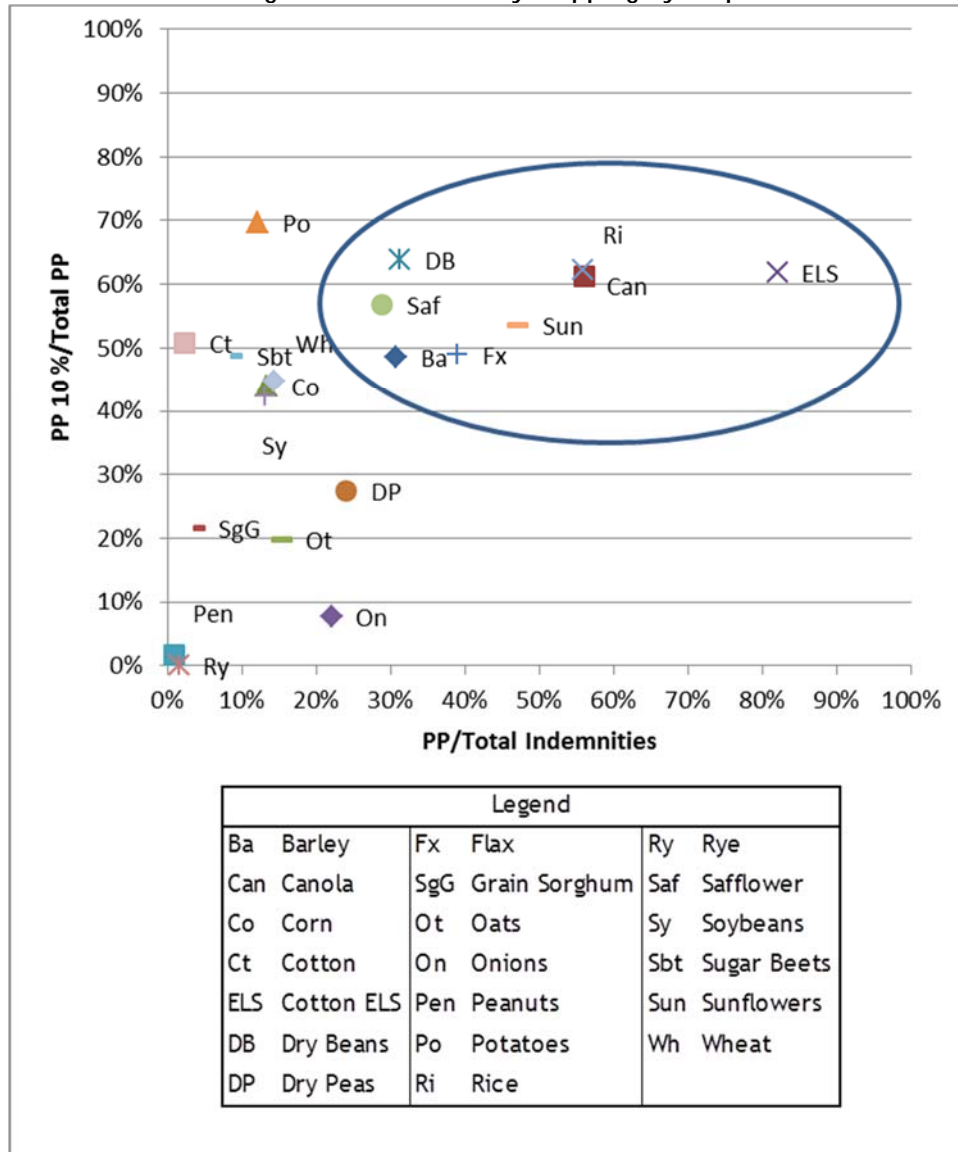
For all of the crops eligible for prevented planting except onions and tobacco, farmers may elect an additional 5% or 10% PP coverage for additional premium on their buy-up coverage. This option is not available for CAT policies. Table 19 breaks out 1994-2013 PP indemnities by the different levels of PP coverage for the 31 separately identified eligible crops. Of the total indemnities, 46% are associated with policies for which the additional 10% coverage was elected. Almost no producers appear to elect the additional 5% coverage.

Table 19: PP indemnities by crop and coverage level

Crop	Prevented planting	PP 10% buy-up	PP 5% buy-up	Total PP indemnities	PP10% Share
	-----\$1,000,000-----				<i>percent</i>
Barley	99.7	94.2	0.3	194.1	49%
Buckwheat	0.1	0.0	-	0.1	7%
Canola	122.4	197.2	2.0	321.6	61%
Corn	1,940.5	1,528.0	9.4	3,477.9	44%
Cotton	94.4	97.4	0.0	191.8	51%
Cotton, extra long staple	58.0	93.7	-	151.7	62%
Dry beans	74.3	131.6	0.1	206.0	64%
Dry peas	33.8	12.8	0.2	46.8	27%
Flax	17.5	17.1	0.2	34.9	49%
Grain sorghum	58.2	16.0	0.0	74.2	22%
Green peas	1.1	0.1	-	1.1	5%
Hybrid corn seed	1.4	0.1	-	1.4	4%
Hybrid sorghum seed	0.0	-	-	0.0	0%
Millet	3.3	0.1	-	3.4	3%
Mustard	1.1	0.6	-	1.7	34%
Oats	11.8	2.9	0.0	14.7	20%
Onions	50.9	4.3	-	55.2	8%
Peanuts	5.6	0.1	-	5.7	2%
Popcorn	2.2	0.7	-	2.9	25%
Potatoes	16.5	38.1	-	54.6	70%
Processing beans	1.0	0.3	-	1.4	23%
Rice	90.1	149.4	0.2	239.7	62%
Rye	0.1	-	-	0.1	0%
Safflower	2.2	2.8	-	5.0	57%
Silage sorghum	0.5	-	-	0.5	0%
Soybeans	815.5	600.3	3.1	1,418.9	42%
Sugar beets	19.2	18.3	0.0	37.4	49%
Sunflowers	221.7	256.5	0.4	478.6	54%
Sweetcorn	1.0	0.1	0.0	1.2	12%
Tobacco	1.1	0.0	-	1.1	0%
Wheat	1,001.4	817.0	7.5	1,825.8	45%
<b>Total</b>	<b>4,746.7</b>	<b>4,079.5</b>	<b>23.5</b>	<b>8,849.6</b>	<b>46%</b>

There does appear to be a relationship between the share of PP indemnities associated with the additional 10% coverage and the share of total indemnities attributable to prevented planting. Figure 10 plots that relationship for the more significant crops.

Figure 10: PP intensity mapping by crop



The circled crops in Figure 10 are those that are among the highest in both dimensions - a high incidence of PP among total indemnities (x axis) and a high selection of the extra 10% coverage (y axis). Five of the eight are among the crops for which we recommend reductions of 15-20% in the PP factor.

As noted earlier, we are unable to conclusively evaluate the appropriateness of the additional coverage because we do not have the experience data that would show who elected the various levels and did not claim an indemnity. Moreover, we do not know what portion of the indemnities at the basic coverage level was associated with CAT policies where one cannot add additional coverage.

Some parts of the country are more subject to weather conditions that prevent planting than others. That being said, there is no striking geographic dimension to the incidence of indemnities associated with the additional 10% coverage. Table 20 shows the PP10% share by state. It is high in the Dakotas and the Mississippi Delta, but it is also high in Texas and California.

Table 20: PP indemnities by state and coverage level

State	PP	PP10%	PP5%	PP Total	PP10% Share
	-----\$1,000,000-----				<i>percent</i>
ND	1,437.8	2,052.6	11.5	3,502.0	59%
SD	787.4	680.4	2.7	1,470.4	46%
MN	502.0	182.6	1.7	686.3	27%
IA	377.4	135.7	1.6	514.7	26%
MO	140.4	131.1	0.6	272.1	48%
IL	147.7	116.6	1.6	265.9	44%
TX	124.7	139.9	0.2	264.9	53%
CA	85.7	153.5	0.0	239.3	64%
IN	117.0	88.3	1.0	206.4	43%
OH	124.8	80.4	0.9	206.1	39%
AR	102.1	82.9	0.0	185.0	45%
WI	135.2	23.1	0.3	158.7	15%
CO	126.0	11.5	0.1	137.7	8%
MT	99.6	11.2	0.5	111.3	10%
MS	58.9	52.2	-	111.1	47%
KS	77.0	3.6	0.0	80.7	4%
NE	45.1	14.3	0.1	59.5	24%
LA	39.5	4.9	0.0	44.5	11%
All others	218.0	114.6	0.5	333.2	34%
Total	4,746.7	4,079.5	23.5	8,849.6	46%

One could question the logic behind offering this additional coverage. As we illustrated earlier in Table 11, the additional 10% in a revenue plan in a high price year can easily end up covering 80% or more of production costs and make prevented planting more profitable than taking the risk of growing the crop. If one purpose was to allow growers with higher than average PP costs to have appropriate insurance coverage, perhaps there should have been parallel -5% and -10% options for those with a lower cost structure. Today the main reason to continue to offer these options is to allow the insurance plans to collect higher premium in proportion to the higher risk of claims among those who elect the additional 10% coverage.

The prevented planting coverage should primarily aim to cover the average costs incurred by all producers of the crop in a prevented planting situation. There will inevitably be some variability among farmers, among regions, and over time in the success of achieving that, but this is true of the underlying insurance plans as well. Those plans use average county yields, average prices, and other components that are averages for all producers. If a farmer wants higher prevented planting coverage, he or she can also select a higher coverage level in the underlying plan. Nevertheless we have concluded that the buy-up options serve an insurance purpose by differentiating the rates charged to growers with different risk profiles.

### 3.5. Impact analysis

In accordance with the Statement of Work, we are required to *document the change in PP payments under any recommended methodology, in comparison to the past five years, by eligible crop, segregated by*

region. We use the Cause of Loss data for 2008-2012 to estimate the potential change in indemnity payments. Our methodology and findings regarding the impact of our proposed changes are shown below.

### 3.5.1. Methodology

We analyze the impact of our proposed recommendations under two scenarios: implementation of our recommended changes in PP coverage factors, and elimination of the options for additional coverage in addition to adopting our recommended changes. This analysis assumes “all else equal”, i.e., it assumes that farmer selection of coverage and behavior would remain the same, both under changed rates and under changed rates with no additional coverage options. Although these assumptions cannot be accurate, we expect the marginal effect of these policy changes on behavior would be limited and would, if anything, result in additional reductions in indemnities beyond what we estimate. Since in most circumstances the PP rate is too high, the net effect of these two changes would likely be more planting and fewer claims - in addition to lower indemnity payments per policy. The procedures for the two scenarios are as follows:

1. **Scenario #1: Calculate what PP payments would have been with the proposed coverage levels.** To do this, we first separated cause of loss data into the basic prevented planting coverage, 5% buy-up, and 10% buy-up. Because the 5% buy-up indemnities were negligible, these small amounts were included with the basic PP indemnities. We then derived two values, by crop and year: the new PP payments for policies with just the standard coverage level, and the new payments for policies with 10% buy-up.
  - a. The new basic PP payments were calculated by multiplying the base period indemnities paid by the ratio of the proposed and current rates. (For onions we did not differentiate geographically; we applied a reduction of 10%.)
  - b. The new 10% buy-up PP payments were derived by multiplying claims paid for those policies by the ratio between the new rate (proposed +10%) and the current rate (rate + 10%)
  - c. These two figures were then added, and the total was subtracted from the actual PP payments. The final results show how payments would have changed under Scenario #1 for each crop and year.
  
2. **Scenario #2: Calculate what PP payments would have been under the new proposed rates AND if PP buy-up is eliminated as an option.** Scenario #2 is the same as Scenario #1, except for the added change that step (b) involved multiplying the actual 10% PP buy-up indemnities by the ratio between the recommended base rate and the current rate plus 10%.

### 3.5.2. Estimated change in PP payments by crop

From 2008-2012, total prevented planting indemnities were over \$4.82 billion - just over \$960 million per year, on average. Total indemnities over this five year period, by crop, are shown in the second column of Table 21 (“Total Actual”). Note that this figure includes “all other crops”. This data actually covers the same individual crops listed but is presented in this line to maintain confidentiality at the county level. We assumed an average reduction of 5% in the coverage level for the policies included in this category. Crops for which we recommend increased coverage levels (green peas, oats and potatoes) have increased costs, shown in brackets in the table’s indemnity reduction column.

**Table 21: Potential change in indemnities by crop**

	Total Actual	Total Scenario #1	Total Scenario #2	Indemnity Reduction #1	Indemnity Reduction #2	10% buy-up percent
All Other Crops	784,742	723,217	676,774	61,525	107,969	43%

Evaluation of Prevented Planting Program

Prepared for: AQD and RMA

Barley	88,973	88,973	82,369	0	6,603	100%
Buckwheat	88	73	72	14	15	6%
Burley Tobacco	467	400	400	67	67	0%
Canola	147,709	113,939	101,309	33,770	46,400	27%
Corn	1,608,981	1,363,075	1,229,531	245,906	379,450	35%
Cotton	37,018	23,429	20,383	13,589	16,635	18%
ELS cotton	82,563	52,514	45,074	30,049	37,490	20%
Dry beans	56,870	39,683	34,375	17,187	22,495	24%
Dry peas	36,284	24,553	23,461	11,731	12,823	9%
Flax	17,193	13,192	12,005	4,002	5,189	23%
Flue cured tobacco	186	159	159	27	27	0%
Grain sorghum	29,031	29,031	28,207	0	824	100%
Green peas	316	395	395	(79)	(79)	0%
Hybrid corn seed	666	555	555	111	111	0%
Hybrid sorghum seed	41	34	34	7	7	0%
Millet	2,573	2,147	2,132	426	441	3%
Mustard	799	613	558	186	241	23%
Oats	3,482	3,764	3,663	(282)	(181)	-55%
Onions	12,975	9,268	9,268	3,707	3,707	0%
Peanuts	1,611	1,611	1,604	0	6	100%
Popcorn	1,376	1,154	1,109	222	267	17%
Potatoes	7,785	11,034	9,680	(3,249)	(1,896)	-71%
Processing beans	645	645	611	0	34	100%
Rice	87,316	87,316	78,741	0	8,575	100%
Rye	23	23	23	0	0	0%
Safflower	1,582	1,582	1,573	0	9	100%
Silage sorghum	356	326	326	30	30	0%
Soybeans	664,888	664,888	617,107	0	47,781	100%
Sugar beets	2,292	2,292	2,120	0	172	100%
Sunflower seed	199,879	153,660	138,657	46,219	61,222	25%
Sweet corn	271	271	256	0	14	100%
Wheat	944,535	944,535	888,430	0	56,105	100%
Total	4,823,514	4,358,351	4,010,963	465,163	812,551	43%

If the rates we propose had been in effect for the period 2008-2012, then PP indemnity payments under Scenario #1 would have been \$4.36 billion. This is shown in column 3 of Table 21 ("Total Scenario #1"). This would have represented a \$465 million reduction in PP payments (\$93 million less per year). A little more than 60% of the reduction on the individual crops listed would have been on corn claims.

If the rates we propose had been in effect, and no buy-up options had been available, PP indemnity payments would have been \$4.01 billion. This is shown in column 4 ("Total Scenario #2"). This would have represented an \$813 million reduction in PP payments (\$163 million less per year). The share of the indemnity reduction attributable to corn would have been about 54%.

The final column of Table 21 shows the share of indemnity reduction attributable to elimination of the buy-up options. This is 100% for the crops for which we recommended no change in coverage level.



### 3.5.3. Estimated change in PP payments by region

Table 22 shows PP indemnities by region for each of the five years. The Northern Plains region accounted for \$2.85 billion (59.1%) of the total, and the Corn Belt for an additional \$940 million (19.5%). The regions are shown in the map from USDA in Figure 11 below and do not correspond to the resource regions that USDA currently uses for its work on production practices and costs. In the past, USDA had different regional definitions for each crop, but here we use one of the more standardized ones.

Figure 11: Map of regions used for regional comparison

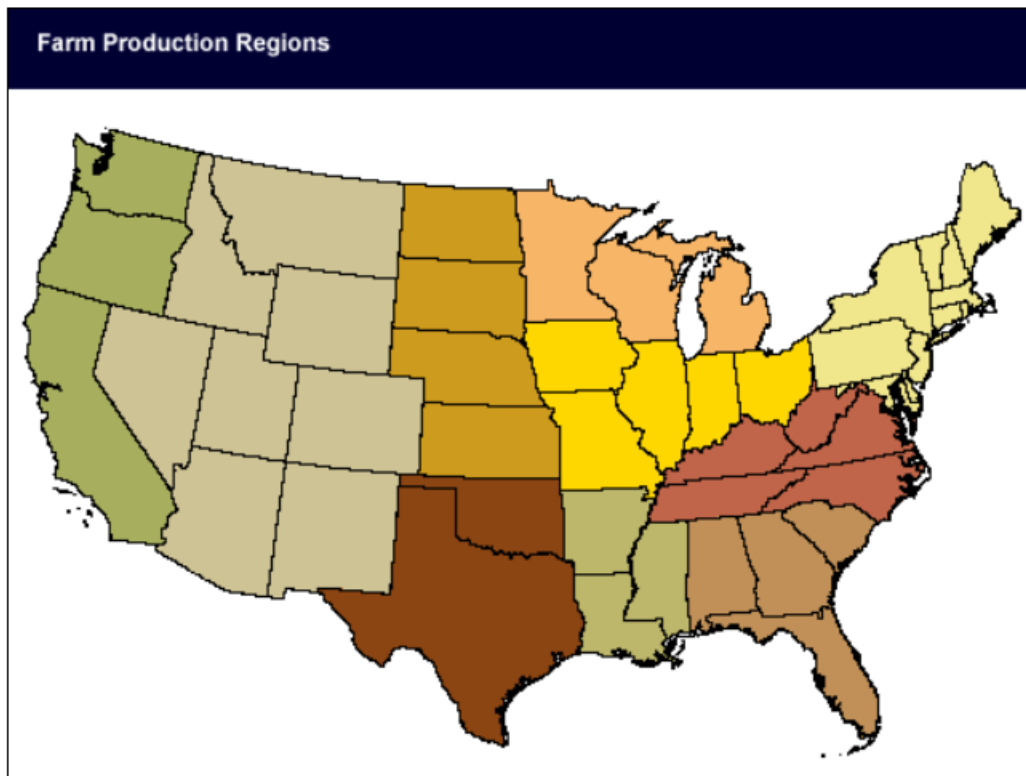


Table 22: Prevented planting indemnities by region

Actual Indemnities	2008	2009	2010	2011	2012	Total
	-----\$1,000,000-----					
Appalachian	6	17	53	37	4	117
Corn Belt	193	162	270	292	23	940
Delta	10	37	41	78	10	176
Mountain	11	14	15	128	49	219
Northeast	1	4	6	21	4	36
Northern Plains	136	437	734	1,485	63	2,854
Pacific	5	57	33	13	14	123
Southeast	1	5	9	3	1	18
Southern Plains	7	14	36	13	52	122
Upper Midwest	12	48	32	123	4	218
Total	382	795	1,229	2,192	225	4,824

Table 23 and Table 24 show our estimates of indemnities under Scenario #1 and Scenario #2 by region. With revised coverage levels and with the ability to continue to purchase an additional 10% coverage, indemnity reductions over the five years would have again been \$465 million, with 59% of that occurring in the Northern Plains region. If the buy-up options are eliminated, the indemnity reduction rises to \$813 million, with \$499 million of that in the Northern Plains. Savings in the Corn Belt would be \$152 million, and these two regions together would account for 80% of the indemnity reduction, about the same proportion as their share of historic indemnities in Table 22.

Table 23: Potential indemnity reduction by region under Scenario #1

Scenario #1	2008	2009	2010	2011	2012	Total	Indemnity Reduction	% of total	
	-----\$1,000,000-----								%
Appalachian	5	15	51	34	4	108	9	2%	
Corn Belt	174	146	250	262	22	855	86	18%	
Delta	9	35	39	71	9	164	12	3%	
Mountain	10	13	14	122	44	203	15	3%	
Northeast	1	4	6	19	4	33	3	1%	
Northern Plains	123	388	657	1,355	57	2,581	274	59%	
Pacific	4	37	24	12	10	87	36	8%	
Southeast	1	5	9	2	1	17	1	0%	
Southern Plains	6	12	33	12	50	114	8	2%	
Upper Midwest	11	44	29	109	4	196	22	5%	
Total	344	699	1,112	1,998	206	4,358	465	100%	

Table 24: Potential indemnity reduction by region under Scenario #2

Scenario #2	2008	2009	2010	2011	2012	Total	Indemnity Reduction	% of total	
	-----\$1,000,000-----								%
Appalachian	5	14	48	32	3	103	15	2%	
Corn Belt	161	135	229	243	21	788	152	19%	
Delta	9	33	36	67	9	155	21	3%	
Mountain	10	12	13	119	42	196	23	3%	
Northeast	1	3	5	18	4	31	5	1%	
Northern Plains	114	347	592	1,251	52	2,355	499	61%	
Pacific	3	33	20	11	9	77	46	6%	
Southeast	1	5	9	2	1	17	2	0%	
Southern Plains	6	11	30	12	44	103	18	2%	
Upper Midwest	10	40	27	105	4	186	32	4%	
<b>Total</b>	<b>318</b>	<b>634</b>	<b>1,010</b>	<b>1,861</b>	<b>188</b>	<b>4,011</b>	<b>813</b>	<b>100%</b>	

Premium revenue would also be reduced, particularly for Scenario #2 where the 5% and 10% buy-up options are eliminated. However, a full evaluation of the rating for prevented planting was not part of our assignment so we did not have the five years of policy records and rate factors necessary to calculate the premium reduction and any net savings.

### 3.6. Pros and cons of recommendations

Section 2 reviewed many of the challenges in determining how crop insurance plans should handle situations in which a farmer is not able to plant the crop due to weather or other conditions. There is no perfect solution. The recommendations above have both positive and negative attributes. These are summarized below.

#### Pros

**A consistent methodology.** We analyzed all of the crops for which prevented planting is available in as consistent a manner as possible, using the methodology described in Section 2.

**Best, recent data.** The current recommendations reflect the most up-to-date assessment, based on the latest available data and budgets. Estimates for the major crops that account for 88% of PP indemnities are based on producer surveys, and the pre-planting estimates for the smaller crops rely on more recent crop budget estimates prepared by regional crop experts.

**Multiple budgets.** For some of the smaller crops, an additional check was conducted in the form of “spot checking” the implied pre-planting costs for additional published budgets. This was particularly useful where the budget analysis indicated deviation from RMA’s current PP rate.

**Consistent with known cost trends.** The new recommended rates reflect the fact that inflation for operating costs - seed and fertilizer in particular - has outpaced inflation in fixed costs (land, machinery). The combined effect of these two trends is to increase the relative importance of avoidable costs in farm budgets, thus lowering the proportion of expenditures that would be lost in a prevented planting situation.

**Potentially more nuanced accounting.** We do not know the specifics of the methodology RMA used to determine the PP rates currently in effect. The current analysis, however, potentially provides more accurate rates, given the nuances in our PP accounting “rules.” For instance, we counted as a PP cost only the proportion of crop insurance indemnities attributable to prevented planting claims; we treated land and machinery depreciation (and other general overhead) costs as sunk costs, regardless of their timing, if they were unavoidable; and we treated as pre-planting expense only the proportion of fertilizer that was both used and lost to future crops.

## Cons

**Reliance on extension budgets.** The crop budgets published by university extension staff are planning tools that predict the coming year’s costs to aid farmers in making their decisions about what mix of crops to plant. They often do not include various overhead costs. They are not statistically representative records of actual costs incurred. They usually cover a specific type, practice or region within a state rather than providing a more comprehensive state average.

**Infrequent updating of ARMS surveys.** For those crops with statistically representative production cost estimates, we used ERS analyses of the most recent survey data but some of that information is dated due to USDA budget constraints that limit the frequency of ARMS surveys. For example, the soybean information was for the 2006 crop.

**Reliance on a limited number of state budgets.** For some of the smaller crops, the production cost analysis was limited to budgets published by one (or a few) states. However, many of these same crops are grown in multiple states and regions. These localized budgets may not, therefore, be reflective of average or typical costs for all producers of that crop.

Another potential weakness was the significant use of North Dakota budgets for many crops. To the degree that North Dakota budgets may be inaccurate, they could skew our analysis and estimates. However, given that North Dakota represents over one-third of all prevented planting claims, and in some cases is the only major producer of a given crop, its budgets do merit particular attention.

Also, it was clear that for some state budgets, line item estimates were *rough* estimates: figures were sometimes rounded, and for some crops, annual budgets would show the same cost for a line item year after year (e.g. land at \$100/acre for many years in a row). Some budgets are simply updated year after year using price indexes without reexamination of whether production practices have changed.

**Reliance on limited years.** For many minor crops, we obtained crop budgets for most of the years from 2003-2012. For others, however, we had fewer yearly budgets available, and in some cases, had to rely on just one or two yearly budgets to create the ten year budget estimates. This forced us to estimate costs for the missing years based on figures that are themselves estimates.

**“Well-managed farm” standard.** For the crops using ERS data, pre-planting percentages reflect averages. For other crops, the percentages will reflect well-managed enterprises. Farmers with higher costs or with poorly managed operations may have higher pre-planting expense rates. If a key policy goal is to provide a rate sufficient to fully compensate most farms, rather than the average, then the new rates may be viewed as too low.

**Linkage to a guarantee that varies with price.** In the current approach, the prevented planting payment is a percentage of a guarantee that for the major crops varies with market prices that can be far above or well below production costs. Consequently the prevented planting payment will seldom precisely correspond to the costs that a farmer has actually incurred in a prevented planting situation.

### 3.7. Updating of prevented planting factors

The production cost analysis in this report was based on data up through the 2012 crop year. Updating should be a combination of ongoing monitoring and a formal review every five years. While costs for individual inputs can change significantly over the course of a few years, the share of costs that occurs before planting changes more slowly and to a lesser degree.

We recommend periodic monitoring of developments every two to three years. RMA should apply the percentage cost allocations we developed to the production cost estimates and forecasts for major crops published by ERS to see if the preplanting share of costs is changing. For the ARMS crops, ERS publishes forecasts two years into the future twice a year. For the crops not covered by statistically representative ARMS surveys, RMA should use the procedure we describe to update the cost estimates using price indexes published by USDA's National Agricultural Statistics Service.

Every five years we recommend a more formal review for all crops. This evaluation began in 2013 using data up through 2012. A five-year review could be undertaken in 2018 using production cost data for the year 2013-2017. For the ARMS crops, we recommend that USDA contract with ERS to do the same cost analysis as in their 2007 and 2013 studies cited later in this report. The analysis should cover any crops for which survey data was published in the interim. This will include 2012 crop soybeans and 2013 crop peanuts and rice. Surveys are also scheduled for 2015 crop cotton and oats, and 2016 crop corn. This is the most important component of any updating because the crops covered by ARMS surveys account for 88 percent of prevented planting claims. For the other crops, the formal review should involve collection of current state-level crop budgets and a fresh analysis of the portion of operating costs incurred prior to planting.

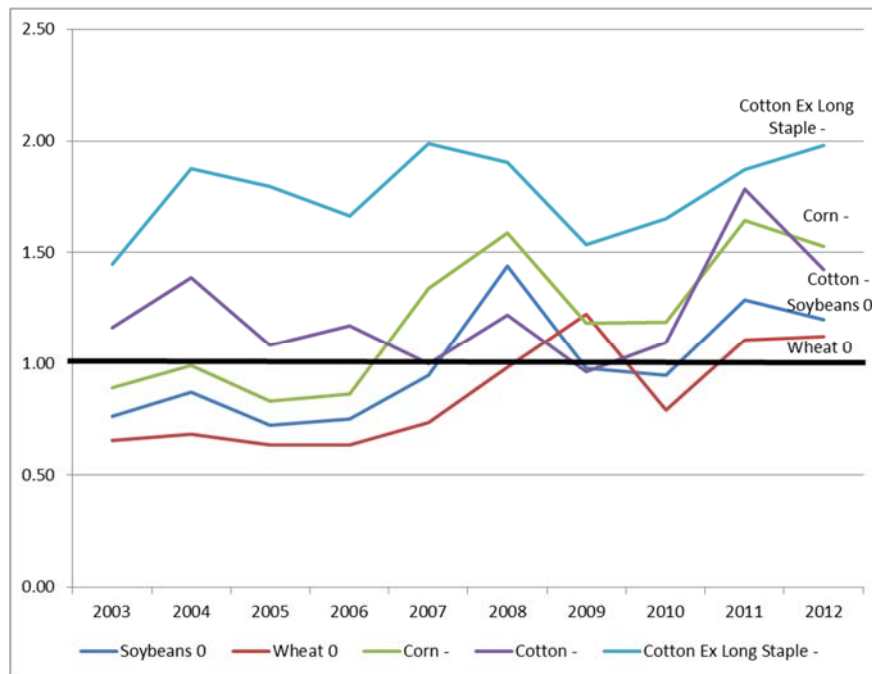
#### 4. REVIEW OF CORN, WHEAT, SOYBEANS AND COTTON

As discussed above, corn, wheat, soybeans, and cotton (both upland and ELS) accounted for 80% of the prevented planting indemnities from 1994 to 2013. RMA asked the Economic Research Service to update their estimates for these crops of the distribution of costs by phase of production in order to have more current numbers that are statistically representative of the average producer. While cotton did not account for a high level of PP indemnities, it was included as a crop more reflective of production practice timing in southern states. The results of our analysis of these crops are presented below. We also include a discussion of cottonseed costs, which is jointly produced with cotton fiber. Section 5 covers the other crops for which USDA conducts ARMS surveys and publishes production cost estimates, plus some related crops. Section 6 covers all the remaining crops. Where data is unavailable for some years, the estimates developed using price indexes are in italics. Years where there is published data are highlighted in blue.

For each crop we also review the ratio between actual PP indemnity payments per acre and the estimated preplanting costs (except cottonseed, which is covered via an endorsement to the cotton plans). A quick glance at Figure 12 shows that the ratio for all five of these crops began between 0.5 and 1.5 in 2003. (The lines are the simple averages of the regional ratios. The symbols after the crop names signify a recommendation of either no change in coverage level (0), a reduction (-) or an increase (+).) By 2012, the ratio for all five was above 1 (i.e., RMA PP payments exceeded PP cost estimates). Wheat and soybeans were not substantially above 1, which was consistent with our findings that PP costs remain close to 60% of total costs. We recommend no change in the 60% rate for these two.

Corn and the two cotton crops, however, now have ratios well above 1. We recommend lowering the RMA PP factor on all three.

Figure 12: Ratio of payments to costs for major crops

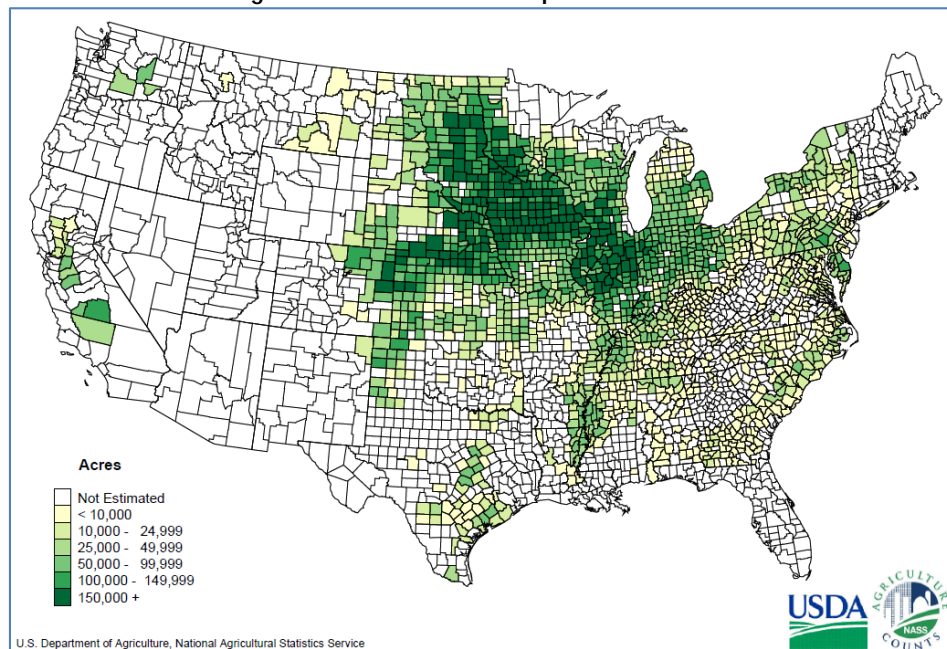


## 4.1. Corn

### Overview

Corn is the quintessentially American crop and by far the most important in economic terms. It is produced on more acres and generates more revenue for farmers than any other field crop. In 2012, the final year covered by our analysis, planted area was just shy of 100 million acres with 87 million harvested for grain and 7 million for silage, compared to harvested area of 75 million for soybeans, and about 50 million each for wheat and hay, the next two most extensively cultivated crops. The value of corn for grain in 2012 accounted for over 40% of the total value of the principal US crops.

Figure 13: US corn acres planted in 2012



### Sources of production cost information

Because corn is a major crop, there are crop budgets available for most of the important agricultural states. However, corn is one of the crops for which the Economic Research Service conducts periodic statistically representative surveys of farm finances and production practices on which it bases annual production cost estimates. The most recent survey covered the 2010 crop. RMA contracted with ERS to prepare estimates of costs incurred at each stage of the production process that year and we are able to use that information in developing our estimates of prevented planting costs.

The annual production cost series maintained by ERS for each farm resource region are available at the following link: <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.

### Production practices

Corn is a spring-planted crop and mostly relies on normal precipitation for moisture. According to the 2012 Census of Agriculture, about 15 percent of planted acres are irrigated, principally in the Great Plains from Northern Texas up into Nebraska, and along the Mississippi from the Missouri boot heel down into Louisiana. Field work begins with some fall cultivation and application of fertilizer, particularly potassium and phosphate. Between a third and a half of those two nutrients are applied in the fall because they bond

well with the soil and are not lost or degraded over the winter to any great degree. This reduces the amount of work that has to be accomplished in the spring. Only about 18% of the nitrogen fertilizer is applied in the fall, and then mostly in the form of anhydrous ammonia which has less tendency to convert to nitrate in the soil, provided it is applied after soil temperatures fall below 40 degrees.

The main change in production practices during the 2003-2012 period was the increased use of biotech varieties - from 40% of plantings to 88%. In 2003 only 11% of plantings were herbicide resistant compared to 21% in 2012. Insect resistant varieties fell from 25% of plantings to 15%, but this was due to development of stacked gene varieties that are both insect and herbicide resistant. These accounted for 52% of plantings in 2012 compared to only 4% in 2003. One result is that seed's share of total production costs in the Cornbelt rose from 10% of total costs to 24% over the period while the cost of chemicals stagnated in nominal terms and fell from an 8% share of costs to just 4%. This means that the number of field operations for chemical treatments after planting fell, so that a lower share of machinery operating costs are in the post-planting period.

### Prevented planting experience

Table 25 summarizes the incidence of prevented planting indemnity payments over the period. States with at least \$10 million in a single year are individually identified and the remaining states are combined in the "other" category. There was a high incidence of prevented planting claims in the 2008-2011 period, particularly in North and South Dakota. Those two states accounted for 64% of all claims over the ten-year period.

Table 25: Prevented planting indemnities for corn (\$ million)

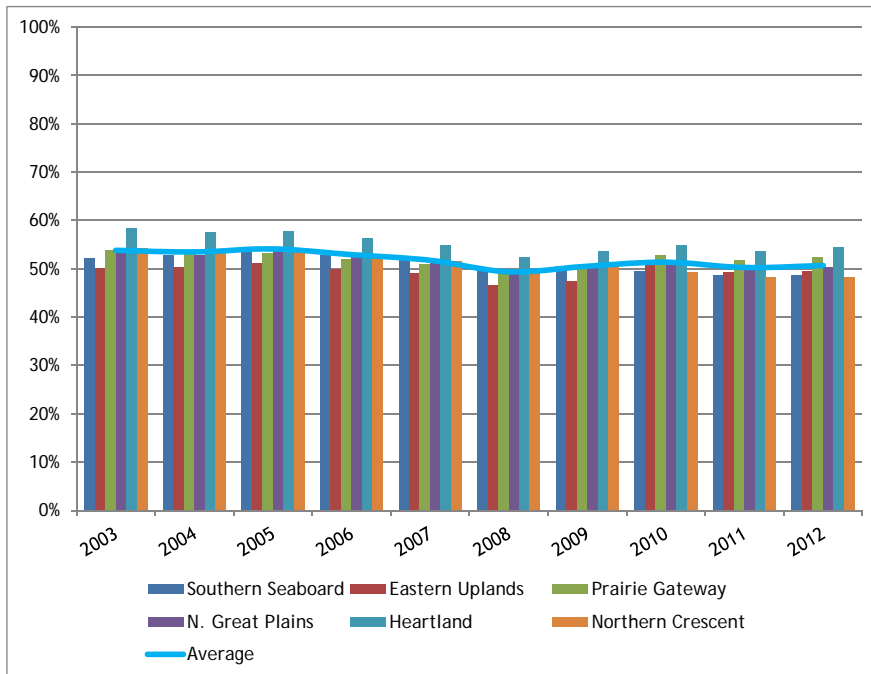
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
IA	0.2	0.2	0.3	0.1	2.1	28.9	9.9	21.4	10.8	0.2	73.9
IL	8.4	0.3	0.1	0.6	0.1	12.5	29.7	12.6	12.2	0.0	76.3
IN	9.7	1.3	0.1	6.4	0.0	16.8	16.8	7.0	39.0	0.0	97.1
MN	1.0	1.2	10.9	1.4	2.0	1.9	13.4	5.4	59.4	0.3	96.9
MO	0.2	0.4	0.0	0.0	2.3	22.2	14.8	31.5	8.2	2.0	81.7
ND	11.9	5.0	18.5	20.9	25.4	16.1	129.1	132.2	229.8	9.2	598.0
OH	12.8	10.0	0.1	0.8	0.1	5.1	0.9	10.1	70.7	0.0	110.7
SD	7.8	5.3	13.9	19.1	50.2	43.7	53.7	235.6	197.8	4.3	631.4
WI	0.4	12.9	0.0	1.2	0.2	3.2	2.0	1.8	5.7	0.0	27.4
Other	19.4	15.1	6.2	6.9	7.9	12.9	9.5	13.4	35.2	10.1	136.6
<b>Total</b>	<b>71.8</b>	<b>51.5</b>	<b>50.0</b>	<b>57.5</b>	<b>90.2</b>	<b>163.5</b>	<b>279.9</b>	<b>470.9</b>	<b>668.7</b>	<b>26.0</b>	<b>1,930.1</b>

### Analysis

On its website, ERS provides annual estimates of corn production costs for six farm resource regions. These are based on the periodic ARMS surveys. We use these costs as our starting point. The results are summarized in Figure 14. On average, the PP share of total cost fell from 54% at the beginning of the period to 51% at the end. Shares for individual regions in 2012 ranged from 48% to 55% compared to 50-58% in 2003. The PP share of total cost fell primarily because seed costs per acre, included in total cost but not PP cost, almost tripled. Thus total costs went up by 96% while prevented planting costs went up by only 83%.

Figure 14: Share of costs incurred prior to planting corn

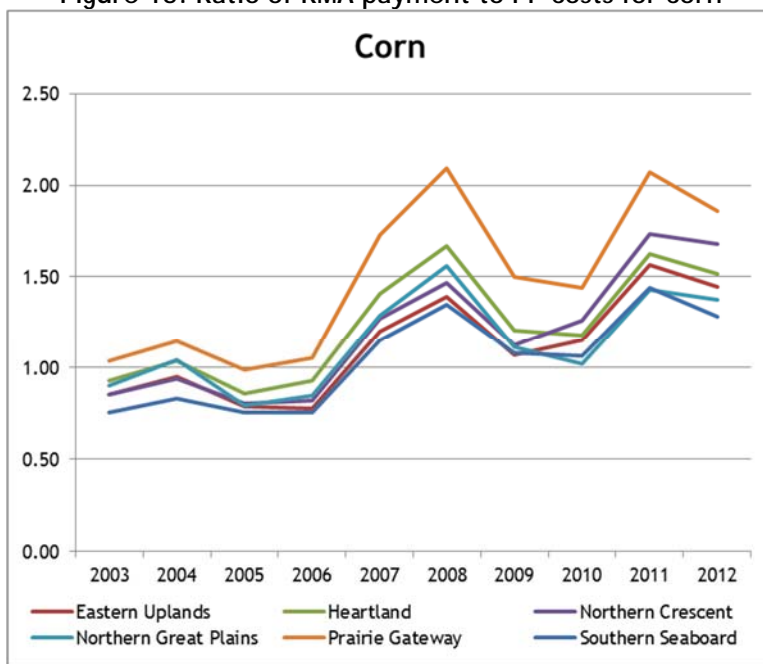




**Comparison of RMA payments to estimated PP cost**

From 2003 to 2006 the ratio of RMA payments to estimated costs averaged slightly less than 1.00 for all regions together. Leaving aside the Prairie Gateway region, which is an outlier, the ratios rose to about 1.35 for two years, fell back to 1.10 for two years, and then rose to 1.50 for two years. For the final six years the Heartland region averaged 1.44. Taking into account the fact that 44% of the PP claims were associated with the additional 10% option, that ratio would be 7% higher at 1.55 (10%/60% \* .46 = .073).

**Figure 15: Ratio of RMA payment to PP costs for corn**



### Recommendation

Taking into account the lower corn prices expected for 2014-2015, reducing the PP payment rate so that a PP indemnity is 17% lower would put it in line with estimated PP costs. We recommend reducing RMA's PP factor for corn from 60% to 50%.

Table 26: Corn production costs per planted acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	33.36	34.05	36.54	38.84	43.78	54.31	71.43	67.14	69.49	75.64
Fertilizer	57.95	67.87	73.55	83.79	97.29	148.39	139.55	137.78	181.05	193.58
Chemicals	24.86	25.24	21.48	22.37	23.08	24.06	26.53	35.30	35.30	37.26
Custom operations	12.76	12.78	6.47	6.76	7.05	7.05	7.53	17.76	18.09	18.42
Fuel, lube, and electricity	20.21	22.61	22.68	25.10	26.82	33.64	24.24	31.67	39.38	42.12
Repairs	17.15	17.53	20.27	20.99	21.71	22.29	22.72	26.03	26.84	27.65
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	7.23	8.70	8.16	9.44	14.44	18.70	16.73	15.18	20.44	18.03
Interest on operating costs	0.82	1.33	3.08	4.68	4.87	2.14	0.42	0.31	0.19	0.26
<b>Total, operating costs</b>	<b>174.34</b>	<b>181.41</b>	<b>184.07</b>	<b>202.53</b>	<b>224.60</b>	<b>291.88</b>	<b>292.42</b>	<b>315.99</b>	<b>370.34</b>	<b>394.93</b>
Allocated overhead:										
Hired Labor	6.73	6.77	6.11	6.33	6.55	6.77	6.92	4.13	4.17	4.35
Opportunity cost of unpaid labor	35.15	36.43	24.69	25.59	26.49	27.39	27.99	32.46	32.8	34.18
Capital recovery of machinery & equip.	56.36	58.00	63.62	66.93	70.24	76.86	81.64	81.80	86.78	91.40
Opportunity cost of land (rental rate)	51.32	53.38	54.69	53.8	57.62	64.50	74.25	66.88	72.78	81.96
Taxes and insurance	10.13	10.22	7.87	8.28	8.95	9.93	9.69	11.91	12.53	13.21
General farm overhead	16.96	17.25	16.85	17.45	18.05	18.53	18.89	25.68	26.48	27.28
<b>Total, allocated overhead</b>	<b>176.65</b>	<b>182.05</b>	<b>173.83</b>	<b>178.38</b>	<b>187.90</b>	<b>203.98</b>	<b>219.38</b>	<b>222.86</b>	<b>235.54</b>	<b>252.38</b>
<b>Total costs listed</b>	<b>350.99</b>	<b>363.46</b>	<b>357.90</b>	<b>380.91</b>	<b>412.50</b>	<b>495.86</b>	<b>511.80</b>	<b>538.85</b>	<b>605.88</b>	<b>647.31</b>

Table 27: Corn production costs per planted acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	35.02	34.65	37.61	39.98	45.06	55.90	73.52	56.01	57.97	61.64
Fertilizer	64.34	68.88	87.96	100.21	116.35	177.46	166.89	131.41	172.68	185.17
Chemicals	24.74	24.31	22.26	23.18	23.92	24.94	27.50	24.55	24.55	25.74
Custom operations	9.68	10.04	8.87	9.27	9.67	9.67	10.33	6.27	6.39	6.54
Fuel, lube, and electricity	10.54	12.69	17.86	19.76	21.23	27.95	19.71	19.01	23.96	21.97
Repairs	10.95	11.91	11.86	12.28	12.70	13.04	13.29	22.67	23.37	24.08
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	6.54	8.55	7.63	9.02	12.81	18.56	14.98	13.02	19.80	16.43
Interest on operating costs	0.74	1.15	3.17	4.84	5.06	2.29	0.45	0.26	0.15	0.22
<b>Total, operating costs</b>	<b>162.55</b>	<b>172.18</b>	<b>197.22</b>	<b>218.54</b>	<b>246.80</b>	<b>329.81</b>	<b>326.67</b>	<b>273.20</b>	<b>328.87</b>	<b>341.79</b>
Allocated overhead:										
Hired Labor	4.22	4.64	1.17	1.21	1.25	1.29	1.32	2.34	2.36	2.46
Opportunity cost of unpaid labor	48.46	49.63	37.75	39.12	40.49	41.86	42.77	33.8	34.16	35.59
Capital recovery of machinery & equip.	47.79	51.95	56.81	59.77	62.73	68.64	72.91	71.86	76.23	79.98
Opportunity cost of land (rental rate)	50.12	51.94	62.77	61.75	66.13	74.02	85.21	72.63	78.31	80.7
Taxes and insurance	6.2	6.19	5.13	5.4	5.83	6.47	6.32	10.95	11.52	12.04
General farm overhead	12.53	12.86	10.54	10.92	11.30	11.60	11.83	23.38	24.11	24.83
<b>Total, allocated overhead</b>	<b>169.32</b>	<b>177.21</b>	<b>174.17</b>	<b>178.17</b>	<b>187.73</b>	<b>203.88</b>	<b>220.36</b>	<b>214.96</b>	<b>226.69</b>	<b>235.60</b>
<b>Total costs listed</b>	<b>331.87</b>	<b>349.39</b>	<b>371.39</b>	<b>396.71</b>	<b>434.53</b>	<b>533.69</b>	<b>547.03</b>	<b>488.16</b>	<b>555.56</b>	<b>577.39</b>

Table 28: Corn production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	35.41	36.32	40.96	43.54	43.54	54.02	71.04	63.21	65.42	71.21
Fertilizer	44.23	45.84	55.62	63.36	63.36	96.64	90.88	84.96	111.64	119.37
Chemicals	28.04	28.76	19.23	20.02	20.02	20.87	23.01	26.42	26.42	27.89
Custom operations	16.16	16.66	14.10	14.74	14.74	14.74	15.75	19.04	19.39	19.75
Fuel, lube, and electricity	47.93	56.75	59.79	66.16	76.30	98.36	67.07	42.51	52.28	51.04
Repairs	21.60	22.88	22.04	22.83	22.83	23.44	23.90	32.37	33.38	34.38
Purchased irrigation water	0.63	0.66	0.18	0.19	0.19	0.19	0.20	0.37	0.38	0.38
Crop Insurance	8.47	10.40	8.96	11.04	17.26	23.46	18.86	14.86	22.26	19.58
Interest on operating costs	1.01	1.62	3.60	5.46	5.46	2.28	0.42	0.27	0.15	0.22
<b>Total, operating costs</b>	<b>203.48</b>	<b>219.89</b>	<b>224.48</b>	<b>247.34</b>	<b>263.70</b>	<b>334.00</b>	<b>311.13</b>	<b>284.01</b>	<b>331.32</b>	<b>343.82</b>
Allocated overhead:										
Hired Labor	5.48	5.58	3.66	3.79	3.79	3.92	4.01	3.34	3.38	3.52
Opportunity cost of unpaid labor	32.74	33.19	24.24	25.12	25.12	25.97	26.54	24.37	24.63	25.66
Capital recovery of machinery & equip.	73.28	77.58	81.97	86.23	86.23	94.36	100.23	101.04	107.19	112.90
Opportunity cost of land (rental rate)	73.48	76.61	70.82	69.67	69.67	77.98	89.77	86.46	94.09	105.96
Taxes and insurance	6.74	6.8	8	8.42	8.42	9.35	9.13	10.45	10.99	11.59
General farm overhead	14.99	15.30	12.64	13.09	13.09	13.44	13.70	16.84	17.36	17.89
<b>Total, allocated overhead</b>	<b>206.71</b>	<b>215.06</b>	<b>201.33</b>	<b>206.32</b>	<b>206.32</b>	<b>225.02</b>	<b>243.38</b>	<b>242.50</b>	<b>257.64</b>	<b>277.52</b>
<b>Total costs listed</b>	<b>410.19</b>	<b>434.95</b>	<b>425.81</b>	<b>453.66</b>	<b>470.02</b>	<b>559.02</b>	<b>554.51</b>	<b>526.51</b>	<b>588.96</b>	<b>621.34</b>

Table 29: Corn production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	32.47	36.32	39.34	41.82	47.14	58.48	76.91	80.03	82.83	90.16
Fertilizer	33.76	35.73	46.25	52.69	61.18	93.31	87.75	94.88	124.68	133.30
Chemicals	20.50	20.66	15.82	16.47	16.99	17.71	19.52	18.34	18.34	19.36
Custom operations	10.72	10.50	9.16	9.58	9.99	9.99	10.67	16.16	16.46	16.76
Fuel, lube, and electricity	20.02	21.86	25.85	28.60	31.92	41.67	28.23	26.75	32.62	31.91
Repairs	14.30	14.60	15.25	15.79	16.33	16.77	17.10	26.86	27.69	28.53
Purchased irrigation water	1.94	1.95	1.50	1.57	1.64	1.64	1.75	0.75	0.76	0.78
Crop Insurance	9.03	11.55	10.03	11.99	21.70	30.00	20.90	17.74	25.07	22.31
Interest on operating costs	0.71	1.11	2.60	3.94	4.08	1.77	0.35	0.26	0.15	0.21
<b>Total, operating costs</b>	<b>143.45</b>	<b>154.28</b>	<b>165.80</b>	<b>182.45</b>	<b>210.97</b>	<b>271.34</b>	<b>263.18</b>	<b>281.77</b>	<b>328.60</b>	<b>343.32</b>
Allocated overhead:										
Hired Labor	5.30	5.42	3.30	3.42	3.54	3.66	3.74	3.17	3.20	3.34
Opportunity cost of unpaid labor	22.62	23	21.29	22.06	22.83	23.6	24.12	26.59	26.87	28
Capital recovery of machinery & equip.	53.78	55.05	69.07	72.66	76.25	83.44	88.63	95.85	101.68	107.10
Opportunity cost of land (rental rate)	53.65	54.73	59.79	58.82	62.99	70.51	81.17	75.46	82.12	92.48
Taxes and insurance	5.1	5.13	4.06	4.27	4.61	5.12	5.00	8.85	9.31	9.81
General farm overhead	11.45	11.86	9.20	9.53	9.86	10.12	10.32	18.08	18.64	19.20
<b>Total, allocated overhead</b>	<b>151.90</b>	<b>155.19</b>	<b>166.71</b>	<b>170.76</b>	<b>180.08</b>	<b>196.45</b>	<b>212.98</b>	<b>228.00</b>	<b>241.82</b>	<b>259.93</b>
<b>Total costs listed</b>	<b>295.35</b>	<b>309.47</b>	<b>332.51</b>	<b>353.21</b>	<b>391.05</b>	<b>467.79</b>	<b>476.16</b>	<b>509.77</b>	<b>570.42</b>	<b>603.25</b>

Table 30: Corn production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	34.89	37.05	41.23	43.83	49.40	61.29	80.61	87.72	90.78	98.83
Fertilizer	51.43	56.01	72.67	82.79	96.13	146.62	137.89	118.09	155.18	165.91
Chemicals	26.50	27.11	24.71	25.73	26.55	27.68	30.52	26.95	26.95	28.45
Custom operations	10.09	10.53	8.99	9.40	9.80	9.80	10.47	15.25	15.53	15.82
Fuel, lube, and electricity	18.81	25.41	20.32	22.48	25.00	32.73	22.13	22.18	27.76	26.10
Repairs	12.63	13.82	12.23	12.67	13.11	13.46	13.72	21.77	22.45	23.12
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	8.17	9.95	8.43	10.03	17.28	23.21	17.54	14.05	23.15	20.11
Interest on operating costs	0.79	1.26	3.07	4.66	4.85	2.16	0.43	0.29	0.17	0.24
<b>Total, operating costs</b>	<b>163.31</b>	<b>181.14</b>	<b>191.65</b>	<b>211.59</b>	<b>242.12</b>	<b>316.95</b>	<b>313.31</b>	<b>306.30</b>	<b>361.97</b>	<b>378.58</b>
Allocated overhead:										
Hired Labor	2.30	2.30	1.41	1.46	1.51	1.56	1.59	2.61	2.64	2.75
Opportunity cost of unpaid labor	23.79	24.28	19.8	20.52	21.24	21.96	22.44	20.21	20.42	21.28
Capital recovery of machinery & equip.	53.06	58.11	60.45	63.59	66.73	73.02	77.56	81.22	86.16	90.75
Opportunity cost of land (rental rate)	100.28	103.58	104.87	103.16	110.48	123.66	142.36	150.49	163.77	184.42
Taxes and insurance	5.19	5.24	6.06	6.37	6.88	7.64	7.46	7.77	8.18	8.62
General farm overhead	10.93	11.17	12.14	12.57	13.00	13.35	13.61	17.37	17.91	18.45
<b>Total, allocated overhead</b>	<b>195.55</b>	<b>204.68</b>	<b>204.73</b>	<b>207.67</b>	<b>219.84</b>	<b>241.19</b>	<b>265.02</b>	<b>279.67</b>	<b>299.08</b>	<b>326.27</b>
<b>Total costs listed</b>	<b>358.86</b>	<b>385.82</b>	<b>396.38</b>	<b>419.26</b>	<b>461.96</b>	<b>558.14</b>	<b>578.33</b>	<b>585.97</b>	<b>661.05</b>	<b>704.85</b>

Table 31: Corn production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	35.48	37.18	41.23	43.83	49.40	61.29	80.61	75.26	77.89	82.82
Fertilizer	58.95	64.01	78.36	89.27	103.65	158.09	148.67	122.11	160.46	172.06
Chemicals	25.77	26.35	19.95	20.77	21.43	22.34	24.63	25.70	25.70	26.95
Custom operations	12.09	12.43	12.46	13.03	13.59	13.59	14.52	20.27	20.65	21.15
Fuel, lube, and electricity	22.31	26.46	25.29	27.98	31.05	41.11	27.96	23.76	29.95	28.70
Repairs	14.90	16.04	14.10	14.60	15.10	15.50	15.80	23.58	24.31	25.04
Purchased irrigation water	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00
Crop Insurance	6.95	8.71	7.95	9.25	16.01	21.57	15.89	13.02	20.23	17.29
Interest on operating costs	0.86	1.37	3.25	4.95	5.16	2.31	0.45	0.29	0.17	0.24
<b>Total, operating costs</b>	<b>177.31</b>	<b>192.55</b>	<b>202.61</b>	<b>223.70</b>	<b>255.41</b>	<b>335.82</b>	<b>328.55</b>	<b>304.01</b>	<b>359.36</b>	<b>374.25</b>
Allocated overhead:										
Hired Labor	3.72	3.97	3.03	3.14	3.25	3.36	3.43	3.59	3.63	3.78
Opportunity cost of unpaid labor	34.8	35.36	31.78	32.94	34.1	35.26	36.03	29.98	30.3	31.57
Capital recovery of machinery & equip.	60.99	65.68	60.53	63.68	66.83	73.13	77.68	73.91	78.41	82.27
Opportunity cost of land (rental rate)	68.88	71.2	77.15	75.9	81.28	90.98	104.74	82.67	89.13	91.86
Taxes and insurance	5.8	5.81	9.00	9.47	10.23	11.35	11.08	9.08	9.55	9.98
General farm overhead	16.22	16.46	17.67	18.30	18.93	19.43	19.81	23.85	24.59	25.33
<b>Total, allocated overhead</b>	<b>190.41</b>	<b>198.48</b>	<b>199.16</b>	<b>203.43</b>	<b>214.62</b>	<b>233.51</b>	<b>252.77</b>	<b>223.08</b>	<b>235.61</b>	<b>244.79</b>
<b>Total costs listed</b>	<b>367.72</b>	<b>391.03</b>	<b>401.77</b>	<b>427.13</b>	<b>470.03</b>	<b>569.33</b>	<b>581.32</b>	<b>527.09</b>	<b>594.97</b>	<b>619.04</b>



Table 32: Corn - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Chemicals	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Custom operations	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Fuel, lube, and electricity	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Repairs	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Interest on operating costs	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Total, operating costs										
Allocated overhead:										
Hired Labor	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Opportunity cost of unpaid labor	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Table 33: Corn prevented planting cost per acre: Southern Seaboard**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	17.96	21.04	22.80	25.97	30.16	46.00	43.26	42.71	56.13	60.01
Chemicals	5.22	5.30	4.51	4.70	4.85	5.05	5.57	7.41	7.41	7.82
Custom operations	3.57	3.58	1.81	1.89	1.97	1.97	2.11	4.97	5.07	5.16
Fuel, lube, and electricity	4.45	4.97	4.99	5.52	5.90	7.40	5.33	6.97	8.66	9.27
Repairs	3.26	3.33	3.85	3.99	4.12	4.24	4.32	4.95	5.10	5.25
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.94	1.13	1.06	1.23	1.88	2.43	2.17	1.97	2.66	2.34
Interest on operating costs	0.26	0.43	0.99	1.50	1.56	0.68	0.13	0.10	0.06	0.08
<b>Total, operating costs</b>	<b>35.66</b>	<b>39.78</b>	<b>40.01</b>	<b>44.80</b>	<b>50.44</b>	<b>67.78</b>	<b>62.90</b>	<b>69.08</b>	<b>85.08</b>	<b>89.94</b>
<b>Allocated overhead:</b>										
Hired Labor	2.29	2.30	2.08	2.15	2.23	2.30	2.35	1.40	1.42	1.48
Opportunity cost of unpaid labor	10.90	11.29	7.65	7.93	8.21	8.49	8.68	10.06	10.17	10.60
Capital recovery of machinery & equip.	56.36	58.00	63.62	66.93	70.24	76.86	81.64	81.80	86.78	91.40
Opportunity cost of land (rental rate)	51.32	53.38	54.69	53.80	57.62	64.50	74.25	66.88	72.78	81.96
Taxes and insurance	10.13	10.22	7.87	8.28	8.95	9.93	9.69	11.91	12.53	13.21
General farm overhead	16.96	17.25	16.85	17.45	18.05	18.53	18.89	25.68	26.48	27.28
<b>Total, allocated overhead</b>	<b>147.95</b>	<b>152.45</b>	<b>152.76</b>	<b>156.55</b>	<b>165.30</b>	<b>180.61</b>	<b>195.50</b>	<b>197.74</b>	<b>210.16</b>	<b>225.92</b>
<b>Total costs listed</b>	<b>183.62</b>	<b>192.23</b>	<b>192.77</b>	<b>201.35</b>	<b>215.74</b>	<b>248.39</b>	<b>258.40</b>	<b>266.82</b>	<b>295.24</b>	<b>315.86</b>
<b>Total costs</b>	<b>350.99</b>	<b>363.46</b>	<b>357.90</b>	<b>380.91</b>	<b>412.50</b>	<b>495.86</b>	<b>511.80</b>	<b>538.85</b>	<b>605.88</b>	<b>647.31</b>
<b>Prevented planting %</b>	<b>52%</b>	<b>53%</b>	<b>54%</b>	<b>53%</b>	<b>52%</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>	<b>49%</b>	<b>49%</b>

Table 34: Corn prevented planting cost per acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	19.95	21.35	27.27	31.07	36.07	55.01	51.74	40.74	53.53	57.40
Chemicals	5.20	5.11	4.67	4.87	5.02	5.24	5.78	5.16	5.16	5.41
Custom operations	2.71	2.81	2.48	2.60	2.71	2.71	2.89	1.76	1.79	1.83
Fuel, lube, and electricity	2.32	2.79	3.93	4.35	4.67	6.15	4.34	4.18	5.27	4.83
Repairs	2.08	2.26	2.25	2.33	2.41	2.48	2.53	4.31	4.44	4.58
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.85	1.11	0.99	1.17	1.67	2.41	1.95	1.69	2.57	2.14
Interest on operating costs	0.24	0.37	1.01	1.55	1.62	0.73	0.14	0.08	0.05	0.07
<b>Total, operating costs</b>	<b>33.34</b>	<b>35.80</b>	<b>42.61</b>	<b>47.93</b>	<b>54.17</b>	<b>74.73</b>	<b>69.36</b>	<b>57.91</b>	<b>72.81</b>	<b>76.25</b>
Allocated overhead:										
Hired Labor	1.43	1.58	0.40	0.41	0.43	0.44	0.45	0.80	0.80	0.84
Opportunity cost of unpaid labor	15.02	15.39	11.70	12.13	12.55	12.98	13.26	10.48	10.59	11.03
Capital recovery of machinery & equip.	47.79	51.95	56.81	59.77	62.73	68.64	72.91	71.86	76.23	79.98
Opportunity cost of land (rental rate)	50.12	51.94	62.77	61.75	66.13	74.02	85.21	72.63	78.31	80.70
Taxes and insurance	6.20	6.19	5.13	5.40	5.83	6.47	6.32	10.95	11.52	12.04
General farm overhead	12.53	12.86	10.54	10.92	11.30	11.60	11.83	23.38	24.11	24.83
<b>Total, allocated overhead</b>	<b>133.10</b>	<b>139.90</b>	<b>147.35</b>	<b>150.38</b>	<b>158.97</b>	<b>174.15</b>	<b>189.98</b>	<b>190.09</b>	<b>201.56</b>	<b>209.42</b>
<b>Total costs listed</b>	<b>166.43</b>	<b>175.71</b>	<b>189.97</b>	<b>198.31</b>	<b>213.13</b>	<b>248.88</b>	<b>259.33</b>	<b>248.01</b>	<b>274.37</b>	<b>285.67</b>
<b>Total costs</b>	<b>331.87</b>	<b>349.39</b>	<b>371.39</b>	<b>396.71</b>	<b>434.53</b>	<b>533.69</b>	<b>547.03</b>	<b>488.16</b>	<b>555.56</b>	<b>577.39</b>
<b>Prevented planting %</b>	<b>50%</b>	<b>50%</b>	<b>51%</b>	<b>50%</b>	<b>49%</b>	<b>47%</b>	<b>47%</b>	<b>51%</b>	<b>49%</b>	<b>49%</b>

Table 35: Corn prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	13.71	14.21	17.24	19.64	19.64	29.96	28.17	26.34	34.61	37.00
Chemicals	5.89	6.04	4.04	4.20	4.20	4.38	4.83	5.55	5.55	5.86
Custom operations	4.52	4.66	3.95	4.13	4.13	4.13	4.41	5.33	5.43	5.53
Fuel, lube, and electricity	10.54	12.49	13.15	14.56	16.79	21.64	14.76	9.35	11.50	11.23
Repairs	4.10	4.35	4.19	4.34	4.34	4.45	4.54	6.15	6.34	6.53
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.10	1.35	1.16	1.44	2.24	3.05	2.45	1.93	2.89	2.55
Interest on operating costs	0.32	0.52	1.15	1.75	1.75	0.73	0.13	0.09	0.05	0.07
<b>Total, operating costs</b>	<b>40.20</b>	<b>43.62</b>	<b>44.89</b>	<b>50.05</b>	<b>53.09</b>	<b>68.34</b>	<b>59.30</b>	<b>54.74</b>	<b>66.37</b>	<b>68.77</b>
Allocated overhead:										
Hired Labor	1.86	1.90	1.24	1.29	1.29	1.33	1.36	1.14	1.15	1.20
Opportunity cost of unpaid labor	10.15	10.29	7.51	7.79	7.79	8.05	8.23	7.55	7.64	7.95
Capital recovery of machinery & equip.	73.28	77.58	81.97	86.23	86.23	94.36	100.23	101.04	107.19	112.90
Opportunity cost of land (rental rate)	73.48	76.61	70.82	69.67	69.67	77.98	89.77	86.46	94.09	105.96
Taxes and insurance	6.74	6.80	8.00	8.42	8.42	9.35	9.13	10.45	10.99	11.59
General farm overhead	14.99	15.30	12.64	13.09	13.09	13.44	13.70	16.84	17.36	17.89
<b>Total, allocated overhead</b>	<b>180.50</b>	<b>188.48</b>	<b>182.19</b>	<b>186.49</b>	<b>186.49</b>	<b>204.51</b>	<b>222.42</b>	<b>223.48</b>	<b>238.41</b>	<b>257.49</b>
<b>Total costs listed</b>	<b>220.70</b>	<b>232.09</b>	<b>227.08</b>	<b>236.53</b>	<b>239.57</b>	<b>272.85</b>	<b>281.72</b>	<b>278.22</b>	<b>304.79</b>	<b>326.26</b>
<b>Total costs</b>	<b>410.19</b>	<b>434.95</b>	<b>425.81</b>	<b>453.66</b>	<b>470.02</b>	<b>559.02</b>	<b>554.51</b>	<b>526.51</b>	<b>588.96</b>	<b>621.34</b>
<b>Prevented planting %</b>	<b>54%</b>	<b>53%</b>	<b>53%</b>	<b>52%</b>	<b>51%</b>	<b>49%</b>	<b>51%</b>	<b>53%</b>	<b>52%</b>	<b>53%</b>

Table 36: Corn prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	10.47	11.08	14.34	16.33	18.97	28.93	27.20	29.41	38.65	41.32
Chemicals	4.31	4.34	3.32	3.46	3.57	3.72	4.10	3.85	3.85	4.07
Custom operations	3.00	2.94	2.56	2.68	2.80	2.80	2.99	4.52	4.61	4.69
Fuel, lube, and electricity	4.40	4.81	5.69	6.29	7.02	9.17	6.21	5.89	7.18	7.02
Repairs	2.72	2.77	2.90	3.00	3.10	3.19	3.25	5.10	5.26	5.42
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.17	1.50	1.30	1.56	2.82	3.90	2.72	2.31	3.26	2.90
Interest on operating costs	0.23	0.36	0.83	1.26	1.31	0.57	0.11	0.08	0.05	0.07
<b>Total, operating costs</b>	<b>26.29</b>	<b>27.79</b>	<b>30.94</b>	<b>34.59</b>	<b>39.58</b>	<b>52.26</b>	<b>46.58</b>	<b>51.17</b>	<b>62.86</b>	<b>65.49</b>
Allocated overhead:										
Hired Labor	1.80	1.84	1.12	1.16	1.20	1.24	1.27	1.08	1.09	1.14
Opportunity cost of unpaid labor	7.01	7.13	6.60	6.84	7.08	7.32	7.48	8.24	8.33	8.68
Capital recovery of machinery & equip.	53.78	55.05	69.07	72.66	76.25	83.44	88.63	95.85	101.68	107.10
Opportunity cost of land (rental rate)	53.65	54.73	59.79	58.82	62.99	70.51	81.17	75.46	82.12	92.48
Taxes and insurance	5.10	5.13	4.06	4.27	4.61	5.12	5.00	8.85	9.31	9.81
General farm overhead	11.45	11.86	9.20	9.53	9.86	10.12	10.32	18.08	18.64	19.20
<b>Total, allocated overhead</b>	<b>132.79</b>	<b>135.74</b>	<b>149.84</b>	<b>153.28</b>	<b>161.99</b>	<b>177.75</b>	<b>193.87</b>	<b>207.56</b>	<b>221.17</b>	<b>238.41</b>
<b>Total costs listed</b>	<b>159.09</b>	<b>163.54</b>	<b>180.79</b>	<b>187.87</b>	<b>201.57</b>	<b>230.01</b>	<b>240.45</b>	<b>258.73</b>	<b>284.02</b>	<b>303.90</b>
<b>Total costs</b>	<b>295.35</b>	<b>309.47</b>	<b>332.51</b>	<b>353.21</b>	<b>391.05</b>	<b>467.79</b>	<b>476.16</b>	<b>509.77</b>	<b>570.42</b>	<b>603.25</b>
<b>Prevented planting %</b>	<b>54%</b>	<b>53%</b>	<b>54%</b>	<b>53%</b>	<b>52%</b>	<b>49%</b>	<b>50%</b>	<b>51%</b>	<b>50%</b>	<b>50%</b>

Table 37: Corn prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	15.94	17.36	22.53	25.66	29.80	45.45	42.75	36.61	48.11	51.43
Chemicals	5.57	5.69	5.19	5.40	5.58	5.81	6.41	5.66	5.66	5.97
Custom operations	2.83	2.95	2.52	2.63	2.74	2.74	2.93	4.27	4.35	4.43
Fuel, lube, and electricity	4.14	5.59	4.47	4.95	5.50	7.20	4.87	4.88	6.11	5.74
Repairs	2.40	2.63	2.32	2.41	2.49	2.56	2.61	4.14	4.27	4.39
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.06	1.29	1.10	1.30	2.25	3.02	2.28	1.83	3.01	2.61
Interest on operating costs	0.25	0.40	0.98	1.49	1.55	0.69	0.14	0.09	0.05	0.08
<b>Total, operating costs</b>	<b>32.19</b>	<b>35.92</b>	<b>39.11</b>	<b>43.85</b>	<b>49.91</b>	<b>67.48</b>	<b>61.98</b>	<b>57.47</b>	<b>71.55</b>	<b>74.66</b>
Allocated overhead:										
Hired Labor	0.78	0.78	0.48	0.50	0.51	0.53	0.54	0.89	0.90	0.94
Opportunity cost of unpaid labor	7.37	7.53	6.14	6.36	6.58	6.81	6.96	6.27	6.33	6.60
Capital recovery of machinery & equip.	53.06	58.11	60.45	63.59	66.73	73.02	77.56	81.22	86.16	90.75
Opportunity cost of land (rental rate)	100.28	103.58	104.87	103.16	110.48	123.66	142.36	150.49	163.77	184.42
Taxes and insurance	5.19	5.24	6.06	6.37	6.88	7.64	7.46	7.77	8.18	8.62
General farm overhead	10.93	11.17	12.14	12.57	13.00	13.35	13.61	17.37	17.91	18.45
<b>Total, allocated overhead</b>	<b>177.62</b>	<b>186.41</b>	<b>190.14</b>	<b>192.55</b>	<b>204.19</b>	<b>225.01</b>	<b>248.49</b>	<b>264.00</b>	<b>283.25</b>	<b>309.77</b>
<b>Total costs listed</b>	<b>209.80</b>	<b>222.33</b>	<b>229.24</b>	<b>236.40</b>	<b>254.10</b>	<b>292.48</b>	<b>310.47</b>	<b>321.48</b>	<b>354.80</b>	<b>384.43</b>
<b>Total costs</b>	<b>358.86</b>	<b>385.82</b>	<b>396.38</b>	<b>419.26</b>	<b>461.96</b>	<b>558.14</b>	<b>578.33</b>	<b>585.97</b>	<b>661.05</b>	<b>704.85</b>
<b>Prevented planting %</b>	<b>58%</b>	<b>58%</b>	<b>58%</b>	<b>56%</b>	<b>55%</b>	<b>52%</b>	<b>54%</b>	<b>55%</b>	<b>54%</b>	<b>55%</b>

**Table 38: Corn prevented planting cost per acre: Northern Crescent**

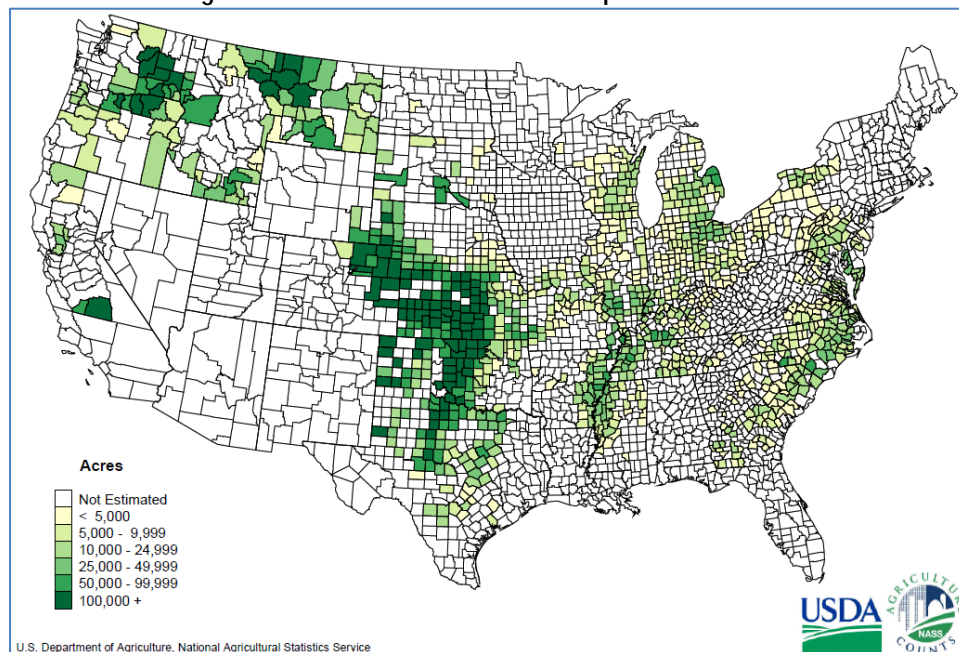
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	18.27	19.84	24.29	27.67	32.13	49.01	46.09	37.85	49.74	53.34
Chemicals	5.41	5.53	4.19	4.36	4.50	4.69	5.17	5.40	5.40	5.66
Custom operations	3.39	3.48	3.49	3.65	3.81	3.81	4.07	5.68	5.78	5.92
Fuel, lube, and electricity	4.91	5.82	5.56	6.16	6.83	9.04	6.15	5.23	6.59	6.31
Repairs	2.83	3.05	2.68	2.77	2.87	2.95	3.00	4.48	4.62	4.76
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.90	1.13	1.03	1.20	2.08	2.80	2.07	1.69	2.63	2.25
Interest on operating costs	0.28	0.44	1.04	1.58	1.65	0.74	0.14	0.09	0.05	0.08
<b>Total, operating costs</b>	<b>35.99</b>	<b>39.30</b>	<b>42.29</b>	<b>47.40</b>	<b>53.87</b>	<b>73.04</b>	<b>66.69</b>	<b>60.42</b>	<b>74.81</b>	<b>78.32</b>
Allocated overhead:										
Hired Labor	1.26	1.35	1.03	1.07	1.11	1.14	1.17	1.22	1.23	1.29
Opportunity cost of unpaid labor	10.79	10.96	9.85	10.21	10.57	10.93	11.17	9.29	9.39	9.79
Capital recovery of machinery & equip.	60.99	65.68	60.53	63.68	66.83	73.13	77.68	73.91	78.41	82.27
Opportunity cost of land (rental rate)	68.88	71.20	77.15	75.90	81.28	90.98	104.74	82.67	89.13	91.86
Taxes and insurance	5.80	5.81	9.00	9.47	10.23	11.35	11.08	9.08	9.55	9.98
General farm overhead	16.22	16.46	17.67	18.30	18.93	19.43	19.81	23.85	24.59	25.33
<b>Total, allocated overhead</b>	<b>163.94</b>	<b>171.46</b>	<b>175.23</b>	<b>178.63</b>	<b>188.95</b>	<b>206.96</b>	<b>225.65</b>	<b>200.02</b>	<b>212.31</b>	<b>220.51</b>
<b>Total costs listed</b>	<b>199.93</b>	<b>210.76</b>	<b>217.52</b>	<b>226.03</b>	<b>242.82</b>	<b>280.00</b>	<b>292.33</b>	<b>260.44</b>	<b>287.12</b>	<b>298.83</b>
<b>Total costs</b>	<b>367.72</b>	<b>391.03</b>	<b>401.77</b>	<b>427.13</b>	<b>470.03</b>	<b>569.33</b>	<b>581.32</b>	<b>527.09</b>	<b>594.97</b>	<b>619.04</b>
<b>Prevented planting %</b>	<b>54%</b>	<b>54%</b>	<b>54%</b>	<b>53%</b>	<b>52%</b>	<b>49%</b>	<b>50%</b>	<b>49%</b>	<b>48%</b>	<b>48%</b>

## 4.2. Wheat

### Overview

Wheat is the world's leading human food crop and one of the most widely cultivated crops in the United States. Production is concentrated in the Great Plains and northwestern states, but there are 39 states that produce at least a million bushels annually. Winter wheat accounts for about three quarters of acreage and production, and durum and other spring wheat account for the other quarter. Figure 16 below shows the distribution of winter wheat plantings. Spring wheat is grown principally in the same parts of Washington, Idaho, Montana and the Dakotas. Durum wheat is grown mostly in northern Montana and northwestern North Dakota.

Figure 16: US winter wheat acres planted in 2012



### Sources of production cost information

Quite a few states produce wheat budgets and these can vary by region within the state or by practice. Fortunately the 2004 and 2009 ARMS surveys on wheat provide statistically representative cost estimates and ERS uses that data to publish annual production cost estimates for six farm resource regions. Those are what we have used for the current analysis.

### Production practices

One virtue of wheat as a crop is that it does well with a comparatively limited amount of water. According to the 2012 Census of Agriculture, only 3.4 million of the 49 million acres harvested were irrigated. These were mostly in California's central valley, eastern Washington, Idaho's Snake River valley, western Kansas, and the Texas high plains.



Production practices vary greatly by region. This variation is well-described in a recent ERS publication based on the ARMS survey covering the 2009 wheat crop.<sup>14</sup> The key variables affecting production costs are winter low temperatures, summer high temperatures, and the amount of normal precipitation. Winter wheat is planted in the fall and after a period of growth it goes dormant for the winter. In the main producing states the most active planting period is mid-September to mid-October. Harvest is in June and July. Cattle may graze on the early foliage growth in the fall and early spring, particularly in the Southern Plains. In the northernmost parts of the country, temperatures in the winter may go low enough to kill the dormant wheat. But farmers would normally still have the ability to plant a spring wheat crop. Winter wheat has higher yield potential due to the longer growing season. Spring wheat is mostly planted from mid-April through the end of May and harvested in August and early September.

In irrigated areas and in the eastern states where there is more precipitation, farmers are able to apply more fertilizer to boost yields per acre. While the additional fertilizer is a major cost item, machinery and a variety of fixed costs can be spread over more bushels, reducing average production cost per bushel.

### Prevented planting experience

Prevented planting claims have only been 12.9% of total indemnities the last 20 years. During the period covered by this study, prevented planting indemnities totaled \$1.1 billion, of which 65% were in North Dakota. Over half of the claims were in a single year - 2011.

Table 39: Prevented planting indemnities for wheat (\$ million)

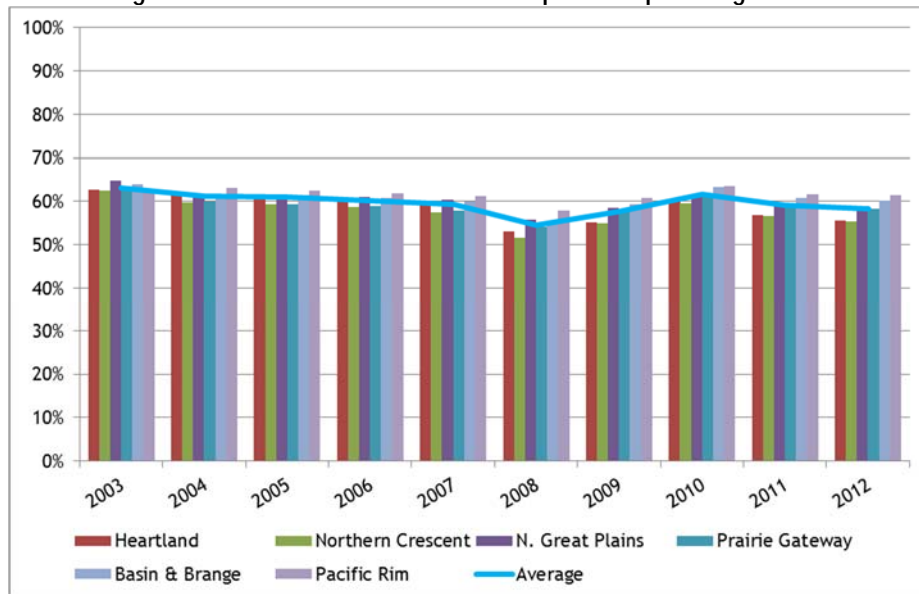
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
IL	0.0	0.0	1.8	0.0	1.5	0.0	2.2	19.1	0.0	3.9	28.5
KS	0.2	0.4	2.3	0.3	0.2	0.3	6.2	12.6	0.5	0.3	23.4
KY	0.1	0.0	1.2	0.0	1.5	0.0	0.0	10.0	0.0	0.1	13.1
MN	0.5	4.6	5.0	0.5	0.3	0.6	11.7	1.5	8.2	0.0	32.9
MT	0.1	1.1	0.1	0.0	1.3	0.3	0.8	2.7	69.8	0.5	76.6
ND	16.5	41.9	13.6	13.7	16.2	9.0	57.6	59.1	479.3	16.2	723.2
SD	1.1	0.5	0.8	1.9	3.4	4.2	10.4	16.4	25.4	0.6	64.5
Other	5.4	2.9	24.2	1.5	8.2	3.7	12.7	66.3	13.4	18.9	157.2
<b>Total</b>	<b>24.0</b>	<b>51.4</b>	<b>48.9</b>	<b>17.9</b>	<b>32.7</b>	<b>18.2</b>	<b>101.4</b>	<b>187.7</b>	<b>596.7</b>	<b>40.4</b>	<b>1,119.5</b>

### Analysis

Over the ten-year period, the share of costs incurred in a prevented planting situation has declined by about five percentage points, from the low 60s to the high 50s. This was due to a decline in labor costs and moderation in growth of other overhead costs per acre. The decline in share would have been one or two percentage points greater if not for the rising expenditure on crop insurance as farmers switched to revenue insurance in the recent years of high crop prices. In 2012 the range by region was 55-61%.

<sup>14</sup> Gary Vocke and Mir Ali, "U.S. Wheat Production Practices, Costs, and Yields: Variations Across Regions", Economic Information Bulletin Number 116, Economic Research Service, USDA, August 2013.

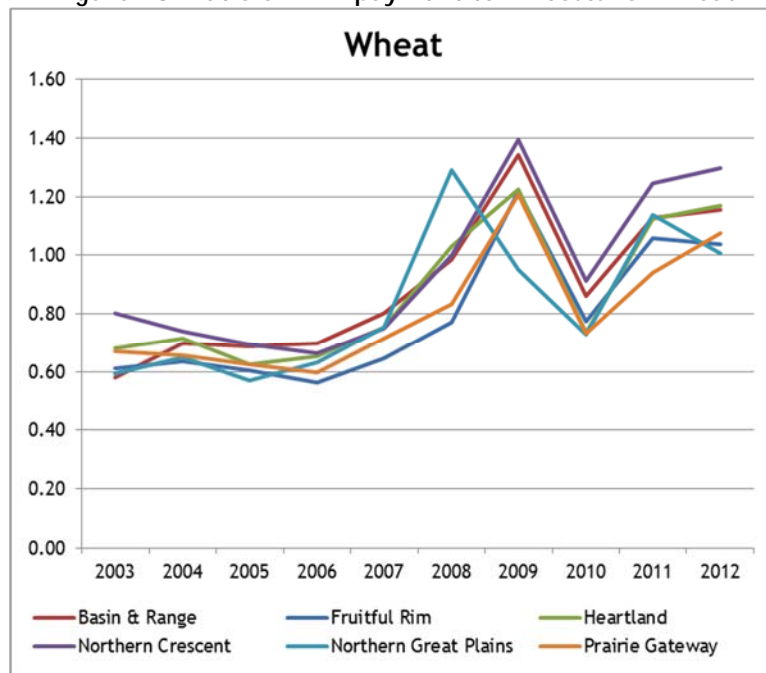
Figure 17: Share of costs incurred prior to planting wheat



### Comparison of RMA payments to estimated PP costs

The ratio of RMA PP payments to estimated PP costs was about 0.75 during the first half of the period and varied between 0.90 and 1.30 during the second half. The average for all regions for 2008-2012 was 1.05. Taking into account the 10% option, the ratio is about 1.10.

Figure 18: Ratio of RMA payment to PP costs for wheat



## Recommendation

Currently the appropriate level for a prevented planting payment is still 60%, but if prices remain at lower levels, a reduction to 55% might be appropriate in coming years. The RMA payment experience is consistent with the recommendation based on production costs that the payment factor remains at 60%.

Table 40: Wheat production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	5.25	5.42	5.70	5.86	6.87	10.89	10.72	8.66	10.23	12.99
Fertilizer	18.54	19.84	23.24	24.80	28.72	45.19	35.77	27.62	36.32	38.92
Chemicals	3.16	3.75	3.81	3.97	4.01	4.13	8.44	8.15	8.17	8.56
Custom operations	8.05	6.24	6.29	6.40	6.50	7.49	10.07	10.07	10.28	10.90
Fuel, lube, and electricity	13.11	15.26	19.97	22.10	24.41	31.81	13.52	16.77	21.37	21.14
Repairs	10.39	12.67	13.21	13.48	13.94	14.56	18.74	19.09	19.80	20.51
Other variable expenses	0.17	0.07	0.07	0.08	0.08	0.08	0.06	0.06	0.06	0.06
Crop Insurance	5.03	5.03	5.62	5.65	8.14	10.87	17.60	10.10	13.43	16.57
Interest on operating costs	0.31	0.50	1.23	1.84	1.89	0.95	0.14	0.09	0.05	0.07
<b>Total, operating costs</b>	<b>64.01</b>	<b>68.78</b>	<b>79.14</b>	<b>84.18</b>	<b>94.56</b>	<b>125.97</b>	<b>115.06</b>	<b>100.61</b>	<b>119.71</b>	<b>129.72</b>
Allocated overhead:										
Hired Labor	2.15	2.27	2.34	2.43	2.51	2.60	1.57	1.58	1.60	1.67
Opportunity cost of unpaid labor	18.22	23.6	24.34	25.22	26.11	26.99	16.79	16.88	17.15	17.87
Capital recovery of machinery & equip	48.01	43.95	46.93	49.38	51.82	56.70	64.36	66.68	70.74	73.93
Opportunity cost of land (rental rate)	30.17	28.05	31.24	30.6	33	36.12	36.39	37.47	40.40	41.63
Taxes and insurance	3.22	3.9	4.69	4.94	5.73	6.46	5.00	5.17	5.44	5.56
General farm overhead	6.34	6.21	6.49	6.72	6.95	7.14	9.15	9.32	9.67	10.01
<b>Total, allocated overhead</b>	<b>108.11</b>	<b>107.98</b>	<b>116.03</b>	<b>119.29</b>	<b>126.12</b>	<b>136.01</b>	<b>133.26</b>	<b>137.10</b>	<b>145.00</b>	<b>150.67</b>
<b>Total costs listed</b>	<b>172.12</b>	<b>176.76</b>	<b>195.17</b>	<b>203.47</b>	<b>220.68</b>	<b>261.98</b>	<b>248.32</b>	<b>237.71</b>	<b>264.71</b>	<b>280.39</b>

Table 41: Wheat production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	7.89	8.06	8.47	8.71	10.22	16.19	14.06	11.35	13.41	17.04
Fertilizer	19.74	19.41	22.74	24.26	28.10	44.21	39.12	30.21	39.72	42.57
Chemicals	10.02	14.26	14.50	15.08	15.25	15.72	20.64	19.92	19.97	20.95
Custom operations	4.68	6.80	6.86	6.97	7.08	8.16	8.32	8.32	8.49	9.01
Fuel, lube, and electricity	7.02	6.28	8.22	9.10	10.05	13.09	9.12	11.31	14.42	14.26
Repairs	10.38	9.89	10.31	10.53	10.88	11.37	18.21	18.55	19.24	19.93
Other variable expenses	0.18	0.10	0.10	0.11	0.11	0.11	0.18	0.19	0.19	0.19
Crop Insurance	4.96	5.50	5.31	6.56	8.44	18.20	12.08	8.81	14.91	12.20
Interest on operating costs	0.32	1.10	1.21	1.80	1.83	0.90	0.16	0.10	0.06	0.08
<b>Total, operating costs</b>	<b>65.19</b>	<b>71.40</b>	<b>77.72</b>	<b>83.12</b>	<b>91.96</b>	<b>127.95</b>	<b>121.89</b>	<b>108.76</b>	<b>130.41</b>	<b>136.23</b>
Allocated overhead:										
Hired Labor	1.80	1.80	1.86	1.92	1.99	2.06	1.32	1.33	1.35	1.40
Opportunity cost of unpaid labor	12.62	13.94	14.38	14.9	15.42	15.94	13.53	13.6	13.82	14.4
Capital recovery of machinery & equip	52.88	42.45	45.33	47.69	50.05	54.77	74.50	77.18	81.88	85.57
Opportunity cost of land (rental rate)	37.71	35.5	39.53	38.73	41.76	45.71	39.66	40.84	44.03	45.37
Taxes and insurance	4.08	6.88	8.28	8.71	10.11	11.40	5.82	6.02	6.33	6.48
General farm overhead	7.16	9.00	9.40	9.74	10.07	10.34	9.45	9.63	9.98	10.34
<b>Total, allocated overhead</b>	<b>116.25</b>	<b>109.57</b>	<b>118.78</b>	<b>121.69</b>	<b>129.40</b>	<b>140.22</b>	<b>144.28</b>	<b>148.60</b>	<b>157.39</b>	<b>163.56</b>
<b>Total costs listed</b>	<b>181.44</b>	<b>180.97</b>	<b>196.50</b>	<b>204.81</b>	<b>221.36</b>	<b>268.17</b>	<b>266.17</b>	<b>257.36</b>	<b>287.80</b>	<b>299.79</b>

Table 42: Wheat production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	12.78	15.93	16.74	17.22	20.19	32.00	27.06	21.85	25.81	32.79
Fertilizer	42.45	45.08	52.81	56.35	65.27	102.67	99.32	76.70	100.84	108.07
Chemicals	3.70	4.81	4.89	5.09	5.14	5.30	9.16	8.84	8.86	9.30
Custom operations	7.97	5.88	5.93	6.03	6.13	7.06	10.18	10.18	10.39	11.02
Fuel, lube, and electricity	7.22	6.00	7.85	8.68	9.59	12.50	9.04	11.21	14.29	14.13
Repairs	8.76	8.89	9.27	9.46	9.78	10.22	13.78	14.04	14.56	15.08
Other variable expenses	0.60	0.52	0.54	0.56	0.59	0.59	0.44	0.45	0.46	0.47
Crop Insurance	3.86	4.26	4.22	5.01	6.65	11.91	13.37	8.06	13.18	13.61
Interest on operating costs	0.44	0.69	1.67	2.49	2.61	1.41	0.24	0.14	0.09	0.12
<b>Total, operating costs</b>	<b>87.78</b>	<b>92.06</b>	<b>103.92</b>	<b>110.89</b>	<b>125.95</b>	<b>183.66</b>	<b>182.59</b>	<b>151.47</b>	<b>188.48</b>	<b>204.59</b>
Allocated overhead:										
Hired Labor	1.61	1.02	1.05	1.09	1.13	1.17	1.51	1.52	1.54	1.61
Opportunity cost of unpaid labor	19.81	16.38	16.89	17.51	18.12	18.73	16.07	16.16	16.41	17.1
Capital recovery of machinery & equip	47.26	44.49	47.51	49.98	52.45	57.40	56.83	58.88	62.46	65.28
Opportunity cost of land (rental rate)	67.87	68.45	76.23	74.67	80.53	88.13	99.64	102.60	110.62	113.99
Taxes and insurance	3.49	4.99	6	6.32	7.33	8.26	6.11	6.32	6.65	6.8
General farm overhead	8.12	8.28	8.65	8.96	9.27	9.52	12.48	12.72	13.19	13.66
<b>Total, allocated overhead</b>	<b>148.16</b>	<b>143.61</b>	<b>156.33</b>	<b>158.53</b>	<b>168.83</b>	<b>183.21</b>	<b>192.64</b>	<b>198.20</b>	<b>210.87</b>	<b>218.44</b>
<b>Total costs listed</b>	<b>235.94</b>	<b>235.67</b>	<b>260.25</b>	<b>269.42</b>	<b>294.78</b>	<b>366.87</b>	<b>375.23</b>	<b>349.67</b>	<b>399.35</b>	<b>423.03</b>

Table 43: Wheat production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	12.67	20.08	21.10	21.71	25.46	40.34	31.61	25.53	30.15	38.30
Fertilizer	40.36	46.88	54.92	58.60	67.87	106.77	89.60	69.20	90.97	97.50
Chemicals	2.89	5.38	5.47	5.69	5.75	5.93	9.96	9.61	9.64	10.11
Custom operations	12.46	10.68	10.77	10.95	11.13	12.82	9.90	9.90	10.10	10.72
Fuel, lube, and electricity	6.39	7.55	9.88	10.94	12.08	15.74	9.98	12.38	15.78	15.60
Repairs	6.92	10.66	11.12	11.35	11.73	12.25	15.05	15.33	15.90	16.47
Other variable expenses	2.19	0.75	0.77	0.81	0.85	0.85	1.17	1.21	1.23	1.25
Crop Insurance	3.71	4.17	4.45	4.63	6.24	11.44	12.74	7.36	12.25	12.08
Interest on operating costs	0.44	0.80	1.94	2.89	3.02	1.62	0.24	0.14	0.09	0.12
<b>Total, operating costs</b>	<b>88.03</b>	<b>106.95</b>	<b>120.42</b>	<b>127.57</b>	<b>144.13</b>	<b>207.76</b>	<b>180.25</b>	<b>150.66</b>	<b>186.11</b>	<b>202.15</b>
Allocated overhead:										
Hired Labor	0.44	1.16	1.20	1.24	1.28	1.33	2.11	2.12	2.15	2.25
Opportunity cost of unpaid labor	17.85	24.34	25.1	26.01	26.93	27.84	18.62	18.72	19.02	19.81
Capital recovery of machinery & equip	42.18	50.82	54.27	57.09	59.92	65.56	60.41	62.59	66.40	69.39
Opportunity cost of land (rental rate)	70.59	61.86	68.89	67.48	72.78	79.65	81.75	84.17	90.76	93.53
Taxes and insurance	4.31	7.78	9.36	9.85	11.43	12.89	10.62	10.98	11.56	11.82
General farm overhead	8.88	14.08	14.71	15.24	15.76	16.18	19.64	20.01	20.75	21.49
<b>Total, allocated overhead</b>	<b>144.25</b>	<b>160.04</b>	<b>173.53</b>	<b>176.91</b>	<b>188.10</b>	<b>203.45</b>	<b>193.15</b>	<b>198.59</b>	<b>210.64</b>	<b>218.29</b>
<b>Total costs listed</b>	<b>232.28</b>	<b>266.99</b>	<b>293.95</b>	<b>304.48</b>	<b>332.23</b>	<b>411.21</b>	<b>373.40</b>	<b>349.25</b>	<b>396.75</b>	<b>420.44</b>

Table 44: Wheat production costs per planted acre: Basin and Range

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	10.83	10.82	11.37	11.70	13.72	21.74	16.92	13.66	16.14	20.50
Fertilizer	35.97	31.34	36.71	39.18	45.37	71.38	50.14	38.72	50.92	54.56
Chemicals	15.04	13.97	14.20	14.78	14.94	15.40	21.74	20.98	21.08	22.06
Custom operations	4.33	6.26	6.31	6.42	6.52	7.51	8.48	8.48	8.66	9.18
Fuel, lube, and electricity	12.14	9.38	12.28	13.59	15.01	19.56	12.49	15.49	19.69	19.53
Repairs	15.36	12.57	13.11	13.38	13.83	14.45	23.40	23.84	24.72	25.61
Other variable expenses	1.26	0.75	0.77	0.81	0.85	0.85	0.73	0.75	0.77	0.78
Crop Insurance	5.65	5.27	5.01	5.87	7.56	11.51	21.74	12.14	18.86	17.96
Interest on operating costs	0.50	0.67	1.61	2.40	2.47	1.25	0.19	0.12	0.07	0.10
<b>Total, operating costs</b>	<b>101.08</b>	<b>91.03</b>	<b>101.37</b>	<b>108.13</b>	<b>120.27</b>	<b>163.65</b>	<b>155.83</b>	<b>134.18</b>	<b>160.91</b>	<b>170.28</b>
Allocated overhead:										
Hired Labor	6.27	3.94	4.06	4.21	4.36	4.51	3.66	3.68	3.74	3.89
Opportunity cost of unpaid labor	28.77	26.45	27.28	28.27	29.26	30.25	18.3	18.4	18.69	19.47
Capital recovery of machinery & equip	74.50	55.28	59.03	62.10	65.18	71.32	84.05	87.08	92.38	96.54
Opportunity cost of land (rental rate)	53.71	47.84	53.28	52.19	56.28	61.60	59.90	61.68	66.50	68.53
Taxes and insurance	7.39	6.9	8.3	8.73	10.13	11.43	7.81	8.08	8.50	8.69
General farm overhead	12.82	8.41	8.79	9.10	9.41	9.67	12.41	12.64	13.11	13.58
<b>Total, allocated overhead</b>	<b>183.46</b>	<b>148.82</b>	<b>160.74</b>	<b>164.60</b>	<b>174.62</b>	<b>188.78</b>	<b>186.13</b>	<b>191.56</b>	<b>202.92</b>	<b>210.70</b>
<b>Total costs listed</b>	<b>284.54</b>	<b>239.85</b>	<b>262.11</b>	<b>272.73</b>	<b>294.89</b>	<b>352.43</b>	<b>341.96</b>	<b>325.74</b>	<b>363.83</b>	<b>380.98</b>



Table 45: Wheat production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	12.42	9.24	9.71	9.99	11.71	18.56	16.63	13.43	15.86	20.15
Fertilizer	37.00	25.61	30.00	32.01	37.08	58.33	46.18	35.66	46.89	50.25
Chemicals	14.07	8.79	8.94	9.30	9.40	9.69	17.48	16.87	16.92	17.74
Custom operations	14.06	6.81	6.87	6.98	7.09	8.17	11.98	11.98	12.23	12.97
Fuel, lube, and electricity	21.84	38.28	50.11	55.45	61.25	79.81	27.15	33.67	42.92	42.44
Repairs	15.83	18.01	18.78	19.17	19.81	20.70	31.19	31.78	32.96	34.13
Other variable expenses	7.00	2.70	2.78	2.93	3.06	3.06	6.82	7.04	7.17	7.29
Crop Insurance	5.70	5.05	4.90	4.92	6.53	9.40	20.83	11.62	16.59	14.93
Interest on operating costs	0.65	0.86	2.16	3.27	3.35	1.65	0.23	0.15	0.09	0.12
<b>Total, operating costs</b>	<b>128.57</b>	<b>115.35</b>	<b>134.25</b>	<b>144.02</b>	<b>159.28</b>	<b>209.37</b>	<b>178.49</b>	<b>162.20</b>	<b>191.63</b>	<b>200.02</b>
Allocated overhead:										
Hired Labor	8.34	7.05	7.27	7.53	7.80	8.06	8.68	8.73	8.86	9.24
Opportunity cost of unpaid labor	21.91	32.92	33.95	35.18	36.42	37.65	20.28	20.39	20.71	21.58
Capital recovery of machinery & equip	69.23	72.67	77.60	81.64	85.68	93.75	96.26	99.73	105.80	110.57
Opportunity cost of land (rental rate)	83.45	71.58	79.71	78.09	84.21	92.17	89.30	91.95	99.14	102.17
Taxes and insurance	5.99	6.88	8.28	8.71	10.11	11.40	8.42	8.71	9.16	9.37
General farm overhead	11.14	11.17	11.67	12.09	12.50	12.84	15.14	15.43	16.00	16.57
<b>Total, allocated overhead</b>	<b>200.06</b>	<b>202.27</b>	<b>218.48</b>	<b>223.24</b>	<b>236.72</b>	<b>255.87</b>	<b>238.08</b>	<b>244.94</b>	<b>259.67</b>	<b>269.50</b>
<b>Total costs listed</b>	<b>328.63</b>	<b>317.62</b>	<b>352.73</b>	<b>367.26</b>	<b>396.00</b>	<b>465.24</b>	<b>416.57</b>	<b>407.14</b>	<b>451.30</b>	<b>469.52</b>

Table 46: Wheat - share of expenses incurred before planting: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Chemicals	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Custom operations	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fuel, lube, and electricity	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Total, operating costs										
Allocated overhead:										
Hired Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Opportunity cost of unpaid labor	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 47: Wheat - share of expenses incurred before planting: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Chemicals	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Custom operations	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Fuel, lube, and electricity	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Repairs	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
Total, operating costs										
Allocated overhead:										
Hired Labor	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Opportunity cost of unpaid labor	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 48: Wheat - share of expenses incurred before planting: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Chemicals	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Custom operations	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fuel, lube, and electricity	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Total, operating costs										
Allocated overhead:										
Hired Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Opportunity cost of unpaid labor	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 49: Wheat - share of expenses incurred before planting: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Chemicals	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Custom operations	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fuel, lube, and electricity	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Total, operating costs										
Allocated overhead:										
Hired Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Opportunity cost of unpaid labor	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 50: Wheat - share of expenses incurred before planting: Basin and Range

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Chemicals	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Custom operations	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fuel, lube, and electricity	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Total, operating costs										
Allocated overhead:										
Hired Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Opportunity cost of unpaid labor	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 51: Wheat - share of expenses incurred before planting: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Chemicals	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Custom operations	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fuel, lube, and electricity	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Repairs	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Other variable expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Interest on operating costs	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Total, operating costs										
Allocated overhead:										
Hired Labor	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Opportunity cost of unpaid labor	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 52: Wheat prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	2.04	2.18	2.56	2.73	3.16	4.97	3.93	3.04	4.00	4.28
Chemicals	1.36	1.61	1.64	1.71	1.72	1.78	3.63	3.50	3.51	3.68
Custom operations	1.27	0.98	0.99	1.01	1.02	1.18	1.58	1.58	1.62	1.71
Fuel, lube, and electricity	4.20	4.88	6.39	7.07	7.81	10.18	4.33	5.37	6.84	6.76
Repairs	3.12	3.80	3.96	4.04	4.18	4.37	5.62	5.73	5.94	6.15
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.70	0.70	0.79	0.79	1.14	1.52	2.46	1.41	1.88	2.32
Interest on operating costs	0.10	0.16	0.38	0.57	0.59	0.29	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>12.78</b>	<b>14.32</b>	<b>16.71</b>	<b>17.92</b>	<b>19.62</b>	<b>24.29</b>	<b>21.60</b>	<b>20.66</b>	<b>23.80</b>	<b>24.94</b>
Allocated overhead:										
Hired Labor	0.82	0.86	0.89	0.92	0.95	0.99	0.60	0.60	0.61	0.63
Opportunity cost of unpaid labor	6.74	8.73	9.01	9.33	9.66	9.99	6.21	6.25	6.35	6.61
Capital recovery of machinery & equip	48.01	43.95	46.93	49.38	51.82	56.70	64.36	66.68	70.74	73.93
Opportunity cost of land (rental rate)	30.17	28.05	31.24	30.60	33.00	36.12	36.39	37.47	40.40	41.63
Taxes and insurance	3.22	3.90	4.69	4.94	5.73	6.46	5.00	5.17	5.44	5.56
General farm overhead	6.34	6.21	6.49	6.72	6.95	7.14	9.15	9.32	9.67	10.01
<b>Total, allocated overhead</b>	<b>95.30</b>	<b>91.70</b>	<b>99.25</b>	<b>101.89</b>	<b>108.11</b>	<b>117.39</b>	<b>121.71</b>	<b>125.49</b>	<b>133.20</b>	<b>138.38</b>
<b>Total costs listed</b>	<b>108.08</b>	<b>106.02</b>	<b>115.95</b>	<b>119.81</b>	<b>127.74</b>	<b>141.68</b>	<b>143.31</b>	<b>146.15</b>	<b>157.00</b>	<b>163.31</b>
<b>Total costs</b>	<b>172.12</b>	<b>176.76</b>	<b>195.17</b>	<b>203.47</b>	<b>220.68</b>	<b>261.98</b>	<b>248.32</b>	<b>237.71</b>	<b>264.71</b>	<b>280.39</b>
<b>Prevented planting %</b>	<b>63%</b>	<b>60%</b>	<b>59%</b>	<b>59%</b>	<b>58%</b>	<b>54%</b>	<b>58%</b>	<b>61%</b>	<b>59%</b>	<b>58%</b>



Table 53: Wheat prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	4.15	4.08	4.78	5.09	5.90	9.28	8.22	6.34	8.34	8.94
Chemicals	2.40	3.42	3.48	3.62	3.66	3.77	4.95	4.78	4.79	5.03
Custom operations	0.70	1.02	1.03	1.05	1.06	1.22	1.25	1.25	1.27	1.35
Fuel, lube, and electricity	1.68	1.51	1.97	2.18	2.41	3.14	2.19	2.71	3.46	3.42
Repairs	2.18	2.08	2.17	2.21	2.28	2.39	3.82	3.90	4.04	4.19
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.69	0.77	0.74	0.92	1.18	2.55	1.69	1.23	2.09	1.71
Interest on operating costs	0.08	0.29	0.31	0.47	0.48	0.23	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>11.89</b>	<b>13.16</b>	<b>14.48</b>	<b>15.54</b>	<b>16.98</b>	<b>22.59</b>	<b>22.16</b>	<b>20.24</b>	<b>24.01</b>	<b>24.66</b>
Allocated overhead:										
Hired Labor	0.56	0.56	0.58	0.60	0.62	0.64	0.41	0.41	0.42	0.43
Opportunity cost of unpaid labor	3.28	3.62	3.74	3.87	4.01	4.14	3.52	3.54	3.59	3.74
Capital recovery of machinery & equip	52.88	42.45	45.33	47.69	50.05	54.77	74.50	77.18	81.88	85.57
Opportunity cost of land (rental rate)	37.71	35.50	39.53	38.73	41.76	45.71	39.66	40.84	44.03	45.37
Taxes and insurance	4.08	6.88	8.28	8.71	10.11	11.40	5.82	6.02	6.33	6.48
General farm overhead	7.16	9.00	9.40	9.74	10.07	10.34	9.45	9.63	9.98	10.34
<b>Total, allocated overhead</b>	<b>105.67</b>	<b>98.01</b>	<b>106.86</b>	<b>109.34</b>	<b>116.62</b>	<b>127.00</b>	<b>133.36</b>	<b>137.62</b>	<b>146.23</b>	<b>151.94</b>
<b>Total costs listed</b>	<b>117.56</b>	<b>111.17</b>	<b>121.34</b>	<b>124.88</b>	<b>133.59</b>	<b>149.60</b>	<b>155.52</b>	<b>157.86</b>	<b>170.24</b>	<b>176.59</b>
<b>Total costs</b>	<b>181.44</b>	<b>180.97</b>	<b>196.50</b>	<b>204.81</b>	<b>221.36</b>	<b>268.17</b>	<b>266.17</b>	<b>257.36</b>	<b>287.80</b>	<b>299.79</b>
<b>Prevented planting %</b>	<b>65%</b>	<b>61%</b>	<b>62%</b>	<b>61%</b>	<b>60%</b>	<b>56%</b>	<b>58%</b>	<b>61%</b>	<b>59%</b>	<b>59%</b>

Table 54: Wheat prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	4.67	4.96	5.81	6.20	7.18	11.29	10.93	8.44	11.09	11.89
Chemicals	1.59	2.07	2.10	2.19	2.21	2.28	3.94	3.80	3.81	4.00
Custom operations	1.25	0.92	0.93	0.95	0.96	1.11	1.60	1.60	1.63	1.73
Fuel, lube, and electricity	2.31	1.92	2.51	2.78	3.07	4.00	2.89	3.59	4.57	4.52
Repairs	2.63	2.67	2.78	2.84	2.93	3.07	4.13	4.21	4.37	4.52
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.54	0.60	0.59	0.70	0.93	1.67	1.87	1.13	1.85	1.91
Interest on operating costs	0.14	0.21	0.52	0.77	0.81	0.44	0.07	0.04	0.03	0.04
<b>Total, operating costs</b>	<b>13.13</b>	<b>13.35</b>	<b>15.25</b>	<b>16.42</b>	<b>18.10</b>	<b>23.85</b>	<b>25.44</b>	<b>22.81</b>	<b>27.35</b>	<b>28.61</b>
Allocated overhead:										
Hired Labor	0.61	0.39	0.40	0.41	0.43	0.44	0.57	0.58	0.59	0.61
Opportunity cost of unpaid labor	7.33	6.06	6.25	6.48	6.70	6.93	5.95	5.98	6.07	6.33
Capital recovery of machinery & equip	47.26	44.49	47.51	49.98	52.45	57.40	56.83	58.88	62.46	65.28
Opportunity cost of land (rental rate)	67.87	68.45	76.23	74.67	80.53	88.13	99.64	102.60	110.62	113.99
Taxes and insurance	3.49	4.99	6.00	6.32	7.33	8.26	6.11	6.32	6.65	6.80
General farm overhead	8.12	8.28	8.65	8.96	9.27	9.52	12.48	12.72	13.19	13.66
<b>Total, allocated overhead</b>	<b>134.68</b>	<b>132.66</b>	<b>145.04</b>	<b>146.82</b>	<b>156.71</b>	<b>170.68</b>	<b>181.58</b>	<b>187.08</b>	<b>199.58</b>	<b>206.67</b>
<b>Total costs listed</b>	<b>147.81</b>	<b>146.01</b>	<b>160.28</b>	<b>163.25</b>	<b>174.81</b>	<b>194.54</b>	<b>207.02</b>	<b>209.89</b>	<b>226.93</b>	<b>235.28</b>
<b>Total costs</b>	<b>235.94</b>	<b>235.67</b>	<b>260.25</b>	<b>269.42</b>	<b>294.78</b>	<b>366.87</b>	<b>375.23</b>	<b>349.67</b>	<b>399.35</b>	<b>423.03</b>
<b>Prevented planting %</b>	<b>63%</b>	<b>62%</b>	<b>62%</b>	<b>61%</b>	<b>59%</b>	<b>53%</b>	<b>55%</b>	<b>60%</b>	<b>57%</b>	<b>56%</b>

Table 55: Wheat prevented planting cost per acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	4.44	5.16	6.04	6.45	7.47	11.74	9.86	7.61	10.01	10.73
Chemicals	1.24	2.31	2.35	2.45	2.47	2.55	4.28	4.13	4.15	4.35
Custom operations	1.96	1.68	1.69	1.72	1.75	2.02	1.56	1.56	1.59	1.69
Fuel, lube, and electricity	2.04	2.42	3.16	3.50	3.87	5.04	3.19	3.96	5.05	4.99
Repairs	2.08	3.20	3.34	3.41	3.52	3.68	4.52	4.60	4.77	4.94
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.52	0.58	0.62	0.65	0.87	1.60	1.78	1.03	1.72	1.69
Interest on operating costs	0.14	0.25	0.60	0.90	0.94	0.50	0.07	0.04	0.03	0.04
<b>Total, operating costs</b>	<b>12.42</b>	<b>15.60</b>	<b>17.81</b>	<b>19.07</b>	<b>20.88</b>	<b>27.13</b>	<b>25.26</b>	<b>22.94</b>	<b>27.30</b>	<b>28.42</b>
Allocated overhead:										
Hired Labor	0.17	0.44	0.46	0.47	0.49	0.51	0.80	0.81	0.82	0.86
Opportunity cost of unpaid labor	6.60	9.01	9.29	9.62	9.96	10.30	6.89	6.93	7.04	7.33
Capital recovery of machinery & equip	42.18	50.82	54.27	57.09	59.92	65.56	60.41	62.59	66.40	69.39
Opportunity cost of land (rental rate)	70.59	61.86	68.89	67.48	72.78	79.65	81.75	84.17	90.76	93.53
Taxes and insurance	4.31	7.78	9.36	9.85	11.43	12.89	10.62	10.98	11.56	11.82
General farm overhead	8.88	14.08	14.71	15.24	15.76	16.18	19.64	20.01	20.75	21.49
<b>Total, allocated overhead</b>	<b>132.73</b>	<b>143.99</b>	<b>156.97</b>	<b>159.75</b>	<b>170.34</b>	<b>185.09</b>	<b>180.11</b>	<b>185.48</b>	<b>197.32</b>	<b>204.41</b>
<b>Total costs listed</b>	<b>145.15</b>	<b>159.58</b>	<b>174.78</b>	<b>178.82</b>	<b>191.22</b>	<b>212.21</b>	<b>205.37</b>	<b>208.42</b>	<b>224.63</b>	<b>232.83</b>
<b>Total costs</b>	<b>232.28</b>	<b>266.99</b>	<b>293.95</b>	<b>304.48</b>	<b>332.23</b>	<b>411.21</b>	<b>373.40</b>	<b>349.25</b>	<b>396.75</b>	<b>420.44</b>
<b>Prevented planting %</b>	<b>62%</b>	<b>60%</b>	<b>59%</b>	<b>59%</b>	<b>58%</b>	<b>52%</b>	<b>55%</b>	<b>60%</b>	<b>57%</b>	<b>55%</b>

**Table 56: Wheat prevented planting cost per acre: Basin and Range**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	3.96	3.45	4.04	4.31	4.99	7.85	5.52	4.26	5.60	6.00
Chemicals	6.47	6.01	6.11	6.36	6.42	6.62	9.35	9.02	9.06	9.49
Custom operations	0.68	0.98	0.99	1.01	1.03	1.18	1.33	1.33	1.36	1.44
Fuel, lube, and electricity	3.88	3.00	3.93	4.35	4.80	6.26	4.00	4.96	6.30	6.25
Repairs	4.61	3.77	3.93	4.01	4.15	4.34	7.02	7.15	7.42	7.68
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.79	0.74	0.70	0.82	1.06	1.61	3.04	1.70	2.64	2.51
Interest on operating costs	0.16	0.21	0.50	0.74	0.77	0.39	0.06	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>20.54</b>	<b>18.16</b>	<b>20.20</b>	<b>21.60</b>	<b>23.22</b>	<b>28.25</b>	<b>30.32</b>	<b>28.46</b>	<b>32.41</b>	<b>33.41</b>
<b>Allocated overhead:</b>										
Hired Labor	2.38	1.50	1.54	1.60	1.66	1.71	1.39	1.40	1.42	1.48
Opportunity cost of unpaid labor	10.64	9.79	10.09	10.46	10.83	11.19	6.77	6.81	6.92	7.20
Capital recovery of machinery & equip	74.50	55.28	59.03	62.10	65.18	71.32	84.05	87.08	92.38	96.54
Opportunity cost of land (rental rate)	53.71	47.84	53.28	52.19	56.28	61.60	59.90	61.68	66.50	68.53
Taxes and insurance	7.39	6.90	8.30	8.73	10.13	11.43	7.81	8.08	8.50	8.69
General farm overhead	12.82	8.41	8.79	9.10	9.41	9.67	12.41	12.64	13.11	13.58
<b>Total, allocated overhead</b>	<b>161.45</b>	<b>129.71</b>	<b>141.04</b>	<b>144.18</b>	<b>153.48</b>	<b>166.93</b>	<b>172.33</b>	<b>177.69</b>	<b>188.83</b>	<b>196.02</b>
<b>Total costs listed</b>	<b>181.99</b>	<b>147.87</b>	<b>161.24</b>	<b>165.78</b>	<b>176.70</b>	<b>195.17</b>	<b>202.65</b>	<b>206.15</b>	<b>221.23</b>	<b>229.43</b>
<b>Total costs</b>	<b>284.54</b>	<b>239.85</b>	<b>262.11</b>	<b>272.73</b>	<b>294.89</b>	<b>352.43</b>	<b>341.96</b>	<b>325.74</b>	<b>363.83</b>	<b>380.98</b>
<b>Prevented planting %</b>	<b>64%</b>	<b>62%</b>	<b>62%</b>	<b>61%</b>	<b>60%</b>	<b>55%</b>	<b>59%</b>	<b>63%</b>	<b>61%</b>	<b>60%</b>

Table 57: Wheat prevented planting cost per acre: Fruitful Rim

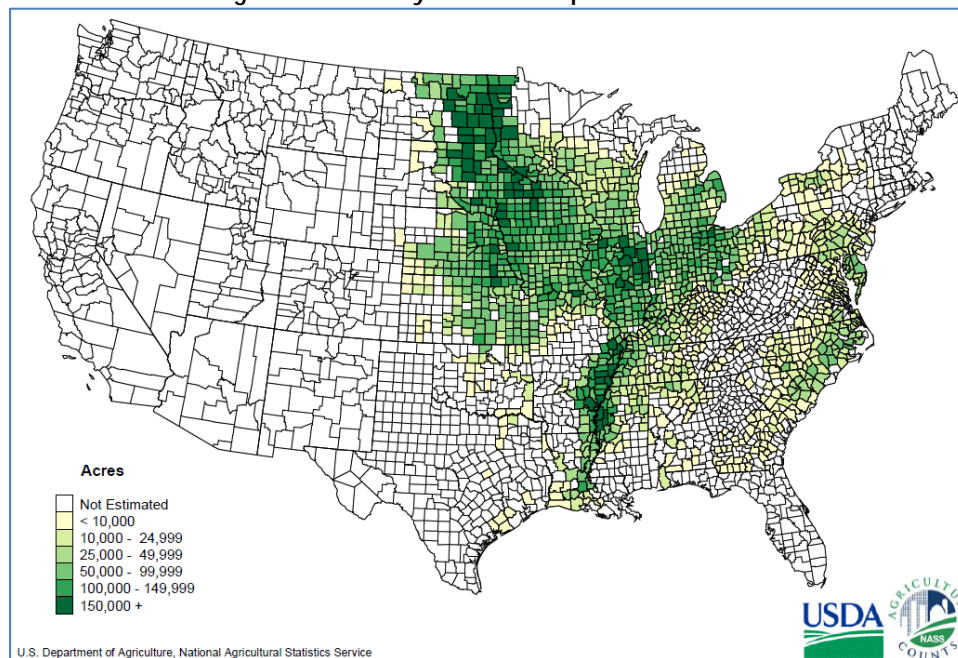
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.27	3.65	4.28	4.56	5.28	8.31	6.58	5.08	6.68	7.16
Chemicals	5.17	3.23	3.29	3.42	3.45	3.56	6.42	6.20	6.22	6.52
Custom operations	2.21	1.07	1.08	1.10	1.12	1.29	1.89	1.89	1.93	2.04
Fuel, lube, and electricity	6.39	11.20	14.66	16.22	17.92	23.34	7.94	9.85	12.55	12.41
Repairs	4.27	4.86	5.07	5.18	5.35	5.59	8.42	8.58	8.90	9.22
Other variable expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.80	0.71	0.69	0.69	0.91	1.32	2.92	1.63	2.32	2.09
Interest on operating costs	0.19	0.25	0.63	0.95	0.97	0.48	0.07	0.04	0.03	0.03
<b>Total, operating costs</b>	<b>24.31</b>	<b>24.97</b>	<b>29.68</b>	<b>32.11</b>	<b>35.01</b>	<b>43.89</b>	<b>34.24</b>	<b>33.27</b>	<b>38.63</b>	<b>39.48</b>
Allocated overhead:										
Hired Labor	3.00	2.54	2.62	2.71	2.81	2.90	3.12	3.14	3.19	3.33
Opportunity cost of unpaid labor	7.23	10.86	11.20	11.61	12.02	12.42	6.69	6.73	6.83	7.12
Capital recovery of machinery & equip	69.23	72.67	77.60	81.64	85.68	93.75	96.26	99.73	105.80	110.57
Opportunity cost of land (rental rate)	83.45	71.58	79.71	78.09	84.21	92.17	89.30	91.95	99.14	102.17
Taxes and insurance	5.99	6.88	8.28	8.71	10.11	11.40	8.42	8.71	9.16	9.37
General farm overhead	11.14	11.17	11.67	12.09	12.50	12.84	15.14	15.43	16.00	16.57
<b>Total, allocated overhead</b>	<b>180.04</b>	<b>175.70</b>	<b>191.08</b>	<b>194.85</b>	<b>207.33</b>	<b>225.49</b>	<b>218.94</b>	<b>225.69</b>	<b>240.12</b>	<b>249.13</b>
<b>Total costs listed</b>	<b>204.35</b>	<b>200.67</b>	<b>220.76</b>	<b>226.96</b>	<b>242.33</b>	<b>269.37</b>	<b>253.17</b>	<b>258.96</b>	<b>278.75</b>	<b>288.60</b>
<b>Total costs</b>	<b>328.63</b>	<b>317.62</b>	<b>352.73</b>	<b>367.26</b>	<b>396.00</b>	<b>465.24</b>	<b>416.57</b>	<b>407.14</b>	<b>451.30</b>	<b>469.52</b>
<b>Prevented planting %</b>	<b>62%</b>	<b>63%</b>	<b>63%</b>	<b>62%</b>	<b>61%</b>	<b>58%</b>	<b>61%</b>	<b>64%</b>	<b>62%</b>	<b>61%</b>

### 4.3. Soybeans

#### Overview

Soybean area planted is second only to that of corn at 75-77 million acres in recent years. Production has historically been concentrated in the Cornbelt in rotation with corn, but plantings have been expanding in the Northern Plains as better adapted seed varieties have become available. The Mississippi Valley and the DelMarVa region are also important production areas. Soybeans are the world's leading oilseed crop and provide the majority of the protein meal that goes into animal feed, and over a quarter of the world's vegetable oil supply. The United States and Brazil each produce almost 90 million tons of soybeans annually, and this accounts for over 60% of total world output.

Figure 19: US soybean acres planted in 2012



#### Sources of production cost information

Because soybeans are a major crop, there are crop budgets available for most of the important agricultural states. However, soybeans are one of the crops for which the Economic Research Service conducts periodic statistically representative surveys of farm finances and production practices on which it bases annual production cost estimates. The most recent survey covered the 2012 crop but that data had not been compiled in time for use in this study. Current production cost estimates are based on surveys for the 2002 and 2006 crops. RMA contracted with ERS to prepare estimates of costs incurred at each stage of the production process in 2006 and we are able to use that information in developing our estimates of prevented planting costs.

The annual production cost series maintained by ERS for each farm resource region are available at the following link: <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.

#### Production practices

Soybeans and corn are typically grown in rotation for sound agronomic reasons. Continuous production of one or the other generally results in more disease and pest problems and lower yields than when the crops

are grown in rotation. Soybeans are also a nitrogen fixing crop that provides a nutritional benefit to the corn crop that follows them. In theory, soybeans do not need any nitrogen fertilizer, but as discussed below there can be a significant amount applied.

High corn prices in recent years caused some farmers to grow corn year after year on the same ground, or to plant two years of corn followed by one of soybeans. In some parts of the country, soybeans can be double-cropped after winter wheat or other crops that are harvested by early summer. On average, about 7% of total soybean plantings follow another harvested crop, but the share has ranged from 3% to 10% in the last five years. Double cropping is most common in DelMarVa and the Southeast.

Almost all soybeans are now biotechnology varieties with genetics that provide resistance to various herbicides. The share of plantings that are biotech rose from 75% in 2002 to 93% in 2012. Seed costs per acre more than doubled over that period but chemical costs were flat due to the reduced need to battle weeds.

### Prevented planting experience

Prevented planting claims have been 13% of total indemnities the last 20 years. PP indemnities for soybeans totaled \$909 million over the last decade, with slightly more than half of those occurring in 2010 and 2011. Excess moisture/precipitation/rain was the cause of loss for 94% of the total. North and South Dakota accounted for 66% of the soybean PP indemnities.

**Table 58: Prevented planting indemnities for soybeans (\$ million)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
IA	0.1	0.3	0.2	0.0	0.7	10.8	4.7	14.9	7.7	0.5	39.8
IL	1.8	0.3	0.3	0.1	0.2	3.5	5.4	9.1	10.7	0.2	31.6
MN	0.6	4.0	15.2	0.5	1.7	1.4	8.5	5.2	14.6	0.2	52.0
MO	0.3	1.6	0.1	0.0	2.0	16.8	7.2	22.3	8.3	0.8	59.5
ND	6.2	5.8	24.0	9.0	40.2	8.8	42.7	48.9	97.8	7.4	291.0
SD	5.0	5.0	13.5	7.6	46.2	20.8	22.0	89.9	98.4	2.6	311.0
Other	19.3	19.1	3.1	3.0	7.1	15.2	8.5	20.0	27.1	2.0	124.4
<b>Total</b>	<b>33.4</b>	<b>36.1</b>	<b>56.4</b>	<b>20.2</b>	<b>98.2</b>	<b>77.3</b>	<b>99.1</b>	<b>210.3</b>	<b>264.6</b>	<b>13.6</b>	<b>909.2</b>

### Analysis

Overall the PP share of expenses fell about 2% over the decade (although farmers in the south saw a 5 percentage point decline). The simple average for the seven regions for which ERS estimates production costs fluctuated in the 58-61% range. Two regions are outliers. Heartland farmers unable to plant incurred 63-68% of their total costs due principally to higher land costs. Southern Seaboard farmers incurred costs in the 46-54% range due to lower capital recovery and land costs. One concludes that there is no compelling reason to change the national 60% factor for soybeans. If one were to differentiate by region, the range could be as wide as 50-65%. However, we are not recommending regional differentiation in PP factors.

### Comparison of estimated PP cost to RMA payments

As with the other major field crops, the ratio of RMA PP payments to estimated PP costs started the period at a moderate level (the 0.70 to 1.00 range) and then had some years in the 1.20 to 1.50 range during 2008-

2012. The average for all regions for 2008-2012 was 1.17. Taking into account the 10% option, the ratio is 7% higher at 1.25. With lower soybean prices in revenue plans, the ratio should fall back closer to 1.00.

Figure 20: Share of costs incurred prior to planting soybeans

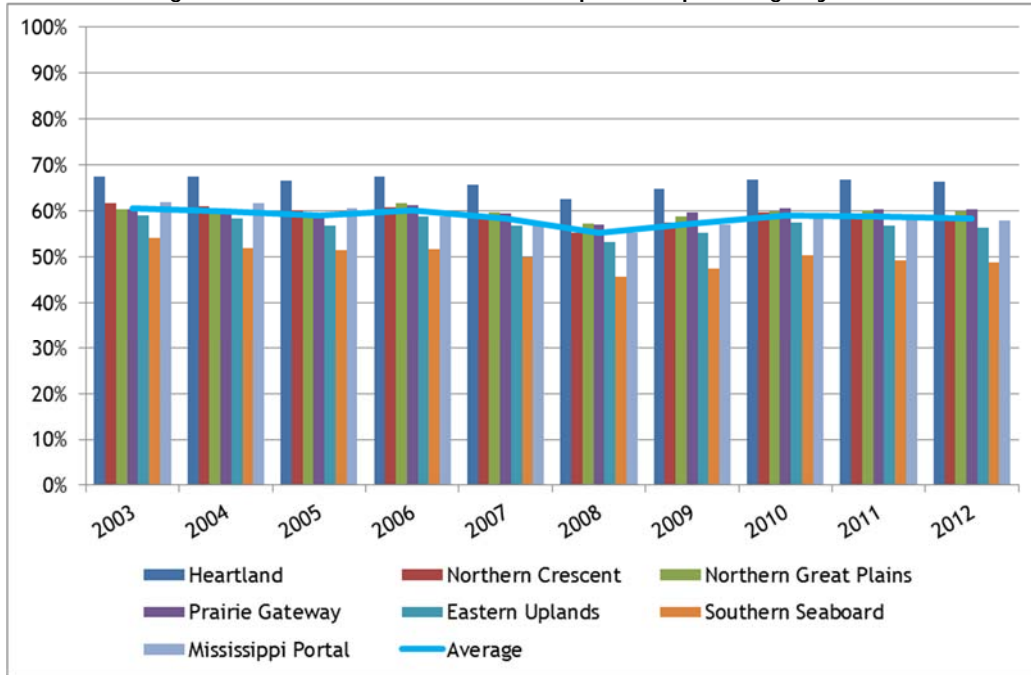
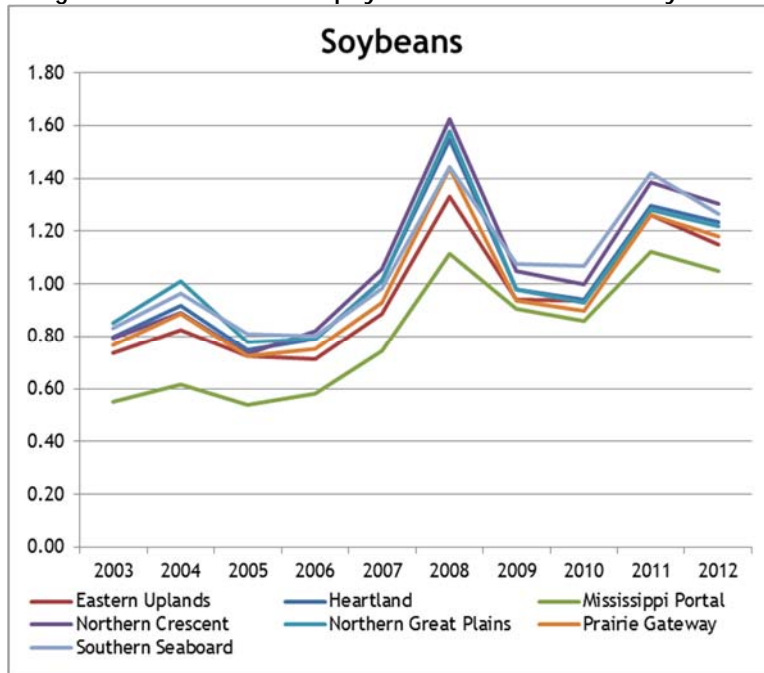


Figure 21: Ratio of RMA payment to PP costs for soybeans





### Recommendation

Both the production cost analysis and the payment rate analysis indicate that the PP payment factor should remain at 60%.

Table 59: Soybean production costs per planted acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	21.72	31.72	33.57	30.23	36.40	40.59	50.52	54.29	51.99	57.43
Fertilizer	11.60	13.08	16.03	34.76	38.79	63.95	60.11	46.09	61.07	65.49
Chemicals	19.17	17.04	15.37	15.75	16.00	16.74	18.48	18.23	17.86	18.73
Custom operations	11.15	11.23	11.71	5.34	5.61	5.61	6.11	6.19	6.30	6.42
Fuel, lube, and electricity	6.21	6.26	8.59	9.98	11.02	14.36	9.52	11.86	15.12	14.95
Repairs	7.39	7.83	8.62	9.62	9.89	10.22	10.42	10.62	11.01	11.34
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	4.22	6.32	5.90	7.22	8.81	16.07	12.31	11.39	15.23	13.83
Interest on operating costs	0.41	0.68	1.58	2.51	2.64	3.39	0.22	0.15	0.08	0.11
<b>Total, operating costs</b>	<b>81.87</b>	<b>94.16</b>	<b>101.37</b>	<b>115.41</b>	<b>129.16</b>	<b>170.93</b>	<b>167.69</b>	<b>158.82</b>	<b>178.66</b>	<b>188.30</b>
Allocated overhead:										
Hired Labor	2.99	3.05	3.07	2.65	2.74	2.84	2.90	2.93	2.96	3.08
Opportunity cost of unpaid labor	20.02	19.82	20.95	17.43	18.04	18.65	19.06	19.26	19.47	20.28
Capital recovery of machinery & equip	36.96	38.96	42.99	51.25	53.78	58.85	62.51	64.77	68.71	71.81
Opportunity cost of land	34.44	36.49	37.02	39.18	39.74	42.79	49.46	57.35	61.84	63.73
Taxes and insurance	4.56	4.65	4.77	6.83	7.37	8.18	9.18	7.99	8.57	8.76
General farm overhead	8.55	8.72	9.18	10.04	10.32	10.66	10.87	11.08	11.49	11.84
<b>Total, allocated overhead</b>	<b>107.52</b>	<b>111.69</b>	<b>117.98</b>	<b>127.38</b>	<b>131.99</b>	<b>141.97</b>	<b>153.98</b>	<b>163.38</b>	<b>173.04</b>	<b>179.50</b>
<b>Total costs listed</b>	<b>189.39</b>	<b>205.85</b>	<b>219.35</b>	<b>242.79</b>	<b>261.15</b>	<b>312.90</b>	<b>321.67</b>	<b>322.20</b>	<b>351.70</b>	<b>367.80</b>

Table 60: Soybean production costs per planted acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	25.03	28.79	32.45	31.44	37.86	42.21	52.55	56.46	54.07	59.73
Fertilizer	13.67	15.12	18.60	21.11	23.56	38.84	36.51	27.99	37.09	39.77
Chemicals	16.14	14.84	13.86	11.49	11.67	12.21	13.48	13.30	13.03	13.66
Custom operations	6.31	6.40	6.65	7.24	7.60	7.60	8.28	8.39	8.54	8.70
Fuel, lube, and electricity	7.13	7.66	11.06	11.66	12.88	16.78	11.12	13.86	17.66	17.47
Repairs	7.86	8.48	9.18	10.50	10.79	11.15	11.37	11.59	12.02	12.38
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	3.90	5.48	5.27	6.22	7.94	15.87	10.83	9.74	14.34	12.95
Interest on operating costs	0.44	0.64	1.55	2.22	2.34	2.88	0.19	0.13	0.07	0.10
<b>Total, operating costs</b>	<b>80.48</b>	<b>87.41</b>	<b>98.62</b>	<b>101.88</b>	<b>114.64</b>	<b>147.54</b>	<b>144.33</b>	<b>141.46</b>	<b>156.82</b>	<b>164.76</b>
Allocated overhead:										
Hired Labor	1.95	2.22	2.20	2.70	2.79	2.89	2.95	2.98	3.02	3.14
Opportunity cost of unpaid labor	16.93	16.85	17.26	16.63	17.21	17.8	18.19	18.38	18.58	19.35
Capital recovery of machinery & equip	38.54	41.54	45.07	54.77	57.48	62.90	66.81	69.21	73.43	76.74
Opportunity cost of land	55.11	58.18	58.96	56.61	57.41	61.83	71.47	82.87	89.35	92.08
Taxes and insurance	3.85	3.87	4.03	6.16	6.65	7.38	8.28	7.20	7.73	7.9
General farm overhead	7.54	7.69	8.11	13.14	13.50	13.96	14.23	14.50	15.04	15.50
<b>Total, allocated overhead</b>	<b>123.92</b>	<b>130.35</b>	<b>135.63</b>	<b>150.01</b>	<b>155.04</b>	<b>166.76</b>	<b>181.93</b>	<b>195.14</b>	<b>207.15</b>	<b>214.71</b>
<b>Total costs listed</b>	<b>204.40</b>	<b>217.76</b>	<b>234.25</b>	<b>251.89</b>	<b>269.68</b>	<b>314.30</b>	<b>326.26</b>	<b>336.60</b>	<b>363.97</b>	<b>379.47</b>

Table 61: Soybean production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	25.92	26.57	30.66	30.69	36.96	41.20	51.29	55.11	52.78	58.30
Fertilizer	5.06	5.08	6.14	7.63	8.52	14.04	13.19	10.12	13.41	14.37
Chemicals	14.56	13.62	10.58	12.94	13.14	13.76	15.18	14.98	14.67	15.39
Custom operations	7.43	7.50	7.78	7.69	8.08	8.08	8.80	8.91	9.07	9.24
Fuel, lube, and electricity	21.09	23.03	31.69	26.34	29.10	37.91	25.13	31.30	39.90	39.45
Repairs	13.12	14.09	14.85	16.85	17.31	17.90	18.24	18.59	19.29	19.87
Purchased irrigation water	1.80	1.78	1.78	1.54	1.62	1.62	1.76	1.78	1.82	1.85
Crop Insurance	5.93	8.58	7.48	9.04	11.34	21.84	13.85	12.08	17.60	15.54
Interest on operating costs	0.47	0.72	1.74	2.46	2.57	3.01	0.19	0.14	0.08	0.10
<b>Total, operating costs</b>	<b>95.38</b>	<b>100.97</b>	<b>112.70</b>	<b>115.18</b>	<b>128.64</b>	<b>159.36</b>	<b>147.63</b>	<b>153.01</b>	<b>168.62</b>	<b>174.11</b>
Allocated overhead:										
Hired Labor	0.88	0.89	0.91	1.90	1.97	2.03	2.08	2.10	2.12	2.21
Opportunity cost of unpaid labor	23.56	23.45	24.39	19.03	19.7	20.37	20.81	21.03	21.26	22.15
Capital recovery of machinery & equip	50.81	54.75	57.91	72.62	76.21	83.39	88.58	91.77	97.36	101.75
Opportunity cost of land	63.97	66.48	67.54	60.64	61.5	66.23	76.55	88.77	95.71	98.63
Taxes and insurance	4.44	4.46	4.55	8.01	8.64	9.59	10.77	9.37	10.05	10.27
General farm overhead	9.19	9.36	9.72	14.72	15.13	15.63	15.94	16.24	16.85	17.36
<b>Total, allocated overhead</b>	<b>152.85</b>	<b>159.39</b>	<b>165.02</b>	<b>176.92</b>	<b>183.15</b>	<b>197.24</b>	<b>214.73</b>	<b>229.28</b>	<b>243.35</b>	<b>252.37</b>
<b>Total costs listed</b>	<b>248.23</b>	<b>260.36</b>	<b>277.72</b>	<b>292.10</b>	<b>311.79</b>	<b>356.60</b>	<b>362.36</b>	<b>382.29</b>	<b>411.97</b>	<b>426.48</b>

Table 62: Soybean production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	26.76	29.96	31.98	34.36	41.37	46.13	57.43	61.71	59.09	65.27
Fertilizer	7.49	7.96	9.16	6.15	6.86	11.31	10.64	8.15	10.80	11.59
Chemicals	13.83	12.78	11.40	12.47	12.67	13.26	14.63	14.43	14.14	14.83
Custom operations	5.65	5.43	5.90	5.05	5.30	5.30	5.78	5.85	5.96	6.07
Fuel, lube, and electricity	7.84	8.47	12.55	10.12	11.18	14.57	9.65	12.03	15.33	15.16
Repairs	9.70	10.44	11.15	12.27	12.61	13.03	13.29	13.54	14.05	14.47
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.59	8.19	7.22	8.01	10.59	20.76	12.24	11.14	16.46	14.49
Interest on operating costs	0.38	0.59	1.38	1.91	2.02	2.32	0.16	0.12	0.06	0.08
<b>Total, operating costs</b>	<b>77.24</b>	<b>83.82</b>	<b>90.74</b>	<b>90.34</b>	<b>102.60</b>	<b>126.68</b>	<b>123.82</b>	<b>126.97</b>	<b>135.89</b>	<b>141.96</b>
Allocated overhead:										
Hired Labor	1.84	2.01	2.02	1.50	1.55	1.61	1.64	1.66	1.68	1.75
Opportunity cost of unpaid labor	11.45	11.38	12.19	13.21	13.67	14.14	14.45	14.6	14.76	15.37
Capital recovery of machinery & equip	42.52	45.80	48.79	65.82	69.07	75.58	80.29	83.18	88.24	92.22
Opportunity cost of land	46.17	47.38	49.99	46.65	47.31	50.95	58.89	68.29	73.63	75.88
Taxes and insurance	4.91	5.01	5.16	6.89	7.43	8.25	9.26	8.06	8.64	8.84
General farm overhead	9.65	9.97	10.37	10.75	11.05	11.42	11.64	11.86	12.31	12.68
<b>Total, allocated overhead</b>	<b>116.54</b>	<b>121.55</b>	<b>128.52</b>	<b>144.82</b>	<b>150.08</b>	<b>161.95</b>	<b>176.17</b>	<b>187.65</b>	<b>199.26</b>	<b>206.74</b>
<b>Total costs listed</b>	<b>193.78</b>	<b>205.37</b>	<b>219.26</b>	<b>235.16</b>	<b>252.68</b>	<b>288.63</b>	<b>299.99</b>	<b>314.62</b>	<b>335.15</b>	<b>348.70</b>

Table 63: Soybean production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	27.78	29.56	32.59	32.01	38.54	42.98	53.50	57.49	55.05	60.81
Fertilizer	7.35	8.10	10.17	12.73	14.21	23.42	22.01	16.88	22.37	23.98
Chemicals	17.49	16.71	14.09	14.38	14.61	15.29	16.87	16.64	16.30	17.10
Custom operations	5.48	5.53	5.75	5.27	5.54	5.54	6.03	6.10	6.22	6.33
Fuel, lube, and electricity	7.16	7.72	11.14	10.99	12.14	15.82	10.48	13.06	16.65	16.46
Repairs	8.73	9.64	10.08	10.59	10.88	11.25	11.47	11.69	12.12	12.49
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	4.73	7.04	6.53	7.34	8.82	18.45	11.49	9.52	15.28	13.15
Interest on operating costs	1.39	0.61	1.41	2.04	2.15	2.56	0.17	0.12	0.06	0.09
<b>Total, operating costs</b>	<b>80.11</b>	<b>84.91</b>	<b>91.76</b>	<b>95.35</b>	<b>106.89</b>	<b>135.31</b>	<b>132.02</b>	<b>131.50</b>	<b>144.05</b>	<b>150.41</b>
Allocated overhead:										
Hired Labor	1.24	1.27	1.29	1.15	1.19	1.23	1.26	1.27	1.28	1.34
Opportunity cost of unpaid labor	15.09	15.14	15.63	14.33	14.83	15.34	15.67	15.84	16.01	16.68
Capital recovery of machinery & equip	40.68	44.92	46.99	58.48	61.37	67.16	71.33	73.90	78.40	81.94
Opportunity cost of land	95.93	98.97	102.09	101.33	102.77	110.67	127.92	148.33	159.93	164.81
Taxes and insurance	5.89	5.95	6.15	7.94	8.57	9.51	10.68	9.29	9.96	10.18
General farm overhead	12.10	12.35	12.97	13.50	13.87	14.34	14.62	14.90	15.46	15.92
<b>Total, allocated overhead</b>	<b>170.93</b>	<b>178.60</b>	<b>185.12</b>	<b>196.73</b>	<b>202.60</b>	<b>218.25</b>	<b>241.48</b>	<b>263.53</b>	<b>281.04</b>	<b>290.87</b>
<b>Total costs listed</b>	<b>251.04</b>	<b>263.51</b>	<b>276.88</b>	<b>292.08</b>	<b>309.49</b>	<b>353.56</b>	<b>373.50</b>	<b>395.03</b>	<b>425.09</b>	<b>441.28</b>

Table 64: Soybean production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	27.46	29.56	31.69	34.67	41.75	46.55	57.94	62.26	59.62	65.86
Fertilizer	12.75	14.02	17.58	19.62	21.90	36.10	33.93	26.02	34.47	36.96
Chemicals	17.21	16.99	13.91	13.92	14.14	14.80	16.33	16.11	15.78	16.55
Custom operations	9.37	9.36	9.81	8.17	8.58	8.58	9.35	9.46	9.64	9.82
Fuel, lube, and electricity	10.30	10.73	15.10	12.45	13.75	17.92	11.88	14.79	18.86	18.65
Repairs	11.14	11.83	12.82	10.53	10.82	11.18	11.40	11.62	12.06	12.42
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	4.85	7.37	7.13	8.03	9.93	20.11	12.36	10.45	15.66	13.54
Interest on operating costs	0.47	0.73	1.70	2.36	2.49	3.03	0.20	0.14	0.08	0.10
<b>Total, operating costs</b>	<b>93.55</b>	<b>100.59</b>	<b>109.74</b>	<b>109.75</b>	<b>123.36</b>	<b>158.27</b>	<b>153.39</b>	<b>150.85</b>	<b>166.17</b>	<b>173.90</b>
Allocated overhead:										
Hired Labor	3.26	3.28	3.30	1.17	1.21	1.25	1.28	1.29	1.31	1.36
Opportunity cost of unpaid labor	21.76	21.67	22.25	16.71	17.3	17.88	18.27	18.47	18.66	19.45
Capital recovery of machinery & equip	48.44	51.46	55.80	52.98	55.60	60.84	64.62	66.95	71.03	74.23
Opportunity cost of land	69.41	71.37	71.96	70.99	72	77.54	89.62	103.92	112.04	115.47
Taxes and insurance	7.43	7.45	7.75	9.99	10.78	11.97	13.43	11.68	12.53	12.81
General farm overhead	14.10	14.31	15.06	17.36	17.84	18.44	18.80	19.16	19.87	20.47
<b>Total, allocated overhead</b>	<b>164.40</b>	<b>169.54</b>	<b>176.12</b>	<b>169.20</b>	<b>174.73</b>	<b>187.92</b>	<b>206.02</b>	<b>221.47</b>	<b>235.44</b>	<b>243.79</b>
<b>Total costs listed</b>	<b>257.95</b>	<b>270.13</b>	<b>285.86</b>	<b>278.95</b>	<b>298.09</b>	<b>346.19</b>	<b>359.41</b>	<b>372.32</b>	<b>401.61</b>	<b>417.69</b>

Table 65: Soybean production costs per planted acre: Mississippi Portal

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	29.25	32.44	35.56	32.59	39.24	43.75	54.47	58.53	56.05	61.91
Fertilizer	7.59	8.19	10.22	13.00	14.51	23.92	22.48	17.24	22.84	24.49
Chemicals	18.13	17.46	15.14	18.57	18.86	19.74	21.79	21.49	21.06	22.08
Custom operations	8.11	8.20	8.48	9.15	9.61	9.61	10.47	10.60	10.80	10.99
Fuel, lube, and electricity	11.77	12.26	18.44	26.66	29.45	38.37	25.43	31.68	40.38	39.93
Repairs	15.50	16.31	17.42	17.89	18.38	19.00	19.37	19.74	20.48	21.10
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	2.73	3.55	3.23	3.61	4.36	7.97	6.57	6.68	8.33	7.68
Interest on operating costs	0.48	0.75	1.77	2.80	2.91	3.46	0.22	0.16	0.09	0.12
<b>Total, operating costs</b>	<b>93.56</b>	<b>99.16</b>	<b>110.26</b>	<b>124.27</b>	<b>137.32</b>	<b>165.82</b>	<b>160.80</b>	<b>166.12</b>	<b>180.03</b>	<b>188.30</b>
Allocated overhead:										
Hired Labor	6.51	6.93	6.92	6.68	6.91	7.15	7.31	7.38	7.46	7.77
Opportunity cost of unpaid labor	16.24	16.23	16.57	18.13	18.77	19.4	19.83	20.04	20.25	21.1
Capital recovery of machinery & equip	59.49	62.58	67.19	68.95	72.36	79.18	84.10	87.13	92.44	96.61
Opportunity cost of land	58.85	62.73	62.6	64.34	65.25	70.27	81.22	94.18	101.55	104.65
Taxes and insurance	6.64	6.72	6.98	7.5	8.09	8.98	10.08	8.77	9.41	9.62
General farm overhead	12.21	12.46	13.15	9.71	9.98	10.31	10.51	10.71	11.12	11.45
<b>Total, allocated overhead</b>	<b>159.94</b>	<b>167.65</b>	<b>173.41</b>	<b>175.31</b>	<b>181.36</b>	<b>195.29</b>	<b>213.05</b>	<b>228.21</b>	<b>242.23</b>	<b>251.20</b>
<b>Total costs listed</b>	<b>253.50</b>	<b>266.81</b>	<b>283.67</b>	<b>299.58</b>	<b>318.68</b>	<b>361.11</b>	<b>373.85</b>	<b>394.33</b>	<b>422.26</b>	<b>439.50</b>



Table 66: Soybeans - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Chemicals	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Custom operations	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Fuel, lube, and electricity	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Repairs	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%
Crop Insurance	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Interest on operating costs	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Total, operating costs										
Allocated overhead:										
Hired Labor	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Opportunity cost of unpaid labor	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Table 67: Soybean prevented planting cost per acre: Southern Seaboard**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.46	0.52	0.64	1.39	1.55	2.56	2.40	1.84	2.44	2.62
Chemicals	4.79	4.26	3.84	3.94	4.00	4.19	4.62	4.56	4.47	4.68
Custom operations	2.56	2.58	2.69	1.23	1.29	1.29	1.41	1.42	1.45	1.48
Fuel, lube, and electricity	1.49	1.50	2.06	2.40	2.64	3.45	2.28	2.85	3.63	3.59
Repairs	1.40	1.49	1.64	1.83	1.88	1.94	1.98	2.02	2.09	2.15
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.55	0.82	0.77	0.94	1.15	2.09	1.60	1.48	1.98	1.80
Interest on operating costs	0.09	0.16	0.36	0.58	0.61	0.78	0.05	0.03	0.02	0.03
<b>Total, operating costs</b>	<b>11.36</b>	<b>11.33</b>	<b>12.01</b>	<b>12.30</b>	<b>13.12</b>	<b>16.29</b>	<b>14.35</b>	<b>14.20</b>	<b>16.08</b>	<b>16.34</b>
<b>Allocated overhead:</b>										
Hired Labor	0.93	0.95	0.95	0.82	0.85	0.88	0.90	0.91	0.92	0.95
Opportunity cost of unpaid labor	5.81	5.75	6.08	5.05	5.23	5.41	5.53	5.59	5.65	5.88
Capital recovery of machinery & equip	36.96	38.96	42.99	51.25	53.78	58.85	62.51	64.77	68.71	71.81
Opportunity cost of land	34.44	36.49	37.02	39.18	39.74	42.79	49.46	57.35	61.84	63.73
Taxes and insurance	4.56	4.65	4.77	6.83	7.37	8.18	9.18	7.99	8.57	8.76
General farm overhead	8.55	8.72	9.18	10.04	10.32	10.66	10.87	11.08	11.49	11.84
<b>Total, allocated overhead</b>	<b>91.24</b>	<b>95.51</b>	<b>100.99</b>	<b>113.18</b>	<b>117.29</b>	<b>126.77</b>	<b>138.45</b>	<b>147.68</b>	<b>157.17</b>	<b>162.98</b>
<b>Total costs listed</b>	<b>102.60</b>	<b>106.85</b>	<b>112.99</b>	<b>125.47</b>	<b>130.41</b>	<b>143.06</b>	<b>152.79</b>	<b>161.89</b>	<b>173.25</b>	<b>179.32</b>
<b>Total costs</b>	<b>189.39</b>	<b>205.85</b>	<b>219.35</b>	<b>242.79</b>	<b>261.15</b>	<b>312.90</b>	<b>321.67</b>	<b>322.20</b>	<b>351.70</b>	<b>367.80</b>
<b>Prevented planting %</b>	<b>54%</b>	<b>52%</b>	<b>52%</b>	<b>52%</b>	<b>50%</b>	<b>46%</b>	<b>47%</b>	<b>50%</b>	<b>49%</b>	<b>49%</b>

Table 68: Soybean prevented planting cost per acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.55	0.60	0.74	0.84	0.94	1.55	1.46	1.12	1.48	1.59
Chemicals	4.04	3.71	3.47	2.87	2.92	3.05	3.37	3.33	3.26	3.42
Custom operations	1.45	1.47	1.53	1.67	1.75	1.75	1.90	1.93	1.96	2.00
Fuel, lube, and electricity	1.71	1.84	2.65	2.80	3.09	4.03	2.67	3.33	4.24	4.19
Repairs	1.49	1.61	1.74	2.00	2.05	2.12	2.16	2.20	2.28	2.35
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.51	0.71	0.69	0.81	1.03	2.06	1.41	1.27	1.86	1.68
Interest on operating costs	0.10	0.15	0.36	0.51	0.54	0.66	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>9.85</b>	<b>10.10</b>	<b>11.18</b>	<b>11.49</b>	<b>12.32</b>	<b>15.23</b>	<b>13.02</b>	<b>13.20</b>	<b>15.11</b>	<b>15.26</b>
Allocated overhead:										
Hired Labor	0.60	0.69	0.68	0.84	0.86	0.90	0.91	0.92	0.94	0.97
Opportunity cost of unpaid labor	4.91	4.89	5.01	4.82	4.99	5.16	5.28	5.33	5.39	5.61
Capital recovery of machinery & equip	38.54	41.54	45.07	54.77	57.48	62.90	66.81	69.21	73.43	76.74
Opportunity cost of land	55.11	58.18	58.96	56.61	57.41	61.83	71.47	82.87	89.35	92.08
Taxes and insurance	3.85	3.87	4.03	6.16	6.65	7.38	8.28	7.20	7.73	7.90
General farm overhead	7.54	7.69	8.11	13.14	13.50	13.96	14.23	14.50	15.04	15.50
<b>Total, allocated overhead</b>	<b>110.55</b>	<b>116.85</b>	<b>121.86</b>	<b>136.34</b>	<b>140.90</b>	<b>152.13</b>	<b>166.98</b>	<b>180.03</b>	<b>191.87</b>	<b>198.80</b>
<b>Total costs listed</b>	<b>120.40</b>	<b>126.95</b>	<b>133.04</b>	<b>147.83</b>	<b>153.22</b>	<b>167.35</b>	<b>180.00</b>	<b>193.23</b>	<b>206.98</b>	<b>214.06</b>
<b>Total costs</b>	<b>204.40</b>	<b>217.76</b>	<b>234.25</b>	<b>251.89</b>	<b>269.68</b>	<b>314.30</b>	<b>326.26</b>	<b>336.60</b>	<b>363.97</b>	<b>379.47</b>
<b>Prevented planting %</b>	<b>59%</b>	<b>58%</b>	<b>57%</b>	<b>59%</b>	<b>57%</b>	<b>53%</b>	<b>55%</b>	<b>57%</b>	<b>57%</b>	<b>56%</b>

Table 69: Soybean prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.20	0.20	0.25	0.31	0.34	0.56	0.53	0.40	0.54	0.57
Chemicals	3.64	3.41	2.65	3.24	3.29	3.44	3.80	3.75	3.67	3.85
Custom operations	1.71	1.73	1.79	1.77	1.86	1.86	2.02	2.05	2.09	2.13
Fuel, lube, and electricity	5.06	5.53	7.61	6.32	6.98	9.10	6.03	7.51	9.58	9.47
Repairs	2.49	2.68	2.82	3.20	3.29	3.40	3.47	3.53	3.67	3.78
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.77	1.12	0.97	1.18	1.47	2.84	1.80	1.57	2.29	2.02
Interest on operating costs	0.11	0.17	0.40	0.57	0.59	0.69	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>13.98</b>	<b>14.82</b>	<b>16.48</b>	<b>16.57</b>	<b>17.82</b>	<b>21.89</b>	<b>17.69</b>	<b>18.85</b>	<b>21.84</b>	<b>21.83</b>
Allocated overhead:										
Hired Labor	0.27	0.28	0.28	0.59	0.61	0.63	0.64	0.65	0.66	0.69
Opportunity cost of unpaid labor	6.83	6.80	7.07	5.52	5.71	5.91	6.03	6.10	6.17	6.42
Capital recovery of machinery & equip	50.81	54.75	57.91	72.62	76.21	83.39	88.58	91.77	97.36	101.75
Opportunity cost of land	63.97	66.48	67.54	60.64	61.50	66.23	76.55	88.77	95.71	98.63
Taxes and insurance	4.44	4.46	4.55	8.01	8.64	9.59	10.77	9.37	10.05	10.27
General farm overhead	9.19	9.36	9.72	14.72	15.13	15.63	15.94	16.24	16.85	17.36
<b>Total, allocated overhead</b>	<b>135.52</b>	<b>142.13</b>	<b>147.08</b>	<b>162.10</b>	<b>167.80</b>	<b>181.38</b>	<b>198.52</b>	<b>212.90</b>	<b>226.79</b>	<b>235.12</b>
<b>Total costs listed</b>	<b>149.50</b>	<b>156.94</b>	<b>163.55</b>	<b>178.67</b>	<b>185.63</b>	<b>203.27</b>	<b>216.21</b>	<b>231.75</b>	<b>248.63</b>	<b>256.95</b>
<b>Total costs</b>	<b>248.23</b>	<b>260.36</b>	<b>277.72</b>	<b>292.10</b>	<b>311.79</b>	<b>356.60</b>	<b>362.36</b>	<b>382.29</b>	<b>411.97</b>	<b>426.48</b>
<b>Prevented planting %</b>	<b>60%</b>	<b>60%</b>	<b>59%</b>	<b>61%</b>	<b>60%</b>	<b>57%</b>	<b>60%</b>	<b>61%</b>	<b>60%</b>	<b>60%</b>

Table 70: Soybean prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.30	0.32	0.37	0.25	0.27	0.45	0.43	0.33	0.43	0.46
Chemicals	3.46	3.20	2.85	3.12	3.17	3.32	3.66	3.61	3.54	3.71
Custom operations	1.30	1.25	1.36	1.16	1.22	1.22	1.33	1.35	1.37	1.40
Fuel, lube, and electricity	1.88	2.03	3.01	2.43	2.68	3.50	2.32	2.89	3.68	3.64
Repairs	1.84	1.98	2.12	2.33	2.40	2.48	2.53	2.57	2.67	2.75
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.73	1.06	0.94	1.04	1.38	2.70	1.59	1.45	2.14	1.88
Interest on operating costs	0.09	0.14	0.32	0.44	0.46	0.53	0.04	0.03	0.01	0.02
<b>Total, operating costs</b>	<b>9.60</b>	<b>9.98</b>	<b>10.96</b>	<b>10.77</b>	<b>11.58</b>	<b>14.19</b>	<b>11.88</b>	<b>12.21</b>	<b>13.84</b>	<b>13.86</b>
Allocated overhead:										
Hired Labor	0.57	0.62	0.63	0.47	0.48	0.50	0.51	0.51	0.52	0.54
Opportunity cost of unpaid labor	3.32	3.30	3.54	3.83	3.96	4.10	4.19	4.23	4.28	4.46
Capital recovery of machinery & equip	42.52	45.80	48.79	65.82	69.07	75.58	80.29	83.18	88.24	92.22
Opportunity cost of land	46.17	47.38	49.99	46.65	47.31	50.95	58.89	68.29	73.63	75.88
Taxes and insurance	4.91	5.01	5.16	6.89	7.43	8.25	9.26	8.06	8.64	8.84
General farm overhead	9.65	9.97	10.37	10.75	11.05	11.42	11.64	11.86	12.31	12.68
<b>Total, allocated overhead</b>	<b>107.14</b>	<b>112.08</b>	<b>118.47</b>	<b>134.41</b>	<b>139.30</b>	<b>150.80</b>	<b>164.78</b>	<b>176.14</b>	<b>187.62</b>	<b>194.62</b>
<b>Total costs listed</b>	<b>116.74</b>	<b>122.06</b>	<b>129.43</b>	<b>145.17</b>	<b>150.89</b>	<b>164.99</b>	<b>176.66</b>	<b>188.35</b>	<b>201.46</b>	<b>208.48</b>
<b>Total costs</b>	<b>193.78</b>	<b>205.37</b>	<b>219.26</b>	<b>235.16</b>	<b>252.68</b>	<b>288.63</b>	<b>299.99</b>	<b>314.62</b>	<b>335.15</b>	<b>348.70</b>
<b>Prevented planting %</b>	<b>60%</b>	<b>59%</b>	<b>59%</b>	<b>62%</b>	<b>60%</b>	<b>57%</b>	<b>59%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>

Table 71: Soybean prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.29	0.32	0.41	0.51	0.57	0.94	0.88	0.68	0.89	0.96
Chemicals	4.37	4.18	3.52	3.60	3.65	3.82	4.22	4.16	4.08	4.28
Custom operations	1.26	1.27	1.32	1.21	1.27	1.27	1.39	1.40	1.43	1.46
Fuel, lube, and electricity	1.72	1.85	2.67	2.64	2.91	3.80	2.52	3.13	4.00	3.95
Repairs	1.66	1.83	1.92	2.01	2.07	2.14	2.18	2.22	2.30	2.37
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.61	0.92	0.85	0.95	1.15	2.40	1.49	1.24	1.99	1.71
Interest on operating costs	0.32	0.14	0.32	0.47	0.49	0.59	0.04	0.03	0.01	0.02
<b>Total, operating costs</b>	<b>10.24</b>	<b>10.51</b>	<b>11.01</b>	<b>11.39</b>	<b>12.12</b>	<b>14.96</b>	<b>12.71</b>	<b>12.86</b>	<b>14.70</b>	<b>14.74</b>
<b>Allocated overhead:</b>										
Hired Labor	0.38	0.39	0.40	0.36	0.37	0.38	0.39	0.39	0.40	0.42
Opportunity cost of unpaid labor	4.38	4.39	4.53	4.16	4.30	4.45	4.54	4.59	4.64	4.84
Capital recovery of machinery & equip	40.68	44.92	46.99	58.48	61.37	67.16	71.33	73.90	78.40	81.94
Opportunity cost of land	95.93	98.97	102.09	101.33	102.77	110.67	127.92	148.33	159.93	164.81
Taxes and insurance	5.89	5.95	6.15	7.94	8.57	9.51	10.68	9.29	9.96	10.18
General farm overhead	12.10	12.35	12.97	13.50	13.87	14.34	14.62	14.90	15.46	15.92
<b>Total, allocated overhead</b>	<b>159.36</b>	<b>166.97</b>	<b>173.13</b>	<b>185.76</b>	<b>191.25</b>	<b>206.51</b>	<b>229.48</b>	<b>251.41</b>	<b>268.79</b>	<b>278.10</b>
<b>Total costs listed</b>	<b>169.60</b>	<b>177.49</b>	<b>184.15</b>	<b>197.15</b>	<b>203.37</b>	<b>221.47</b>	<b>242.20</b>	<b>264.27</b>	<b>283.49</b>	<b>292.85</b>
<b>Total costs</b>	<b>251.04</b>	<b>263.51</b>	<b>276.88</b>	<b>292.08</b>	<b>309.49</b>	<b>353.56</b>	<b>373.50</b>	<b>395.03</b>	<b>425.09</b>	<b>441.28</b>
<b>Prevented planting %</b>	<b>68%</b>	<b>67%</b>	<b>67%</b>	<b>67%</b>	<b>66%</b>	<b>63%</b>	<b>65%</b>	<b>67%</b>	<b>67%</b>	<b>66%</b>

Table 72: Soybean prevented planting cost per acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.51	0.56	0.70	0.78	0.88	1.44	1.36	1.04	1.38	1.48
Chemicals	4.30	4.25	3.48	3.48	3.54	3.70	4.08	4.03	3.95	4.14
Custom operations	2.16	2.15	2.26	1.88	1.97	1.97	2.15	2.18	2.22	2.26
Fuel, lube, and electricity	2.47	2.58	3.62	2.99	3.30	4.30	2.85	3.55	4.53	4.48
Repairs	2.12	2.25	2.44	2.00	2.06	2.12	2.17	2.21	2.29	2.36
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.63	0.96	0.93	1.04	1.29	2.61	1.61	1.36	2.04	1.76
Interest on operating costs	0.11	0.17	0.39	0.54	0.57	0.70	0.05	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>12.29</b>	<b>12.91</b>	<b>13.81</b>	<b>12.72</b>	<b>13.60</b>	<b>16.85</b>	<b>14.26</b>	<b>14.39</b>	<b>16.41</b>	<b>16.49</b>
<b>Allocated overhead:</b>										
Hired Labor	1.01	1.02	1.02	0.36	0.38	0.39	0.40	0.40	0.41	0.42
Opportunity cost of unpaid labor	6.31	6.28	6.45	4.85	5.02	5.19	5.30	5.36	5.41	5.64
Capital recovery of machinery & equip	48.44	51.46	55.80	52.98	55.60	60.84	64.62	66.95	71.03	74.23
Opportunity cost of land	69.41	71.37	71.96	70.99	72.00	77.54	89.62	103.92	112.04	115.47
Taxes and insurance	7.43	7.45	7.75	9.99	10.78	11.97	13.43	11.68	12.53	12.81
General farm overhead	14.10	14.31	15.06	17.36	17.84	18.44	18.80	19.16	19.87	20.47
<b>Total, allocated overhead</b>	<b>146.70</b>	<b>151.89</b>	<b>158.05</b>	<b>156.53</b>	<b>161.61</b>	<b>174.36</b>	<b>192.17</b>	<b>207.47</b>	<b>221.29</b>	<b>229.04</b>
<b>Total costs listed</b>	<b>159.00</b>	<b>164.80</b>	<b>171.86</b>	<b>169.25</b>	<b>175.22</b>	<b>191.22</b>	<b>206.43</b>	<b>221.86</b>	<b>237.70</b>	<b>245.54</b>
<b>Total costs</b>	<b>257.95</b>	<b>270.13</b>	<b>285.86</b>	<b>278.95</b>	<b>298.09</b>	<b>346.19</b>	<b>359.41</b>	<b>372.32</b>	<b>401.61</b>	<b>417.69</b>
<b>Prevented planting %</b>	<b>62%</b>	<b>61%</b>	<b>60%</b>	<b>61%</b>	<b>59%</b>	<b>55%</b>	<b>57%</b>	<b>60%</b>	<b>59%</b>	<b>59%</b>

**Table 73: Soybean prevented planting cost per acre: Mississippi Portal**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.30	0.33	0.41	0.52	0.58	0.96	0.90	0.69	0.91	0.98
Chemicals	4.53	4.37	3.79	4.64	4.72	4.94	5.45	5.37	5.27	5.52
Custom operations	1.87	1.89	1.95	2.10	2.21	2.21	2.41	2.44	2.48	2.53
Fuel, lube, and electricity	2.82	2.94	4.43	6.40	7.07	9.21	6.10	7.60	9.69	9.58
Repairs	2.95	3.10	3.31	3.40	3.49	3.61	3.68	3.75	3.89	4.01
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.35	0.46	0.42	0.47	0.57	1.04	0.85	0.87	1.08	1.00
Interest on operating costs	0.11	0.17	0.41	0.64	0.67	0.80	0.05	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>12.94</b>	<b>13.25</b>	<b>14.71</b>	<b>18.18</b>	<b>19.30</b>	<b>22.75</b>	<b>19.44</b>	<b>20.76</b>	<b>23.35</b>	<b>23.65</b>
<b>Allocated overhead:</b>										
Hired Labor	2.02	2.15	2.15	2.07	2.14	2.22	2.27	2.29	2.31	2.41
Opportunity cost of unpaid labor	4.71	4.71	4.81	5.26	5.44	5.63	5.75	5.81	5.87	6.12
Capital recovery of machinery & equip	59.49	62.58	67.19	68.95	72.36	79.18	84.10	87.13	92.44	96.61
Opportunity cost of land	58.85	62.73	62.60	64.34	65.25	70.27	81.22	94.18	101.55	104.65
Taxes and insurance	6.64	6.72	6.98	7.50	8.09	8.98	10.08	8.77	9.41	9.62
General farm overhead	12.21	12.46	13.15	9.71	9.98	10.31	10.51	10.71	11.12	11.45
<b>Total, allocated overhead</b>	<b>143.92</b>	<b>151.35</b>	<b>156.87</b>	<b>157.83</b>	<b>163.27</b>	<b>176.58</b>	<b>193.93</b>	<b>208.89</b>	<b>222.71</b>	<b>230.86</b>
<b>Total costs listed</b>	<b>156.85</b>	<b>164.60</b>	<b>171.58</b>	<b>176.01</b>	<b>182.57</b>	<b>199.34</b>	<b>213.37</b>	<b>229.65</b>	<b>246.05</b>	<b>254.50</b>
<b>Total costs</b>	<b>253.50</b>	<b>266.81</b>	<b>283.67</b>	<b>299.58</b>	<b>318.68</b>	<b>361.11</b>	<b>373.85</b>	<b>394.33</b>	<b>422.26</b>	<b>439.50</b>
<b>Prevented planting %</b>	<b>62%</b>	<b>62%</b>	<b>60%</b>	<b>59%</b>	<b>57%</b>	<b>55%</b>	<b>57%</b>	<b>58%</b>	<b>58%</b>	<b>58%</b>

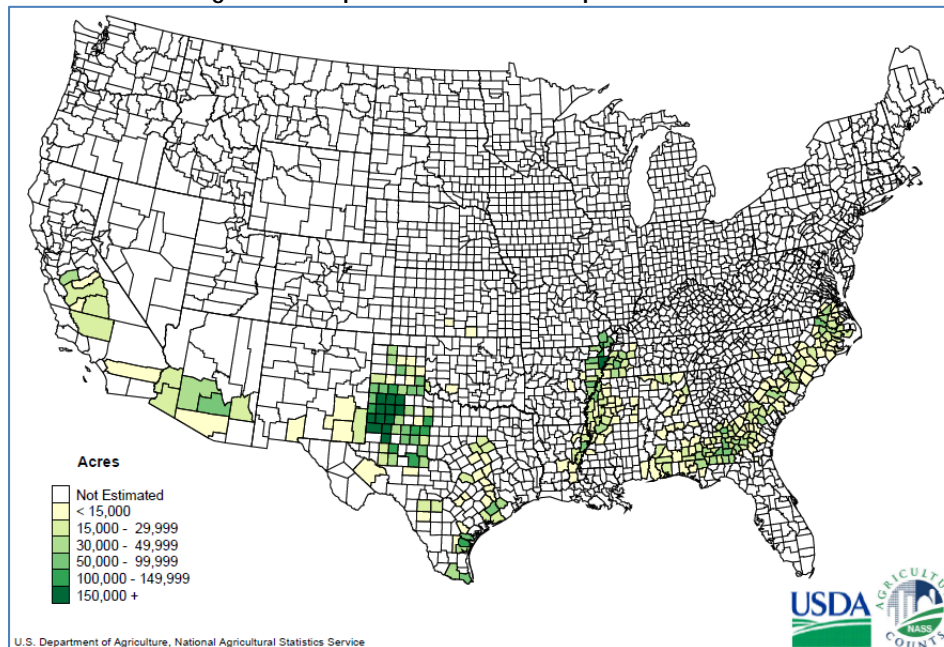


## 4.4. Cotton

### Overview

Upland cotton accounts for over 95% of the cotton planted in the United States. It is grown in 17 states on 10-15 million acres, making it the fourth ranking crop in terms of area, after corn, soybeans and wheat. Major concentration areas include the Texas High and Rolling Plains, the Mississippi, Arkansas, and Louisiana Delta, Southern Georgia, and the Carolinas. About 40% of upland cotton acreage is irrigated. Only 20-25% of cotton production is used domestically, with the balance being exported.

Figure 22: Upland cotton acres planted in 2012



### Sources of production cost information

We have used the ERS estimates of production costs and returns per acre for cotton. The latest available survey information is for the 2003 and 2007 crops. Since over 95% of cotton grown in the US is upland cotton, these figures should be representative of upland production costs. Estimates are available for the following regions: Heartland, Prairie Gateway, Southern Seaboard, Fruitful Rim, Mississippi Delta, and Eastern Uplands. However, ERS discontinued the estimates for the Eastern Uplands after the 2006 crop due to the decline in that region's production. We have used price indexes to project the 2006 costs forward through 2012, and the results look reasonable in relation to the data for the other regions.

State extension services in several of the cotton producing states also prepare cost budgets. The Texas Tech University Cotton Economics Research Institute has created an online Cotton Production Cost Calculator where producers can determine the true costs of production for enterprises within a farming operation. Texas AgriLife Extension has two dozen different cotton crop budgets that vary by practice and location. Georgia also has an online calculator.

### Production practices

Cotton plants cannot withstand frost. They require a lot of sunshine, warm conditions, and four to five months of frost-free temperatures to mature and produce cotton. Therefore, planting begins as soon as

early March in South Texas and as late as mid-May further north in Kansas. Planting should be done when soil temperatures are 65 degrees F by 10am; if the conditions are too cold, planting will be delayed.

In the spring, farmers prepare for planting in several ways. Producers who plant using no-till or conservation tillage methods use special equipment designed to plant the seed through the litter from the previous crop that covers the soil surface. Producers who use conventional tillage practices plow the land into rows, forming firm seed beds for planting. Production methods also vary by area within a state, type of irrigation, row width, solid versus skip-row, first or second crop, and biotechnology seed trait.

Regional differences are also important. For example, North Carolina extension specialists recommend that producers use in-furrow fungicides in addition to treated seeds in fields where there is a history of seedling disease problems or when planting early, or when cool, wet weather is expected.

**Prevented planting experience**

Cotton has very low prevented planting claims, just 2.2% of total indemnities over the last 20 years, because farmers are usually able to plant and then collect a full indemnity if there is a problem, rather than the 50% PP indemnity. Since insurance coverage for cottonseed is provided through an endorsement to the cotton policies, the cotton indemnities include payments for both cotton fiber and cottonseed.

As in the case of other crops, the most common cause of a prevented planting situation is too much moisture. During 2003-2012, 69 percent of PP indemnities paid were for the following causes of loss: cold wet weather, excess moisture/precip/rain, or flood. Failure of the irrigation supply in California and Arizona accounted for 24 percent of indemnities. Drought accounted for less than 6 percent, principally in Georgia and Texas. The leading states for upland cotton PP claims are shown in Table 74.

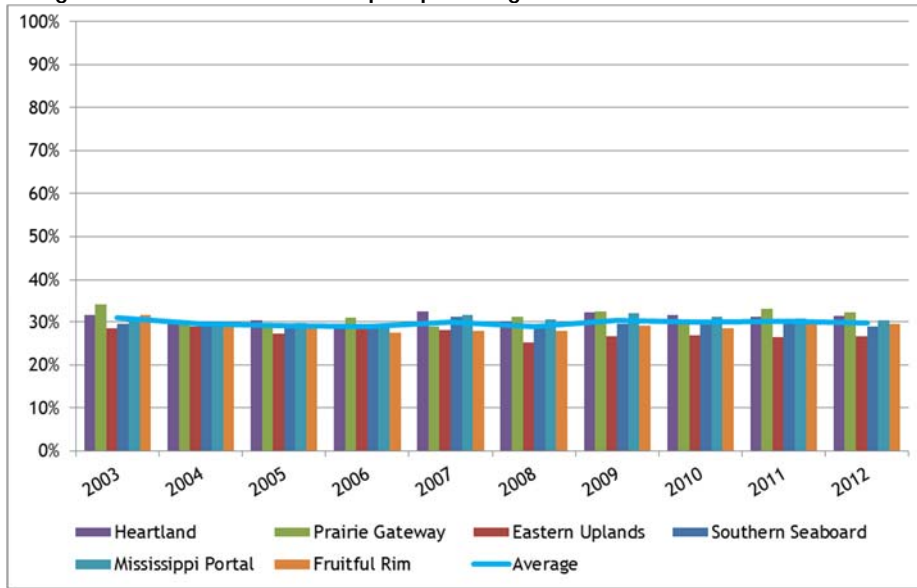
**Table 74: Prevented planting indemnities for upland cotton, 2003-2012**

	\$million
Mississippi	18.7
California	14.2
New Mexico	10.7
Arkansas	8.5
Texas	6.2
North Carolina	4.2
South Carolina	3.7
Other	10.4
Total	76.6

**Analysis**

The share of costs incurred by cotton growers in a prevented planting situation has been stable over the last decade and varies little among regions. Over the ten years the average for the five regions has stayed between 29% and 31% with no upward or downward trend. The average for the period is 30%. The annual calculations for the regions are all in a range of 25-34%. These estimates are well below the 50% prevented planting factor in the current insurance plan. If one includes the 5-7% of costs allocated to cottonseed, as discussed below in Section 4.6, a total of 34-37% of costs are incurred in a PP situation.

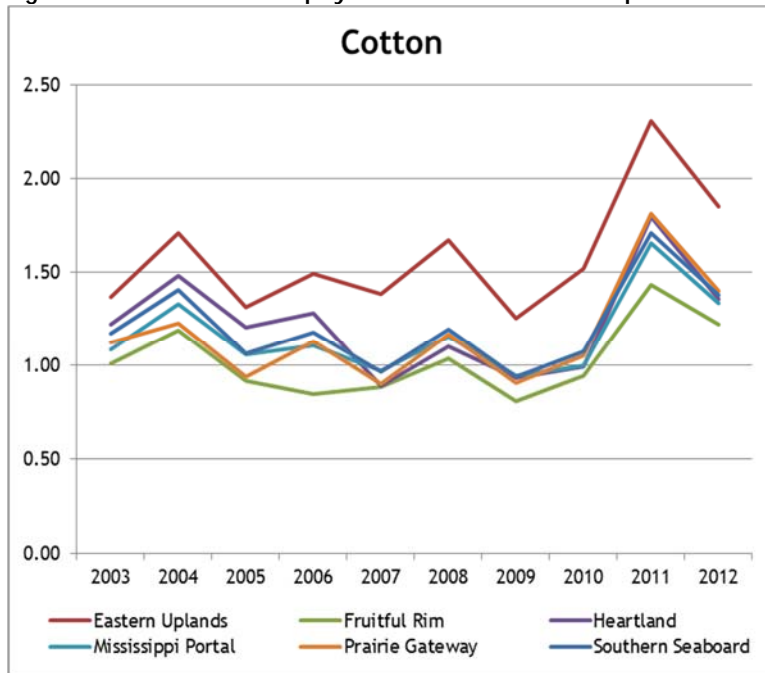
Figure 23: Share of cotton pre-planting costs allocated to cotton fiber



Comparison of estimated PP cost to RMA payments

With the exception of the Eastern Upland region, the ratio of RMA’s incurred base PP payment to estimated PP costs has been close to 1.00, but it rose to about 1.50 for 2011 and 2012. Since 51% of PP indemnities are associated with the additional 10% coverage, all of these ratios would be higher by about 10% if that were taken into account ( $10\%/50\% \times 0.51 = 0.102$ ). For example, the Southern Seaboard ratio of 1.38 in 2012 would be 1.52 if one assumes the 10% buy-up indemnity share is the same in all regions.

Figure 24: Ratio of RMA payment to PP costs for upland cotton



## Recommendation

Reducing the PP payment rate so that a PP indemnity is 30-40% lower would put it in line with estimated PP costs, as long as farm prices for cotton remain 70-80 cents per pound or higher. We recommend reducing the PP payment rate for cotton fiber from 50% of the guarantee to 30%, which cuts the indemnity by 40%. We recommend reducing it from 50% to 35% for policies with the cottonseed endorsement elected, cutting the indemnity by 30%.

Table 75: Upland cotton production costs per planted acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	38.84	48.10	55.05	63.42	64.65	72.10	82.56	90.32	108.38	111.24
Fertilizer	50.63	53.77	62.01	70.64	93.68	154.58	145.16	112.51	147.84	158.54
Chemicals	65.37	65.37	65.37	68.07	79.15	82.73	91.42	88.13	88.13	92.41
Custom operations	24.94	25.14	26.16	27.35	21.09	21.09	22.53	23.26	23.69	24.27
Fuel, lube, and electricity	12.25	13.94	19.27	20.68	39.27	51.54	34.74	42.46	53.07	55.35
Repairs	19.77	20.21	21.10	21.85	32.21	33.29	33.94	34.80	35.88	36.97
Ginning	108.30	100.06	114.64	104.61	100.25	105.09	120.45	113.56	101.04	144.71
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	13.24	15.56	12.50	14.68	14.29	19.51	15.49	18.25	31.95	24.59
Interest on operating costs	1.12	1.79	4.23	6.43	7.31	3.85	0.77	0.51	0.28	0.42
<b>Total, operating costs</b>	<b>334.46</b>	<b>343.94</b>	<b>380.33</b>	<b>397.73</b>	<b>451.90</b>	<b>543.78</b>	<b>547.06</b>	<b>523.80</b>	<b>590.26</b>	<b>648.50</b>
Allocated overhead:										
Hired Labor	12.57	12.89	13.29	13.77	12.74	13.17	13.46	13.60	13.75	14.32
Opportunity cost of unpaid labor	31.78	32.59	33.61	34.83	19.59	20.25	20.7	20.92	21.14	22.02
Capital recovery of machinery & equip.	57.88	62.10	66.32	69.77	111.28	121.77	129.34	134.00	142.16	149.15
Opportunity cost of land (rental rate)	46.5	46.5	48.44	47.65	62.21	71.65	82.48	84.93	91.57	94.36
Taxes and insurance	9.29	9.44	9.52	10.01	7.63	7.97	7.78	8.05	8.47	8.85
General farm overhead	23.97	24.51	25.59	26.50	17.31	17.89	18.24	18.70	19.28	19.87
<b>Total, allocated overhead</b>	<b>181.99</b>	<b>188.03</b>	<b>196.77</b>	<b>202.53</b>	<b>230.76</b>	<b>252.70</b>	<b>272.00</b>	<b>280.20</b>	<b>296.37</b>	<b>308.57</b>
<b>Total costs listed</b>	<b>516.45</b>	<b>531.97</b>	<b>577.10</b>	<b>600.26</b>	<b>682.66</b>	<b>796.48</b>	<b>819.06</b>	<b>804.00</b>	<b>886.63</b>	<b>957.07</b>

Table 76: Upland cotton production costs per planted acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	46.52	57.62	65.94	75.97	85.15	108.11	124.81	129.40	138.58	149.85
Fertilizer	48.97	52.01	59.98	68.33	83.86	152.19	106.77	97.84	127.34	129.28
Chemicals	62.93	62.93	62.93	65.53	66.04	71.16	76.28	73.72	74.23	78.33
Custom operations	10.32	10.40	10.82	11.31	11.49	13.24	13.33	13.33	13.61	14.44
Fuel, lube, and electricity	9.15	10.21	14.65	14.68	16.22	21.13	14.07	17.44	22.23	22.11
Repairs	16.17	16.53	17.26	17.88	18.48	18.72	19.08	19.44	20.16	20.88
Ginning	90.85	76.93	100.37	64.79	68.05	68.05	72.71	75.04	76.44	77.84
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	9.93	11.48	9.85	11.75	12.51	19.35	12.96	14.81	25.30	18.12
Interest on operating costs	1.03	1.66	3.94	6.00	6.41	6.72	6.18	6.00	6.54	6.63
<b>Total, operating costs</b>	<b>295.87</b>	<b>299.77</b>	<b>345.74</b>	<b>336.24</b>	<b>368.21</b>	<b>478.68</b>	<b>446.19</b>	<b>447.03</b>	<b>504.45</b>	<b>517.49</b>
Allocated overhead:										
Hired Labor	10.79	11.06	11.41	11.82	12.23	12.65	13.00	13.06	13.27	13.76
Opportunity cost of unpaid labor	23.27	23.86	24.61	25.5	26.39	27.29	28.04	28.18	28.63	29.68
Capital recovery of machinery & equip.	47.53	50.99	54.45	57.28	60.11	65.78	69.87	72.39	76.79	80.88
Opportunity cost of land (rental rate)	49.11	49.11	51.16	50.33	53.97	62.15	71.55	73.68	79.44	81.86
Taxes and insurance	6.61	6.71	6.76	7.11	7.61	8.85	8.62	8.90	9.77	10.14
General farm overhead	10.74	10.98	11.46	11.87	12.71	14.78	14.40	14.86	16.31	16.92
<b>Total, allocated overhead</b>	<b>148.05</b>	<b>152.71</b>	<b>159.85</b>	<b>163.91</b>	<b>173.04</b>	<b>191.50</b>	<b>205.47</b>	<b>211.07</b>	<b>224.21</b>	<b>233.24</b>
<b>Total costs listed</b>	<b>443.92</b>	<b>452.48</b>	<b>505.59</b>	<b>500.15</b>	<b>541.25</b>	<b>670.18</b>	<b>651.66</b>	<b>658.10</b>	<b>728.66</b>	<b>750.73</b>

**Table 77: Upland cotton production costs per planted acre: Prairie Gateway**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	29.06	35.99	41.19	47.46	44.57	49.70	56.91	62.27	74.72	76.69
Fertilizer	12.74	13.53	15.60	17.77	34.64	57.16	53.67	41.60	54.67	58.62
Chemicals	28.15	28.15	28.15	29.31	36.95	38.62	42.68	41.14	41.14	43.14
Custom operations	10.41	10.49	10.92	11.42	12.83	12.83	13.71	14.15	14.41	14.76
Fuel, lube, and electricity	24.49	33.80	46.85	47.07	51.59	61.98	41.39	53.51	62.79	63.78
Repairs	18.65	19.07	19.91	20.62	29.97	30.98	31.58	32.38	33.39	34.40
Ginning	42.73	75.63	87.45	57.34	136.38	65.44	72.20	113.70	38.21	64.13
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	12.19	14.19	10.85	14.45	13.79	20.05	16.05	18.36	33.85	29.48
Interest on operating costs	0.65	1.11	2.76	4.11	4.66	2.34	0.45	0.36	0.16	0.24
<b>Total, operating costs</b>	<b>179.07</b>	<b>231.96</b>	<b>263.68</b>	<b>249.55</b>	<b>365.38</b>	<b>339.10</b>	<b>328.64</b>	<b>377.47</b>	<b>353.34</b>	<b>385.24</b>
Allocated overhead:										
Hired Labor	12.08	12.39	12.78	13.24	11.30	11.68	11.94	12.07	12.19	12.70
Opportunity cost of unpaid labor	36.44	37.37	38.54	39.94	27.64	28.58	29.2	29.51	29.83	31.08
Capital recovery of machinery & equip.	56.10	60.19	64.28	67.62	100.82	110.32	117.18	121.41	128.80	135.13
Opportunity cost of land (rental rate)	27.17	27.17	28.3	27.84	30.55	35.18	40.50	41.71	44.97	46.34
Taxes and insurance	5.59	5.68	5.73	6.03	6.18	6.46	6.30	6.52	6.86	7.17
General farm overhead	10.39	10.62	11.09	11.49	11.50	11.89	12.12	12.43	12.81	13.20
<b>Total, allocated overhead</b>	<b>147.77</b>	<b>153.42</b>	<b>160.72</b>	<b>166.16</b>	<b>187.99</b>	<b>204.11</b>	<b>217.24</b>	<b>223.65</b>	<b>235.46</b>	<b>245.62</b>
<b>Total costs listed</b>	<b>326.84</b>	<b>385.38</b>	<b>424.40</b>	<b>415.71</b>	<b>553.37</b>	<b>543.21</b>	<b>545.88</b>	<b>601.12</b>	<b>588.80</b>	<b>630.86</b>

**Table 78: Upland cotton production costs per planted acre: Heartland**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	46.59	57.70	66.03	76.07	95.09	106.04	121.43	132.85	159.42	163.61
Fertilizer	39.85	42.32	48.81	55.61	75.44	124.49	116.89	90.60	119.06	127.67
Chemicals	77.15	77.15	77.15	80.34	78.17	81.70	90.29	87.03	87.03	91.27
Custom operations	9.77	9.85	10.25	10.72	13.02	13.02	13.91	14.36	14.63	14.98
Fuel, lube, and electricity	15.87	19.40	25.39	28.27	48.16	63.34	40.89	52.03	65.24	64.77
Repairs	22.39	22.89	23.90	24.75	41.14	42.52	43.35	44.45	45.83	47.21
Ginning	93.49	114.05	104.89	111.55	145.81	154.86	132.97	164.34	149.58	157.43
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.44	1.70	1.54	2.21	1.91	2.69	2.54	4.22	10.15	6.35
Interest on operating costs	1.12	1.81	4.28	6.52	7.78	4.34	0.81	0.59	0.32	0.45
<b>Total, operating costs</b>	<b>307.67</b>	<b>346.87</b>	<b>362.24</b>	<b>396.04</b>	<b>506.52</b>	<b>593.00</b>	<b>563.08</b>	<b>590.47</b>	<b>651.26</b>	<b>673.74</b>
<b>Allocated overhead:</b>										
Hired Labor	15.06	15.44	15.92	16.50	16.60	17.16	17.54	17.73	17.91	18.66
Opportunity cost of unpaid labor	20.49	21.01	21.67	22.46	25.97	26.85	27.44	27.73	28.02	29.2
Capital recovery of machinery & equip.	59.90	64.26	68.62	72.19	152.19	166.53	176.89	183.27	194.42	203.98
Opportunity cost of land (rental rate)	56.01	56.01	58.34	57.39	76.82	88.47	101.85	104.87	113.07	116.52
Taxes and insurance	8.51	8.64	8.71	9.16	6.69	6.99	6.82	7.06	7.43	7.76
General farm overhead	19.21	19.64	20.51	21.24	13.10	13.54	13.80	14.16	14.59	15.03
<b>Total, allocated overhead</b>	<b>179.18</b>	<b>185.00</b>	<b>193.77</b>	<b>198.94</b>	<b>291.37</b>	<b>319.54</b>	<b>344.34</b>	<b>354.82</b>	<b>375.44</b>	<b>391.15</b>
<b>Total costs listed</b>	<b>486.85</b>	<b>531.87</b>	<b>556.01</b>	<b>594.98</b>	<b>797.89</b>	<b>912.54</b>	<b>907.42</b>	<b>945.29</b>	<b>1,026.70</b>	<b>1,064.89</b>



Table 79: Upland cotton production costs per planted acre: Mississippi Portal

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	52.25	64.71	74.06	85.32	81.10	90.44	103.56	113.30	135.96	139.54
Fertilizer	46.67	49.56	57.16	65.12	80.08	132.14	124.08	96.18	126.38	135.52
Chemicals	104.42	104.42	104.42	108.73	91.48	95.62	105.66	101.85	101.85	106.81
Custom operations	45.03	45.40	47.25	49.40	26.79	26.79	28.62	29.54	30.09	30.83
Fuel, lube, and electricity	18.08	21.22	27.85	31.10	36.75	47.05	30.79	39.36	49.63	50.03
Repairs	22.99	23.50	24.54	25.42	37.55	38.81	39.57	40.57	41.83	43.09
Ginning	109.29	114.67	106.72	114.80	143.03	126.30	117.38	151.95	143.55	167.69
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.86	5.91	4.35	5.07	3.31	4.27	5.14	7.56	14.47	10.28
Interest on operating costs	1.53	2.44	5.70	8.63	7.84	4.12	0.80	0.57	0.31	0.45
<b>Total, operating costs</b>	<b>406.12</b>	<b>431.83</b>	<b>452.05</b>	<b>493.59</b>	<b>507.93</b>	<b>565.54</b>	<b>555.60</b>	<b>580.88</b>	<b>644.07</b>	<b>684.24</b>
Allocated overhead:										
Hired Labor	16.80	17.23	17.77	18.42	15.74	16.27	16.63	16.81	16.98	17.70
Opportunity cost of unpaid labor	24.23	24.85	25.63	26.56	19.32	19.97	20.41	20.63	20.85	21.72
Capital recovery of machinery & equip.	66.13	70.95	75.77	79.71	128.63	140.75	149.51	154.89	164.32	172.40
Opportunity cost of land (rental rate)	76.5	76.5	79.69	78.39	78.29	90.17	103.80	106.88	115.24	118.75
Taxes and insurance	8.89	9.03	9.10	9.57	9.31	9.73	9.50	9.82	10.33	10.80
General farm overhead	16.27	16.63	17.36	17.98	18.22	18.83	19.20	19.69	20.30	20.91
<b>Total, allocated overhead</b>	<b>208.82</b>	<b>215.19</b>	<b>225.32</b>	<b>230.63</b>	<b>269.51</b>	<b>295.72</b>	<b>319.05</b>	<b>328.72</b>	<b>348.02</b>	<b>362.28</b>
<b>Total costs listed</b>	<b>614.94</b>	<b>647.02</b>	<b>677.37</b>	<b>724.22</b>	<b>777.44</b>	<b>861.26</b>	<b>874.65</b>	<b>909.60</b>	<b>992.09</b>	<b>1,046.52</b>

Table 80: Upland cotton production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	27.28	33.79	38.67	44.55	59.64	66.51	76.16	83.32	99.98	102.62
Fertilizer	39.93	42.41	48.91	55.72	78.41	129.39	121.50	94.17	123.74	132.69
Chemicals	88.27	88.27	88.27	91.92	85.69	89.56	98.98	95.41	95.41	100.05
Custom operations	52.59	53.02	55.18	57.69	57.58	57.58	61.52	63.50	64.68	66.26
Fuel, lube, and electricity	51.85	65.67	84.34	94.99	91.70	113.05	75.13	95.28	117.65	118.52
Repairs	24.62	25.17	26.28	27.22	34.71	35.87	36.57	37.51	38.67	39.83
Ginning	129.10	177.27	173.14	217.09	215.92	171.96	180.20	219.79	137.56	169.69
Purchased irrigation water	22.45	22.63	23.55	24.62	33.59	33.59	35.89	37.04	37.73	38.65
Crop Insurance	10.77	13.06	10.48	13.59	11.87	16.83	15.37	16.59	25.73	23.63
Interest on operating costs	1.62	2.61	6.21	9.38	9.78	5.16	0.99	0.73	0.36	0.51
<b>Total, operating costs</b>	<b>448.48</b>	<b>523.90</b>	<b>555.03</b>	<b>636.77</b>	<b>678.89</b>	<b>719.50</b>	<b>702.31</b>	<b>743.34</b>	<b>741.51</b>	<b>792.45</b>
Allocated overhead:										
Hired Labor	31.19	31.98	32.98	34.18	25.96	26.84	27.43	27.72	28.01	29.19
Opportunity cost of unpaid labor	48.64	49.88	51.44	53.31	31.06	32.11	32.81	33.17	33.52	34.92
Capital recovery of machinery & equip.	78.50	84.22	89.94	94.62	128.35	140.45	149.18	154.56	163.97	172.03
Opportunity cost of land (rental rate)	79.47	79.47	82.78	81.43	86.98	100.17	115.32	118.74	128.03	131.94
Taxes and insurance	15.3	15.54	15.66	16.47	10.00	10.45	10.20	10.55	11.10	11.60
General farm overhead	31.23	31.93	33.34	34.53	25.66	26.52	27.04	27.73	28.59	29.45
<b>Total, allocated overhead</b>	<b>284.33</b>	<b>293.02</b>	<b>306.14</b>	<b>314.54</b>	<b>308.01</b>	<b>336.54</b>	<b>361.98</b>	<b>372.47</b>	<b>393.22</b>	<b>409.13</b>
<b>Total costs listed</b>	<b>732.81</b>	<b>816.92</b>	<b>861.17</b>	<b>951.31</b>	<b>986.90</b>	<b>1,056.04</b>	<b>1,064.29</b>	<b>1,115.81</b>	<b>1,134.73</b>	<b>1,201.58</b>

Table 81: Upland cotton - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chemicals	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Custom operations	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Fuel, lube, and electricity	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Ginning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Interest on operating costs	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Total, operating costs										
Allocated overhead:										
Hired Labor	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Opportunity cost of unpaid labor	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 82: Upland cotton prevented planting cost per acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.46	6.86	7.91	9.01	11.94	18.78	17.64	13.67	17.96	19.26
Chemicals	8.33	8.33	8.33	8.68	10.09	10.05	11.11	10.71	10.71	11.23
Custom operations	2.97	2.99	3.11	3.25	2.51	2.39	2.55	2.64	2.69	2.75
Fuel, lube, and electricity	1.56	1.78	2.46	2.64	5.01	6.26	4.22	5.16	6.45	6.73
Repairs	2.52	2.58	2.69	2.79	4.11	4.04	4.12	4.23	4.36	4.49
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.23	0.26	0.21	0.25	0.24	0.32	0.25	0.30	0.52	0.40
Interest on operating costs	0.12	0.20	0.47	0.71	0.81	0.41	0.08	0.05	0.03	0.04
<b>Total, operating costs</b>	<b>22.19</b>	<b>23.00</b>	<b>25.18</b>	<b>27.32</b>	<b>34.71</b>	<b>42.25</b>	<b>39.98</b>	<b>36.75</b>	<b>42.71</b>	<b>44.90</b>
Allocated overhead:										
Hired Labor	3.85	3.94	4.07	4.21	3.90	3.84	3.92	3.97	4.01	4.18
Opportunity cost of unpaid labor	9.45	9.70	10.00	10.36	5.83	5.74	5.87	5.93	5.99	6.24
Capital recovery of machinery & equip.	49.20	52.79	56.37	59.30	94.59	98.63	104.77	108.54	115.15	120.81
Opportunity cost of land (rental rate)	39.53	39.53	41.17	40.50	52.88	58.04	66.81	68.79	74.17	76.43
Taxes and insurance	7.90	8.02	8.09	8.51	6.49	6.46	6.30	6.52	6.86	7.17
General farm overhead	20.37	20.83	21.75	22.53	14.71	14.49	14.77	15.15	15.62	16.09
<b>Total, allocated overhead</b>	<b>130.29</b>	<b>134.81</b>	<b>141.46</b>	<b>145.42</b>	<b>178.39</b>	<b>187.20</b>	<b>202.44</b>	<b>208.90</b>	<b>221.80</b>	<b>230.92</b>
<b>Total costs listed</b>	<b>152.48</b>	<b>157.81</b>	<b>166.64</b>	<b>172.74</b>	<b>213.10</b>	<b>229.45</b>	<b>242.42</b>	<b>245.65</b>	<b>264.51</b>	<b>275.83</b>
<b>Total costs</b>	<b>516.45</b>	<b>531.97</b>	<b>577.10</b>	<b>600.26</b>	<b>682.66</b>	<b>796.48</b>	<b>819.06</b>	<b>804.00</b>	<b>886.63</b>	<b>957.07</b>
<b>Prevented planting %</b>	<b>30%</b>	<b>30%</b>	<b>29%</b>	<b>29%</b>	<b>31%</b>	<b>29%</b>	<b>30%</b>	<b>31%</b>	<b>30%</b>	<b>29%</b>

Table 83: Upland cotton prevented planting cost per acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.24	6.63	7.65	8.71	10.69	18.49	12.97	11.89	15.47	15.71
Chemicals	8.02	8.02	8.02	8.36	8.42	8.65	9.27	8.96	9.02	9.52
Custom operations	1.23	1.24	1.29	1.35	1.37	1.50	1.51	1.51	1.54	1.64
Fuel, lube, and electricity	1.17	1.30	1.87	1.87	2.07	2.57	1.71	2.12	2.70	2.69
Repairs	2.06	2.11	2.20	2.28	2.36	2.27	2.32	2.36	2.45	2.54
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.17	0.20	0.17	0.20	0.21	0.31	0.21	0.24	0.41	0.29
Interest on operating costs	0.11	0.18	0.44	0.66	0.71	0.71	0.65	0.63	0.69	0.70
<b>Total, operating costs</b>	<b>19.01</b>	<b>19.68</b>	<b>21.63</b>	<b>23.43</b>	<b>25.82</b>	<b>34.50</b>	<b>28.64</b>	<b>27.71</b>	<b>32.28</b>	<b>33.08</b>
Allocated overhead:										
Hired Labor	3.30	3.38	3.49	3.62	3.74	3.69	3.79	3.81	3.87	4.01
Opportunity cost of unpaid labor	6.92	7.10	7.32	7.59	7.85	7.74	7.95	7.99	8.12	8.41
Capital recovery of machinery & equip.	40.40	43.34	46.28	48.69	51.10	53.28	56.59	58.63	62.20	65.52
Opportunity cost of land (rental rate)	41.74	41.74	43.49	42.78	45.87	50.35	57.96	59.68	64.34	66.31
Taxes and insurance	5.62	5.70	5.75	6.04	6.47	7.17	6.99	7.21	7.91	8.21
General farm overhead	9.13	9.33	9.74	10.09	10.81	11.97	11.66	12.03	13.21	13.71
<b>Total, allocated overhead</b>	<b>107.12</b>	<b>110.60</b>	<b>116.07</b>	<b>118.80</b>	<b>125.84</b>	<b>134.19</b>	<b>144.94</b>	<b>149.35</b>	<b>159.66</b>	<b>166.17</b>
<b>Total costs listed</b>	<b>126.12</b>	<b>130.28</b>	<b>137.70</b>	<b>142.23</b>	<b>151.67</b>	<b>168.69</b>	<b>173.58</b>	<b>177.06</b>	<b>191.94</b>	<b>199.25</b>
<b>Total costs</b>	<b>443.92</b>	<b>452.48</b>	<b>505.59</b>	<b>500.15</b>	<b>541.25</b>	<b>670.18</b>	<b>651.66</b>	<b>658.10</b>	<b>728.66</b>	<b>750.73</b>
<b>Prevented planting %</b>	<b>28%</b>	<b>29%</b>	<b>27%</b>	<b>28%</b>	<b>28%</b>	<b>25%</b>	<b>27%</b>	<b>27%</b>	<b>26%</b>	<b>27%</b>

Table 84: Upland cotton prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	1.62	1.73	1.99	2.27	4.42	6.94	6.52	5.05	6.64	7.12
Chemicals	3.59	3.59	3.59	3.74	4.71	4.69	5.19	5.00	5.00	5.24
Custom operations	1.24	1.25	1.30	1.36	1.53	1.45	1.55	1.60	1.63	1.67
Fuel, lube, and electricity	3.12	4.31	5.97	6.00	6.58	7.53	5.03	6.50	7.63	7.75
Repairs	2.38	2.43	2.54	2.63	3.82	3.76	3.84	3.93	4.06	4.18
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.21	0.24	0.18	0.25	0.23	0.32	0.26	0.30	0.55	0.48
Interest on operating costs	0.07	0.12	0.30	0.45	0.51	0.25	0.05	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>12.23</b>	<b>13.67</b>	<b>15.88</b>	<b>16.69</b>	<b>21.80</b>	<b>24.96</b>	<b>22.43</b>	<b>22.43</b>	<b>25.53</b>	<b>26.47</b>
Allocated overhead:										
Hired Labor	3.70	3.79	3.91	4.05	3.46	3.41	3.48	3.52	3.55	3.70
Opportunity cost of unpaid labor	10.84	11.12	11.47	11.88	8.22	8.10	8.28	8.37	8.46	8.81
Capital recovery of machinery & equip.	47.69	51.16	54.64	57.48	85.70	89.36	94.92	98.34	104.33	109.46
Opportunity cost of land (rental rate)	23.09	23.09	24.06	23.66	25.97	28.50	32.81	33.79	36.43	37.54
Taxes and insurance	4.75	4.83	4.87	5.13	5.25	5.23	5.10	5.28	5.56	5.81
General farm overhead	8.83	9.03	9.43	9.77	9.78	9.63	9.82	10.07	10.38	10.69
<b>Total, allocated overhead</b>	<b>98.90</b>	<b>103.02</b>	<b>108.37</b>	<b>111.97</b>	<b>138.37</b>	<b>144.23</b>	<b>154.40</b>	<b>159.36</b>	<b>168.70</b>	<b>176.00</b>
<b>Total costs listed</b>	<b>111.13</b>	<b>116.69</b>	<b>124.25</b>	<b>128.66</b>	<b>160.18</b>	<b>169.18</b>	<b>176.84</b>	<b>181.79</b>	<b>194.22</b>	<b>202.47</b>
<b>Total costs</b>	<b>326.84</b>	<b>385.38</b>	<b>424.40</b>	<b>415.71</b>	<b>553.37</b>	<b>543.21</b>	<b>545.88</b>	<b>601.12</b>	<b>588.80</b>	<b>630.86</b>
<b>Prevented planting %</b>	<b>34%</b>	<b>30%</b>	<b>29%</b>	<b>31%</b>	<b>29%</b>	<b>31%</b>	<b>32%</b>	<b>30%</b>	<b>33%</b>	<b>32%</b>

Table 85: Upland cotton prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.08	5.40	6.22	7.09	9.62	15.13	14.20	11.01	14.47	15.51
Chemicals	9.84	9.84	9.84	10.24	9.97	9.93	10.97	10.57	10.57	11.09
Custom operations	1.16	1.17	1.22	1.28	1.55	1.48	1.58	1.63	1.66	1.70
Fuel, lube, and electricity	2.02	2.47	3.24	3.60	6.14	7.70	4.97	6.32	7.93	7.87
Repairs	2.85	2.92	3.05	3.16	5.25	5.17	5.27	5.40	5.57	5.74
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.02	0.03	0.03	0.04	0.03	0.04	0.04	0.07	0.16	0.10
Interest on operating costs	0.12	0.20	0.47	0.72	0.86	0.46	0.09	0.06	0.03	0.05
<b>Total, operating costs</b>	<b>21.11</b>	<b>22.03</b>	<b>24.06</b>	<b>26.13</b>	<b>33.41</b>	<b>39.89</b>	<b>37.11</b>	<b>35.06</b>	<b>40.39</b>	<b>42.06</b>
Allocated overhead:										
Hired Labor	4.61	4.72	4.87	5.05	5.08	5.00	5.11	5.17	5.22	5.44
Opportunity cost of unpaid labor	6.10	6.25	6.45	6.68	7.73	7.61	7.78	7.86	7.94	8.28
Capital recovery of machinery & equip.	50.92	54.62	58.33	61.36	129.36	134.89	143.28	148.45	157.48	165.22
Opportunity cost of land (rental rate)	47.61	47.61	49.59	48.78	65.30	71.66	82.50	84.94	91.59	94.38
Taxes and insurance	7.23	7.34	7.40	7.79	5.69	5.66	5.52	5.72	6.02	6.29
General farm overhead	16.33	16.69	17.43	18.05	11.14	10.97	11.18	11.47	11.82	12.17
<b>Total, allocated overhead</b>	<b>132.79</b>	<b>137.24</b>	<b>144.07</b>	<b>147.71</b>	<b>224.29</b>	<b>235.80</b>	<b>255.38</b>	<b>263.61</b>	<b>280.07</b>	<b>291.78</b>
<b>Total costs listed</b>	<b>153.90</b>	<b>159.27</b>	<b>168.13</b>	<b>173.84</b>	<b>257.70</b>	<b>275.69</b>	<b>292.49</b>	<b>298.68</b>	<b>320.46</b>	<b>333.84</b>
<b>Total costs</b>	<b>486.85</b>	<b>531.87</b>	<b>556.01</b>	<b>594.98</b>	<b>797.89</b>	<b>912.54</b>	<b>907.42</b>	<b>945.29</b>	<b>1,026.70</b>	<b>1,064.89</b>
<b>Prevented planting %</b>	<b>32%</b>	<b>30%</b>	<b>30%</b>	<b>29%</b>	<b>32%</b>	<b>30%</b>	<b>32%</b>	<b>32%</b>	<b>31%</b>	<b>31%</b>

**Table 86: Upland cotton prevented planting cost per acre: Mississippi Portal**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.95	6.32	7.29	8.30	10.21	16.06	15.08	11.69	15.36	16.47
Chemicals	13.31	13.31	13.31	13.86	11.66	11.62	12.84	12.37	12.37	12.98
Custom operations	5.36	5.40	5.62	5.88	3.19	3.04	3.25	3.35	3.41	3.50
Fuel, lube, and electricity	2.31	2.71	3.55	3.97	4.69	5.72	3.74	4.78	6.03	6.08
Repairs	2.93	3.00	3.13	3.24	4.79	4.72	4.81	4.93	5.08	5.24
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.10	0.10	0.07	0.09	0.06	0.07	0.08	0.12	0.23	0.17
Interest on operating costs	0.17	0.27	0.63	0.95	0.87	0.43	0.08	0.06	0.03	0.05
<b>Total, operating costs</b>	<b>30.13</b>	<b>31.11</b>	<b>33.61</b>	<b>36.29</b>	<b>35.46</b>	<b>41.65</b>	<b>39.88</b>	<b>37.30</b>	<b>42.52</b>	<b>44.47</b>
Allocated overhead:										
Hired Labor	5.14	5.27	5.44	5.64	4.82	4.74	4.85	4.90	4.95	5.16
Opportunity cost of unpaid labor	7.21	7.39	7.62	7.90	5.75	5.66	5.79	5.85	5.91	6.16
Capital recovery of machinery & equip.	56.21	60.31	64.40	67.75	109.34	114.01	121.10	125.46	133.10	139.64
Opportunity cost of land (rental rate)	65.03	65.03	67.74	66.63	66.55	73.04	84.08	86.57	93.34	96.19
Taxes and insurance	7.56	7.68	7.74	8.13	7.91	7.88	7.70	7.95	8.37	8.75
General farm overhead	13.83	14.14	14.76	15.28	15.49	15.25	15.55	15.95	16.44	16.94
<b>Total, allocated overhead</b>	<b>154.97</b>	<b>159.81</b>	<b>167.69</b>	<b>171.34</b>	<b>209.85</b>	<b>220.58</b>	<b>239.06</b>	<b>246.69</b>	<b>262.12</b>	<b>272.84</b>
<b>Total costs listed</b>	<b>185.10</b>	<b>190.92</b>	<b>201.30</b>	<b>207.63</b>	<b>245.30</b>	<b>262.23</b>	<b>278.94</b>	<b>283.99</b>	<b>304.64</b>	<b>317.30</b>
<b>Total costs</b>	<b>614.94</b>	<b>647.02</b>	<b>677.37</b>	<b>724.22</b>	<b>777.44</b>	<b>861.26</b>	<b>874.65</b>	<b>909.60</b>	<b>992.09</b>	<b>1,046.52</b>
<b>Prevented planting %</b>	<b>30%</b>	<b>30%</b>	<b>30%</b>	<b>29%</b>	<b>32%</b>	<b>30%</b>	<b>32%</b>	<b>31%</b>	<b>31%</b>	<b>30%</b>



Table 87: Upland cotton prevented planting cost per acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.09	5.41	6.24	7.10	10.00	15.72	14.76	11.44	15.03	16.12
Chemicals	11.25	11.25	11.25	11.72	10.93	10.88	12.03	11.59	11.59	12.16
Custom operations	6.26	6.31	6.57	6.87	6.85	6.53	6.98	7.20	7.33	7.51
Fuel, lube, and electricity	6.61	8.37	10.75	12.11	11.69	13.74	9.13	11.58	14.29	14.40
Repairs	3.14	3.21	3.35	3.47	4.43	4.36	4.44	4.56	4.70	4.84
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.18	0.22	0.18	0.23	0.20	0.27	0.25	0.27	0.42	0.38
Interest on operating costs	0.18	0.29	0.69	1.04	1.08	0.54	0.10	0.08	0.04	0.05
<b>Total, operating costs</b>	<b>32.72</b>	<b>35.06</b>	<b>39.03</b>	<b>42.54</b>	<b>45.17</b>	<b>52.04</b>	<b>47.69</b>	<b>46.71</b>	<b>53.41</b>	<b>55.47</b>
Allocated overhead:										
Hired Labor	9.54	9.79	10.09	10.46	7.94	7.83	8.00	8.08	8.17	8.51
Opportunity cost of unpaid labor	14.47	14.84	15.30	15.86	9.24	9.10	9.30	9.40	9.50	9.90
Capital recovery of machinery & equip.	66.73	71.59	76.45	80.43	109.10	113.76	120.84	125.19	132.82	139.34
Opportunity cost of land (rental rate)	67.55	67.55	70.36	69.22	73.93	81.14	93.41	96.18	103.70	106.87
Taxes and insurance	13.01	13.21	13.31	14.00	8.50	8.46	8.26	8.55	8.99	9.40
General farm overhead	26.55	27.14	28.34	29.35	21.81	21.48	21.90	22.46	23.16	23.85
<b>Total, allocated overhead</b>	<b>197.84</b>	<b>204.11</b>	<b>213.86</b>	<b>219.31</b>	<b>230.53</b>	<b>241.78</b>	<b>261.71</b>	<b>269.87</b>	<b>286.34</b>	<b>297.88</b>
<b>Total costs listed</b>	<b>230.56</b>	<b>239.17</b>	<b>252.88</b>	<b>261.85</b>	<b>275.70</b>	<b>293.82</b>	<b>309.40</b>	<b>316.58</b>	<b>339.75</b>	<b>353.35</b>
<b>Total costs</b>	<b>732.81</b>	<b>816.92</b>	<b>861.17</b>	<b>951.31</b>	<b>986.90</b>	<b>1,056.04</b>	<b>1,064.29</b>	<b>1,115.81</b>	<b>1,134.73</b>	<b>1,201.58</b>
<b>Prevented planting %</b>	<b>31%</b>	<b>29%</b>	<b>29%</b>	<b>28%</b>	<b>28%</b>	<b>28%</b>	<b>29%</b>	<b>28%</b>	<b>30%</b>	<b>29%</b>

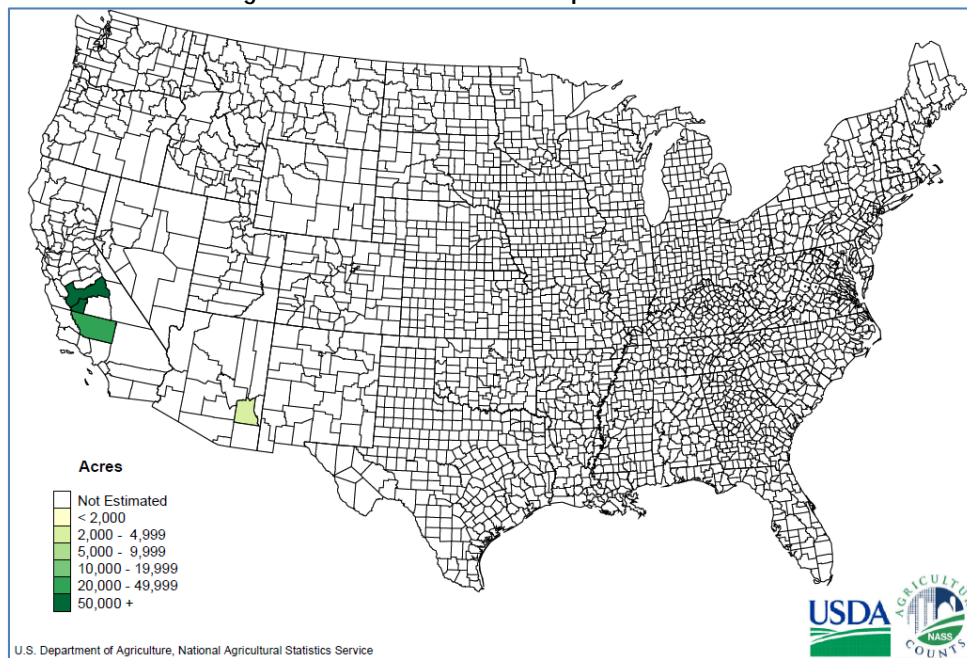
## 4.5. ELS cotton

### Overview

Pima or extra long staple (ELS) cotton is grown in the southwestern part of the United States. The majority of production is in California where yields are 1,200 to 2,200 lbs of cotton fiber per acre. ELS cotton accounts for over half of California's planted cotton acreage. Small quantities of ELS cotton are grown in West Texas, New Mexico, and Arizona but yields are considerably lower and acreage in those states has been declining.

ELS is considered a superior blend of cotton because it is extremely durable and absorbent. ELS cotton got its name because the staple is at least 1 3/8" or longer. ELS yields are lower on average than American Upland cotton. Producers get higher prices for it because it has higher quality cotton lint and higher production costs based on different ginning methods, since it is roller-ginned to preserve the fiber's longer length.

Figure 25: ELS cotton acres planted in 2012



### Sources of production cost information

ERS published a thorough study of cotton production costs in 2012<sup>15</sup>. This document has some information specific to ELS cotton. ERS also prepares an annual estimate of production costs and returns for cotton but not specifically for ELS cotton. Since over 95% of the cotton grown in the US is Upland, it is likely that the national cost estimates do not accurately account for the costs of producing ELS cotton. However, we know that roughly half of the cotton grown in the Fruitful Rim ERS region is ELS cotton. Therefore, the cost numbers for that region should be closer to the actual costs of producing ELS cotton.

<sup>15</sup> Linda Foreman, "Characteristics and Production Costs of US Cotton Farms, 2007", Economic Research Service, USDA, EIB 104, December 2012

The University of California Cooperative Extension at Davis has conducted a number of studies of production costs for various types of ELS cotton in the San Joaquin Valley, Sacramento Valley, and Imperial County. The San Joaquin Valley is where the vast majority of ELS cotton is produced. California published budgets in 2003 and 2012 for the San Joaquin Valley specifically for extra long staple cotton.<sup>16</sup> Agralytica used these two budgets to identify prevented planting costs. As a side note, upland and Pima cotton budgets from California were compared to see if there were significant differences in production costs. The 2003 budgets and the 2013 budgets showed insignificant differences in production costs for the two types, less than \$30 per acre out of \$600-\$1,000 in total costs.

Although Texas AgriLife Extension has more than two dozen different cotton crop budgets, none are specifically for ELS cotton, and the acreage of that type grown in the state is too low to be representative of typical costs.

### Production practices

Preplanting land preparation operations occur from November to March. Cotton fields are typically prepared with two stubble disc operations, sprayed with herbicide, and then undergo a final disc pass to incorporate the herbicides. Deep ripping of the soil occurs every 3 years to break up compaction that adversely impacts root penetration and water uptake. After the beds and furrow are formed with a lister, preplanting irrigation may be applied if rainfall has been insufficient.

ELS cotton is longer maturing than upland cotton and yields are dramatically affected by planting date, as much as 500 lbs per acre for a 14-day difference. For best yields, planting takes place about mid-April. Farmers in the northern part of the Valley use 30-inch rows for the best yields, while farmers in the south may use 30-40 inch rows without adverse yield affects.

### Prevented planting experience

During 1994-2013, PP claims were 82% of total indemnities. From 2003 to 2012, indemnities for extra long staple cotton totaled about \$112.6 million dollars. California accounted for virtually all of the indemnities, more than 99.9%. Arizona was the only other state with claims, but they only totaled \$83,300, about 0.07%.

Prevented planting claims accounted for \$101.3 million in California, almost 90% of all ELS cotton insurance claims for that decade. Prevented planting insurance is clearly important to California ELS cotton growers.

**Table 88: Causes of loss for prevented planting of ELS Cotton in California (million dollars)**

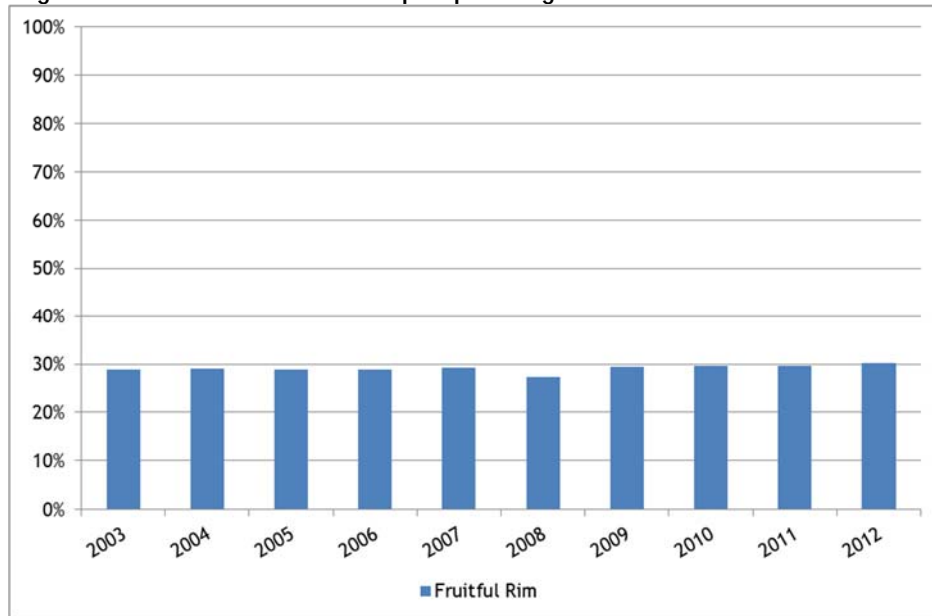
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Cold Wet Weather	6.1	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.1	0.0	18.5
Excess Moisture/Precip/Rain	4.3	0.0	1.0	3.4	0.0	0.0	0.7	3.6	0.4	0.0	13.4
Failure Irrig Supply	0.4	0.2	0.0	0.0	3.1	3.7	46.6	4.1	0.0	10.9	68.9
Other	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.5
<b>Total</b>	<b>11.0</b>	<b>0.2</b>	<b>1.0</b>	<b>3.4</b>	<b>3.2</b>	<b>3.8</b>	<b>47.2</b>	<b>20.0</b>	<b>0.5</b>	<b>11.0</b>	<b>101.3</b>

<sup>16</sup> Available at [http://cottoninfo.ucdavis.edu/Cost\\_Studies/](http://cottoninfo.ucdavis.edu/Cost_Studies/)

## Analysis

In 2003, preplanting costs accounted for 29% of total costs according to the California extension budget. In 2012, this rose slightly to 30% due to changes in overhead costs rising faster than cash expenses. Since overhead costs are heavily weighted as preplanted sunk costs, these tend to drive preplanting costs more than cash expenses. These PP cost shares calculated from the extension budgets are virtually the same as those for upland cotton in the Fruitful Rim resource region which fell in a range of 28-31% over the decade.

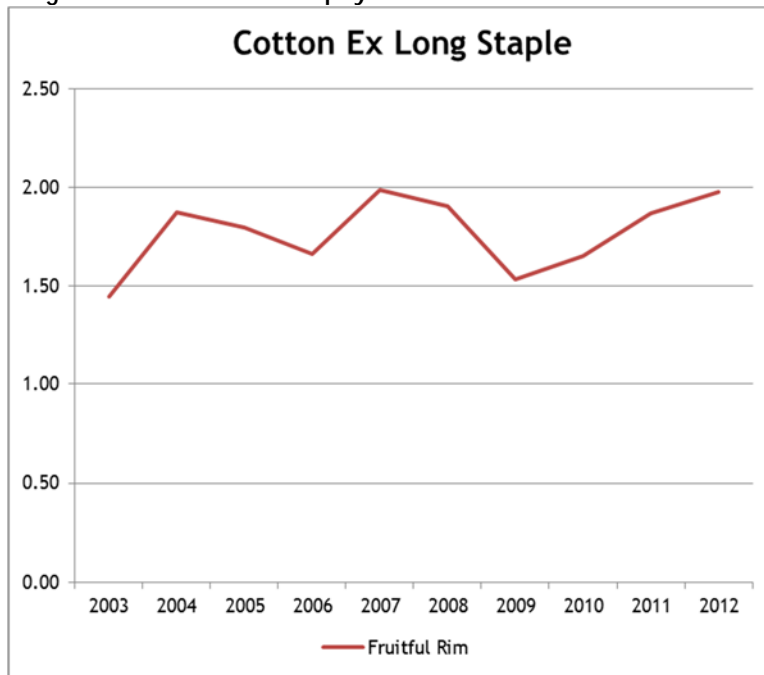
Figure 26: Share of ELS cotton pre-planting costs allocated to cotton fiber



## Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs has varied between 1.50 and 2.00 over the decade. The estimated costs are based on a budget for California, where most of the ELS cotton is produced. Since 62% of PP indemnities are associated with the additional 10% coverage, the ratio would be higher by about 12% if that were taken into account ( $10\%/50\% \times 0.62 = 0.124$ ). For example, a ratio of 1.50 becomes 1.69 when the 10% buy-up is taken into account.

Figure 27: Ratio of RMA payment to PP costs for ELS cotton



### Recommendation

As in the case of upland cotton, we recommend reducing the PP factor from 50% to 30%. This would probably still leave the PP indemnity somewhat above estimated PP costs, especially if the 10% buy-up option remains in place.

Table 89: ELS cotton production costs per planted acre: California San Joaquin Valley

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Cultivation	70.08	75.18	80.29	84.46	88.64	96.99	103.03	106.74	113.24	108.00
Planting	26	26.68	28.36	30.73	34.44	43.73	50.48	52.34	56.05	64.00
Irrigation	205	211.03	218.57	226.10	232.13	241.18	239.67	244.19	251.73	297.00
Fertilizer	53	59.84	70.10	75.23	92.32	167.55	117.54	107.71	140.19	161.00
Chemicals	291	291.00	295.81	307.83	310.24	334.29	358.34	346.31	348.72	320.00
Pickup Truck	14	13.88	13.88	13.64	13.40	13.03	13.28	13.64	14.00	13.00
Harvest costs	60.00	64.37	68.74	72.32	75.89	83.05	88.21	91.39	96.95	122.00
Ginning	16.00	17.17	18.33	19.28	20.24	22.15	23.52	24.37	25.85	27.23
Assessments	23.00	24.05	25.63	27.21	29.15	33.89	33.01	34.06	37.40	24.00
Postharvest operations	15.00	16.09	17.19	18.08	18.97	20.76	22.05	22.85	24.24	28.00
Crop Insurance	8.13	6.41	6.36	6.54	6.51	5.78	31.99	17.38	13.86	23.23
Interest on operating capital	25.48	26.29	30.08	36.05	38.48	40.38	37.13	36.05	39.30	30.00
Total, operating costs	806.68	831.99	873.34	917.47	960.42	1102.77	1118.25	1097.03	1161.53	1217.46
Allocated overhead:										
Land rent	150.00	156.12	162.24	169.39	181.63	209.18	240.82	247.96	267.35	275.51
Office expenses	30.00	30.88	31.99	33.09	33.97	35.29	35.07	35.74	36.84	50.00
Liability Insurance	1.00	1.06	1.13	1.20	1.30	1.50	1.45	1.50	1.68	1.00
Property Taxes	5.00	5.16	6.01	6.86	7.75	8.10	7.91	8.26	8.60	8.90
Property Insurance	4.00	4.26	4.51	4.80	5.18	6.02	5.79	5.98	6.72	3.00
Investment Repairs	3.00	3.09	3.22	3.29	3.40	3.44	3.51	3.57	3.71	3.00
Total, allocated overhead	193.00	200.57	209.10	218.62	233.23	263.54	294.54	303.00	324.90	341.41
Total costs listed	999.68	1,032.55	1,082.44	1,136.10	1,193.65	1366.31	1412.79	1400.03	1486.43	1558.87

Table 90: ELS cotton - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Cultivation	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Planting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	25%	26%	26%	27%	28%	28%	29%	30%	31%	32%
Fertilizer	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chemicals	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Pickup Truck	42%	41%	41%	41%	40%	40%	40%	39%	39%	38%
Harvest costs	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ginning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Assessments	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Postharvest operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
Interest on operating capital	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Allocated overhead:										
Land rent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Office expenses	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Liability Insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Property Taxes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Property Insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Investment Repairs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 91: ELS cotton prevented planting costs per acre: California San Joaquin Valley

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Cultivation	23.83	25.56	27.30	28.72	30.14	31.43	33.38	34.58	36.69	34.99
Planting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	43.56	46.64	48.30	51.89	55.25	54.70	56.30	59.34	63.21	76.98
Fertilizer	6.76	7.63	8.94	9.59	11.77	20.36	14.28	13.09	17.03	19.56
Chemicals	37.10	37.10	37.72	39.25	39.56	40.62	43.54	42.08	42.37	38.88
Pickup Truck	5.00	4.84	4.84	4.75	4.55	4.22	4.30	4.31	4.42	4.00
Harvest costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Assessments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Postharvest operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.67	4.47	4.43	4.56	4.54	3.84	21.25	11.54	9.21	15.43
Interest on operating capital	2.82	2.90	3.32	3.98	4.25	4.25	3.91	3.80	4.14	3.16
Total, operating costs	124.73	129.14	134.85	142.74	150.06	159.41	176.96	168.73	177.07	193.01
Allocated overhead:										
Land rent	127.50	132.70	137.91	143.98	154.39	169.44	195.06	200.85	216.55	223.16
Office expenses	25.50	26.25	27.19	28.13	28.88	28.59	28.41	28.95	29.84	40.50
Liability Insurance	0.85	0.90	0.96	1.02	1.10	1.22	1.17	1.21	1.36	0.81
Property Taxes	4.25	4.38	5.11	5.83	6.59	6.56	6.40	6.69	6.97	7.21
Property Insurance	3.40	3.62	3.84	4.08	4.41	4.87	4.69	4.85	5.44	2.43
Investment Repairs	2.55	2.63	2.74	2.79	2.89	2.79	2.84	2.89	3.00	2.43
Total, allocated overhead	164.05	170.48	177.73	185.83	198.25	213.47	238.58	245.43	263.17	276.54
Total costs listed	288.78	299.62	312.58	328.57	348.30	372.88	415.54	414.17	440.23	469.55
Total costs	999.68	1,032.55	1,082.44	1,136.10	1,193.65	1,366.31	1,412.79	1,400.03	1,486.43	1,558.87
Prevented planting %	29%	29%	29%	29%	29%	27%	29%	30%	30%	30%



## 4.6. Cottonseed

### Overview

Background on production of upland cotton and ELS cotton is reviewed in Sections 4.4 and 4.5. As noted in those discussions, cottonseed and cotton lint are joint products. When cotton is ginned, the mill recovers the cottonseed which then goes on to be crushed, yielding cottonseed oil and cottonseed meal. The grower gets a payment from the ginner for the seed as well as for the lint.

Cottonseed oil goes primarily to human edible consumption where it competes with other vegetable oils (soybean, corn, canola, peanut, palm etc.) and with animal fats (butter, lard, tallow and fish oil). In the US market, cottonseed oil accounts for about 2% of consumption of fats and oils and 5% of exports. Cottonseed meal is used mostly as a high-protein animal feed. About 90% is used domestically and 10% is exported.

The ERS cost and return estimates for cotton include returns per acre for both lint and seed. For the period under study, there are two distinct periods for the relationship between lint and seed returns. During 2003-2007, the returns from cottonseed averaged 15% of total returns. During 2008-2012, the average rose to 19% due to higher US and world market prices for protein meal and vegetable oil relative to cotton.

The preceding cotton discussions cover sources of production cost information, production practices, and prevented planting experience.

### Analysis

The cottonseed endorsement establishes a grower's guarantee using an established price for cottonseed and a yield that is calculated in relation to lint yield using a conversion factor determined by RMA. Both of these are shown in the actuarial documents, on the price and rates pages.

Since lint and seed are joint products, and the seed yield guarantee is linked to the lint yield guarantee, one can simply make a pro rata attribution of the appropriate portion of production costs, in the same fashion as for upland and ELS cotton. As part of the attribution of costs for cottonseed to the preplanting period, we include only 15% of those costs for 2003-2007 and 19% for 2008-2012. These factors are applied in the PP cost worksheets. The results are shown in Figure 28.

### Recommendation

The indemnity for cottonseed in a prevented planting situation should represent approximately 7% of total production costs. With the portion of costs covered under the cotton lint plan, a total of up to 37% of a grower's costs would be covered. Thus it appears that the current 50% factor in the insurance plans for cotton and cottonseed is too high. We recommend factors of 30% for upland and ELS cotton, and 35% when the grower elects the cottonseed endorsement.

Figure 28: Share of cotton pre-planting costs allocated to cottonseed

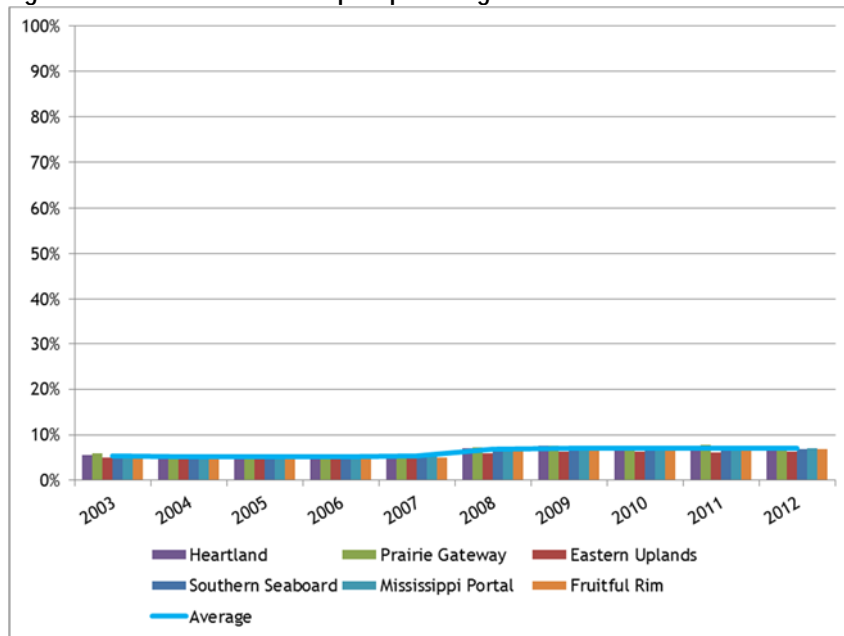


Table 92: Cottonseed production costs per planted acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	38.84	48.10	55.05	63.42	64.65	72.10	82.56	90.32	108.38	111.24
Fertilizer	50.63	53.77	62.01	70.64	93.68	154.58	145.16	112.51	147.84	158.54
Chemicals	65.37	65.37	65.37	68.07	79.15	82.73	91.42	88.13	88.13	92.41
Custom operations	24.94	25.14	26.16	27.35	21.09	21.09	22.53	23.26	23.69	24.27
Fuel, lube, and electricity	12.25	13.94	19.27	20.68	39.27	51.54	34.74	42.46	53.07	55.35
Repairs	19.77	20.21	21.10	21.85	32.21	33.29	33.94	34.80	35.88	36.97
Ginning	108.30	100.06	114.64	104.61	100.25	105.09	120.45	113.56	101.04	144.71
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	13.24	15.56	12.50	14.68	14.29	19.51	15.49	18.25	31.95	24.59
Interest on operating costs	1.12	1.79	4.23	6.43	7.31	3.85	0.77	0.51	0.28	0.42
<b>Total, operating costs</b>	<b>334.46</b>	<b>343.94</b>	<b>380.33</b>	<b>397.73</b>	<b>451.90</b>	<b>543.78</b>	<b>547.06</b>	<b>523.80</b>	<b>590.26</b>	<b>648.50</b>
Allocated overhead:										
Hired Labor	12.57	12.89	13.29	13.77	12.74	13.17	13.46	13.60	13.75	14.32
Opportunity cost of unpaid labor	31.78	32.59	33.61	34.83	19.59	20.25	20.7	20.92	21.14	22.02
Capital recovery of machinery & equip.	57.88	62.10	66.32	69.77	111.28	121.77	129.34	134.00	142.16	149.15
Opportunity cost of land (rental rate)	46.5	46.5	48.44	47.65	62.21	71.65	82.48	84.93	91.57	94.36
Taxes and insurance	9.29	9.44	9.52	10.01	7.63	7.97	7.78	8.05	8.47	8.85
General farm overhead	23.97	24.51	25.59	26.50	17.31	17.89	18.24	18.70	19.28	19.87
<b>Total, allocated overhead</b>	<b>181.99</b>	<b>188.03</b>	<b>196.77</b>	<b>202.53</b>	<b>230.76</b>	<b>252.70</b>	<b>272.00</b>	<b>280.20</b>	<b>296.37</b>	<b>308.57</b>
<b>Total costs listed</b>	<b>516.45</b>	<b>531.97</b>	<b>577.10</b>	<b>600.26</b>	<b>682.66</b>	<b>796.48</b>	<b>819.06</b>	<b>804.00</b>	<b>886.63</b>	<b>957.07</b>

Table 93: Cottonseed production costs per planted acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	46.52	57.62	65.94	75.97	85.15	108.11	124.81	129.40	138.58	149.85
Fertilizer	48.97	52.01	59.98	68.33	83.86	152.19	106.77	97.84	127.34	129.28
Chemicals	62.93	62.93	62.93	65.53	66.04	71.16	76.28	73.72	74.23	78.33
Custom operations	10.32	10.40	10.82	11.31	11.49	13.24	13.33	13.33	13.61	14.44
Fuel, lube, and electricity	9.15	10.21	14.65	14.68	16.22	21.13	14.07	17.44	22.23	22.11
Repairs	16.17	16.53	17.26	17.88	18.48	18.72	19.08	19.44	20.16	20.88
Ginning	90.85	76.93	100.37	64.79	68.05	68.05	72.71	75.04	76.44	77.84
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	9.93	11.48	9.85	11.75	12.51	19.35	12.96	14.81	25.30	18.12
Interest on operating costs	1.03	1.66	3.94	6.00	6.41	6.72	6.18	6.00	6.54	6.63
<b>Total, operating costs</b>	<b>295.87</b>	<b>299.77</b>	<b>345.74</b>	<b>336.24</b>	<b>368.21</b>	<b>478.68</b>	<b>446.19</b>	<b>447.03</b>	<b>504.45</b>	<b>517.49</b>
Allocated overhead:										
Hired Labor	10.79	11.06	11.41	11.82	12.23	12.65	13.00	13.06	13.27	13.76
Opportunity cost of unpaid labor	23.27	23.86	24.61	25.5	26.39	27.29	28.04	28.18	28.63	29.68
Capital recovery of machinery & equip.	47.53	50.99	54.45	57.28	60.11	65.78	69.87	72.39	76.79	80.88
Opportunity cost of land (rental rate)	49.11	49.11	51.16	50.33	53.97	62.15	71.55	73.68	79.44	81.86
Taxes and insurance	6.61	6.71	6.76	7.11	7.61	8.85	8.62	8.90	9.77	10.14
General farm overhead	10.74	10.98	11.46	11.87	12.71	14.78	14.40	14.86	16.31	16.92
<b>Total, allocated overhead</b>	<b>148.05</b>	<b>152.71</b>	<b>159.85</b>	<b>163.91</b>	<b>173.04</b>	<b>191.50</b>	<b>205.47</b>	<b>211.07</b>	<b>224.21</b>	<b>233.24</b>
<b>Total costs listed</b>	<b>443.92</b>	<b>452.48</b>	<b>505.59</b>	<b>500.15</b>	<b>541.25</b>	<b>670.18</b>	<b>651.66</b>	<b>658.10</b>	<b>728.66</b>	<b>750.73</b>

Table 94: Cottonseed production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	29.06	35.99	41.19	47.46	44.57	49.70	56.91	62.27	74.72	76.69
Fertilizer	12.74	13.53	15.60	17.77	34.64	57.16	53.67	41.60	54.67	58.62
Chemicals	28.15	28.15	28.15	29.31	36.95	38.62	42.68	41.14	41.14	43.14
Custom operations	10.41	10.49	10.92	11.42	12.83	12.83	13.71	14.15	14.41	14.76
Fuel, lube, and electricity	24.49	33.80	46.85	47.07	51.59	61.98	41.39	53.51	62.79	63.78
Repairs	18.65	19.07	19.91	20.62	29.97	30.98	31.58	32.38	33.39	34.40
Ginning	42.73	75.63	87.45	57.34	136.38	65.44	72.20	113.70	38.21	64.13
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	12.19	14.19	10.85	14.45	13.79	20.05	16.05	18.36	33.85	29.48
Interest on operating costs	0.65	1.11	2.76	4.11	4.66	2.34	0.45	0.36	0.16	0.24
<b>Total, operating costs</b>	<b>179.07</b>	<b>231.96</b>	<b>263.68</b>	<b>249.55</b>	<b>365.38</b>	<b>339.10</b>	<b>328.64</b>	<b>377.47</b>	<b>353.34</b>	<b>385.24</b>
Allocated overhead:										
Hired Labor	12.08	12.39	12.78	13.24	11.30	11.68	11.94	12.07	12.19	12.70
Opportunity cost of unpaid labor	36.44	37.37	38.54	39.94	27.64	28.58	29.2	29.51	29.83	31.08
Capital recovery of machinery & equip.	56.10	60.19	64.28	67.62	100.82	110.32	117.18	121.41	128.80	135.13
Opportunity cost of land (rental rate)	27.17	27.17	28.3	27.84	30.55	35.18	40.50	41.71	44.97	46.34
Taxes and insurance	5.59	5.68	5.73	6.03	6.18	6.46	6.30	6.52	6.86	7.17
General farm overhead	10.39	10.62	11.09	11.49	11.50	11.89	12.12	12.43	12.81	13.20
<b>Total, allocated overhead</b>	<b>147.77</b>	<b>153.42</b>	<b>160.72</b>	<b>166.16</b>	<b>187.99</b>	<b>204.11</b>	<b>217.24</b>	<b>223.65</b>	<b>235.46</b>	<b>245.62</b>
<b>Total costs listed</b>	<b>326.84</b>	<b>385.38</b>	<b>424.40</b>	<b>415.71</b>	<b>553.37</b>	<b>543.21</b>	<b>545.88</b>	<b>601.12</b>	<b>588.80</b>	<b>630.86</b>

Table 95: Cottonseed production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	46.59	57.70	66.03	76.07	95.09	106.04	121.43	132.85	159.42	163.61
Fertilizer	39.85	42.32	48.81	55.61	75.44	124.49	116.89	90.60	119.06	127.67
Chemicals	77.15	77.15	77.15	80.34	78.17	81.70	90.29	87.03	87.03	91.27
Custom operations	9.77	9.85	10.25	10.72	13.02	13.02	13.91	14.36	14.63	14.98
Fuel, lube, and electricity	15.87	19.40	25.39	28.27	48.16	63.34	40.89	52.03	65.24	64.77
Repairs	22.39	22.89	23.90	24.75	41.14	42.52	43.35	44.45	45.83	47.21
Ginning	93.49	114.05	104.89	111.55	145.81	154.86	132.97	164.34	149.58	157.43
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.44	1.70	1.54	2.21	1.91	2.69	2.54	4.22	10.15	6.35
Interest on operating costs	1.12	1.81	4.28	6.52	7.78	4.34	0.81	0.59	0.32	0.45
<b>Total, operating costs</b>	<b>307.67</b>	<b>346.87</b>	<b>362.24</b>	<b>396.04</b>	<b>506.52</b>	<b>593.00</b>	<b>563.08</b>	<b>590.47</b>	<b>651.26</b>	<b>673.74</b>
Allocated overhead:										
Hired Labor	15.06	15.44	15.92	16.50	16.60	17.16	17.54	17.73	17.91	18.66
Opportunity cost of unpaid labor	20.49	21.01	21.67	22.46	25.97	26.85	27.44	27.73	28.02	29.2
Capital recovery of machinery & equip.	59.90	64.26	68.62	72.19	152.19	166.53	176.89	183.27	194.42	203.98
Opportunity cost of land (rental rate)	56.01	56.01	58.34	57.39	76.82	88.47	101.85	104.87	113.07	116.52
Taxes and insurance	8.51	8.64	8.71	9.16	6.69	6.99	6.82	7.06	7.43	7.76
General farm overhead	19.21	19.64	20.51	21.24	13.10	13.54	13.80	14.16	14.59	15.03
<b>Total, allocated overhead</b>	<b>179.18</b>	<b>185.00</b>	<b>193.77</b>	<b>198.94</b>	<b>291.37</b>	<b>319.54</b>	<b>344.34</b>	<b>354.82</b>	<b>375.44</b>	<b>391.15</b>
<b>Total costs listed</b>	<b>486.85</b>	<b>531.87</b>	<b>556.01</b>	<b>594.98</b>	<b>797.89</b>	<b>912.54</b>	<b>907.42</b>	<b>945.29</b>	<b>1,026.70</b>	<b>1,064.89</b>

Table 96: Cottonseed production costs per planted acre: Mississippi Portal

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	52.25	64.71	74.06	85.32	81.10	90.44	103.56	113.30	135.96	139.54
Fertilizer	46.67	49.56	57.16	65.12	80.08	132.14	124.08	96.18	126.38	135.52
Chemicals	104.42	104.42	104.42	108.73	91.48	95.62	105.66	101.85	101.85	106.81
Custom operations	45.03	45.40	47.25	49.40	26.79	26.79	28.62	29.54	30.09	30.83
Fuel, lube, and electricity	18.08	21.22	27.85	31.10	36.75	47.05	30.79	39.36	49.63	50.03
Repairs	22.99	23.50	24.54	25.42	37.55	38.81	39.57	40.57	41.83	43.09
Ginning	109.29	114.67	106.72	114.80	143.03	126.30	117.38	151.95	143.55	167.69
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.86	5.91	4.35	5.07	3.31	4.27	5.14	7.56	14.47	10.28
Interest on operating costs	1.53	2.44	5.70	8.63	7.84	4.12	0.80	0.57	0.31	0.45
<b>Total, operating costs</b>	<b>406.12</b>	<b>431.83</b>	<b>452.05</b>	<b>493.59</b>	<b>507.93</b>	<b>565.54</b>	<b>555.60</b>	<b>580.88</b>	<b>644.07</b>	<b>684.24</b>
Allocated overhead:										
Hired Labor	16.80	17.23	17.77	18.42	15.74	16.27	16.63	16.81	16.98	17.70
Opportunity cost of unpaid labor	24.23	24.85	25.63	26.56	19.32	19.97	20.41	20.63	20.85	21.72
Capital recovery of machinery & equip.	66.13	70.95	75.77	79.71	128.63	140.75	149.51	154.89	164.32	172.40
Opportunity cost of land (rental rate)	76.5	76.5	79.69	78.39	78.29	90.17	103.80	106.88	115.24	118.75
Taxes and insurance	8.89	9.03	9.10	9.57	9.31	9.73	9.50	9.82	10.33	10.80
General farm overhead	16.27	16.63	17.36	17.98	18.22	18.83	19.20	19.69	20.30	20.91
<b>Total, allocated overhead</b>	<b>208.82</b>	<b>215.19</b>	<b>225.32</b>	<b>230.63</b>	<b>269.51</b>	<b>295.72</b>	<b>319.05</b>	<b>328.72</b>	<b>348.02</b>	<b>362.28</b>
<b>Total costs listed</b>	<b>614.94</b>	<b>647.02</b>	<b>677.37</b>	<b>724.22</b>	<b>777.44</b>	<b>861.26</b>	<b>874.65</b>	<b>909.60</b>	<b>992.09</b>	<b>1,046.52</b>

Table 97: Cottonseed production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	27.28	33.79	38.67	44.55	59.64	66.51	76.16	83.32	99.98	102.62
Fertilizer	39.93	42.41	48.91	55.72	78.41	129.39	121.50	94.17	123.74	132.69
Chemicals	88.27	88.27	88.27	91.92	85.69	89.56	98.98	95.41	95.41	100.05
Custom operations	52.59	53.02	55.18	57.69	57.58	57.58	61.52	63.50	64.68	66.26
Fuel, lube, and electricity	51.85	65.67	84.34	94.99	91.70	113.05	75.13	95.28	117.65	118.52
Repairs	24.62	25.17	26.28	27.22	34.71	35.87	36.57	37.51	38.67	39.83
Ginning	129.10	177.27	173.14	217.09	215.92	171.96	180.20	219.79	137.56	169.69
Purchased irrigation water	22.45	22.63	23.55	24.62	33.59	33.59	35.89	37.04	37.73	38.65
Crop Insurance	10.77	13.06	10.48	13.59	11.87	16.83	15.37	16.59	25.73	23.63
Interest on operating costs	1.62	2.61	6.21	9.38	9.78	5.16	0.99	0.73	0.36	0.51
<b>Total, operating costs</b>	<b>448.48</b>	<b>523.90</b>	<b>555.03</b>	<b>636.77</b>	<b>678.89</b>	<b>719.50</b>	<b>702.31</b>	<b>743.34</b>	<b>741.51</b>	<b>792.45</b>
Allocated overhead:										
Hired Labor	31.19	31.98	32.98	34.18	25.96	26.84	27.43	27.72	28.01	29.19
Opportunity cost of unpaid labor	48.64	49.88	51.44	53.31	31.06	32.11	32.81	33.17	33.52	34.92
Capital recovery of machinery & equip.	78.50	84.22	89.94	94.62	128.35	140.45	149.18	154.56	163.97	172.03
Opportunity cost of land (rental rate)	79.47	79.47	82.78	81.43	86.98	100.17	115.32	118.74	128.03	131.94
Taxes and insurance	15.3	15.54	15.66	16.47	10.00	10.45	10.20	10.55	11.10	11.60
General farm overhead	31.23	31.93	33.34	34.53	25.66	26.52	27.04	27.73	28.59	29.45
<b>Total, allocated overhead</b>	<b>284.33</b>	<b>293.02</b>	<b>306.14</b>	<b>314.54</b>	<b>308.01</b>	<b>336.54</b>	<b>361.98</b>	<b>372.47</b>	<b>393.22</b>	<b>409.13</b>
<b>Total costs listed</b>	<b>732.81</b>	<b>816.92</b>	<b>861.17</b>	<b>951.31</b>	<b>986.90</b>	<b>1,056.04</b>	<b>1,064.29</b>	<b>1,115.81</b>	<b>1,134.73</b>	<b>1,201.58</b>



Table 98: Cottonseed - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chemicals	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Custom operations	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Fuel, lube, and electricity	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Ginning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Interest on operating costs	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Total, operating costs										
Allocated overhead:										
Hired Labor	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Opportunity cost of unpaid labor	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 99: Cottonseed prevented planting cost per acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	1.14	1.21	1.40	1.59	2.11	4.41	4.14	3.21	4.21	4.52
Chemicals	1.47	1.47	1.47	1.53	1.78	2.36	2.61	2.51	2.51	2.63
Custom operations	0.52	0.53	0.55	0.57	0.44	0.56	0.60	0.62	0.63	0.65
Fuel, lube, and electricity	0.28	0.31	0.43	0.47	0.88	1.47	0.99	1.21	1.51	1.58
Repairs	0.44	0.45	0.47	0.49	0.72	0.95	0.97	0.99	1.02	1.05
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.04	0.05	0.04	0.04	0.04	0.07	0.06	0.07	0.12	0.09
Interest on operating costs	0.02	0.03	0.08	0.13	0.14	0.10	0.02	0.01	0.01	0.01
<b>Total, operating costs</b>	<b>3.92</b>	<b>4.06</b>	<b>4.44</b>	<b>4.82</b>	<b>6.13</b>	<b>9.91</b>	<b>9.38</b>	<b>8.62</b>	<b>10.02</b>	<b>10.53</b>
Allocated overhead:										
Hired Labor	0.68	0.70	0.72	0.74	0.69	0.90	0.92	0.93	0.94	0.98
Opportunity cost of unpaid labor	1.67	1.71	1.76	1.83	1.03	1.35	1.38	1.39	1.41	1.46
Capital recovery of machinery & equip.	8.68	9.32	9.95	10.47	16.69	23.14	24.57	25.46	27.01	28.34
Opportunity cost of land (rental rate)	6.98	6.98	7.27	7.15	9.33	13.61	15.67	16.14	17.40	17.93
Taxes and insurance	1.39	1.42	1.43	1.50	1.14	1.51	1.48	1.53	1.61	1.68
General farm overhead	3.60	3.68	3.84	3.98	2.60	3.40	3.47	3.55	3.66	3.78
<b>Total, allocated overhead</b>	<b>22.99</b>	<b>23.79</b>	<b>24.96</b>	<b>25.66</b>	<b>31.48</b>	<b>43.91</b>	<b>47.49</b>	<b>49.00</b>	<b>52.03</b>	<b>54.17</b>
<b>Total costs listed</b>	<b>26.91</b>	<b>27.85</b>	<b>29.41</b>	<b>30.48</b>	<b>37.61</b>	<b>53.82</b>	<b>56.86</b>	<b>57.62</b>	<b>62.05</b>	<b>64.70</b>
<b>Total costs</b>	<b>516.45</b>	<b>531.97</b>	<b>577.10</b>	<b>600.26</b>	<b>682.66</b>	<b>796.48</b>	<b>819.06</b>	<b>804.00</b>	<b>886.63</b>	<b>957.07</b>
<b>Prevented planting %</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>

Table 100: Cottonseed prevented planting cost per acre: Eastern Uplands

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	1.10	1.17	1.35	1.54	1.89	4.34	3.04	2.79	3.63	3.68
Chemicals	1.42	1.42	1.42	1.47	1.49	2.03	2.17	2.10	2.12	2.23
Custom operations	0.22	0.22	0.23	0.24	0.24	0.35	0.35	0.35	0.36	0.38
Fuel, lube, and electricity	0.21	0.23	0.33	0.33	0.36	0.60	0.40	0.50	0.63	0.63
Repairs	0.36	0.37	0.39	0.40	0.42	0.53	0.54	0.55	0.57	0.60
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.03	0.03	0.03	0.04	0.04	0.07	0.05	0.06	0.10	0.07
Interest on operating costs	0.02	0.03	0.08	0.12	0.12	0.17	0.15	0.15	0.16	0.16
<b>Total, operating costs</b>	<b>3.35</b>	<b>3.47</b>	<b>3.82</b>	<b>4.13</b>	<b>4.56</b>	<b>8.09</b>	<b>6.72</b>	<b>6.50</b>	<b>7.57</b>	<b>7.76</b>
Allocated overhead:										
Hired Labor	0.58	0.60	0.62	0.64	0.66	0.87	0.89	0.89	0.91	0.94
Opportunity cost of unpaid labor	1.22	1.25	1.29	1.34	1.39	1.81	1.86	1.87	1.90	1.97
Capital recovery of machinery & equip.	7.13	7.65	8.17	8.59	9.02	12.50	13.28	13.75	14.59	15.37
Opportunity cost of land (rental rate)	7.37	7.37	7.67	7.55	8.10	11.81	13.60	14.00	15.09	15.55
Taxes and insurance	0.99	1.01	1.01	1.07	1.14	1.68	1.64	1.69	1.86	1.93
General farm overhead	1.61	1.65	1.72	1.78	1.91	2.81	2.74	2.82	3.10	3.22
<b>Total, allocated overhead</b>	<b>18.90</b>	<b>19.52</b>	<b>20.48</b>	<b>20.97</b>	<b>22.21</b>	<b>31.48</b>	<b>34.00</b>	<b>35.03</b>	<b>37.45</b>	<b>38.98</b>
<b>Total costs listed</b>	<b>22.26</b>	<b>22.99</b>	<b>24.30</b>	<b>25.10</b>	<b>26.76</b>	<b>39.57</b>	<b>40.72</b>	<b>41.53</b>	<b>45.02</b>	<b>46.74</b>
<b>Total costs</b>	<b>443.92</b>	<b>452.48</b>	<b>505.59</b>	<b>500.15</b>	<b>541.25</b>	<b>670.18</b>	<b>651.66</b>	<b>658.10</b>	<b>728.66</b>	<b>750.73</b>
<b>Prevented planting %</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>

Table 101: Cottonseed prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.29	0.30	0.35	0.40	0.78	1.63	1.53	1.19	1.56	1.67
Chemicals	0.63	0.63	0.63	0.66	0.83	1.10	1.22	1.17	1.17	1.23
Custom operations	0.22	0.22	0.23	0.24	0.27	0.34	0.36	0.38	0.38	0.39
Fuel, lube, and electricity	0.55	0.76	1.05	1.06	1.16	1.77	1.18	1.53	1.79	1.82
Repairs	0.42	0.43	0.45	0.46	0.67	0.88	0.90	0.92	0.95	0.98
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.04	0.04	0.03	0.04	0.04	0.08	0.06	0.07	0.13	0.11
Interest on operating costs	0.01	0.02	0.05	0.08	0.09	0.06	0.01	0.01	0.00	0.01
<b>Total, operating costs</b>	<b>2.16</b>	<b>2.41</b>	<b>2.80</b>	<b>2.95</b>	<b>3.85</b>	<b>5.85</b>	<b>5.26</b>	<b>5.26</b>	<b>5.99</b>	<b>6.21</b>
Allocated overhead:										
Hired Labor	0.65	0.67	0.69	0.71	0.61	0.80	0.82	0.83	0.83	0.87
Opportunity cost of unpaid labor	1.91	1.96	2.02	2.10	1.45	1.90	1.94	1.96	1.98	2.07
Capital recovery of machinery & equip.	8.42	9.03	9.64	10.14	15.12	20.96	22.26	23.07	24.47	25.67
Opportunity cost of land (rental rate)	4.08	4.08	4.25	4.18	4.58	6.68	7.70	7.92	8.54	8.80
Taxes and insurance	0.84	0.85	0.86	0.90	0.93	1.23	1.20	1.24	1.30	1.36
General farm overhead	1.56	1.59	1.66	1.72	1.73	2.26	2.30	2.36	2.43	2.51
<b>Total, allocated overhead</b>	<b>17.45</b>	<b>18.18</b>	<b>19.12</b>	<b>19.76</b>	<b>24.42</b>	<b>33.83</b>	<b>36.22</b>	<b>37.38</b>	<b>39.57</b>	<b>41.29</b>
<b>Total costs listed</b>	<b>19.61</b>	<b>20.59</b>	<b>21.93</b>	<b>22.70</b>	<b>28.27</b>	<b>39.69</b>	<b>41.48</b>	<b>42.64</b>	<b>45.56</b>	<b>47.49</b>
<b>Total costs</b>	<b>326.84</b>	<b>385.38</b>	<b>424.40</b>	<b>415.71</b>	<b>553.37</b>	<b>543.21</b>	<b>545.88</b>	<b>601.12</b>	<b>588.80</b>	<b>630.86</b>
<b>Prevented planting %</b>	<b>6%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>7%</b>	<b>8%</b>	<b>7%</b>	<b>8%</b>	<b>8%</b>

Table 102: Cottonseed prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.90	0.95	1.10	1.25	1.70	3.55	3.33	2.58	3.39	3.64
Chemicals	1.74	1.74	1.74	1.81	1.76	2.33	2.57	2.48	2.48	2.60
Custom operations	0.21	0.21	0.22	0.23	0.27	0.35	0.37	0.38	0.39	0.40
Fuel, lube, and electricity	0.36	0.44	0.57	0.64	1.08	1.81	1.17	1.48	1.86	1.85
Repairs	0.50	0.52	0.54	0.56	0.93	1.21	1.24	1.27	1.31	1.35
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.04	0.02
Interest on operating costs	0.02	0.04	0.08	0.13	0.15	0.11	0.02	0.01	0.01	0.01
<b>Total, operating costs</b>	<b>3.72</b>	<b>3.89</b>	<b>4.25</b>	<b>4.61</b>	<b>5.90</b>	<b>9.36</b>	<b>8.71</b>	<b>8.22</b>	<b>9.47</b>	<b>9.86</b>
Allocated overhead:										
Hired Labor	0.81	0.83	0.86	0.89	0.90	1.17	1.20	1.21	1.23	1.28
Opportunity cost of unpaid labor	1.08	1.10	1.14	1.18	1.36	1.79	1.82	1.84	1.86	1.94
Capital recovery of machinery & equip.	8.99	9.64	10.29	10.83	22.83	31.64	33.61	34.82	36.94	38.76
Opportunity cost of land (rental rate)	8.40	8.40	8.75	8.61	11.52	16.81	19.35	19.93	21.48	22.14
Taxes and insurance	1.28	1.30	1.31	1.37	1.00	1.33	1.30	1.34	1.41	1.47
General farm overhead	2.88	2.95	3.08	3.19	1.97	2.57	2.62	2.69	2.77	2.86
<b>Total, allocated overhead</b>	<b>23.43</b>	<b>24.22</b>	<b>25.42</b>	<b>26.07</b>	<b>39.58</b>	<b>55.31</b>	<b>59.90</b>	<b>61.84</b>	<b>65.70</b>	<b>68.44</b>
<b>Total costs listed</b>	<b>27.16</b>	<b>28.11</b>	<b>29.67</b>	<b>30.68</b>	<b>45.48</b>	<b>64.67</b>	<b>68.61</b>	<b>70.06</b>	<b>75.17</b>	<b>78.31</b>
<b>Total costs</b>	<b>486.85</b>	<b>531.87</b>	<b>556.01</b>	<b>594.98</b>	<b>797.89</b>	<b>912.54</b>	<b>907.42</b>	<b>945.29</b>	<b>1,026.70</b>	<b>1,064.89</b>
<b>Prevented planting %</b>	<b>6%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>

Table 103: Cottonseed prevented planting cost per acre: Mississippi Portal

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	1.05	1.12	1.29	1.47	1.80	3.77	3.54	2.74	3.60	3.86
Chemicals	2.35	2.35	2.35	2.45	2.06	2.73	3.01	2.90	2.90	3.04
Custom operations	0.95	0.95	0.99	1.04	0.56	0.71	0.76	0.79	0.80	0.82
Fuel, lube, and electricity	0.41	0.48	0.63	0.70	0.83	1.34	0.88	1.12	1.41	1.43
Repairs	0.52	0.53	0.55	0.57	0.84	1.11	1.13	1.16	1.19	1.23
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.05	0.04
Interest on operating costs	0.03	0.05	0.11	0.17	0.15	0.10	0.02	0.01	0.01	0.01
<b>Total, operating costs</b>	<b>5.32</b>	<b>5.49</b>	<b>5.93</b>	<b>6.40</b>	<b>6.26</b>	<b>9.77</b>	<b>9.35</b>	<b>8.75</b>	<b>9.97</b>	<b>10.43</b>
Allocated overhead:										
Hired Labor	0.91	0.93	0.96	0.99	0.85	1.11	1.14	1.15	1.16	1.21
Opportunity cost of unpaid labor	1.27	1.30	1.35	1.39	1.01	1.33	1.36	1.37	1.39	1.44
Capital recovery of machinery & equip.	9.92	10.64	11.37	11.96	19.29	26.74	28.41	29.43	31.22	32.76
Opportunity cost of land (rental rate)	11.48	11.48	11.95	11.76	11.74	17.13	19.72	20.31	21.90	22.56
Taxes and insurance	1.33	1.35	1.37	1.44	1.40	1.85	1.81	1.87	1.96	2.05
General farm overhead	2.44	2.49	2.60	2.70	2.73	3.58	3.65	3.74	3.86	3.97
<b>Total, allocated overhead</b>	<b>27.35</b>	<b>28.20</b>	<b>29.59</b>	<b>30.24</b>	<b>37.03</b>	<b>51.74</b>	<b>56.08</b>	<b>57.86</b>	<b>61.48</b>	<b>64.00</b>
<b>Total costs listed</b>	<b>32.66</b>	<b>33.69</b>	<b>35.52</b>	<b>36.64</b>	<b>43.29</b>	<b>61.51</b>	<b>65.43</b>	<b>66.62</b>	<b>71.46</b>	<b>74.43</b>
<b>Total costs</b>	<b>614.94</b>	<b>647.02</b>	<b>677.37</b>	<b>724.22</b>	<b>777.44</b>	<b>861.26</b>	<b>874.65</b>	<b>909.60</b>	<b>992.09</b>	<b>1,046.52</b>
<b>Prevented planting %</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>

Table 104: Cottonseed prevented planting cost per acre: Fruitful Rim

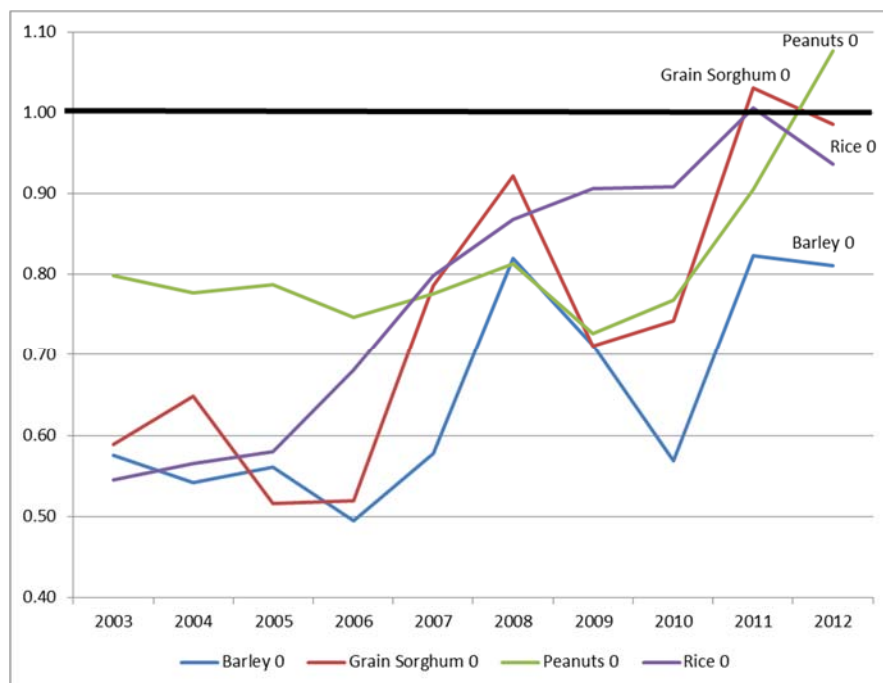
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.90	0.95	1.10	1.25	1.76	3.69	3.46	2.68	3.53	3.78
Chemicals	1.99	1.99	1.99	2.07	1.93	2.55	2.82	2.72	2.72	2.85
Custom operations	1.10	1.11	1.16	1.21	1.21	1.53	1.64	1.69	1.72	1.76
Fuel, lube, and electricity	1.17	1.48	1.90	2.14	2.06	3.22	2.14	2.72	3.35	3.38
Repairs	0.55	0.57	0.59	0.61	0.78	1.02	1.04	1.07	1.10	1.14
Ginning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.03	0.04	0.03	0.04	0.04	0.06	0.06	0.06	0.10	0.09
Interest on operating costs	0.03	0.05	0.12	0.18	0.19	0.13	0.02	0.02	0.01	0.01
<b>Total, operating costs</b>	<b>5.77</b>	<b>6.19</b>	<b>6.89</b>	<b>7.51</b>	<b>7.97</b>	<b>12.21</b>	<b>11.19</b>	<b>10.96</b>	<b>12.53</b>	<b>13.01</b>
Allocated overhead:										
Hired Labor	1.68	1.73	1.78	1.85	1.40	1.84	1.88	1.90	1.92	2.00
Opportunity cost of unpaid labor	2.55	2.62	2.70	2.80	1.63	2.14	2.18	2.21	2.23	2.32
Capital recovery of machinery & equip.	11.78	12.63	13.49	14.19	19.25	26.69	28.34	29.37	31.15	32.69
Opportunity cost of land (rental rate)	11.92	11.92	12.42	12.21	13.05	19.03	21.91	22.56	24.33	25.07
Taxes and insurance	2.30	2.33	2.35	2.47	1.50	1.99	1.94	2.00	2.11	2.20
General farm overhead	4.68	4.79	5.00	5.18	3.85	5.04	5.14	5.27	5.43	5.60
<b>Total, allocated overhead</b>	<b>34.91</b>	<b>36.02</b>	<b>37.74</b>	<b>38.70</b>	<b>40.68</b>	<b>56.71</b>	<b>61.39</b>	<b>63.30</b>	<b>67.17</b>	<b>69.87</b>
<b>Total costs listed</b>	<b>40.69</b>	<b>42.21</b>	<b>44.63</b>	<b>46.21</b>	<b>48.65</b>	<b>68.92</b>	<b>72.58</b>	<b>74.26</b>	<b>79.69</b>	<b>82.88</b>
<b>Total costs</b>	<b>732.81</b>	<b>816.92</b>	<b>861.17</b>	<b>951.31</b>	<b>986.90</b>	<b>1,056.04</b>	<b>1,064.29</b>	<b>1,115.81</b>	<b>1,134.73</b>	<b>1,201.58</b>
<b>Prevented planting %</b>	<b>6%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>

## 5. ADDITIONAL CROPS COVERED BY THE ARMS SURVEYS

Results for barley, grain sorghum, oats, peanuts, and rice are covered in this section. For these crops ERS publishes annual estimates of production costs by region based on ARMS surveys. In addition, we review popcorn, silage sorghum, hybrid corn seed, and hybrid sorghum seed in this section because their production methods are similar to those for crops for which ARMS data are available.

Figure 29 shows the simple average of regional rates (shown in subsequent sections) for barley, grain sorghum, peanuts, and rice. The symbols after the crop names signify a recommendation of either no change in coverage level (0), a reduction (-) or an increase (+). All four crops began in 2003 with relatively low ratios, from 0.5 to 0.8. By 2012, however, the ratios had risen to around 1.0 for peanuts, grain sorghum, and rice, while barley had risen to above 0.8.

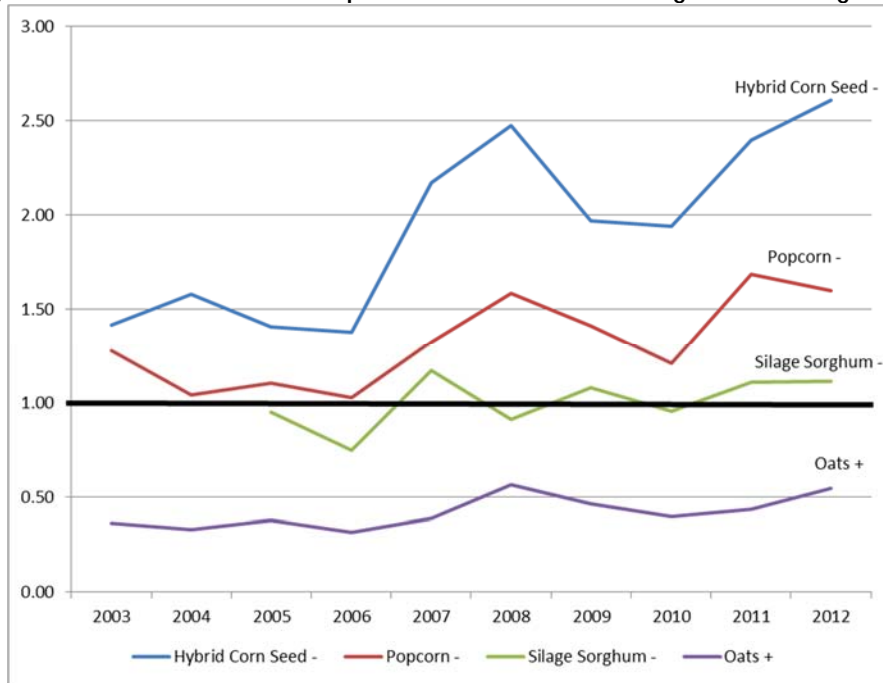
Figure 29: Ratios for other crops with ERS data and no change in coverage level



Other crops for which we have updated cost data but relevant older prevented planting estimates include hybrid corn seed, popcorn, silage sorghum, and oats, shown in Figure 30. Hybrid corn seed and popcorn both began above 1 and are now above 1.5. Silage sorghum began in 2005 at just about 1, has fluctuated slightly, and is now just above 1.



Figure 30: Ratios for other crops with ERS data and changes in coverage level



## 5.1. Barley

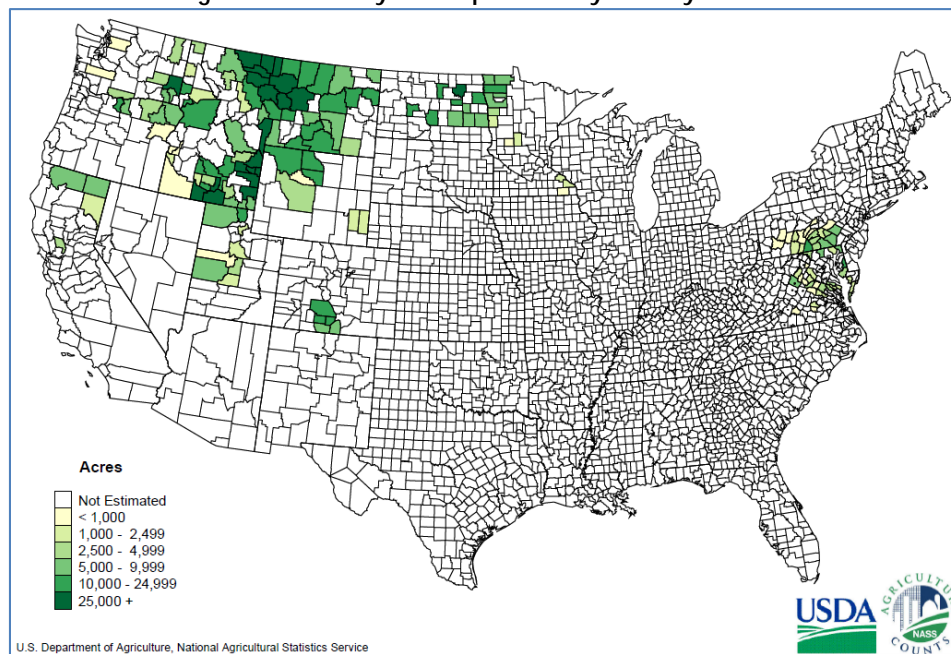
### Overview

Barley is the world's oldest cultivated grain. It is a short season, early maturing crop adapted to a wide variety of climates and suited to both dryland and irrigated production methods. It fits nicely into rotations with sugar beets, legumes and corn and is an alternate to dryland wheat. It is also a good forage crop alternative. However, corn and soybeans have replaced barley acreage as world demand for feed ingredients has exploded. Total US production has fallen from a peak of 609 million bushels in 1986/87 to 215 million bushels in 2013/14.

US production is concentrated in the Northern Plains states of Minnesota, Montana, Wyoming, and North Dakota, and in the Pacific Northwest states of Idaho, Washington, and Oregon. There is minor production in California, Colorado, Delaware, Maryland, New York, Utah, and Wisconsin. North Dakota and Montana are the two largest barley-producing states. North Dakota accounts for 36% of production and Montana accounts for 22%.

Barley is used for several end products. Between 60% and 90% of the barley grown in the US is produced for malt. Other uses include feed grain, hay, and a minor amount is used for human food. Farmers regularly grow barley for the malt market but use the feed market as a backup if the barley fails to meet malt specifications. Almost all malting barley is grown under contract.

Figure 31: Barley acres planted by county in 2012



### Sources of production costs

Cost estimates for barley came from the ERS cost and return estimates. The most recent ARMS survey underpinning those estimates covered the 2011 barley crop. The cost tables are available at <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.

### Production practices

Barley does best in rotation following row crops such as sugar beets, corn, peas, beans, or lentils. It is a frost resistant crop and can be planted in early April, or as early as soil and climate conditions permit. Barley can be grown in any tillage system; however, residue management is critical to success. Nitrogen management is also critical for barley; it is usually applied and tilled in just before planting or at planting in a band offset. Additional applications later in the season may be necessary.

Malting barley is grown to variety requirements and tight specifications due to rigid brewer requirements. Due to these standards, barley for malting requires more intensive management and precision growing parameters than barley for other end uses.

### Prevented planting experience

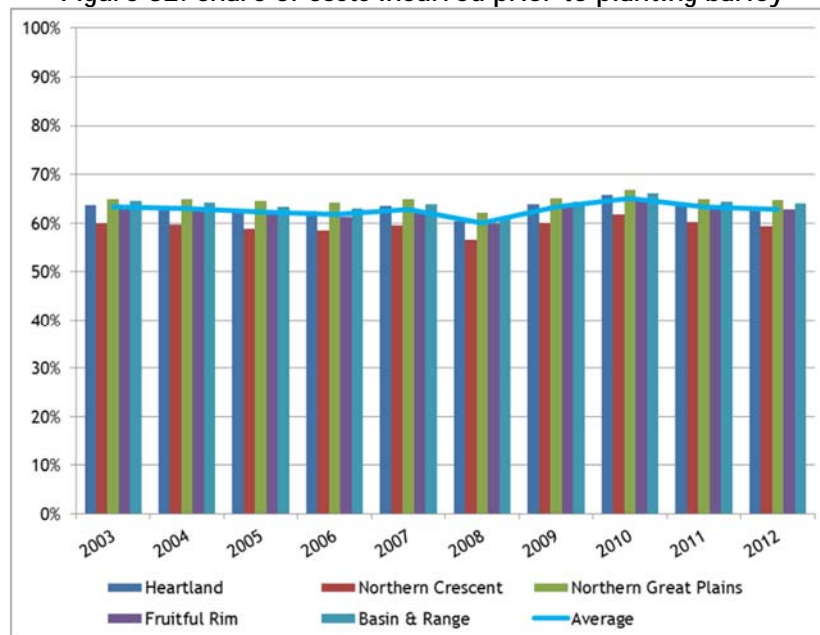
Prevented planting claims have accounted for 30.7% of total indemnities the last 20 years. Barley indemnities from 2003 to 2012 totaled \$341 million. Indemnities due to prevented planting were \$113 million (33% of total claims).

Of prevented planting indemnities, \$95.9 million (85%) were in North Dakota. Montana (\$7.5 million, 6.6%) and Minnesota (\$3.7 million, 3.3%) accounted for most of the rest. The most common cause of prevented planting claims was excess moisture/precipitation/rain, which represented \$107 million (95%).

### Analysis

Prevented planting costs for barley generally ranged from 60% to 65% over the past ten years, with the Northern Crescent around 59%-60% and the other regions in the 63%-65% range. A straight average of costs across all five regions shows prevented planting costs at 63% in both 2003 and 2012.

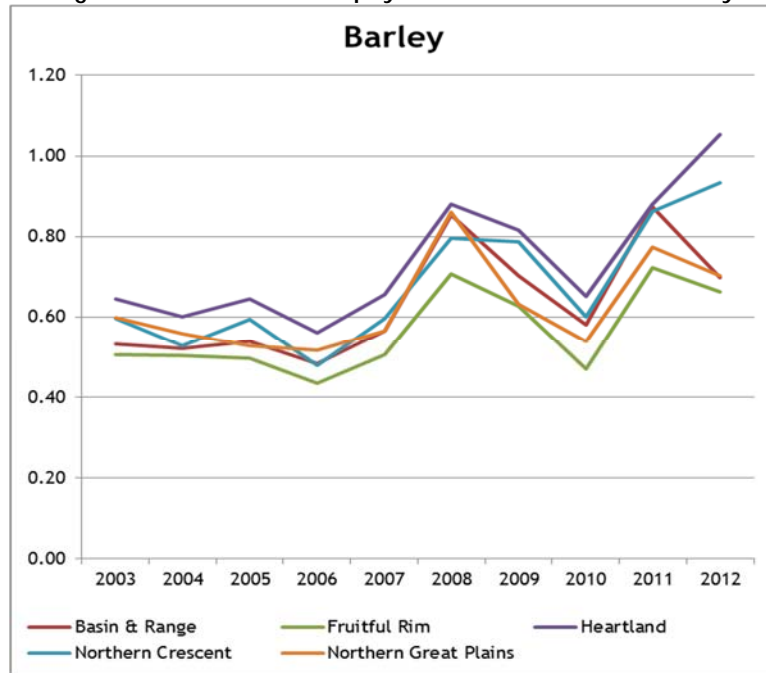
Figure 32: Share of costs incurred prior to planting barley



### Comparison of estimated PP cost to RMA payments

The ratio of RMA's incurred base PP payment to estimated PP costs has been under 1.00, though the ratio has increased in the past five years from 0.58 to 0.81. Also, since 49% of PP indemnities are associated with the additional 10% coverage, all of these ratios would be higher by about 8% if that were taken into account ( $10\%/60\% \times 0.49 = 0.082$ ). This would bring the average of the ratios to 0.88.

Figure 33: Ratio of RMA payment to PP costs for barley



### Recommendation

The ratio of RMA's PP payments to estimated PP costs is already close to 1.0 in a couple of regions. However, PP claims as a percentage of total indemnities are relatively high. Finally, estimates of the PP share of production costs are just a touch over RMA's 60% rate. On balance, the PP payment rate should be left at 60%.

Table 105: Barley production costs per planted acre: Basin and Range

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	10.81	10.39	10.53	10.31	11.25	15.82	15.32	13.35	16.14	20.52
Fertilizer	24.70	26.23	32.67	34.86	40.14	67.04	63.11	48.76	64.12	68.72
Chemicals	12.22	12.22	12.42	12.93	12.87	13.61	15.05	14.51	14.55	15.25
Custom operations	7.17	7.23	6.94	7.06	7.17	8.26	8.32	8.32	8.49	9.01
Fuel, lube, and electricity	11.54	13.44	17.80	19.70	21.76	28.36	18.79	23.41	29.84	29.51
Repairs	15.46	15.81	16.60	16.94	17.72	18.31	18.67	19.03	19.74	20.34
Purchased irrigation water	3.54	3.57	3.80	4.00	4.17	4.17	4.60	4.65	4.68	4.82
Crop Insurance	3.16	3.71	4.95	4.19	5.47	9.56	9.17	7.45	14.37	10.73
Interest on operating costs	0.45	0.70	1.71	2.54	2.77	1.29	0.21	0.13	0.08	0.11
<b>Total, operating costs</b>	<b>89.05</b>	<b>93.30</b>	<b>107.42</b>	<b>112.53</b>	<b>123.32</b>	<b>166.42</b>	<b>153.24</b>	<b>139.61</b>	<b>172.01</b>	<b>179.01</b>
Allocated overhead:										
Hired Labor	2.78	2.85	2.92	3.03	3.13	3.24	3.31	3.35	3.40	3.52
Opportunity cost of unpaid labor	27.85	28.56	29.27	30.33	31.4	32.46	33.17	33.53	34.06	35.3
Capital recovery of machinery & equip.	65.29	67.46	74.80	78.69	82.59	90.37	95.99	99.45	105.50	110.26
Opportunity cost of land	63.52	63.52	63.52	62.22	77.78	85.13	101.98	105.00	113.21	116.67
Taxes and insurance	6.53	6.63	7.8	8.2	9.52	10.73	10.33	10.68	11.24	11.49
General farm overhead	8.56	8.75	9.22	9.55	9.88	10.14	10.34	10.54	10.93	11.26
<b>Total, allocated overhead</b>	<b>174.53</b>	<b>177.77</b>	<b>187.53</b>	<b>192.02</b>	<b>214.30</b>	<b>232.07</b>	<b>255.12</b>	<b>262.55</b>	<b>278.34</b>	<b>288.50</b>
<b>Total costs listed</b>	<b>263.58</b>	<b>271.07</b>	<b>294.95</b>	<b>304.55</b>	<b>337.62</b>	<b>398.49</b>	<b>408.36</b>	<b>402.16</b>	<b>450.35</b>	<b>467.51</b>

Table 106: Barley production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	12.97	12.47	12.63	12.37	13.50	18.99	18.38	16.02	19.36	24.62
Fertilizer	27.40	29.10	36.24	38.67	44.53	74.37	70.01	54.09	71.13	76.23
Chemicals	15.58	15.58	15.84	16.48	16.41	17.36	19.19	18.50	18.55	19.44
Custom operations	11.89	11.99	11.51	11.70	11.89	13.70	13.79	13.79	14.08	14.93
Fuel, lube, and electricity	24.07	28.02	37.14	41.09	45.39	59.14	39.20	48.83	62.24	61.55
Repairs	19.18	19.61	20.59	21.01	21.98	22.72	23.16	23.61	24.49	25.23
Purchased irrigation water	5.85	5.90	6.27	6.60	6.89	6.89	7.60	7.69	7.74	7.97
Crop Insurance	4.52	4.84	4.72	4.50	4.43	7.97	6.09	5.34	9.35	9.41
Interest on operating costs	0.61	0.97	2.38	3.56	3.86	1.77	0.28	0.18	0.11	0.15
<b>Total, operating costs</b>	<b>122.07</b>	<b>128.48</b>	<b>147.32</b>	<b>155.98</b>	<b>168.88</b>	<b>222.91</b>	<b>197.70</b>	<b>188.05</b>	<b>227.05</b>	<b>239.53</b>
<b>Allocated overhead:</b>										
Hired Labor	7.96	8.16	8.37	8.67	8.97	9.28	9.48	9.58	9.73	10.09
Opportunity cost of unpaid labor	26.97	27.66	28.34	29.37	30.41	31.44	32.12	32.47	32.98	34.18
Capital recovery of machinery & equip.	75.22	77.72	86.18	90.66	95.15	104.11	110.59	114.57	121.55	127.03
Opportunity cost of land	84.35	84.35	84.35	82.63	103.29	113.04	135.42	139.44	150.34	154.93
Taxes and insurance	6.71	6.81	8.01	8.43	9.78	11.03	10.61	10.98	11.55	11.81
General farm overhead	10.48	10.71	11.29	11.69	12.09	12.41	12.66	12.90	13.38	13.79
<b>Total, allocated overhead</b>	<b>211.69</b>	<b>215.41</b>	<b>226.54</b>	<b>231.45</b>	<b>259.69</b>	<b>281.31</b>	<b>310.88</b>	<b>319.94</b>	<b>339.53</b>	<b>351.83</b>
<b>Total costs listed</b>	<b>333.76</b>	<b>343.89</b>	<b>373.86</b>	<b>387.43</b>	<b>428.57</b>	<b>504.22</b>	<b>508.58</b>	<b>507.99</b>	<b>566.58</b>	<b>591.36</b>

Table 107: Barley production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	8.21	7.89	8.00	7.83	8.54	12.02	11.64	10.14	12.26	15.59
Fertilizer	16.43	17.45	21.73	23.19	26.70	44.60	41.98	32.43	42.65	45.71
Chemicals	12.16	12.16	12.36	12.86	12.81	13.55	14.97	14.44	14.48	15.17
Custom operations	6.13	6.18	5.93	6.03	6.13	7.06	7.11	7.11	7.26	7.70
Fuel, lube, and electricity	7.76	9.03	11.97	13.25	14.63	19.07	12.64	15.74	20.07	19.84
Repairs	14.24	14.56	15.29	15.60	16.32	16.87	17.20	17.53	18.18	18.73
Purchased irrigation water	0.69	0.70	0.74	0.78	0.81	0.81	0.90	0.91	0.91	0.94
Crop Insurance	5.21	4.90	5.08	5.66	6.56	12.07	8.62	7.63	14.19	10.41
Interest on operating costs	0.35	0.54	1.29	1.91	2.07	0.95	0.15	0.10	0.06	0.08
<b>Total, operating costs</b>	<b>71.18</b>	<b>73.41</b>	<b>82.39</b>	<b>87.11</b>	<b>94.57</b>	<b>127.00</b>	<b>115.21</b>	<b>106.03</b>	<b>130.06</b>	<b>134.17</b>
Allocated overhead:										
Hired Labor	1.97	2.02	2.07	2.15	2.22	2.30	2.35	2.37	2.41	2.50
Opportunity cost of unpaid labor	17.82	18.27	18.73	19.41	20.09	20.77	21.23	21.45	21.79	22.59
Capital recovery of machinery & equip.	63.56	65.67	72.82	76.61	80.40	87.97	93.45	96.81	102.71	107.34
Opportunity cost of land	32.41	32.41	32.41	31.75	39.69	43.43	52.03	53.58	57.76	59.53
Taxes and insurance	6.77	6.88	8.08	8.5	9.87	11.13	10.71	11.07	11.65	11.91
General farm overhead	8.10	8.28	8.72	9.03	9.35	9.60	9.78	9.97	10.34	10.65
<b>Total, allocated overhead</b>	<b>130.63</b>	<b>133.53</b>	<b>142.83</b>	<b>147.45</b>	<b>161.62</b>	<b>175.20</b>	<b>189.55</b>	<b>195.25</b>	<b>206.66</b>	<b>214.52</b>
<b>Total costs listed</b>	<b>201.81</b>	<b>206.94</b>	<b>225.22</b>	<b>234.56</b>	<b>256.19</b>	<b>302.20</b>	<b>304.76</b>	<b>301.28</b>	<b>336.72</b>	<b>348.69</b>

Table 108: Barley production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	10.80	10.38	10.52	10.30	11.24	15.81	15.31	13.34	16.12	20.50
Fertilizer	19.76	20.99	26.13	27.89	32.11	53.63	50.49	39.01	51.30	54.97
Chemicals	5.02	5.02	5.10	5.31	5.29	5.59	6.18	5.96	5.98	6.26
Custom operations	13.05	13.16	12.63	12.84	13.05	15.03	15.14	15.14	15.45	16.39
Fuel, lube, and electricity	7.68	8.94	11.85	13.11	14.48	18.87	12.51	15.58	19.86	19.64
Repairs	9.64	9.86	10.35	10.56	11.05	11.42	11.64	11.86	12.31	12.68
Purchased irrigation water	0.57	0.57	0.61	0.64	0.67	0.67	0.74	0.75	0.75	0.78
Crop Insurance	3.29	3.26	3.48	2.84	3.47	7.29	5.72	5.30	8.31	9.81
Interest on operating costs	0.35	0.54	1.31	1.94	2.11	1.00	0.16	0.10	0.06	0.09
<b>Total, operating costs</b>	<b>70.16</b>	<b>72.72</b>	<b>81.98</b>	<b>85.43</b>	<b>93.47</b>	<b>129.31</b>	<b>117.89</b>	<b>107.04</b>	<b>130.14</b>	<b>141.12</b>
Allocated overhead:										
Hired Labor	2.16	2.22	2.27	2.35	2.44	2.52	2.57	2.60	2.64	2.74
Opportunity cost of unpaid labor	22.35	22.92	23.49	24.34	25.2	26.05	26.62	26.91	27.33	28.33
Capital recovery of machinery & equip.	42.28	43.68	48.44	50.96	53.48	58.52	62.16	64.40	68.32	71.40
Opportunity cost of land	52.55	52.55	52.55	51.48	64.35	70.42	84.37	86.87	93.66	96.52
Taxes and insurance	4.34	4.41	5.18	5.45	6.32	7.13	6.86	7.10	7.47	7.64
General farm overhead	7.32	7.48	7.88	8.16	8.45	8.67	8.84	9.01	9.35	9.63
<b>Total, allocated overhead</b>	<b>131.00</b>	<b>133.26</b>	<b>139.81</b>	<b>142.74</b>	<b>160.24</b>	<b>173.31</b>	<b>191.42</b>	<b>196.89</b>	<b>208.77</b>	<b>216.26</b>
<b>Total costs listed</b>	<b>201.16</b>	<b>205.98</b>	<b>221.79</b>	<b>228.17</b>	<b>253.71</b>	<b>302.62</b>	<b>309.31</b>	<b>303.93</b>	<b>338.91</b>	<b>357.38</b>



Table 109: Barley production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	13.03	12.53	12.69	12.43	13.56	19.07	18.47	16.09	19.45	24.74
Fertilizer	22.09	23.46	29.22	31.18	35.90	59.96	56.44	43.61	57.34	61.46
Chemicals	2.87	2.87	2.92	3.04	3.02	3.20	3.53	3.41	3.42	3.58
Custom operations	15.95	16.08	15.44	15.69	15.95	18.37	18.50	18.50	18.88	20.03
Fuel, lube, and electricity	10.22	11.90	15.77	17.45	19.27	25.11	16.64	20.73	26.43	26.13
Repairs	9.73	9.95	10.45	10.66	11.15	11.53	11.75	11.98	12.42	12.80
Purchased irrigation water	2.07	2.09	2.22	2.34	2.44	2.44	2.69	2.72	2.74	2.82
Crop Insurance	1.76	1.99	2.85	2.30	3.56	5.52	4.42	3.79	6.12	7.23
Interest on operating costs	0.39	0.62	1.51	2.23	2.44	1.16	0.19	0.12	0.07	0.10
<b>Total, operating costs</b>	<b>78.11</b>	<b>81.49</b>	<b>93.07</b>	<b>97.32</b>	<b>107.29</b>	<b>146.36</b>	<b>132.63</b>	<b>120.95</b>	<b>146.87</b>	<b>158.89</b>
Allocated overhead:										
Hired Labor	2.17	2.23	2.28	2.36	2.45	2.53	2.58	2.61	2.65	2.75
Opportunity cost of unpaid labor	29.97	30.73	31.5	32.64	33.79	34.93	35.7	36.08	36.65	37.99
Capital recovery of machinery & equip.	42.83	44.25	49.07	51.62	54.18	59.28	62.97	65.24	69.21	72.33
Opportunity cost of land	48.15	48.15	48.15	47.17	58.96	64.53	77.30	79.59	85.82	88.44
Taxes and insurance	3.74	3.8	4.46	4.7	5.45	6.15	5.91	6.12	6.44	6.58
General farm overhead	8.06	8.24	8.68	8.99	9.30	9.55	9.73	9.92	10.29	10.60
<b>Total, allocated overhead</b>	<b>134.92</b>	<b>137.40</b>	<b>144.14</b>	<b>147.48</b>	<b>164.13</b>	<b>176.97</b>	<b>194.19</b>	<b>199.56</b>	<b>211.06</b>	<b>218.69</b>
<b>Total costs listed</b>	<b>213.03</b>	<b>218.89</b>	<b>237.21</b>	<b>244.80</b>	<b>271.42</b>	<b>323.33</b>	<b>326.82</b>	<b>320.51</b>	<b>357.93</b>	<b>377.58</b>

Table 110: Barley - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Chemicals	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Custom operations	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Fuel, lube, and electricity	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Repairs	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Interest on operating costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Hired Labor	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Opportunity cost of unpaid labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 111: Barley prevented planting cost per acre: Basin and Range

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	7.41	7.87	9.80	10.46	12.04	20.11	18.93	14.63	19.24	20.62
Chemicals	2.08	2.08	2.11	2.20	2.19	2.31	2.56	2.47	2.47	2.59
Custom operations	2.08	2.10	2.01	2.05	2.08	2.40	2.41	2.41	2.46	2.61
Fuel, lube, and electricity	2.65	3.09	4.09	4.53	5.00	6.52	4.32	5.38	6.86	6.79
Repairs	3.09	3.16	3.32	3.39	3.54	3.66	3.73	3.81	3.95	4.07
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.98	1.15	1.53	1.30	1.70	2.96	2.84	2.31	4.45	3.33
Interest on operating costs	0.11	0.18	0.43	0.64	0.69	0.32	0.05	0.03	0.02	0.03
<b>Total, operating costs</b>	<b>18.41</b>	<b>19.62</b>	<b>23.30</b>	<b>24.56</b>	<b>27.25</b>	<b>38.29</b>	<b>34.86</b>	<b>31.04</b>	<b>39.46</b>	<b>40.03</b>
Allocated overhead:										
Hired Labor	0.81	0.83	0.85	0.88	0.91	0.94	0.96	0.97	0.99	1.02
Opportunity cost of unpaid labor	6.96	7.14	7.32	7.58	7.85	8.12	8.29	8.38	8.52	8.83
Capital recovery of machinery & equip.	65.29	67.46	74.80	78.69	82.59	90.37	95.99	99.45	105.50	110.26
Opportunity cost of land	63.52	63.52	63.52	62.22	77.78	85.13	101.98	105.00	113.21	116.67
Taxes and insurance	6.53	6.63	7.80	8.20	9.52	10.73	10.33	10.68	11.24	11.49
General farm overhead	8.56	8.75	9.22	9.55	9.88	10.14	10.34	10.54	10.93	11.26
<b>Total, allocated overhead</b>	<b>151.67</b>	<b>154.33</b>	<b>163.50</b>	<b>167.12</b>	<b>188.53</b>	<b>205.42</b>	<b>227.89</b>	<b>235.02</b>	<b>250.38</b>	<b>259.53</b>
<b>Total costs listed</b>	<b>170.07</b>	<b>173.95</b>	<b>186.81</b>	<b>191.68</b>	<b>215.77</b>	<b>243.72</b>	<b>262.75</b>	<b>266.06</b>	<b>289.84</b>	<b>299.56</b>
<b>Total costs</b>	<b>263.58</b>	<b>271.07</b>	<b>294.95</b>	<b>304.55</b>	<b>337.62</b>	<b>398.49</b>	<b>408.36</b>	<b>402.16</b>	<b>450.35</b>	<b>467.51</b>
<b>Prevented planting %</b>	<b>65%</b>	<b>64%</b>	<b>63%</b>	<b>63%</b>	<b>64%</b>	<b>61%</b>	<b>64%</b>	<b>66%</b>	<b>64%</b>	<b>64%</b>

Table 112: Barley prevented planting cost per acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	8.22	8.73	10.87	11.60	13.36	22.31	21.00	16.23	21.34	22.87
Chemicals	2.65	2.65	2.69	2.80	2.79	2.95	3.26	3.15	3.15	3.30
Custom operations	3.45	3.48	3.34	3.39	3.45	3.97	4.00	4.00	4.08	4.33
Fuel, lube, and electricity	5.54	6.44	8.54	9.45	10.44	13.60	9.02	11.23	14.32	14.16
Repairs	3.84	3.92	4.12	4.20	4.40	4.54	4.63	4.72	4.90	5.05
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.40	1.50	1.46	1.40	1.37	2.47	1.89	1.66	2.90	2.92
Interest on operating costs	0.15	0.24	0.60	0.89	0.97	0.44	0.07	0.05	0.03	0.04
<b>Total, operating costs</b>	<b>25.24</b>	<b>26.97</b>	<b>31.62</b>	<b>33.73</b>	<b>36.77</b>	<b>50.29</b>	<b>43.87</b>	<b>41.02</b>	<b>50.71</b>	<b>52.66</b>
<b>Allocated overhead:</b>										
Hired Labor	2.31	2.37	2.43	2.51	2.60	2.69	2.75	2.78	2.82	2.93
Opportunity cost of unpaid labor	6.74	6.92	7.09	7.34	7.60	7.86	8.03	8.12	8.25	8.55
Capital recovery of machinery & equip.	75.22	77.72	86.18	90.66	95.15	104.11	110.59	114.57	121.55	127.03
Opportunity cost of land	84.35	84.35	84.35	82.63	103.29	113.04	135.42	139.44	150.34	154.93
Taxes and insurance	6.71	6.81	8.01	8.43	9.78	11.03	10.61	10.98	11.55	11.81
General farm overhead	10.48	10.71	11.29	11.69	12.09	12.41	12.66	12.90	13.38	13.79
<b>Total, allocated overhead</b>	<b>185.81</b>	<b>188.87</b>	<b>199.34</b>	<b>203.27</b>	<b>230.51</b>	<b>251.14</b>	<b>280.06</b>	<b>288.79</b>	<b>307.89</b>	<b>319.03</b>
<b>Total costs listed</b>	<b>211.05</b>	<b>215.84</b>	<b>230.96</b>	<b>237.00</b>	<b>267.28</b>	<b>301.44</b>	<b>323.93</b>	<b>329.81</b>	<b>358.60</b>	<b>371.69</b>
<b>Total costs</b>	<b>333.76</b>	<b>343.89</b>	<b>373.86</b>	<b>387.43</b>	<b>428.57</b>	<b>504.22</b>	<b>508.58</b>	<b>507.99</b>	<b>566.58</b>	<b>591.36</b>
<b>Prevented planting %</b>	<b>63%</b>	<b>63%</b>	<b>62%</b>	<b>61%</b>	<b>62%</b>	<b>60%</b>	<b>64%</b>	<b>65%</b>	<b>63%</b>	<b>63%</b>

Table 113: Barley prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	4.93	5.24	6.52	6.96	8.01	13.38	12.59	9.73	12.80	13.71
Chemicals	2.07	2.07	2.10	2.19	2.18	2.30	2.54	2.45	2.46	2.58
Custom operations	1.78	1.79	1.72	1.75	1.78	2.05	2.06	2.06	2.11	2.23
Fuel, lube, and electricity	1.78	2.08	2.75	3.05	3.36	4.39	2.91	3.62	4.62	4.56
Repairs	2.85	2.91	3.06	3.12	3.26	3.37	3.44	3.51	3.64	3.75
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.62	1.52	1.57	1.75	2.03	3.74	2.67	2.37	4.40	3.23
Interest on operating costs	0.09	0.14	0.32	0.48	0.52	0.24	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>15.11</b>	<b>15.74</b>	<b>18.05</b>	<b>19.29</b>	<b>21.15</b>	<b>29.47</b>	<b>26.26</b>	<b>23.76</b>	<b>30.03</b>	<b>30.08</b>
Allocated overhead:										
Hired Labor	0.57	0.59	0.60	0.62	0.64	0.67	0.68	0.69	0.70	0.73
Opportunity cost of unpaid labor	4.46	4.57	4.68	4.85	5.02	5.19	5.31	5.36	5.45	5.65
Capital recovery of machinery & equip.	63.56	65.67	72.82	76.61	80.40	87.97	93.45	96.81	102.71	107.34
Opportunity cost of land	32.41	32.41	32.41	31.75	39.69	43.43	52.03	53.58	57.76	59.53
Taxes and insurance	6.77	6.88	8.08	8.50	9.87	11.13	10.71	11.07	11.65	11.91
General farm overhead	8.10	8.28	8.72	9.03	9.35	9.60	9.78	9.97	10.34	10.65
<b>Total, allocated overhead</b>	<b>115.87</b>	<b>118.39</b>	<b>127.31</b>	<b>131.37</b>	<b>144.98</b>	<b>157.99</b>	<b>171.96</b>	<b>177.48</b>	<b>188.61</b>	<b>195.80</b>
<b>Total costs listed</b>	<b>130.98</b>	<b>134.13</b>	<b>145.36</b>	<b>150.66</b>	<b>166.12</b>	<b>187.46</b>	<b>198.22</b>	<b>201.24</b>	<b>218.63</b>	<b>225.88</b>
<b>Total costs</b>	<b>201.81</b>	<b>206.94</b>	<b>225.22</b>	<b>234.56</b>	<b>256.19</b>	<b>302.20</b>	<b>304.76</b>	<b>301.28</b>	<b>336.72</b>	<b>348.69</b>
<b>Prevented planting %</b>	<b>65%</b>	<b>65%</b>	<b>65%</b>	<b>64%</b>	<b>65%</b>	<b>62%</b>	<b>65%</b>	<b>67%</b>	<b>65%</b>	<b>65%</b>

Table 114: Barley prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.93	6.30	7.84	8.37	9.63	16.09	15.15	11.70	15.39	16.49
Chemicals	0.85	0.85	0.87	0.90	0.90	0.95	1.05	1.01	1.02	1.06
Custom operations	3.78	3.82	3.66	3.72	3.78	4.36	4.39	4.39	4.48	4.75
Fuel, lube, and electricity	1.77	2.06	2.73	3.02	3.33	4.34	2.88	3.58	4.57	4.52
Repairs	1.93	1.97	2.07	2.11	2.21	2.28	2.33	2.37	2.46	2.54
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.02	1.01	1.08	0.88	1.08	2.26	1.77	1.64	2.58	3.04
Interest on operating costs	0.09	0.14	0.33	0.49	0.53	0.25	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>15.37</b>	<b>16.14</b>	<b>18.57</b>	<b>19.49</b>	<b>21.46</b>	<b>30.53</b>	<b>27.61</b>	<b>24.73</b>	<b>30.51</b>	<b>32.43</b>
<b>Allocated overhead:</b>										
Hired Labor	0.63	0.64	0.66	0.68	0.71	0.73	0.75	0.75	0.77	0.79
Opportunity cost of unpaid labor	5.59	5.73	5.87	6.09	6.30	6.51	6.66	6.73	6.83	7.08
Capital recovery of machinery & equip.	42.28	43.68	48.44	50.96	53.48	58.52	62.16	64.40	68.32	71.40
Opportunity cost of land	52.55	52.55	52.55	51.48	64.35	70.42	84.37	86.87	93.66	96.52
Taxes and insurance	4.34	4.41	5.18	5.45	6.32	7.13	6.86	7.10	7.47	7.64
General farm overhead	7.32	7.48	7.88	8.16	8.45	8.67	8.84	9.01	9.35	9.63
<b>Total, allocated overhead</b>	<b>112.70</b>	<b>114.49</b>	<b>120.58</b>	<b>122.82</b>	<b>139.61</b>	<b>151.98</b>	<b>169.63</b>	<b>174.86</b>	<b>186.40</b>	<b>193.07</b>
<b>Total costs listed</b>	<b>128.07</b>	<b>130.63</b>	<b>139.15</b>	<b>142.30</b>	<b>161.07</b>	<b>182.52</b>	<b>197.24</b>	<b>199.59</b>	<b>216.91</b>	<b>225.49</b>
<b>Total costs</b>	<b>201.16</b>	<b>205.98</b>	<b>221.79</b>	<b>228.17</b>	<b>253.71</b>	<b>302.62</b>	<b>309.31</b>	<b>303.93</b>	<b>338.91</b>	<b>357.38</b>
<b>Prevented planting %</b>	<b>64%</b>	<b>63%</b>	<b>63%</b>	<b>62%</b>	<b>63%</b>	<b>60%</b>	<b>64%</b>	<b>66%</b>	<b>64%</b>	<b>63%</b>

Table 115: Barley prevented planting cost per acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.63	7.04	8.77	9.35	10.77	17.99	16.93	13.08	17.20	18.44
Chemicals	0.49	0.49	0.50	0.52	0.51	0.54	0.60	0.58	0.58	0.61
Custom operations	4.63	4.66	4.48	4.55	4.63	5.33	5.37	5.37	5.48	5.81
Fuel, lube, and electricity	2.35	2.74	3.63	4.01	4.43	5.78	3.83	4.77	6.08	6.01
Repairs	1.95	1.99	2.09	2.13	2.23	2.31	2.35	2.40	2.48	2.56
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.55	0.62	0.88	0.71	1.10	1.71	1.37	1.17	1.90	2.24
Interest on operating costs	0.10	0.16	0.38	0.56	0.61	0.29	0.05	0.03	0.02	0.03
<b>Total, operating costs</b>	<b>16.68</b>	<b>17.69</b>	<b>20.72</b>	<b>21.84</b>	<b>24.28</b>	<b>33.94</b>	<b>30.49</b>	<b>27.40</b>	<b>33.74</b>	<b>35.69</b>
<b>Allocated overhead:</b>										
Hired Labor	0.63	0.65	0.66	0.68	0.71	0.73	0.75	0.76	0.77	0.80
Opportunity cost of unpaid labor	7.49	7.68	7.88	8.16	8.45	8.73	8.93	9.02	9.16	9.50
Capital recovery of machinery & equip.	42.83	44.25	49.07	51.62	54.18	59.28	62.97	65.24	69.21	72.33
Opportunity cost of land	48.15	48.15	48.15	47.17	58.96	64.53	77.30	79.59	85.82	88.44
Taxes and insurance	3.74	3.80	4.46	4.70	5.45	6.15	5.91	6.12	6.44	6.58
General farm overhead	8.06	8.24	8.68	8.99	9.30	9.55	9.73	9.92	10.29	10.60
<b>Total, allocated overhead</b>	<b>110.90</b>	<b>112.77</b>	<b>118.90</b>	<b>121.32</b>	<b>137.05</b>	<b>148.98</b>	<b>165.58</b>	<b>170.65</b>	<b>181.69</b>	<b>188.25</b>
<b>Total costs listed</b>	<b>127.58</b>	<b>130.46</b>	<b>139.61</b>	<b>143.16</b>	<b>161.33</b>	<b>182.92</b>	<b>196.08</b>	<b>198.04</b>	<b>215.43</b>	<b>223.94</b>
<b>Total costs</b>	<b>213.03</b>	<b>218.89</b>	<b>237.21</b>	<b>244.80</b>	<b>271.42</b>	<b>323.33</b>	<b>326.82</b>	<b>320.51</b>	<b>357.93</b>	<b>377.58</b>
<b>Prevented planting %</b>	<b>60%</b>	<b>60%</b>	<b>59%</b>	<b>58%</b>	<b>59%</b>	<b>57%</b>	<b>60%</b>	<b>62%</b>	<b>60%</b>	<b>59%</b>

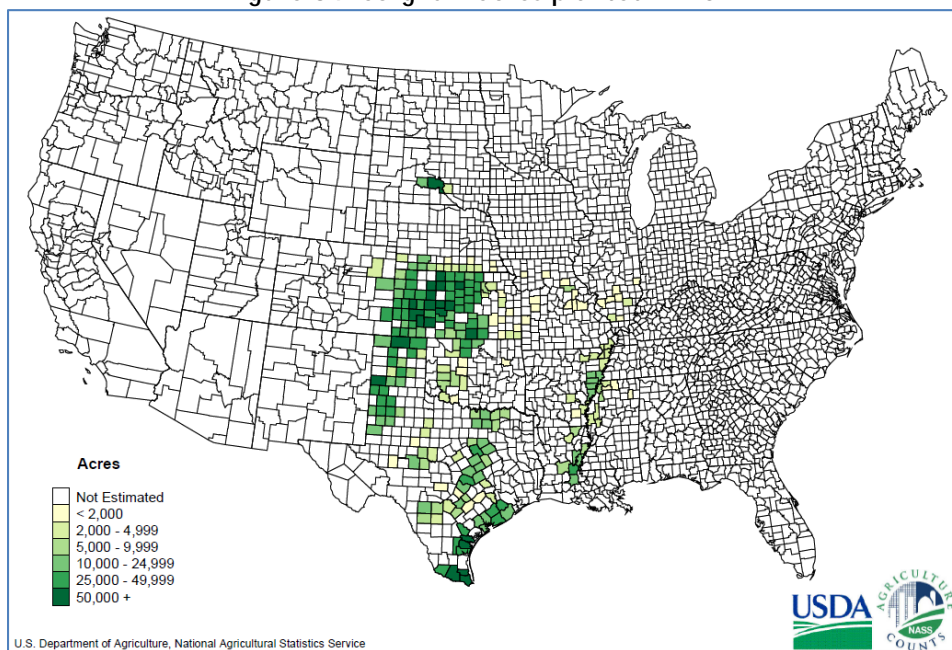
## 5.2. Grain sorghum

### Overview

In the United States, sorghum is used mostly as a feed grain for livestock. It has high nutritional value and is more tolerant to drought than other crops. About 80% of planted area is harvested for grain, 6-7% is harvested for silage, and the remainder either fails or is grazed. Total area harvested for grain sorghum in 2013 was 6.5 million acres, up substantially over 2011 (3.9 million acres) and 2012 (5.0 million acres).

From 2011 through 2013, average national annual production was 283 million bushels. Over three-quarters of this total was produced by two states, Kansas (119 million bu, 42%) and Texas (99 million bu, 35%). A dozen other states produce the rest. Key production areas are shown in the accompanying map.

Figure 34: Sorghum acres planted in 2012



### Sources of production cost information

Many states produce sorghum crop budgets. Moreover, sorghum is one of the crops for which the Economic Research Service conducts a periodic statistically representative survey of farm finances and production practices on which it bases annual production cost estimates. The most recent survey covered the 2011 crop.

RMA contracted with ERS in 2007 to prepare estimates of costs incurred at each stage of the sorghum production process and we have used some of that information in developing our estimates of prevented planting costs.

The annual production cost series maintained by ERS for each farm resource region are available at the following link: <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.



### Production practices

Sorghum is a warm weather, drought tolerant crop. Typical soil preparation involves several field passes prior to planting for field cultivation/seedbed preparation, a spring burndown with glyphosate, and the use of fertilizer: nitrogen, some phosphate and potash, and occasionally lime. Nitrogen represents roughly half of fertilizer costs. Most nitrogen is applied pre-planting.

Post-planting herbicides and insecticides are also used. Grain sorghum is produced under both non-irrigated and irrigated systems.

### Prevented planting experience

Total insurance indemnities paid to farmers for grain sorghum were \$1.167 billion for the period 2003-2012. Of this total, \$42.2 million (3.6%) was for prevented planting claims. Of this prevented planting total, over three-quarters came from four states: Texas (\$10.4 million, 24.6%), Kansas (\$9.9 million, 23.5%), Oklahoma (\$7.4 million, 17.6%), and Colorado (\$4.9 million, 11.7%).

### Analysis

Production costs and prevented planting percentages vary by region and generally fell by 4-5 percentage points over the decade. Most grain sorghum production and prevented planting claims come from the Prairie Gateway region, where the prevented planting cost percentage has dropped from an estimated 58% (close to RMA's 60% rate) in 2003 to 54% in 2012. Elsewhere, prevented planting percentages were higher.

**Table 116: Grain sorghum production costs and percentages by region 2003 and 2012**

Region	PP costs 2003	PP costs 2012	PP% 2003	PP % 2012
Fruitful Rim	\$123 of \$207	\$200 of \$357	59%	56%
Prairie Gateway	\$129 of \$224	\$210 of \$386	58%	54%
Northern Great Plains	\$105 of \$162	\$167 of \$267	65%	62%
Heartland	\$189 of \$280	\$296 of \$466	68%	63%

### Comparison of RMA payments to estimated PP costs

In 2003, the ratio of RMA's incurred base PP payment to estimated PP costs was well below 1.00, but it has since risen to 1.00.

Figure 35: Share of costs incurred prior to planting grain sorghum

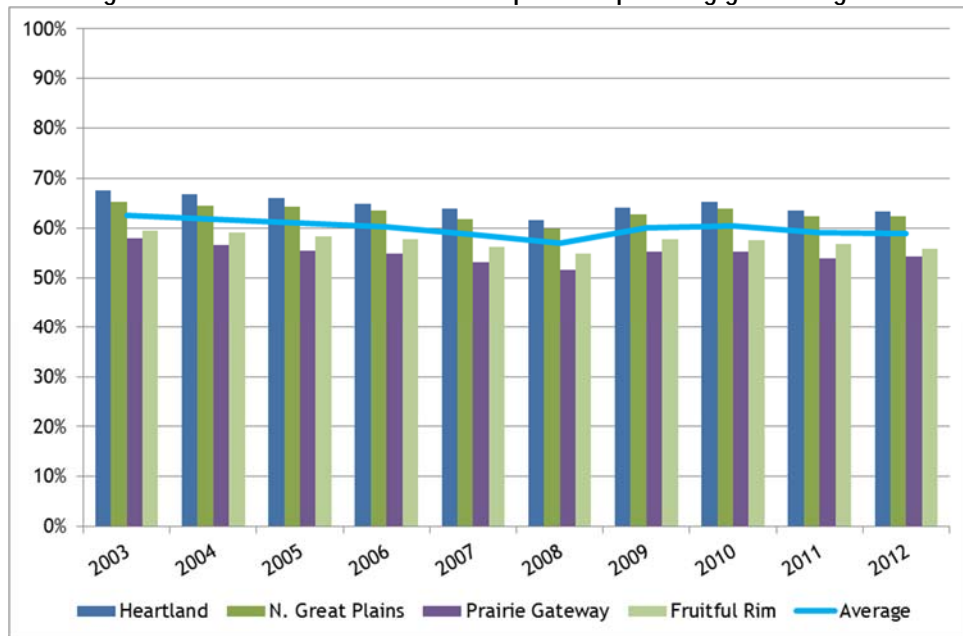
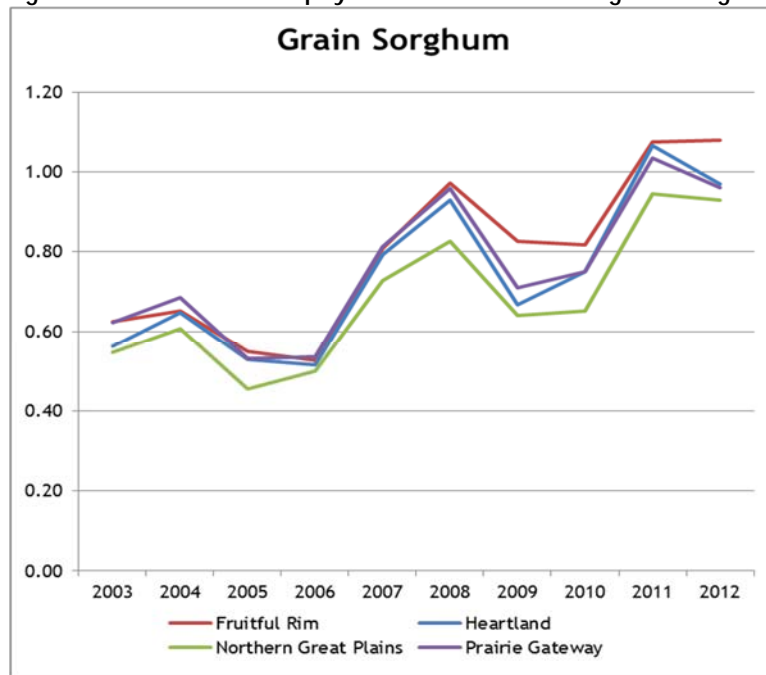


Figure 36: Ratio of RMA payment to PP costs for grain sorghum



**Recommendation**

Current PP indemnity payments match estimated PP costs. RMA's 60% rate should be left as is.

Table 117: Grain sorghum production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	5.56	5.84	6.35	6.46	6.68	7.90	8.96	9.18	9.01	11.29
Fertilizer	19.70	20.92	24.13	27.49	31.92	48.76	46.42	35.59	46.82	50.16
Chemicals	7.20	7.20	7.20	7.50	7.74	8.10	9.06	8.94	8.97	9.40
Custom operations	9.84	9.92	10.32	10.79	11.25	11.25	12.25	12.64	12.90	13.68
Fuel, lube, and electricity	13.94	16.60	22.06	21.84	29.24	35.76	22.67	33.25	37.82	41.19
Repairs	14.46	14.78	15.43	15.98	16.53	16.97	17.30	17.63	18.29	18.84
Purchased irrigation water	0.55	0.55	0.57	0.60	0.63	0.63	0.69	0.71	0.72	0.76
Crop Insurance	5.24	5.62	4.95	5.78	8.54	10.47	10.36	10.06	12.56	15.26
Interest on operating inputs	0.38	0.60	1.46	2.14	2.29	0.96	0.17	0.12	0.07	0.09
<b>Total, operating costs</b>	<b>76.87</b>	<b>82.03</b>	<b>92.47</b>	<b>98.58</b>	<b>114.82</b>	<b>140.80</b>	<b>127.88</b>	<b>128.12</b>	<b>147.16</b>	<b>160.67</b>
Allocated overhead:										
Hired labor	12.73	13.05	13.46	13.95	14.44	14.93	15.26	15.42	15.66	16.23
Opportunity cost of unpaid labor	21.56	22.11	22.8	23.63	24.46	25.29	25.84	26.12	26.53	27.5
Capital recovery of machinery & equip	49.83	53.46	57.09	60.06	63.03	68.97	73.59	75.90	80.52	84.15
Opportunity cost of land	34.2	34.2	35.63	35.05	37.54	42.02	45.91	47.27	50.97	52.53
Taxes and insurance	2.63	2.67	2.69	2.83	3.06	3.40	3.82	3.32	3.49	3.57
General farm overhead	9.52	9.67	10.10	10.46	10.82	11.11	11.33	11.55	11.98	12.34
<b>Total, allocated overhead</b>	<b>130.47</b>	<b>135.16</b>	<b>141.77</b>	<b>145.98</b>	<b>153.35</b>	<b>165.72</b>	<b>175.75</b>	<b>179.58</b>	<b>189.15</b>	<b>196.32</b>
<b>Total costs listed</b>	<b>207.34</b>	<b>217.19</b>	<b>234.24</b>	<b>244.56</b>	<b>268.17</b>	<b>306.52</b>	<b>303.63</b>	<b>307.70</b>	<b>336.31</b>	<b>356.99</b>

Table 118: Grain sorghum production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	4.27	4.48	4.87	4.96	5.13	6.07	6.88	7.05	6.92	8.67
Fertilizer	18.02	19.14	22.07	25.14	29.19	44.59	42.45	32.55	42.82	45.88
Chemicals	19.74	19.74	19.74	20.56	21.21	22.20	24.83	24.50	24.59	25.77
Custom operations	9.08	9.15	9.52	9.95	10.38	10.38	11.30	11.66	11.90	12.62
Fuel, lube, and electricity	22.11	28.67	38.73	39.56	49.77	63.00	42.60	53.26	60.65	58.83
Repairs	17.04	17.42	18.19	18.84	19.49	20.01	20.40	20.79	21.57	22.22
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.09	7.18	6.09	7.23	11.91	16.47	13.02	12.42	19.00	17.44
Interest on operating inputs	0.48	0.78	1.92	2.81	2.98	1.23	0.22	0.15	0.08	0.11
<b>Total, operating costs</b>	<b>95.83</b>	<b>106.56</b>	<b>121.13</b>	<b>129.05</b>	<b>150.06</b>	<b>183.95</b>	<b>161.70</b>	<b>162.38</b>	<b>187.53</b>	<b>191.54</b>
Allocated overhead:										
Hired labor	3.18	3.26	3.36	3.48	3.60	3.72	3.80	3.84	3.90	4.04
Opportunity cost of unpaid labor	26.44	27.11	27.96	28.98	30	31.02	31.7	32.04	32.55	33.74
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land	32.59	32.59	33.95	33.4	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.9	4.1	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>127.74</b>	<b>132.69</b>	<b>139.35</b>	<b>143.69</b>	<b>151.08</b>	<b>163.79</b>	<b>174.15</b>	<b>177.82</b>	<b>187.59</b>	<b>194.79</b>
<b>Total costs listed</b>	<b>223.57</b>	<b>239.25</b>	<b>260.48</b>	<b>272.74</b>	<b>301.14</b>	<b>347.74</b>	<b>335.85</b>	<b>340.20</b>	<b>375.12</b>	<b>386.33</b>

Table 119: Grain sorghum production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	5.96	6.26	6.81	6.93	7.17	8.48	9.61	9.85	9.67	12.12
Fertilizer	15.71	16.68	19.24	21.92	25.45	38.88	37.01	28.38	37.34	40.00
Chemicals	13.89	13.89	13.89	14.46	14.92	15.61	17.46	17.23	17.29	18.12
Custom operations	7.09	7.15	7.44	7.78	8.11	8.11	8.83	9.11	9.30	9.87
Fuel, lube, and electricity	4.07	4.69	6.28	6.44	8.43	11.54	7.18	8.85	11.34	10.22
Repairs	7.57	7.74	8.08	8.37	8.66	8.89	9.06	9.23	9.58	9.87
Purchased irrigation water	0.14	0.14	0.15	0.16	0.17	0.17	0.19	0.20	0.20	0.21
Crop Insurance	4.93	6.69	5.64	6.34	10.91	13.47	9.36	9.25	12.90	11.51
Interest on operating inputs	0.29	0.45	1.05	1.56	1.61	0.68	0.13	0.08	0.05	0.07
Total, operating costs	59.65	63.69	68.58	73.96	85.43	105.83	98.83	92.18	107.67	111.99
Allocated overhead:										
Hired labor	0.55	0.56	0.58	0.60	0.62	0.64	0.65	0.66	0.67	0.69
Opportunity cost of unpaid labor	14.55	14.92	15.39	15.95	16.51	17.07	17.44	17.63	17.91	18.56
Capital recovery of machinery & equip	35.70	38.30	40.90	43.03	45.16	49.42	52.73	54.39	57.70	60.30
Opportunity cost of land	35.74	35.74	37.23	36.62	39.22	43.90	47.97	49.39	53.25	54.88
Taxes and insurance	5.34	5.42	5.46	5.74	6.2	6.88	7.72	6.71	7.06	7.22
General farm overhead	10.18	10.34	10.80	11.19	11.58	11.89	12.12	12.35	12.81	13.20
Total, allocated overhead	102.06	105.28	110.36	113.13	119.29	129.80	138.63	141.13	149.40	154.85
Total costs listed	161.71	168.97	178.94	187.09	204.72	235.63	237.46	233.31	257.07	266.84

Table 120: Grain sorghum production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	7.64	8.02	8.72	8.87	9.18	10.86	12.31	12.62	12.39	15.53
Fertilizer	36.48	38.74	44.68	50.90	59.10	90.28	85.94	65.90	86.69	92.88
Chemicals	19.48	19.48	19.48	20.28	20.92	21.89	24.48	24.15	24.23	25.39
Custom operations	5.41	5.45	5.67	5.93	6.18	6.18	6.73	6.95	7.09	7.52
Fuel, lube, and electricity	8.96	11.31	14.08	15.94	18.25	23.53	15.16	18.53	23.14	21.71
Repairs	14.44	14.76	15.41	15.96	16.51	16.95	17.28	17.61	18.27	18.82
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	4.50	6.01	5.46	5.55	8.90	12.36	10.52	10.72	15.43	13.75
Interest on operating inputs	0.49	0.77	1.84	2.79	2.87	1.26	0.23	0.15	0.09	0.12
<b>Total, operating costs</b>	<b>97.40</b>	<b>104.54</b>	<b>115.34</b>	<b>126.22</b>	<b>141.91</b>	<b>183.31</b>	<b>172.65</b>	<b>156.63</b>	<b>187.33</b>	<b>195.72</b>
Allocated overhead:										
Hired labor	2.18	2.24	2.31	2.39	2.47	2.55	2.61	2.64	2.68	2.78
Opportunity cost of unpaid labor	23.39	23.99	24.74	25.64	26.54	27.44	28.04	28.34	28.79	29.84
Capital recovery of machinery & equip	47.18	50.62	54.06	56.87	59.68	65.30	69.67	71.86	76.23	79.67
Opportunity cost of land	64.48	64.48	67.17	66.08	70.77	79.21	86.55	89.12	96.09	99.02
Taxes and insurance	20.3	20.62	20.78	21.86	23.62	26.22	29.44	25.61	26.95	27.56
General farm overhead	24.61	24.99	26.10	27.03	27.96	28.71	29.27	29.83	30.95	31.88
<b>Total, allocated overhead</b>	<b>182.14</b>	<b>186.94</b>	<b>195.16</b>	<b>199.87</b>	<b>211.04</b>	<b>229.43</b>	<b>245.58</b>	<b>247.40</b>	<b>261.69</b>	<b>270.75</b>
<b>Total costs listed</b>	<b>279.54</b>	<b>291.48</b>	<b>310.50</b>	<b>326.09</b>	<b>352.95</b>	<b>412.74</b>	<b>418.23</b>	<b>404.03</b>	<b>449.02</b>	<b>466.47</b>

Table 121: Grain sorghum - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Chemicals	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Custom operations	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Fuel, lube, and electricity	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Repairs	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Interest on operating inputs	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Total, operating costs										
Allocated overhead:										
Hired labor	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Opportunity cost of unpaid labor	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 122: Grain sorghum prevented planting cost per acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.11	6.49	7.48	8.52	9.90	15.12	14.39	11.03	14.51	15.55
Chemicals	2.88	2.88	2.88	3.00	3.10	3.24	3.62	3.58	3.59	3.76
Custom operations	1.67	1.69	1.75	1.83	1.91	1.91	2.08	2.15	2.19	2.33
Fuel, lube, and electricity	2.23	2.66	3.53	3.49	4.68	5.72	3.63	5.32	6.05	6.59
Repairs	3.47	3.55	3.70	3.84	3.97	4.07	4.15	4.23	4.39	4.52
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.21	0.22	0.20	0.23	0.34	0.42	0.41	0.40	0.50	0.61
Interest on operating inputs	0.10	0.16	0.39	0.58	0.62	0.26	0.05	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>16.67</b>	<b>17.64</b>	<b>19.94</b>	<b>21.49</b>	<b>24.51</b>	<b>30.74</b>	<b>28.34</b>	<b>26.74</b>	<b>31.26</b>	<b>33.38</b>
<b>Allocated overhead:</b>										
Hired labor	4.58	4.70	4.85	5.02	5.20	5.37	5.49	5.55	5.64	5.84
Opportunity cost of unpaid labor	5.82	5.97	6.16	6.38	6.60	6.83	6.98	7.05	7.16	7.43
Capital recovery of machinery & equip	49.83	53.46	57.09	60.06	63.03	68.97	73.59	75.90	80.52	84.15
Opportunity cost of land	34.20	34.20	35.63	35.05	37.54	42.02	45.91	47.27	50.97	52.53
Taxes and insurance	2.63	2.67	2.69	2.83	3.06	3.40	3.82	3.32	3.49	3.57
General farm overhead	9.52	9.67	10.10	10.46	10.82	11.11	11.33	11.55	11.98	12.34
<b>Total, allocated overhead</b>	<b>106.58</b>	<b>110.67</b>	<b>116.51</b>	<b>119.80</b>	<b>126.25</b>	<b>137.70</b>	<b>147.12</b>	<b>150.64</b>	<b>159.76</b>	<b>165.86</b>
<b>Total costs listed</b>	<b>123.26</b>	<b>128.31</b>	<b>136.45</b>	<b>141.30</b>	<b>150.76</b>	<b>168.44</b>	<b>175.46</b>	<b>177.39</b>	<b>191.02</b>	<b>199.24</b>
<b>Total costs</b>	<b>207.34</b>	<b>217.19</b>	<b>234.24</b>	<b>244.56</b>	<b>268.17</b>	<b>306.52</b>	<b>303.63</b>	<b>307.70</b>	<b>336.31</b>	<b>356.99</b>
<b>Prevented planting %</b>	<b>59%</b>	<b>59%</b>	<b>58%</b>	<b>58%</b>	<b>56%</b>	<b>55%</b>	<b>58%</b>	<b>58%</b>	<b>57%</b>	<b>56%</b>



Table 123: Grain sorghum prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.59	5.93	6.84	7.79	9.05	13.82	13.16	10.09	13.27	14.22
Chemicals	7.90	7.90	7.90	8.22	8.48	8.88	9.93	9.80	9.84	10.31
Custom operations	1.54	1.56	1.62	1.69	1.76	1.76	1.92	1.98	2.02	2.15
Fuel, lube, and electricity	3.54	4.59	6.20	6.33	7.96	10.08	6.82	8.52	9.70	9.41
Repairs	4.09	4.18	4.37	4.52	4.68	4.80	4.90	4.99	5.18	5.33
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.20	0.29	0.24	0.29	0.48	0.66	0.52	0.50	0.76	0.70
Interest on operating inputs	0.13	0.21	0.52	0.76	0.80	0.33	0.06	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>22.99</b>	<b>24.65</b>	<b>27.68</b>	<b>29.61</b>	<b>33.22</b>	<b>40.34</b>	<b>37.30</b>	<b>35.92</b>	<b>40.80</b>	<b>42.15</b>
Allocated overhead:										
Hired labor	1.14	1.17	1.21	1.25	1.30	1.34	1.37	1.38	1.40	1.45
Opportunity cost of unpaid labor	7.14	7.32	7.55	7.82	8.10	8.38	8.56	8.65	8.79	9.11
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land	32.59	32.59	33.95	33.40	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.90	4.10	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>106.40</b>	<b>110.81</b>	<b>116.79</b>	<b>120.31</b>	<b>126.88</b>	<b>138.76</b>	<b>148.58</b>	<b>151.97</b>	<b>161.33</b>	<b>167.57</b>
<b>Total costs listed</b>	<b>129.39</b>	<b>135.46</b>	<b>144.47</b>	<b>149.92</b>	<b>160.10</b>	<b>179.11</b>	<b>185.88</b>	<b>187.89</b>	<b>202.13</b>	<b>209.72</b>
<b>Total costs</b>	<b>223.57</b>	<b>239.25</b>	<b>260.48</b>	<b>272.74</b>	<b>301.14</b>	<b>347.74</b>	<b>335.85</b>	<b>340.20</b>	<b>375.12</b>	<b>386.33</b>
<b>Prevented planting %</b>	<b>58%</b>	<b>57%</b>	<b>55%</b>	<b>55%</b>	<b>53%</b>	<b>52%</b>	<b>55%</b>	<b>55%</b>	<b>54%</b>	<b>54%</b>

Table 124: Grain sorghum prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	4.87	5.17	5.96	6.80	7.89	12.05	11.47	8.80	11.58	12.40
Chemicals	5.56	5.56	5.56	5.78	5.97	6.24	6.98	6.89	6.92	7.25
Custom operations	1.21	1.22	1.26	1.32	1.38	1.38	1.50	1.55	1.58	1.68
Fuel, lube, and electricity	0.65	0.75	1.00	1.03	1.35	1.85	1.15	1.42	1.81	1.64
Repairs	1.82	1.86	1.94	2.01	2.08	2.13	2.17	2.22	2.30	2.37
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.20	0.27	0.23	0.25	0.44	0.54	0.37	0.37	0.52	0.46
Interest on operating inputs	0.08	0.12	0.28	0.42	0.43	0.18	0.04	0.02	0.01	0.02
<b>Total, operating costs</b>	<b>14.37</b>	<b>14.94</b>	<b>16.24</b>	<b>17.62</b>	<b>19.53</b>	<b>24.38</b>	<b>23.69</b>	<b>21.26</b>	<b>24.72</b>	<b>25.81</b>
Allocated overhead:										
Hired labor	0.20	0.20	0.21	0.22	0.22	0.23	0.23	0.24	0.24	0.25
Opportunity cost of unpaid labor	3.93	4.03	4.16	4.31	4.46	4.61	4.71	4.76	4.84	5.01
Capital recovery of machinery & equip	35.70	38.30	40.90	43.03	45.16	49.42	52.73	54.39	57.70	60.30
Opportunity cost of land	35.74	35.74	37.23	36.62	39.22	43.90	47.97	49.39	53.25	54.88
Taxes and insurance	5.34	5.42	5.46	5.74	6.20	6.88	7.72	6.71	7.06	7.22
General farm overhead	10.18	10.34	10.80	11.19	11.58	11.89	12.12	12.35	12.81	13.20
<b>Total, allocated overhead</b>	<b>91.09</b>	<b>94.03</b>	<b>98.75</b>	<b>101.10</b>	<b>106.84</b>	<b>116.93</b>	<b>125.48</b>	<b>127.84</b>	<b>135.90</b>	<b>140.86</b>
<b>Total costs listed</b>	<b>105.46</b>	<b>108.97</b>	<b>114.99</b>	<b>118.72</b>	<b>126.38</b>	<b>141.31</b>	<b>149.17</b>	<b>149.10</b>	<b>160.61</b>	<b>166.67</b>
<b>Total costs</b>	<b>161.71</b>	<b>168.97</b>	<b>178.94</b>	<b>187.09</b>	<b>204.72</b>	<b>235.63</b>	<b>237.46</b>	<b>233.31</b>	<b>257.07</b>	<b>266.84</b>
<b>Prevented planting %</b>	<b>65%</b>	<b>64%</b>	<b>64%</b>	<b>63%</b>	<b>62%</b>	<b>60%</b>	<b>63%</b>	<b>64%</b>	<b>62%</b>	<b>62%</b>

Table 125: Grain sorghum prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	11.31	12.01	13.85	15.78	18.32	27.99	26.64	20.43	26.87	28.79
Chemicals	7.79	7.79	7.79	8.11	8.37	8.76	9.79	9.66	9.69	10.16
Custom operations	0.92	0.93	0.96	1.01	1.05	1.05	1.14	1.18	1.21	1.28
Fuel, lube, and electricity	1.43	1.81	2.25	2.55	2.92	3.76	2.43	2.96	3.70	3.47
Repairs	3.47	3.54	3.70	3.83	3.96	4.07	4.15	4.23	4.38	4.52
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.18	0.24	0.22	0.22	0.36	0.49	0.42	0.43	0.62	0.55
Interest on operating inputs	0.13	0.21	0.50	0.75	0.77	0.34	0.06	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>25.23</b>	<b>26.53</b>	<b>29.27</b>	<b>32.26</b>	<b>35.75</b>	<b>46.46</b>	<b>44.63</b>	<b>38.93</b>	<b>46.50</b>	<b>48.80</b>
Allocated overhead:										
Hired labor	0.78	0.81	0.83	0.86	0.89	0.92	0.94	0.95	0.96	1.00
Opportunity cost of unpaid labor	6.32	6.48	6.68	6.92	7.17	7.41	7.57	7.65	7.77	8.06
Capital recovery of machinery & equip	47.18	50.62	54.06	56.87	59.68	65.30	69.67	71.86	76.23	79.67
Opportunity cost of land	64.48	64.48	67.17	66.08	70.77	79.21	86.55	89.12	96.09	99.02
Taxes and insurance	20.30	20.62	20.78	21.86	23.62	26.22	29.44	25.61	26.95	27.56
General farm overhead	24.61	24.99	26.10	27.03	27.96	28.71	29.27	29.83	30.95	31.88
<b>Total, allocated overhead</b>	<b>163.67</b>	<b>167.99</b>	<b>175.62</b>	<b>179.62</b>	<b>190.09</b>	<b>207.77</b>	<b>223.44</b>	<b>225.02</b>	<b>238.96</b>	<b>247.19</b>
<b>Total costs listed</b>	<b>188.90</b>	<b>194.52</b>	<b>204.89</b>	<b>211.88</b>	<b>225.84</b>	<b>254.23</b>	<b>268.07</b>	<b>263.95</b>	<b>285.46</b>	<b>295.99</b>
<b>Total costs</b>	<b>279.54</b>	<b>291.48</b>	<b>310.50</b>	<b>326.09</b>	<b>352.95</b>	<b>412.74</b>	<b>418.23</b>	<b>404.03</b>	<b>449.02</b>	<b>466.47</b>
<b>Prevented planting %</b>	<b>68%</b>	<b>67%</b>	<b>66%</b>	<b>65%</b>	<b>64%</b>	<b>62%</b>	<b>64%</b>	<b>65%</b>	<b>64%</b>	<b>63%</b>

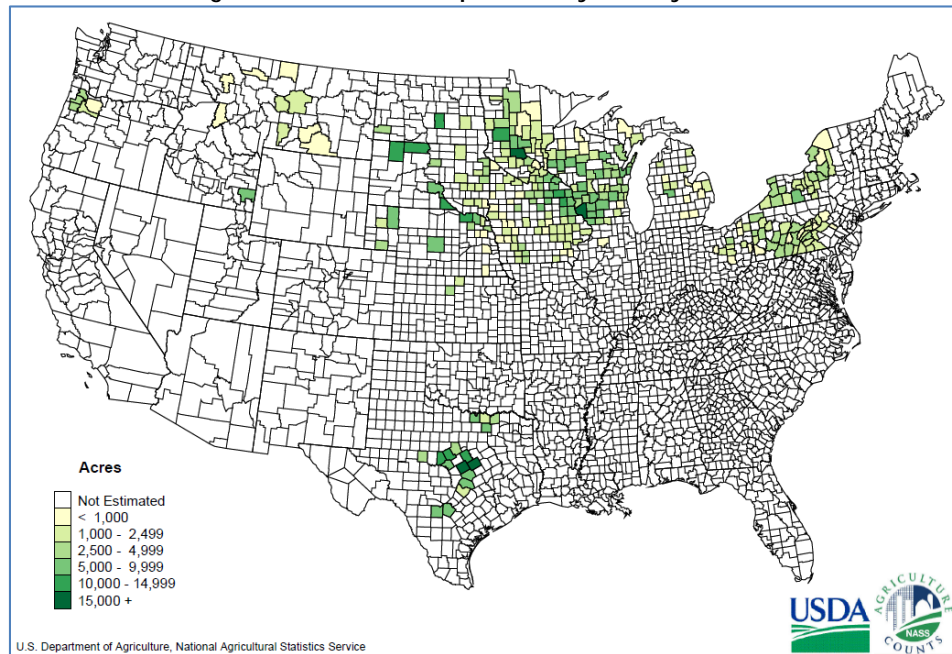
### 5.3. Oats

#### Overview

Oats are grown for human consumption, animal feed, and for forage. Each market has its own quality standards. Planted area has been 2.5-3.0 million acres in recent years, and 30-40% of that is harvested for grain, with the remainder grown for forage. Although oats are a high quality product for human consumption, they are used far less than other grains. Oats are highly palatable and provide excellent nutritional value for dairy and beef cattle, sheep, hogs and horses. Acreage in oat production has declined for many years as corn and soybeans have become the major feed crops.

Oats are grown in cooler regions than many other cereals. They have a lower summer heat requirement and are more tolerant of rain. Although oats are grown in most states, most production never leaves the farm. Commercial oats are primarily grown in Wisconsin, Minnesota, North Dakota, Iowa, South Dakota, Texas, Oregon, Ohio, Pennsylvania, and New York.

Figure 37: Oats acres planted by county in 2012



#### Sources of production cost information

ERS prepares estimates of production costs and returns per acre for oats based on periodic ARMS surveys, the most recent of which covered the 2005 crop year. Estimates were available for the following regions beginning with the 2005 crop year: Heartland, Prairie Gateway, Northern Great Plains, Northern Crescent, and the US as a whole. Prior to 2005, ERS used different regional definitions for oats. We developed cost estimates for 2003 and 2004 using price indexes to adjust the 2005 figures.

The annual production cost series maintained by ERS for each farm resource region is available at the following link: <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.

## Production practices

Oats can be planted in the spring or fall depending on the region. Spring sowing is the most common, and oats can be planted as soon as the soil can be worked. Early planting is necessary for good yields because oats go dormant in the summer. In warmer areas, oats are sown in late summer or early fall. Overwintering oat types are cold tolerant and are unaffected by late frosts or snow.

There are a limited number of seed treatments available. Hulless types require treatment. In areas prone to smut, seed should be treated with a fungicide prior to planting, especially in Wisconsin and Minnesota.

Oats require effective management of nitrogen. Nitrogen fertilization is typically split into two applications, one in the fall at the time of plowing and one in the spring, generally at planting, in sidebands. Phosphorus is also an important fertilizer and is applied along with other fertilizers, if needed, in the spring around planting.

## Prevented planting experience

Prevented planting claims represent 11% of total indemnities the last 20 years. Over three-quarters of the PP claims came from North Dakota, South Dakota, and Minnesota. From 2003 to 2012, total oat indemnities were \$46.6 million. Prevented planting claims for oats totaled about \$5.1 million, 11% of total oat claims. North Dakota farmers received 49%, or \$2.5 million of the prevented planting insurance payments. Minnesota and South Dakota accounted for 17% and 16%, respectively. The most common cause of loss was excess moisture; it made up 97% or \$4.9 million, of the prevented planting claims.

## Analysis

The results are summarized in Figure 38. On average, the PP share of total cost remained the same from the beginning of the period to the end. Shares for individual regions in 2012 ranged from 58% to 70% with an average of about 63%.

## Comparison of RMA payments to estimated PP costs

The ratios of RMA's incurred base PP payments to estimated PP costs were well below 1.00 for the entire period from 2003 through 2012. The ratios were below 0.4 from 2003 through 2007, and have since fluctuated around 0.5. About 20% of PP indemnities are associated with the additional 10% coverage, but even so, this brings the ratio up by only 3% ( $10\%/60\%*0.2 = 0.033$ ).

Figure 38: Share of costs incurred prior to planting oats

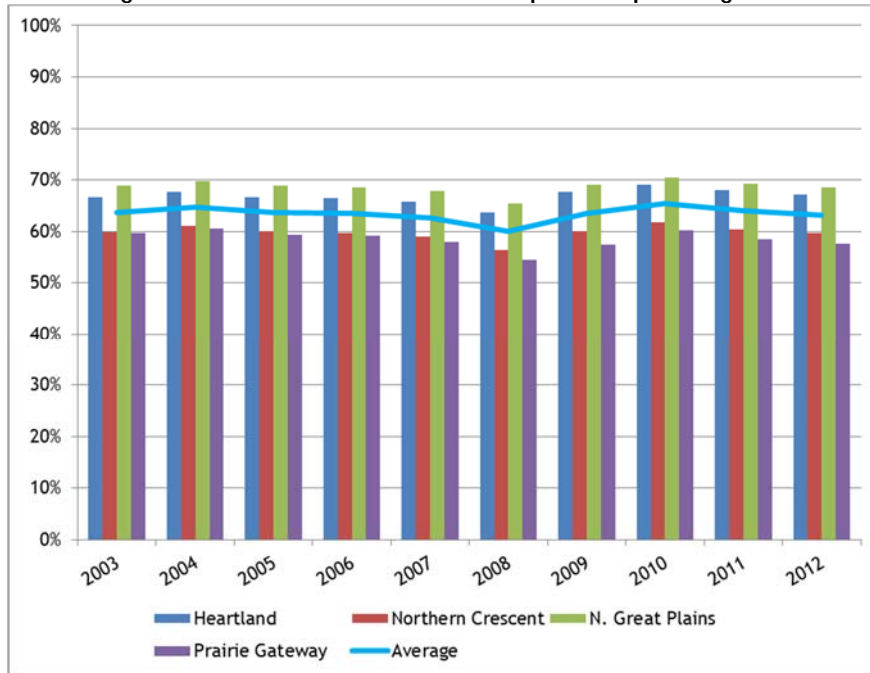
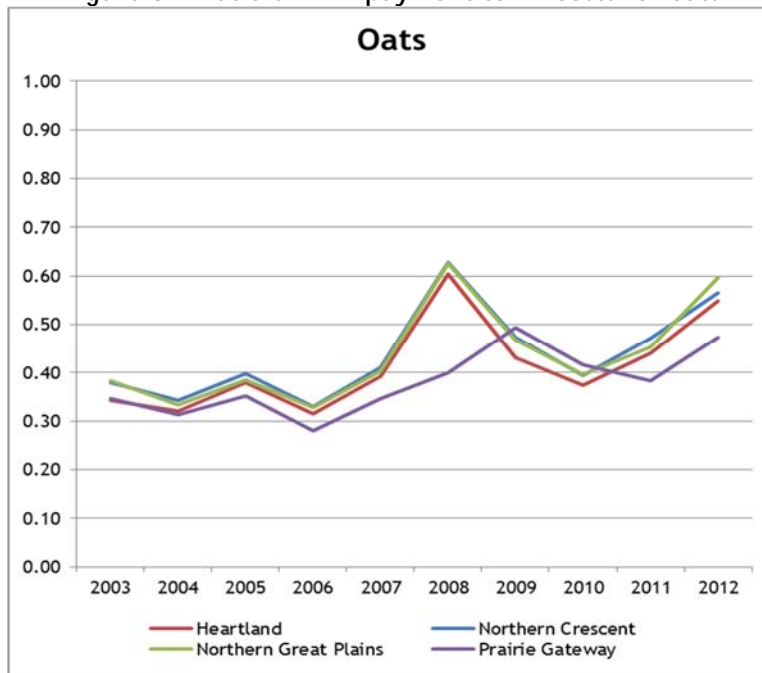


Figure 39: Ratio of RMA payment to PP costs for oats



**Recommendation**

RMA's PP payment rate of 60% does not cover estimated PP costs. Our estimates suggest that pre-planting costs represent 63% of total production costs. The comparison of actual payments to estimated costs confirms that farmers are undercompensated in a PP situation. Consequently, our recommendation is to raise the payment factor to 65%.

Table 126: Oats production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	6.30	6.46	6.87	7.23	8.44	10.16	10.16	9.65	10.34	12.77
Fertilizer	25.84	29.18	34.18	36.47	43.98	72.57	68.36	52.78	69.41	74.38
Chemicals	0.79	0.79	0.80	0.83	0.85	0.89	0.98	0.95	0.95	1.00
Custom operations	2.63	2.53	2.55	2.67	2.80	3.03	3.06	3.06	3.12	3.31
Fuel, lube, and electricity	6.62	7.81	10.22	11.31	12.49	16.28	10.79	13.44	17.13	16.94
Repairs	8.67	8.93	9.31	9.64	9.91	10.24	10.44	10.64	11.04	11.37
Straw baling	0.25	0.24	0.24	0.25	0.26	0.26	0.27	0.27	0.28	0.29
Crop Insurance	2.44	2.32	2.70	2.51	3.52	4.39	6.31	4.42	4.48	5.88
Interest on operating costs	0.92	0.95	1.09	1.16	1.76	0.94	0.15	0.09	0.06	0.08
<b>Total, operating costs</b>	<b>54.47</b>	<b>59.20</b>	<b>67.96</b>	<b>72.07</b>	<b>84.01</b>	<b>118.76</b>	<b>110.52</b>	<b>95.30</b>	<b>116.81</b>	<b>126.02</b>
Allocated overhead:										
Hired Labor	0.33	0.34	0.35	0.36	0.38	0.39	0.40	0.40	0.41	0.42
Opportunity cost of unpaid labor	24.13	24.59	25.36	26.28	27.2	28.13	28.74	29.05	29.51	30.59
Capital recovery of machinery & equip	36.22	38.86	41.50	43.66	45.82	50.14	53.25	55.17	58.53	61.17
Opportunity cost of land	32.88	33.68	34.48	35.04	38.17	42.72	51.18	52.70	56.82	58.55
Taxes and insurance	4.38	4.45	4.66	4.9	5.74	6.37	6.13	6.34	6.67	6.82
General farm overhead	4.75	4.89	5.06	5.24	5.39	5.57	5.67	5.78	6.00	6.18
<b>Total, allocated overhead</b>	<b>102.69</b>	<b>106.81</b>	<b>111.41</b>	<b>115.48</b>	<b>122.70</b>	<b>133.32</b>	<b>145.37</b>	<b>149.44</b>	<b>157.94</b>	<b>163.73</b>
<b>Total costs listed</b>	<b>157.16</b>	<b>166.01</b>	<b>179.37</b>	<b>187.55</b>	<b>206.71</b>	<b>252.08</b>	<b>255.89</b>	<b>244.74</b>	<b>274.75</b>	<b>289.75</b>

Table 127: Oats production costs per planted acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	5.65	5.79	6.16	6.48	7.57	9.11	9.11	8.65	9.27	11.45
Fertilizer	8.55	9.65	11.31	12.07	14.55	24.01	22.62	17.47	22.97	24.61
Chemicals	3.05	3.05	3.10	3.23	3.31	3.45	3.81	3.67	3.69	3.86
Custom operations	2.42	2.32	2.34	2.45	2.57	2.78	2.80	2.80	2.86	3.04
Fuel, lube, and electricity	7.49	8.82	11.55	12.78	14.12	18.39	12.19	15.19	19.36	19.14
Repairs	11.78	12.13	12.65	13.10	13.46	13.92	14.19	14.46	15.00	15.45
Straw baling	0.77	0.74	0.75	0.78	0.80	0.83	0.84	0.86	0.89	0.92
Crop Insurance	2.78	2.79	3.51	3.23	4.80	8.32	6.89	5.62	6.93	9.10
Interest on operating costs	0.69	0.71	0.81	0.87	1.26	0.60	0.10	0.06	0.04	0.05
Total, operating costs	43.18	46.01	52.18	54.99	62.44	81.41	72.55	68.78	81.01	87.62
Allocated overhead:										
Hired Labor	0.31	0.32	0.33	0.34	0.35	0.37	0.37	0.38	0.38	0.40
Opportunity cost of unpaid labor	19.36	19.73	20.35	21.09	21.83	22.57	23.06	23.31	23.68	24.54
Capital recovery of machinery & equip	51.03	54.75	58.47	61.51	64.55	70.64	75.03	77.73	82.47	86.18
Opportunity cost of land	41.49	42.50	43.51	44.22	48.16	53.91	64.58	66.50	71.70	73.88
Taxes and insurance	3.19	3.24	3.39	3.57	4.18	4.64	4.46	4.61	4.86	4.96
General farm overhead	6.47	6.66	6.90	7.15	7.34	7.59	7.74	7.89	8.18	8.43
Total, allocated overhead	121.86	127.20	132.95	137.88	146.41	159.72	175.24	180.42	191.27	198.39
Total costs listed	165.03	173.22	185.13	192.87	208.85	241.13	247.79	249.20	272.28	286.01



Table 128: Oats production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	8.50	8.72	9.27	9.76	11.40	13.70	13.70	13.02	13.96	17.23
Fertilizer	14.82	16.73	19.60	20.91	25.22	41.62	39.20	30.27	39.80	42.65
Chemicals	1.62	1.62	1.65	1.72	1.76	1.84	2.03	1.96	1.96	2.06
Custom operations	10.87	10.43	10.52	11.00	11.55	12.52	12.61	12.61	12.87	13.65
Fuel, lube, and electricity	9.48	11.18	14.63	16.19	17.88	23.30	15.44	19.24	24.52	24.25
Repairs	10.13	10.43	10.88	11.27	11.58	11.97	12.20	12.43	12.90	13.29
Straw baling	5.71	5.48	5.53	5.73	5.89	6.08	6.20	6.32	6.56	6.75
Crop Insurance	2.56	2.58	3.13	2.77	3.77	6.37	4.69	3.98	4.85	6.62
Interest on operating costs	1.04	1.07	1.23	1.30	1.91	0.92	0.15	0.10	0.06	0.08
Total, operating costs	64.74	68.25	76.44	80.65	90.96	118.32	106.22	99.93	117.48	126.58
Allocated overhead:										
Hired Labor	0.18	0.18	0.19	0.20	0.20	0.21	0.22	0.22	0.22	0.23
Opportunity cost of unpaid labor	28.81	29.36	30.28	31.38	32.48	33.58	34.32	34.68	35.23	36.52
Capital recovery of machinery & equip	46.73	50.14	53.54	56.33	59.11	64.68	68.70	71.18	75.51	78.92
Opportunity cost of land	78.99	80.91	82.84	84.19	91.7	102.64	122.96	126.60	136.50	140.67
Taxes and insurance	4.26	4.33	4.53	4.77	5.58	6.20	5.96	6.17	6.49	6.63
General farm overhead	8.31	8.55	8.86	9.18	9.43	9.75	9.94	10.13	10.51	10.82
Total, allocated overhead	167.28	173.48	180.24	186.05	198.50	217.06	242.10	248.98	264.46	273.79
Total costs listed	232.02	241.73	256.68	266.70	289.46	335.38	348.32	348.91	381.94	400.37

Table 129: Oats production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Cash expenses:											
Seed	8.94	9.17	9.75	10.26	11.99	14.41	14.41	13.69	14.68	18.13	
Fertilizer	23.30		30.81	32.88	39.64		61.62	47.58		67.05	
Chemicals	1.99	2.30	2.02	2.10	2.16	65.42	2.48	2.39	6.56	2.52	
Custom operations	10.36	1.99	10.03	10.49	11.01	2.25	12.02	12.02	2.40	13.01	
Fuel, lube, and electricity	11.62	9.95	17.93	19.84	21.91	11.94	18.93	23.57	12.27	29.72	
Repairs	11.08	13.70	11.89	12.31	12.65	28.56	13.33	13.59	30.05	14.52	
Straw baling	1.85	1.40	1.79	1.85	1.91	13.08	2.01	2.05	14.10	2.19	
Crop Insurance	1.60	1.78	1.79	2.24	1.98	2.65	1.97	3.50	3.24	2.12	
Interest on operating costs	1.21		1.43	1.53	2.27	4.37	0.18	0.11	3.80	0.10	
Total, operating costs	71.94	1.25	77.32	87.89	93.24	106.19	1.14	143.14	128.48	118.24	0.07
Allocated overhead:											
Hired Labor	1.37	1.40	1.44	1.49	1.54	1.60	1.63	1.65		1.74	
Opportunity cost of unpaid labor	38.36		40.31	41.78	43.24		45.68	46.17	1.68	48.62	
Capital recovery of machinery & equip	45.07	39.09	51.64	54.33	57.01	44.71	66.27	68.65	46.91	76.12	
Opportunity cost of land	56.22	48.36	58.96	59.92	65.26	62.39	87.51	90.11	72.83	100.12	
Taxes and insurance	4.13	5.59	4.39	4.62	5.41	73.05	5.78	5.98	9.15	6.43	
General farm overhead	8.08	4.19	8.61	8.92	9.16	6.00	9.66	9.84	6.29	10.21	
Total, allocated overhead	153.22	8.31	158.94	165.35	171.06	181.62	9.47	197.22	216.53	222.40	235.07
Total costs listed	225.16	236.25	253.24	264.30	287.81	340.36	345.01	340.64	377.12	396.12	

Table 130: Oats - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Chemicals	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Custom operations	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Fuel, lube, and electricity	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Repairs	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Straw baling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Interest on operating costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Hired Labor	28%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Opportunity cost of unpaid labor	22%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 131: Oats prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.20	7.00	8.20	8.75	10.56	17.42	16.41	12.67	16.66	17.85
Chemicals	0.14	0.14	0.14	0.15	0.15	0.16	0.18	0.17	0.17	0.18
Custom operations	0.40	0.38	0.38	0.40	0.42	0.45	0.46	0.46	0.47	0.50
Fuel, lube, and electricity	1.39	1.64	2.15	2.38	2.62	3.42	2.27	2.82	3.60	3.56
Repairs	1.56	1.61	1.68	1.74	1.78	1.84	1.88	1.92	1.99	2.05
Straw baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.27	0.26	0.30	0.28	0.39	0.48	0.69	0.49	0.49	0.65
Interest on operating costs	0.23	0.24	0.27	0.29	0.44	0.24	0.04	0.02	0.02	0.02
<b>Total, operating costs</b>	<b>10.19</b>	<b>11.26</b>	<b>13.12</b>	<b>13.98</b>	<b>16.36</b>	<b>24.01</b>	<b>21.92</b>	<b>18.54</b>	<b>23.39</b>	<b>24.80</b>
Allocated overhead:										
Hired Labor	0.09	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.13
Opportunity cost of unpaid labor	5.31	7.38	7.61	7.88	8.16	8.44	8.62	8.72	8.85	9.18
Capital recovery of machinery & equip	36.22	38.86	41.50	43.66	45.82	50.14	53.25	55.17	58.53	61.17
Opportunity cost of land	32.88	33.68	34.48	35.04	38.17	42.72	51.18	52.70	56.82	58.55
Taxes and insurance	4.38	4.45	4.66	4.90	5.74	6.37	6.13	6.34	6.67	6.82
General farm overhead	4.75	4.89	5.06	5.24	5.39	5.57	5.67	5.78	6.00	6.18
<b>Total, allocated overhead</b>	<b>83.63</b>	<b>89.35</b>	<b>93.41</b>	<b>96.83</b>	<b>103.39</b>	<b>113.36</b>	<b>124.97</b>	<b>128.83</b>	<b>137.00</b>	<b>142.02</b>
<b>Total costs listed</b>	<b>93.82</b>	<b>100.62</b>	<b>106.53</b>	<b>110.81</b>	<b>119.76</b>	<b>137.37</b>	<b>146.89</b>	<b>147.37</b>	<b>160.39</b>	<b>166.82</b>
<b>Total costs</b>	<b>157.16</b>	<b>166.01</b>	<b>179.37</b>	<b>187.55</b>	<b>206.71</b>	<b>252.08</b>	<b>255.89</b>	<b>244.74</b>	<b>274.75</b>	<b>289.75</b>
<b>Prevented planting %</b>	<b>60%</b>	<b>61%</b>	<b>59%</b>	<b>59%</b>	<b>58%</b>	<b>54%</b>	<b>57%</b>	<b>60%</b>	<b>58%</b>	<b>58%</b>

Table 132: Oats prevented planting cost per acre: Northern Great Plains

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	2.05	2.32	2.71	2.90	3.49	5.76	5.43	4.19	5.51	5.91
Chemicals	0.55	0.55	0.56	0.58	0.60	0.62	0.69	0.66	0.66	0.69
Custom operations	0.36	0.35	0.35	0.37	0.39	0.42	0.42	0.42	0.43	0.46
Fuel, lube, and electricity	1.57	1.85	2.43	2.68	2.97	3.86	2.56	3.19	4.07	4.02
Repairs	2.12	2.18	2.28	2.36	2.42	2.51	2.55	2.60	2.70	2.78
Straw baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.31	0.31	0.39	0.36	0.53	0.92	0.76	0.62	0.76	1.00
Interest on operating costs	0.17	0.18	0.20	0.22	0.32	0.15	0.03	0.02	0.01	0.01
<b>Total, operating costs</b>	<b>7.13</b>	<b>7.73</b>	<b>8.91</b>	<b>9.46</b>	<b>10.70</b>	<b>14.23</b>	<b>12.43</b>	<b>11.70</b>	<b>14.14</b>	<b>14.87</b>
Allocated overhead:										
Hired Labor	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.12
Opportunity cost of unpaid labor	4.26	5.92	6.11	6.33	6.55	6.77	6.92	6.99	7.10	7.36
Capital recovery of machinery & equip	51.03	54.75	58.47	61.51	64.55	70.64	75.03	77.73	82.47	86.18
Opportunity cost of land	41.49	42.50	43.51	44.22	48.16	53.91	64.58	66.50	71.70	73.88
Taxes and insurance	3.19	3.24	3.39	3.57	4.18	4.64	4.46	4.61	4.86	4.96
General farm overhead	6.47	6.66	6.90	7.15	7.34	7.59	7.74	7.89	8.18	8.43
<b>Total, allocated overhead</b>	<b>106.53</b>	<b>113.17</b>	<b>118.47</b>	<b>122.88</b>	<b>130.88</b>	<b>143.66</b>	<b>158.84</b>	<b>163.84</b>	<b>174.43</b>	<b>180.93</b>
<b>Total costs listed</b>	<b>113.66</b>	<b>120.90</b>	<b>127.39</b>	<b>132.34</b>	<b>141.59</b>	<b>157.90</b>	<b>171.27</b>	<b>175.54</b>	<b>188.57</b>	<b>195.80</b>
<b>Total costs</b>	<b>165.03</b>	<b>173.22</b>	<b>185.13</b>	<b>192.87</b>	<b>208.85</b>	<b>241.13</b>	<b>247.79</b>	<b>249.20</b>	<b>272.28</b>	<b>286.01</b>
<b>Prevented planting %</b>	<b>69%</b>	<b>70%</b>	<b>69%</b>	<b>69%</b>	<b>68%</b>	<b>65%</b>	<b>69%</b>	<b>70%</b>	<b>69%</b>	<b>68%</b>

Table 133: Oats prevented planting cost per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	3.56	4.02	4.70	5.02	6.05	9.99	9.41	7.26	9.55	10.24
Chemicals	0.29	0.29	0.30	0.31	0.32	0.33	0.37	0.35	0.35	0.37
Custom operations	1.63	1.56	1.58	1.65	1.73	1.88	1.89	1.89	1.93	2.05
Fuel, lube, and electricity	1.99	2.35	3.07	3.40	3.75	4.89	3.24	4.04	5.15	5.09
Repairs	1.82	1.88	1.96	2.03	2.08	2.15	2.20	2.24	2.32	2.39
Straw baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.28	0.28	0.34	0.30	0.41	0.70	0.52	0.44	0.53	0.73
Interest on operating costs	0.26	0.27	0.31	0.33	0.48	0.23	0.04	0.03	0.02	0.02
<b>Total, operating costs</b>	<b>9.84</b>	<b>10.65</b>	<b>12.26</b>	<b>13.04</b>	<b>14.83</b>	<b>20.18</b>	<b>17.66</b>	<b>16.25</b>	<b>19.86</b>	<b>20.89</b>
Allocated overhead:										
Hired Labor	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07
Opportunity cost of unpaid labor	6.34	8.81	9.08	9.41	9.74	10.07	10.30	10.40	10.57	10.96
Capital recovery of machinery & equip	46.73	50.14	53.54	56.33	59.11	64.68	68.70	71.18	75.51	78.92
Opportunity cost of land	78.99	80.91	82.84	84.19	91.70	102.64	122.96	126.60	136.50	140.67
Taxes and insurance	4.26	4.33	4.53	4.77	5.58	6.20	5.96	6.17	6.49	6.63
General farm overhead	8.31	8.55	8.86	9.18	9.43	9.75	9.94	10.13	10.51	10.82
<b>Total, allocated overhead</b>	<b>144.68</b>	<b>152.79</b>	<b>158.91</b>	<b>163.94</b>	<b>175.62</b>	<b>193.41</b>	<b>217.92</b>	<b>224.55</b>	<b>239.65</b>	<b>248.07</b>
<b>Total costs listed</b>	<b>154.51</b>	<b>163.44</b>	<b>171.17</b>	<b>176.98</b>	<b>190.46</b>	<b>213.58</b>	<b>235.58</b>	<b>240.80</b>	<b>259.50</b>	<b>268.95</b>
<b>Total costs</b>	<b>232.02</b>	<b>241.73</b>	<b>256.68</b>	<b>266.70</b>	<b>289.46</b>	<b>335.38</b>	<b>348.32</b>	<b>348.91</b>	<b>381.94</b>	<b>400.37</b>
<b>Prevented planting %</b>	<b>67%</b>	<b>68%</b>	<b>67%</b>	<b>66%</b>	<b>66%</b>	<b>64%</b>	<b>68%</b>	<b>69%</b>	<b>68%</b>	<b>67%</b>

Table 134: Oats prevented planting cost per acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.59	6.31	7.39	7.89	9.51	15.70	14.79	11.42	15.01	16.09
Chemicals	0.36	0.36	0.36	0.38	0.39	0.41	0.45	0.43	0.43	0.45
Custom operations	1.55	1.49	1.50	1.57	1.65	1.79	1.80	1.80	1.84	1.95
Fuel, lube, and electricity	2.44	2.88	3.77	4.17	4.60	6.00	3.98	4.95	6.31	6.24
Repairs	1.99	2.05	2.14	2.22	2.28	2.35	2.40	2.45	2.54	2.61
Straw baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.18	0.20	0.25	0.22	0.29	0.48	0.39	0.36	0.42	0.59
Interest on operating costs	0.30	0.31	0.36	0.38	0.57	0.29	0.05	0.03	0.02	0.03
Total, operating costs	12.42	13.60	15.77	16.83	19.29	27.01	23.84	21.43	26.57	27.96
Allocated overhead:										
Hired Labor	0.38	0.42	0.43	0.45	0.46	0.48	0.49	0.50	0.50	0.52
Opportunity cost of unpaid labor	8.44	11.73	12.09	12.53	12.97	13.41	13.70	13.85	14.07	14.59
Capital recovery of machinery & equip	45.07	48.36	51.64	54.33	57.01	62.39	66.27	68.65	72.83	76.12
Opportunity cost of land	56.22	57.59	58.96	59.92	65.26	73.05	87.51	90.11	97.15	100.12
Taxes and insurance	4.13	4.19	4.39	4.62	5.41	6.00	5.78	5.98	6.29	6.43
General farm overhead	8.08	8.31	8.61	8.92	9.16	9.47	9.66	9.84	10.21	10.52
Total, allocated overhead	122.31	130.60	136.13	140.77	150.27	164.80	183.41	188.93	201.06	208.30
Total costs listed	134.73	144.20	151.90	157.60	169.57	191.82	207.26	210.36	227.63	236.26
Total costs	225.16	236.25	253.24	264.30	287.81	340.36	345.01	340.64	377.12	396.12
Prevented planting %	60%	61%	60%	60%	59%	56%	60%	62%	60%	60%

## 5.4. Peanuts

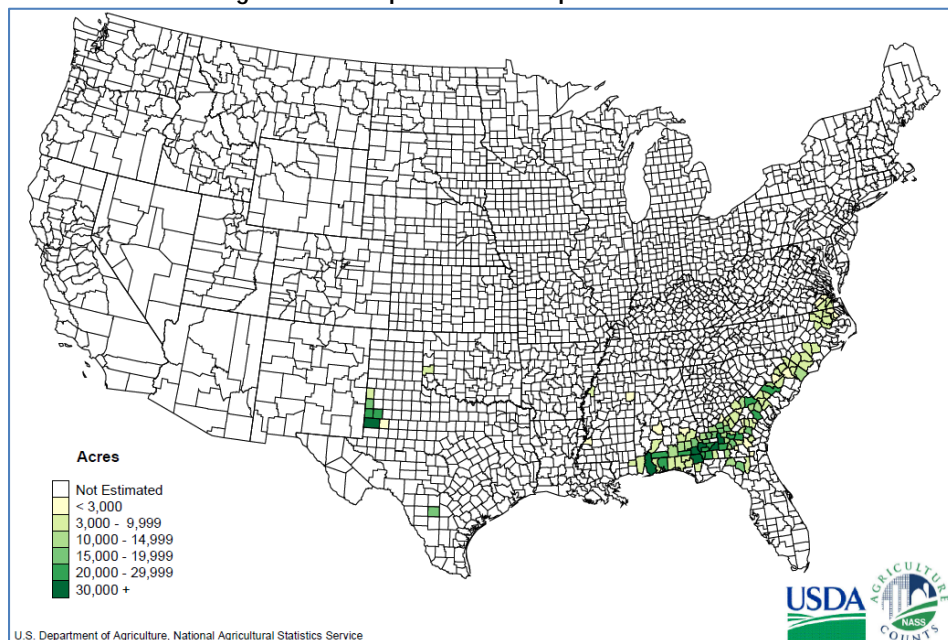
### Overview

Peanuts are grown principally in the southeastern states in an arc stretching from southern Alabama and the Florida Panhandle up through the piedmont region to Virginia. A second production area is western Texas and southwestern Oklahoma, which together account for about 10% of US acreage and production. Georgia is the most important producing state, accounting for about 40% of the sector.

There are four market types of peanuts grown in the United States: runner, Virginia, Spanish, and Valencia.

- Runners have an intermediate size seed and are grown in Florida and the Southeast.
- Virginia peanuts have a large seed and are grown mostly in North Carolina, Virginia, and Texas, but some are grown in Florida.
- Spanish peanuts have small kernels and are grown mostly in Texas and Oklahoma.
- Valencia peanuts are usually about the same size as Spanish peanuts but are considered special-use peanuts, such as for boiling. Florida is a major producer of boiling peanuts which are usually planted early and throughout the year (February-July) to keep a continuous supply.

Figure 40: US peanut acres planted in 2012



### Sources of production cost information

All of the extension offices located in peanut producing states publish crop budgets for that crop, in most cases on an annual basis. The University of Florida has detailed production budgets, but published in 2005. The University of Georgia has interactive enterprise budgets, printed budgets, and computer spreadsheet budgets available for peanut production in Georgia. These were all useful in determining the share of total cost that farmers incur in a prevented planting situation. Since ERS publishes annual production cost estimates based on ARMS surveys, we used those as our starting point. Budgets are available for the following resource regions: Southern Seaboard, Fruitful Rim, and Prairie Gateway.



## Production practices

Peanut yields respond better than most crops to crop rotation. They fit into corn, cotton, and forage crop rotation schemes. Crop rotation reduces the effects of pests (disease, nematodes, insects, and weeds). Research has been conducted on which crop rotations reduce which pests in peanut operations.

Peanuts are a legume that produces a fruit in a pod underground. In the presence of rhizobium bacteria in the soil, peanuts fix nitrogen and little if any supplemental nitrogen fertilizer is required. Peanuts grow best on well-drained soils and in full sun. If planted on poorly-drained soils, diseases will be prevalent and yields will be low. Peanuts can grow on sandy or excessively-drained soils, but irrigation may be needed for consistent production.

In northern Florida, peanuts are planted during the second half of May until the first week of June. Peanuts planted before this window could suffer serious yield loss from tomato spotted wilt virus (TSWV) and after this window will suffer yield losses.

## Prevented planting experience

Since peanuts require a high level of management, many decisions are required in growing the crop. Most of these decisions can be made prior to planting. For example, land selection, variety, and crop rotation are of vital importance in preventing many weed, insect, disease, and nematode problems.

Improper or faulty irrigation equipment may cause a producer not to plant peanuts. Also drought conditions may result in a prevented planting claim. However, over the last 20 years, less than 1% of indemnities for peanuts were attributable to prevented planting.

## Analysis

The PP share of costs fell from about 47% in 2003 to 45%, the current PP factor, in the final years of the period studied. The shares were very uniform across the three regions, varying by only a percent or two. The share declined over the period because overhead costs grew at a slower rate than cash expenses.

## Comparison of RMA payments to estimated PP costs

Up through 2010, the ratio of RMA's base PP payment to estimated PP costs was close to 0.80. It rose for 2011 and 2012 due to stronger US and world oilseed prices and averaged close to 1.00. Only about 2% of PP indemnities have been associated with the additional 10% coverage, so this does not affect the ratio significantly.

Figure 41: Share of costs incurred prior to planting peanuts

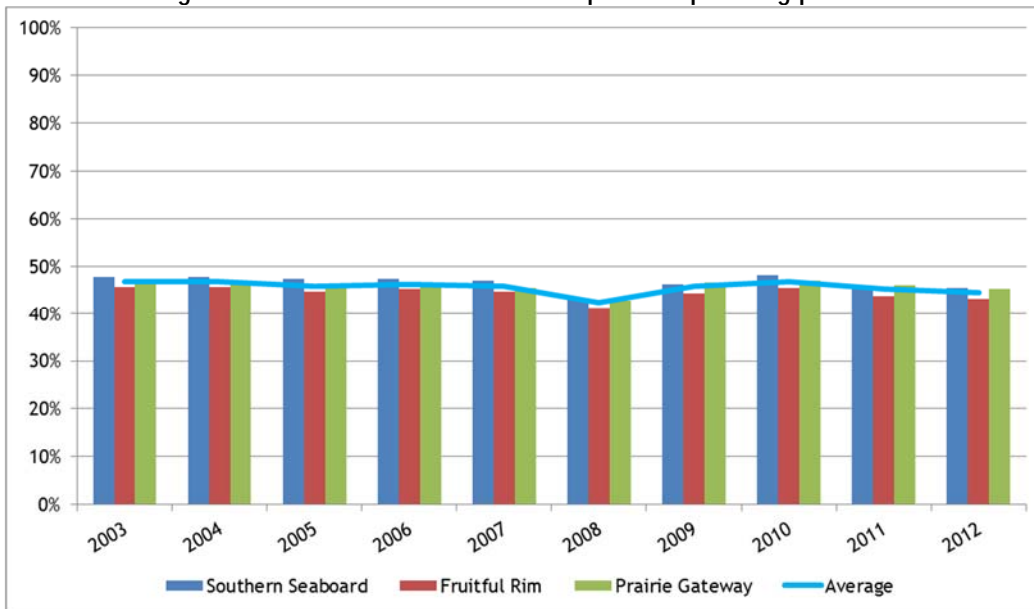
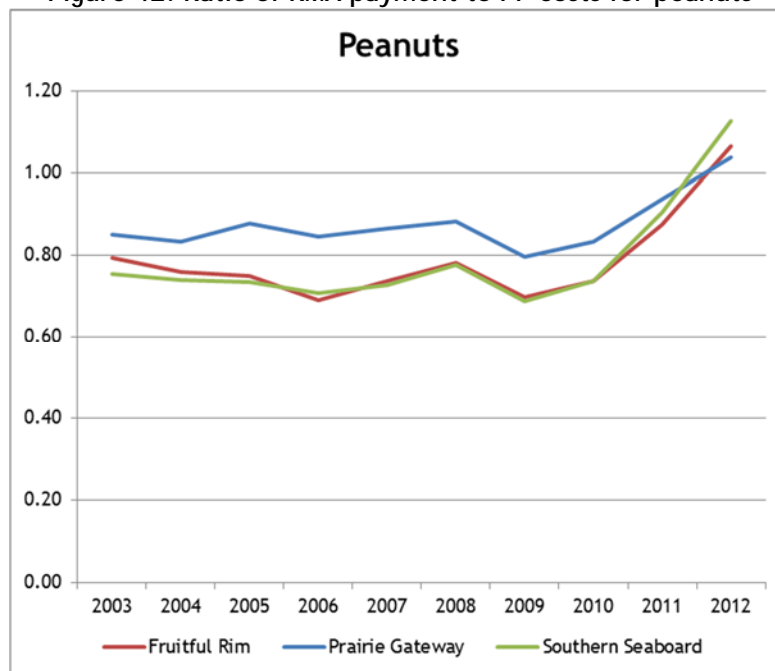


Figure 42: Ratio of RMA payment to PP costs for peanuts



**Recommendation**

The fact that the payment ratio has been low and there have been almost no prevented planting claims argues for leaving the PP factor at 50%.

Table 135: Peanuts production costs per planted acre: Southern Seaboard

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	80.74	82.84	82.11	84.00	88.34	120.94	111.34	109.74	132.44	138.84
Fertilizer	54.19	61.18	71.67	76.48	91.32	150.68	141.48	108.76	144.11	154.45
Chemicals	112.44	112.44	113.37	118.94	120.15	125.26	138.46	136.60	133.91	140.32
Custom operations	5.75	5.52	5.70	6.14	6.35	6.62	6.67	6.67	6.81	7.22
Fuel, lube, and electricity	46.84	55.20	76.67	81.44	88.32	115.08	76.28	95.01	121.11	119.77
Repairs	26.88	27.67	29.08	29.29	30.77	31.80	32.42	33.04	34.28	35.31
Purchased irrigation water & hay baling	0.36	0.37	0.38	0.41	0.43	0.43	0.47	0.47	0.48	0.49
Commercial drying	3.26	3.84	4.35	4.92	4.53	8.71	5.81	5.27	8.79	9.74
Crop Insurance	10.14	10.62	11.63	12.29	15.32	18.97	16.94	17.88	23.31	30.02
Interest on operating costs	2.65	2.73	6.44	9.52	9.54	4.57	0.74	0.49	0.29	0.39
<b>Total, operating costs</b>	<b>343.24</b>	<b>362.41</b>	<b>401.40</b>	<b>423.43</b>	<b>455.07</b>	<b>583.06</b>	<b>530.61</b>	<b>513.93</b>	<b>605.53</b>	<b>636.55</b>
Allocated overhead:										
Hired Labor	22.91	23.35	24.08	24.96	25.83	26.71	27.29	27.58	28.02	29.04
Opportunity cost of unpaid labor	62.18	63.37	65.35	67.73	70.1	72.48	74.06	74.86	76.04	78.82
Capital recovery of machinery & equip.	122.82	131.77	140.72	148.04	155.36	170.00	180.57	187.08	198.47	207.42
Opportunity cost of land	55.72	57.99	60.4	60.4	66.7	74.65	84.89	92.09	99.29	102.32
Taxes and insurance	21.97	22.98	23.17	29.8	33.02	36.65	41.14	35.78	38.37	39.24
General farm overhead	35.71	37.35	39.26	39.53	41.53	42.92	43.76	44.60	46.27	47.66
<b>Total, allocated overhead</b>	<b>321.32</b>	<b>336.81</b>	<b>352.98</b>	<b>370.46</b>	<b>392.54</b>	<b>423.41</b>	<b>451.71</b>	<b>461.99</b>	<b>486.46</b>	<b>504.50</b>
<b>Total costs listed</b>	<b>664.56</b>	<b>699.22</b>	<b>754.38</b>	<b>793.89</b>	<b>847.61</b>	<b>1,006.47</b>	<b>982.32</b>	<b>975.92</b>	<b>1,091.99</b>	<b>1,141.05</b>

Table 136: Peanuts production costs per planted acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	65.64	67.35	66.76	88.37	71.82	98.33	90.52	89.22	107.67	112.88
Fertilizer	50.85	57.41	67.25	71.95	85.69	141.40	132.77	102.06	135.23	144.93
Chemicals	117.04	117.04	118.01	120.80	125.07	130.39	144.12	142.19	139.38	146.06
Custom operations	9.14	8.77	9.05	6.35	10.08	10.52	10.60	10.60	10.82	11.47
Fuel, lube, and electricity	27.87	32.85	45.63	89.96	52.56	68.49	45.39	56.54	72.07	71.27
Repairs	29.09	29.95	31.48	30.97	33.30	34.42	35.09	35.76	37.10	38.22
Purchased irrigation water & hay baling	0.26	0.27	0.28	0.43	0.31	0.31	0.34	0.34	0.35	0.36
Commercial drying	21.50	25.34	35.96	4.50	39.92	62.85	40.75	55.00	62.01	70.46
Crop Insurance	8.86	9.43	10.76	11.73	14.32	16.70	15.06	16.00	18.81	22.34
Interest on operating costs	2.40	2.48	5.75	9.69	8.49	4.02	0.67	0.44	0.25	0.34
<b>Total, operating costs</b>	<b>332.66</b>	<b>350.89</b>	<b>390.93</b>	<b>434.75</b>	<b>441.56</b>	<b>567.43</b>	<b>515.31</b>	<b>508.15</b>	<b>583.69</b>	<b>618.33</b>
Allocated overhead:										
Hired Labor	28.95	29.50	30.42	31.53	32.63	33.74	34.48	34.85	35.40	36.69
Opportunity cost of unpaid labor	84.97	86.59	89.3	92.54	95.79	99.04	101.2	102.28	103.91	107.7
Capital recovery of machinery & equip.	111.93	120.08	128.23	134.90	141.58	154.92	164.55	170.48	180.86	189.01
Opportunity cost of land	51.70	53.81	56.05	56.05	61.9	69.28	78.78	85.46	92.15	94.96
Taxes and insurance	28.24	29.53	29.77	38.27	42.41	47.07	52.84	45.96	49.29	50.4
General farm overhead	27.34	28.59	30.05	30.26	31.79	32.86	33.50	34.14	35.42	36.48
<b>Total, allocated overhead</b>	<b>333.11</b>	<b>348.10</b>	<b>363.82</b>	<b>383.55</b>	<b>406.10</b>	<b>436.91</b>	<b>465.35</b>	<b>473.17</b>	<b>497.03</b>	<b>515.24</b>
<b>Total costs listed</b>	<b>665.78</b>	<b>698.99</b>	<b>754.75</b>	<b>818.30</b>	<b>847.66</b>	<b>1,004.34</b>	<b>980.66</b>	<b>981.32</b>	<b>1,080.72</b>	<b>1,133.57</b>

Table 137: Peanuts production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	62.17	63.78	63.22	64.68	68.02	93.12	85.72	84.49	101.97	106.90
Fertilizer	37.19	41.99	49.19	52.49	62.67	103.42	97.11	74.65	98.91	106.00
Chemicals	40.85	40.85	41.19	43.21	43.65	45.51	50.30	49.63	48.65	50.98
Custom operations	34.18	32.81	33.87	36.51	37.72	39.37	39.65	39.65	40.47	42.93
Fuel, lube, and electricity	72.89	85.91	119.32	126.74	137.46	179.11	118.71	147.87	188.48	186.40
Repairs	37.45	38.55	40.52	40.80	42.87	44.30	45.17	46.03	47.76	49.19
Purchased irrigation water & hay baling	0.22	0.23	0.24	0.26	0.26	0.26	0.29	0.29	0.30	0.31
Commercial drying	27.11	31.95	45.50	48.72	55.59	66.58	43.35	58.40	46.41	66.03
Crop Insurance										
Interest on operating costs	2.33	2.40	5.91	8.75	8.80	4.19	0.63	0.44	0.26	0.35
<b>Total, operating costs</b>	<b>314.38</b>	<b>338.47</b>	<b>398.96</b>	<b>422.16</b>	<b>457.04</b>	<b>575.86</b>	<b>480.93</b>	<b>501.45</b>	<b>573.21</b>	<b>609.09</b>
Allocated overhead:										
Hired Labor	16.24	16.55	17.07	17.69	18.31	18.93	19.34	19.55	19.86	20.58
Opportunity cost of unpaid labor	68.14	69.44	71.61	74.21	76.82	79.42	81.16	82.03	83.33	86.37
Capital recovery of machinery & equip.	111.56	119.69	127.82	134.47	141.12	154.41	164.02	169.93	180.27	188.40
Opportunity cost of land	46.03	47.91	49.91	49.91	55.11	61.69	70.14	76.09	82.04	84.55
Taxes and insurance	28.24	29.53	29.77	38.27	42.41	47.07	52.84	45.96	49.29	50.4
General farm overhead	36.62	38.30	40.26	40.54	42.59	44.02	44.87	45.73	47.45	48.88
<b>Total, allocated overhead</b>	<b>306.83</b>	<b>321.42</b>	<b>336.44</b>	<b>355.09</b>	<b>376.36</b>	<b>405.54</b>	<b>432.37</b>	<b>439.29</b>	<b>462.24</b>	<b>479.18</b>
<b>Total costs listed</b>	<b>621.21</b>	<b>659.89</b>	<b>735.40</b>	<b>777.25</b>	<b>833.40</b>	<b>981.40</b>	<b>913.30</b>	<b>940.74</b>	<b>1,035.45</b>	<b>1,088.27</b>

Table 138: Peanuts - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Purchased irrigation water & hay baling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Commercial drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Interest on operating costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Hired Labor	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Opportunity cost of unpaid labor	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Table 139: Peanuts prevented planting cost per acre: Southern Seaboard**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	33.73	33.73	34.01	35.68	36.05	37.58	41.54	40.98	40.17	42.10
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	15.46	18.22	25.30	26.88	29.15	37.98	25.17	31.35	39.97	39.52
Repairs	6.72	6.92	7.27	7.32	7.69	7.95	8.11	8.26	8.57	8.83
Purchased irrigation water & hay baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.10	0.11	0.12	0.12	0.15	0.19	0.17	0.18	0.23	0.30
Interest on operating costs	0.66	0.68	1.61	2.38	2.39	1.14	0.19	0.12	0.07	0.10
<b>Total, operating costs</b>	<b>56.67</b>	<b>59.65</b>	<b>68.31</b>	<b>72.38</b>	<b>75.42</b>	<b>84.84</b>	<b>75.17</b>	<b>80.89</b>	<b>89.01</b>	<b>90.85</b>
<b>Allocated overhead:</b>										
Hired Labor	6.42	6.54	6.74	6.99	7.23	7.48	7.64	7.72	7.85	8.13
Opportunity cost of unpaid labor	17.41	17.74	18.30	18.96	19.63	20.29	20.74	20.96	21.29	22.07
Capital recovery of machinery & equip.	122.82	131.77	140.72	148.04	155.36	170.00	180.57	187.08	198.47	207.42
Opportunity cost of land	55.72	57.99	60.40	60.40	66.70	74.65	84.89	92.09	99.29	102.32
Taxes and insurance	21.97	22.98	23.17	29.80	33.02	36.65	41.14	35.78	38.37	39.24
General farm overhead	35.71	37.35	39.26	39.53	41.53	42.92	43.76	44.60	46.27	47.66
<b>Total, allocated overhead</b>	<b>260.05</b>	<b>274.37</b>	<b>288.59</b>	<b>303.72</b>	<b>323.47</b>	<b>351.99</b>	<b>378.74</b>	<b>388.23</b>	<b>411.54</b>	<b>426.84</b>
<b>Total costs listed</b>	<b>316.72</b>	<b>334.03</b>	<b>356.90</b>	<b>376.11</b>	<b>398.89</b>	<b>436.83</b>	<b>453.91</b>	<b>469.13</b>	<b>500.55</b>	<b>517.69</b>
<b>Total costs</b>	<b>664.56</b>	<b>699.22</b>	<b>754.38</b>	<b>793.89</b>	<b>847.61</b>	<b>1,006.47</b>	<b>982.32</b>	<b>975.92</b>	<b>1,091.99</b>	<b>1,141.05</b>
<b>Prevented planting %</b>	<b>48%</b>	<b>48%</b>	<b>47%</b>	<b>47%</b>	<b>47%</b>	<b>43%</b>	<b>46%</b>	<b>48%</b>	<b>46%</b>	<b>45%</b>

Table 140: Peanuts prevented planting cost per acre: Fruitful Rim

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	35.11	35.11	35.40	36.24	37.52	39.12	43.24	42.66	41.81	43.82
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	9.20	10.84	15.06	29.69	17.34	22.60	14.98	18.66	23.78	23.52
Repairs	7.27	7.49	7.87	7.74	8.33	8.61	8.77	8.94	9.28	9.56
Purchased irrigation water & hay baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.09	0.09	0.11	0.12	0.14	0.17	0.15	0.16	0.19	0.22
Interest on operating costs	0.60	0.62	1.44	2.42	2.12	1.01	0.17	0.11	0.06	0.09
<b>Total, operating costs</b>	<b>52.27</b>	<b>54.15</b>	<b>59.88</b>	<b>76.21</b>	<b>65.46</b>	<b>71.50</b>	<b>67.31</b>	<b>70.53</b>	<b>75.12</b>	<b>77.20</b>
Allocated overhead:										
Hired Labor	8.11	8.26	8.52	8.83	9.14	9.45	9.65	9.76	9.91	10.27
Opportunity cost of unpaid labor	23.79	24.25	25.00	25.91	26.82	27.73	28.34	28.64	29.09	30.16
Capital recovery of machinery & equip.	111.93	120.08	128.23	134.90	141.58	154.92	164.55	170.48	180.86	189.01
Opportunity cost of land	51.70	53.81	56.05	56.05	61.90	69.28	78.78	85.46	92.15	94.96
Taxes and insurance	28.24	29.53	29.77	38.27	42.41	47.07	52.84	45.96	49.29	50.40
General farm overhead	27.34	28.59	30.05	30.26	31.79	32.86	33.50	34.14	35.42	36.48
<b>Total, allocated overhead</b>	<b>251.10</b>	<b>264.52</b>	<b>277.62</b>	<b>294.22</b>	<b>313.64</b>	<b>341.31</b>	<b>367.66</b>	<b>374.44</b>	<b>396.73</b>	<b>411.28</b>
<b>Total costs listed</b>	<b>303.37</b>	<b>318.67</b>	<b>337.50</b>	<b>370.43</b>	<b>379.09</b>	<b>412.80</b>	<b>434.97</b>	<b>444.96</b>	<b>471.85</b>	<b>488.48</b>
<b>Total costs</b>	<b>665.78</b>	<b>698.99</b>	<b>754.75</b>	<b>818.30</b>	<b>847.66</b>	<b>1,004.34</b>	<b>980.66</b>	<b>981.32</b>	<b>1,080.72</b>	<b>1,133.57</b>
<b>Prevented planting %</b>	<b>46%</b>	<b>46%</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>	<b>41%</b>	<b>44%</b>	<b>45%</b>	<b>44%</b>	<b>43%</b>



**Table 141: Peanuts prevented planting cost per acre: Prairie Gateway**

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	12.26	12.26	12.36	12.96	13.10	13.65	15.09	14.89	14.60	15.29
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	24.05	28.35	39.38	41.82	45.36	59.11	39.17	48.80	62.20	61.51
Repairs	9.36	9.64	10.13	10.20	10.72	11.08	11.29	11.51	11.94	12.30
Purchased irrigation water & hay baling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating costs	0.58	0.60	1.48	2.19	2.20	1.05	0.16	0.11	0.07	0.09
<b>Total, operating costs</b>	<b>46.25</b>	<b>50.84</b>	<b>63.34</b>	<b>67.17</b>	<b>71.37</b>	<b>84.88</b>	<b>65.71</b>	<b>75.30</b>	<b>88.80</b>	<b>89.19</b>
Allocated overhead:										
Hired Labor	4.55	4.63	4.78	4.95	5.13	5.30	5.42	5.47	5.56	5.76
Opportunity cost of unpaid labor	19.08	19.44	20.05	20.78	21.51	22.24	22.72	22.97	23.33	24.18
Capital recovery of machinery & equip.	111.56	119.69	127.82	134.47	141.12	154.41	164.02	169.93	180.27	188.40
Opportunity cost of land	46.03	47.91	49.91	49.91	55.11	61.69	70.14	76.09	82.04	84.55
Taxes and insurance	28.24	29.53	29.77	38.27	42.41	47.07	52.84	45.96	49.29	50.40
General farm overhead	36.62	38.30	40.26	40.54	42.59	44.02	44.87	45.73	47.45	48.88
<b>Total, allocated overhead</b>	<b>246.08</b>	<b>259.51</b>	<b>272.59</b>	<b>288.92</b>	<b>307.87</b>	<b>334.73</b>	<b>360.01</b>	<b>366.15</b>	<b>387.94</b>	<b>402.18</b>
<b>Total costs listed</b>	<b>292.33</b>	<b>310.35</b>	<b>335.93</b>	<b>356.10</b>	<b>379.24</b>	<b>419.61</b>	<b>425.72</b>	<b>441.46</b>	<b>476.74</b>	<b>491.37</b>
<b>Total costs</b>	<b>621.21</b>	<b>659.89</b>	<b>735.40</b>	<b>777.25</b>	<b>833.40</b>	<b>981.40</b>	<b>913.30</b>	<b>940.74</b>	<b>1,035.45</b>	<b>1,088.27</b>
<b>Prevented planting %</b>	<b>47%</b>	<b>47%</b>	<b>46%</b>	<b>46%</b>	<b>46%</b>	<b>43%</b>	<b>47%</b>	<b>47%</b>	<b>46%</b>	<b>45%</b>

## 5.5. Rice

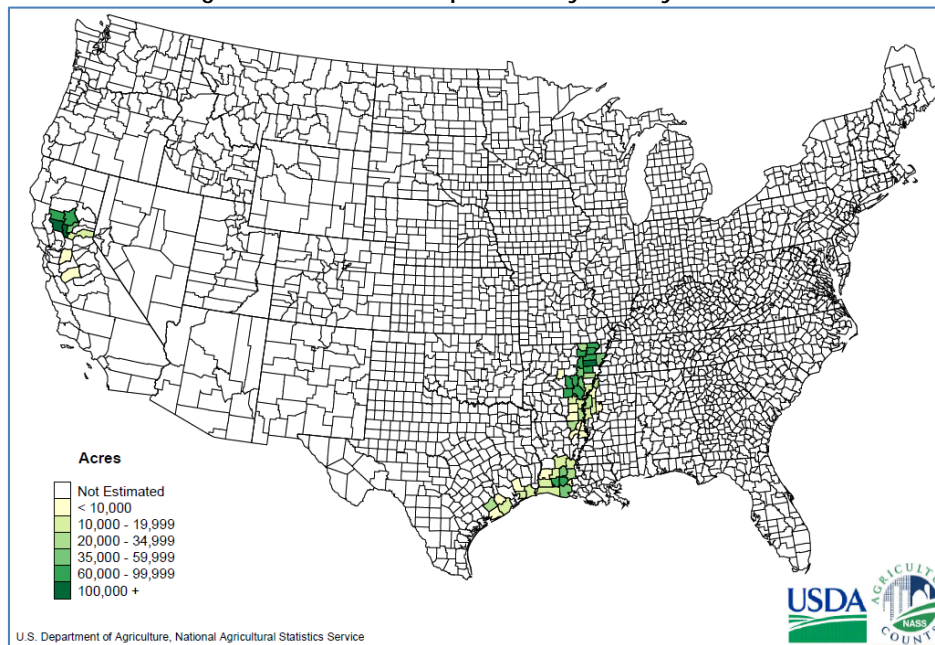
### Overview

Rice production for 2013 is estimated at 9.5 million tons (190 million cwt), harvested from almost 2.5 million acres. Yield was estimated at almost 7,700 pounds/acre. Production was 6.6 million tons (69%) long grain, 2.7 million tons (29%) medium grain, and 154,000 tons (2%) short grain.

Three states produce the majority of US rice: Arkansas (4 million tons, 43%), California (2.4 million tons, 25%), and Louisiana (1.5 million tons, 16%). Other producer states are Texas, Missouri, and Mississippi.

Arkansas, Louisiana, and other Gulf states produce mostly long grain rice; California produces primarily medium grain rice, as well as almost all the short grain rice.

Figure 43: Rice acres planted by county in 2012



### Sources of production cost information

The most accurate rice production cost data are derived from ERS's ARMS surveys of 2000 and 2006. The cost and returns estimates are available at <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>. For rice ERS does not organize the cost data on the basis of the resource regions used for most of the other major crops. Instead, the regions are described as California, Gulf Coast, Arkansas Non-Delta, and Mississippi River Delta. California is clearly Fruitful Rim. The Gulf Coast region is about equally split between Fruitful Rim and Mississippi Portal. Arkansas Non-Delta is Eastern Uplands. And Mississippi River Delta is Mississippi Portal.

### Production practices

Rice production practices vary, even within regions. For example, Louisiana publishes 24 rice budgets. Arkansas publishes five. Other states publish their own budgets as well.

Preparation generally includes field work in the fall and spring, and an herbicide burndown in the spring.

Rice can be dry planted or water planted, each with different implications for labor, water, and chemical usage.

Post-planting practices involve irrigation, repeated applications of fertilizer, and responding to birds, disease, and insects, so practices will vary widely.

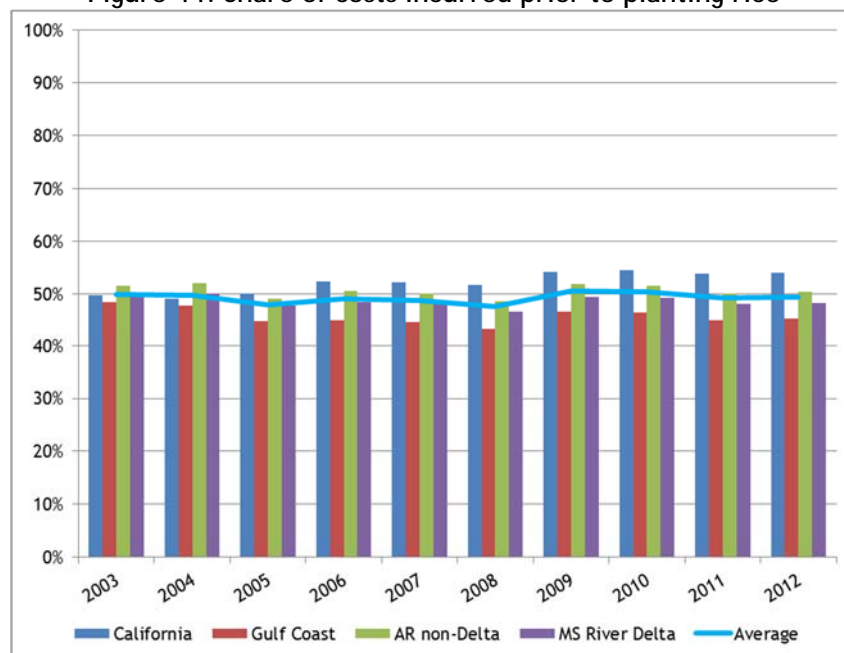
### Prevented planting experience

Prevented planting claims have been 56% of total indemnities over the past 20 years. Over the 10 year period 2003-2012, total indemnities for rice were \$220.6 million, \$115.1 million of which (52.2%) were prevented planting. Prevented planting claims for rice came almost entirely from Texas (\$26.4m, 97.4%), with most of the rest from California (\$593,545, 2.2%). Cause of loss in Texas was irrigation supply failures; in California, it was split between excess moisture/precipitation/rain and irrigation failure.

### Analysis

The percentage used by RMA for prevented planting for rice is 45%. The straight average of all producing regions shows prevented planting costs at 50% in 2003, dropping slightly to 49% in 2012. In the Gulf Coast region, including Texas, the source of almost all of the prevented planting claims, pre-planting costs dropped from an estimated 48% in 2003 (\$250 of \$638 per acre) to 45% (\$381 of \$1,049 per acre).

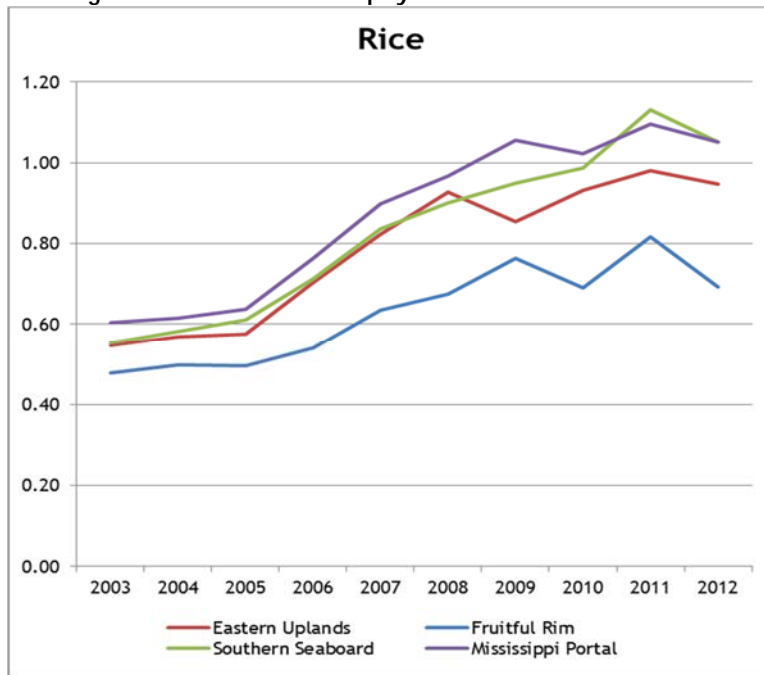
Figure 44: Share of costs incurred prior to planting rice



### Comparison of estimated PP cost to RMA payments

With the exception of the Fruitful Rim region, the ratios of RMA's incurred base PP payment to estimated PP costs have been close to 1.00 over the past five years. Also, because 62% of PP indemnities are associated with the additional 10% coverage, all of these ratios would be higher by about 14% if that were taken into account ( $10\%/45\% \times 0.62 = 0.138$ ). For example, the Mississippi Portal ratio of 1.05 in 2012 would be 1.19 if one assumes the 10% buy-up indemnity share is the same in all regions.

Figure 45: Ratio of RMA payment to PP costs for rice



### Recommendation

Based solely on a review of production costs, one might conclude that a 5% increase in the PP payment rate might be warranted (from 45% to 50%).

However, given the fact that the RMA payment / PP cost ratio in most regions is already near 1, that PP claims have accounted for a majority of indemnities, that almost two-thirds of PP claims are associated with buy-up, and that most claims are in the Gulf Coast region where preplanting costs are 45%, we suggest that the 45% payment rate be left as is.

Table 142: Rice production costs per planted acre: California

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	23.21	34.86	25.93	41.41	45.81	50.81	73.72	74.17	75.54	76.75
Fertilizer	60.21	67.78	73.11	69.58	76.39	125.92	118.36	90.88	120.25	128.95
Chemicals	87.98	80.55	80.56	90.88	92.31	96.48	106.48	104.82	102.67	107.91
Custom operations	160.22	161.42	166.63	82.00	86.13	86.13	92.03	94.98	96.75	99.11
Fuel, lube, and electricity	43.34	49.66	55.93	63.72	70.39	91.71	61.05	75.72	96.51	95.45
Repairs	18.88	19.62	20.15	25.45	26.15	27.03	27.56	28.26	29.14	30.01
Commercial drying				43.00	45.17	45.17	48.26	49.81	50.73	51.97
Purchased irrigation water	43.30	43.66	44.27	32.49	38.69	50.66	34.94	40.31	53.31	51.45
Crop Insurance	4.02	4.78	3.80	4.51	5.75	8.63	10.07	9.37	13.04	11.63
Interest on operating costs	2.31	3.60	7.87	9.98	10.62	3.87	0.76	0.52	0.29	0.40
<b>Total, operating costs</b>	<b>443.47</b>	<b>465.93</b>	<b>478.25</b>	<b>463.02</b>	<b>497.41</b>	<b>586.41</b>	<b>573.23</b>	<b>568.84</b>	<b>638.23</b>	<b>653.63</b>
Allocated overhead:										
Hired Labor	35.82	36.09	37.79	23.72	24.55	25.38	25.94	26.22	26.49	27.60
Opportunity cost of unpaid labor	59.9	61.09	62.48	65.18	67.47	69.75	71.28	72.04	72.8	75.85
Capital recovery of machinery & equip	88.78	92.26	94.75	101.22	106.23	116.24	123.47	127.92	135.70	142.38
Opportunity cost of land (rental rate)	197.02	197.02	216.72	234.25	251.18	289.28	333.03	342.91	369.72	381.01
Taxes and insurance	20.47	20.65	21.17	13.67	15.45	16.42	15.76	16.30	17.15	17.92
General farm overhead	25.79	26.37	27.72	34.46	35.41	36.60	37.31	38.26	39.45	40.64
<b>Total, allocated overhead</b>	<b>427.78</b>	<b>433.48</b>	<b>460.63</b>	<b>472.50</b>	<b>500.29</b>	<b>553.67</b>	<b>606.79</b>	<b>623.65</b>	<b>661.31</b>	<b>685.40</b>
<b>Total costs listed</b>	<b>871.25</b>	<b>899.41</b>	<b>938.88</b>	<b>935.52</b>	<b>997.70</b>	<b>1,140.08</b>	<b>1,180.02</b>	<b>1,192.49</b>	<b>1,299.54</b>	<b>1,339.03</b>

Table 143: Rice production costs per planted acre: Gulf Coast

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	20.45	33.10	34.34	35.08	38.81	43.05	62.45	62.84	63.99	65.02
Fertilizer	65.80	70.78	87.20	75.15	82.50	136.01	127.84	98.16	129.88	139.27
Chemicals	50.06	49.48	49.06	67.38	68.44	71.53	78.95	77.71	76.12	80.01
Custom operations	67.56	68.74	69.49	48.73	51.18	51.18	54.69	56.44	57.49	58.90
Fuel, lube, and electricity	81.74	92.30	139.73	111.17	122.80	160.01	106.52	132.10	168.38	166.52
Repairs	21.82	23.22	24.62	25.66	26.37	27.25	27.78	28.49	29.38	30.26
Commercial drying	15.43	15.93	15.34	15.98	16.78	16.78	17.93	18.51	18.85	19.31
Purchased irrigation water				35.41	39.19	49.49	36.39	42.69	55.97	58.42
Crop Insurance	2.92	3.70	3.35	4.59	5.54	5.91	10.37	7.13	7.85	11.11
Interest on operating costs	1.71	2.78	7.08	9.10	9.77	3.74	0.69	0.47	0.27	0.37
<b>Total, operating costs</b>	<b>327.49</b>	<b>360.03</b>	<b>430.21</b>	<b>428.25</b>	<b>461.38</b>	<b>564.95</b>	<b>523.61</b>	<b>524.54</b>	<b>608.18</b>	<b>629.19</b>
Allocated overhead:										
Hired Labor	28.68	29.55	29.77	9.18	9.50	9.82	10.04	10.15	10.25	10.68
Opportunity cost of unpaid labor	62.46	61.54	63.54	46.55	48.18	49.82	50.91	51.45	51.99	54.17
Capital recovery of machinery & equip	90.89	96.69	102.59	95.13	99.83	109.24	116.04	120.22	127.54	133.81
Opportunity cost of land (rental rate)	93.58	101.41	96.7	109.98	117.93	135.82	156.36	160.99	173.58	178.88
Taxes and insurance	13.81	13.96	14.31	12.7	14.35	15.25	14.64	15.14	15.93	16.65
General farm overhead	21.44	21.97	22.97	21.38	21.97	22.71	23.15	23.74	24.48	25.21
<b>Total, allocated overhead</b>	<b>310.86</b>	<b>325.12</b>	<b>329.88</b>	<b>294.92</b>	<b>311.76</b>	<b>342.66</b>	<b>371.14</b>	<b>381.69</b>	<b>403.77</b>	<b>419.40</b>
<b>Total costs listed</b>	<b>638.35</b>	<b>685.15</b>	<b>760.09</b>	<b>723.17</b>	<b>773.14</b>	<b>907.61</b>	<b>894.75</b>	<b>906.23</b>	<b>1,011.95</b>	<b>1,048.59</b>

Table 144: Rice production costs per planted acre: Arkansas Non-Delta

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	15.82	20.62	24.13	34.38	38.03	42.19	61.20	61.58	62.72	63.72
Fertilizer	45.18	47.18	59.19	51.99	57.08	94.09	88.44	67.91	89.85	96.35
Chemicals	49.34	49.19	49.52	56.75	57.64	60.25	66.49	65.45	64.11	67.39
Custom operations	42.40	42.75	44.10	27.93	29.34	29.34	31.35	32.35	32.95	33.76
Fuel, lube, and electricity	80.11	81.34	114.29	102.66	113.40	147.76	98.36	121.99	155.49	153.78
Repairs	21.51	23.15	24.05	27.66	28.42	29.38	29.95	30.71	31.67	32.62
Commercial drying	0.00	0.00	0.00	0.18	0.19	0.19	0.20	0.21	0.21	0.22
Purchased irrigation water				12.90	14.83	18.07	12.21	14.49	18.47	20.99
Crop Insurance	4.02	4.78	3.80	4.51	5.75	8.63	10.07	9.37	13.04	11.63
Interest on operating costs	1.34	2.08	5.31	7.24	7.78	2.98	0.55	0.38	0.22	0.30
<b>Total, operating costs</b>	<b>259.72</b>	<b>271.09</b>	<b>324.39</b>	<b>326.20</b>	<b>352.46</b>	<b>432.88</b>	<b>398.82</b>	<b>404.44</b>	<b>468.73</b>	<b>480.76</b>
Allocated overhead:										
Hired Labor	23.06	26.29	25.75	19.61	20.30	20.99	21.44	21.67	21.90	22.82
Opportunity cost of unpaid labor	50.14	49.91	50.73	35.32	36.56	37.8	38.62	39.04	39.45	41.1
Capital recovery of machinery & equip	83.35	89.69	93.19	98.55	103.42	113.17	120.21	124.54	132.12	138.62
Opportunity cost of land (rental rate)	83.75	92.34	92.34	89.46	95.93	110.48	127.18	130.96	141.20	145.51
Taxes and insurance	15.47	15.62	15.99	16.28	18.4	19.55	18.76	19.41	20.42	21.34
General farm overhead	22.00	22.49	23.64	19.13	19.66	20.32	20.71	21.24	21.90	22.56
<b>Total, allocated overhead</b>	<b>277.77</b>	<b>296.34</b>	<b>301.64</b>	<b>278.35</b>	<b>294.27</b>	<b>322.31</b>	<b>346.92</b>	<b>356.86</b>	<b>376.99</b>	<b>391.95</b>
<b>Total costs listed</b>	<b>537.49</b>	<b>567.43</b>	<b>626.03</b>	<b>604.55</b>	<b>646.73</b>	<b>755.19</b>	<b>745.74</b>	<b>761.30</b>	<b>845.72</b>	<b>872.71</b>

Table 145: Rice production costs per planted acre: Mississippi River Delta

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	19.53	24.34	27.23	39.35	43.53	48.29	70.05	70.48	71.78	72.93
Fertilizer	58.85	61.38	75.58	59.34	65.15	107.39	100.94	77.51	102.56	109.97
Chemicals	62.16	60.65	60.70	56.10	56.98	59.56	65.73	64.70	63.38	66.61
Custom operations	49.34	50.23	51.43	34.05	35.76	35.76	38.21	39.44	40.17	41.15
Fuel, lube, and electricity	75.52	79.99	110.48	97.23	107.40	139.95	93.16	115.54	147.27	145.64
Repairs	20.52	21.99	22.95	24.94	25.63	26.49	27.00	27.69	28.55	29.41
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water				10.47	12.08	14.60	9.72	11.88	15.36	16.67
Crop Insurance	2.62	2.96	2.22	2.95	3.32	3.97	6.05	6.79	7.07	6.08
Interest on operating costs	1.51	2.35	5.87	7.46	8.03	3.09	0.57	0.40	0.23	0.31
<b>Total, operating costs</b>	<b>290.05</b>	<b>303.89</b>	<b>356.46</b>	<b>331.89</b>	<b>357.88</b>	<b>439.10</b>	<b>411.43</b>	<b>414.43</b>	<b>476.37</b>	<b>488.77</b>
Allocated overhead:										
Hired Labor	28.69	30.27	29.56	19.77	20.46	21.16	21.62	21.85	22.08	23.01
Opportunity cost of unpaid labor	16.48	16.62	16.86	28.94	29.96	30.97	31.65	31.99	32.32	33.68
Capital recovery of machinery & equip	86.72	92.70	97.06	89.75	94.19	103.06	109.48	113.42	120.32	126.24
Opportunity cost of land (rental rate)	75.69	83.3	85.5	84.48	90.59	104.33	120.10	123.67	133.34	137.41
Taxes and insurance	17.47	17.45	18.07	19.77	22.34	23.75	22.79	23.57	24.80	25.91
General farm overhead	27.81	28.07	29.81	26.89	27.63	28.56	29.12	29.86	30.78	31.71
<b>Total, allocated overhead</b>	<b>252.86</b>	<b>268.41</b>	<b>276.86</b>	<b>269.60</b>	<b>285.17</b>	<b>311.83</b>	<b>334.76</b>	<b>344.36</b>	<b>363.64</b>	<b>377.96</b>
<b>Total costs listed</b>	<b>542.91</b>	<b>572.30</b>	<b>633.32</b>	<b>601.49</b>	<b>643.05</b>	<b>750.93</b>	<b>746.19</b>	<b>758.79</b>	<b>840.01</b>	<b>866.73</b>



Table 146: Rice - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Chemicals	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Custom operations	13%	13%	13%	25%	25%	25%	25%	25%	25%	25%
Fuel, lube, and electricity	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Repairs	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Commercial drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
Interest on operating costs	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Total, operating costs										
Allocated overhead:										
Hired Labor	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
Opportunity cost of unpaid labor	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 147: Rice prevented planting cost per acre: California

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	16.26	18.30	19.74	18.79	20.63	34.00	31.96	24.54	32.47	34.82
Chemicals	7.04	6.44	6.44	7.27	7.38	7.72	8.52	8.39	8.21	8.63
Custom operations	20.83	20.98	21.66	20.50	21.53	21.53	23.01	23.75	24.19	24.78
Fuel, lube, and electricity	4.33	4.97	5.59	6.37	7.04	9.17	6.11	7.57	9.65	9.55
Repairs	4.34	4.51	4.63	5.85	6.01	6.22	6.34	6.50	6.70	6.90
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	2.25	2.68	2.13	2.53	3.22	4.83	5.64	5.25	7.30	6.51
Interest on operating costs	0.37	0.58	1.26	1.60	1.70	0.62	0.12	0.08	0.05	0.06
<b>Total, operating costs</b>	<b>55.42</b>	<b>58.46</b>	<b>61.46</b>	<b>62.90</b>	<b>67.52</b>	<b>84.09</b>	<b>81.69</b>	<b>76.07</b>	<b>88.57</b>	<b>91.25</b>
Allocated overhead:										
Hired Labor	16.48	16.60	17.38	10.91	11.29	11.67	11.93	12.06	12.19	12.70
Opportunity cost of unpaid labor	29.35	29.93	30.62	31.94	33.06	34.18	34.93	35.30	35.67	37.17
Capital recovery of machinery & equip	88.78	92.26	94.75	101.22	106.23	116.24	123.47	127.92	135.70	142.38
Opportunity cost of land (rental rate)	197.02	197.02	216.72	234.25	251.18	289.28	333.03	342.91	369.72	381.01
Taxes and insurance	20.47	20.65	21.17	13.67	15.45	16.42	15.76	16.30	17.15	17.92
General farm overhead	25.79	26.37	27.72	34.46	35.41	36.60	37.31	38.26	39.45	40.64
<b>Total, allocated overhead</b>	<b>377.89</b>	<b>382.84</b>	<b>408.36</b>	<b>426.45</b>	<b>452.62</b>	<b>504.39</b>	<b>556.43</b>	<b>572.75</b>	<b>609.88</b>	<b>631.81</b>
<b>Total costs listed</b>	<b>433.31</b>	<b>441.30</b>	<b>469.82</b>	<b>489.35</b>	<b>520.14</b>	<b>588.48</b>	<b>638.12</b>	<b>648.82</b>	<b>698.45</b>	<b>723.06</b>
<b>Total costs</b>	<b>871.25</b>	<b>899.41</b>	<b>938.88</b>	<b>935.52</b>	<b>997.70</b>	<b>1,140.08</b>	<b>1,180.02</b>	<b>1,192.49</b>	<b>1,299.54</b>	<b>1,339.03</b>
<b>Prevented planting %</b>	<b>50%</b>	<b>49%</b>	<b>50%</b>	<b>52%</b>	<b>52%</b>	<b>52%</b>	<b>54%</b>	<b>54%</b>	<b>54%</b>	<b>54%</b>

Table 148: Rice prevented planting cost per acre: Gulf Coast

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	17.77	19.11	23.54	20.29	22.28	36.72	34.52	26.50	35.07	37.60
Chemicals	4.00	3.96	3.92	5.39	5.48	5.72	6.32	6.22	6.09	6.40
Custom operations	8.78	8.94	9.03	12.18	12.80	12.80	13.67	14.11	14.37	14.73
Fuel, lube, and electricity	8.17	9.23	13.97	11.12	12.28	16.00	10.65	13.21	16.84	16.65
Repairs	5.02	5.34	5.66	5.90	6.07	6.27	6.39	6.55	6.76	6.96
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.64	2.07	1.88	2.57	3.10	3.31	5.81	3.99	4.40	6.22
Interest on operating costs	0.27	0.44	1.13	1.46	1.56	0.60	0.11	0.08	0.04	0.06
<b>Total, operating costs</b>	<b>45.66</b>	<b>49.09</b>	<b>59.15</b>	<b>58.91</b>	<b>63.56</b>	<b>81.42</b>	<b>77.46</b>	<b>70.66</b>	<b>83.56</b>	<b>88.62</b>
Allocated overhead:										
Hired Labor	13.19	13.59	13.69	4.22	4.37	4.52	4.62	4.67	4.72	4.91
Opportunity cost of unpaid labor	30.61	30.15	31.13	22.81	23.61	24.41	24.95	25.21	25.48	26.54
Capital recovery of machinery & equip	90.89	96.69	102.59	95.13	99.83	109.24	116.04	120.22	127.54	133.81
Opportunity cost of land (rental rate)	93.58	101.41	96.70	109.98	117.93	135.82	156.36	160.99	173.58	178.88
Taxes and insurance	13.81	13.96	14.31	12.70	14.35	15.25	14.64	15.14	15.93	16.65
General farm overhead	21.44	21.97	22.97	21.38	21.97	22.71	23.15	23.74	24.48	25.21
<b>Total, allocated overhead</b>	<b>263.52</b>	<b>277.78</b>	<b>281.40</b>	<b>266.22</b>	<b>282.06</b>	<b>311.95</b>	<b>339.75</b>	<b>349.97</b>	<b>371.72</b>	<b>386.01</b>
<b>Total costs listed</b>	<b>309.17</b>	<b>326.87</b>	<b>340.55</b>	<b>325.13</b>	<b>345.61</b>	<b>393.37</b>	<b>417.22</b>	<b>420.63</b>	<b>455.28</b>	<b>474.63</b>
<b>Total costs</b>	<b>638.35</b>	<b>685.15</b>	<b>760.09</b>	<b>723.17</b>	<b>773.14</b>	<b>907.61</b>	<b>894.75</b>	<b>906.23</b>	<b>1,011.95</b>	<b>1,048.59</b>
<b>Prevented planting %</b>	<b>48%</b>	<b>48%</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>	<b>43%</b>	<b>47%</b>	<b>46%</b>	<b>45%</b>	<b>45%</b>

Table 149: Rice prevented planting cost per acre: Arkansas Non-Delta

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	12.20	12.74	15.98	14.04	15.41	25.40	23.88	18.34	24.26	26.01
Chemicals	3.95	3.94	3.96	14.19	14.41	15.06	16.62	16.36	16.03	16.85
Custom operations	5.51	5.56	5.73	6.98	7.34	7.34	7.84	8.09	8.24	8.44
Fuel, lube, and electricity	8.01	8.13	11.43	10.27	11.34	14.78	9.84	12.20	15.55	15.38
Repairs	4.95	5.32	5.53	6.36	6.54	6.76	6.89	7.06	7.28	7.50
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	2.25	2.68	2.13	2.53	3.22	4.83	5.64	5.25	7.30	6.51
Interest on operating costs	0.21	0.33	0.85	1.16	1.24	0.48	0.09	0.06	0.04	0.05
<b>Total, operating costs</b>	<b>37.08</b>	<b>38.70</b>	<b>45.61</b>	<b>55.52</b>	<b>59.50</b>	<b>74.64</b>	<b>70.79</b>	<b>67.36</b>	<b>78.70</b>	<b>80.74</b>
Allocated overhead:										
Hired Labor	10.61	12.09	11.85	9.02	9.34	9.66	9.86	9.97	10.07	10.50
Opportunity cost of unpaid labor	24.57	24.46	24.86	17.31	17.91	18.52	18.92	19.13	19.33	20.14
Capital recovery of machinery & equip	83.35	89.69	93.19	98.55	103.42	113.17	120.21	124.54	132.12	138.62
Opportunity cost of land (rental rate)	83.75	92.34	92.34	89.46	95.93	110.48	127.18	130.96	141.20	145.51
Taxes and insurance	15.47	15.62	15.99	16.28	18.40	19.55	18.76	19.41	20.42	21.34
General farm overhead	22.00	22.49	23.64	19.13	19.66	20.32	20.71	21.24	21.90	22.56
<b>Total, allocated overhead</b>	<b>239.75</b>	<b>256.69</b>	<b>261.86</b>	<b>249.75</b>	<b>264.66</b>	<b>291.70</b>	<b>315.65</b>	<b>325.25</b>	<b>345.04</b>	<b>358.67</b>
<b>Total costs listed</b>	<b>276.83</b>	<b>295.39</b>	<b>307.48</b>	<b>305.27</b>	<b>324.16</b>	<b>366.34</b>	<b>386.44</b>	<b>392.60</b>	<b>423.74</b>	<b>439.41</b>
<b>Total costs</b>	<b>537.49</b>	<b>567.43</b>	<b>626.03</b>	<b>604.55</b>	<b>646.73</b>	<b>755.19</b>	<b>745.74</b>	<b>761.30</b>	<b>845.72</b>	<b>872.71</b>
<b>Prevented planting %</b>	<b>52%</b>	<b>52%</b>	<b>49%</b>	<b>50%</b>	<b>50%</b>	<b>49%</b>	<b>52%</b>	<b>52%</b>	<b>50%</b>	<b>50%</b>

Table 150: Rice prevented planting cost per acre: Mississippi River Delta

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	15.89	16.57	20.41	16.02	17.59	29.00	27.25	20.93	27.69	29.69
Chemicals	4.97	4.85	4.86	4.49	4.56	4.76	5.26	5.18	5.07	5.33
Custom operations	6.41	6.53	6.69	8.51	8.94	8.94	9.55	9.86	10.04	10.29
Fuel, lube, and electricity	7.55	8.00	11.05	9.72	10.74	14.00	9.32	11.55	14.73	14.56
Repairs	4.72	5.06	5.28	5.74	5.89	6.09	6.21	6.37	6.57	6.76
Commercial drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	1.47	1.66	1.24	1.65	1.86	2.22	3.39	3.80	3.96	3.40
Interest on operating costs	0.24	0.38	0.94	1.19	1.28	0.49	0.09	0.06	0.04	0.05
<b>Total, operating costs</b>	<b>41.26</b>	<b>43.04</b>	<b>50.46</b>	<b>47.33</b>	<b>50.87</b>	<b>65.51</b>	<b>61.07</b>	<b>57.75</b>	<b>68.09</b>	<b>70.09</b>
Allocated overhead:										
Hired Labor	13.20	13.92	13.60	9.09	9.41	9.73	9.95	10.05	10.16	10.58
Opportunity cost of unpaid labor	8.08	8.14	8.26	14.18	14.68	15.18	15.51	15.68	15.84	16.50
Capital recovery of machinery & equip	86.72	92.70	97.06	89.75	94.19	103.06	109.48	113.42	120.32	126.24
Opportunity cost of land (rental rate)	75.69	83.30	85.50	84.48	90.59	104.33	120.10	123.67	133.34	137.41
Taxes and insurance	17.47	17.45	18.07	19.77	22.34	23.75	22.79	23.57	24.80	25.91
General farm overhead	27.81	28.07	29.81	26.89	27.63	28.56	29.12	29.86	30.78	31.71
<b>Total, allocated overhead</b>	<b>228.96</b>	<b>243.59</b>	<b>252.30</b>	<b>244.16</b>	<b>258.84</b>	<b>284.61</b>	<b>306.94</b>	<b>316.25</b>	<b>335.23</b>	<b>348.36</b>
<b>Total costs listed</b>	<b>270.22</b>	<b>286.63</b>	<b>302.76</b>	<b>291.49</b>	<b>309.71</b>	<b>350.11</b>	<b>368.01</b>	<b>374.00</b>	<b>403.33</b>	<b>418.45</b>
<b>Total costs</b>	<b>542.91</b>	<b>572.30</b>	<b>633.32</b>	<b>601.49</b>	<b>643.05</b>	<b>750.93</b>	<b>746.19</b>	<b>758.79</b>	<b>840.01</b>	<b>866.73</b>
<b>Prevented planting %</b>	<b>50%</b>	<b>50%</b>	<b>48%</b>	<b>48%</b>	<b>48%</b>	<b>47%</b>	<b>49%</b>	<b>49%</b>	<b>48%</b>	<b>48%</b>

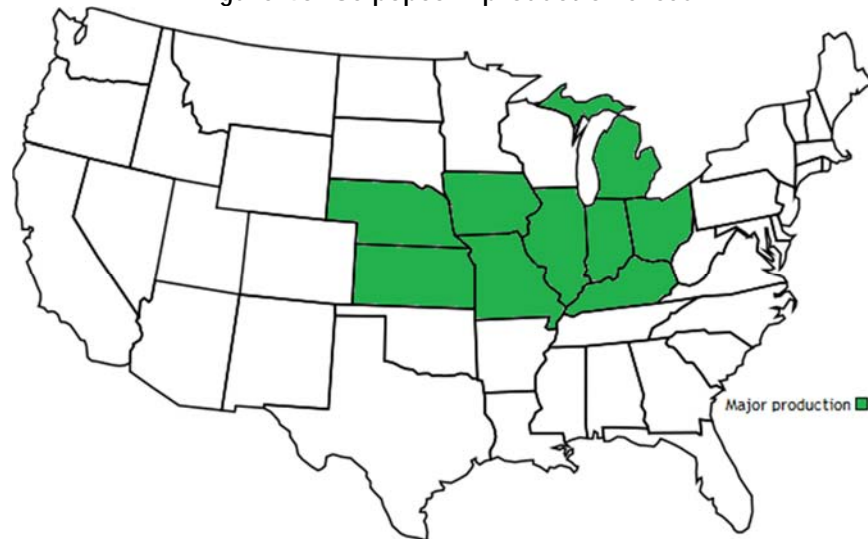
## 5.6. Popcorn

### Overview

Popcorn is grown primarily in the Heartland. Key producers are Nebraska and Indiana, which combined accounted for 71% of all popcorn crop insurance liabilities in 2013. Most of the rest of production takes place in Ohio, Illinois, Missouri, and Kentucky.

Annual popcorn production is just shy of one billion pounds. A large portion of the commercial crop is produced under contract with processors, which specify the varieties to be grown.

Figure 46: US popcorn production areas



### Sources of production cost information

The most detailed source of popcorn production cost information is a 2008 budget published by Ohio State University. We used this as the key budget in our analysis. In addition, we also reviewed a 2010 budget published by Iowa State University Extension, and a 2013 budget published by the University of Missouri Extension. The USDA has no information available on popcorn production costs.

### Production practices

Popcorn production practices, for the most part, are similar to those for dent corn, including weed and insect control.

There are a few differences, however. Popcorn seed germinates more slowly, and seedlings grow more slowly, and the popcorn root system is less extensive. Consequently, well-drained, medium- to coarse-textured soils are best.

### Prevented planting experience

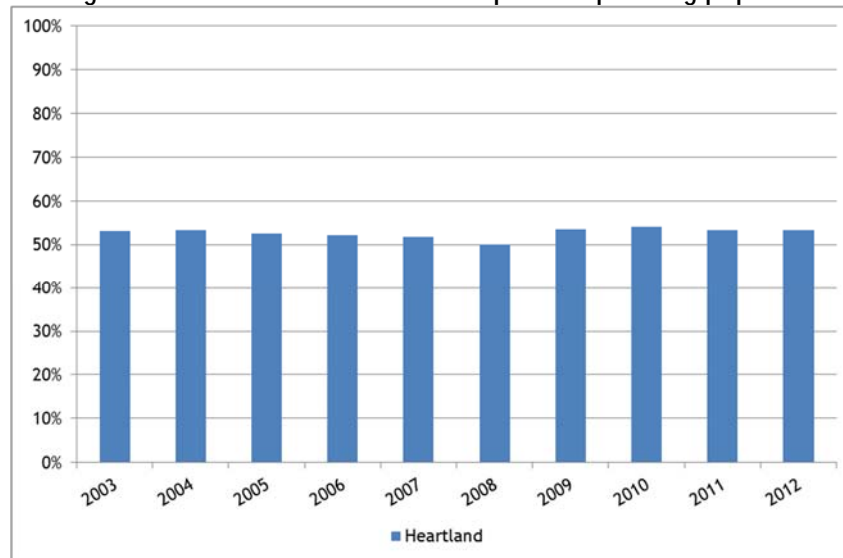
Prevented planting claims have accounted for 5.5% of total indemnities in the past 20 years. PP 10% buy-up is associated with 25% of the PP indemnities. Over the 10 year period 2003-2012, total indemnities for popcorn were \$33.9 million, \$2.3 million of which (6.9%) were prevented planting. Prevented planting for popcorn has occurred primarily in Illinois (31%), Indiana (26%), and Ohio (14%). Excess moisture/precipitation/rain is the cause of prevented planting for 94% of the indemnities.

## Analysis

Based on analysis of the Ohio State University budget, pre-planting costs for popcorn were an estimated 53% in 2003 (\$195 of \$367 per acre); by 2012, the pre-planting share of costs were also 53% (\$347 out of \$650). These shares are similar to those for corn harvested for grain which fell from 55% at the beginning of the period to 52% at the end.

A separate review of other budgets shows roughly similar figures. The University of Missouri Extension budget for 2013 for irrigated popcorn indicated a pre-planting cost share of 55%. A budget for 2010 published by Iowa State University Extension also showed prevented planting costs of 55%.

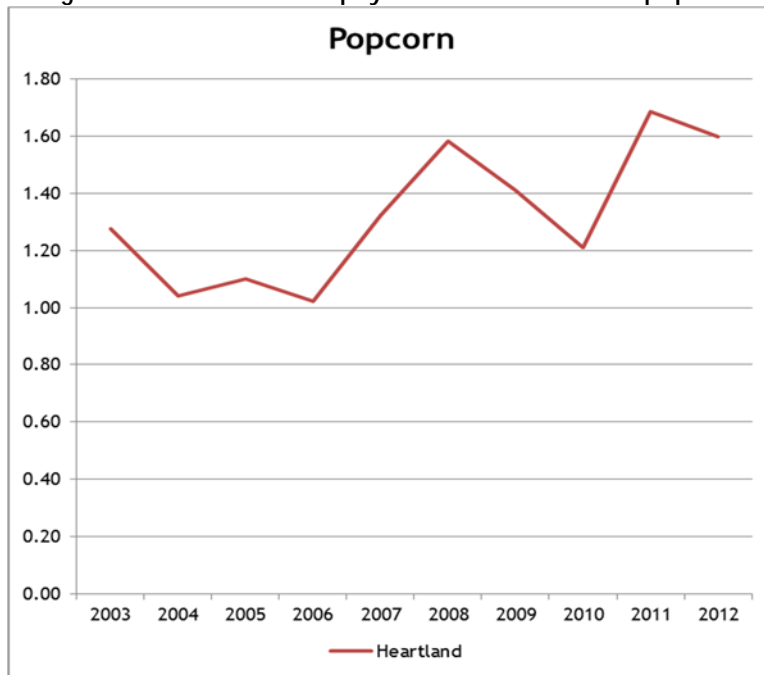
**Figure 47: Share of costs incurred prior to planting popcorn**



## Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs was close to 1.00 through 2006, but has since fluctuated at a higher level, exceeding 1.5 in 2011 and 2012.

Figure 48: Ratio of RMA payment to PP costs for popcorn



### Recommendation

The ratio of payments to estimated costs supports a recommendation to reduce the PP payment rate. Our actual estimate of PP costs for popcorn was 53%, and for corn overall, 51%, so a cut to 50% would appear to be the most appropriate adjustment in light of the high ratio of RMA payments to PP costs.



Table 151: Popcorn production costs per planted acre: Ohio

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>15.46</i>	<i>15.86</i>	<i>16.86</i>	<i>18.27</i>	<i>20.48</i>	26.00	<i>30.02</i>	<i>31.12</i>	<i>33.33</i>	<i>36.04</i>
Fertilizer	<i>45.79</i>	<i>51.69</i>	<i>60.55</i>	<i>64.99</i>	<i>79.75</i>	144.74	<i>101.54</i>	<i>93.05</i>	<i>121.11</i>	<i>122.96</i>
Chemicals	<i>45.97</i>	<i>45.97</i>	<i>46.73</i>	<i>48.63</i>	<i>49.01</i>	52.81	<i>56.61</i>	<i>54.71</i>	<i>55.09</i>	<i>58.13</i>
Fuel, lube, and repairs	<i>20.80</i>	<i>24.51</i>	<i>32.09</i>	<i>35.50</i>	<i>39.22</i>	51.10	<i>34.02</i>	<i>42.19</i>	<i>53.77</i>	<i>53.48</i>
Hired labor	<i>41.70</i>	<i>42.49</i>	<i>43.82</i>	<i>45.41</i>	<i>47.01</i>	48.60	<i>49.93</i>	<i>50.19</i>	<i>50.99</i>	<i>52.85</i>
Miscellaneous	<i>6.11</i>	<i>6.39</i>	<i>6.81</i>	<i>7.23</i>	<i>7.74</i>	9.00	<i>8.77</i>	<i>9.05</i>	<i>9.93</i>	<i>10.31</i>
Crop insurance	<i>13.27</i>	<i>13.48</i>	<i>14.12</i>	<i>14.76</i>	<i>15.50</i>	15.50	<i>16.56</i>	<i>17.09</i>	<i>17.41</i>	<i>17.73</i>
Interest on operating capital	<i>9.91</i>	<i>10.23</i>	<i>11.70</i>	<i>14.02</i>	<i>14.97</i>	15.71	<i>14.44</i>	<i>14.02</i>	<i>15.29</i>	<i>15.50</i>
Total, operating costs	<i>199.00</i>	<i>210.63</i>	<i>232.69</i>	<i>248.81</i>	<i>273.68</i>	363.46	<i>311.88</i>	<i>311.42</i>	<i>356.92</i>	<i>366.98</i>
Allocated overhead:										
Management expenses	<i>32.22</i>	<i>32.84</i>	<i>33.87</i>	<i>35.10</i>	<i>36.33</i>	37.56	<i>38.59</i>	<i>38.79</i>	<i>39.41</i>	<i>40.84</i>
Capital recovery of machinery & equip	<i>47.01</i>	<i>50.44</i>	<i>53.86</i>	<i>56.66</i>	<i>59.47</i>	65.07	<i>69.12</i>	<i>71.61</i>	<i>75.97</i>	<i>80.01</i>
Opportunity cost of land (rental rate)	<i>88.5585</i>	<i>92.1732</i>	<i>95.7878</i>	<i>100.005</i>	<i>107.234</i>	123.50	<i>142.176</i>	<i>146.393</i>	<i>157.839</i>	<i>162.659</i>
Total, allocated overhead	<i>167.79</i>	<i>175.45</i>	<i>183.52</i>	<i>191.77</i>	<i>203.03</i>	226.13	<i>249.88</i>	<i>256.79</i>	<i>273.21</i>	<i>283.52</i>
Total costs listed	<i>366.79</i>	<i>386.08</i>	<i>416.20</i>	<i>440.58</i>	<i>476.71</i>	589.59	<i>561.76</i>	<i>568.21</i>	<i>630.14</i>	<i>650.50</i>

Source for budget(s): Ohio State University  
Ext.

<http://aede.osu.edu/sites/aede/files/import/popcorn2008.pdf>

Notes:

Based on 2008 budget; values for other years derived using price indices (in italics)

Table 152: Popcorn - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Chemicals	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fuel, lube, and repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hired labor	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Miscellaneous	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Crop insurance	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Management expenses	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 153: Popcorn prevented planting cost per acre: Ohio

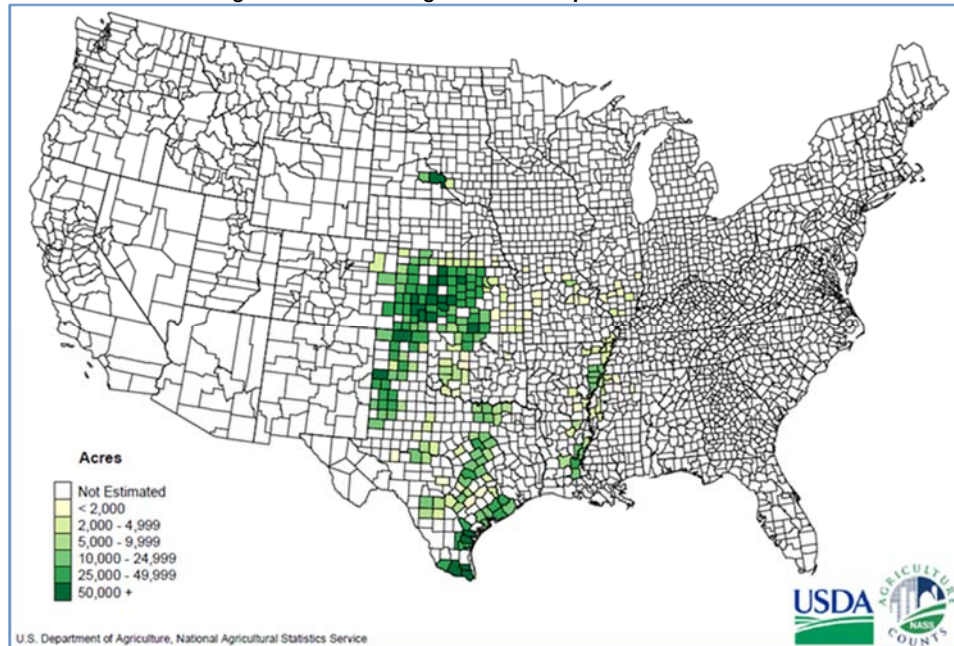
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	14.19	16.02	18.77	20.15	24.72	44.87	31.48	28.84	37.54	38.12
Chemicals	11.49	11.49	11.68	12.16	12.25	13.20	14.15	13.68	13.77	14.53
Fuel, lube, and repairs	5.20	6.13	8.02	8.88	9.80	12.78	8.50	10.55	13.44	13.37
Hired labor	12.51	12.75	13.15	13.62	14.10	14.58	14.98	15.06	15.30	15.85
Miscellaneous	3.05	3.19	3.40	3.61	3.87	4.50	4.38	4.52	4.97	5.15
Crop insurance	0.80	0.81	0.85	0.89	0.93	0.93	0.99	1.03	1.04	1.06
Interest on operating capital	2.48	2.56	2.93	3.51	3.74	3.93	3.61	3.51	3.82	3.87
<b>Total, operating costs</b>	<b>49.72</b>	<b>52.95</b>	<b>58.80</b>	<b>62.81</b>	<b>69.43</b>	<b>94.78</b>	<b>78.10</b>	<b>77.18</b>	<b>89.89</b>	<b>91.96</b>
Allocated overhead:										
Management expenses	9.67	9.85	10.16	10.53	10.90	11.27	11.58	11.64	11.82	12.25
Capital recovery of machinery & equip	47.01	50.44	53.86	56.66	59.47	65.07	69.12	71.61	75.97	80.01
Opportunity cost of land (rental rate)	88.56	92.17	95.79	100.00	107.23	123.50	142.18	146.39	157.84	162.66
<b>Total, allocated overhead</b>	<b>145.24</b>	<b>152.46</b>	<b>159.81</b>	<b>167.20</b>	<b>177.60</b>	<b>199.84</b>	<b>222.87</b>	<b>229.64</b>	<b>245.63</b>	<b>254.93</b>
<b>Total costs listed</b>	<b>194.96</b>	<b>205.41</b>	<b>218.61</b>	<b>230.01</b>	<b>247.02</b>	<b>294.62</b>	<b>300.97</b>	<b>306.82</b>	<b>335.52</b>	<b>346.89</b>
<b>Total costs</b>	<b>366.79</b>	<b>386.08</b>	<b>416.20</b>	<b>440.58</b>	<b>476.71</b>	<b>589.59</b>	<b>561.76</b>	<b>568.21</b>	<b>630.14</b>	<b>650.50</b>
<b>Prevented planting %</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>52%</b>	<b>52%</b>	<b>50%</b>	<b>54%</b>	<b>54%</b>	<b>53%</b>	<b>53%</b>

## 5.7. Silage sorghum

### Overview

Silage sorghum is grown in the same regions as grain sorghum. From 2011 through 2013, average annual production was 3.9 million tons. From 2011 through 2013, three-quarters of production came from 4 states: Texas (averaging 1.4 million tons, or 36% of overall production), Kansas (860,000 tons, 22%), Arkansas (390,000 tons, 10%) and New Mexico (230,000 tons, 6%).

Figure 49: US sorghum acres planted in 2012



### Sources of production cost information

Production of silage sorghum is broadly similar to grain sorghum production. However, there are many different methods of sorghum production, and costs vary dramatically (especially for irrigated vs. non-irrigated systems). Rather than use one of the many budgets (Texas alone publishes twenty different sorghum production budgets), we have used the ERS data for sorghum production for the Prairie Gateway region, where most silage sorghum is grown.

### Production practices

Both the Texas budgets and a sorghum expert confirm that there is generally greater nitrogen use pre-planting in the case of silage sorghum. We have therefore assumed a 70% nitrogen use rate pre-planting, vs. 61% for grain sorghum.

### Prevented planting experience

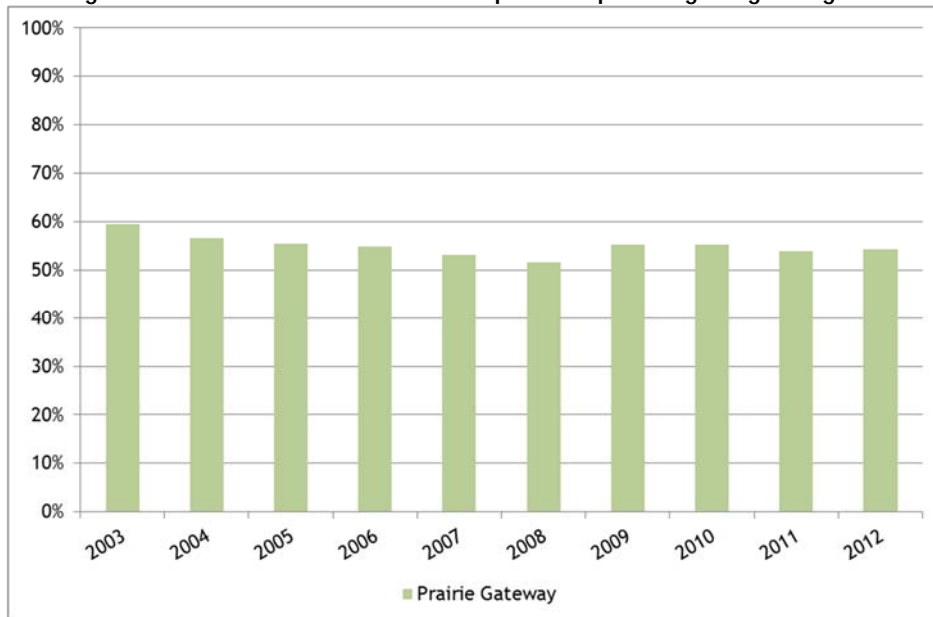
Over the 7 year period 2005-2012 (the years for which crop insurance was available), total indemnities for silage sorghum were \$23 million, \$382,000 of which (1.7%) were prevented planting. Prevented planting claims came almost exclusively from Colorado (99%), and most of this was due to irrigation failure. Drought accounted for the remaining claims of less than \$50,000.

**Analysis**

Based on the ERS budget data for the Prairie Gateway region, pre-planting costs for silage sorghum were an estimated 59% in 2003 (\$129 of \$218 per acre); by 2012, the pre-planting share of costs had dropped slightly to 54% (\$168 out of \$384).

We also reviewed a Texas 2012 budget for irrigated silage sorghum. It indicated prevented planting (sunk) costs of \$320 out of \$663 (48%). This system would be expected to have a lower than average prevented planting cost percentage, however, given its higher overall inputs at and after planting and higher harvest costs.

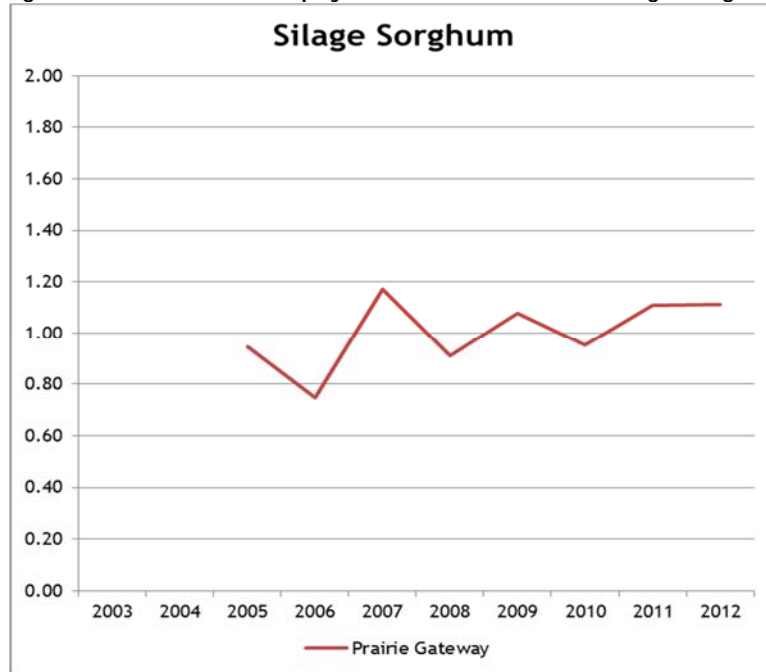
**Figure 50: Share of costs incurred prior to planting silage sorghum**



### Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs has been close to 1.00, but rose slightly in 2011 and 2012 to over 1.1.

Figure 51: Ratio of RMA payment to PP costs for silage sorghum



### Recommendation

We recommend reducing the PP payment rate for silage sorghum from 60% of guarantee to 55%, which cuts the indemnity by 8.3%.

Table 154: Silage Sorghum production costs per planted acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	4.27	4.48	4.87	4.96	5.13	6.07	6.88	7.05	6.92	8.67
Fertilizer	18.02	19.14	22.07	25.14	29.19	44.59	42.45	32.55	42.82	45.88
Chemicals	19.74	19.74	19.74	20.56	21.21	22.20	24.83	24.50	24.59	25.77
Custom operations	9.08	9.15	9.52	9.95	10.38	10.38	11.30	11.66	11.90	12.62
Fuel, lube, and electricity	22.11	28.67	38.73	39.56	49.77	63.00	42.60	53.26	60.65	58.83
Repairs	17.04	17.42	18.19	18.84	19.49	20.01	20.40	20.79	21.57	22.22
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance			7.70	10.10	8.68	8.34	13.25	12.85	14.85	15.46
Interest on operating inputs	0.48	0.78	1.92	2.81	2.98	1.23	0.22	0.15	0.08	0.11
<b>Total, operating costs</b>	<b>90.74</b>	<b>99.38</b>	<b>122.74</b>	<b>131.92</b>	<b>146.83</b>	<b>175.82</b>	<b>161.93</b>	<b>162.81</b>	<b>183.38</b>	<b>189.56</b>
Allocated overhead:										
Hired labor	3.18	3.26	3.36	3.48	3.60	3.72	3.80	3.84	3.90	4.04
Opportunity cost of unpaid labor	26.44	27.11	27.96	28.98	30	31.02	31.7	32.04	32.55	33.74
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land	32.59	32.59	33.95	33.4	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.9	4.1	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>127.74</b>	<b>132.69</b>	<b>139.35</b>	<b>143.69</b>	<b>151.08</b>	<b>163.79</b>	<b>174.15</b>	<b>177.82</b>	<b>187.59</b>	<b>194.79</b>
<b>Total costs listed</b>	<b>218.48</b>	<b>232.07</b>	<b>262.09</b>	<b>275.61</b>	<b>297.91</b>	<b>339.61</b>	<b>336.08</b>	<b>340.63</b>	<b>370.97</b>	<b>384.35</b>

Table 155: Silage sorghum - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Chemicals	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Custom operations	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Fuel, lube, and electricity	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Repairs	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Purchased irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Interest on operating inputs	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Total, operating costs										
Allocated overhead:										
Hired labor	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Opportunity cost of unpaid labor	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table 156: Silage sorghum prevented planting cost per acre: Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	6.31	6.70	7.72	8.80	10.22	15.61	14.86	11.39	14.99	16.06
Chemicals	7.90	7.90	7.90	8.22	8.48	8.88	9.93	9.80	9.84	10.31
Custom operations	1.54	1.56	1.62	1.69	1.76	1.76	1.92	1.98	2.02	2.15
Fuel, lube, and electricity	3.54	4.59	6.20	6.33	7.96	10.08	6.82	8.52	9.70	9.41
Repairs	4.09	4.18	4.37	4.52	4.68	4.80	4.90	4.99	5.18	5.33
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.00	0.15	0.20	0.17	0.17	0.27	0.26	0.30	0.31
Interest on operating inputs	0.13	0.21	0.52	0.76	0.80	0.33	0.06	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>23.50</b>	<b>25.13</b>	<b>28.47</b>	<b>30.53</b>	<b>34.08</b>	<b>41.63</b>	<b>38.75</b>	<b>36.98</b>	<b>42.05</b>	<b>43.60</b>
Allocated overhead:										
Hired labor	1.14	1.17	1.21	1.25	1.30	1.34	1.37	1.38	1.40	1.45
Opportunity cost of unpaid labor	7.14	7.32	7.55	7.82	8.10	8.38	8.56	8.65	8.79	9.11
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land	32.59	32.59	33.95	33.40	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.90	4.10	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>106.40</b>	<b>110.81</b>	<b>116.79</b>	<b>120.31</b>	<b>126.88</b>	<b>138.76</b>	<b>148.58</b>	<b>151.97</b>	<b>161.33</b>	<b>167.57</b>
<b>Total costs listed</b>	<b>129.91</b>	<b>135.94</b>	<b>145.26</b>	<b>150.83</b>	<b>160.96</b>	<b>180.40</b>	<b>187.32</b>	<b>188.96</b>	<b>203.38</b>	<b>211.17</b>
<b>Total costs</b>	<b>218.48</b>	<b>232.07</b>	<b>262.09</b>	<b>275.61</b>	<b>297.91</b>	<b>339.61</b>	<b>336.08</b>	<b>340.63</b>	<b>370.97</b>	<b>384.35</b>
<b>Prevented planting %</b>	<b>59%</b>	<b>59%</b>	<b>55%</b>	<b>55%</b>	<b>54%</b>	<b>53%</b>	<b>56%</b>	<b>55%</b>	<b>55%</b>	<b>55%</b>

## 5.8. Hybrid corn seed

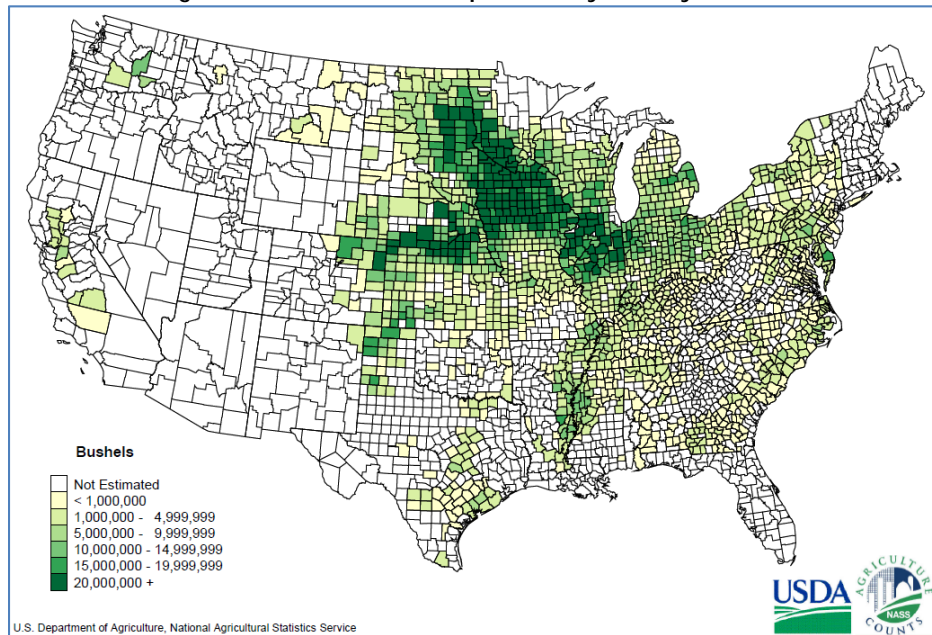
### Overview

Corn is produced on more acres, and generates more revenue for farmers, than any other field crop. Virtually all US corn is grown from hybrid corn strains. Hybrid corn grown for seed is generally grown in the same areas as corn for grain. However, inbred corn must be grown on the best land possible and under the most favorable environmental conditions. Hybrid seed production centers on Nebraska, Indiana, Illinois, and Iowa. Production methods are similar to those for corn for grain with some additional requirements. All seed corn is grown under contract to one of the commercial seed producers.

Corn for seed competes for the highest value land and management practices. As such, farmers are paid a premium over the return that acre of land would yield in commercial corn production in order to secure enough acreage to produce adequate supply.

The map below shows where corn is produced. The dark green areas also are the primary regions where hybrid corn seed is produced.

Figure 52: US corn acres planted by county in 2012



### Sources of production cost information

Although corn is a major crop, there are no public crop budgets available for hybrid seed corn. However, corn is one of the crops for which the Economic Research Service conducts periodic statistically representative surveys of farm finances and production practices on which it bases annual production cost estimates. We used that information as a basis for developing our estimates of prevented planting costs, combined with expert opinions to reflect the higher inputs necessary for hybrid seed corn production.

The annual production cost series maintained by ERS for each farm resource region are available at the following link: <http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx>.

## Production practices

Seed corn is a late spring-planted crop due to its intolerance of extreme environmental conditions. Seed corn is a management intensive, input critical, and timing sensitive crop. It is also more labor and capital intensive. The necessity of detasseling the corn for proper breeding significantly increases the cost of production. Many production acres are irrigated for greater control over the growing process. The planting process for seed corn can be more time consuming than corn for grain. More tillage passes, slower tractor speeds, male/female row planting ratios, and border rows all serve to increase the time required to plant seed corn.

Fieldwork begins in the fall with cultivation and application of fertilizer, particularly potassium and phosphate. Seed corn generally requires the same fertilizer inputs as 120-160 bushel/acre yield commercial corn. Between a third and half of those two nutrients are applied in the fall because they bond well with the soil and are not lost or degraded over the winter to any great degree. This reduces the amount of work that has to be accomplished in the spring.

Planting occurs in two passes. The female seeds and male seeds are planted in specific alternating rows, typically 4:1, or 6:2 patterns. In addition, they must be planted so that they are in the reproductive phase at the same time for proper fertilization. This may mean the males and females are planted several days or even a week apart depending on which inbreds are used. On some fields, border rows are necessary to prevent cross-pollination from a neighboring cornfield. Border rows are not harvested for seed and serve only to provide a buffer zone.

Before pollination occurs, the tassels are removed from the female plants by a specialized detasseling machine. The machine leaves anywhere from 60 to 90% of the tassels in the plants, so crews of mostly teenagers are hired for several weeks to remove the remaining tassels. Machine detasseling reduces the total detasseling costs, however it reduces yields by anywhere from 4-45%. However, it is far more cost effective even with the yield losses than fully manual detasseling.

After pollination ends, the male plants are usually destroyed by specialized machines to reduce competition and increase yields in the pollinated female plants. During the growing phase, water availability is crucial for proper yields in drought prone areas. Irrigation is usually done 1-2 times in a normal year but may be done 2-3 times in a dry year. Irrigation is used in about 15% of commercial corn but a higher percentage of seed corn is irrigated.

During the growing phase, depending on cultivar and region, an insecticide may be required to reduce pest pressure. The seed companies sometimes provide the farmer with a specific insecticide but it is up to the farmer to apply it.

## Prevented planting experience

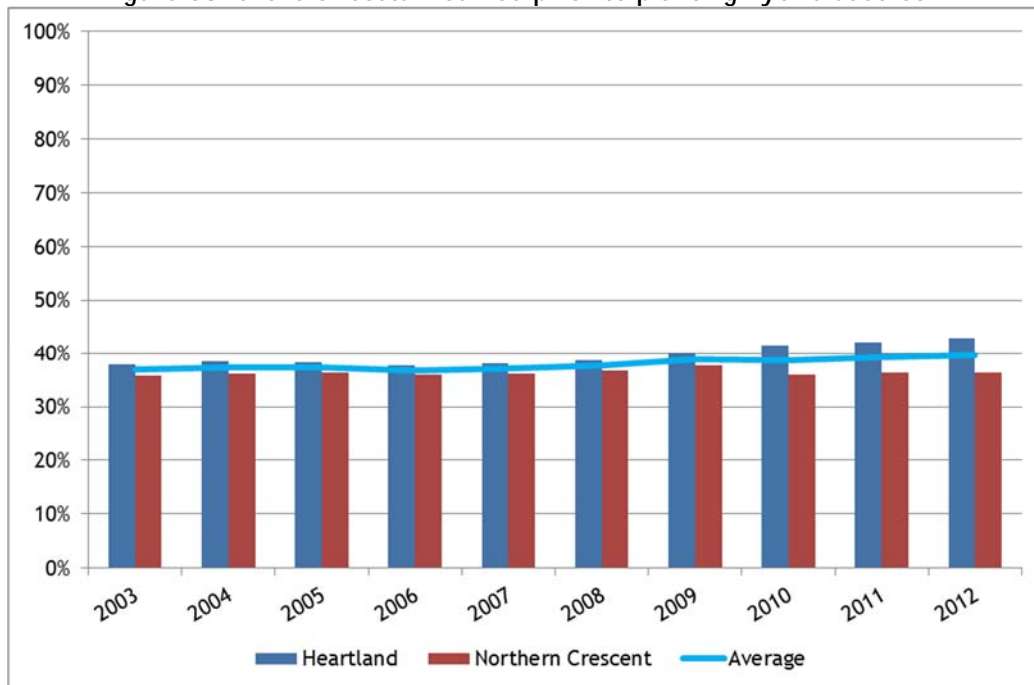
Insurance indemnities paid out for hybrid seed corn totaled more than \$137.5 million over the 10-year period. Prevented planting accounted for \$672,000, a mere half a percent of total indemnities.

## Analysis

Several costs for hybrid seed corn are typically covered by the seed company. These include insecticides for specific pests, seed costs, crop insurance, and harvest costs. In addition, although the seed company may provide an insecticide the farmer must apply it. There are also additional costs of production that are not covered by the seed company. The most costly of these is detasseling (although one company has found

a genetic solution for this). This has the effect of raising overall costs for the post-planting phase. This effectively pushes the share of preplanting costs significantly lower than for commercial corn.

Figure 53: Share of costs incurred prior to planting hybrid seed corn



The liabilities per acre (at 100%) for hybrid corn seed are much higher than for corn, e.g. \$1,599 in the Heartland region in 2012 compared to \$971 for regular corn. This suggests we may have underestimated production costs, which we put at \$901 for the seed versus \$705 for corn.

However, less than one percent of total indemnities for hybrid corn seed the last twenty years have been for prevented planting. Seed companies are intent on getting the seed produced because their business is directly dependent on having that supply, so contract growers have a strong incentive to produce the crop rather than file for prevented planting.

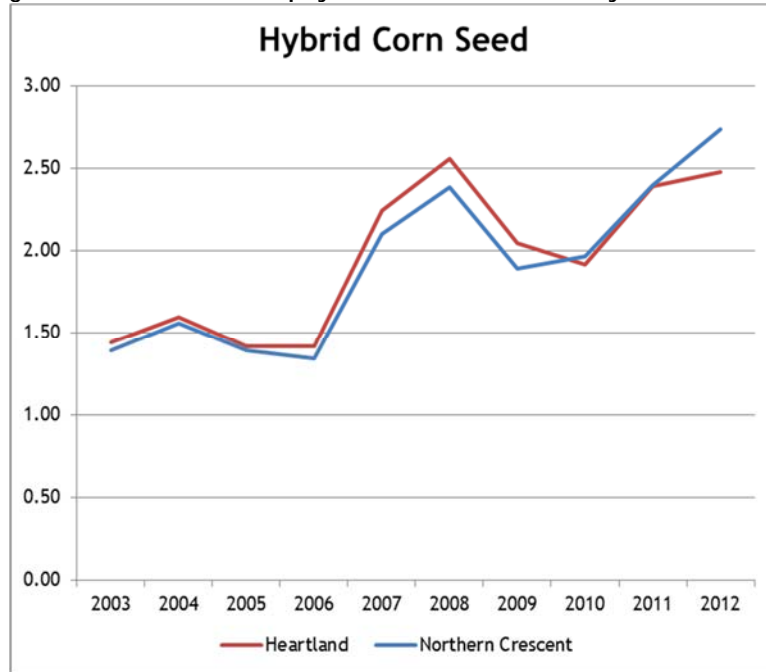
### Hybrid seed corn - possible future changes to crop management practices

In 2011, Pioneer Hi-Bred was cleared by the USDA APHIS to release its Seed Production Technology (SPT) Process DP-32138-1 Corn. According to Pioneer, DP-32138-1 is engineered to produce male sterile female inbred plants for the generation of hybrid corn seed that is non-transgenic (Pioneer 2009). DP-32139-1 contains a male sterile trait that eliminates the need for costly detasseling operations. This patented process has the potential to change production costs depending on the level of incorporation and adoption. Pioneer Hi-Bred currently has a 30% market share of the hybrid corn seed market. The total adoption and thus, elimination of detasseling represents costs upwards of \$280-\$350 million (2010) dollars due to increased yields and reduced inputs according to the USDA APHIS report. Even if only a portion of Pioneer Hi-Bred's 450 corn varieties incorporates this technology, it could represent noticeable changes in the cost structure of hybrid corn seed production. The effect on the prevented planting factor would be to raise it due to the removal of detasseling costs from the denominator. RMA will have to monitor developments in this area.

### Comparison of estimated PP cost to RMA payments

The ratios in the chart below are almost all in the 1.50-2.50 range, suggesting that payments are well in excess of our estimates of prevented planting costs.

Figure 54: Ratio of RMA payment to PP costs for hybrid corn seed



### Recommendation

Given the low incidence of PP claims, we do not think the high ratios in the chart above dictate a greater reduction in the payment factor than we recommend based on production costs, which is to reduce the factor from 50% to 40%.

Table 157: Hybrid corn seed production costs per planted acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	51.43	56.01	72.67	82.79	96.13	146.62	137.89	118.09	155.18	165.91
Chemicals	26.50	27.11	24.71	25.73	26.55	27.68	30.52	26.95	26.95	28.45
Custom operations	10.09	10.53	8.99	9.40	9.80	9.80	10.47	15.25	15.53	15.82
Fuel, lube, and electricity	18.81	25.41	20.32	22.48	25.00	32.73	22.13	22.18	27.76	26.10
Repairs	12.63	13.82	12.23	12.67	13.11	13.46	13.72	21.77	22.45	23.12
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Detassling	248.36	253.11	261.02	270.51	280.00	289.49	297.40	298.98	303.73	314.80
Interest on operating costs	0.79	1.26	3.07	4.66	4.85	2.16	0.43	0.29	0.17	0.24
<b>Total, operating costs</b>	<b>368.61</b>	<b>387.25</b>	<b>403.01</b>	<b>428.24</b>	<b>455.44</b>	<b>521.94</b>	<b>512.56</b>	<b>503.51</b>	<b>551.77</b>	<b>574.44</b>
Allocated overhead:										
Hired Labor	2.30	2.30	1.41	1.46	1.51	1.56	1.59	2.61	2.64	2.75
Opportunity cost of unpaid labor	23.79	24.28	19.8	20.52	21.24	21.96	22.44	20.21	20.42	21.28
Capital recovery of machinery & equip.	53.06	58.11	60.45	63.59	66.73	73.02	77.56	81.22	86.16	90.75
Opportunity cost of land (rental rate)	100.28	103.58	104.87	103.16	110.48	123.66	142.36	150.49	163.77	184.42
Taxes and insurance	5.19	5.24	6.06	6.37	6.88	7.64	7.46	7.77	8.18	8.62
General farm overhead	10.93	11.17	12.14	12.57	13.00	13.35	13.61	17.37	17.91	18.45
<b>Total, allocated overhead</b>	<b>195.55</b>	<b>204.68</b>	<b>204.73</b>	<b>207.67</b>	<b>219.84</b>	<b>241.19</b>	<b>265.02</b>	<b>279.67</b>	<b>299.08</b>	<b>326.27</b>
<b>Total costs listed</b>	<b>564.16</b>	<b>591.93</b>	<b>607.74</b>	<b>635.91</b>	<b>675.28</b>	<b>763.13</b>	<b>777.58</b>	<b>783.18</b>	<b>850.85</b>	<b>900.71</b>

Source for budget(s): [Source here] <http://linktobudgethere.com>

Notes: Type notes here in case 2000-2002 columns get delete

Table 158: Hybrid corn seed production costs per planted acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	58.95	64.01	78.36	89.27	103.65	158.09	148.67	122.11	160.46	172.06
Chemicals	25.77	26.35	19.95	20.77	21.43	22.34	24.63	25.70	25.70	26.95
Custom operations	12.09	12.43	12.46	13.03	13.59	13.59	14.52	20.27	20.65	21.15
Fuel, lube, and electricity	22.31	26.46	25.29	27.98	31.05	41.11	27.96	23.76	29.95	28.70
Repairs	14.90	16.04	14.10	14.60	15.10	15.50	15.80	23.58	24.31	25.04
Purchased irrigation water	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00
Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Detassling	248.36	253.11	261.02	270.51	280.00	289.49	297.40	298.98	303.73	314.80
Interest on operating costs	0.86	1.37	3.25	4.95	5.16	2.31	0.45	0.29	0.17	0.24
<b>Total, operating costs</b>	<b>383.24</b>	<b>399.77</b>	<b>414.45</b>	<b>441.13</b>	<b>470.00</b>	<b>542.45</b>	<b>529.45</b>	<b>514.71</b>	<b>564.97</b>	<b>588.94</b>
Allocated overhead:										
Hired Labor	3.72	3.97	3.03	3.14	3.25	3.36	3.43	3.59	3.63	3.78
Opportunity cost of unpaid labor	34.8	35.36	31.78	32.94	34.1	35.26	36.03	29.98	30.3	31.57
Capital recovery of machinery & equip.	60.99	65.68	60.53	63.68	66.83	73.13	77.68	73.91	78.41	82.27
Opportunity cost of land (rental rate)	68.88	71.2	77.15	75.9	81.28	90.98	104.74	82.67	89.13	91.86
Taxes and insurance	5.8	5.81	9.00	9.47	10.23	11.35	11.08	9.08	9.55	9.98
General farm overhead	16.22	16.46	17.67	18.30	18.93	19.43	19.81	23.85	24.59	25.33
<b>Total, allocated overhead</b>	<b>190.41</b>	<b>198.48</b>	<b>199.16</b>	<b>203.43</b>	<b>214.62</b>	<b>233.51</b>	<b>252.77</b>	<b>223.08</b>	<b>235.61</b>	<b>244.79</b>
<b>Total costs listed</b>	<b>573.65</b>	<b>598.25</b>	<b>613.61</b>	<b>644.56</b>	<b>684.62</b>	<b>775.96</b>	<b>782.22</b>	<b>737.79</b>	<b>800.58</b>	<b>833.73</b>

Source for budget(s): [Source here] <http://linktobudgethere.com>

Notes: Type notes here in case 2000-2002 columns get delete

Table 159: Hybrid corn seed - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Chemicals	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Custom operations	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Fuel, lube, and electricity	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%
Repairs	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Purchased irrigation water	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Crop Insurance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Detassling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Interest on operating costs	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Total, operating costs										
Allocated overhead:										
Hired Labor	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Opportunity cost of unpaid labor	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Capital recovery of machinery & equip.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total, allocated overhead										
Total costs listed										



Table 160: Hybrid corn seed prevented planting costs per acre: Heartland

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	14.40	15.68	20.35	23.18	26.92	41.05	38.61	33.07	43.45	46.45
Chemicals	5.57	5.69	5.19	5.40	5.58	5.81	6.41	5.66	5.66	5.97
Custom operations	2.83	2.95	2.52	2.63	2.74	2.74	2.93	4.27	4.35	4.43
Fuel, lube, and electricity	8.28	11.18	8.94	9.89	11.00	14.40	9.74	9.76	12.21	11.48
Repairs	5.05	5.53	4.89	5.07	5.24	5.38	5.49	8.71	8.98	9.25
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Detassling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating costs	0.25	0.40	0.98	1.49	1.55	0.69	0.14	0.09	0.05	0.08
<b>Total, operating costs</b>	<b>36.37</b>	<b>41.44</b>	<b>42.87</b>	<b>47.67</b>	<b>53.03</b>	<b>70.09</b>	<b>63.31</b>	<b>61.55</b>	<b>74.71</b>	<b>77.67</b>
Allocated overhead:										
Hired Labor	0.78	0.78	0.48	0.50	0.51	0.53	0.54	0.89	0.90	0.94
Opportunity cost of unpaid labor	7.37	7.53	6.14	6.36	6.58	6.81	6.96	6.27	6.33	6.60
Capital recovery of machinery & equip.	53.06	58.11	60.45	63.59	66.73	73.02	77.56	81.22	86.16	90.75
Opportunity cost of land (rental rate)	100.28	103.58	104.87	103.16	110.48	123.66	142.36	150.49	163.77	184.42
Taxes and insurance	5.19	5.24	6.06	6.37	6.88	7.64	7.46	7.77	8.18	8.62
General farm overhead	10.93	11.17	12.14	12.57	13.00	13.35	13.61	17.37	17.91	18.45
<b>Total, allocated overhead</b>	<b>177.62</b>	<b>186.41</b>	<b>190.14</b>	<b>192.55</b>	<b>204.19</b>	<b>225.01</b>	<b>248.49</b>	<b>264.00</b>	<b>283.25</b>	<b>309.77</b>
<b>Total costs listed</b>	<b>213.99</b>	<b>227.84</b>	<b>233.01</b>	<b>240.21</b>	<b>257.22</b>	<b>295.09</b>	<b>311.80</b>	<b>325.56</b>	<b>357.95</b>	<b>387.44</b>
<b>Total costs</b>	<b>564.16</b>	<b>591.93</b>	<b>607.74</b>	<b>635.91</b>	<b>675.28</b>	<b>763.13</b>	<b>777.58</b>	<b>783.18</b>	<b>850.85</b>	<b>900.71</b>
<b>Prevented planting %</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>39%</b>	<b>40%</b>	<b>42%</b>	<b>42%</b>	<b>43%</b>

Table 161: Hybrid corn seed prevented planting costs per acre: Northern Crescent

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	16.51	17.92	21.94	25.00	29.02	44.27	41.63	34.19	44.93	48.18
Chemicals	5.41	5.53	4.19	4.36	4.50	4.69	5.17	5.40	5.40	5.66
Custom operations	3.39	3.48	3.49	3.65	3.81	3.81	4.07	5.68	5.78	5.92
Fuel, lube, and electricity	9.82	11.64	11.13	12.31	13.66	18.09	12.30	10.45	13.18	12.63
Repairs	5.96	6.42	5.64	5.84	6.04	6.20	6.32	9.43	9.72	10.02
Purchased irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Detassling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating costs	0.28	0.44	1.04	1.58	1.65	0.74	0.14	0.09	0.05	0.08
<b>Total, operating costs</b>	<b>41.35</b>	<b>45.43</b>	<b>47.43</b>	<b>52.74</b>	<b>58.68</b>	<b>77.79</b>	<b>69.63</b>	<b>65.24</b>	<b>79.06</b>	<b>82.48</b>
Allocated overhead:										
Hired Labor	1.26	1.35	1.03	1.07	1.11	1.14	1.17	1.22	1.23	1.29
Opportunity cost of unpaid labor	10.79	10.96	9.85	10.21	10.57	10.93	11.17	9.29	9.39	9.79
Capital recovery of machinery & equip.	60.99	65.68	60.53	63.68	66.83	73.13	77.68	73.91	78.41	82.27
Opportunity cost of land (rental rate)	68.88	71.20	77.15	75.90	81.28	90.98	104.74	82.67	89.13	91.86
Taxes and insurance	5.80	5.81	9.00	9.47	10.23	11.35	11.08	9.08	9.55	9.98
General farm overhead	16.22	16.46	17.67	18.30	18.93	19.43	19.81	23.85	24.59	25.33
<b>Total, allocated overhead</b>	<b>163.94</b>	<b>171.46</b>	<b>175.23</b>	<b>178.63</b>	<b>188.95</b>	<b>206.96</b>	<b>225.65</b>	<b>200.02</b>	<b>212.31</b>	<b>220.51</b>
<b>Total costs listed</b>	<b>205.30</b>	<b>216.89</b>	<b>222.66</b>	<b>231.37</b>	<b>247.63</b>	<b>284.75</b>	<b>295.28</b>	<b>265.27</b>	<b>291.37</b>	<b>302.99</b>
<b>Total costs</b>	<b>573.65</b>	<b>598.25</b>	<b>613.61</b>	<b>644.56</b>	<b>684.62</b>	<b>775.96</b>	<b>782.22</b>	<b>737.79</b>	<b>800.58</b>	<b>833.73</b>
<b>Prevented planting %</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>	<b>37%</b>	<b>38%</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>

## 5.9. Hybrid sorghum seed

### Overview

Hybrid sorghum seed is produced primarily within a 100-mile radius of Dumas, Texas. Approximately 80% of the world's supply of hybrid sorghum seed is grown in the Northern High Plains and the Panhandle of Texas according to the Texas Seed Trade Association. Of the 2.75 million acres planted to sorghum in Texas, approximately 5%, or 135,000 acres, are hybrid seed production acres.

Figure 55: US hybrid sorghum seed production areas



Source: Agralytica, Texas Seed Trade Association

### Sources of production cost information

There are no production cost budgets for hybrid sorghum seed publicly available. While Texas A&M's AgriLife Extension Service produces about two dozen sorghum budgets each year, none cover hybrid seed production. We had to rely on interviews with experts to determine hybrid seed production costs and management practices. During these interviews, it was revealed that many costs are the same as for grain sorghum, with some exceptions, particularly around inputs used. We were provided with the costs for hybrid grain sorghum seed, hybrid forage sorghum seed, and hybrid Sudan grass sorghum seed, all of which are produced in this region. Costs vary little among the three. The only noted difference is the seed cost. Grain seed is provided free to the farmer, forage seed is provided free but a necessary seed treatment costs \$4.50 per acre. Sudan grass seed costs \$16 per acre. We calculated the preplant production costs for each type of seed produced but because the costs are so close, preplant cost ratios are virtually identical.

We constructed the hybrid sorghum seed budget as a composite of 2003-2012 ERS grain sorghum production costs for the Prairie Gateway and the information obtained from interviews for the latest crop year, 2013. The allocated overhead costs, with the exception of "Hired Labor" came from the ERS data, things such as land costs and machinery costs. Most of the variable costs or cash expense values were direct inputs from the interview. There were a couple of exceptions, crop insurance, interest on operating capital, and repairs costs were not known. Production costs for these three categories were taken from the ERS grain sorghum

data for the Prairie gateway region. The only one of these that may have an issue was “Repairs”. The issue is that our contact could not give us any value for this. We were informed that although the equipment is the same, the number of preplant field passes, 4-5, is more than for grain sorghum in the area; typically, 2-3 passes are required for grain sorghum. Wear and tear on machinery would increase due to the number of passes, but to what degree it would increase repair costs we cannot say. Therefore, while we acknowledge that the ERS repair cost is probably on the low side, it is the best approximation of cost we have available.

### Production methods

Hybrid sorghum seed, like other hybrid seeds, is sensitive to environmental extremes. Although sorghum is typically a warm weather, drought tolerant crop, hybrid seed is a completely different thing. Because of its genetic instability, hybrid seed needs plenty of water, nutrients, and moderate environmental conditions to thrive. Hybrid sorghum seed is produced under irrigation and intensive management. According to our expert, typical soil preparation entails 2-4 rouging passes and one to two cultivation passes. Preplant fertilizer applications include nitrogen (half of fertilizer costs, with most applied pre-planting), some phosphate, potash, and occasionally lime. Virtually all hybrid sorghum seed growers hire crop consultants to help optimize field nutrients and management according to our source.

As with other seed production, hybrid sorghum seed companies typically provide the farmers with free or heavily subsidized services, to ensure maximum quality, yield, and germination rates from the finished seed. Generally, these services are in the form of custom hauling, custom spraying, small reimbursements for extra field passes, and other services out of the ordinary for normal grain sorghum production. Although seed production costs are certainly higher, the farmer does not bear these burdens alone. According to our expert, the seed companies do everything in their power to prevent any production loss either before or after planting.

### Prevented planting history

Total insurance indemnities paid to farmers for hybrid sorghum seed for the period 2003-2012 totaled more than \$13 million. Prevented planting indemnities occurred in one year of the last decade. In 2009, claims totaling \$40,776 were paid out. This amount accounts for a mere 0.3% of the total indemnities. In addition, in our discussion with the seed company representative, it was made clear that prevented planting situations simply did not occur, crop failures after planting were reported as uncommon as well.

### Analysis

The prevented planting percentage of production was relatively stable at 52 to 54%. The cost structures for seed for grain sorghum, forage sorghum, and Sudan grass are all quite similar. It must be noted that the majority of budget data came from expert opinions and was relevant to the 2013 crop year. The values for all other years were filled in using price indexes and a combination of ERS ARMS survey data for grain sorghum. For example, land rent prices were imputed from the Prairie Gateway grain sorghum data.

### Comparison of RMA payments to estimated PP costs

The ratio for hybrid sorghum seed is high at 1.4 to 1.7 in recent years, although not as high as for hybrid corn seed.

Figure 56: Share of costs incurred prior to planting hybrid sorghum seed

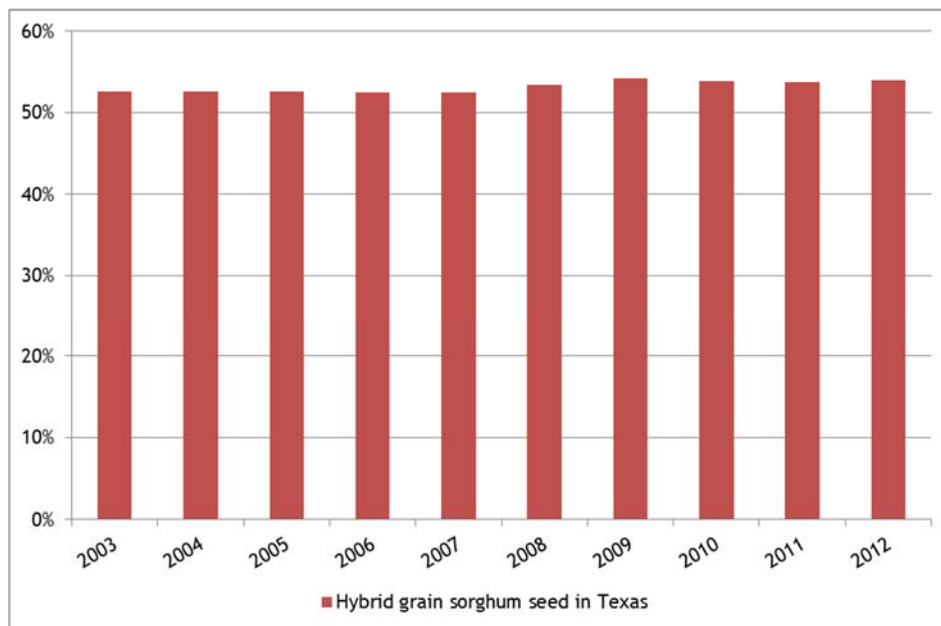
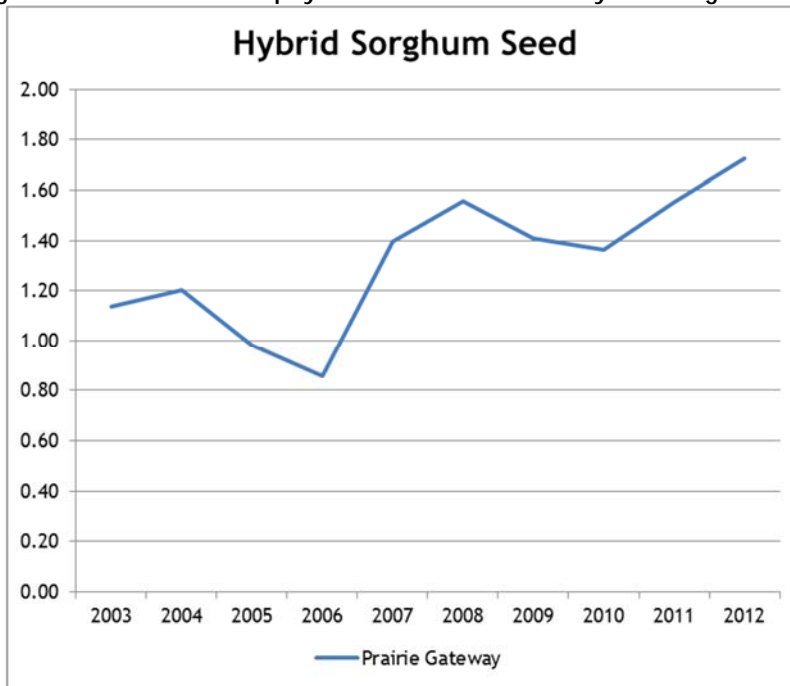


Figure 57: Ratio of RMA payment to PP costs for hybrid sorghum seed



**Recommendation**

In comparing costs for grain sorghum and costs for hybrid sorghum seed in the Prairie Gateway, it is apparent that the share of costs incurred in a prevented planting situation for hybrid sorghum seed is comparable to that for grain sorghum. We conclude that the methodology we used is valid and we recommend reducing the factor from 60% to 55%.

Table 162: Hybrid sorghum seed production costs per planted acre – Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	56.36	63.64	74.55	80.00	98.18	178.18	125.00	114.55	149.09	151.36
Chemicals	89.20	89.20	90.67	94.36	95.10	102.47	109.84	106.15	106.89	112.79
Custom operations	23.89	22.93	23.12	23.50	23.89	27.52	27.71	27.71	28.28	30.00
Fuel, lube, & electricity	78.87	92.96	121.69	134.65	148.73	193.80	129.01	160.00	203.94	202.82
Repairs	17.04	17.42	18.19	18.84	19.49	20.01	20.40	20.79	21.57	22.22
Purchased irrigation water	141.50	145.66	150.87	156.07	160.23	166.47	165.43	168.55	173.76	176.88
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	5.09	7.18	6.09	7.23	11.91	16.47	13.02	12.42	19.00	17.44
Interest on operating capital	0.48	0.78	1.92	2.81	2.98	1.23	0.22	0.15	0.08	0.11
<b>Total, operating costs</b>	<b>412.43</b>	<b>439.77</b>	<b>487.10</b>	<b>517.46</b>	<b>560.51</b>	<b>706.15</b>	<b>590.63</b>	<b>610.32</b>	<b>702.61</b>	<b>713.62</b>
<b>Allocated overhead:</b>										
Hired labor	18.96	19.32	19.93	20.65	21.38	22.10	22.71	22.83	23.19	24.03
Opportunity cost of unpaid labor	26.44	27.11	27.96	28.98	30.00	31.02	31.70	32.04	32.55	33.74
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land (rental rate)	32.59	32.59	33.95	33.40	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.90	4.10	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>143.52</b>	<b>148.75</b>	<b>155.92</b>	<b>160.86</b>	<b>168.86</b>	<b>182.17</b>	<b>193.06</b>	<b>196.81</b>	<b>206.88</b>	<b>214.78</b>
<b>Total costs listed</b>	<b>555.96</b>	<b>588.52</b>	<b>643.01</b>	<b>678.32</b>	<b>729.36</b>	<b>888.32</b>	<b>783.69</b>	<b>807.13</b>	<b>909.49</b>	<b>928.40</b>

Table 163: Hybrid sorghum seed - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Chemicals	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Custom operations	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Fuel, lube, & electricity	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Repairs	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Purchased irrigation water	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hauling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
<b>Allocated overhead:</b>										
Hired labor	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Opportunity cost of unpaid labor	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 164: Hybrid sorghum seed prevented planting costs per acre – Prairie Gateway

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	36.64	41.36	48.45	52.00	63.82	115.82	81.25	74.45	96.91	98.39
Chemicals	44.60	44.60	45.34	47.18	47.55	51.23	54.92	53.08	53.45	56.39
Custom operations	11.94	11.46	11.56	11.75	11.94	13.76	13.85	13.85	14.14	15.00
Fuel, lube, & electricity	35.49	41.83	54.76	60.59	66.93	87.21	58.06	72.00	91.77	91.27
Repairs	7.67	7.84	8.19	8.48	8.77	9.00	9.18	9.36	9.71	10.00
Purchased irrigation water	35.38	36.42	37.72	39.02	40.06	41.62	41.36	42.14	43.44	44.22
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.02	0.04	0.03
Interest on operating capital	0.12	0.20	0.48	0.70	0.75	0.31	0.06	0.04	0.02	0.03
<b>Total, operating costs</b>	<b>171.85</b>	<b>183.72</b>	<b>206.51</b>	<b>219.73</b>	<b>239.84</b>	<b>318.98</b>	<b>258.70</b>	<b>264.94</b>	<b>309.47</b>	<b>315.33</b>
<b>Allocated overhead:</b>										
Hired labor	9.48	9.66	9.96	10.33	10.69	11.05	11.35	11.41	11.59	12.02
Opportunity cost of unpaid labor	13.22	13.56	13.98	14.49	15.00	15.51	15.85	16.02	16.28	16.87
Capital recovery of machinery & equip	55.52	59.56	63.60	66.91	70.22	76.84	81.99	84.56	89.71	93.75
Opportunity cost of land (rental rate)	32.59	32.59	33.95	33.40	35.77	40.04	43.75	45.05	48.57	50.05
Taxes and insurance	3.81	3.87	3.90	4.10	4.43	4.92	5.52	4.80	5.05	5.16
General farm overhead	6.20	6.30	6.58	6.82	7.06	7.25	7.39	7.53	7.81	8.05
<b>Total, allocated overhead</b>	<b>120.82</b>	<b>125.54</b>	<b>131.97</b>	<b>136.05</b>	<b>143.17</b>	<b>155.61</b>	<b>165.85</b>	<b>169.37</b>	<b>179.01</b>	<b>185.90</b>
<b>Total costs listed</b>	<b>292.67</b>	<b>309.26</b>	<b>338.48</b>	<b>355.78</b>	<b>383.00</b>	<b>474.60</b>	<b>424.55</b>	<b>434.31</b>	<b>488.48</b>	<b>501.23</b>
<b>Total costs</b>	<b>555.96</b>	<b>588.52</b>	<b>643.01</b>	<b>678.32</b>	<b>729.36</b>	<b>888.32</b>	<b>783.69</b>	<b>807.13</b>	<b>909.49</b>	<b>928.40</b>
<b>Prevented planting %</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>52%</b>	<b>53%</b>	<b>53%</b>	<b>54%</b>	<b>54%</b>	<b>54%</b>	<b>54%</b>



## 6. CROPS FOR WHICH ANALYSIS IS BUDGET BASED

About half the crops under study have no statistically representative production cost information available. For these we have relied primarily on crop budgets prepared by university extension staff.

For most of these crops, a review of the PP payment to PP cost ratio shows that it is “high,” i.e., it is well above 1.0, suggesting a reduction in the PP rate may be warranted.

Figures 58-60 show the crops for which we recommend rate reductions: buckwheat, canola, dry beans, dry peas, flax, mustard, millet, southern onions, sunflower seed (confectionery and oil), and tobacco. All have PP payment to PP cost ratios above 1 (sometimes well above 1), with the exception of buckwheat and millet. Buckwheat has a short history and a ratio near 1; millet’s ratio is near 0.75. We recommend rate reductions for these two as well, with greater detail provided under each crop’s summary.

Figure 58: Other crops: buckwheat, canola, dry beans, and dry peas

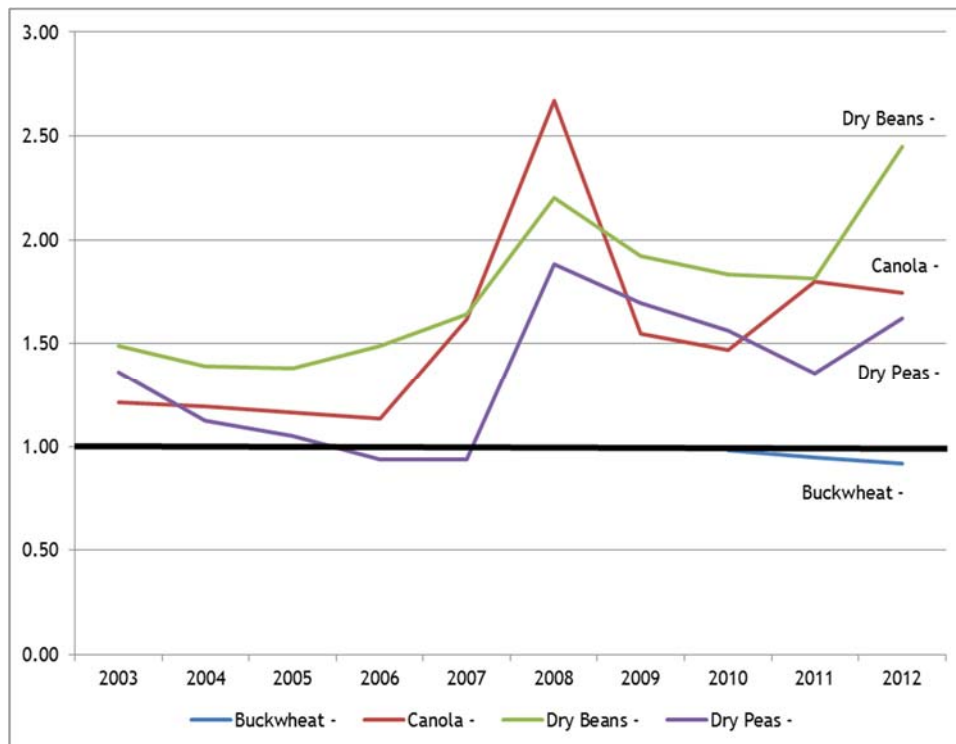


Figure 59: Other crops: flax, mustard, millet, and hybrid sorghum seed

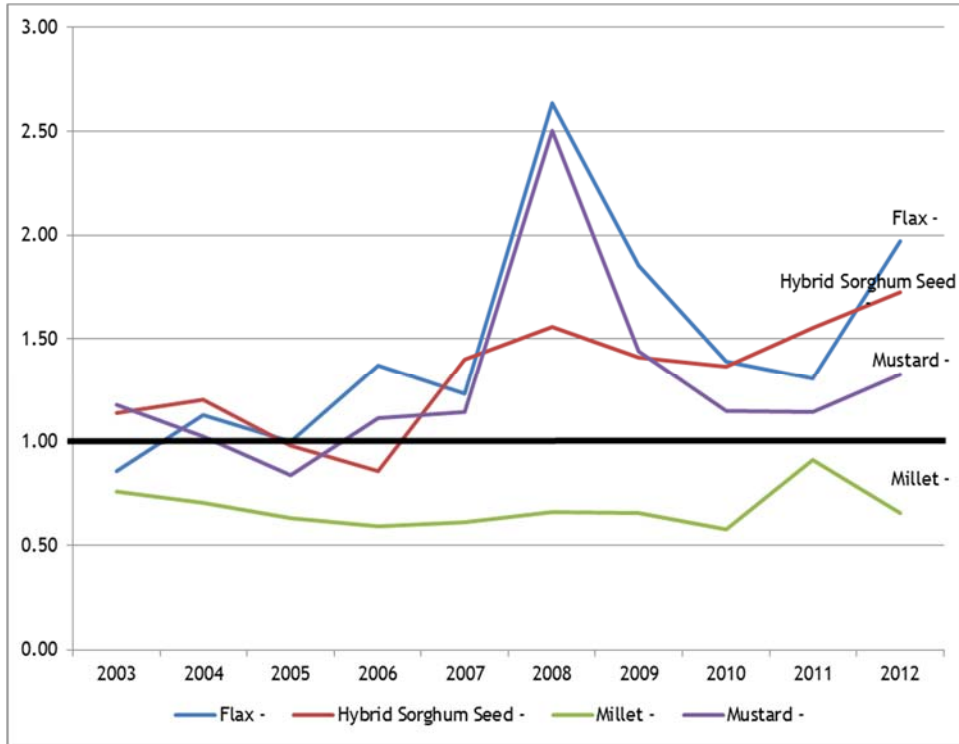
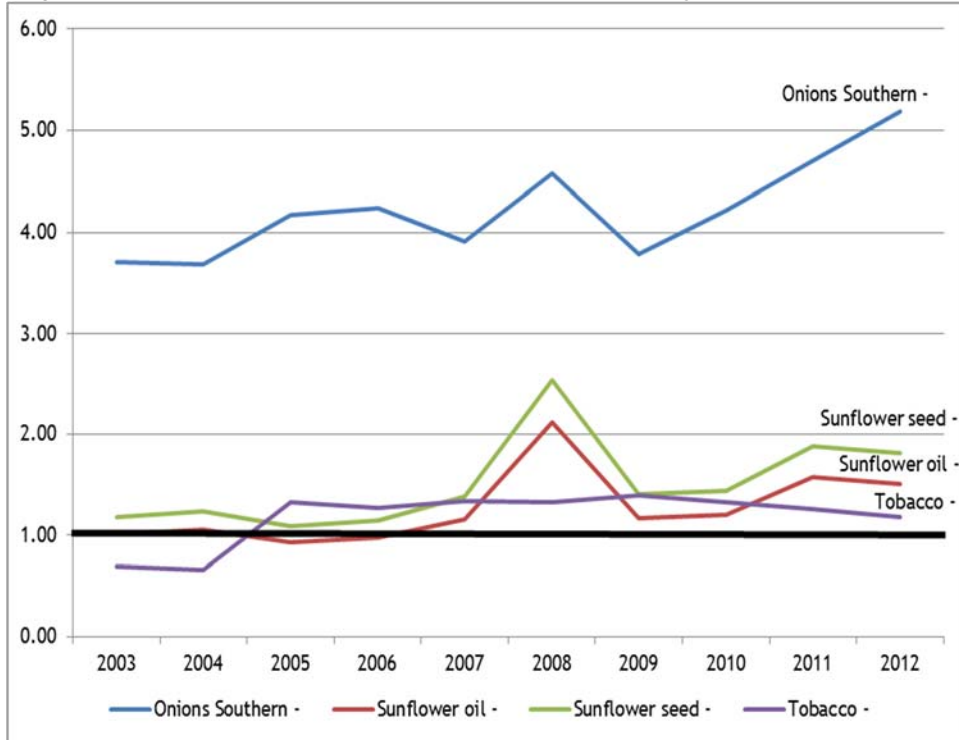


Figure 60: Other crops: sunflower seed (confectionery and oil) and tobacco



Figures 61 and 62 show crops for which the ratio is close to 1 and for which we recommend no change: northern onions, processing beans, rye, safflower, sugar beets, and sweet corn.

Figure 61: Other crops: northern onions, processing beans, and rye

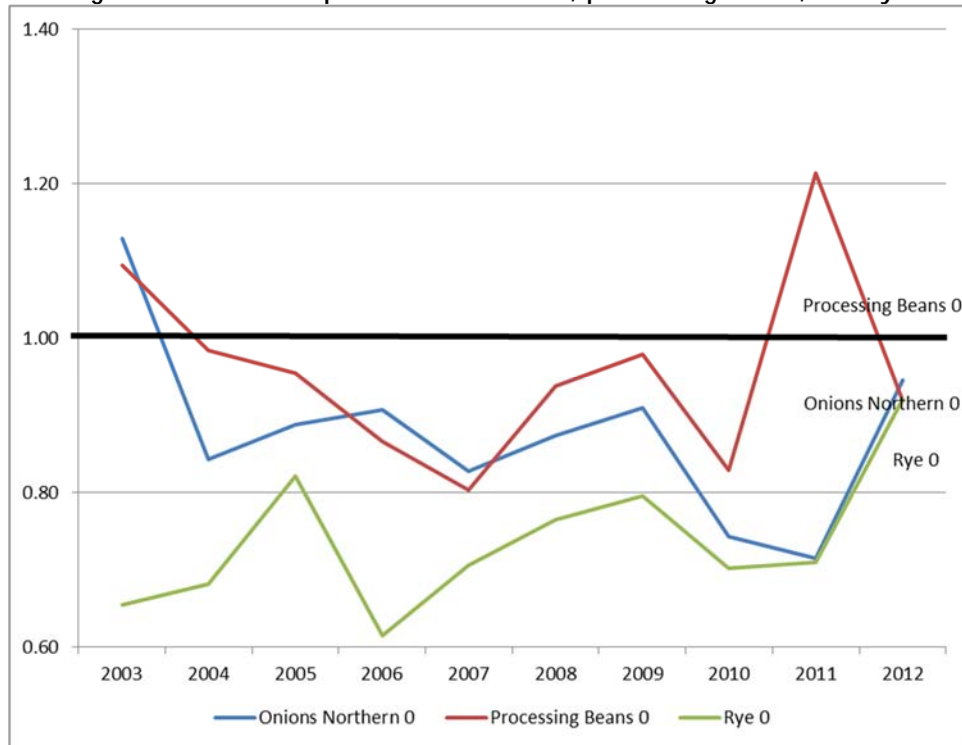
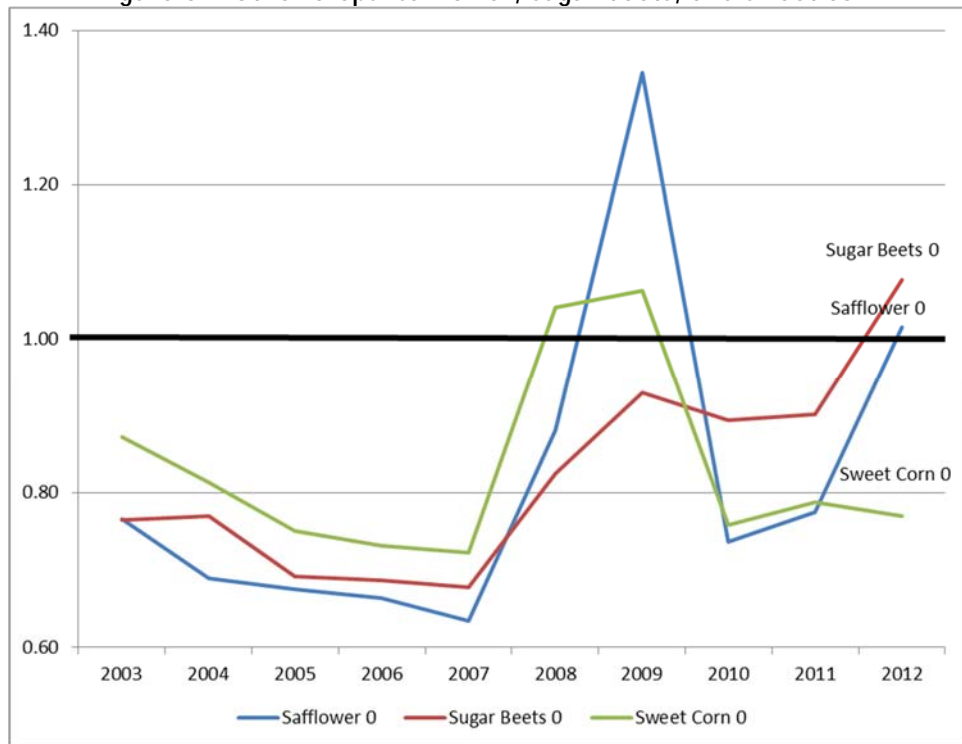


Figure 62: Other crops: safflower, sugar beets, and sweet corn

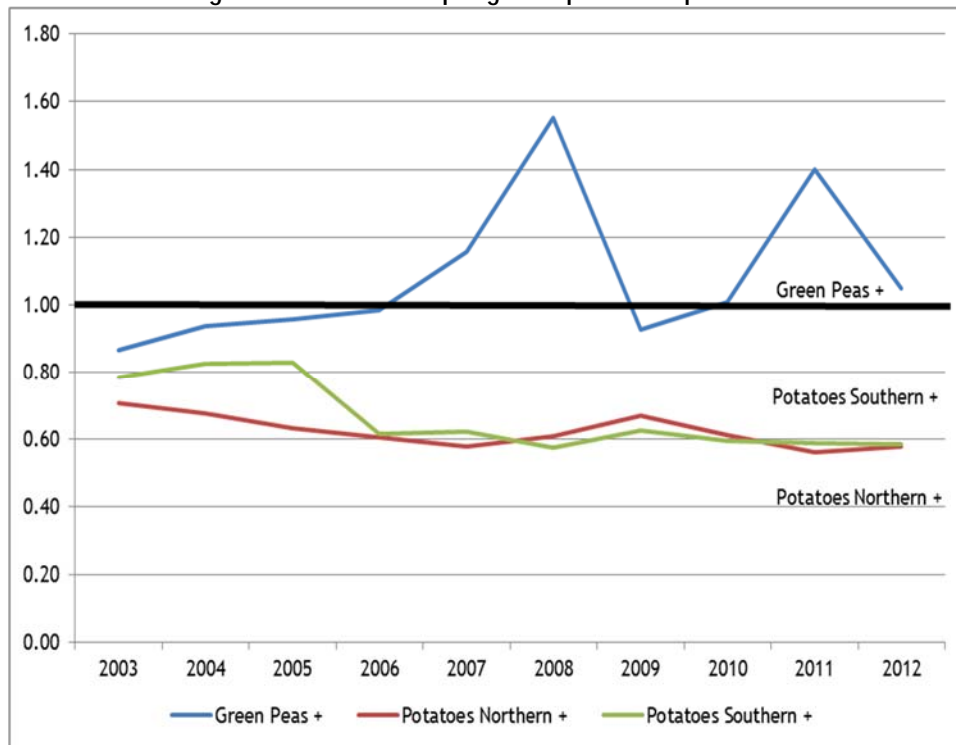


Finally, among these budget-based crops there are two for which we propose increases in the PP rates: green peas and potatoes.

Our production cost analysis suggests that the 40% rate for green peas is too low to cover PP costs. Nevertheless, the PP payment to PP cost ratio for green peas has bounced upward and back from 1. We recommend a 10 percentage point increase to 50%.

Potato PP payments are well below our estimated PP costs. Moreover, the payment ratio has been around 0.6 since 2006 and this further supports an increase in the PP rate for both northern and southern potatoes. We recommend that the PP factor be increased from 25% to 40%

Figure 63: Other crops: green peas and potatoes

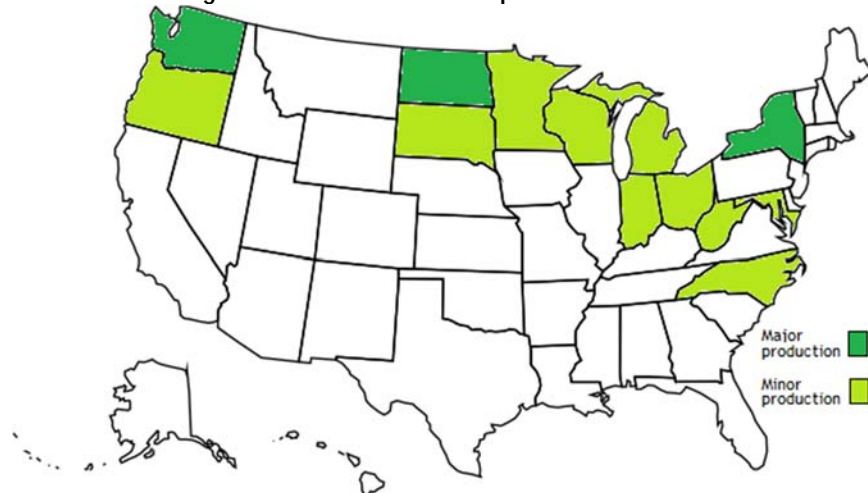


## 6.1. Buckwheat

### Overview

Buckwheat is a fast maturing crop that is used as a cover crop or grown under contract for niche and export markets. In the United States, about 25,000 acres are planted with buckwheat each year. Buckwheat is produced mainly in Washington, North Dakota, and New York.

Figure 64: US buckwheat production areas



Source: Agralytica and AgMRC.org

### Sources of production cost information

Two of the largest producers of buckwheat in the US, Washington and New York, do not have budgets available. However, budgets are available from North Dakota State University Extension.

NDSU has published budgets for seven of the nine state regions for 2004 to 2012. Production costs from each regional budget were compiled and averaged to obtain an average state budget for each year. The 2003 data were estimated using NASS Prices Paid Indexes.

### Production practices

Buckwheat grows well in a variety of soils but does best in loamy soil. It yields better than other grains in low fertility soils but not as well as other grains in highly fertile soil. This makes it a great choice for poorer quality soils where the production of other grains, like corn or wheat, is marginal. Overall, buckwheat requires relatively low inputs for a high yield per acre, even in marginal soils.

Buckwheat is sensitive to frost. Seeding must be delayed until there is no danger of spring frost; it must also be planted at least 12 weeks before the first killing frost in the fall. Frost damaged buckwheat rarely achieves sufficient yields to be worth harvesting. Seeding dates therefore range from early June to mid-July in most states. The crop matures in around 80 days.

Preplanting field operations consist of a fall tillage and burn down. Generally, there is little tillage needed in the spring, especially if the ground is too wet. Fertilizer is applied at or after planting. The crop is a heavy user of phosphorus but uses very little nitrogen.

**Prevented planting history**

Buckwheat crop insurance began in 2010. Total indemnities for buckwheat from 2010 to 2012 were \$660,638. For the 3-year period, prevented planting claims were 13% (\$87,591) of total claims. All of these occurred in North Dakota and were caused by excess moisture / cold wet weather.

**Table 165: Buckwheat indemnities and prevented planting**

	2010	2011	2012	Total
Total indemnities	\$98,347	\$150,427	\$411,864	\$660,638
Prevented planting	\$5,496	\$73,325	\$8,770	\$87,591
Prevented planting %	6%	49%	2%	13%

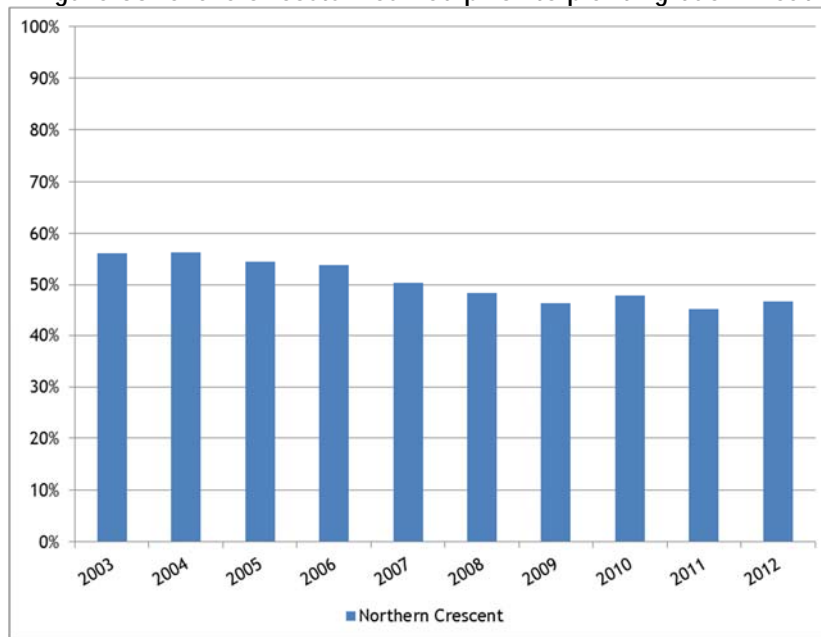
Source: USDA RMA

**Analysis**

We constructed buckwheat budgets using NDSU data. Prevented planting costs rose from \$60 per acre in 2003 to \$121 per acre in 2012. As a percentage of total per acre costs, however (\$106 in 2003 and \$237 in 2012), the share that represents prevented planting costs dropped from 56% to 47%, primarily due to the rapid growth of (avoidable) seed and fertilizer costs.

Based on the crop budget analysis, a more appropriate percentage for buckwheat would be 50%.

**Figure 65: Share of costs incurred prior to planting buckwheat**

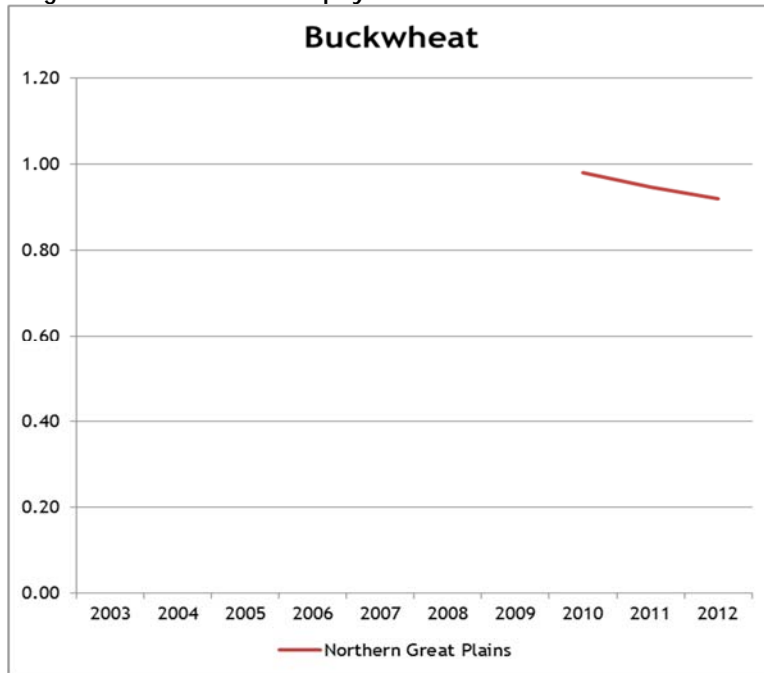


### Comparison of RMA payments to estimated PP costs

There are only 3 years of data. For those years, the ratio of RMA's incurred base PP payment to estimated PP costs has been close to 1.00.

Buckwheat PP indemnities represented 13% of total indemnities on average over the three years, totaling under \$30,000 per year. Also, only 7% of PP indemnities are associated with the additional 10% coverage.

Figure 66: Ratio of RMA payment to PP costs for buckwheat



### Recommendation

We recommend reducing the PP payment rate from 60% to 50%. This would put it in line with estimated PP costs, which were 45-48% over the 2010-2012 period.

Table 165: Buckwheat production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>13.65</i>	14.00	14.00	14.00	15.00	16.50	25.00	25.00	27.00	33.50
Fertilizer	<i>5.00</i>	5.64	7.37	7.34	6.21	12.50	17.86	12.97	19.49	19.76
Herbicides	<i>0.00</i>	0.00	0.00	0.00	8.74	9.68	14.29	12.00	12.50	14.14
Crop insurance	<i>0.00</i>	0.00	0.00	0.00	0.00	0.00	0.00	2.46	11.89	13.61
Fuel & lubrication	<i>4.82</i>	5.68	8.37	10.89	11.47	14.54	9.85	11.83	14.53	17.18
Repairs	<i>9.17</i>	9.44	9.49	9.84	10.30	11.02	12.27	13.84	14.76	16.96
Miscellaneous	<i>0.97</i>	1.00	1.00	1.00	1.00	1.50	1.50	1.50	1.50	1.50
Interest on operating capital	<i>1.04</i>	1.07	1.31	1.67	2.17	2.47	2.22	2.09	2.54	2.68
<b>Total, operating costs</b>	<b><i>34.64</i></b>	<b>36.83</b>	<b>41.54</b>	<b>44.74</b>	<b>54.89</b>	<b>68.21</b>	<b>82.99</b>	<b>81.69</b>	<b>104.21</b>	<b>119.33</b>
Allocated overhead:										
Returns to labor & mgmt	<i>20.13</i>	<i>20.51</i>	<i>21.15</i>	<i>21.92</i>	<i>22.69</i>	23.46	24.10	24.23	24.61	25.51
Misc	<i>3.17</i>	3.31	3.25	3.33	3.42	3.53	4.76	5.00	6.17	6.73
Machinery depreciation	<i>10.75</i>	11.53	11.63	12.07	12.59	13.27	14.66	15.92	16.8	20.01
Machinery investment	<i>6.62</i>	7.1	6.99	7.24	7.52	7.85	8.62	9.4	9.94	11.77
Land charge	<i>30.99</i>	32.25	31.83	32.40	33.36	36.00	39.49	40.97	42.91	54.00
<b>Total, allocated overhead</b>	<b><i>71.64</i></b>	<b>74.70</b>	<b>74.85</b>	<b>76.96</b>	<b>79.58</b>	<b>84.11</b>	<b>91.63</b>	<b>95.52</b>	<b>100.43</b>	<b>118.02</b>
<b>Total costs listed</b>	<b><i>106.28</i></b>	<b>111.53</b>	<b>116.39</b>	<b>121.70</b>	<b>134.47</b>	<b>152.32</b>	<b>174.62</b>	<b>177.21</b>	<b>204.64</b>	<b>237.35</b>

Source for budget(s): NDSU extension <http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 and select values derived using price indices (in italics)

Data reflects average of budgets for 7 ND regions w/buckwheat budgets

Returns to labor & management: avge for 2004-2012, used f/2008, then adjusted fwd & back using labor index



Table 166: Buckwheat - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Herbicides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Fuel & lubrication	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Repairs	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Miscellaneous	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Returns to labor & mgmt	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Misc	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 167: Buckwheat prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	1.00	1.13	1.47	1.47	1.24	2.50	3.57	2.59	3.90	3.95
Herbicides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	1.55	1.77
Fuel & lubrication	0.96	1.14	1.67	2.18	2.29	2.91	1.97	2.37	2.91	3.44
Repairs	1.83	1.89	1.90	1.97	2.06	2.20	2.45	2.77	2.95	3.39
Miscellaneous	0.10	0.10	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.15
Interest on operating capital	0.26	0.27	0.33	0.42	0.54	0.62	0.56	0.52	0.64	0.67
<b>Total, operating costs</b>	<b>4.15</b>	<b>4.52</b>	<b>5.47</b>	<b>6.13</b>	<b>6.24</b>	<b>8.38</b>	<b>8.70</b>	<b>8.72</b>	<b>12.09</b>	<b>13.37</b>
Allocated overhead:										
Returns to labor & mgmt	4.03	4.10	4.23	4.38	4.54	4.69	4.82	4.85	4.92	5.10
Misc	3.17	3.31	3.25	3.33	3.42	3.53	4.76	5.00	6.17	6.73
Machinery depreciation	10.75	11.53	11.63	12.07	12.59	13.27	14.66	15.92	16.80	20.01
Machinery investment	6.62	7.10	6.99	7.24	7.52	7.85	8.62	9.40	9.94	11.77
Land charge	30.99	32.25	31.83	32.40	33.36	36.00	39.49	40.97	42.91	54.00
<b>Total, allocated overhead</b>	<b>55.54</b>	<b>58.29</b>	<b>57.93</b>	<b>59.42</b>	<b>61.43</b>	<b>65.34</b>	<b>72.35</b>	<b>76.14</b>	<b>80.74</b>	<b>97.61</b>
<b>Total costs listed</b>	<b>59.69</b>	<b>62.81</b>	<b>63.40</b>	<b>65.56</b>	<b>67.67</b>	<b>73.72</b>	<b>81.05</b>	<b>84.86</b>	<b>92.83</b>	<b>110.98</b>
<b>Total costs</b>	<b>106.28</b>	<b>111.53</b>	<b>116.39</b>	<b>121.70</b>	<b>134.47</b>	<b>152.32</b>	<b>174.62</b>	<b>177.21</b>	<b>204.64</b>	<b>237.35</b>
<b>Prevented planting %</b>	<b>56%</b>	<b>56%</b>	<b>54%</b>	<b>54%</b>	<b>50%</b>	<b>48%</b>	<b>46%</b>	<b>48%</b>	<b>45%</b>	<b>47%</b>

## 6.2. Canola

### Overview

Canola, a rapeseed variety developed for human and animal consumption, is produced primarily in North Dakota, which accounts for (84%) of national production. The second largest producer is Oklahoma (8%); more than half a dozen other states produce the rest.

Figure 66: US canola production areas



Source: Canolainfo.org

### Sources of production cost information

Canola is grown primarily in North Dakota and NDSU publishes canola budgets, so we used North Dakota averages as proxy for canola production costs.

Budgets were available for 2004-2013. The state is split into nine budget regions; eight have published canola budgets. Agralytica aggregated the relevant budgets by year and averaged the costs to get yearly production costs. The 2003 data were estimated using NASS Prices Paid Indexes.

### Production practices

Canola yields best in rotation with small grain crops. It can be spring planted or winter planted. Canola does well in most soil types, but grows best in clay-loam soils that do not crust. A firm, weed-free seedbed is crucial for canola seeds and care must be taken to prepare the ground accordingly. Good drainage is essential to canola because it cannot tolerate standing water. In addition, canola is less tolerant to drought than small grain crops.

**Spring canola.** In most of North Dakota, farmers use no-till practices or one pass seeding. Most producers (60%) spray nitrogen in the fall; the remainder use fertilizer just prior to planting. Nitrogen accounts for 75%-80% of the fertilizer budget. Canola is also a high user of sulfur. Sulfur levels determine whether a canola crop grows or not and providing adequate sulfur at/before planting is ideal. Yield response to sulfur application decreases quickly after planting. In addition, soil packing with a roller is sometimes used just prior to planting to increase seed-to-soil contact.

Spring planted canola should be planted in late April to early May. Planting beyond May 15 results in yield reductions that become significant if planting is pushed into June. Seed that is not used can generally be returned to the supplier or held until the following year.

Herbicide practices have changed in the last 10-20 years. Roundup Ready varieties allow all chemical use to take place at or after planting.

Winter canola is typically planted in regions with less harsh winters, like Oklahoma and Kansas, and parts of Wisconsin. Seeding dates for winter canola range from late August to the first week of October in the Plains states, and from mid-August to the first week in September in Wisconsin and Minnesota.

### Prevented planting experience

Prevented planting claims have been 56% of total indemnities the last 20 years. Total canola indemnities from 2003 to 2012 were \$369.3 million. Of this total, prevented planting claims accounted for \$199.4 (54%). Of prevented planting claims, \$190.8 million (96%) came from North Dakota. Most of the rest came from Minnesota.

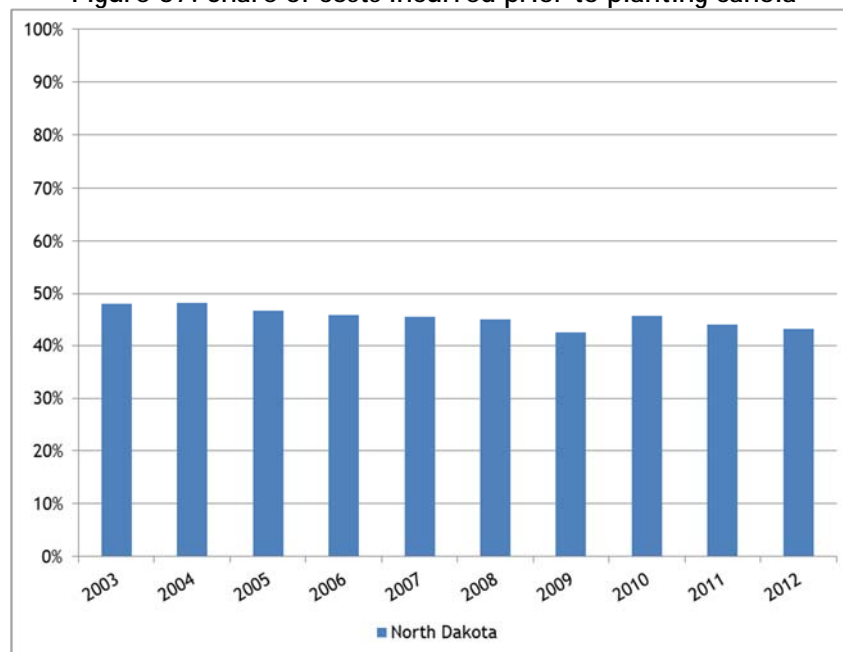
The cause of prevented planting was almost always excess moisture (\$193.3 million, 96.9% of prevented planted claims) or cold wet weather (\$5.7 million, 2.9%)

### Analysis

Analysis of crop production cost estimates for canola suggests that prevented planting costs as a share of production have dropped from 48% in 2003 (\$70 of \$146) to 43% in 2012 (\$125 of \$289).

The decreased share of pre-planting costs is primarily due to the relative increase in seed and fertilizer costs, which are mostly avoidable in a prevented planting situation.

Figure 67: Share of costs incurred prior to planting canola

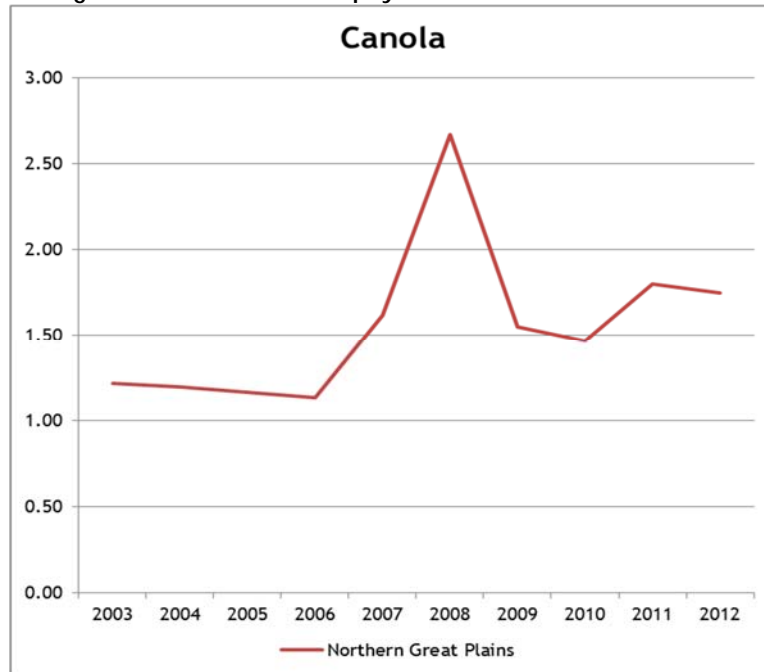


### Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs has been high, above 1.5 for the past 7 years.

Also, since 61% of PP indemnities are associated with the additional 10% coverage, the ratio would be higher by about 10% if that were taken into account ( $10\%/60\% \times 0.61 = 0.102$ ). Factoring this in, the ratio has been over 2.0 for the period 2008-2012.

Figure 68: Ratio of RMA payment to PP costs for canola



### Recommendation

The current canola PP payment rate is much too high. Consistent with this is the very high proportion of PP 10% buy-up, and the fact that a majority of canola indemnities come from prevented planting claims.

Reducing the PP payment rate to 45% will better align the indemnity payments with estimated PP costs.

Table 168: Canola production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>16.08</i>	16.50	17.05	17.60	18.15	18.25	39.50	40.00	42.50	45.50
Fertilizer	<i>23.45</i>	26.48	29.99	35.10	32.33	49.08	63.83	42.69	65.47	79.92
Herbicides	<i>15.75</i>	15.75	16.00	17.50	18.25	19.31	18.00	14.00	16.00	18.00
Insecticides	<i>7.00</i>	7.00	7.00	6.00	7.00	6.00	0.00	0.00	0.00	0.00
Fuel & lubrication	<i>5.03</i>	5.93	8.44	10.79	11.16	14.16	10.18	12.16	15.01	16.74
Repairs	<i>9.56</i>	9.84	9.73	9.96	10.00	10.72	12.41	13.97	14.79	15.26
Miscellaneous	<i>0.97</i>	1.00	1.00	1.00	2.00	2.63	3.75	3.75	4.00	4.00
Crop insurance	<i>6.65</i>	7.27	6.80	7.88	10.37	21.29	12.12	12.18	17.83	14.82
Interest on operating capital	<i>2.53</i>	2.61	3.07	3.98	4.47	5.00	4.43	3.67	4.27	4.46
<b>Total, operating costs</b>	<b><i>87.03</i></b>	<b>92.38</b>	<b>99.08</b>	<b>109.81</b>	<b>113.73</b>	<b>146.44</b>	<b>164.22</b>	<b>142.42</b>	<b>179.87</b>	<b>198.70</b>
Allocated overhead:										
<i>Returns to labor &amp; management</i>	<i>3.55</i>	<i>3.62</i>	<i>3.73</i>	<i>3.87</i>	<i>4.00</i>	4.14	4.25	4.28	4.34	4.50
Miscellaneous overhead	<i>3.35</i>	3.50	3.39	3.44	3.41	3.52	4.84	5.07	6.24	6.34
Machinery depreciation	<i>11.31</i>	12.13	12.11	12.42	12.45	13.13	14.90	16.11	17.05	17.58
Machinery investment	<i>7.07</i>	7.59	7.29	7.48	7.35	7.70	8.75	9.49	10.01	10.28
Opportunity cost of land (rental rate)	<i>33.35</i>	34.71	33.94	35.03	35.56	38.44	42.15	43.68	45.70	51.34
<b>Total, allocated overhead</b>	<b><i>58.63</i></b>	<b>61.55</b>	<b>60.46</b>	<b>62.24</b>	<b>62.77</b>	<b>66.93</b>	<b>74.89</b>	<b>78.63</b>	<b>83.34</b>	<b>90.04</b>
<b>Total costs listed</b>	<b><i>145.66</i></b>	<b>153.93</b>	<b>159.54</b>	<b>172.05</b>	<b>176.50</b>	<b>213.37</b>	<b>239.11</b>	<b>221.05</b>	<b>263.21</b>	<b>288.74</b>

Source for budget(s): NDSU extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 and select values derived using price indices (in italics)

Data reflects average of budgets for 8 ND regions w/canola budgets

Returns to labor & management: avge for 2004-2012, used f/2008, then adjusted fwd & back using labor index

Table 169: Canola - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Herbicides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Insecticides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel & lubrication	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Returns to labor & management	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Miscellaneous overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 170: Canola prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	5.86	6.62	7.50	8.78	8.08	12.27	15.96	10.67	16.37	19.98
Herbicides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel & lubrication	1.26	1.48	2.11	2.70	2.79	3.54	2.55	3.04	3.75	4.19
Repairs	2.39	2.46	2.43	2.49	2.50	2.68	3.10	3.49	3.70	3.82
Miscellaneous	0.24	0.25	0.25	0.25	0.50	0.66	0.94	0.94	1.00	1.00
Crop insurance	3.72	4.07	3.81	4.41	5.81	11.92	6.79	6.82	9.98	8.30
Interest on operating capital	0.63	0.65	0.77	1.00	1.12	1.25	1.11	0.92	1.07	1.12
<b>Total, operating costs</b>	<b>14.11</b>	<b>15.54</b>	<b>16.87</b>	<b>19.62</b>	<b>20.80</b>	<b>32.32</b>	<b>30.44</b>	<b>25.88</b>	<b>35.87</b>	<b>38.39</b>
Allocated overhead:										
Returns to labor & management	0.89	0.90	0.93	0.97	1.00	1.04	1.06	1.07	1.09	1.13
Miscellaneous overhead	3.35	3.50	3.39	3.44	3.41	3.52	4.84	5.07	6.24	6.34
Machinery depreciation	11.31	12.13	12.11	12.42	12.45	13.13	14.90	16.11	17.05	17.58
Machinery investment	7.07	7.59	7.29	7.48	7.35	7.70	8.75	9.49	10.01	10.28
Opportunity cost of land (rental rate)	33.35	34.71	33.94	35.03	35.56	38.44	42.15	43.68	45.70	51.34
<b>Total, allocated overhead</b>	<b>55.96</b>	<b>58.83</b>	<b>57.66</b>	<b>59.34</b>	<b>59.77</b>	<b>63.83</b>	<b>71.70</b>	<b>75.42</b>	<b>80.09</b>	<b>86.67</b>
<b>Total costs listed</b>	<b>70.07</b>	<b>74.37</b>	<b>74.53</b>	<b>78.96</b>	<b>80.57</b>	<b>96.14</b>	<b>102.14</b>	<b>101.30</b>	<b>115.96</b>	<b>125.06</b>
<b>Total costs</b>	<b>145.66</b>	<b>153.93</b>	<b>159.54</b>	<b>172.05</b>	<b>176.50</b>	<b>213.37</b>	<b>239.11</b>	<b>221.05</b>	<b>263.21</b>	<b>288.74</b>
<b>Prevented planting %</b>	<b>48%</b>	<b>48%</b>	<b>47%</b>	<b>46%</b>	<b>46%</b>	<b>45%</b>	<b>43%</b>	<b>46%</b>	<b>44%</b>	<b>43%</b>



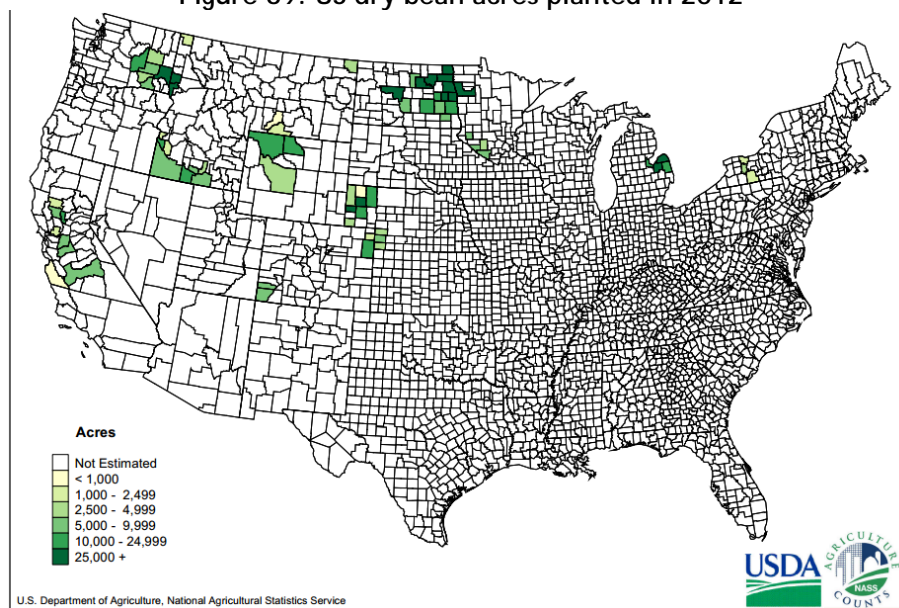
### 6.3. Dry beans

#### Overview

Dry beans are grown across the US, although primarily in the North and in the West. Fourteen main varieties are grown: adzuki, baby lima, black, blackeye, cranberry, dark red kidney, light red kidney, garbanzo, great northern, large lima, navy, pink, pinto, and yelloweye. The five types grown in largest volumes are pinto, navy, great northern, red kidney, and black beans. Pinto beans account for 40% of production.

Total US production was 31.9 million hundredweight (cwt) in 2012. Of this total, 11.7 million cwt (37%) were grown in North Dakota. Major producing states include Michigan (14%), Nebraska (11%), Minnesota (10%), and Idaho (9%). Other producers include California, Washington, and Colorado.

Figure 69: US dry bean acres planted in 2012



Source: USDA

#### Sources of production cost information

The primary sources of production cost information come from North Dakota State University Extension and Nebraska University Extension.

NDSU publishes dry bean budgets annually for all regions except Northwest and Southwest. We averaged costs for the seven other regions to an average budget for each year from 2004 to 2012. We used price indices to estimate the budget figures for 2003.

Nebraska University Extension has published dry bean budgets every few years (2004, 2006, 2009, and 2012) for multiple state regions. We averaged budget costs across each region for each year, and estimated missing years (2003, 2005, 2007-8, 2010-11) using price indices.

Dry bean production budgets are also available from California, Colorado, Kentucky, and Michigan. However, these are not comparable between years or only one budget year is available.

## Production practices

Dry beans are a warm season crop and are not planted until all danger of frost has passed. Cultivation keeps the bean fields weed-free, which reduces the need for chemical weed control. Cultivation also helps prepare the seedbed for efficient "pulling" of the bean plant at harvest.

For single-cropped fields, the ground is typically disced twice in the fall. For double-cropped fields, discing generally occurs in June, after the wheat or other winter cereal is harvested.

Prior to planting, pre-plant herbicides are sprayed onto the soil and mixed in with two passes of a finishing disc. A starter fertilizer is generally applied at planting or just before planting. Fields are pre-irrigated if conditions are too dry to germinate seed; however, this is not often the case for much of the Upper Midwest. In fact, too much moisture is a common occurrence. If the soil is over-saturated with water or moisture, dry bean producers will likely file a prevented planting claim. Soil with too much water has lower amounts of oxygen, which results in reduced root growth and stand loss. The ability of fungi to invade plant tissue is also higher in wet conditions.

## Prevented planting experience

Prevented planting claims have been 31% of total indemnities the last 20 years. Total insurance indemnities paid to farmers were almost \$352 million for the period 2003-2012. Close to \$107 million (31%) were paid out due to prevented planting. Of prevented planting claims, excess moisture was the most common cause of loss, accounting for \$97 million (91%). Geographically, North Dakota accounted for \$92 million (86%) of overall prevented planting claims.

## Analysis

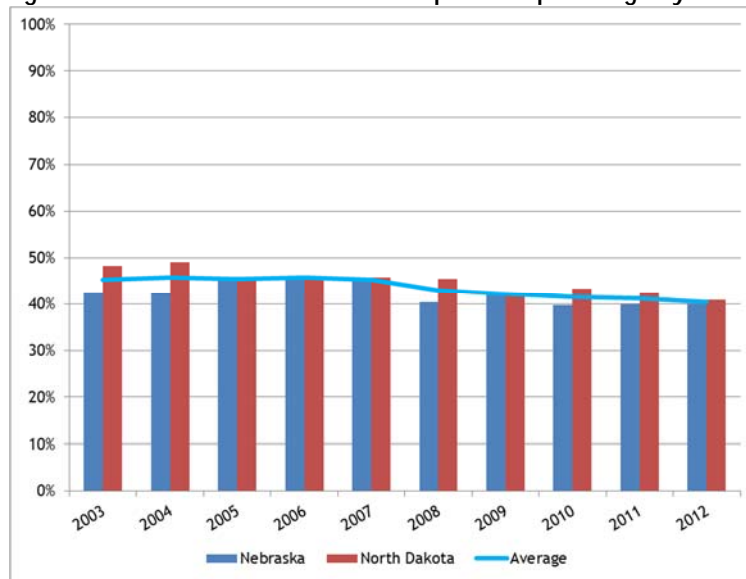
The percentage used by RMA for prevented planting for dry beans is 60%.

Analysis of the North Dakota budgets indicates that the percentage of pre-planting costs decreased from 48% in 2003 to 41% in 2012. Pre-planting costs went from \$83 out of \$173 in 2003 to \$138 out of \$338 in 2012.

The Nebraska budgets indicate that the percentage of pre-planting costs decreased from 43% in 2003 to 40% in 2012. Pre-planting costs went from \$167 out of \$392 in 2003 to \$311 out of \$782 in 2012.

Averaging the two budgets, the pre-planting cost percentage has declined from 45% in 2003 to 40% in 2012. However, differences in the dry beans produced, the regions where they are grown, and our reliance on extension budgets can introduce significant variability in cost calculations.

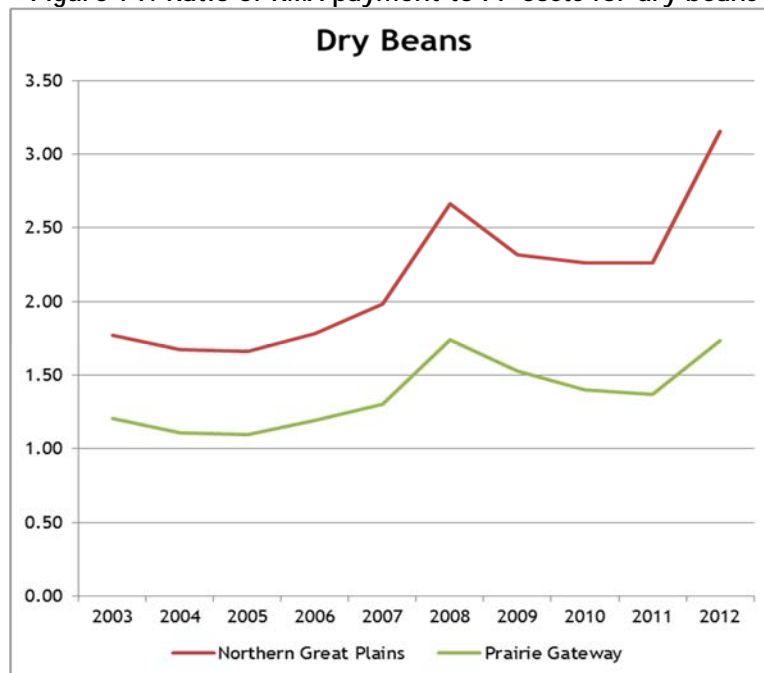
Figure 70: Share of costs incurred prior to planting dry beans



### Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs has been too high. In the Prairie Gateway region, the ratio is approximately 1.5, and in the Northern Great Plains, twice that. Since 64% of PP indemnities are associated with the additional 10% coverage, these ratios would be higher by about 11% if that were taken into account ( $10\%/60\% \times 0.64 = 0.107$ ).

Figure 71: Ratio of RMA payment to PP costs for dry beans



### Recommendation

Based on the crop budget review, a more appropriate PP rate for dry beans would be 40%. Reducing the PP payment rate from 60% so that a PP indemnity is 33% lower would bring it closer in line with estimated PP costs.

Table 171: Dry bean production costs per planted acre - Nebraska

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Field operations	69.95	75.05	79.69	83.84	50.83	92.24	123.50	223.54	237.15	249.78
Materials and services:										
Fertilizer	14.43	16.29	15.18	16.29	50.83	92.24	64.71	30.33	39.48	40.08
Herbicide	22.70	22.90	18.97	20.12	19.14	20.39	22.12	52.50	51.71	54.89
Seed	22.42	23.00	22.89	24.80	21.15	26.85	31.00	29.83	31.94	34.54
Other	52.54	55.00	30.96	32.70	35.50	40.35	39.25	4.11	4.56	4.83
Insecticide	4.41	4.35	2.01	2.00	2.98	3.14	3.24	2.77	2.84	2.96
Custom	6.94	6.66	6.69	6.80	7.07	8.14	8.20	44.35	45.27	48.02
Scouting drybeans	9.55	9.17	9.25	9.40	9.55	11.01	11.08	11.08	11.31	12.00
Drybean premium	16.80	17.29	17.91	18.53	19.02	19.76	19.64	20.01	20.63	21.00
Crop Insurance	9.83	9.19	9.77	11.78	13.37	20.85	18.74	19.33	20.27	27.80
Interest	6.61	6.82	5.07	6.08	6.49	6.81	6.26	6.08	6.63	13.55
	236.18	245.73	218.40	232.34	235.93	341.80	347.75	443.94	471.78	509.45
Total Allocated overhead										
Farm overhead	7.87	8.00	7.65	8.00	8.40	8.40	8.98	9.27	9.44	20.00
Management incl scouting	28.85	30.20	28.59	30.20	32.41	36.84	35.84	36.84	40.87	43.29
Machinery taxes, housing, ins & int	17.08	18.17	19.05	20.27	21.89	25.41	24.46	25.27	28.38	30.00
Irrigation system taxes, ins & int	9.49	10.10	11.97	12.73	13.75	15.95	15.36	15.87	17.82	18.84
Land incl interest and depreciation	92.74	95.00	100.64	110.00	114.68	128.72	143.55	148.23	159.93	160.00
	156.03	161.47	167.90	181.20	191.14	215.33	228.18	235.48	256.44	272.13
Total, allocated overhead										
Total costs listed	392.21	407.20	386.31	413.54	427.07	557.13	575.93	679.41	728.22	781.58

Source for budget(s): U. Nebraska-Lincoln

<http://www.ianrpubs.unl.edu/pages/publicationD.jsp?publicationId=597>

Table 172: Dry bean production costs per planted acre - North Dakota

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>28.75</i>	29.50	32.50	31.00	31.00	33.50	42.00	42.00	39.00	46.00
Chemicals	<i>27.12</i>	20.42	21.22	23.25	24.00	24.80	31.30	45.50	46.00	53.33
Fertilizer	<i>14.92</i>	16.85	21.64	21.92	21.68	21.60	37.25	28.35	40.10	47.02
Crop Insurance	<i>9.97</i>	10.13	12.36	14.52	14.42	17.87	18.32	23.33	22.63	26.35
Fuel & Lubrication	<i>6.26</i>	7.38	10.71	13.90	15.20	19.23	13.52	16.15	19.93	22.34
Repairs	<i>11.77</i>	12.12	12.02	12.42	12.84	13.36	15.56	16.55	17.25	17.75
Miscellaneous	<i>0.97</i>	1.00	1.00	1.00	1.00	1.50	8.50	4.67	5.17	12.17
Operating Interest	<i>2.83</i>	2.92	3.55	4.57	4.96	4.95	4.58	4.63	4.75	5.18
Total, operating costs	<i>102.61</i>	100.33	115.00	122.58	125.09	136.80	171.03	181.19	194.82	230.14
Allocated overhead:										
Misc. Overhead	<i>4.25</i>	4.37	4.26	4.38	4.44	4.55	5.77	5.97	7.10	7.24
Machinery Depreciation	<i>14.78</i>	15.86	15.67	16.24	16.65	17.29	19.88	20.84	21.59	22.34
Machinery Investment	<i>9.83</i>	10.55	10.25	10.60	10.81	11.17	11.86	12.53	12.94	13.35
Land Charge	<i>41.39</i>	42.40	40.59	42.78	43.33	47.25	51.37	54.70	57.23	64.67
Total, allocated overhead	<i>70.25</i>	73.18	70.77	74.00	75.23	80.26	88.87	94.04	98.86	107.59
Total costs listed	<i>172.86</i>	173.51	185.77	196.58	200.33	217.06	259.90	275.23	293.69	337.73

Source for budget(s): NDSU extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 and select values derived using price indices (in italics)

Data reflects average of budgets for 7 ND regions w/dry bean budgets

Returns to labor & management: avge for 2004-2012, used f/2008, then adjusted fwd & back using labor index

Table 173: Dry bean - share of expenses incurred before planting - Nebraska

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Field operations	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Materials and services:										
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicide	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Insecticide	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Scouting drybeans	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Drybean premium	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead										
Farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Management incl scouting	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Machinery taxes, housing, ins & int	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Irrigation system taxes, ins & int	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land incl interest and depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 174: Dry beans - share of expenses incurred before planting - North Dakota

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Fuel & Lubrication	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Repairs	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Miscellaneous	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table 175: Dry bean prevented planting cost per acre - Nebraska

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Field operations	13.99	15.01	15.94	16.77	10.17	18.45	24.70	44.71	47.43	49.96
Materials and services:										
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicide	4.54	4.58	3.79	4.02	3.83	4.08	4.42	10.50	10.34	10.98
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	10.51	11.00	6.19	6.54	7.10	8.07	7.85	0.82	0.91	0.97
Insecticide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scouting drybeans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drybean premium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	3.05	2.85	3.03	3.65	4.14	6.46	5.81	5.99	6.28	8.62
Interest	1.65	1.71	1.27	1.52	1.62	1.70	1.57	1.52	1.66	3.39
<b>Total</b>	<b>33.74</b>	<b>35.14</b>	<b>30.22</b>	<b>32.50</b>	<b>26.86</b>	<b>38.76</b>	<b>44.35</b>	<b>63.54</b>	<b>66.62</b>	<b>73.91</b>
Allocated overhead										
Farm overhead	7.87	8.00	7.65	8.00	8.40	8.40	8.98	9.27	9.44	20.00
Management incl scouting	5.77	6.04	5.72	6.04	6.48	7.37	7.17	7.37	8.17	8.66
Machinery taxes, housing, ins & int	17.08	18.17	19.05	20.27	21.89	25.41	24.46	25.27	28.38	30.00
Irrigation system taxes, ins & int	9.49	10.10	11.97	12.73	13.75	15.95	15.36	15.87	17.82	18.84
Land incl interest and depreciation	92.74	95.00	100.64	110.00	114.68	128.72	143.55	148.23	159.93	160.00
<b>Total, allocated overhead</b>	<b>132.95</b>	<b>137.31</b>	<b>145.03</b>	<b>157.04</b>	<b>165.21</b>	<b>185.86</b>	<b>199.51</b>	<b>206.00</b>	<b>223.74</b>	<b>237.50</b>
<b>Total costs listed</b>	<b>166.69</b>	<b>172.45</b>	<b>175.25</b>	<b>189.54</b>	<b>192.07</b>	<b>224.62</b>	<b>243.86</b>	<b>269.54</b>	<b>290.37</b>	<b>311.40</b>
<b>Total costs</b>	<b>392.21</b>	<b>407.20</b>	<b>386.31</b>	<b>413.54</b>	<b>427.07</b>	<b>557.13</b>	<b>575.93</b>	<b>679.41</b>	<b>728.22</b>	<b>781.58</b>
Prevented planting %	43%	42%	45%	46%	45%	40%	42%	40%	40%	40%

Table 176: Dry bean prevented planting cost per acre - North Dakota

Items	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	5.42	4.08	4.24	4.65	4.80	4.96	6.26	9.10	9.20	10.67
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	3.09	3.14	3.83	4.50	4.47	5.54	5.68	7.23	7.02	8.17
Fuel & Lubrication	1.25	1.48	2.14	2.78	3.04	3.85	2.70	3.23	3.99	4.47
Repairs	2.35	2.42	2.40	2.48	2.57	2.67	3.11	3.31	3.45	3.55
Miscellaneous	0.19	0.20	0.20	0.20	0.20	0.30	1.70	0.93	1.03	2.43
Operating Interest	0.71	0.73	0.89	1.14	1.24	1.24	1.15	1.16	1.19	1.30
Total, operating costs	13.02	12.05	13.71	15.76	16.32	18.56	20.60	24.96	25.87	30.58
Allocated overhead:										
Misc. Overhead	4.25	4.37	4.26	4.38	4.44	4.55	5.77	5.97	7.10	7.24
Machinery Depreciation	14.78	15.86	15.67	16.24	16.65	17.29	19.88	20.84	21.59	22.34
Machinery Investment	9.83	10.55	10.25	10.60	10.81	11.17	11.86	12.53	12.94	13.35
Land Charge	41.39	42.40	40.59	42.78	43.33	47.25	51.37	54.70	57.23	64.67
Total, allocated overhead	70.25	73.18	70.77	74.00	75.23	80.26	88.88	94.04	98.86	107.60
Total costs listed	83.28	85.23	84.48	89.76	91.55	98.82	109.48	119.00	124.73	138.18
Total costs	172.86	173.51	185.77	196.58	200.33	217.06	259.90	275.23	293.69	337.73
Prevented planting %	48%	49%	45%	46%	46%	46%	42%	43%	42%	41%

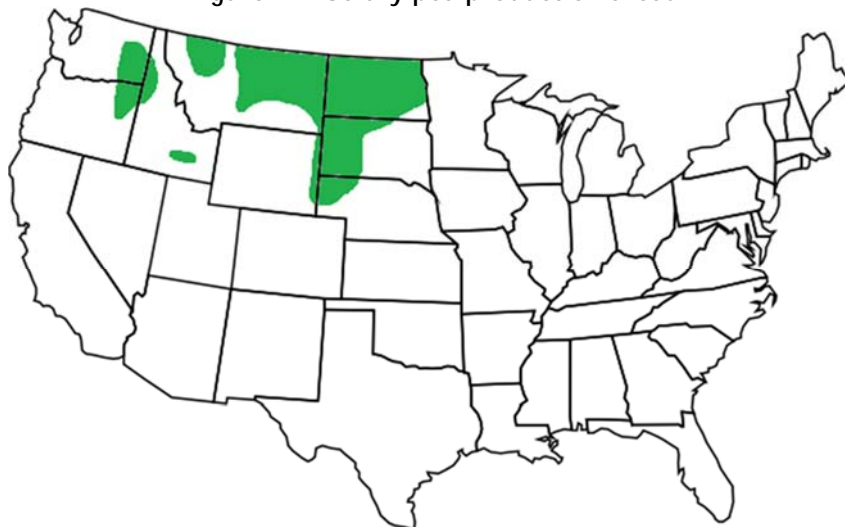
## 6.4. Dry peas

### Overview

Dry peas are legumes primarily sold to processors or used as feed. RMA insures three types of dry peas: lentils, chickpeas, and split peas. Dry peas are differentiated from green/succulent peas, in that green peas are grown for the fresh and frozen markets for human consumption.

Most dry peas (over 90% in 2011 and 2012) are grown in Montana, North Dakota, and Washington. Acreage can vary substantially from one year to the next. U.S. planted area in 2012 was 649,000 acres for dry peas, 463,000 acres for lentils, and 208,000 acres for chickpeas. In 2012, the country produced 572,650 tons, 41% in Montana, 39% in North Dakota, and 13% in Washington. Small amounts are also produced in Idaho and Oregon.

Figure 72: US dry pea production areas



Source: Dry Pea and Lentil Council

### Sources of production cost information

The primary source of production cost information for dry peas comes from the North Dakota State University Extension, which publishes budgets annually for field peas, lentils, and chickpeas for a number of regions within the state. (All field peas grown in North Dakota are split peas.)

We averaged costs for each type of pea across North Dakota's regional budgets to build an overall crop budget for each year. We used actual crop budget data for 2004-2012, and used price indices to come up with budget figures for 2003.

Washington State Extension had one budget available for 2004 and this was used as a check against the North Dakota data. Other states do not publish crop budgets for dry peas.

### Production practices

The pea is a hardy, cool season legume. Peas can be grown on a wide range of soil types, but there must be good drainage as field peas do not tolerate soggy or water-soaked conditions.

As a cool season crop, peas cannot tolerate hot weather or drought stress during flowering, thus seeding early is important. Seeding should be as early in the spring as feasible provided soil temperature in the upper inch is over 40°F. In Minnesota and Wisconsin, this ranges from mid-March to mid-April.

Drought conditions are also likely to cause producers not to plant pea crops.

Peas need a weed free seedbed and they grow best when planted into a seedbed with a minimum amount of residue on the soil surface. In the Red River Valley, many farmers cultivate in the fall and spring to prepare the soil for seeding. Outside the Red River Valley, most North Dakota farmers utilize a no till-method with a chemical burn down and one pass seeding. In early spring, herbicide is sprayed on the field to get rid of any weeds. The one pass seeding then serves to break up the soil sufficiently at the same time the seed is planted.

Peas are vulnerable to seed blights and rots; seeds should therefore be pre-treated with fungicides. Phosphate is applied at seeding, while potassium and sulfur are applied in bands beside the growing shoots.

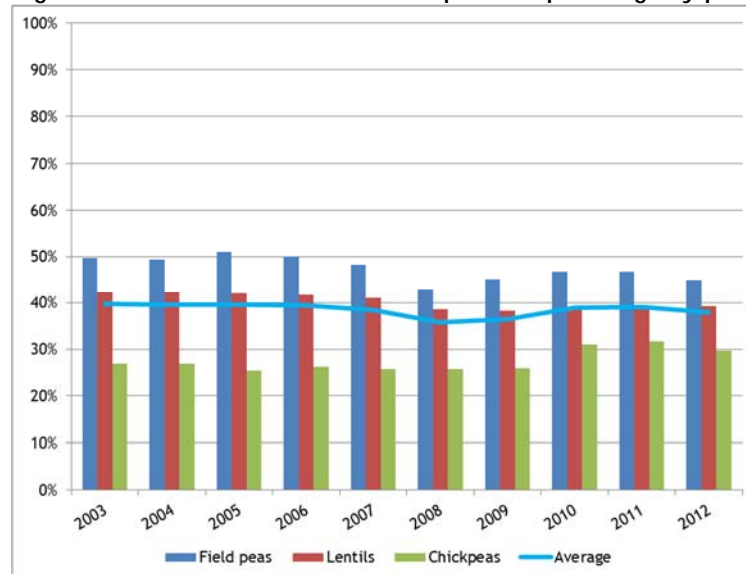
### Prevented planting experience

Prevented planting claims have been 24% of total indemnities the last 20 years. Total indemnities for dry peas were \$163.8 million from 2003-2013. Prevented planting indemnities were \$37.6 million, about 23% of this total. The majority of prevented planting claims over the decade (77%) originate from North Dakota, almost all due to excess moisture. Most remaining prevented planting claims (15%) came from Montana.

### Analysis

In addition to the usual variation in cultivation costs, dry pea costs also vary significantly by crop type. For field peas the share of costs incurred pre-planting was 45%; for lentils, 39%. For field peas, this percentage dropped from 50% to 45% from 2003 to 2012; for lentils, the drop was smaller, from 42% to 39% over the same period.

Figure 73: Share of costs incurred prior to planting dry peas



Chickpeas, by contrast, are more expensive to grow, particularly due to the high cost of seed. The share of costs incurred pre-planting for chickpeas, however, is much lower than for the other dry peas. The percentage of pre-planting costs rose, however, from 27% in 2003 to 30% in 2012.

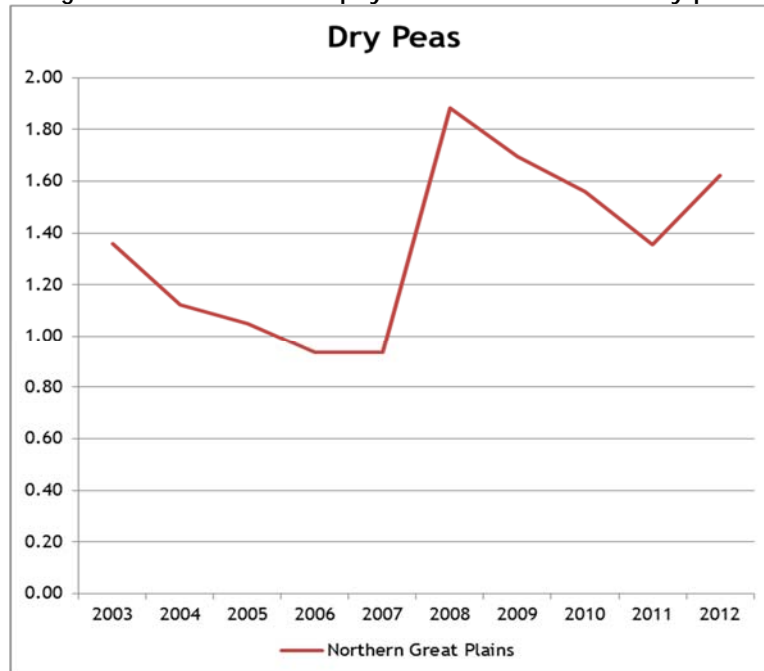
Averaged across all three pea types, the pre-planting percentage dropped from 40% in 2003 to 38% in 2012.

Given the crop budget analysis, 40% would be a more appropriate PP rate for dry peas. However, chickpea prevented planting costs appear to be substantially lower than those for other dry peas, due to the much higher cost of chickpea seed. There may be merit to assigning chickpeas a 30% rate.

### Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs was close to 1.00 from 2005 through 2007, but has since been closer to 1.60. Also, since 27% of PP indemnities are associated with the additional 10% coverage, this ratio would be higher by about 5% if that were taken into account ( $10\%/60\% \times 0.27 = 0.045$ ).

Figure 74: Ratio of RMA payment to PP costs for dry peas



### Recommendation

We recommend reducing the PP payment rate for dry peas from 60% of guarantee to 40%, which cuts the indemnity by 33%.

Table 177: Field pea production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	16.22	17.25	17.25	17.25	19.20	31.50	33.00	31.50	31.50	40.50
Herbicides	14.26	14.64	14.64	16.00	18.00	19.89	23.54	24.86	25.36	29.00
Fertilizer	3.84	4.50	4.43	4.96	4.89	8.11	12.34	6.00	10.71	11.88
Crop Insurance	5.92	6.20	6.07	5.93	6.16	7.40	12.43	8.04	6.74	10.96
Fuel & Lubrication	4.77	6.24	8.50	11.13	12.26	15.02	10.88	12.60	15.60	17.61
Repairs	10.29	10.73	10.29	10.69	11.19	11.79	13.62	15.02	15.95	16.61
Miscellaneous	1.88	2.00	2.00	2.00	3.33	5.64	5.54	6.29	7.14	8.14
Operating Interest	1.62	1.85	2.06	2.64	3.10	3.73	3.06	2.74	2.86	3.13
Total, operating costs	58.80	63.41	65.24	70.60	78.13	103.08	114.41	107.05	115.86	137.83
Allocated overhead:										
Opportunity cost of labor	11.23	11.58	12.00	12.42	12.84	13.19	13.55	13.62	13.84	14.34
Misc. Overhead	3.52	3.75	3.53	3.63	3.63	3.68	5.05	5.26	6.42	6.57
Machinery Depreciation	12.65	13.51	13.18	13.69	13.98	14.53	16.55	17.51	18.46	19.25
Machinery Investment	7.63	8.15	7.57	7.84	7.87	8.04	9.24	9.90	10.40	10.84
Land Charge	25.36	26.35	33.38	33.67	33.83	34.36	42.06	43.33	45.64	50.99
Total, allocated overhead	60.38	63.34	69.66	71.25	72.15	73.80	86.45	89.62	94.76	101.99
Total costs listed	119.18	126.75	134.90	141.85	150.28	176.88	200.86	196.67	210.62	239.82

Source for budget: North Dakota State University - Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values based on price indices

Data reflects the average of budgets for North Dakota

North Dakota accounts for 84% of national production

Returns to labor (& management & risk) averaged for 2003-2012, used for 2008, then adjusted forward & back using labor index

Table 178: Lentil production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	15.14	16.10	14.00	13.30	13.30	23.80	26.60	28.00	30.10	29.40
Herbicides	15.72	16.14	16.14	20.14	21.50	22.33	31.00	32.50	33.00	34.00
Fertilizer	2.21	2.59	2.76	3.07	3.25	5.10	8.26	3.94	7.00	7.83
Crop Insurance	8.50	8.90	10.33	10.30	10.29	12.90	22.23	17.10	15.80	16.40
Fuel & Lubrication	4.96	6.49	8.92	11.04	11.25	13.88	9.56	10.97	13.62	15.33
Repairs	10.33	10.77	10.56	10.98	10.98	11.62	13.28	14.73	15.59	16.22
Miscellaneous	3.75	4.00	4.00	4.00	4.00	6.00	6.25	7.00	8.00	9.00
Operating Interest	1.70	1.95	2.17	2.82	3.08	3.59	3.22	3.00	3.08	2.95
<b>Total, operating costs</b>	<b>62.32</b>	<b>66.94</b>	<b>68.88</b>	<b>75.65</b>	<b>77.65</b>	<b>99.22</b>	<b>120.40</b>	<b>117.24</b>	<b>126.19</b>	<b>131.13</b>
Allocated overhead:										
Opportunity cost of labor	58.54	60.37	62.57	64.76	66.96	68.79	70.66	71.04	72.17	74.80
Misc. Overhead	3.34	3.56	3.52	3.61	3.49	3.52	4.83	5.04	6.21	6.34
Machinery Depreciation	11.89	12.70	12.70	13.92	13.61	14.09	15.92	16.90	17.83	18.59
Machinery Investment	7.51	8.02	7.75	8.04	7.61	7.68	8.73	9.40	9.93	10.34
Land Charge	26.21	27.24	27.87	28.67	28.83	30.67	33.00	33.47	34.67	38.17
<b>Total, allocated overhead</b>	<b>107.50</b>	<b>111.89</b>	<b>114.41</b>	<b>119.00</b>	<b>120.50</b>	<b>124.75</b>	<b>133.14</b>	<b>135.85</b>	<b>140.81</b>	<b>148.24</b>
<b>Total costs listed</b>	<b>169.81</b>	<b>178.83</b>	<b>183.29</b>	<b>194.65</b>	<b>198.15</b>	<b>223.97</b>	<b>253.54</b>	<b>253.09</b>	<b>267.00</b>	<b>279.37</b>

Source for budget(s): North Dakota State University - Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values based on price indices

Data reflects the average of budgets for North Dakota

North Dakota accounts for 84% of national production

Returns to labor (& management & risk) averaged for 2003-2012, used for 2008, then adjusted forward & back using labor index

Table 179: Chickpea production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	56.43	60.00	84.00	78.00	78.00	78.00	78.00	72.00	69.60	84.00
Herbicides	15.72	16.14	16.14	16.14	20.50	21.25	28.80	32.50	33.00	34.00
Fungicide	27.81	29.00	49.00	49.00	49.00	50.00	65.00	18.00	18.00	36.00
Fertilizer	2.56	3.00	3.38	3.76	3.83	6.01	9.91	16.34	19.21	13.42
Crop Insurance	0.00	0.00	0.00	6.90	8.04	10.95	10.65	10.85	12.20	17.00
Fuel & Lubrication	4.42	5.79	8.79	11.44	11.36	14.02	9.96	12.29	15.31	17.56
Repairs	9.49	9.90	11.34	11.78	11.80	12.49	14.23	16.76	17.63	18.90
Miscellaneous	14.08	15.00	6.00	6.00	6.00	7.00	7.00	7.00	8.00	8.00
Operating Interest	3.64	4.17	5.81	7.09	7.78	7.49	6.15	4.88	4.83	5.27
Total, operating costs	134.76	143.00	184.46	190.11	196.31	207.21	229.70	190.62	197.78	234.15
Allocated overhead:										
Opportunity cost of labor	52.89	54.55	56.53	58.51	60.50	62.15	63.85	64.19	65.21	67.58
Misc. Overhead	3.06	3.26	3.71	3.81	3.59	3.55	4.94	5.47	6.61	6.84
Machinery Depreciation	11.57	12.36	14.36	14.91	14.24	14.56	16.61	19.82	20.73	22.00
Machinery Investment	6.64	7.09	8.55	8.86	8.15	7.97	9.25	10.77	11.28	12.06
Land Charge	18.76	19.50	25.35	25.85	26.25	27.75	30.30	30.30	31.60	34.15
Total, allocated overhead	92.93	96.76	108.50	111.94	112.73	115.98	124.95	130.55	135.43	142.63
Total costs listed	227.09	239.76	292.96	302.05	309.04	323.19	354.65	321.17	333.21	376.78

Source for budget(s): North Dakota State University - Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values based on price indices

Data reflects the average of budgets for North Dakota

North Dakota accounts for 84% of national production

Returns to labor (& management & risk) averaged for 2003-2012, used for 2008, then adjusted forward & back using labor index



Table 180: Field pea - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Crop Insurance	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Fuel & Lubrication	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Opportunity cost of labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 181: Lentil - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Crop Insurance	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Fuel & Lubrication	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Opportunity cost of labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 182: Chickpea - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Fungicide	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Crop Insurance	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Fuel & Lubrication	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Opportunity cost of labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 183: Field pea prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	2.14	2.20	2.20	2.40	2.70	2.98	3.53	3.73	3.80	4.35
Fertilizer	0.77	0.90	0.89	0.99	0.98	1.62	2.47	1.20	2.14	2.38
Crop Insurance	1.42	1.49	1.46	1.42	1.48	1.78	2.98	1.93	1.62	2.63
Fuel & Lubrication	0.72	0.94	1.28	1.67	1.84	2.25	1.63	1.89	2.34	2.64
Repairs	1.54	1.61	1.54	1.60	1.68	1.77	2.04	2.25	2.39	2.49
Miscellaneous	0.28	0.30	0.30	0.30	0.50	0.85	0.83	0.94	1.07	1.22
Operating Interest	0.40	0.46	0.52	0.66	0.78	0.93	0.77	0.69	0.72	0.78
Total, operating costs	7.27	7.89	8.17	9.05	9.95	12.18	14.25	12.63	14.08	16.49
Allocated overhead:										
Opportunity cost of labor	2.81	2.89	3.00	3.10	3.21	3.30	3.39	3.41	3.46	3.59
Misc. Overhead	3.52	3.75	3.53	3.63	3.63	3.68	5.05	5.26	6.42	6.57
Machinery Depreciation	12.65	13.51	13.18	13.69	13.98	14.53	16.55	17.51	18.46	19.25
Machinery Investment	7.63	8.15	7.57	7.84	7.87	8.04	9.24	9.90	10.40	10.84
Land Charge	25.36	26.35	33.38	33.67	33.83	34.36	42.06	43.33	45.64	50.99
Total, allocated overhead	51.96	54.65	60.66	61.93	62.52	63.91	76.29	79.41	84.38	91.24
Total costs listed	59.24	62.55	68.83	70.98	72.47	76.09	90.54	92.04	98.46	107.73
Total costs	119.18	126.75	134.90	141.85	150.28	176.88	200.86	196.67	210.62	239.82
Prevented planting %	50%	49%	51%	50%	48%	43%	45%	47%	47%	45%

Table 184: Lentil prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	2.36	2.42	2.42	3.02	3.23	3.35	4.65	4.88	4.95	5.10
Fertilizer	0.44	0.52	0.55	0.61	0.65	1.02	1.65	0.79	1.40	1.57
Crop Insurance	2.04	2.14	2.48	2.47	2.47	3.10	5.34	4.10	3.79	3.94
Fuel & Lubrication	0.74	0.97	1.34	1.66	1.69	2.08	1.43	1.65	2.04	2.30
Repairs	1.55	1.62	1.58	1.65	1.65	1.74	1.99	2.21	2.34	2.43
Miscellaneous	0.56	0.60	0.60	0.60	0.60	0.90	0.94	1.05	1.20	1.35
Operating Interest	0.43	0.49	0.54	0.71	0.77	0.90	0.81	0.75	0.77	0.74
Total, operating costs	8.12	8.75	9.52	10.72	11.05	13.09	16.81	15.42	16.49	17.42
Allocated overhead:										
Opportunity cost of labor	14.64	15.09	15.64	16.19	16.74	17.20	17.67	17.76	18.04	18.70
Misc. Overhead	3.34	3.56	3.52	3.61	3.49	3.52	4.83	5.04	6.21	6.34
Machinery Depreciation	11.89	12.70	12.70	13.92	13.61	14.09	15.92	16.90	17.83	18.59
Machinery Investment	7.51	8.02	7.75	8.04	7.61	7.68	8.73	9.40	9.93	10.34
Land Charge	26.21	27.24	27.87	28.67	28.83	30.67	33.00	33.47	34.67	38.17
Total, allocated overhead	63.59	66.61	67.48	70.43	70.28	73.16	80.15	82.57	86.68	92.14
Total costs listed	71.71	75.36	77.00	81.15	81.33	86.24	96.95	97.99	103.18	109.56
Total costs	169.81	178.83	183.29	194.65	198.15	223.97	253.54	253.09	267.00	279.37
Prevented planting %	42%	42%	42%	42%	41%	39%	38%	39%	39%	39%

Table 185: Chickpea prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	2.36	2.42	2.42	2.42	3.08	3.19	4.32	4.88	4.95	5.10
Fungicide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.51	0.60	0.68	0.75	0.77	1.20	1.98	3.27	3.84	2.68
Crop Insurance	0.00	0.00	0.00	1.66	1.93	2.63	2.56	2.60	2.93	4.08
Fuel & Lubrication	0.66	0.87	1.32	1.72	1.70	2.10	1.49	1.84	2.30	2.63
Repairs	1.42	1.49	1.70	1.77	1.77	1.87	2.13	2.51	2.64	2.84
Miscellaneous	2.11	2.25	0.90	0.90	0.90	1.05	1.05	1.05	1.20	1.20
Operating Interest	0.91	1.04	1.45	1.77	1.95	1.87	1.54	1.22	1.21	1.32
Total, operating costs	7.98	8.67	8.47	10.98	12.09	13.92	15.07	17.37	19.07	19.85
Allocated overhead:										
Opportunity cost of labor	13.22	13.64	14.13	14.63	15.12	15.54	15.96	16.05	16.30	16.90
Misc. Overhead	3.06	3.26	3.71	3.81	3.59	3.55	4.94	5.47	6.61	6.84
Machinery Depreciation	11.57	12.36	14.36	14.91	14.24	14.56	16.61	19.82	20.73	22.00
Machinery Investment	6.64	7.09	8.55	8.86	8.15	7.97	9.25	10.77	11.28	12.06
Land Charge	18.76	19.50	25.35	25.85	26.25	27.75	30.30	30.30	31.60	34.15
Total, allocated overhead	53.26	55.85	66.10	68.06	67.35	69.37	77.06	82.41	86.52	91.95
Total costs listed	61.24	64.51	74.57	79.04	79.44	83.28	92.14	99.78	105.59	111.80
Total costs	227.09	239.76	292.96	302.05	309.04	323.19	354.65	321.17	333.21	376.78
Prevented planting %	27%	27%	25%	26%	26%	26%	26%	31%	32%	30%

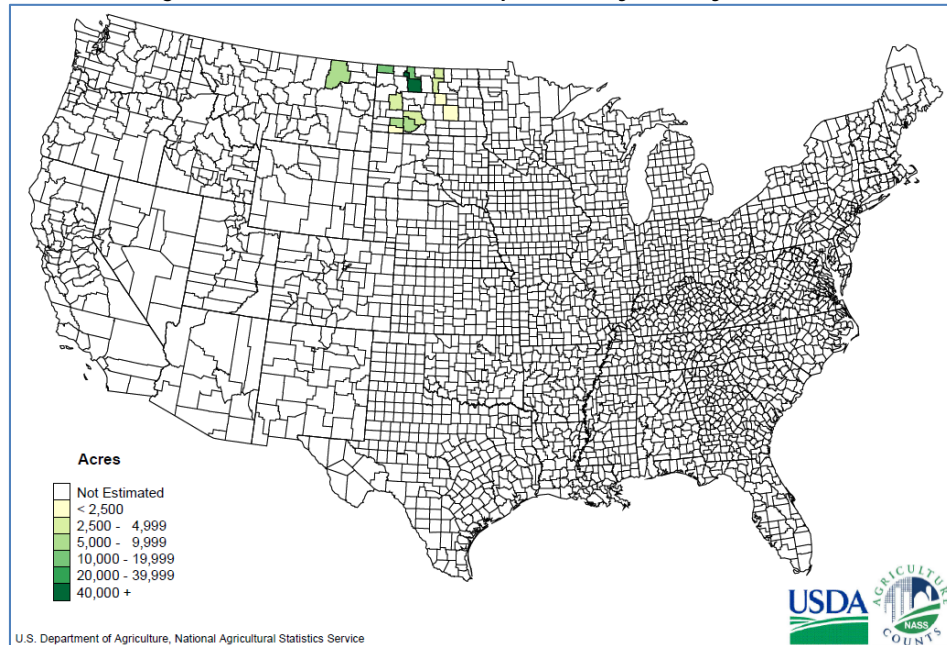
## 6.5. Flaxseed

### Overview

Flaxseed is produced primarily in North Dakota (84% of national acreage in 2011) and Montana (10%). Small amounts are also produced in South Dakota and Minnesota.

The map below from NASS provides a snapshot of the main areas of production. Production is concentrated in the western half of North Dakota.

Figure 75: US flaxseed acres planted by county in 2012



### Sources of production cost information

The primary source of production cost information comes from the North Dakota State University Extension, which publishes budgets annually for flaxseed and other crops for a number of regions within the state. Other states do not publish flax crop budgets. The USDA has no information available on flax production costs.

Because flax production is concentrated in North Dakota's Northwest (NW), North-central (NC), and Southwest (SW) regions, we averaged costs for these three regions to build an overall crop budget for flax. We used actual crop budget data for 2004-2012, and used price indices to come up with budget figures for 2003.

NDSU also published a detailed guide on flaxseed production, *Flax Production in North Dakota (2007)*: <http://www.ag.ndsu.edu/pubs/plantsci/crops/a1038.pdf>.

### Production practices

Flaxseed is typically rotated with other crops (potatoes, canola, or sugar beets), and its recommended frequency within a rotation is no more often than once every three years.

Most flaxseed is now produced under no-till practice. An herbicide, typically Glyphosate (sometimes in combination with other products), is applied in a burndown either late in the fall, or more commonly early in the spring. All other effort and labor either takes place at or after planting.

### Prevented planting experience

Prevented planting claims have accounted for 39% of total indemnities over the last 20 years. For the 10-year period 2003-2012, there were \$68.3 million in indemnities for flaxseed, \$23.4 million (34%) of which were for prevented planting. Excess moisture/rain was the cause of 99% of prevented planting claims.

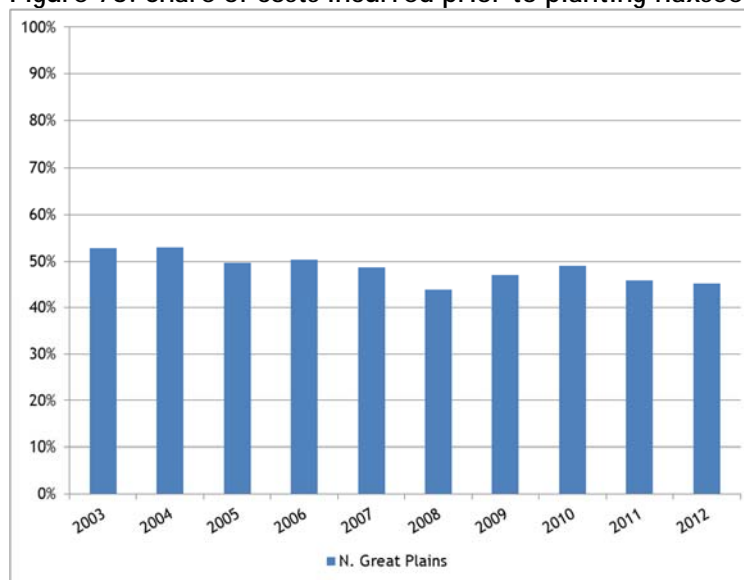
Claims came primarily from North Dakota (\$22.9m, 97.8%); Montana (\$0.25m, 1.1%) and Minnesota (\$0.2m, 0.8%) accounted for most of the rest.

### Analysis

In 2003, pre-planting costs for flaxseed were 53% (\$58 of \$110 per acre); by 2012, the pre-plant share of costs dropped to 45% (\$86 out of \$191).

The decreased share of pre-planting costs is primarily due to the combination of the relative increase in the cost of fertilizer and the relative decrease in the cost of machinery investment and depreciation (as a percentage of total costs).

Figure 76: Share of costs incurred prior to planting flaxseed

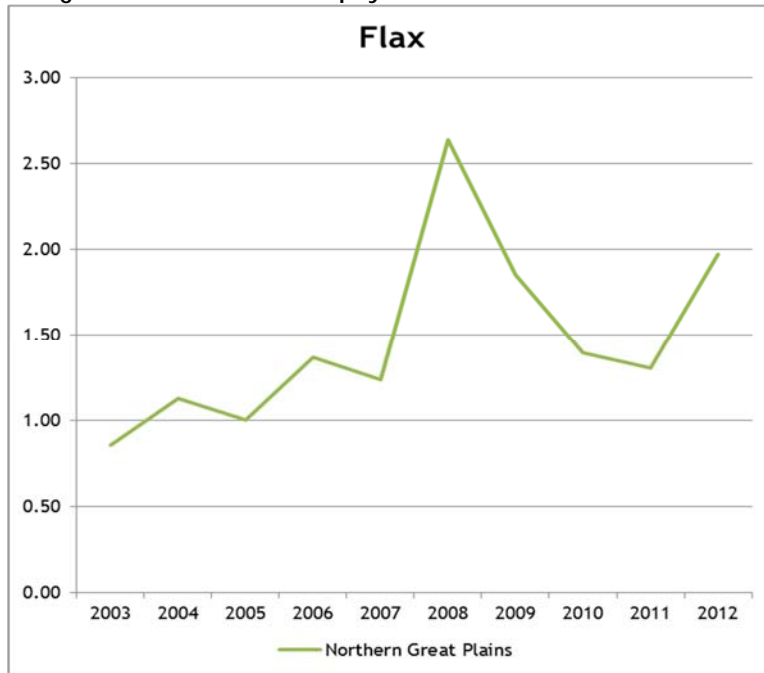




**Comparison of RMA payments to estimated PP costs**

The ratio of RMA's incurred base PP payment to estimated PP costs was close to 1.00 from 2003 through 2005, but has since risen and was closer to 2.00 in 2012. Since 49% of PP indemnities are associated with the additional 10% coverage, this ratio would be higher by about 8% if that were taken into account ( $10\%/60\% \times 0.49 = 0.082$ ).

**Figure 77: Ratio of RMA payment to PP costs for flaxseed**



**Recommendation**

We recommend reducing the PP payment rate for flax from 60% of guarantee to 45%, which cuts the indemnity by 25%. This would put it closer to but still well above actual RMA payment levels.

Table 186: Flaxseed production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	5.56	5.70	8.87	5.70	5.07	10.45	8.87	7.92	11.08	11.40
Herbicides	14.71	14.71	14.71	16.83	18.71	20.06	24.50	23.50	24.00	24.50
Fertilizer	7.86	8.87	11.61	10.96	11.91	18.79	20.08	15.23	24.02	29.70
Crop Insurance	5.91	6.00	4.43	5.57	4.76	6.47	8.63	6.37	6.97	10.00
Fuel & Lubrication	5.25	6.19	8.09	9.49	9.83	12.42	8.78	10.28	12.69	14.33
Repairs	9.98	10.28	9.53	9.38	9.70	10.40	11.85	13.29	14.15	14.73
Miscellaneous	0.96	1.00	1.00	1.00	3.67	4.50	1.50	1.50	1.50	1.50
Operating Interest	1.53	1.58	1.89	2.28	2.63	3.12	2.32	2.05	2.36	2.44
<b>Total, operating costs</b>	<b>51.75</b>	<b>54.33</b>	<b>60.14</b>	<b>61.21</b>	<b>66.26</b>	<b>86.21</b>	<b>86.53</b>	<b>80.13</b>	<b>96.77</b>	<b>108.60</b>
Allocated overhead:										
Returns to labor & management	9.61	9.79	10.10	10.47	10.83	11.20	11.51	11.57	11.75	12.18
Misc. Overhead	3.38	3.53	3.32	3.23	3.28	3.30	4.61	4.80	5.96	6.10
Machinery Depreciation	11.67	12.52	11.98	11.82	11.89	12.32	13.94	14.90	15.78	16.48
Machinery Investment	7.34	7.87	7.22	6.92	7.05	7.16	8.18	8.82	9.34	9.74
Land Charge	26.17	27.24	27.83	28.67	28.83	30.67	33.00	33.47	34.67	38.17
<b>Total, allocated overhead</b>	<b>58.16</b>	<b>60.96</b>	<b>60.45</b>	<b>61.10</b>	<b>61.88</b>	<b>64.65</b>	<b>71.24</b>	<b>73.55</b>	<b>77.49</b>	<b>82.67</b>
<b>Total costs listed</b>	<b>109.92</b>	<b>115.29</b>	<b>120.59</b>	<b>122.32</b>	<b>128.15</b>	<b>150.86</b>	<b>157.77</b>	<b>153.68</b>	<b>174.26</b>	<b>191.27</b>

Source for budget(s): North Dakota State University - Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values based on price indices

Data reflects the average of budgets for North Dakota's Northwest, North-Central, and Southwest regions (the key flax growing areas)

North Dakota accounts for 84% of national production

Returns to labor (& management & risk) averaged for 2003-2012, used for 2008, then adjusted forward & back using labor index

Table 187: Flaxseed - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
Fuel & Lubrication	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Repairs	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Miscellaneous	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Returns to labor & management	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 188: Flaxseed prevented planting cost per acre: North Dakota

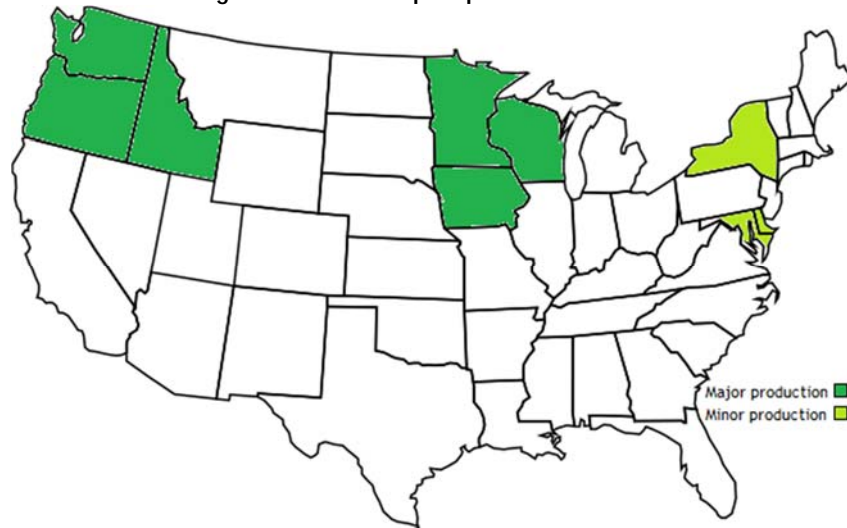
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	3.68	3.68	3.68	4.21	4.68	5.02	6.13	5.88	6.00	6.13
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	2.30	2.34	1.73	2.17	1.86	2.52	3.37	2.48	2.72	3.90
Fuel & Lubrication	0.52	0.62	0.81	0.95	0.98	1.24	0.88	1.03	1.27	1.43
Repairs	1.00	1.03	0.95	0.94	0.97	1.04	1.19	1.33	1.41	1.47
Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operating Interest	0.38	0.40	0.47	0.57	0.66	0.78	0.58	0.51	0.59	0.61
Total, operating costs	7.89	8.06	7.64	8.84	9.14	10.60	12.13	11.23	11.99	13.54
Allocated overhead:										
Returns to labor & management	1.92	1.96	2.02	2.09	2.17	2.24	2.30	2.31	2.35	2.44
Misc. Overhead	3.38	3.53	3.32	3.23	3.28	3.30	4.61	4.80	5.96	6.10
Machinery Depreciation	11.67	12.52	11.98	11.82	11.89	12.32	13.94	14.90	15.78	16.48
Machinery Investment	7.34	7.87	7.22	6.92	7.05	7.16	8.18	8.82	9.34	9.74
Land Charge	26.17	27.24	27.83	28.67	28.83	30.67	33.00	33.47	34.67	38.17
Total, allocated overhead	50.48	53.12	52.37	52.73	53.22	55.69	62.04	64.30	68.09	72.92
Total costs listed	58.36	61.18	60.01	61.57	62.36	66.29	74.17	75.52	80.08	86.46
Total costs	110.41	115.29	120.59	122.32	128.15	150.86	157.77	153.68	174.26	191.27
Prevented planting %	53%	53%	50%	50%	49%	44%	47%	49%	46%	45%

## 6.6. Green peas

### Overview

Green peas, also known as succulent peas, are closely related to field/dry peas. They differ from dry peas under RMA insurance specifications but are closely related and have similar production inputs, disease susceptibilities, and environmental requirements. Green peas are grown primarily in Washington, Oregon, Minnesota, Wisconsin, Iowa, New York, Maryland, and Delaware.

Figure 78: Green pea production areas



Sources: Agralytica, University of Nebraska, Small Grains.org, Montana State University, North Dakota State University

### Sources of production cost information

The primary source of production cost information comes from the University of Minnesota's FINBIN system, which collects cost data from groups of farms. Other states with green pea budgets include North Dakota (NDSU Extension) and Nebraska (UN-Lincoln Extension).

For this budget review we worked with the FINBIN budgets and the NDSU budgets. FINBIN provided production data for all years (2003-2012). NDSU provided yearly budgets for 2004-2012 for seven of the state's nine growing regions; these were averaged and 2003 figures estimated using price indexes.

### Production practices

The pea is a hardy, cool season, legume that is cultivated throughout the world. Peas are a rich source of proteins, amino acids, and vitamins. Peas can be grown on a wide range of soil types, from light sandy loams to heavy clays, but in any soil, there must be good drainage as field peas do not tolerate soggy or water-soaked conditions. If the soil is over-saturated with water or moisture producers will likely file a prevented planting claim. Peas need a weed free seedbed and they grow best when planted into a seedbed with a minimum amount of residue on the soil surface.

As a cool season crop, pea cannot tolerate hot weather or drought stress during flowering, thus seeding early is important. Drought conditions are also likely to cause producers not to plant pea crops. Seeding should be as early in the spring as feasible provided soil temperature in the upper inch is over 40°F. In Minnesota and Wisconsin, this ranges from mid-March to mid-April.

Peas are vulnerable to seed blights and rots; therefore seeds should be pretreated with fungicides before planting. Phosphate is applied at seeding while potassium and sulfur are applied in bands beside the growing shoots. Although snap and lima beans are typically nitrogen-fixing crops, the nitrogen fixing ability is dependent on inoculating the seeds with a bacterial strain. Commercial producers do not inoculate their seed, instead relying on chemical nitrogen fertilization at the time of planting.

### Prevented planting experience

Total crop insurance indemnities for green peas from 2003 to 2012 totaled more than \$46.4 million. Prevented planting indemnities were \$865,000, less than 2% of the total. Moreover, PP 10% buy-up accounts for only 5% of green pea PP indemnities.

Most prevented planting claims came from Wisconsin (\$340,000, 39%) and Minnesota (\$297,000, 34%). Almost all prevented planting claims (98%) were due to excess moisture/precipitation/rain.

### Analysis

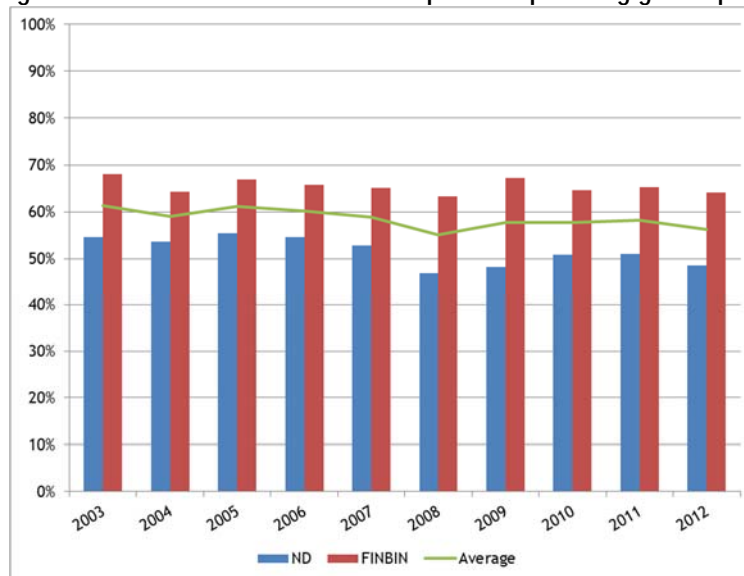
The percentage used by RMA for prevented planting for green peas is 40%.

Analysis of the North Dakota budgets indicates that the percentage of pre-planting costs decreased from 55% in 2003 to 49% in 2012.

FINBIN data for Minnesota suggest considerably higher pre-planting percentages, declining from 68% in 2003 to 64% in 2012. For the FINBIN budgets, land alone represented over 40% of total production costs.

Averaging these two budgets, the pre-planting cost percentage declined from 61% in 2003 to 56% in 2012. Given this crop budget analysis, a more appropriate PP rate would be 60%.

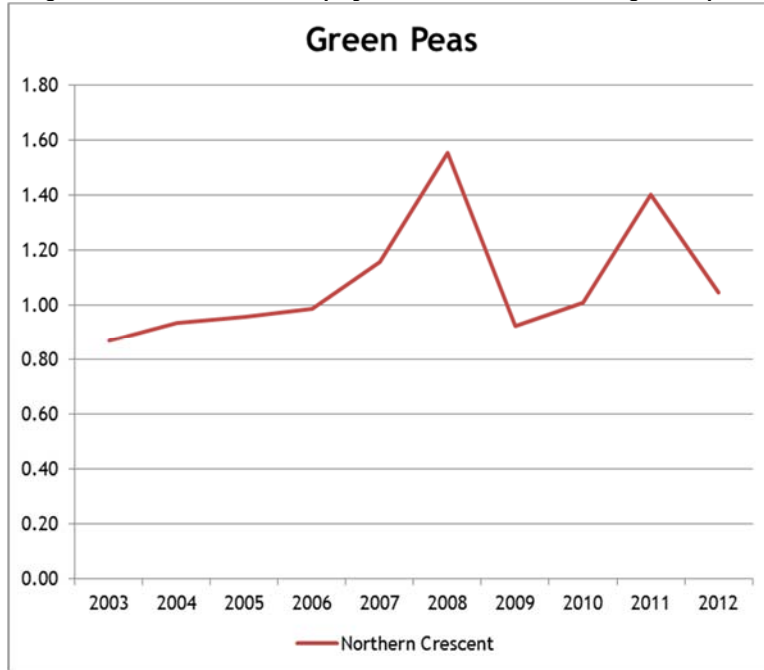
Figure 79: Share of costs incurred prior to planting green peas



### Comparison of estimated PP cost to RMA payments

The ratio of RMA's incurred base PP payment to estimated PP costs in the Northern Crescent has been close to 1.00. This would seem to argue that the payment factor is not that far out of line.

Figure 80: Ratio of RMA payment to PP costs for green peas



### Recommendation

Although the ratio of RMA's base PP payment to estimated PP costs may appear appropriate, green pea farmers are neither making PP claims nor going for buy-up policies in any meaningful way.

It appears, rather, that the 40% payment factor is too low to adequately compensate farmers in a PP situation.

RMA should increase the PP payment rate, by 25%, to a new rate of 50%, to better match estimated costs and thus more adequately compensate farmers unable to plant in PP situations.

Table 189: Green peas production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	16.22	17.25	17.25	17.25	19.20	31.50	33.00	31.50	31.50	40.50
Herbicides	14.40	14.64	14.64	16.00	18.00	19.89	23.54	24.86	25.36	29.00
Fertilizer	3.84	4.50	4.43	4.96	4.89	8.11	12.34	6.00	10.71	11.88
Crop Insurance	5.92	6.20	6.07	5.93	6.16	7.40	12.43	8.04	6.74	10.96
Fuel & Lubrication	4.77	6.24	8.50	11.13	12.26	15.02	10.88	12.60	15.60	17.61
Repairs	10.29	10.73	10.29	10.69	11.19	11.79	13.62	15.02	15.95	16.61
Miscellaneous	1.93	2.00	2.00	2.00	3.33	5.64	5.54	6.29	7.14	8.14
Operating Interest	1.62	1.85	2.06	2.64	3.10	3.73	3.06	2.74	2.86	3.13
<b>Total, operating costs</b>	<b>58.99</b>	<b>63.41</b>	<b>65.24</b>	<b>70.60</b>	<b>78.13</b>	<b>103.08</b>	<b>114.41</b>	<b>107.05</b>	<b>115.86</b>	<b>137.83</b>
Allocated overhead:										
Misc. Overhead	3.62	3.75	3.53	3.63	3.63	3.68	5.05	5.26	6.42	6.57
Machinery Depreciation	12.65	13.51	13.18	13.69	13.98	14.53	16.55	17.51	18.46	19.25
Machinery Investment	7.63	8.15	7.57	7.84	7.87	8.04	9.24	9.90	10.40	10.84
Land Charge	26.63	26.35	33.38	33.67	33.83	34.36	42.06	43.33	45.64	50.99
<b>Total, allocated overhead</b>	<b>50.53</b>	<b>51.76</b>	<b>57.66</b>	<b>58.83</b>	<b>59.31</b>	<b>60.61</b>	<b>72.90</b>	<b>76.00</b>	<b>80.92</b>	<b>87.65</b>
<b>Total costs listed</b>	<b>109.52</b>	<b>115.17</b>	<b>122.90</b>	<b>129.43</b>	<b>137.44</b>	<b>163.69</b>	<b>187.31</b>	<b>183.05</b>	<b>196.78</b>	<b>225.48</b>

Source for budget: NDSU-Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values based on price indices

Data reflects the average of budgets for North Dakota's seven green pea-growing regions



Table 190: Green peas production costs per planted acre: Minnesota and Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Direct Expenses										
Seed	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.99
Fertilizer	15.10	15.11	14.98	15.87	14.32	26.72	40.85	26.17	32.22	39.82
Crop chemicals	13.10	14.91	14.92	12.60	15.30	15.86	17.50	17.76	18.01	18.57
Crop insurance	5.34	5.94	4.42	5.26	5.31	6.69	5.49	4.92	6.99	9.59
Fuel & oil	5.42	6.66	7.81	8.49	9.89	13.54	8.68	12.29	13.78	15.46
Repairs	10.51	10.53	11.10	10.08	13.86	15.02	20.94	17.32	18.85	21.44
Custom hire	1.85	1.99	1.96	1.65	3.36	4.99	4.01	5.47	5.14	7.90
Hired labor	0.02	0.07	0.00	0.00	0.44	2.98	2.65	3.23	1.75	1.35
Land rent	83.62	67.10	79.46	76.24	83.57	95.00	141.95	104.34	113.77	139.81
Machinery leases	0.46	0.23	0.04	0.33	0.30	0.06	0.39	1.54	0.61	1.76
Utilities	0.02	0.00	0.04	0.00	0.03	0.49	0.93	0.55	0.65	0.25
Marketing	1.08	0.34	0.08	0.32	0.06	0.28	0.47	0.37	0.06	1.84
Operating interest	3.27	3.21	3.12	4.58	4.08	4.42	4.79	4.58	2.61	4.62
Miscellaneous	0.51	0.39	0.78	1.05	1.38	1.95	1.05	4.72	1.23	2.69
<b>Total direct expenses</b>	<b>140.39</b>	<b>126.48</b>	<b>138.71</b>	<b>136.47</b>	<b>151.90</b>	<b>188.00</b>	<b>249.70</b>	<b>203.26</b>	<b>215.67</b>	<b>274.09</b>
Overhead Expenses										
Custom hire	0.64	0.92	0.68	0.72	0.70	0.28	0.00	0.24	0.00	0.31
Hired labor	3.95	3.63	3.64	3.47	4.62	4.48	14.47	5.29	6.50	6.19
Machinery leases	1.29	3.26	1.55	1.17	1.35	0.48	0.92	0.65	0.50	1.37
Building leases	0.00	0.00	0.07	0.12	0.26	0.46	0.70	0.30	0.98	0.86
RE & pers. property taxes	2.75	4.49	4.01	5.70	6.02	6.74	4.47	9.14	9.82	7.96
Farm insurance	2.64	3.67	2.61	2.67	2.32	2.77	3.70	2.78	3.35	4.44
Utilities	1.74	1.48	1.62	1.49	1.47	1.71	1.82	2.15	2.12	2.15
Dues & professional fees	0.61	0.51	1.13	1.05	0.74	0.97	1.46	1.24	1.44	1.25
Interest	11.95	14.80	13.15	15.22	18.54	15.90	11.40	19.53	17.57	16.62
Mach & bldg depreciation	11.29	10.51	10.93	10.45	12.39	14.72	16.99	17.73	16.72	22.90
Miscellaneous	2.70	1.90	2.05	1.75	3.15	3.05	6.44	4.14	4.59	4.29
<b>Total overhead expenses</b>	<b>39.56</b>	<b>45.17</b>	<b>41.44</b>	<b>43.81</b>	<b>51.56</b>	<b>51.56</b>	<b>62.37</b>	<b>63.19</b>	<b>63.59</b>	<b>68.34</b>
<b>Total expenses</b>	<b>179.97</b>	<b>171.66</b>	<b>180.16</b>	<b>180.28</b>	<b>203.47</b>	<b>239.60</b>	<b>312.07</b>	<b>266.47</b>	<b>279.23</b>	<b>342.44</b>

Source for budget: FINBIN (University of Minnesota)

<http://www.finbin.umn.edu/CropEnterpriseAnalysis/Default.aspx?new=1>

Table 191: Green peas - share of expenses incurred before planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fertilizer	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop Insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Fuel & Lubrication	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 192: Green peas - share of expenses incurred before planting: Minnesota and Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Direct Expenses</b>										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop chemicals	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Fuel & oil	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Custom hire	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hired labor	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Land rent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery leases	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Utilities	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Marketing	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operating interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
<b>Overhead Expenses</b>										
Custom hire	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hired labor	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Machinery leases	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Building leases	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
RE & pers. property taxes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Farm insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Utilities	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Dues & professional fees	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Mach & bldg depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 193: Green peas prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	3.60	3.66	3.66	4.00	4.50	4.97	5.89	6.22	6.34	7.25
Fertilizer	0.96	1.13	1.11	1.24	1.22	2.03	3.09	1.50	2.68	2.97
Crop Insurance	0.12	0.12	0.12	0.12	0.12	0.15	0.25	0.16	0.13	0.22
Fuel & Lubrication	1.19	1.56	2.13	2.78	3.07	3.76	2.72	3.15	3.90	4.40
Repairs	2.57	2.68	2.57	2.67	2.80	2.95	3.41	3.76	3.99	4.15
Miscellaneous	0.48	0.50	0.50	0.50	0.83	1.41	1.39	1.57	1.79	2.04
Operating Interest	0.40	0.46	0.52	0.66	0.78	0.93	0.77	0.69	0.72	0.78
Total, operating costs	9.33	10.11	10.60	11.97	13.32	16.19	17.49	17.04	19.54	21.81
Allocated overhead:										
Misc. Overhead	3.62	3.75	3.53	3.63	3.63	3.68	5.05	5.26	6.42	6.57
Machinery Depreciation	12.65	13.51	13.18	13.69	13.98	14.53	16.55	17.51	18.46	19.25
Machinery Investment	7.63	8.15	7.57	7.84	7.87	8.04	9.24	9.90	10.40	10.84
Land Charge	26.63	26.35	33.38	33.67	33.83	34.36	42.06	43.33	45.64	50.99
Total, allocated overhead	50.53	51.76	57.66	58.83	59.31	60.61	72.90	76.00	80.92	87.65
Total costs listed	59.86	61.87	68.26	70.80	72.63	76.80	90.39	93.04	100.46	109.46
Total costs	109.52	115.17	122.90	129.43	137.44	163.69	187.31	183.05	196.78	225.48
Prevented planting %	55%	54%	56%	55%	53%	47%	48%	51%	51%	49%

Table 194: Green peas prevented planting cost per acre: Minnesota and Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Direct Expenses</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	3.78	3.78	3.75	3.97	3.58	6.68	10.21	6.54	8.06	9.96
Crop chemicals	3.28	3.73	3.73	3.15	3.83	3.97	4.38	4.44	4.50	4.64
Crop insurance	0.11	0.12	0.09	0.11	0.11	0.13	0.11	0.10	0.14	0.19
Fuel & oil	1.36	1.67	1.95	2.12	2.47	3.39	2.17	3.07	3.45	3.87
Repairs	2.63	2.63	2.78	2.52	3.47	3.76	5.24	4.33	4.71	5.36
Custom hire	0.46	0.50	0.49	0.41	0.84	1.25	1.00	1.37	1.29	1.98
Hired labor	0.01	0.02	0.00	0.00	0.13	0.89	0.80	0.97	0.53	0.41
Land rent	83.62	67.10	79.46	76.24	83.57	95.00	141.95	104.34	113.77	139.81
Machinery leases	0.46	0.23	0.04	0.33	0.30	0.06	0.39	1.54	0.61	1.76
Utilities	0.01	0.00	0.01	0.00	0.01	0.12	0.23	0.14	0.16	0.06
Marketing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operating interest	0.82	0.80	0.78	1.15	1.02	1.11	1.20	1.15	0.65	1.16
Miscellaneous	0.13	0.10	0.20	0.26	0.35	0.49	0.26	1.18	0.31	0.67
<b>Total direct expenses</b>	<b>96.64</b>	<b>80.67</b>	<b>93.27</b>	<b>90.26</b>	<b>99.66</b>	<b>116.84</b>	<b>167.93</b>	<b>129.16</b>	<b>138.17</b>	<b>169.85</b>
<b>Overhead Expenses</b>										
Custom hire	0.16	0.23	0.17	0.18	0.18	0.07	0.00	0.06	0.00	0.08
Hired labor	1.19	1.09	1.09	1.04	1.39	1.34	4.34	1.59	1.95	1.86
Machinery leases	1.29	3.26	1.55	1.17	1.35	0.48	0.92	0.65	0.50	1.37
Building leases	0.00	0.00	0.07	0.12	0.26	0.46	0.70	0.30	0.98	0.86
RE & pers. property taxes	2.75	4.49	4.01	5.70	6.02	6.74	4.47	9.14	9.82	7.96
Farm insurance	2.64	3.67	2.61	2.67	2.32	2.77	3.70	2.78	3.35	4.44
Utilities	0.44	0.37	0.41	0.37	0.37	0.43	0.46	0.54	0.53	0.54
Dues & professional fees	0.61	0.51	1.13	1.05	0.74	0.97	1.46	1.24	1.44	1.25
Interest	2.99	3.70	3.29	3.81	4.64	3.98	2.85	4.88	4.39	4.16
Mach & bldg depreciation	11.29	10.51	10.93	10.45	12.39	14.72	16.99	17.73	16.72	22.90
Miscellaneous	2.70	1.90	2.05	1.75	3.15	3.05	6.44	4.14	4.59	4.29
<b>Total overhead expenses</b>	<b>26.05</b>	<b>29.73</b>	<b>27.30</b>	<b>28.31</b>	<b>32.79</b>	<b>35.01</b>	<b>42.33</b>	<b>43.05</b>	<b>44.27</b>	<b>49.70</b>
<b>Total Costs Listed</b>	<b>122.69</b>	<b>110.40</b>	<b>120.57</b>	<b>118.56</b>	<b>132.46</b>	<b>151.84</b>	<b>210.26</b>	<b>172.21</b>	<b>182.44</b>	<b>219.55</b>
<b>Total costs</b>	<b>179.97</b>	<b>171.66</b>	<b>180.16</b>	<b>180.28</b>	<b>203.47</b>	<b>239.60</b>	<b>312.07</b>	<b>266.47</b>	<b>279.23</b>	<b>342.44</b>
<b>Prevented planting %</b>	<b>68%</b>	<b>64%</b>	<b>67%</b>		<b>65%</b>	<b>63%</b>		<b>65%</b>	<b>65%</b>	

66%

67%

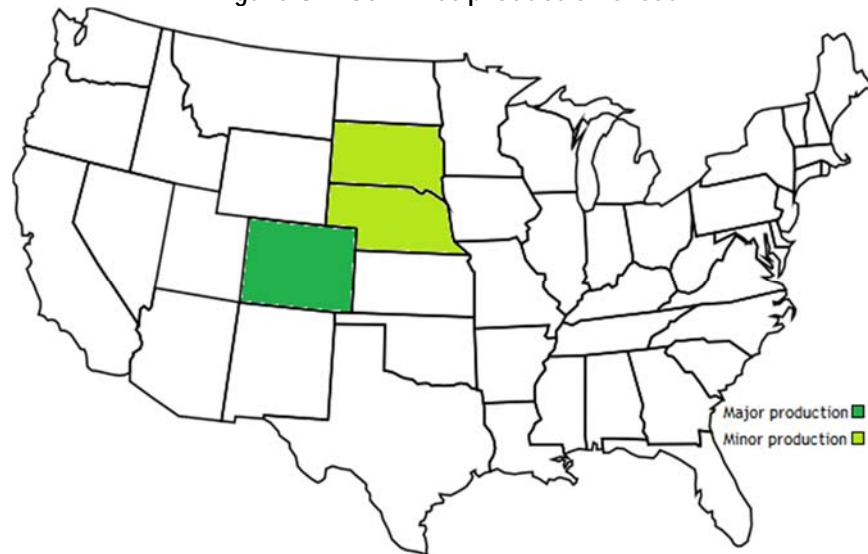
64%

## 6.7. Millet

### Overview

Proso (common) millet is produced primarily in Colorado (55%), with lesser amounts in Nebraska (21%) and South Dakota (19%). Several other states produce the remainder (5%). Total production in 2011 was an estimated 9.1 million bushels worth \$53.7 million.

Figure 81: US millet production areas



### Sources of production cost information

The primary source of production cost information comes from Colorado State University (CSU), which has published proso millet budgets for each of the years 2010-2012. The University of Nebraska-Lincoln (UNL) Extension has also published recent budgets. The USDA has no information available on millet production costs.

We used the CSU budgets as a proxy for all millet production, given that Colorado produces more than half of the country's millet. We used crop budget data for 2010-2012 and used price indices to come up with budget figures for the years 2003-2009. We also checked recent UNL budgets and obtained copies of budgets from a decade ago for comparison purposes.

### Production practices

Proso millet is grown for birdseed and to a lesser extent, as forage for animal feed. It is typically rotated with other crops, often with winter annuals such as wheat, or warm season broadleaf crops such as sunflower. Proso is seen as an alternative to summer fallow. It is an excellent dry land and no-till crop. Millet can be grown in just 60-100 days, has limited water requirements, and can yield well with inconsistent water availability.

Millet is typically planted in late May / early June and harvested in late August or early September.

Millet is mostly produced under no-till practice. Glyphosate is typically used following a fall crop and/or before seeding millet in the spring.

Fertilizer and other products, however, are generally used only post-planting. Millet generally is a low-maintenance crop, especially under no-till, which has become more common.

### Prevented planting experience

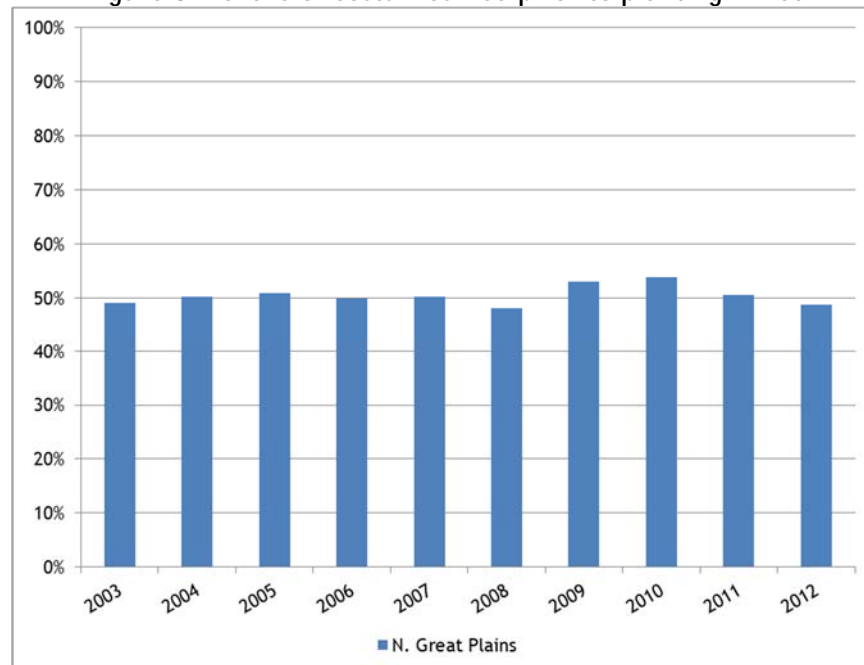
Prevented planting claims have only been 5% of total indemnities from 1993-2012, and only 3% of PP indemnities were associated with the additional 10% coverage. Over the 10 year period 2003-2012, total indemnities for millet were \$52.8 million, \$3.2 million of which (6%) were prevented planting. Prevented planting for millet has occurred primarily in Colorado (53%), South Dakota (31%), and Nebraska (13%). Excess moisture is the main cause (\$2 million), though drought is a reason also (\$1.2 million), particularly in Colorado.

### Analysis

Based on analysis of the Colorado budget, pre-planting costs for millet were an estimated 49% in 2003 (\$61 of \$124 per acre); in 2012, the pre-planting share of costs remained at 49% (\$99 out of \$203).

A separate review of the University of Nebraska-Lincoln Extension budget for 2012 for millet suggested pre-planting costs of 52%.

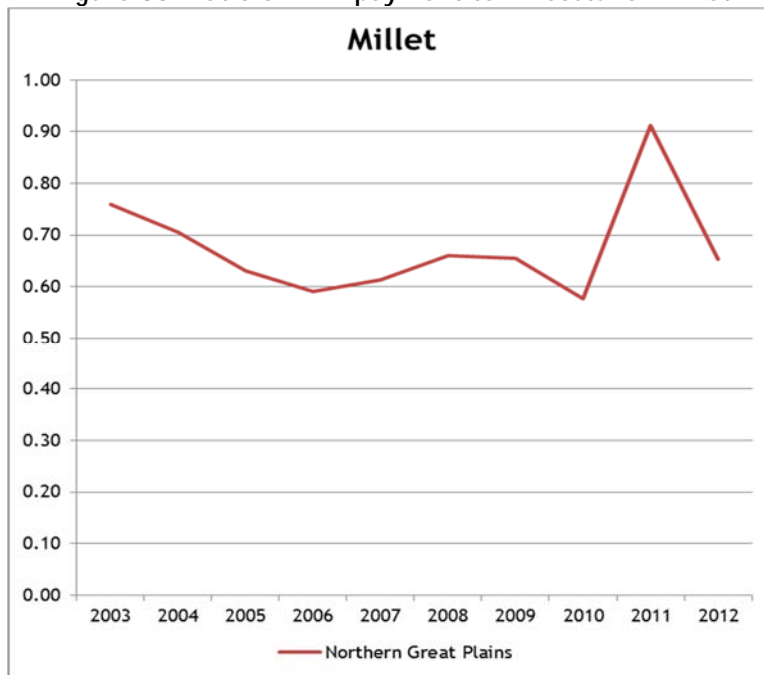
Figure 82: Share of costs incurred prior to planting millet



### Comparison of estimated PP cost to RMA payments

The ratio of RMA's incurred base PP payment to estimated PP costs has been well below 1.00, averaging about 0.75 in recent years.

Figure 83: Ratio of RMA payment to PP costs for millet



### Recommendation

The production cost information points to a PP factor of 50%, but the payment ratio suggests that the PP base payment rate is not high enough. However, there may be logical reasons for the discrepancy.

RMA's PP payments appear to be going to less productive land: its payments of \$65/acre imply production costs of \$108/acre. Our total production cost estimate, by contrast, exceeds \$200 per acre (Colorado); and the University of Nebraska-Lincoln identifies budget costs in excess of \$300/acre.

For well managed millet production, we stick with recommending that the PP payment rate be reduced to 50%, reducing indemnity payments by 16.7%. This would bring payments more in line with estimated PP costs.



Table 195: Millet production costs per planted acre: Colorado

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	1.62	1.66	1.77	1.91	2.15	2.72	3.14	3.26	3.86	4.13
Fertilizer	8.32	9.39	11.00	11.81	14.49	26.30	18.45	16.91	22.57	30.34
Herbicide	10.03	10.03	10.20	10.61	10.70	11.53	12.35	11.94	11.76	12.30
Custom operations	5.17	4.97	5.01	5.09	5.17	5.96	6.00	6.00	7.00	7.00
Crop insurance	5.15	5.23	5.48	5.72	6.01	6.01	6.42	6.63	7.06	11.00
Fuel	3.24	3.82	5.00	5.53	6.11	7.96	5.30	6.57	8.93	9.33
Repairs & maintenance	3.83	3.94	4.11	4.19	4.33	4.39	4.48	4.56	4.79	4.90
Labor	1.95	1.99	2.05	2.13	2.20	2.28	2.34	2.35	2.38	2.48
Harvest costs	24.66	23.67	23.87	24.26	24.66	28.40	28.60	28.60	31.86	30.39
Interest on operating capital	1.44	1.49	1.70	2.04	2.18	2.29	2.10	2.04	2.39	2.85
<b>Total, operating costs</b>	<b>65.41</b>	<b>66.19</b>	<b>70.18</b>	<b>73.30</b>	<b>78.00</b>	<b>97.84</b>	<b>89.19</b>	<b>88.86</b>	<b>102.60</b>	<b>114.72</b>
Allocated overhead:										
Capital recovery of machinery & equip	26.50	28.43	30.36	31.94	33.52	36.67	38.96	40.36	40.76	43.44
Opportunity cost of land (rental rate)	19.36	20.15	20.94	21.86	23.44	27.00	31.08	32.00	32.00	32.50
Real estate taxes	1.37	1.43	1.53	1.62	1.74	2.02	1.97	2.03	2.29	2.39
General farm overhead	6.75	7.06	7.53	7.99	8.56	9.95	9.69	10.00	10.00	10.00
<b>Total, allocated overhead</b>	<b>53.98</b>	<b>57.07</b>	<b>60.35</b>	<b>63.41</b>	<b>67.25</b>	<b>75.64</b>	<b>81.69</b>	<b>84.39</b>	<b>85.05</b>	<b>88.33</b>
<b>Total costs listed</b>	<b>119.39</b>	<b>123.26</b>	<b>130.53</b>	<b>136.71</b>	<b>145.25</b>	<b>173.48</b>	<b>170.88</b>	<b>173.25</b>	<b>187.65</b>	<b>203.05</b>

Source for budget: CSU Extension

<http://www.coopext.colostate.edu/ABM/cropbudgets.htm>

Notes:

Based on 2010-2012 millet budgets from CSU; 2003-2009 values derived from 2010 data using price indices

Colorado accounts for 68% of national production

Table 196: Millet - share of expenses incurred before planting: Colorado

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicide	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Custom operations	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Fuel	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs & maintenance	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Harvest costs	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Real estate taxes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 197: Millet prevented planting cost per acre: Colorado

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicide	3.31	3.31	3.37	3.50	3.53	3.80	4.08	3.94	3.88	4.06
Custom operations	1.29	1.24	1.25	1.27	1.29	1.49	1.50	1.50	1.75	1.75
Crop insurance	0.26	0.26	0.27	0.29	0.30	0.30	0.32	0.33	0.35	0.55
Fuel	0.81	0.95	1.25	1.38	1.53	1.99	1.32	1.64	2.23	2.33
Repairs & maintenance	0.38	0.39	0.41	0.42	0.43	0.44	0.45	0.46	0.48	0.49
Labor	0.49	0.50	0.51	0.53	0.55	0.57	0.58	0.59	0.60	0.62
Harvest costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating capital	0.36	0.37	0.43	0.51	0.54	0.57	0.53	0.51	0.60	0.71
<b>Total, operating costs</b>	<b>6.90</b>	<b>7.03</b>	<b>7.49</b>	<b>7.90</b>	<b>8.18</b>	<b>9.16</b>	<b>8.78</b>	<b>8.97</b>	<b>9.89</b>	<b>10.51</b>
Allocated overhead:										
Capital recovery of machinery & equip	26.50	28.43	30.36	31.94	33.52	36.67	38.96	40.36	40.76	43.44
Opportunity cost of land (rental rate)	19.36	20.15	20.94	21.86	23.44	27.00	31.08	32.00	32.00	32.50
Real estate taxes	1.37	1.43	1.53	1.62	1.74	2.02	1.97	2.03	2.29	2.39
General farm overhead	6.75	7.06	7.53	7.99	8.56	9.95	9.69	10.00	10.00	10.00
<b>Total, allocated overhead</b>	<b>53.98</b>	<b>57.07</b>	<b>60.35</b>	<b>63.41</b>	<b>67.25</b>	<b>75.64</b>	<b>81.69</b>	<b>84.39</b>	<b>85.05</b>	<b>88.33</b>
<b>Total costs listed</b>	<b>60.88</b>	<b>64.10</b>	<b>67.84</b>	<b>71.31</b>	<b>75.43</b>	<b>84.80</b>	<b>90.47</b>	<b>93.36</b>	<b>94.94</b>	<b>98.84</b>
<b>Total costs</b>	<b>124.20</b>	<b>127.51</b>	<b>133.56</b>	<b>142.93</b>	<b>150.17</b>	<b>176.13</b>	<b>170.73</b>	<b>173.25</b>	<b>187.65</b>	<b>203.05</b>
<b>Prevented planting %</b>	<b>49%</b>	<b>50%</b>	<b>51%</b>	<b>50%</b>	<b>50%</b>	<b>48%</b>	<b>53%</b>	<b>54%</b>	<b>51%</b>	<b>49%</b>

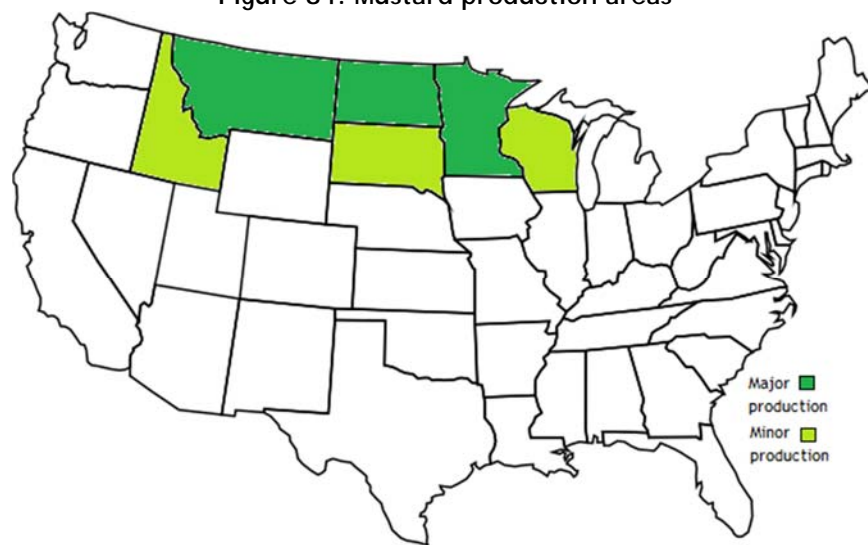
## 6.8. Mustard

### Overview

Mustard is primarily grown in North Dakota, Minnesota, and Montana. It is also grown in a few other northern states. The map below shows the key producing states, although the crop can be grown all across the north, from Washington to New York.

There has been a secular decline in mustard production, though acreage and output can vary considerably from year to year. In 2012, almost 50,000 acres were harvested, yielding just under 30 million pounds. (In recent years acreage has typically been under 50,000 acres, and production under 50 million pounds.) The crop is typically grown under contract. Mustard is popular in crop rotations because it enhances yields in wheat and barley and breaks disease cycles in most cereal crops.

Figure 84: Mustard production areas



### Sources of production cost information

Production cost information comes from the North Dakota State University Extension, which publishes budgets annually for mustard and other crops, for a number of regions within the state. The USDA has no information available on mustard production costs.

NDSU publishes separate budgets for each region within the state where a crop is grown. In the case of mustard, there were budgets for 7 regions. We averaged costs across all regions for each year for which a budget was available. This provided a “state-wide” mustard budget for 2004-2012. We then used price indices to develop an estimated budget for 2003.

### Production methods

Mustard can be grown on many soil types but yields best in fertile, well-drained, loamy soils. Like other Brassica varieties (e.g., canola), mustard needs a firm seedbed to produce the highest potential yields. Moreover, the crop does not compete well with weeds.

Consequently, fields are often tilled several times to keep them free and clear before planting.

In addition, in North Dakota, herbicide will typically be used in the fall or spring, prior to planting. Most fertilizer is applied at planting.

### Prevented planting history

Prevented planting claims have been 11% of total indemnities in the past 20 years. For the 10-year period 2003-2012, there were \$12.4 million in indemnities for mustard, \$1.4 million (11%) of which were for prevented planting. All prevented planting claims were due to excess moisture/rain.

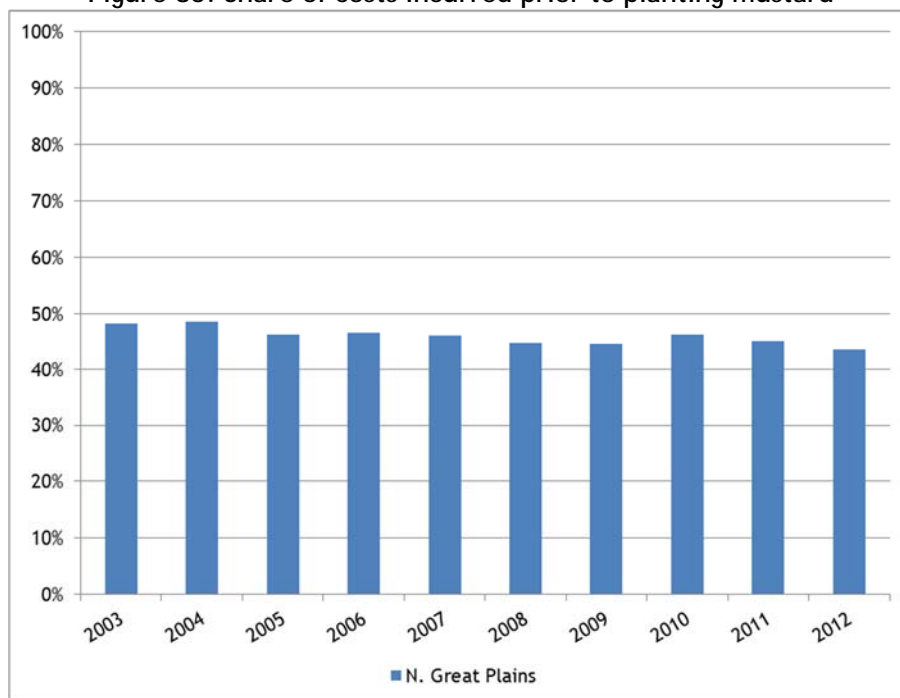
Claims came primarily from North Dakota (89%); Montana (11%) accounted for the rest.

### Analysis

We constructed mustard budgets using NDSU data. Prevented planting costs rose from \$70 per acre in 2003 to \$115 per acre in 2012. As a percentage of total per acre costs, however (\$146 in 2003 and \$264 in 2012), the share that represents prevented planting costs dropped, from 48% to 44%.

The decreased share of pre-planting costs is primarily due to the *relative* increase in the cost of fertilizer and decrease in the cost of land, as a percentage of total costs. Given this crop budget analysis, a more appropriate PP rate would be 45%.

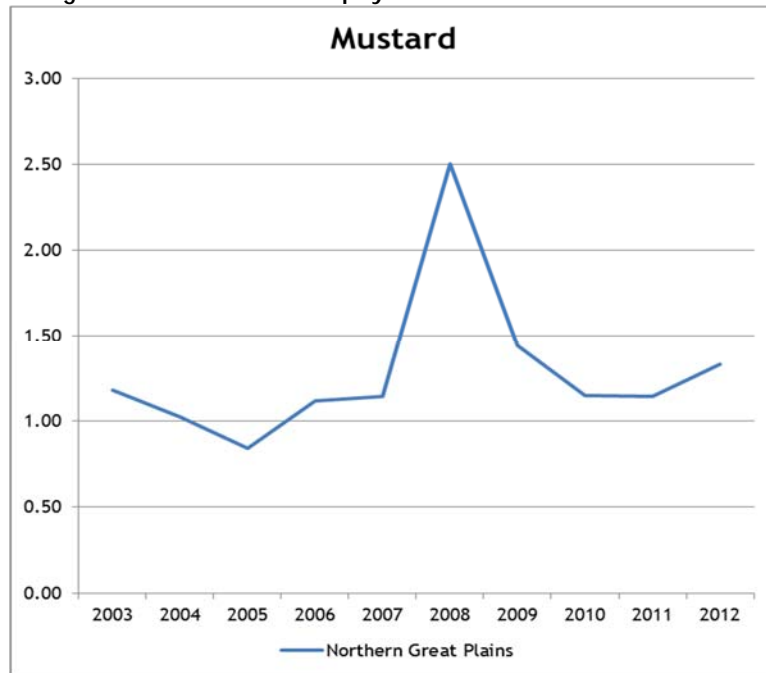
Figure 85: Share of costs incurred prior to planting mustard



**Comparison of estimated PP cost to RMA payments**

The ratio of RMA's incurred base PP payment to estimated PP costs was close to 1.00 from 2003 through 2007, but has since risen to 1.2-1.3. Since 34% of PP indemnities are associated with the additional 10% coverage, this ratio would be higher by about 6% if that were taken into account ( $10\%/60\% \times 0.34 = 0.057$ ).

**Figure 86: Ratio of RMA payment to PP costs for mustard**



**Recommendation**

We recommend that the PP factor be reduced from 60% to 45%.

Table 198: Mustard production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	9.06	9.63	9.91	7.43	7.82	10.69	13.77	11.11	13.43	18.13
Herbicides	5.85	5.95	7.41	6.33	9.51	10.21	14.50	13.57	14.07	14.83
Insecticides	0.00	0.00	1.00	1.71	2.00	2.57	3.43	3.43	3.43	3.00
Fertilizer	10.96	12.84	13.36	16.79	15.99	26.85	31.64	24.17	34.66	37.57
Crop insurance	0.00	0.00	3.41	1.30	1.50	1.91	3.76	4.07	7.06	10.00
Fuel, lube, and electricity	4.68	6.13	8.36	10.24	11.23	13.09	10.14	12.20	14.76	16.00
Repairs	8.96	9.34	9.28	9.34	9.75	10.63	12.56	14.06	14.92	15.39
Miscellaneous	0.94	1.00	1.43	1.00	1.64	2.14	3.43	3.43	3.64	4.00
Interest on operating capital	1.20	1.37	1.81	2.12	2.41	2.79	2.55	2.24	2.62	2.74
<b>Total, operating costs</b>	<b>41.65</b>	<b>46.26</b>	<b>55.97</b>	<b>56.26</b>	<b>61.85</b>	<b>80.88</b>	<b>95.78</b>	<b>88.28</b>	<b>108.59</b>	<b>121.66</b>
Allocated overhead:										
Returns to labor & mgmt	50.82	52.41	54.31	56.22	58.12	59.71	61.34	61.67	62.65	64.93
Misc. Overhead	3.02	3.22	3.18	3.18	3.27	3.55	4.81	5.18	6.20	6.32
Machinery Depreciation	10.66	11.38	11.39	11.58	12.07	12.91	14.87	16.09	16.95	17.55
Machinery Investment	6.49	6.93	6.79	6.84	7.10	7.55	8.90	9.64	10.17	10.55
Land Charge	31.82	33.07	33.20	33.41	34.86	37.19	39.80	41.26	43.39	43.32
<b>Total, allocated overhead</b>	<b>102.81</b>	<b>107.01</b>	<b>108.87</b>	<b>111.23</b>	<b>115.42</b>	<b>120.91</b>	<b>129.72</b>	<b>133.84</b>	<b>139.36</b>	<b>142.67</b>
<b>Total costs listed</b>	<b>144.45</b>	<b>153.27</b>	<b>164.84</b>	<b>167.49</b>	<b>177.27</b>	<b>201.79</b>	<b>225.50</b>	<b>222.12</b>	<b>247.95</b>	<b>264.33</b>

Source for budget(s): NDSU

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values derived from 2004 data using price indices

Data reflects avge of budgets for 7 all ND regions w/mustard budgets

Returns to labor & management: avge for 2004-2012, used f/2008, then adjusted fwd & back using labor index

Table 199: Mustard - share of expenses incurred before planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Insecticides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Crop insurance	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Fuel, lube, and electricity	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Repairs	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Miscellaneous	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Returns to labor & mgmt	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table 200: Mustard prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	1.76	1.79	2.22	1.90	2.85	3.06	4.35	4.07	4.22	4.45
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	3.29	3.85	4.01	5.04	4.80	8.06	9.49	7.25	10.40	11.27
Crop insurance	0.00	0.00	0.38	0.14	0.17	0.21	0.41	0.45	0.78	1.10
Fuel, lube, and electricity	0.94	1.23	1.67	2.05	2.25	2.62	2.03	2.44	2.95	3.20
Repairs	1.79	1.87	1.86	1.87	1.95	2.13	2.51	2.81	2.98	3.08
Miscellaneous	0.19	0.20	0.29	0.20	0.33	0.43	0.69	0.69	0.73	0.80
Interest on operating capital	0.30	0.34	0.45	0.53	0.60	0.70	0.64	0.56	0.66	0.69
Total, operating costs	8.26	9.27	10.87	11.73	12.94	17.20	20.12	18.27	22.71	24.58
Allocated overhead:										
Returns to labor & mgmt	10.16	10.48	10.86	11.24	11.62	11.94	12.27	12.33	12.53	12.99
Misc. Overhead	3.02	3.22	3.18	3.18	3.27	3.55	4.81	5.18	6.20	6.32
Machinery Depreciation	10.66	11.38	11.39	11.58	12.07	12.91	14.87	16.09	16.95	17.55
Machinery Investment	6.49	6.93	6.79	6.84	7.10	7.55	8.90	9.64	10.17	10.55
Land Charge	31.82	33.07	33.20	33.41	34.86	37.19	39.80	41.26	43.39	43.32
Total, allocated overhead	62.15	65.08	65.42	66.25	68.92	73.14	80.65	84.50	89.24	90.73
Total costs listed	70.41	74.35	76.29	77.98	81.87	90.34	100.77	102.77	111.95	115.31
Total costs	146.17	153.27	164.84	167.49	177.27	201.79	225.50	222.12	247.95	264.33
Prevented planting %	48%	49%	46%	47%	46%	45%	45%	46%	45%	44%

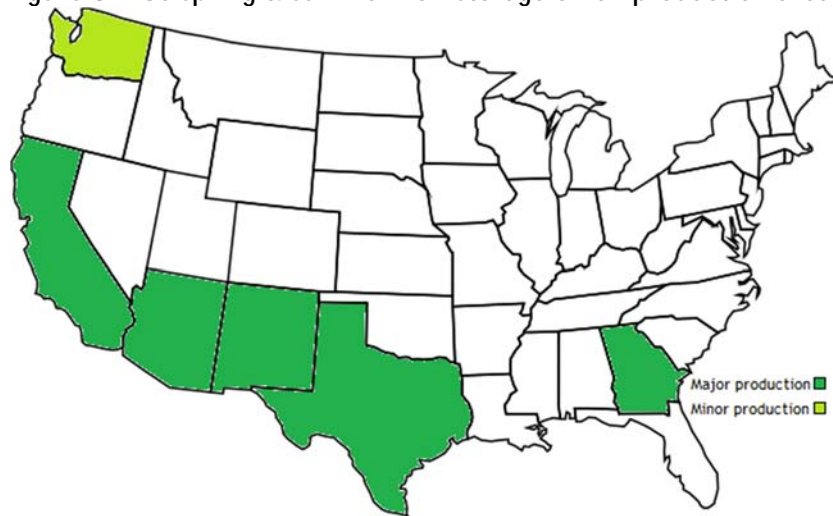
## 6.9. Onions

### Overview

There are many varieties of onions, broadly classified into spring onions, summer non-storage, and summer storage onions.

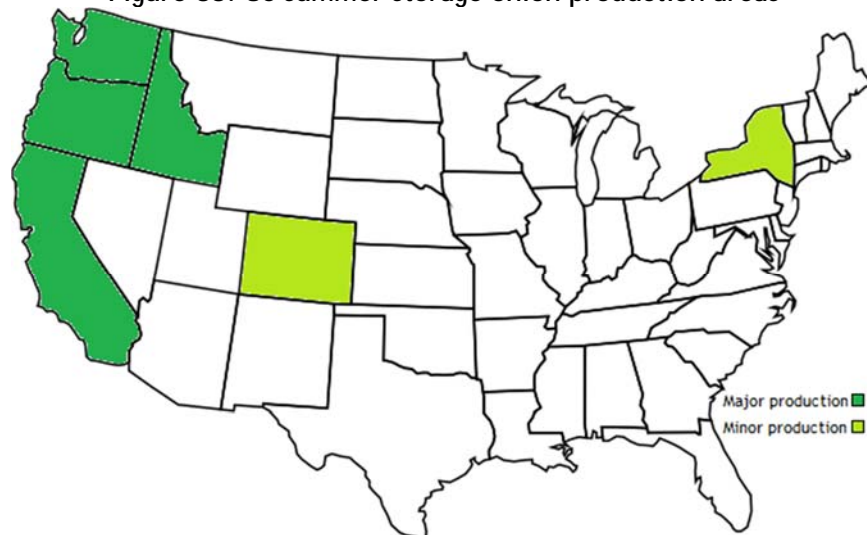
- **Spring onions** are grown in Texas, Georgia, and California. These are planted in the fall and harvested in the spring.
- **Summer non-storage onions** are grown in California, Nevada, New Mexico, and to a lesser extent, in Washington and Texas. Summer onions are planted in the spring and harvested in the fall.

Figure 87: US spring & summer non-storage onion production areas



- **Summer storage onions**, the largest category, are grown in Oregon, Washington, California, Idaho, and to a lesser extent, Colorado, New York, and a few other states.

Figure 88: US summer storage onion production areas



Both spring and summer non-storage onions are fresh market onions.

In 2011, 7.4 billion pounds of onions were grown on over 118,000 acres.

### Sources of production cost information

Onion crop budget availability varies by state, but apart from Texas, which produces annual onion budgets (<http://agecoext.tamu.edu/resources/crop-livestock-budgets/by-commodity/fruits-and-vegetables/archives.html>), no other large producing states publish annual onion crop budgets. Episodic budgets are available from New Mexico (2011), Idaho/Oregon (2011), Colorado (2008, 2010), Georgia (2001, 2008), Nevada (2008), and Washington (2004). California has multiple onion budgets, but for different varieties in different years.

### Production practices

Onions are typically planted in a rotation with other crops (e.g., in California they are rotated with potatoes, small grains, and alfalfa). Onion production is dense, with some farms producing in excess of 25 tons of onions per acre. Revenue per acre is generally ranges from \$3,000-\$5,000 or more.

Typically, fields are worked in the fall, can receive a cover crop, and are prepared again with fertilizer and bed shaping prior to planting. Herbicides may also be also applied pre-planting.

Onions are a thirsty crop, using up to three acre-feet of water over a growing season. Different irrigation systems are used for onion cultivation, from no irrigation to drip, rill, and furrow irrigation.

Onions are susceptible to a variety of crop threats. Cultivation costs are thus significant, with regular irrigation and the use of herbicides, fungicides, insecticides, and reapplication of fertilizer all taking place during the growing period.

Harvesting costs are very high for fresh market onions (both spring and summer) and account for most labor costs. Some onion operations are integrated and clean, sort, and pack onions on the farm; others contract out these activities, sometimes including harvest.

### Prevented planting experience

Prevented planting claims have been 22% of total onion indemnities over the last 20 years. PP buy-up is associated with 8% of onion PP indemnities. For the 10-year period 2003-2012, there were \$187.5 million in indemnities for onions, \$41.3 million (22%) of which were for prevented planting. Excess moisture/rain (\$28.3m, 69%) and failure of irrigation supply (\$10.9m, 26%) account for 95% of all onion prevented planting claims.

Of all prevented planting claims, almost 85% had just two causes: excess moisture in Texas (\$26.6m, 94% of Texas claims) and failure of irrigation supplies in Colorado (\$8.4m, 97% of Colorado's claims). The remaining \$6.3m (15%) account for all other onion prevented planting claims - including Colorado and Texas claims for reasons other than those identified above.

### Production budgets and pre-planting costs

Onion production is extremely diverse, with many varieties, different growing seasons, and different production practices. After reviewing many production budgets for onions, we concluded that - from a prevented planting perspective - there are two key production categories. These are **fresh market onions** (both spring onions and summer non-storage onions) and **storage onions**.

Their production cost structures are different primarily in that fresh market onions are more delicate and are generally hand-harvested, with higher harvest (variable) costs. Storage onions, on the other hand, are highly mechanized operations, and are often grown on more expensive land. Their fixed costs (equipment, rents) tend to be higher. Calls we made to obtain details on production practices and costs confirmed differences between these the production systems.

We have therefore developed two budgets for onions. After reviewing the available materials, we settled on using Texas A&M's budget for (hybrid yellow) spring onions, and the University of Idaho's budget for storage onions produced in southwestern Idaho / eastern Oregon. We also list other budget sources for reference.

For each budget, we provide three tables: (1) production costs, (2) the estimated pre-planting share of costs, and (3) the estimated pre-planting (sunk) costs, i.e., (1) x (2).

**Fresh market onions (spring/summer).** Spring onions (primarily produced in Texas and Georgia) are seeded in the fall, grow over the winter, and are harvested in the spring. They are destined for the fresh market, and are generally hand-harvested. Most harvest, packing, and shipping operations are contracted out to intermediaries (approximately three-quarters of production). Land costs tend to be low, and harvest costs high, as a percentage of total costs. Irrigation depends in many cases on surface water availability. Most expenses are incurred at planting or post-planting. Texas A&M has published its hybrid yellow onion crop budget annually since 2004.

We show that this budget implies pre-planting costs of 10%. An analysis of an onion crop budget for Georgia (2008) showed approximately 15% in pre-planting costs.

Fresh market onions are also grown in the summer in other states, all with high relative harvest costs. A budget for summer market onions prepared by Penn State University (2012) shows pre-planting costs (including fixed costs) under 15%. A budget for Colorado summer non-storage onions shows costs of 19% (2010).

**Summer storage onions.** For storage onion production, we selected the University of Idaho budget both for its recency (2011) and the level of detail it provides. The budget, expanded through indexes to cover the years 2003-2010 and 2012, shows the share of pre-planting costs for onions unchanged, 38% in both 2003 and 2012. Other west coast onion budgets are similar: 32% for Washington (2004), and 42% for California (dry onions for processing, 2011).

## Analysis

Based on our analysis, the percentage of costs that could be considered unavoidable pre-planting expenses varies significantly, especially between fresh market onion and storage onion production.

Using a single percentage for pre-planting costs for all onion production (currently 35%) may roughly approximate costs incurred by storage onion producers, while overestimating the costs incurred by producers of fresh market onions.

The single figure for both crops may encourage producers in areas where pre-planting costs are low (as a percentage of total costs) to file prevented planting claims. Prevented planting claims data show that claims tend to be higher in states where pre-planting cost percentages are lower (Texas, Colorado, Georgia).

Figure 89: Share of costs incurred prior to planting fresh market onions

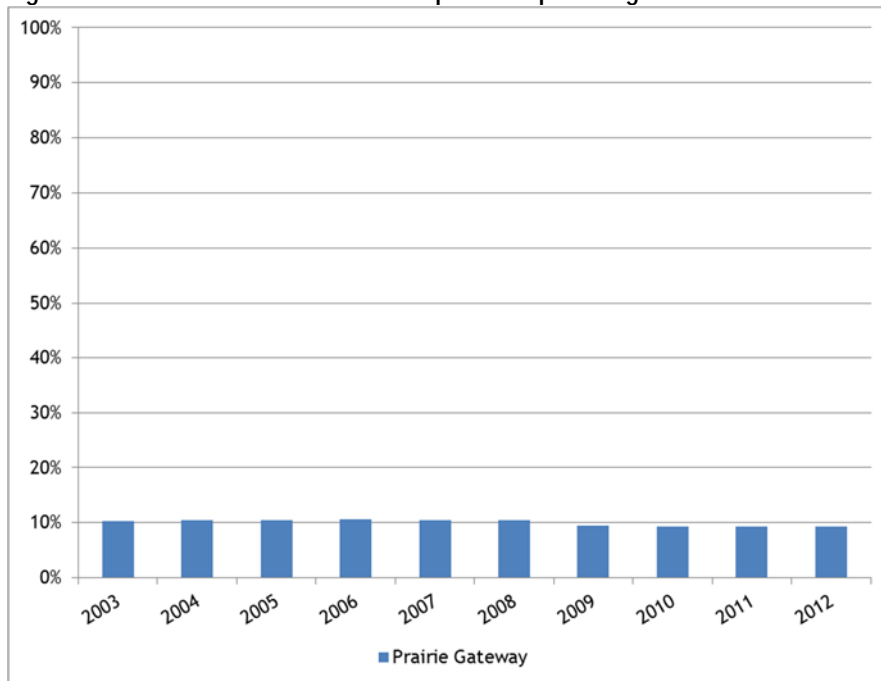
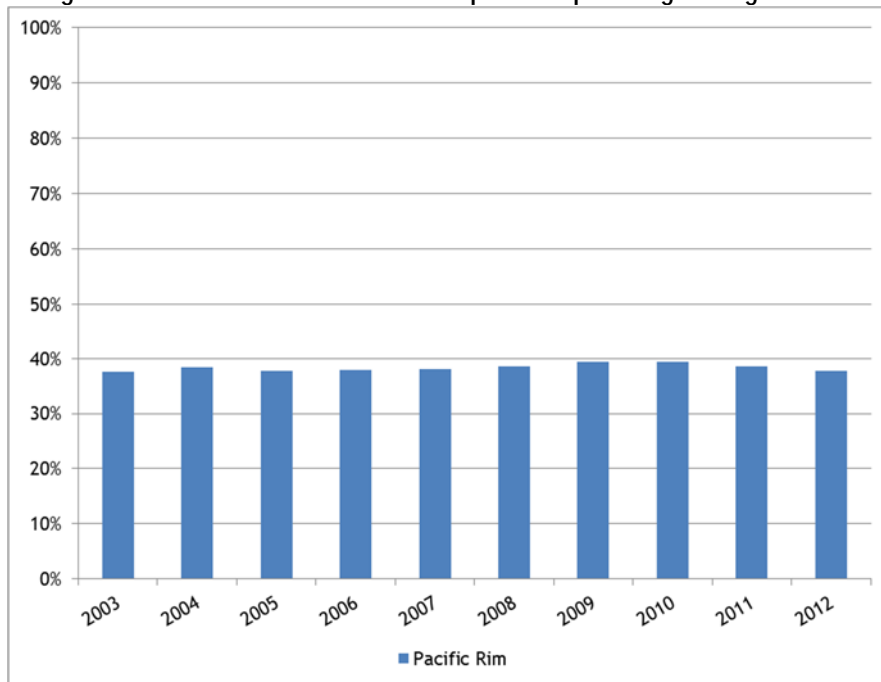


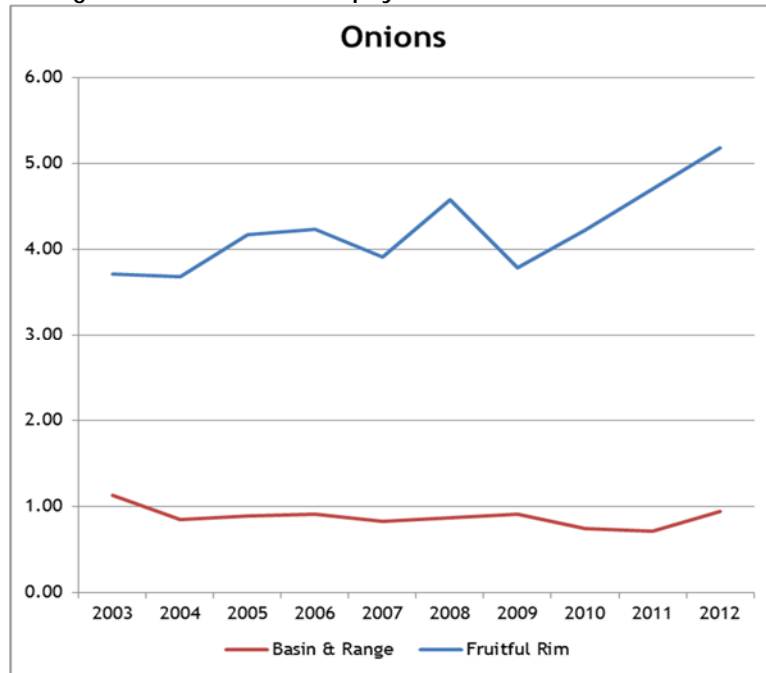
Figure 90: Share of costs incurred prior to planting storage onions



**Comparison of estimated PP cost to RMA payments**

The ratio of RMA’s incurred base PP payment to estimated PP costs is dramatically different between summer storage and spring/summer fresh market onions. The rate for summer storage onions has been close to 1.0. However, for fresh market onions, the rate has been very high, generally around 4 but exceeding 5 in 2012.

**Figure 91: Ratio of RMA payment to PP costs for onions**



**Recommendation**

Based on our review of various budgets, and the budgets analyzed, if a single percentage were used, the most appropriate figure would be 25%. However, The 35% PP payment rate appears reasonable for summer storage onions, based on both the analysis of production costs and a review of the ratio of RMA payments to estimated costs for the northern states. However, RMA payments for fresh market onions continue to appear too high. The ratio of 4 to 5 confirms this, and adds to the evidence that the payment rate for fresh market onions should be reduced. It would be appropriate to reduce the rate from 35% to 15% (i.e., a liability payment reduction of 57%), to put payments more in line with costs. By way of reference, the Texas budgets we used for analysis yielded a PP cost estimate of 10%; other state budgets implied PP costs of 15% (Georgia, Pennsylvania) and 19% (Colorado). We therefore recommend a factor of 15% for fresh market onions and 35% for storage onions.

The following states should be classified as producers of fresh market onions: Georgia, Nevada, New Mexico, and Texas. All others should be treated as producers of storage onions. California does produce fresh market onions (13,200 of 43,300 planted acres in 2012), but only processing (storage) onions are insured. Production in Washington State in 2012 was over 90% storage onions (22,000 of 24,000 planted acres). Considering that there were no prevented planting indemnities for onions in Washington from 2003 through 2012, classifying Washington as a storage onion state (and thus maintaining the current 35% PP rate there) appears appropriate.

Table 201: Fresh market onion production costs per planted acre: Texas

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Fertilizer	129.89	152.16	182.54	184.81	184.81	187.09	470.49	229.74	377.34	430.72
Fungicide	131.75	133.93	133.93	133.93	133.93	133.93	169.47	169.47	162.19	167.23
Herbicides	39.82	40.48	40.48	40.48	40.48	40.48	51.81	54.13	55.09	55.09
Insecticide/miticide	33.39	33.94	33.94	33.94	33.94	33.94	43.46	45.62	48.37	52.91
Irrigation	43.49	45.44	45.44	45.44	56.00	56.00	56.00	56.00	56.00	56.00
Seed/plants	141.07	150.00	169.41	189.89	241.09	278.32	288.56	309.04	334.18	350.00
Custom harvest	1809.92	1825.00	1825.00	1825.00	1825.00	1825.00	2211.00	2211.00	2211.00	2211.00
Other labor	65.56	67.61	61.77	61.77	70.85	70.85	70.85	70.85	70.85	70.85
Fuel	9.26	12.12	19.79	25.17	25.17	32.04	32.04	24.03	28.60	35.47
Repair & maintenance	14.47	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09
Crop insurance	334.21	350.00	365.79	384.21	384.21	410.53	423.68	431.58	439.47	450.00
Interest on operating capital	67.90	77.70	59.69	60.08	60.93	65.67	85.77	75.36	82.69	86.03
<b>Total, operating costs</b>	<b>2820.74</b>	<b>2903.47</b>	<b>2952.87</b>	<b>2999.81</b>	<b>3071.50</b>	<b>3148.94</b>	<b>3918.23</b>	<b>3691.91</b>	<b>3880.87</b>	<b>3980.39</b>
<b>Allocated overhead:</b>										
Capital recovery of machinery & equip	45.54	48.63	46.13	46.13	46.13	46.13	46.13	46.13	46.13	46.13
Opportunity cost of land (rental rate)	96.23	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Total, allocated overhead</b>	<b>141.76</b>	<b>148.63</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>
<b>Total costs listed</b>	<b>2,962.50</b>	<b>3,052.10</b>	<b>3,099.00</b>	<b>3,145.94</b>	<b>3,217.63</b>	<b>3,295.07</b>	<b>4,064.36</b>	<b>3,838.04</b>	<b>4,027.00</b>	<b>4,126.52</b>

Source for budgets: Texas A&M

<http://agecoext.tamu.edu/resources/crop-livestock-budgets/by-commodity/fruits-and-vegetables/archives.html>

Notes:

Crop insurance for onions (2013) ranges from \$360 to \$560 per acre; used \$450 for 2012.

Seed costs of \$350 / acre; used this figure as budget values had not been updated in 5 years.

Based on 2004-2012 budgets; 2003 values derived from 2004 data using price indices.

Table 202: Fresh market onion - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Fungicide	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Insecticide/miticide	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Seed/plants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom harvest	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Fuel	50%	50%	50%	50%	50%	45%	45%	55%	45%	40%
Repair & maintenance	50%	50%	50%	50%	50%	45%	45%	55%	45%	40%
Crop insurance	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table 203: Fresh market onion prevented planting cost per acre: Texas

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	12.99	15.22	18.25	18.48	18.48	18.71	47.05	22.97	37.73	43.07
Fungicide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	26.68	27.12	27.12	27.12	27.12	27.12	34.71	36.27	36.91	36.91
Insecticide/miticide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed/plants	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom harvest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other labor	6.56	6.76	6.18	6.18	7.09	7.09	7.09	7.09	7.09	7.09
Fuel	4.63	6.06	9.90	12.59	12.59	14.42	14.42	13.22	12.87	14.19
Repair & maintenance	7.23	7.55	7.55	7.55	7.55	6.79	6.79	8.30	6.79	6.04
Crop insurance	73.53	77.00	80.47	84.53	84.53	90.32	93.21	94.95	96.68	99.00
Interest on operating capital	16.98	19.43	14.92	15.02	15.23	16.42	21.44	18.84	20.67	21.51
<b>Total, operating costs</b>	<b>148.59</b>	<b>159.13</b>	<b>164.39</b>	<b>171.46</b>	<b>172.58</b>	<b>180.86</b>	<b>224.71</b>	<b>201.63</b>	<b>218.75</b>	<b>227.80</b>
Allocated overhead:										
Capital recovery of machinery & equip	45.54	48.63	46.13	46.13	46.13	46.13	46.13	46.13	46.13	46.13
Opportunity cost of land (rental rate)	96.23	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Total, allocated overhead</b>	<b>141.76</b>	<b>148.63</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>	<b>146.13</b>
<b>Total costs listed</b>	<b>290.36</b>	<b>307.76</b>	<b>310.52</b>	<b>317.59</b>	<b>318.71</b>	<b>326.99</b>	<b>370.84</b>	<b>347.76</b>	<b>364.88</b>	<b>373.93</b>
<b>Total costs</b>	<b>2821.82</b>	<b>2936.88</b>	<b>2957.48</b>	<b>2992.20</b>	<b>3062.49</b>	<b>3146.88</b>	<b>3899.88</b>	<b>3707.45</b>	<b>3913.18</b>	<b>3997.02</b>
<b>Prevented planting %</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>11%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>

Table 204: Storage onion production costs per planted acre: Idaho

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	119.00	139.40	149.60	183.60	333.20	233.75	214.20	278.80	283.05	287.36
Storage	260.44	269.74	279.04	286.49	297.65	295.79	301.37	310.67	316.25	321.93
Herbicides / pesticides	499.71	507.97	528.62	532.75	574.05	615.35	594.70	598.83	631.87	666.73
Irrigation	38.08	39.79	41.21	42.35	43.77	44.62	45.47	47.18	48.60	50.06
Seed/plants	179.37	190.72	206.61	231.59	294.03	339.44	351.92	376.90	407.55	440.69
Custom labor - pre-planting	71.69	72.29	73.49	74.68	86.03	86.63	86.63	88.42	93.80	99.50
Custom labor - post-planting	217.45	219.26	222.89	226.51	260.94	262.75	262.75	268.19	284.50	301.80
Labor	187.16	193.01	200.03	207.05	214.06	219.91	221.08	224.59	232.78	241.27
Fuel & lubrication	70.58	92.40	102.24	112.93	147.16	97.96	121.49	154.86	154.00	153.15
Marketing	44.06	45.63	47.21	48.46	50.35	50.04	50.98	52.56	53.50	54.46
Repair & maintenance	56.14	58.54	59.75	61.75	62.55	63.76	64.96	67.36	69.77	72.26
Crop insurance	22.81	23.89	24.97	26.23	26.23	28.02	28.92	29.46	30.00	30.55
Interest on operating capital	48.29	55.26	66.21	70.69	74.18	68.20	66.21	72.18	73.18	74.19
<b>Total, operating costs</b>	<b>1814.80</b>	<b>1907.92</b>	<b>2001.86</b>	<b>2105.08</b>	<b>2464.20</b>	<b>2406.22</b>	<b>2410.70</b>	<b>2570.00</b>	<b>2678.85</b>	<b>2793.97</b>
Allocated overhead:										
General overhead	164.28	175.07	185.86	199.05	231.43	225.43	232.62	255.41	265.00	274.95
Taxes and insurance	3.73	3.98	4.22	4.52	5.26	5.12	5.28	5.80	6.02	6.25
Equipment	137.44	146.77	154.41	162.05	177.32	188.35	195.13	207.01	218.04	229.66
Land	255.00	265.00	276.67	296.67	341.67	393.33	405.00	436.67	450.00	463.74
<b>Total, allocated overhead</b>	<b>560.45</b>	<b>590.82</b>	<b>621.16</b>	<b>662.28</b>	<b>755.67</b>	<b>812.23</b>	<b>838.04</b>	<b>904.89</b>	<b>939.06</b>	<b>974.60</b>
<b>Total costs listed</b>	<b>2,375.24</b>	<b>2,498.73</b>	<b>2,623.02</b>	<b>2,767.36</b>	<b>3,219.86</b>	<b>3218.45</b>	<b>3248.74</b>	<b>3474.89</b>	<b>3617.91</b>	<b>3768.56</b>

Source for budget: University of Idaho

<http://web.cals.uidaho.edu/idahoagbiz/files/2012/11/EBB2On11.pdf>

Based on 2011 budget; 2003-2010 and 2012 values derived using 2011 data and price indices

Table 205: Storage onion - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Storage	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Herbicides / pesticides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Seed/plants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom labor - pre-planting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Custom labor - post-planting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fuel & lubrication	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Marketing	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Repair & maintenance	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Crop insurance	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
General overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 206: Storage onion prevented planting cost per acre: Idaho

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	23.80	27.88	29.92	36.72	66.64	46.75	42.84	55.76	56.61	57.47
Storage	52.09	53.95	55.81	57.30	59.53	59.16	60.27	62.13	63.25	64.39
Herbicides / pesticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	7.62	7.96	8.24	8.47	8.75	8.92	9.09	9.44	9.72	10.01
Seed/plants	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom labor - pre-planting	71.69	72.29	73.49	74.68	86.03	86.63	86.63	88.42	93.80	99.50
Custom labor - post-planting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor	46.79	48.25	50.01	51.76	53.52	54.98	55.27	56.15	58.20	60.32
Fuel & lubrication	47.01	61.54	68.09	75.21	98.01	65.24	80.91	103.13	102.56	102.00
Marketing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repair & maintenance	37.44	39.05	39.85	41.19	41.72	42.52	43.33	44.93	46.54	48.20
Crop insurance	5.02	5.26	5.49	5.77	5.77	6.17	6.36	6.48	6.60	6.72
Interest on operating capital	12.07	13.81	16.55	17.67	18.54	17.05	16.55	18.05	18.30	18.55
<b>Total, operating costs</b>	<b>303.53</b>	<b>329.99</b>	<b>347.45</b>	<b>368.77</b>	<b>438.51</b>	<b>387.42</b>	<b>401.26</b>	<b>444.49</b>	<b>455.57</b>	<b>467.16</b>
Allocated overhead:										
General overhead	164.28	175.07	185.86	199.05	231.43	225.43	232.62	255.41	265.00	274.95
Taxes and insurance	3.73	3.98	4.22	4.52	5.26	5.12	5.28	5.80	6.02	6.25
Equipment	137.44	146.77	154.41	162.05	177.32	188.35	195.13	207.01	218.04	229.66
Land	255.00	265.00	276.67	296.67	341.67	393.33	405.00	436.67	450.00	463.74
<b>Total, allocated overhead</b>	<b>560.45</b>	<b>590.82</b>	<b>621.16</b>	<b>662.28</b>	<b>755.67</b>	<b>812.23</b>	<b>838.04</b>	<b>904.89</b>	<b>939.06</b>	<b>974.60</b>
<b>Total costs listed</b>	<b>863.98</b>	<b>920.81</b>	<b>968.61</b>	<b>1031.06</b>	<b>1194.18</b>	<b>1199.65</b>	<b>1239.31</b>	<b>1349.38</b>	<b>1394.63</b>	<b>1441.75</b>
<b>Total costs</b>	<b>2295.55</b>	<b>2400.32</b>	<b>2565.39</b>	<b>2715.69</b>	<b>3132.02</b>	<b>3114.56</b>	<b>3147.28</b>	<b>3424.72</b>	<b>3617.91</b>	<b>3826.67</b>
<b>Prevented planting %</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>38%</b>	<b>39%</b>	<b>39%</b>	<b>39%</b>	<b>39%</b>	<b>38%</b>

## 6.10. Potatoes

### Overview

Potatoes are grown commercially in 30 states and are country's top vegetable crop. Total production was 46.7 billion pounds in 2012. The two largest producers are Idaho (14.32 billion pounds, 30.7% of national production) and Washington (9.76 billion pounds, 20.9%). Other states with significant production are Wisconsin (6.3%), North Dakota (5.4%), Colorado (5.0%), and Oregon (4.9%).

RMA classifies producers into two regions:

- **Northern potatoes:** Most Fall potatoes, which represent 90.5% of production (42.25 billion pounds) are grown in northern states, particularly Idaho and Washington.
- **Southern potatoes:** include some fall potatoes, but also all Spring potatoes (2.67 billion pounds, 5.7% of production) and Summer potatoes (1.79 billion pounds, 3.8%). California is the largest producer of Spring potatoes, and Texas is the largest producer of Summer potatoes.

### Sources of production cost information

The primary source of production cost information for northern potatoes comes from the University of Idaho-Extension, which published a retrospective budget covering 2005-2010, later updating it to extend it through 2012.

We therefore used crop budget data for 2005-2012 and used price indices to estimate budget figures for 2003-2004. The budgets omitted crop insurance information, so we took these figures directly from RMA's data, calculating the average per acre cost of crop insurance (to the farmer) for Idaho for each year.

Other northern potato budgets are available, but are not published consistently. As a check for the prevented planting percentage, we also used a California 2008 potato budget.

Southern potatoes are produced in much smaller quantities. We used a University of Florida (IFAS) table potato budget for the Hastings region, as it has updated this budget on a few occasions.

### Production practices

Northern potatoes are typically seeded in May. Spring potatoes are seeded in the fall, and Summer potatoes are planted in winter.

Potatoes are grown in rotation with other crops. A cover crop may be used. In preparing fields, farmers typically disc and rip fields, and depending on the area, may fumigate the soil as well.

Seed potatoes come from special varieties that are cut and treated prior to planting. The soil is fertilized at planting time. Potato cultivation requires fairly extensive use of chemicals during the growing season, and is typically irrigated.

### Prevented planting experience

Prevented planting claims have accounted for 12% of total indemnities over the last 20 years. PP 10% buy-up is associated with 70% of PP indemnities. This is very high but may be due to the base rate being too low.

Over the 10 year period 2003-2012, total indemnities for potatoes were \$205.8 million, \$25.5 million of which (12.4%) were prevented planting situations. Prevented planting for potatoes has occurred primarily

in North Dakota (87%) and Idaho (4.3%), with prevented planting losses reported in over a dozen additional states. Excess moisture is the main cause of prevented planting (92.3% of the time); irrigation failure accounts for the rest (7.7%) of prevented planting indemnities.

### Northern potatoes analysis

Based on analysis of the University of Idaho Extension budget (shown on the following pages), and following conversations with the Idaho specialist, pre-planting costs for potatoes were an estimated 46% in 2003 (\$680 of \$1,475 per acre); by 2012, the pre-planting share of costs had dropped to 44% (\$1,225 out of \$2,792).

Similar results obtain from a review of other northern potato budgets. A separate analysis of a 2008 University of California Cooperative Extension budget yielded a lower figure (34%). The potato handbook shows fixed costs for Arizona (2001) and Washington (2006) at 29% and 24%, respectively, but these percentages ignore all operating costs: adding back in sunk costs related to labor, fertilizer, machinery, fuel, irrigation, operating interest, among others, plus the costs that are typically entirely sunk such as seed, plus a portion of crop insurance, and the pre-planting share jumps closer to 50% in each case.

These percentages differ significantly from RMA's current pre-planting rate of 25% for potatoes nationwide. Though the budget analysis does suggest that pre-planting costs have dropped slightly over the past 10 years, it also indicates that the prevented planting rate of 25% is far below a farmer's actual incurred costs if unable to plant after preparing to do so.

A key variable in this analysis is the extent to which an individual farmer can avoid paying for the seed or recoup seed costs in a prevented planting situation. Seed is typically 10%-15% of total costs, and this has a very large impact when it is considered a pre-planting cost. A seed specialist in North Dakota indicated that in a prevented planting situation, a potato farmer is simply out of luck, as there are no alternative uses for the seed potatoes.

Likewise, Idaho's potato crop budget specialist explained that seed potatoes would typically be a 100% sunk cost because they are often contracted in the fall and farmers usually take delivery in the spring, after the seed potatoes have been cut and treated. If they are not cut and treated (typically not the case), then they might be salvaged for 15% of their value.

We do not treat fertilizer as a sunk pre-planting cost since its value will be recouped through a subsequent crop.

### Southern potatoes analysis

Based on an analysis of the University of Florida table potato budget for the Hastings region, pre-planting costs for potatoes were an estimated 30% in 2003 (\$831 of \$2,767 per acre). In 2012, the pre-planting share of costs was slightly higher, at 31% (\$1,519 out of \$4,877).

These percentages are also higher than RMA's current pre-planting rate of 25%, although not by as much as northern potatoes. Also, in this case, the analysis shows an increase in the sunk cost percentage over the past decade, rather than the decline shown for northern potatoes.

As with northern potatoes, a key variable in this analysis is the extent to which an individual farmer can recoup seed costs in a prevented planting situation. This impacts the pre-planting percentage by 10-15 points. Here we assume the farmer cannot.

Figure 92: Share of costs incurred prior to planting northern potatoes

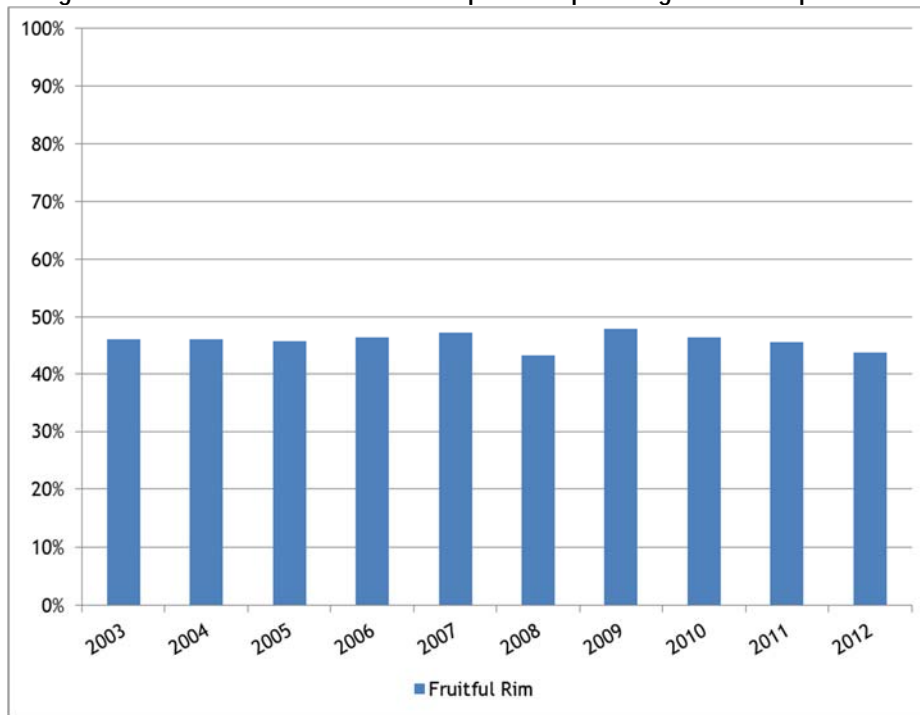
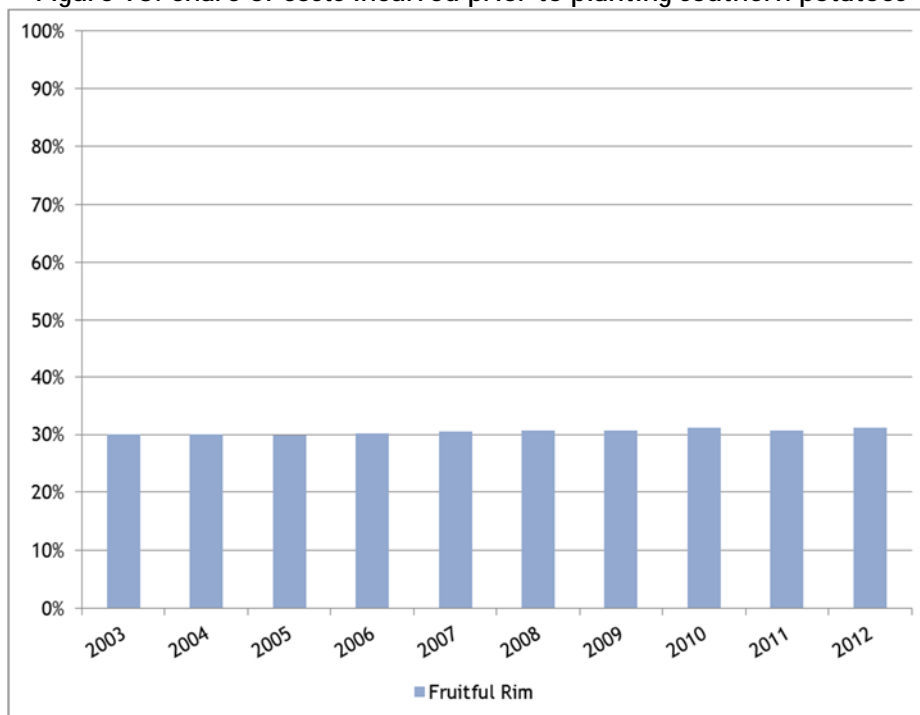


Figure 93: Share of costs incurred prior to planting southern potatoes

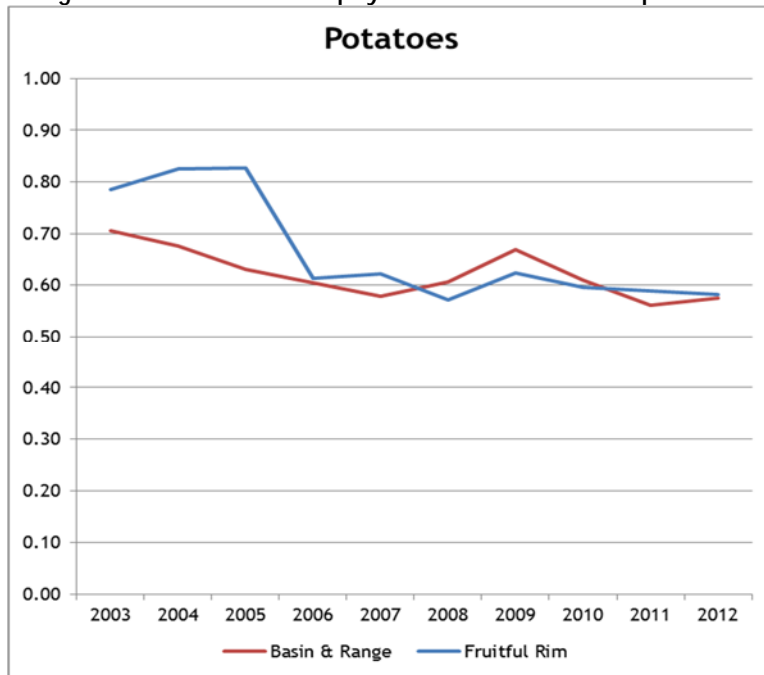


Given this crop budget analysis, one could conclude that the 25% PP factor should be increased to 30% for southern potatoes and 40% for northern potatoes.

### Comparison of RMA payments to estimated PP costs

The ratio of RMA's incurred base PP payment to estimated PP costs has been approximately 0.6 since 2006 for potatoes in both regions.

Figure 94: Ratio of RMA payment to PP costs for potatoes



### Recommendation

Current RMA potato PP payments appear to undercompensate farmers. PP indemnity payments for both northern and southern potatoes fall short of estimated costs by a similar factor. Hence the Florida budget alone appears insufficient evidence to justify a differentiated PP rate for southern potatoes. Increasing the PP payment rate for both regions to 40% so that a PP indemnity is 60% higher would put payments more in line with estimated PP costs.



Table 207: Northern potato production costs per planted acre: Idaho, no storage

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	159.50	163.64	174.00	209.00	227.00	252.00	330.00	227.00	317.00	301.00
Fertilizer	176.93	199.76	234.00	245.00	307.00	540.00	421.00	338.00	465.00	524.00
Chemicals	106.24	106.24	108.00	110.00	102.00	123.00	173.00	163.00	184.00	234.00
Custom operations	110.54	106.12	107.00	122.00	133.00	146.00	150.00	162.00	187.00	212.00
Machinery: Fuel, oil, lube, repairs	79.07	93.19	122.00	152.00	149.00	198.00	123.00	143.00	153.00	161.00
Transload	30.99	29.75	30.00	33.00	33.00	36.00	41.00	50.00	53.00	58.00
Irrigation	61.29	63.17	66.00	61.00	64.00	70.00	74.00	73.00	74.00	77.00
Hired labor	117.04	119.27	123.00	127.00	126.00	133.00	139.00	130.00	134.00	142.00
Miscellaneous	40.98	42.85	45.67	54.24	65.27	71.84	76.72	83.41	97.03	106.66
Crop insurance	25.53	29.32	28.33	26.76	22.73	20.16	29.28	24.59	22.97	17.34
Interest on operating capital	24.56	25.34	29.00	41.00	45.00	49.00	44.00	38.00	55.00	53.00
<b>Total, operating costs</b>	<b>932.67</b>	<b>978.66</b>	<b>1,067.00</b>	<b>1,181.00</b>	<b>1,274.00</b>	<b>1,639.00</b>	<b>1,601.00</b>	<b>1,432.00</b>	<b>1,742.00</b>	<b>1,886.00</b>
Allocated overhead:										
Opportunity cost of unpaid labor	77.07	78.55	81.00	84.00	90.00	100.00	120.00	125.00	130.00	135.00
Capital recovery of machinery & equip	164.09	176.05	188.00	209.00	221.00	234.00	245.00	221.00	230.00	233.00
Opportunity cost of land (rental rate)	240.38	250.19	260.00	270.00	325.00	375.00	425.00	425.00	445.00	475.00
General farm overhead	24.23	25.34	27.00	29.00	32.00	41.00	40.00	36.00	43.00	46.00
<b>Total, allocated overhead</b>	<b>505.77</b>	<b>530.12</b>	<b>556.00</b>	<b>592.00</b>	<b>668.00</b>	<b>750.00</b>	<b>830.00</b>	<b>807.00</b>	<b>848.00</b>	<b>889.00</b>
<b>Total costs listed</b>	<b>1,438.44</b>	<b>1,508.78</b>	<b>1,623.00</b>	<b>1,773.00</b>	<b>1,942.00</b>	<b>2,389.00</b>	<b>2,431.00</b>	<b>2,239.00</b>	<b>2,590.00</b>	<b>2,775.00</b>

Source for budget(s): University of Idaho Extension

<http://web.cals.uidaho.edu/idahoagbiz/enterprise-budgets/>

Notes:

Based on 2006-2012 budgets; 2003-2005 values derived from 2006 data using price indices

Crop insurance calculated from RMA data, includes farmer portion only

This budget does not include fumigant, which can range from \$150-\$170 per acre plus \$30+ in application costs

Table 208: Northern potatoes - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Custom operations	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Machinery: Fuel, oil, lube, repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Transload	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Crop insurance	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Opportunity cost of unpaid labor	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 209: Northern potatoes prevented planting cost per acre: Idaho, no storage

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	159.50	163.64	174.00	209.00	227.00	252.00	330.00	227.00	317.00	301.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	15.94	15.94	16.20	16.50	15.30	18.45	25.95	24.45	27.60	35.10
Custom operations	11.05	10.61	10.70	12.20	13.30	14.60	15.00	16.20	18.70	21.20
Machinery: Fuel, oil, lube, repairs	19.77	23.30	30.50	38.00	37.25	49.50	30.75	35.75	38.25	40.25
Transload	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	6.13	6.32	6.60	6.10	6.40	7.00	7.40	7.30	7.40	7.70
Hired labor	11.70	11.93	12.30	12.70	12.60	13.30	13.90	13.00	13.40	14.20
Miscellaneous	6.15	6.43	6.85	8.14	9.79	10.78	11.51	12.51	14.55	16.00
Crop insurance	3.06	3.52	3.40	3.21	2.73	2.42	3.51	2.95	2.76	2.08
Interest on operating capital	6.14	6.34	7.25	10.25	11.25	12.25	11.00	9.50	13.75	13.25
Total, operating costs	239.44	248.02	267.80	316.10	335.62	380.30	449.02	348.66	453.41	450.78
Allocated overhead:										
Opportunity cost of unpaid labor	11.56	11.78	12.15	12.60	13.50	15.00	18.00	18.75	19.50	20.25
Capital recovery of machinery & equip	164.09	176.05	188.00	209.00	221.00	234.00	245.00	221.00	230.00	233.00
Opportunity cost of land (rental rate)	240.38	250.19	260.00	270.00	325.00	375.00	425.00	425.00	445.00	475.00
General farm overhead	24.23	25.34	27.00	29.00	32.00	41.00	40.00	36.00	43.00	46.00
Total, allocated overhead	440.26	463.35	487.15	520.60	591.50	665.00	728.00	700.75	737.50	774.25
Total costs listed	679.70	711.37	754.95	836.70	927.12	1045.30	1177.02	1049.41	1190.91	1225.03
Total costs	1,475.49	1,541.87	1,651.33	1,799.76	1,964.73	2,409.16	2,460.28	2,263.59	2,612.97	2,792.34
Prevented planting %	46%	46%	46%	46%	47%	43%	48%	46%	46%	44%

Table 210: Southern potatoes production costs per planted acre: Florida

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	312.16	320.27	340.54	368.92	413.51	525.00	525.00	544.31	582.94	630.35
Fertilizer	174.26	196.75	230.48	247.34	303.56	550.90	550.90	504.82	657.07	667.09
Chemicals	457.14	457.14	464.69	483.58	487.36	525.14	545.95	527.63	531.29	560.61
Custom operations	15.63	15.00	15.13	15.38	15.63	18.00	19.50	19.50	19.90	21.11
Machinery: Fuel, oil, lube, repairs	113.97	134.32	175.83	194.56	214.91	280.03	449.82	557.86	711.07	707.14
Harvest & marketing costs	650.00	670.00	700.00	725.00	745.00	770.00	742.00	756.18	784.54	808.17
Hired labor	231.13	235.55	242.91	251.74	260.58	269.41	284.15	285.66	290.20	300.78
Miscellaneous	13.58	14.20	15.13	16.06	17.20	20.00	20.00	20.64	22.66	23.51
Crop insurance	29.97	30.45	31.88	33.32	35.00	35.00	35.00	36.12	36.79	37.47
Interest on operating capital	99.94	103.13	118.02	141.41	150.98	158.42	190.87	185.30	202.02	204.80
Total, operating costs	2,097.77	2,176.80	2,334.61	2,477.31	2,643.72	3,151.90	3,363.19	3,438.02	3,838.48	3,961.02
Allocated overhead:										
Capital recovery of machinery & equip	64.31	68.99	73.68	77.51	81.34	89.01	99.15	102.72	108.98	114.78
Opportunity cost of land (rental rate)	107.56	111.95	116.34	121.46	130.24	150.00	150.00	154.45	166.53	171.61
General farm overhead & mgmt	498.03	520.84	555.06	589.27	631.09	733.74	535.89	552.99	607.15	629.96
Total, allocated overhead	669.90	701.79	745.08	788.25	842.68	972.75	785.04	810.16	882.65	916.35
Total costs listed	2,767.67	2,878.58	3,079.69	3,265.56	3,486.40	4,124.65	4,148.23	4,248.19	4,721.14	4,877.37

Source for budget(s): University of Florida - IFAS

<http://www.fred.ifas.ufl.edu/iatpc/budgets.php><http://www.fred.ifas.ufl.edu/iatpc/files/HastingsTablePotato09.pdf><http://www.fred.ifas.ufl.edu/iatpc/files/tablepotatoes08l.xls>

Notes:

Based on 2008, 2009 budgets; 2003-2007 and 2010-2012 values derived from 2008 and 2009 data using price indices

Table 211: Southern potatoes - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Custom operations	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Machinery: Fuel, oil, lube, repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Harvest & marketing costs	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Crop insurance	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead & mgmt	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Table 212: Southern potatoes prevented planting cost per acre: Florida

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	312.16	320.27	340.54	368.92	413.51	525.00	525.00	544.31	582.94	630.35
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	101.94	101.94	103.63	107.84	108.68	117.11	121.75	117.66	118.48	125.02
Custom operations	1.56	1.50	1.51	1.54	1.56	1.80	1.95	1.95	1.99	2.11
Machinery: Fuel, oil, lube, repairs	28.49	33.58	43.96	48.64	53.73	70.01	112.46	139.46	177.77	176.79
Harvest & marketing costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hired labor	23.11	23.55	24.29	25.17	26.06	26.94	28.42	28.57	29.02	30.08
Miscellaneous	13.58	14.20	15.13	16.06	17.20	20.00	20.00	20.64	22.66	23.51
Crop insurance	3.60	3.65	3.83	4.00	4.20	4.20	4.20	4.33	4.42	4.50
Interest on operating capital	24.99	25.78	29.50	35.35	37.74	39.61	47.72	46.32	50.50	51.20
<b>Total, operating costs</b>	<b>509.43</b>	<b>524.48</b>	<b>562.39</b>	<b>607.52</b>	<b>662.69</b>	<b>804.66</b>	<b>861.48</b>	<b>903.25</b>	<b>987.78</b>	<b>1043.55</b>
Allocated overhead:										
Capital recovery of machinery & equip	64.31	68.99	73.68	77.51	81.34	89.01	99.15	102.72	108.98	114.78
Opportunity cost of land (rental rate)	107.56	111.95	116.34	121.46	130.24	150.00	150.00	154.45	166.53	171.61
General farm overhead & mgmt	149.41	156.25	166.52	176.78	189.33	220.12	160.77	165.90	182.15	188.99
<b>Total, allocated overhead</b>	<b>321.28</b>	<b>337.20</b>	<b>356.54</b>	<b>375.76</b>	<b>400.92</b>	<b>459.13</b>	<b>409.92</b>	<b>423.07</b>	<b>457.65</b>	<b>475.38</b>
<b>Total costs listed</b>	<b>830.71</b>	<b>861.68</b>	<b>918.93</b>	<b>983.28</b>	<b>1063.60</b>	<b>1263.79</b>	<b>1271.40</b>	<b>1326.32</b>	<b>1445.42</b>	<b>1518.93</b>
<b>Total costs</b>	<b>2,767.67</b>	<b>2,878.58</b>	<b>3,079.69</b>	<b>3,265.56</b>	<b>3,486.40</b>	<b>4,124.65</b>	<b>4,148.23</b>	<b>4,248.19</b>	<b>4,721.14</b>	<b>4,877.37</b>
<b>Prevented planting %</b>	<b>30%</b>	<b>30%</b>	<b>30%</b>	<b>30%</b>	<b>31%</b>	<b>31%</b>	<b>31%</b>	<b>31%</b>	<b>31%</b>	<b>31%</b>

## 6.11. Processing beans

### Overview

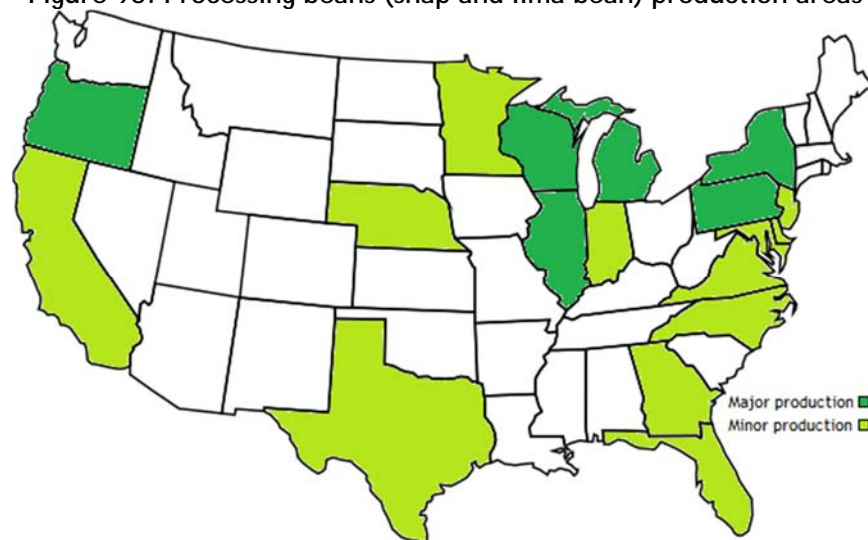
Beans for processing are primarily grown for the frozen and canned markets. RMA insures two types of processing beans, snap beans, and lima beans. Processing beans include green beans, also known as snap beans, and all types of lima beans.

Snap beans are of two major types: runner and bush. These categories describe the growing characteristics of the plant. Runner types need a pole to support growth while bush types do not. Runner types must be handpicked while bush types are compatible with mechanized harvesting. Bush types are the only types used for commercial processing. Runner types are planted for pick-your-own, roadside stand, and fresh markets.

Snap beans for processing are also known as green beans, bush beans, or sometimes string beans. Processing beans are grown primarily in Wisconsin, Oregon, New York, Michigan, Illinois, Pennsylvania, Minnesota, and Indiana. In 2011, snap bean production was 681,000 tons. Wisconsin accounted for about 44% of production. Oregon, New York, Michigan, Illinois, and Pennsylvania account for an additional 43% of US production. Twelve other states make up the remainder of production. Detailed information on snap bean production is limited.

Lima beans are subdivided into two groups depending on where they came from. Baby lima beans are direct descendants of the Mesoamerican variety, a more heat tolerant plant. These lima beans are smaller than the larger Fordhook type. Fordhook lima beans descend from the Andean variety, more suited to cooler climates. Lima beans are grown in California, the Pacific Northwest, Wisconsin, Illinois, Minnesota, and Mid-Atlantic states. Detailed information on lima bean production is limited.

Figure 95: Processing beans (snap and lima bean) production areas



Source: USDA NASS

### Sources of production cost information

Budgets for processing beans were sparse. There are no regularly published budgets. We settled on budgets for New York (2010, Cornell University Cooperative Extension) and Oregon (2010, Oregon State University Extension). These are obvious choices as they are major producers. In addition, New York accounts for roughly 40% of prevented planting claims so production costs from there are relevant to this study.

### Production practices

Snap beans and lima beans grow best on soils that hold water well, and require a constant supply of moisture. Performance in sandy soils requires irrigation. Fields for these crops require significant preparation prior to planting.

Nevertheless, many expenses come at or after planting (particularly planting, irrigation, crop protection chemicals, and harvest costs).

### Prevented planting experience

Prevented planting claims have accounted for only 4.4% of total indemnities over the past 20 years. Total indemnities for processing beans were \$20.3 million for the period 2003-2012. Prevented planting indemnities were relatively small compared to total indemnities, only \$1 million or 5% of total claims. New York accounted for 41% of prevented planting claims, and Wisconsin 40%. Overall, excess moisture/precipitation/rain was the cause of loss for 84% of the prevented planting indemnities; drought accounted for the rest.

### Analysis

We constructed processing bean budgets from two sources: New York and Oregon. There were small variations in the percentage of costs that would be considered sunk costs at planting time.

For New York, pre-planting costs were \$154 out of \$376 in 2003 (41%) and \$266 out of \$653 in 2012 (also 41%). In Oregon, the pre-planting portion rose slightly from \$313 out of \$789 per acre (40%) in 2003, to \$576 out of \$1,381 (42%) in 2012.

Averaged across both markets, the prevented planting percentage remained fairly steady at 41% - very close to the 40% rate used by RMA.

### Comparison of RMA payments to estimated costs

The ratio of RMA's incurred base PP payment to estimated PP costs has fluctuated slightly over the past ten years, but has generally been close to 1.00.



Figure 96: Share of costs incurred prior to planting processing beans

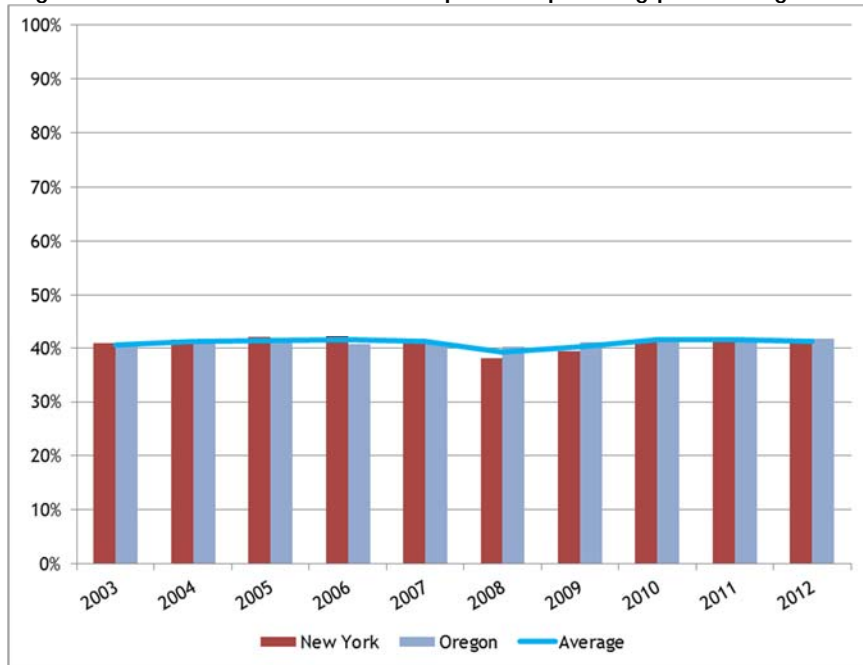
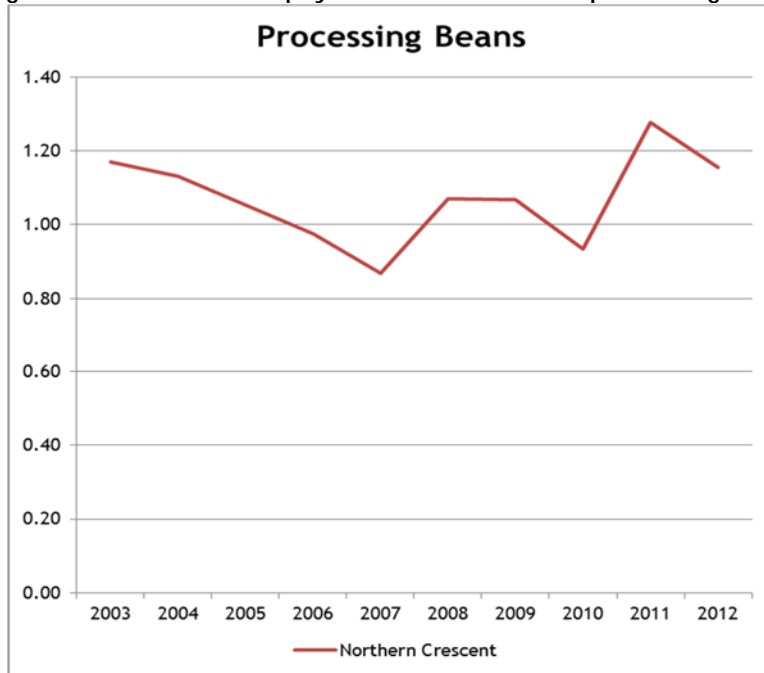


Figure 97: Ratio of RMA payment to PP costs for processing beans



**Recommendation**

We recommend leaving the payment rate unchanged at 40%.

Table 213: Snap bean production costs per planted acre: New York

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	29.31	30.07	31.97	34.64	38.83	49.29	56.91	59.00	63.19	68.33
Fertilizer	47.62	53.76	62.98	67.59	82.95	150.53	105.60	96.77	125.95	127.87
Land preparation	20.85	24.58	32.17	35.60	39.32	51.24	34.11	42.30	53.92	53.62
Planting	5.90	6.05	6.44	6.97	7.82	9.93	11.46	11.88	12.72	13.76
Irrigation	12.89	13.27	13.75	14.22	14.60	15.17	15.08	15.36	15.83	16.12
Chemicals	54.45	54.45	55.35	57.60	58.05	62.55	67.05	64.80	65.25	68.85
Custom	55.70	53.47	53.92	54.81	55.70	64.16	64.61	64.61	65.95	69.96
Repair and maintenance	11.63	11.97	12.48	12.74	13.17	13.34	13.59	13.85	14.36	14.88
Other variable costs	30.72	31.62	32.75	33.88	34.78	36.14	35.91	36.59	37.72	38.40
Business expenses	0.60	0.61	0.64	0.66	0.67	0.70	0.70	0.71	0.73	0.75
Crop insurance	4.03	4.09	4.29	4.48	4.71	4.71	5.03	5.19	5.29	5.38
<b>Total cash expenses</b>	<b>273.69</b>	<b>283.95</b>	<b>306.73</b>	<b>323.18</b>	<b>350.59</b>	<b>457.75</b>	<b>410.04</b>	<b>411.06</b>	<b>460.91</b>	<b>477.90</b>
Allocated overhead:										
Tractors	3.58	3.84	4.10	4.31	4.53	4.95	5.26	5.45	5.78	6.09
Implements	26.86	28.81	30.77	32.37	33.97	37.17	39.49	40.91	43.40	45.71
Land rent	32.72	34.06	35.39	36.95	39.62	45.63	52.53	54.09	58.32	60.10
Office	6.67	6.83	6.99	7.64	7.97	8.94	9.97	10.30	11.11	11.49
Utilities	1.68	1.73	1.79	1.85	1.90	1.98	1.96	2.00	2.06	2.10
Liability	1.46	1.48	1.55	1.62	1.70	1.70	1.82	1.88	1.92	1.95
Property taxes	20.77	21.72	23.15	24.58	26.32	30.60	29.81	30.76	33.77	35.04
Property insurance	2.09	2.18	2.33	2.47	2.64	3.07	2.99	3.09	3.39	3.52
Investment repairs	6.77	6.97	7.26	7.41	7.66	7.76	7.91	8.06	8.36	8.66
<b>Total, allocated overhead</b>	<b>102.59</b>	<b>107.62</b>	<b>113.34</b>	<b>119.21</b>	<b>126.32</b>	<b>141.82</b>	<b>151.75</b>	<b>156.54</b>	<b>168.11</b>	<b>174.66</b>
<b>Total costs listed</b>	<b>376.28</b>	<b>391.58</b>	<b>420.07</b>	<b>442.39</b>	<b>476.91</b>	<b>599.58</b>	<b>561.79</b>	<b>567.60</b>	<b>629.03</b>	<b>652.57</b>

Source for budget: Cornell University

<http://dyson.cornell.edu/outreach/extensionpdf/2011/Cornell-Dyson-eb1110.pdf>

Notes:

Based on 2010 budget; 2003-2009, 2011-2012 values based on price indices

Table 214: Bush bean production costs per planted acre: Oregon

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	99.35	101.94	108.39	117.42	131.61	167.10	192.90	200.00	214.19	231.61
Fertilizer	93.49	105.56	123.65	132.70	162.86	295.56	207.34	190.00	247.30	251.07
Chemicals	88.23	88.23	89.69	93.33	94.06	101.35	108.65	105.00	105.73	111.56
Irrigation	65.48	67.41	69.81	72.22	74.15	77.04	76.56	78.00	80.41	81.85
Labor	86.57	88.22	90.98	94.29	97.59	100.90	103.66	104.21	105.86	109.72
Machinery	72.49	77.77	83.05	87.37	91.69	100.33	106.57	110.41	117.13	123.37
Miscellaneous	1.35	1.41	1.51	1.60	1.71	1.99	1.94	2.00	2.20	2.28
Crop insurance	8.13	8.26	8.65	9.04	9.49	9.49	10.14	10.47	10.67	10.86
Operating interest	22.32	23.03	26.36	31.58	33.72	35.38	32.53	31.58	34.43	34.90
<b>Total overhead costs</b>	<b>537.41</b>	<b>561.82</b>	<b>602.08</b>	<b>639.54</b>	<b>696.89</b>	<b>889.14</b>	<b>840.29</b>	<b>831.67</b>	<b>917.92</b>	<b>957.24</b>
Allocated overhead:										
Property Insurance	16.88	17.65	18.81	19.97	21.39	24.87	24.23	25.00	27.45	28.48
Property taxes	13.51	14.12	15.05	15.98	17.11	19.90	19.38	20.00	21.96	22.78
Land Rent	120.99	125.93	130.86	136.63	146.50	168.72	194.24	200.00	215.64	222.22
Machinery & equip, deprec, Int & Ins	80.54	86.41	92.28	97.08	101.88	111.48	118.41	122.68	130.15	137.08
Pickups, truck & ATV, deprec, Int & Ins	9.38	10.07	10.75	11.31	11.87	12.99	13.79	14.29	15.16	15.97
<b>Total, allocated overhead</b>	<b>241.30</b>	<b>254.18</b>	<b>267.76</b>	<b>280.96</b>	<b>298.75</b>	<b>337.96</b>	<b>370.05</b>	<b>381.97</b>	<b>410.35</b>	<b>426.53</b>
<b>Total costs listed</b>	<b>778.71</b>	<b>816.00</b>	<b>869.83</b>	<b>920.51</b>	<b>995.64</b>	<b>1227.09</b>	<b>1210.34</b>	<b>1213.64</b>	<b>1328.27</b>	<b>1383.77</b>

Source for budget(s): Oregon State University

<http://arec.oregonstate.edu/oaeb/files/pdf/AEB0004.pdf>

Notes:

Based on 2010 budget; 2003-2009, 2011-2012 values based on price indices

Table 215: Snap bean - share of expenses incurred before planting: New York

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Land preparation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Planting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Custom	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repair and maintenance	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Other variable costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Business expenses	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Allocated overhead:										
Tractors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Implements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land rent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Office	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Utilities	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Liability	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Property taxes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Property insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Investment repairs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 216: Bush bean - share of expenses incurred before planting: Oregon

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Irrigation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Machinery	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Miscellaneous	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Operating interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Property Insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Property taxes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Rent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery & equip, deprec, Int & Ins	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pickups, truck & ATV, deprec, Int & Ins	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 217: Snap bean prevented planting cost per acre: New York

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Land preparation	20.85	24.58	32.17	35.60	39.32	51.24	34.11	42.30	53.92	53.62
Planting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	5.45	5.45	5.54	5.76	5.81	6.26	6.71	6.48	6.53	6.89
Custom	13.92	13.37	13.48	13.70	13.92	16.04	16.15	16.15	16.49	17.49
Repair and maintenance	2.91	2.99	3.12	3.18	3.29	3.33	3.40	3.46	3.59	3.72
Other variable costs	7.68	7.91	8.19	8.47	8.70	9.03	8.98	9.15	9.43	9.60
Business expenses	0.15	0.15	0.16	0.16	0.17	0.18	0.17	0.18	0.18	0.19
Crop insurance	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.21	0.22
<b>Total, operating costs</b>	<b>51.12</b>	<b>54.60</b>	<b>62.82</b>	<b>67.06</b>	<b>71.39</b>	<b>86.27</b>	<b>69.72</b>	<b>77.93</b>	<b>90.34</b>	<b>91.71</b>
Allocated overhead:										
Tractors	3.58	3.84	4.10	4.31	4.53	4.95	5.26	5.45	5.78	6.09
Implements	26.86	28.81	30.77	32.37	33.97	37.17	39.49	40.91	43.40	45.71
Land rent	32.72	34.06	35.39	36.95	39.62	45.63	52.53	54.09	58.32	60.10
Office	6.67	6.83	6.99	7.64	7.97	8.94	9.97	10.30	11.11	11.49
Utilities	1.68	1.73	1.79	1.85	1.90	1.98	1.96	2.00	2.06	2.10
Liability	1.46	1.48	1.55	1.62	1.70	1.70	1.82	1.88	1.92	1.95
Property taxes	20.77	21.72	23.15	24.58	26.32	30.60	29.81	30.76	33.77	35.04
Property insurance	2.09	2.18	2.33	2.47	2.64	3.07	2.99	3.09	3.39	3.52
Investment repairs	6.77	6.97	7.26	7.41	7.66	7.76	7.91	8.06	8.36	8.66
<b>Total, allocated overhead</b>	<b>102.59</b>	<b>107.62</b>	<b>113.34</b>	<b>119.21</b>	<b>126.32</b>	<b>141.82</b>	<b>151.75</b>	<b>156.54</b>	<b>168.11</b>	<b>174.66</b>
<b>Total costs listed</b>	<b>153.71</b>	<b>162.22</b>	<b>176.16</b>	<b>186.27</b>	<b>197.72</b>	<b>228.09</b>	<b>221.47</b>	<b>234.47</b>	<b>258.46</b>	<b>266.38</b>
<b>Total costs</b>	<b>376.28</b>	<b>391.58</b>	<b>420.07</b>	<b>442.39</b>	<b>476.91</b>	<b>599.58</b>	<b>561.79</b>	<b>567.60</b>	<b>629.03</b>	<b>652.57</b>
<b>Prevented planting %</b>	<b>41%</b>	<b>41%</b>	<b>42%</b>	<b>42%</b>	<b>41%</b>	<b>38%</b>	<b>39%</b>	<b>41%</b>	<b>41%</b>	<b>41%</b>

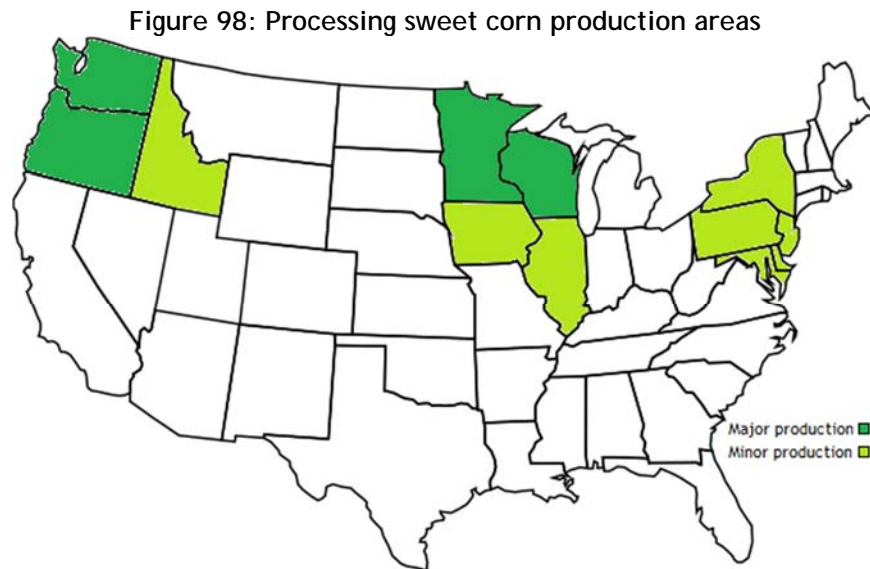
Table 218: Bush bean prevented planting cost per acre: Oregon

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	31.98	36.11	42.30	45.40	55.71	101.11	70.93	65.00	84.60	85.89
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor	12.11	12.34	12.73	13.19	13.65	14.12	14.50	14.58	14.81	15.35
Machinery	22.66	24.31	25.96	27.31	28.66	31.36	33.31	34.51	36.61	38.56
Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	0.33	0.33	0.35	0.36	0.38	0.38	0.41	0.42	0.43	0.43
Operating interest	5.58	5.76	6.59	7.90	8.43	8.84	8.13	7.90	8.61	8.73
<b>Total, operating costs</b>	<b>72.66</b>	<b>78.85</b>	<b>87.92</b>	<b>94.15</b>	<b>106.84</b>	<b>155.81</b>	<b>127.28</b>	<b>122.40</b>	<b>145.06</b>	<b>148.97</b>
Allocated overhead:										
Property Insurance	16.88	17.65	18.81	19.97	21.39	24.87	24.23	25.00	27.45	28.48
Property taxes	13.51	14.12	15.05	15.98	17.11	19.90	19.38	20.00	21.96	22.78
Land Rent	120.99	125.93	130.86	136.63	146.50	168.72	194.24	200.00	215.64	222.22
Machinery & equip, deprec, Int & Ins	80.54	86.41	92.28	97.08	101.88	111.48	118.41	122.68	130.15	137.08
Pickups, truck & ATV, deprec, Int & Ins	9.38	10.07	10.75	11.31	11.87	12.99	13.79	14.29	15.16	15.97
<b>Total, allocated overhead</b>	<b>241.30</b>	<b>254.18</b>	<b>267.76</b>	<b>280.96</b>	<b>298.75</b>	<b>337.96</b>	<b>370.05</b>	<b>381.97</b>	<b>410.35</b>	<b>426.53</b>
<b>Total costs listed</b>	<b>313.96</b>	<b>333.03</b>	<b>355.68</b>	<b>375.12</b>	<b>405.59</b>	<b>493.77</b>	<b>497.34</b>	<b>504.37</b>	<b>555.41</b>	<b>575.50</b>
<b>Total costs</b>	<b>778.71</b>	<b>816.00</b>	<b>869.83</b>	<b>920.51</b>	<b>995.64</b>	<b>1,227.09</b>	<b>1,210.34</b>	<b>1,213.64</b>	<b>1,328.27</b>	<b>1,383.77</b>
<b>Prevented planting %</b>	<b>40%</b>	<b>41%</b>	<b>41%</b>	<b>41%</b>	<b>41%</b>	<b>40%</b>	<b>41%</b>	<b>42%</b>	<b>42%</b>	<b>42%</b>

## 6.12. Processing sweet corn

### Overview

Production of sweet corn for processing was almost three million tons in 2012. Production is concentrated in a few states. In 2009, key producing states were Minnesota (30%), Washington (26%), Wisconsin (21%), and Oregon (7%).



Source: USDA NASS

### Sources of production cost information

Few states publish budgets specifically for sweet corn for processing. One of the most recent budgets in a key producing region is a 2010 budget from Oregon State University Extension for the Willamette Valley, which has a similar climate to key growing areas in Washington State. This is the budget we have used for this analysis. We also checked prevented planting costs from a 2002 budget published by Washington State University Extension.

### Production practices

Sweet corn production for processing differs from traditional feed corn production in planting and post-planting costs are a lot higher: from more expensive seed, to multiple applications of crop inputs, irrigation and more expensive harvesting.

### Prevented planting experience

Prevented planting claims were only 2.7% of total sweet corn indemnities from 1993-2012. Also, only 12% of indemnities were associated with 10% buy-up.

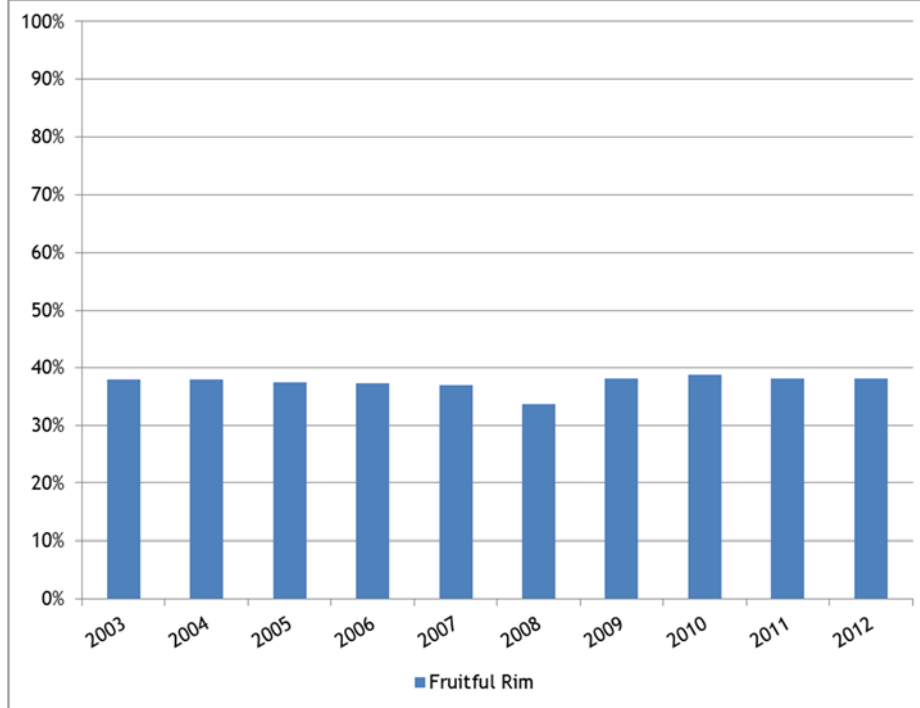
Prevented planting claims represent only a small fraction (1.8%) of all processing sweet corn claims for the period 2003-2012: \$441,000 out of \$25 million. Of these prevented planting claims, they came primarily from Minnesota (\$200,000), Wisconsin (\$121,000), and New York (\$111,000). The cause of loss for these prevented planting claims was most often excess moisture/precipitation/rain (94%).



**Analysis**

Based on the OSU Extension budget for 2010, pre-planting costs for sweet corn for processing have remained relatively stable over the past decade, at 38% of total costs. In comparison with other crops, however, we had fewer budgets to work with. Analysis of a 2002 budget from Washington State University Extension turned up similar results: pre-planting costs of 38%. RMA's rate for processing corn is 40%.

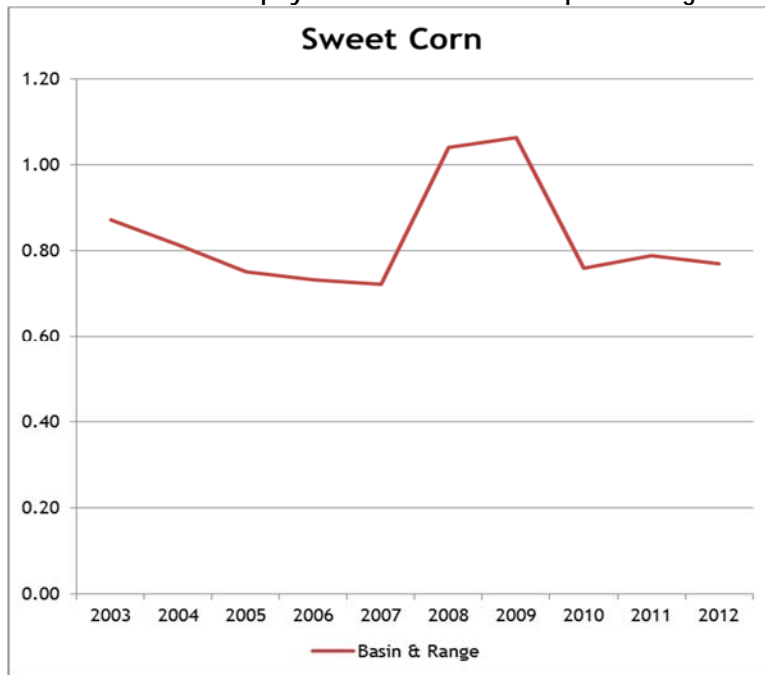
**Figure 99: Share of costs incurred prior to planting processing sweet corn**



**Comparison of RMA payments to estimated PP costs**

The ratio of RMA's incurred base PP payment to estimated PP costs has been mostly around 0.8, except for 2008 and 2009 when it was slightly over 1.0.

Figure 100: Ratio of RMA payment to PP costs for processing sweet corn



### Recommendation

RMA's payments based on the 40% PP rate for sweet corn may be a bit low, though they do not appear significantly out of line. We recommend keeping the PP factor at 40%.

Table 219: Processing sweet corn production costs per planted acre: Willamette Valley, Oregon

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>49.68</i>	<i>50.97</i>	<i>54.19</i>	<i>58.71</i>	<i>65.81</i>	<i>83.55</i>	<i>96.45</i>	100.00	<i>107.10</i>	<i>115.81</i>
Fertilizer	<i>137.78</i>	<i>155.56</i>	<i>182.22</i>	<i>195.56</i>	<i>240.00</i>	<i>435.56</i>	<i>305.56</i>	280.00	<i>364.44</i>	<i>370.00</i>
Chemicals	<i>58.82</i>	<i>58.82</i>	<i>59.79</i>	<i>62.22</i>	<i>62.71</i>	<i>67.57</i>	<i>72.43</i>	70.00	<i>70.49</i>	<i>74.38</i>
Fuel, lube, and repairs	<i>37.67</i>	<i>44.39</i>	<i>58.11</i>	<i>64.30</i>	<i>71.03</i>	<i>92.55</i>	<i>61.61</i>	76.41	<i>97.40</i>	<i>96.86</i>
Irrigation	<i>71.36</i>	<i>73.46</i>	<i>76.08</i>	<i>78.70</i>	<i>80.80</i>	<i>83.95</i>	<i>83.43</i>	85.00	<i>87.62</i>	<i>89.20</i>
Hired labor	<i>43.69</i>	<i>44.52</i>	<i>45.91</i>	<i>47.58</i>	<i>49.25</i>	<i>50.92</i>	<i>52.31</i>	52.59	<i>53.42</i>	<i>55.37</i>
Miscellaneous	<i>1.35</i>	<i>1.41</i>	<i>1.51</i>	<i>1.60</i>	<i>1.71</i>	<i>1.99</i>	<i>1.94</i>	2.00	<i>2.20</i>	<i>2.28</i>
Crop insurance	<i>3.39</i>	<i>3.44</i>	<i>3.60</i>	<i>3.76</i>	<i>3.95</i>	<i>3.95</i>	<i>4.22</i>	4.36	<i>4.44</i>	<i>4.52</i>
Interest on operating capital	<i>16.99</i>	<i>17.53</i>	<i>20.06</i>	<i>24.04</i>	<i>25.67</i>	<i>26.93</i>	<i>24.76</i>	24.04	<i>26.21</i>	<i>26.57</i>
Total, operating costs	<i>420.71</i>	<i>450.10</i>	<i>501.48</i>	<i>536.48</i>	<i>600.93</i>	<i>846.97</i>	<i>702.71</i>	694.40	<i>813.32</i>	<i>834.98</i>
Allocated overhead:										
Returns to management / risk	<i>56.45</i>	<i>57.52</i>	<i>59.32</i>	<i>61.48</i>	<i>63.64</i>	<i>65.79</i>	<i>67.59</i>	67.95	<i>69.03</i>	<i>71.55</i>
Capital recovery of machinery & equip	<i>30.87</i>	<i>33.12</i>	<i>35.37</i>	<i>37.21</i>	<i>39.05</i>	<i>42.73</i>	<i>45.38</i>	47.02	<i>49.88</i>	<i>52.54</i>
Opportunity cost of land (rental rate)	<i>120.988</i>	<i>125.926</i>	<i>130.864</i>	<i>136.626</i>	<i>146.502</i>	<i>168.724</i>	<i>194.239</i>	200.00	<i>215.638</i>	<i>222.222</i>
Taxes and insurance	<i>30.3866</i>	<i>31.7784</i>	<i>33.866</i>	<i>35.9536</i>	<i>38.5052</i>	<i>44.768</i>	<i>43.6082</i>	45.00	<i>49.4072</i>	<i>51.2629</i>
Total, allocated overhead	<i>238.69</i>	<i>248.35</i>	<i>259.42</i>	<i>271.26</i>	<i>287.69</i>	<i>322.01</i>	<i>350.82</i>	359.97	<i>383.96</i>	<i>397.57</i>
Total costs listed	<i>659.40</i>	<i>698.44</i>	<i>760.90</i>	<i>807.74</i>	<i>888.62</i>	<i>1,168.98</i>	<i>1,053.54</i>	1,054.37	<i>1,197.27</i>	<i>1,232.55</i>

Source for budget(s): OSU Extension

<http://arec.oregonstate.edu/oaeb/files/pdf/AEB0006.pdf>

Notes:

Based on 2010 budget; values for other years derived using price indices (in italics)

Table 220: Processing sweet corn - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and repairs	23%	23%	23%	23%	23%	3%	23%	23%	23%	23%
Irrigation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hired labor	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Miscellaneous	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Returns to management / risk	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 221: Processing sweet corn prevented planting cost per acre: Willamette Valley, Oregon

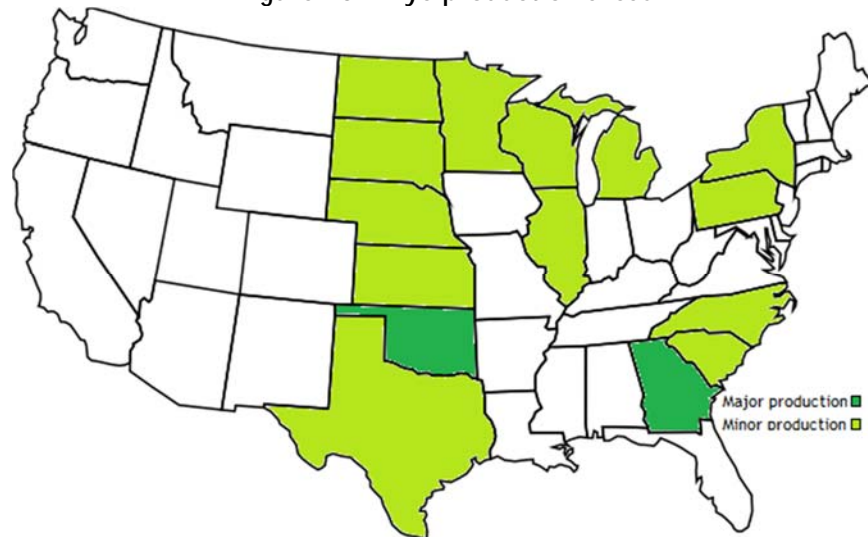
Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	31.69	35.78	41.91	44.98	55.20	100.18	70.28	64.40	83.82	85.10
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and repairs	8.66	10.21	13.37	14.79	16.34	2.78	14.17	17.57	22.40	22.28
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hired labor	6.12	6.23	6.43	6.66	6.90	7.13	7.32	7.36	7.48	7.75
Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.14
Interest on operating capital	4.25	4.38	5.02	6.01	6.42	6.73	6.19	6.01	6.55	6.64
Total, operating costs	50.82	56.71	66.83	72.55	84.97	116.93	98.09	95.48	120.39	121.91
Allocated overhead:										
Returns to management / risk	16.93	17.26	17.80	18.44	19.09	19.74	20.28	20.39	20.71	21.46
Capital recovery of machinery & equip	30.87	33.12	35.37	37.21	39.05	42.73	45.38	47.02	49.88	52.54
Opportunity cost of land (rental rate)	120.99	125.93	130.86	136.63	146.50	168.72	194.24	200.00	215.64	222.22
Taxes and insurance	30.39	31.78	33.87	35.95	38.51	44.77	43.61	45.00	49.41	51.26
Total, allocated overhead	199.18	208.08	217.89	228.23	243.14	275.96	303.51	312.41	335.64	347.49
Total costs listed	249.99	264.79	284.72	300.78	328.11	392.89	401.60	407.88	456.02	469.40
Total costs	659.40	698.44	760.90	807.74	888.62	1,168.98	1,053.54	1,054.37	1,197.27	1,232.55
Prevented planting %	38%	38%	37%	37%	37%	34%	38%	39%	38%	38%

## 6.13. Rye

### Overview

Rye is grown in most US states as a cover crop or for on farm use. In 2013, Oklahoma (21%) and Georgia (14%) were the largest producer states. Others include Illinois, Kansas, Michigan, Minnesota, Nebraska, New York, North Carolina, North Dakota, Pennsylvania, South Carolina, South Dakota, Texas, and Wisconsin

Figure 101: Rye production areas



Source: Agralytica and NASS 2012

### Sources of production cost information

Rye budgets were available for several states: North Dakota, Wisconsin, Florida, Iowa, North Carolina, and Georgia (2 budgets). Budgets from North Dakota and Wisconsin were used to estimate prevented planting costs. (Those from Georgia, Florida, Iowa, and North Carolina did not include fixed costs.) In addition, as Oklahoma is the largest producer, we requested Oklahoma budgets directly from Oklahoma State University Extension and used those to prepare a third rye budget.

### Production practices

Rye is a hardy crop and can be grown in a wider range of environmental conditions than any other small grain. It can survive in harsh winters, sandy soils, and drought conditions. It cannot tolerate heat or waterlogged conditions, however, and is rarely seen in tropical or subtropical climates.

Most rye grown in the US is used for pasture hay or as a cover crop, with less than half of production harvested for grain. More than half of the grain goes into animal feeds; the rest is used to make bread or alcoholic beverages.

Rye can be grown in the previous crop stubble without preparation and is an economical choice in fields that are reasonably weed free. Rye for forage or straw is increasingly planted in no till systems as it is a low value crop. Rye for grain tends to be planted in conventional tillage systems for higher yields. Typically, in conventional tillage, a field will be plowed to remove stubble and disced just prior to the seeding pass.

Seeding dates depend on the use of the crop. Winter rye can be seeded from late summer to late fall, similar to winter wheat. Stored rye seed loses its ability to germinate faster than other cereal crop seeds and should not be stored for long periods. Fungicide treatments used on other small grains are also suitable for rye, if needed.

Winter rye and winter wheat have similar response profiles to fertilizers. However, rye is an efficient user of residual fertilizer, especially nitrogen. Phosphorus and potash may be applied just prior to planting, either before or after the disc pass, or at planting in sidebands with the seeding pass. In cases where nitrogen is needed, half of the nitrogen is applied at planting and the other half by topdressing in the spring.

**Prevented planting experience**

Prevented planting claims for rye were only \$51,941 over twenty years, representing only 1.5% of indemnities. Only hybrid sorghum seed had a lower dollar amount of PP indemnities.

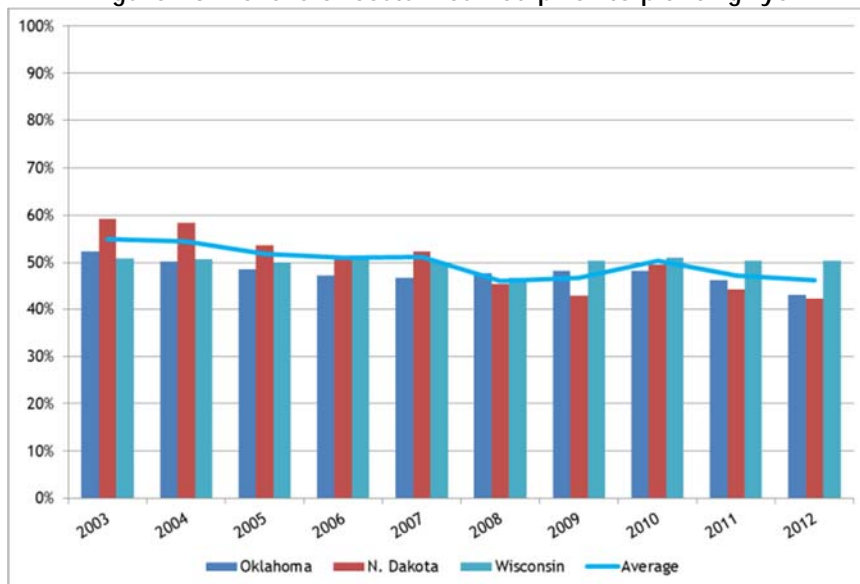
Total indemnities paid out for rye losses totaled \$2.5 million for the period 2003-2012. Prevented planting indemnities totaled \$37,500, just 1.5% of the total. Of this total, \$32,000 came from North Dakota, \$3,200 from Oklahoma, and \$2,300 from South Dakota.

**Analysis**

Rye budgets indicate pre-planting costs in North Dakota dropping from 59% of total costs in 2003 to 42% in 2012. In Wisconsin, the percentage was 51% in 2003 and 50% in 2012 (essentially flat). The third budget, for Oklahoma, showed PP costs dropping from 52% to 43% of total costs between 2003 and 2012.

The average of the three budgets dropped from 55% in 2003 to 46% in 2012. RMA's rate has been 60%. Based on this crop budget analysis, a more appropriate PP rate for rye would be 45%.

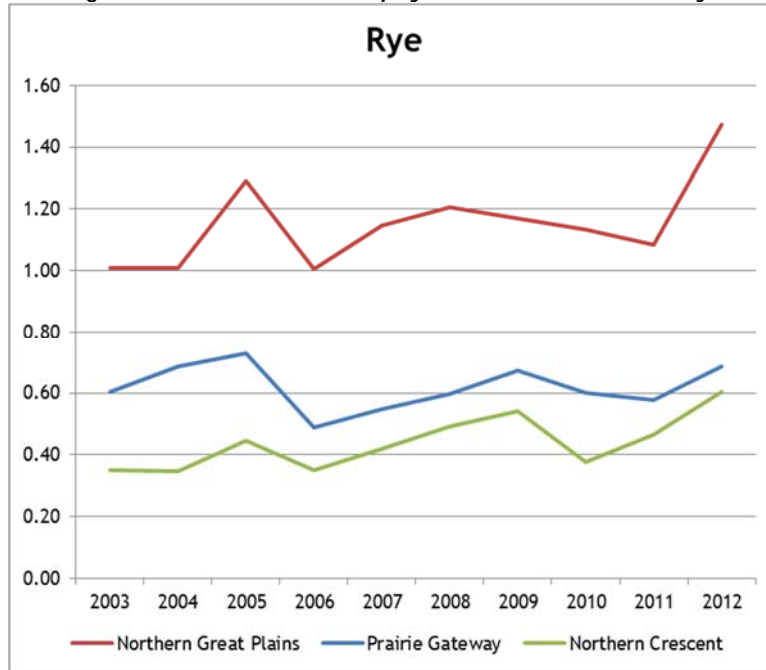
**Figure 102: Share of costs incurred prior to planting rye**



### Comparison of RMA payments to estimated PP costs

The ratio of RMA payment amounts to PP costs ranged mostly from 0.40 to 1.20 for the three budget regions. However the Wisconsin budget had costs roughly twice those of North Dakota and Oklahoma, and there were only two years with any insured rye acreage in Wisconsin. We used the RMA payments for the entire Northern Crescent region and still only had about 100 acres a year insured. We therefore ignore the lowest line in the chart below. Oklahoma has the largest rye production and insured acreage, but liabilities per acre are low, presumably due to lower yields than in North Dakota.

Figure 103: Ratio of RMA payment to PP costs for rye



### Recommendation

In view of the possible deficiencies of the production cost data, the limited insurance experience, and the virtual absence of prevented planting claims, we recommend keeping the PP payment rate for rye at 60%.



Table 222: Rye production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	4.68	4.80	4.80	4.80	4.80	5.40	6.60	6.24	7.20	11.40
Herbicides	0.00	0.00	0.00	0.00	1.20	1.30	8.60	5.88	3.50	3.50
Fungicides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	17.79	20.08	25.97	31.68	27.62	46.23	59.14	39.49	60.45	69.89
Crop Insurance	3.65	3.50	4.56	3.52	4.84	5.48	5.74	5.30	5.44	7.38
Fuel & Lubrication	5.03	5.93	8.74	11.45	11.25	14.31	8.87	10.31	12.75	14.34
Repairs	9.33	9.60	9.60	9.95	9.68	10.40	11.08	12.41	13.17	13.69
Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	0.97	1.00	1.00	1.00	2.60	3.30	6.00	6.00	6.50	6.50
Interest on operating costs	1.31	1.35	1.78	2.42	2.56	3.24	2.92	2.25	2.73	2.91
<b>Total, operating costs</b>	<b>42.75</b>	<b>46.26</b>	<b>56.45</b>	<b>64.82</b>	<b>64.55</b>	<b>89.66</b>	<b>108.95</b>	<b>87.88</b>	<b>111.74</b>	<b>129.61</b>
Allocated overhead:										
Misc. Overhead	3.45	3.55	3.44	3.53	3.44	3.55	4.59	4.74	5.90	6.02
Machinery Depreciation	11.23	12.05	12.04	12.47	12.34	12.95	13.5	14.25	15.14	15.76
Machinery Investment	6.98	7.49	7.19	7.44	7.15	7.44	7.53	8.04	8.48	8.82
Land Charge	28.09	28.77	28.86	29.52	30.4	32.30	35.16	36.28	37.64	42.48
<b>Total, allocated overhead</b>	<b>49.75</b>	<b>51.86</b>	<b>51.53</b>	<b>52.96</b>	<b>53.33</b>	<b>56.24</b>	<b>60.78</b>	<b>63.31</b>	<b>67.16</b>	<b>73.08</b>
<b>Total costs listed</b>	<b>92.49</b>	<b>98.12</b>	<b>107.98</b>	<b>117.78</b>	<b>117.88</b>	<b>145.90</b>	<b>169.73</b>	<b>151.19</b>	<b>178.90</b>	<b>202.69</b>

Source for budget(s): [Source here] <http://linktobudgethere.com>  
Notes: Type notes here in case 2000-2002 columns get deleted

Table 223: Rye production costs per planted acre: Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	20.07	22.65	26.54	28.48	34.95	63.43	44.50	40.78	53.08	53.89
Rye Seed	9.83	10.09	10.72	11.62	13.02	16.53	19.09	19.79	21.19	22.91
Crop ins	7.16	7.39	7.79	8.14	8.60	8.43	9.12	9.41	9.58	9.76
Scouting	6.83	6.96	7.17	7.43	7.70	7.96	8.17	8.22	8.35	8.65
Custom operations	9.11	8.74	8.82	8.96	9.11	10.49	10.57	10.57	10.78	11.44
Hauling	7.09	6.80	6.86	6.97	7.09	8.16	8.22	8.22	8.39	8.90
Herbicides	2.36	2.36	2.40	2.49	2.51	2.71	2.90	2.81	2.83	2.98
Labor	3.27	3.33	3.44	3.56	3.69	3.81	3.91	3.94	4.00	4.14
Fuel, lube, electricity	8.69	10.25	13.41	14.84	16.39	21.36	14.22	17.63	22.48	22.35
Repairs and Maintenance	13.90	14.31	14.93	15.23	15.75	15.95	16.26	16.56	17.18	17.79
Interest on operating costs	2.07	2.14	2.45	2.93	3.13	3.29	3.02	2.93	3.20	3.24
<b>Total, operating costs</b>	<b>90.37</b>	<b>95.02</b>	<b>104.53</b>	<b>110.67</b>	<b>121.94</b>	<b>162.12</b>	<b>139.98</b>	<b>140.85</b>	<b>161.05</b>	<b>166.06</b>
Allocated overhead:										
Hired Labor	10.47	10.67	11.00	11.40	11.80	12.20	12.53	12.60	12.80	13.27
Capital recovery of machinery & equip	14.41	15.45	16.50	17.36	18.22	19.94	21.18	21.94	23.28	24.52
Opportunity cost of land (rental rate)	70.85	72.58	74.31	81.22	84.68	95.05	105.99	109.45	118.09	122.12
Interest and insurance	9.02	9.31	10.65	12.76	13.62	14.30	13.14	12.76	13.91	14.10
Returns to management	65.17	66.42	68.50	70.99	73.48	75.97	78.04	78.46	79.70	82.61
<b>Total, allocated overhead</b>	<b>169.92</b>	<b>174.43</b>	<b>180.96</b>	<b>193.73</b>	<b>201.80</b>	<b>217.45</b>	<b>230.89</b>	<b>235.21</b>	<b>247.78</b>	<b>256.62</b>
<b>Total costs listed</b>	<b>260.29</b>	<b>269.45</b>	<b>285.48</b>	<b>304.40</b>	<b>323.74</b>	<b>379.57</b>	<b>370.87</b>	<b>376.06</b>	<b>408.83</b>	<b>422.68</b>

Source for budget(s): [Source here] <http://linktobudgethere.com>  
Notes: Type notes here in case 2000-2002 columns get deleted

Table 224: Rye production costs per planted acre: Oklahoma

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Rye Seed	11.25	11.25	11.25	10.50	10.50	10.50	14.63	14.63	14.63	14.63
Fertilizer	11.12	14.42	19.07	22.61	26.73	26.73	20.56	20.86	30.08	43.43
Pesticide	3.39	3.44	3.50	3.50	3.51	3.51	4.73	4.50	3.93	4.14
Crop Insurance	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	4.50
Operating Capital	2.86	3.15	3.72	4.97	5.84	5.84	4.23	4.36	4.90	5.85
Machinery Labor Hrs.	9.00	8.39	9.61	9.61	9.61	9.61	10.35	10.85	11.78	11.78
Custom Hire	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machinery Fuel, Lube, Repairs	25.35	24.39	37.63	46.55	47.24	47.24	44.83	48.07	53.13	63.62
Total, operating costs	64.45	66.52	86.26	99.22	104.91	104.91	100.81	104.75	119.93	147.95
Allocated overhead:										
Interest	6.20	6.01	7.10	9.01	9.53	9.53	8.00	7.98	7.82	8.47
Taxes	1.20	1.22	1.47	1.65	1.68	1.68	1.68	1.72	1.74	2.19
Insurance	0.49	0.52	0.57	0.64	0.65	0.65	0.65	0.67	0.67	0.85
Depreciation	8.36	9.15	10.48	11.70	11.98	11.98	11.98	12.31	12.41	15.57
Land	30.17	28.05	31.24	30.60	33.00	36.12	36.39	37.47	40.40	41.63
Returns to management	-51.03	0.00	-12.32	-28.54	-34.73	-34.73	-12.79	-17.10	21.83	-19.63
Total, allocated overhead	46.41	44.96	50.86	53.60	56.84	59.96	58.70	60.15	63.04	68.71
Total costs listed	110.86	111.48	137.12	152.82	161.75	164.87	159.51	164.90	182.97	216.66

Source for budget(s): [Source here] <http://linktobudgethere.com>

Notes: Type notes here in case 2000-2002 columns get deleted

Table 225: Rye - estimated share of expenses incurred pre-planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Fungicides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Insecticides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop Insurance	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Fuel & Lubrication	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Interest on operating costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table 226: Rye - estimated share of expenses incurred pre-planting: Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rye Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop ins	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Scouting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hauling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Herbicides	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Fuel, lube, electricity	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Repairs and Maintenance	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Interest on operating costs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Hired Labor	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Interest and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Returns to management	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%



Table 228: Estimated prevented planting costs per acre in Rye production: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	0.00	0.00	0.00	0.00	0.52	0.56	3.70	2.53	1.51	1.51
Fungicides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.07	0.07	0.09	0.07	0.10	0.11	0.11	0.11	0.11	0.15
Fuel & Lubrication	1.61	1.90	2.80	3.66	3.60	4.58	2.84	3.30	4.08	4.59
Repairs	2.80	2.88	2.88	2.99	2.90	3.12	3.32	3.72	3.95	4.11
Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	0.24	0.25	0.25	0.25	0.65	0.83	1.50	1.50	1.63	1.63
Interest on operating costs	0.33	0.34	0.45	0.61	0.64	0.81	0.73	0.56	0.68	0.73
<b>Total, operating costs</b>	<b>5.05</b>	<b>5.44</b>	<b>6.46</b>	<b>7.57</b>	<b>8.41</b>	<b>10.00</b>	<b>12.21</b>	<b>11.72</b>	<b>11.95</b>	<b>12.70</b>
Allocated overhead:										
Misc. Overhead	3.45	3.55	3.44	3.53	3.44	3.55	4.59	4.74	5.90	6.02
Machinery Depreciation	11.23	12.05	12.04	12.47	12.34	12.95	13.50	14.25	15.14	15.76
Machinery Investment	6.98	7.49	7.19	7.44	7.15	7.44	7.53	8.04	8.48	8.82
Land Charge	28.09	28.77	28.86	29.52	30.40	32.30	35.16	36.28	37.64	42.48
<b>Total, allocated overhead</b>	<b>49.75</b>	<b>51.86</b>	<b>51.53</b>	<b>52.96</b>	<b>53.33</b>	<b>56.24</b>	<b>60.78</b>	<b>63.31</b>	<b>67.16</b>	<b>73.08</b>
<b>Total costs listed</b>	<b>54.80</b>	<b>57.30</b>	<b>57.99</b>	<b>60.53</b>	<b>61.74</b>	<b>66.24</b>	<b>72.99</b>	<b>75.03</b>	<b>79.11</b>	<b>85.78</b>
<b>Total costs</b>	<b>92.49</b>	<b>98.12</b>	<b>107.98</b>	<b>117.78</b>	<b>117.88</b>	<b>145.90</b>	<b>169.73</b>	<b>151.19</b>	<b>178.90</b>	<b>202.69</b>
<b>Prevented planting %</b>	<b>59%</b>	<b>58%</b>	<b>54%</b>	<b>51%</b>	<b>52%</b>	<b>45%</b>	<b>43%</b>	<b>50%</b>	<b>44%</b>	<b>42%</b>

Table 229: Estimated prevented planting costs per acre in Rye production: Wisconsin

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rye Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop ins	0.14	0.15	0.16	0.16	0.17	0.17	0.18	0.19	0.19	0.20
Scouting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicides	1.01	1.01	1.03	1.07	1.08	1.16	1.25	1.21	1.22	1.28
Labor	1.24	1.27	1.31	1.35	1.40	1.45	1.49	1.50	1.52	1.57
Fuel, lube, elec.	2.78	3.28	4.29	4.75	5.25	6.84	4.55	5.64	7.19	7.15
Repairs and Maintenance	4.17	4.29	4.48	4.57	4.72	4.78	4.88	4.97	5.15	5.34
Interest on operating costs	0.52	0.53	0.61	0.73	0.78	0.82	0.76	0.73	0.80	0.81
<b>Total, operating costs</b>	<b>9.87</b>	<b>10.54</b>	<b>11.87</b>	<b>12.64</b>	<b>13.41</b>	<b>15.22</b>	<b>13.10</b>	<b>14.24</b>	<b>16.07</b>	<b>16.35</b>
<b>Allocated overhead:</b>										
Hired Labor	3.98	4.05	4.18	4.33	4.48	4.64	4.76	4.79	4.86	5.04
Capital recovery of machinery & equip	14.41	15.45	16.50	17.36	18.22	19.94	21.18	21.94	23.28	24.52
Opportunity cost of land (rental rate)	70.85	72.58	74.31	81.22	84.68	95.05	105.99	109.45	118.09	122.12
Interest and insurance	9.02	9.31	10.65	12.76	13.62	14.30	13.14	12.76	13.91	14.10
Returns to management	24.11	24.58	25.34	26.27	27.19	28.11	28.88	29.03	29.49	30.57
<b>Total, allocated overhead</b>	<b>122.37</b>	<b>125.97</b>	<b>130.99</b>	<b>141.94</b>	<b>148.19</b>	<b>162.02</b>	<b>173.95</b>	<b>177.97</b>	<b>189.63</b>	<b>196.35</b>
<b>Total costs listed</b>	<b>132.24</b>	<b>136.51</b>	<b>142.86</b>	<b>154.58</b>	<b>161.60</b>	<b>177.25</b>	<b>187.05</b>	<b>192.20</b>	<b>205.70</b>	<b>212.70</b>
<b>Total costs</b>	<b>260.29</b>	<b>269.45</b>	<b>285.48</b>	<b>304.40</b>	<b>323.74</b>	<b>379.57</b>	<b>370.87</b>	<b>376.06</b>	<b>408.83</b>	<b>422.68</b>
<b>Prevented planting %</b>	<b>51%</b>	<b>51%</b>	<b>50%</b>	<b>51%</b>	<b>50%</b>	<b>47%</b>	<b>50%</b>	<b>51%</b>	<b>50%</b>	<b>50%</b>



Table 230: Estimated prevented planting costs per acre in Rye production: Oklahoma

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Rye Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pesticide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop Insurance	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.09
Operating Capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machinery Labor Hrs.	3.42	3.19	3.65	3.65	3.65	3.65	3.93	4.12	4.48	4.48
Custom Hire	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machinery Fuel, Lube, Repairs	8.11	7.80	12.04	14.90	15.12	15.12	14.35	15.38	17.00	20.36
Total, operating costs	11.56	11.02	15.72	18.58	18.80	18.80	18.31	19.54	21.51	24.92
Allocated overhead:										
Interest	6.20	6.01	7.10	9.01	9.53	9.53	8.00	7.98	7.82	8.47
Taxes	1.20	1.22	1.47	1.65	1.68	1.68	1.68	1.72	1.74	2.19
Insurance	0.49	0.52	0.57	0.64	0.65	0.65	0.65	0.67	0.67	0.85
Depreciation	8.36	9.15	10.48	11.70	11.98	11.98	11.98	12.31	12.41	15.57
Land	30.17	28.05	31.24	30.60	33.00	36.12	36.39	37.47	40.40	41.63
Returns to management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total, allocated overhead	46.41	44.96	50.86	53.60	56.84	59.96	58.70	60.15	63.04	68.71
Total costs listed	57.97	55.98	66.58	72.18	75.64	78.76	77.01	79.69	84.55	93.63
Total costs	110.86	111.48	137.12	152.82	161.75	164.87	159.51	164.90	182.97	216.66
Prevented planting %	52%	50%	49%	47%	47%	48%	48%	48%	46%	43%

## 6.14. Safflower

### Overview

Safflower is an annual, broadleaf, oilseed crop. It has a long taproot system and it is well adapted to semiarid regions, such as the Great Plains and California valleys. Safflower is grown primarily for oil, meal, and birdseed.

In 2012, 179.4 million pounds of safflower were grown on 160,100 harvested acres. California is by far the most significant producer, accounting for one-third of the acreage and more than three-fifths (61%) of production. Other important safflower states include Montana (10% of production), North Dakota (9%), and Utah (5%).

Figure 104: Safflower producing states



Source: Agralytica and NASS 2012

### Sources of production cost information

California periodically publishes budgets for safflower production. Because it is by far the largest producer, we used California's data to build our safflower budget presented here. Safflower is grown in California in both the Sacramento and San Joaquin Valleys, and can be grown bed planted and irrigated, or on dryland. We worked with the Sacramento Valley, bed-planted and irrigated budgets, as there were ones available for both 2005 and 2011. We used price indices to calculate cost estimates for the missing years.

In North Dakota, safflower production is concentrated in the Northwest (NW) and Southwest (SW) regions. We averaged costs for these regions for 2004 and 2012 to build an overall crop budget for safflower for North Dakota, filling in the years 2003 and 2005-2011 using NASS price indexes.

Additionally, we ran prevented planting cost calculations on budgets obtained for Utah and Nebraska.

### Production practices

Safflower is an option for dryland crop rotation; it is usually grown in rotation with small grains or on fallow. Most safflower is grown under contract, either with a birdseed company or an oil company for delivery in the fall.

Safflower grows best in fertile, well-drained soils. It is slow to develop in the early growth stages; seedlings are weak and stands are poor weed competitors. Weeds must be controlled before planting and pre-emergence. Farmers also use row spacing for competition control.

Land planted to safflower is usually tilled in the fall; in the spring, herbicides are used, and there is additional preparation of the soil. In California, safflower is planted from January through April, from South to North. Outside California, it is typically planted later (in North Dakota it is planted between late April and early May). Safflower typically needs 110-140 days to mature. It is a low maintenance crop.

Safflower yields vary dramatically. Irrigated safflower in California has high yields, typically over a ton (average: 2,100 pounds/acre). In other states, yields are typically lower, typically in the 700-900 pounds per acre range.

### Prevented planting experience

Prevented planting claims were 28% of total indemnities over the past 20 years. Total safflower indemnities totaled almost \$10.5 million from 2003 to 2012, \$2.9 million of which were for prevented planting (28%). California accounted for the largest portion of prevented planting indemnities (\$1.3 million, 45%). Montana (20%) and North Dakota (18%) accounted for most of the rest. The most common cause of loss in all three states was excess moisture/precipitation/rain. Excess moisture and cold wet weather accounted for 96.5% (\$2.8 million) of safflower prevented planting claims.

### Analysis

The California safflower budget indicates pre-planting cost estimates of 66% in 2003 (\$173 of \$270 per acre) and 68% in 2012 (\$248 of \$365 per acre). For North Dakota, the pre-planting percentage declined, from 62% in 2003 (\$74 of \$119) to 58% in 2012 (\$81 of \$257). When averaging both budget percentages, the average is 63% for 2003 and 63% for 2012.

We ran a similar analysis of individual budgets for a number of different states, estimating pre-planting costs as follows:

- North Dakota (western portion of the state): 62% (2004) and 58% (2012)
- Nebraska: 60% (2007)
- Utah (Box Elder County): 66% (2013)

Base on this crop budget analysis, we would recommend no change in RMA's 60% PP rate.

### Comparison of estimated PP cost to RMA payments

The ratio of RMA's incurred base PP payment to estimated PP costs has fluctuated around 1.00 for California, which represents over 60% of national production. The ratio has been closer to 0.75 for North Dakota, but that state represents less than 10% of production.

### Recommendation

RMA's PP payments for safflower are consistent with estimated PP costs for California, the major producer. We reviewed several other state budgets, all of which suggested PP costs were in the 58%-68% range. The PP payment rate should be left unchanged at 60%.

Figure 105: Share of costs incurred prior to planting safflower

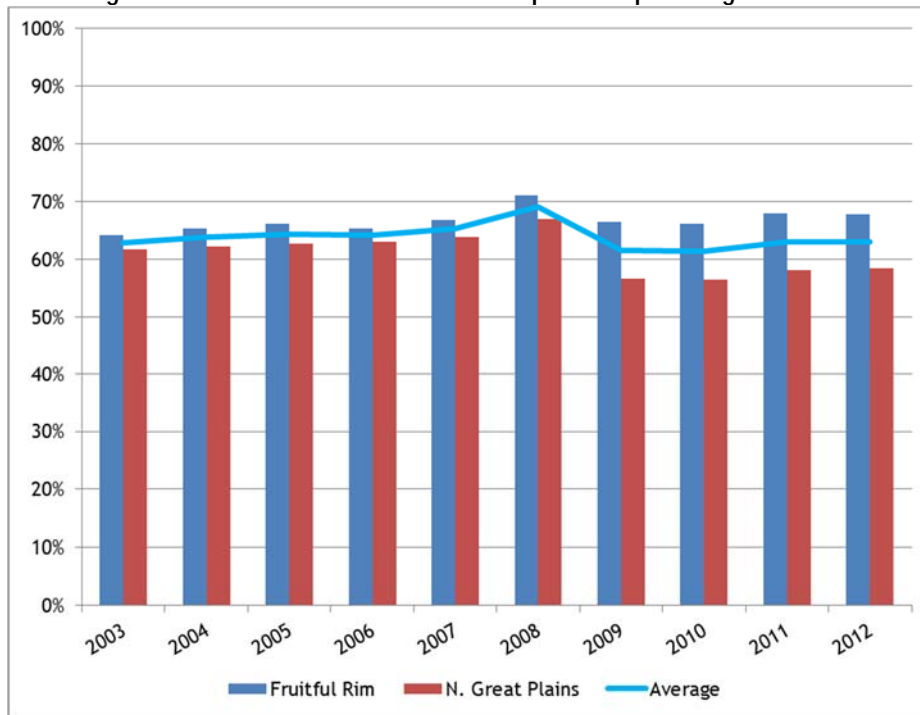


Figure 106: Ratio of RMA payment to PP costs for safflower

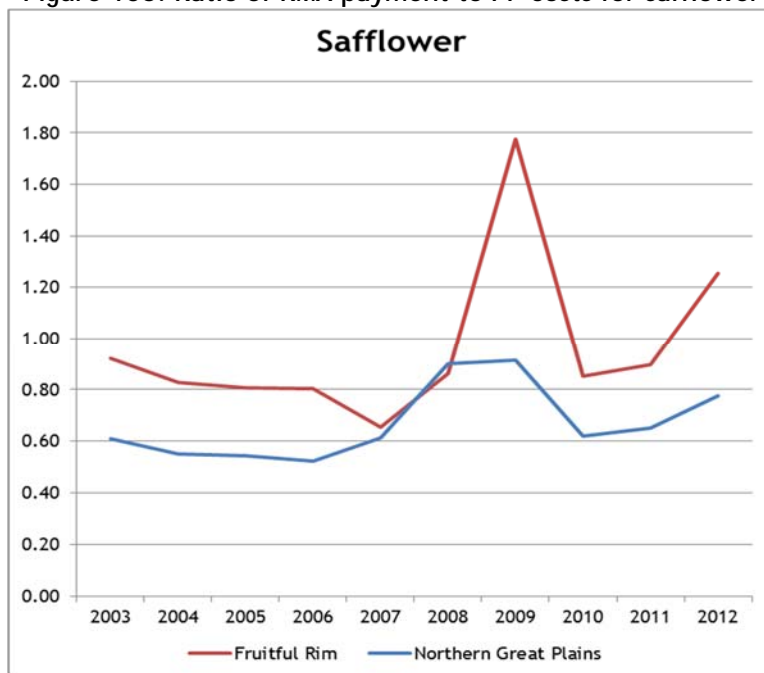


Table 231: Safflower production costs per planted acre: California

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	<i>11.92</i>	<i>12.23</i>	13.00	<i>13.00</i>	<i>13.00</i>	<i>13.00</i>	<i>13.00</i>	<i>13.00</i>	13.00	<i>14.06</i>
Fertilizer	<i>27.22</i>	<i>30.73</i>	36.00	<i>38.63</i>	<i>47.41</i>	<i>86.05</i>	<i>48.63</i>	<i>44.56</i>	58.00	<i>58.88</i>
Chemicals	<i>21.64</i>	<i>21.64</i>	22.00	<i>22.89</i>	<i>23.07</i>	<i>24.86</i>	<i>19.52</i>	<i>18.87</i>	19.00	<i>20.05</i>
Custom operations	<i>34.09</i>	<i>32.73</i>	33.00	<i>33.55</i>	<i>34.09</i>	<i>35.03</i>	<i>35.27</i>	<i>35.27</i>	36.00	<i>38.19</i>
Fuel, lube, and repairs	<i>10.37</i>	<i>12.22</i>	16.00	<i>17.70</i>	<i>19.56</i>	<i>32.31</i>	<i>21.51</i>	<i>26.67</i>	34.00	<i>33.81</i>
Hired labor	<i>21.88</i>	<i>22.30</i>	23.00	<i>23.84</i>	<i>24.67</i>	<i>25.51</i>	<i>26.21</i>	<i>29.53</i>	30.00	<i>31.09</i>
Irrigation water	<i>10.32</i>	<i>10.62</i>	11.00	<i>11.00</i>	<i>11.00</i>	<i>11.00</i>	<i>11.00</i>	<i>11.00</i>	11.00	<i>11.20</i>
Crop insurance	5.00	5.08	5.32	5.56	5.84	5.84	3.23	3.34	3.40	3.46
Interest on operating capital	<i>4.23</i>	<i>4.37</i>	5.00	<i>5.00</i>	<i>5.00</i>	<i>5.00</i>	<i>5.00</i>	<i>5.00</i>	5.00	<i>5.07</i>
Total, operating costs	<i>146.68</i>	<i>151.92</i>	164.32	<i>171.17</i>	<i>183.65</i>	<i>238.60</i>	<i>183.37</i>	<i>187.24</i>	209.40	<i>215.81</i>
Allocated overhead:										
Managerial labor	<i>23.79</i>	<i>24.24</i>	25.00	<i>25.91</i>	<i>26.82</i>	<i>27.73</i>	<i>24.48</i>	<i>24.61</i>	25.00	<i>25.91</i>
Capital recovery of machinery & equip	<i>29.68</i>	<i>31.84</i>	34.00	<i>35.77</i>	<i>37.54</i>	<i>41.08</i>	<i>24.57</i>	<i>25.45</i>	27.00	<i>28.44</i>
Opportunity cost of land (rental rate)	<i>52.70</i>	<i>54.85</i>	57.00	<i>59.51</i>	<i>63.81</i>	<i>73.49</i>	<i>65.76</i>	<i>67.71</i>	73.00	<i>75.23</i>
Taxes and insurance	<i>2.69</i>	<i>2.82</i>	3.00	<i>2.91</i>	<i>3.12</i>	<i>3.62</i>	<i>3.53</i>	<i>3.64</i>	4.00	<i>4.15</i>
Other farm overhead	<i>13.46</i>	<i>14.08</i>	15.00	<i>10.92</i>	<i>11.69</i>	<i>13.59</i>	<i>13.24</i>	<i>13.66</i>	15.00	<i>15.56</i>
Total, allocated overhead	<i>122.31</i>	<i>127.82</i>	134.00	<i>135.01</i>	<i>142.97</i>	<i>159.51</i>	<i>131.57</i>	<i>135.07</i>	144.00	<i>149.29</i>
Total costs listed	<i>268.99</i>	<i>279.74</i>	298.32	<i>306.19</i>	<i>326.62</i>	<i>398.11</i>	<i>314.94</i>	<i>322.31</i>	353.40	<i>365.11</i>

Source for budget(s): UC Davis

<http://coststudies.ucdavis.edu/files/SafflowerSV2011.pdf>

Notes:

Based on 2005 and 2011 budgets; values for other years derived using price indices (in italics)

Table 232: Safflower production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
-Seed	12.18	12.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00	12.50
-Herbicides	9.39	9.39	9.55	9.93	10.01	10.79	18.50	17.88	18.01	19.00
-Fungicides	0.10	0.10	0.10	0.11	0.11	0.11	0.00	0.00	0.00	0.00
-Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-Fertilizer	5.78	6.53	7.64	8.20	10.07	18.27	20.72	18.98	24.71	25.09
-Crop Insurance	4.08	4.15	4.35	4.54	4.77	4.77	14.25	14.70	14.98	15.25
-Fuel & Lubrication	3.92	4.63	6.05	6.70	7.40	9.64	7.94	9.85	12.55	12.48
-Repairs	7.82	8.05	8.40	8.57	8.86	8.97	12.15	12.38	12.84	13.30
-Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-Miscellaneous	0.96	1.00	1.07	1.13	1.21	1.41	5.53	5.71	6.26	6.50
-Operating Interest	1.35	1.40	1.60	1.91	2.04	2.14	2.23	2.17	2.36	2.40
<b>Total, operating costs</b>	<b>45.59</b>	<b>47.74</b>	<b>51.75</b>	<b>54.09</b>	<b>57.46</b>	<b>69.11</b>	<b>94.32</b>	<b>94.67</b>	<b>104.71</b>	<b>106.51</b>
Allocated overhead:										
- Operator returns	30.96	31.55	32.54	33.72	34.90	36.09	81.95	82.38	83.69	86.74
-Misc. Overhead	6.37	6.67	7.10	7.54	8.08	9.39	4.87	5.03	5.52	5.73
-Machinery Depreciation	9.60	10.30	10.99	11.57	12.14	13.28	12.99	13.46	14.28	15.04
-Machinery Investment	5.58	5.99	6.40	6.73	7.06	7.73	7.20	7.45	7.91	8.33
-Land Charge	20.43	21.27	22.10	23.07	24.74	28.49	29.85	30.74	33.14	34.15
<b>Total, allocated overhead</b>	<b>72.94</b>	<b>75.77</b>	<b>79.13</b>	<b>82.63</b>	<b>86.92</b>	<b>94.98</b>	<b>136.86</b>	<b>139.06</b>	<b>144.54</b>	<b>149.99</b>
<b>Total costs listed</b>	<b>118.53</b>	<b>123.50</b>	<b>130.88</b>	<b>136.72</b>	<b>144.38</b>	<b>164.08</b>	<b>231.17</b>	<b>233.73</b>	<b>249.25</b>	<b>256.50</b>

Table 233: Safflower - share of expenses incurred before planting: California

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chemicals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and repairs	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Hired labor	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Irrigation water	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Managerial labor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Other farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 234: Safflower - share of expenses incurred before planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses										
-Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-Herbicides	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Fungicides	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Insecticides	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-Fertilizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Crop Insurance	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
-Fuel & Lubrication	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
-Repairs	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
-Drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-Miscellaneous	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
-Operating Interest	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
- Operator returns	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
-Misc. Overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Machinery Depreciation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Machinery Investment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
-Land Charge	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total, allocated overhead										



Table 235: Safflower prevented planting cost per acre: California

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	27.22	30.73	36.00	38.63	47.41	86.05	48.63	44.56	58.00	58.88
Chemicals	21.64	21.64	22.00	22.89	23.07	24.86	19.52	18.87	19.00	20.05
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and repairs	6.74	7.94	10.40	11.51	12.71	21.00	13.98	17.34	22.10	21.98
Hired labor	10.94	11.15	11.50	11.92	12.34	12.75	13.10	14.77	15.00	15.55
Irrigation water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	1.45	1.47	1.54	1.61	1.69	1.69	0.94	0.97	0.99	1.00
Interest on operating capital	1.06	1.09	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.27
<b>Total, operating costs</b>	<b>69.05</b>	<b>74.04</b>	<b>82.69</b>	<b>87.82</b>	<b>98.48</b>	<b>147.61</b>	<b>97.42</b>	<b>97.75</b>	<b>116.34</b>	<b>118.73</b>
Allocated overhead:										
Managerial labor	4.76	4.85	5.00	5.18	5.36	5.55	4.90	4.92	5.00	5.18
Capital recovery of machinery & equip	29.68	31.84	34.00	35.77	37.54	41.08	24.57	25.45	27.00	28.44
Opportunity cost of land (rental rate)	52.70	54.85	57.00	59.51	63.81	73.49	65.76	67.71	73.00	75.23
Taxes and insurance	2.69	2.82	3.00	2.91	3.12	3.62	3.53	3.64	4.00	4.15
Other farm overhead	13.46	14.08	15.00	10.92	11.69	13.59	13.24	13.66	15.00	15.56
<b>Total, allocated overhead</b>	<b>103.28</b>	<b>108.43</b>	<b>114.00</b>	<b>114.29</b>	<b>121.52</b>	<b>137.33</b>	<b>111.99</b>	<b>115.38</b>	<b>124.00</b>	<b>128.56</b>
<b>Total costs listed</b>	<b>172.34</b>	<b>182.46</b>	<b>196.69</b>	<b>202.10</b>	<b>220.00</b>	<b>284.94</b>	<b>209.41</b>	<b>213.14</b>	<b>240.34</b>	<b>247.29</b>
<b>Total costs</b>	<b>268.99</b>	<b>279.74</b>	<b>298.32</b>	<b>306.19</b>	<b>326.62</b>	<b>398.11</b>	<b>314.94</b>	<b>322.31</b>	<b>353.40</b>	<b>365.11</b>
<b>Prevented planting %</b>	<b>64%</b>	<b>65%</b>	<b>66%</b>	<b>66%</b>	<b>67%</b>	<b>72%</b>	<b>66%</b>	<b>66%</b>	<b>68%</b>	<b>68%</b>

Table 236: Safflower prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses										
-Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-Herbicides	9.39	9.39	9.55	9.93	10.01	10.79	18.50	17.88	18.01	19.00
-Fungicides	0.10	0.10	0.10	0.11	0.11	0.11	0.00	0.00	0.00	0.00
-Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-Fertilizer	5.78	6.53	7.64	8.20	10.07	18.27	20.72	18.98	24.71	25.09
-Crop Insurance	1.18	1.20	1.26	1.32	1.38	1.38	4.13	4.26	4.34	4.42
-Fuel & Lubrication	2.55	3.01	3.94	4.35	4.81	6.27	5.16	6.40	8.16	8.11
-Repairs	5.08	5.23	5.46	5.57	5.76	5.83	7.90	8.05	8.35	8.65
-Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-Miscellaneous	0.48	0.50	0.53	0.57	0.61	0.70	2.76	2.85	3.13	3.25
-Operating Interest	0.34	0.35	0.40	0.48	0.51	0.54	0.56	0.54	0.59	0.60
Total, operating costs	24.90	26.31	28.87	30.53	33.25	43.89	59.73	58.97	67.28	69.11
Allocated overhead:										
- Operator returns	6.19	6.31	6.51	6.74	6.98	7.22	16.39	16.48	16.74	17.35
-Misc. Overhead	6.37	6.67	7.10	7.54	8.08	9.39	4.87	5.03	5.52	5.73
-Machinery Depreciation	9.60	10.30	10.99	11.57	12.14	13.28	12.99	13.46	14.28	15.04
-Machinery Investment	5.58	5.99	6.40	6.73	7.06	7.73	7.20	7.45	7.91	8.33
-Land Charge	20.43	21.27	22.10	23.07	24.74	28.49	29.85	30.74	33.14	34.15
Total, allocated overhead	48.18	50.53	53.10	55.65	59.00	66.11	71.30	73.16	77.59	80.60
Total costs listed	73.08	76.83	81.97	86.18	92.25	110.00	131.03	132.13	144.87	149.71
Total costs	118.53	123.50	130.88	136.72	144.38	164.08	231.17	233.73	249.25	256.50
Prevented planting %	62%	62%	63%	63%	64%	67%	57%	57%	58%	58%

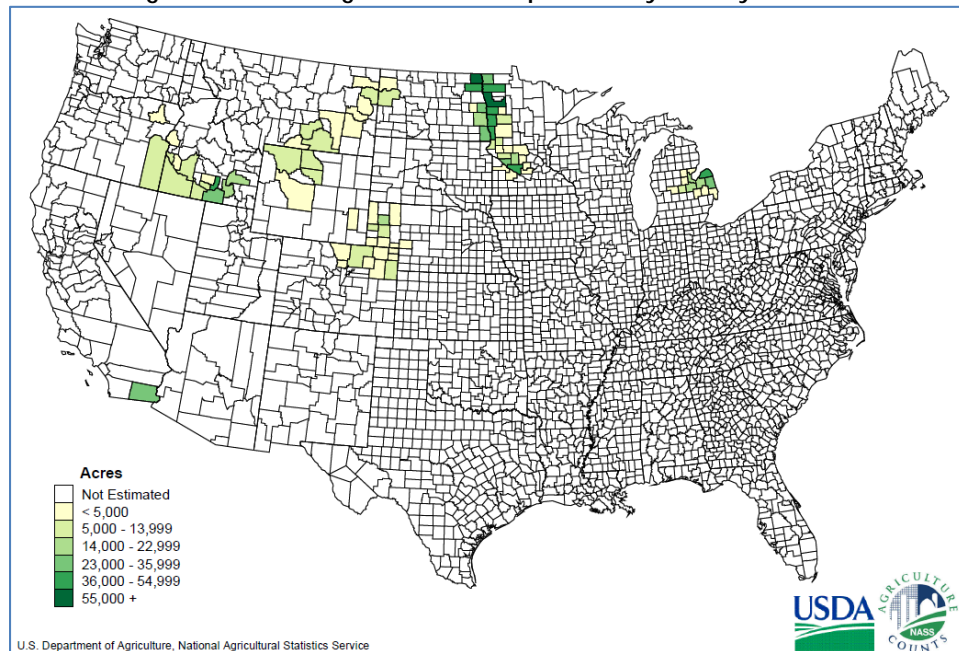
## 6.15. Sugar beets

### Overview

Sugar beets are currently produced in ten states but four of them account for 80-85 percent of total production. Those four are Minnesota, Idaho, North Dakota and Michigan.

Production is non-irrigated in the East and irrigated in the West. The map below from NASS provides a snapshot of the main areas of production.

Figure 107: US sugar beet acres planted by county in 2012



### Sources of production cost information

ERS prepared estimates of production cost for sugar beets up through 2007 in connection with the sugar program. Estimates are available for three regions, defined as Great Lakes, Great Plains, and Northwest.

For later years one has to rely primarily on state extension budgets. We found full or partial budgets for selected years for Idaho (2009, 2011), Michigan (2011), Colorado (2010, 2012), Nebraska (2011) and Minnesota (2010). The recent budgets specifically address costs for Roundup Ready beet production. Fortunately we also found actual production cost data for Minnesota and North Dakota through the University of Minnesota's FINBIN database which compiles actual farm financial and operating data from participating farmers. An average of 135 sugar beet growers participates each year, which is a respectable sample.

We used the Michigan and Idaho budgets and the FINBIN cost data in extending the production cost estimates for the three regions in the ERS data. The resulting budgets are representative of 85 percent of total sugar beet harvested area.

## Production practices

Sugar beets are planted comparatively early in the spring because they do have some degree of frost tolerance. Plantings begin in early April and are most active from mid-April to mid-May. They are produced in rotation with grain, oilseed and pulse crops. The typical rotation in the east is wheat or another small grain, followed by sugar beets, and then an oilseed or corn crop. In the west the rotation may include potatoes or dry beans rather than corn or oilseeds.

The fields are plowed in the fall and receive light cultivation in the spring followed by initial fertilization prior to planting. However, if it is too wet to plant it is generally too wet to fertilize. Most passes of equipment through the field are after the pre-planting phase. Typically there are about 14 passes through the field, two of which occur prior to planting in a PP situation.

## Prevented planting experience

PP claims were 8.6% of total indemnities over the last 20 years and only 5.3% of indemnities between 2003 and 2012. Since beet factories are cooperatively owned by the growers, the latter have a strong incentive to get a crop planted so that factories have sufficient raw material. Failure of the irrigation supply is the most common cause of a prevented planting situation, accounting for 80% of the PP indemnities. Of the total payments of \$14.7 million over that period, over half were for failure of the irrigation supply in Wyoming. The rest were about evenly divided among Colorado, Minnesota, Nebraska, North Dakota, and Oregon.

## Analysis

The current PP guarantee adjustment factor is 45%. Since one-seventh of the field operations occur before planting, we allocated 15% of fuel and equipment repair costs to the pre-planting period. In general, the share of costs incurred prior to planting did not change significantly over the ten-year period.

- Pre-planting costs in the Great Plains averaged 49% in the first half of the period and 44% in the second half due to lower capital recovery costs in the source material for the latter period.
- Costs in the Great Lakes region were flat at 53%.
- Costs in the Northwest rose from 54% to 56%.

However these results were affected by unusually high sugar prices in 2010-2012 that inflated the quota lease and land rent costs by \$50-75 per acre. Without that, the share of costs incurred pre-planting would have been about 2% lower at the end of the period for each region. Based on this crop budget analysis, one might recommend a PP rate of 50%.

## Comparison of estimated PP cost to RMA payments

The ratio of RMA PP payments to estimated costs has mostly been 0.80 or below, but rose to 1.20 for the Northern Great Plains beginning in 2008 when we started using FINBIN data showing lower production costs. For all three regions the ratio rose in 2012 by about 0.20.

## Recommendation

Since the Northern Great Plains is the most important production region, we give it more weight in considering whether the payment ratios argue for any change in the recommendation based on PP cost estimates. On balance, we think the payment rate should be kept at 45%.

Figure 108: Share of costs incurred prior to planting sugar beets

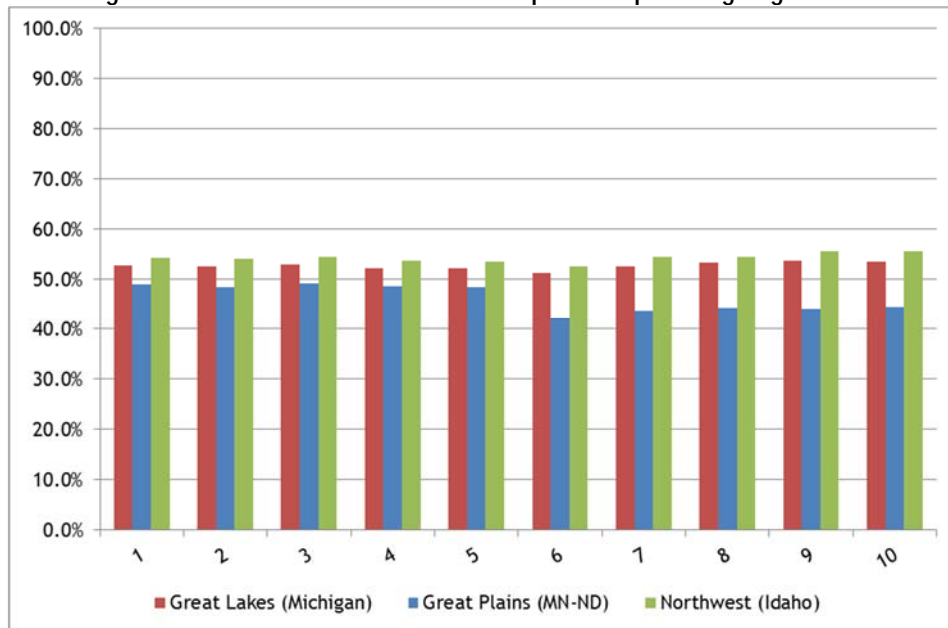


Figure 109: Ratio of RMA payment to PP costs for sugar beets

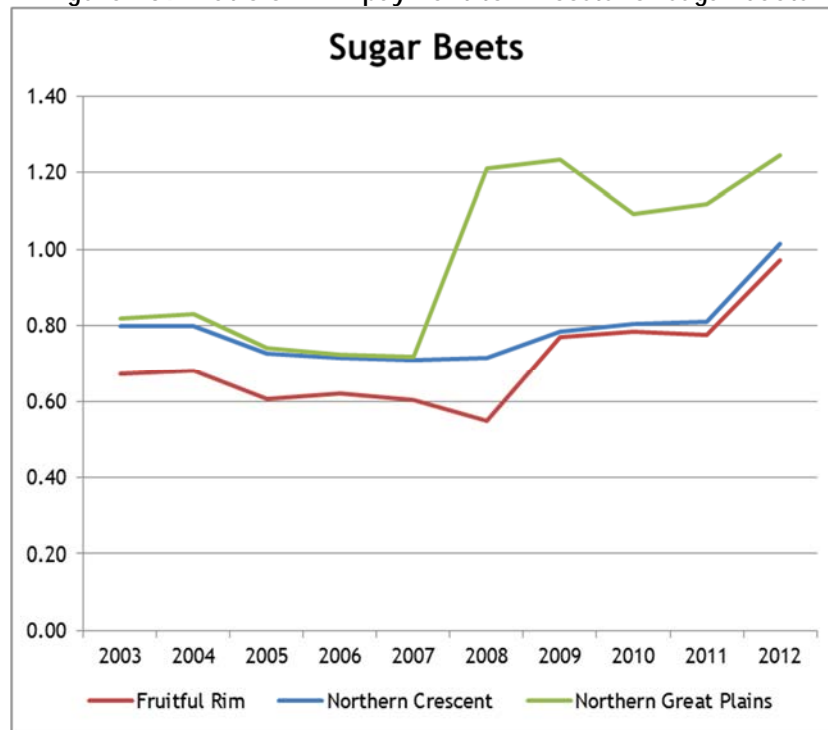


Table 237: Sugar beets production costs per planted acre: Great Lakes (Michigan)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	42.77	46.02	46.98	50.54	56.93	58.51	67.55	70.03	75.00	81.10
Fertilizer 2/	80.31	85.65	100.33	107.06	133.22	173.53	121.74	111.56	145.20	147.41
Chemicals	74.37	74.13	75.36	78.42	79.65	99.70	106.87	103.28	104.00	109.74
Custom operations	30.15	30.86	31.12	31.63	32.14	37.03	37.28	37.28	38.05	40.37
Fuel, lube, and electricity	48.14	59.24	77.55	85.81	94.79	34.81	23.17	28.74	36.63	36.43
Repairs	56.90	59.99	62.56	63.85	65.99	58.04	59.15	60.27	62.50	64.73
Hired labor	32.32	31.19	32.16	33.33	34.50	71.48	73.44	73.83	75.00	77.73
Freight and dirt hauling	21.05	21.38	25.26	29.71	32.06	66.41	66.87	66.87	68.25	72.40
Miscellaneous	3.34	3.55	3.77	3.96	4.39	8.15	7.94	8.20	9.00	9.34
Crop insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating capital	1.89	3.01	7.19	10.85	11.18	21.60	19.86	19.28	21.02	21.31
<b>Total, operating costs</b>	<b>358.92</b>	<b>383.83</b>	<b>430.12</b>	<b>461.83</b>	<b>510.35</b>	<b>629.25</b>	<b>583.87</b>	<b>579.33</b>	<b>634.65</b>	<b>660.56</b>
Allocated overhead:										
Opportunity cost of unpaid labor	108.31	104.53	107.80	111.72	115.64	47.66	48.96	49.22	50.00	51.82
Capital recovery of machinery and equipment	173.35	177.75	189.82	199.70	209.58	229.33	243.60	252.37	267.74	282.00
Opportunity cost of land (rental rate)	129.81	131.62	146.58	143.59	155.70	132.23	152.23	156.74	169.00	174.16
Taxes and insurance	14.74	15.07	18.13	19.07	20.60	25.37	24.71	25.50	28.00	29.05
General farm overhead	29.23	29.88	31.22	32.34	33.46	38.90	37.89	39.10	42.93	44.55
Coop share	12.36	12.66	13.04	13.42	12.24	14.23	13.86	14.30	15.71	16.30
<b>Total, allocated overhead</b>	<b>500.12</b>	<b>502.70</b>	<b>538.75</b>	<b>553.17</b>	<b>581.72</b>	<b>487.72</b>	<b>521.25</b>	<b>537.25</b>	<b>573.37</b>	<b>597.88</b>
<b>Total costs listed</b>	<b>859.04</b>	<b>886.53</b>	<b>968.87</b>	<b>1,015.00</b>	<b>1,092.07</b>	<b>1116.98</b>	<b>1105.12</b>	<b>1116.58</b>	<b>1208.03</b>	<b>1258.44</b>

Sources: ERS, USDA for 2003-2007; Michigan State University for 2011; remaining years calculated with price indexes from 2011

Table 238: Sugar beet - share of expenses incurred before planting: Great Lakes (Michigan)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer 2/	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Freight and dirt hauling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Crop insurance	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Interest on operating capital	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
<b>Allocated overhead:</b>										
Opportunity cost of unpaid labor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Capital recovery of machinery and equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Coop share	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 239: Sugar beet prevented planting cost per acre: Great Lakes (Michigan)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer 2/	16.06	17.13	20.07	21.41	26.64	34.71	24.35	22.31	29.04	29.48
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	7.22	8.89	11.63	12.87	14.22	5.22	3.48	4.31	5.49	5.46
Repairs	8.54	9.00	9.38	9.58	9.90	8.71	8.87	9.04	9.38	9.71
Hired labor	3.23	3.12	3.22	3.33	3.45	7.15	7.34	7.38	7.50	7.77
Freight and dirt hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	0.50	0.53	0.57	0.59	0.66	1.22	1.19	1.23	1.35	1.40
Crop insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on operating capital	0.28	0.45	1.08	1.63	1.68	3.24	2.98	2.89	3.15	3.20
<b>Total, operating costs</b>	<b>35.83</b>	<b>39.12</b>	<b>45.94</b>	<b>49.42</b>	<b>56.55</b>	<b>60.24</b>	<b>48.21</b>	<b>47.17</b>	<b>55.91</b>	<b>57.03</b>
Allocated overhead:										
Opportunity cost of unpaid labor	21.66	20.91	21.56	22.34	23.13	9.53	9.79	9.84	10.00	10.36
Capital recovery of machinery and equipment	173.35	177.75	189.82	199.70	209.58	229.33	243.60	252.37	267.74	282.00
Opportunity cost of land (rental rate)	129.81	131.62	146.58	143.59	155.70	132.23	152.23	156.74	169.00	174.16
Taxes and insurance	14.74	15.07	18.13	19.07	20.60	25.37	24.71	25.50	28.00	29.05
General farm overhead	29.23	29.88	31.22	32.34	33.46	38.90	37.89	39.10	42.93	44.55
Coop share	12.36	12.66	13.04	13.42	12.24	14.23	13.86	14.30	15.71	16.30
<b>Total, allocated overhead</b>	<b>417.27</b>	<b>427.46</b>	<b>467.37</b>	<b>481.51</b>	<b>512.93</b>	<b>513.08</b>	<b>533.28</b>	<b>547.93</b>	<b>592.44</b>	<b>616.64</b>
<b>Costs prior to planting</b>	<b>453.10</b>	<b>466.57</b>	<b>513.31</b>	<b>530.92</b>	<b>569.48</b>	<b>573.33</b>	<b>581.49</b>	<b>595.10</b>	<b>648.35</b>	<b>673.67</b>
<b>Total costs listed</b>	<b>859.04</b>	<b>886.53</b>	<b>968.87</b>	<b>1,015.00</b>	<b>1,092.07</b>	<b>1,116.98</b>	<b>1,105.12</b>	<b>1,116.58</b>	<b>1,208.03</b>	<b>1,258.44</b>
<b>PP costs as % of total</b>	<b>52.7%</b>	<b>52.6%</b>	<b>53.0%</b>	<b>52.3%</b>	<b>52.1%</b>	<b>51.3%</b>	<b>52.6%</b>	<b>53.3%</b>	<b>53.7%</b>	<b>53.5%</b>



Table 240: Sugarbeet production costs per planted acre: Northwest (Idaho)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	41.83	44.87	45.81	49.28	55.51	70.48	101.88	105.63	127.34	137.70
Fertilizer 2/	90.39	88.15	103.26	110.19	137.11	248.83	164.45	150.70	180.15	182.90
Chemicals	86.88	81.45	82.80	86.17	87.52	94.30	52.24	50.49	45.28	47.78
Custom operations	49.84	49.40	49.81	50.63	51.45	59.27	25.50	25.50	26.10	27.69
Fuel, lube, and electricity	131.19	133.17	174.33	192.89	213.07	277.64	125.77	155.98	160.57	159.68
Repairs	66.16	67.23	70.11	71.55	73.95	74.91	60.94	62.09	61.83	64.04
Hired labor	102.65	109.24	112.65	116.75	120.85	124.95	110.37	110.96	114.58	118.76
Purchased irrigation water	17.05	18.33	18.90	19.89	20.87	21.68	38.20	38.92	41.30	42.04
Freight and dirt hauling	15.43	16.51	18.37	22.79	26.14	30.11	33.00	33.00	18.15	19.25
Miscellaneous	30.74	32.19	34.16	35.88	39.81	46.29	45.09	46.52	51.08	53.00
Hauling allowance (-)	1.31	1.29	1.37	1.44	1.60	2.12	1.31	1.69	2.23	2.29
Crop insurance	5.82	4.21	5.38	4.68	4.46	8.71	10.01	10.30	10.02	12.05
Interest on operating capital	2.80	4.20	10.16	15.37	15.80	16.58	25.15	24.42	28.23	28.62
<b>Total, operating costs</b>	<b>640.78</b>	<b>648.95</b>	<b>725.74</b>	<b>776.07</b>	<b>846.54</b>	<b>1,073.74</b>	<b>792.60</b>	<b>814.50</b>	<b>864.64</b>	<b>893.51</b>
<b>Allocated overhead:</b>										
Opportunity cost of unpaid labor	93.42	100.79	103.94	107.72	111.50	115.28	75.00	75.40	80.00	82.92
Capital recovery of machinery and equipment	220.36	220.78	235.77	248.04	260.31	284.84	165.00	170.95	174.19	183.47
Opportunity cost of land and quota	215.02	217.04	241.70	236.77	256.74	295.68	300.00	308.90	350.00	360.69
Taxes and insurance	21.96	22.49	27.06	28.47	30.76	35.76	53.30	55.00	60.85	63.14
General farm overhead	47.16	48.50	50.67	52.48	54.29	63.12	24.00	24.77	24.00	24.90
Coop share	19.04	19.33	19.92	20.51	18.71	21.75	25.00	25.80	35.00	36.31
<b>Total, allocated overhead</b>	<b>616.96</b>	<b>628.93</b>	<b>679.06</b>	<b>693.99</b>	<b>732.31</b>	<b>816.44</b>	<b>642.30</b>	<b>660.81</b>	<b>724.04</b>	<b>751.43</b>
<b>Total costs listed</b>	<b>1,257.74</b>	<b>1,277.88</b>	<b>1,404.80</b>	<b>1,470.06</b>	<b>1,578.85</b>	<b>1,890.18</b>	<b>1,434.90</b>	<b>1,475.31</b>	<b>1,588.68</b>	<b>1,644.93</b>

Sources for budgets: ERS, USDA for 2003-2007; University of Idaho for 2009 and 2011, with adjustments to the remaining years via price indexes.

<http://web.cals.uidaho.edu/idaohogbiz/enterprise-budgets/>

Table 241: Sugar beet - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Purchased irrigation water	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Freight and dirt hauling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hauling allowance (-)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Interest on operating capital	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
<b>Allocated overhead:</b>										
Opportunity cost of unpaid labor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Capital recovery of machinery and equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land and quota	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Coop share	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 242: Sugar beets prevented planting cost per acre: Northwest (Idaho)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer 2/	18.08	17.63	20.65	22.04	27.42	49.77	32.89	30.14	36.03	36.58
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	19.68	19.98	26.15	28.93	31.96	41.65	18.87	23.40	24.09	23.95
Repairs	9.92	10.08	10.52	10.73	11.09	11.24	9.14	9.31	9.27	9.61
Hired labor	10.27	10.92	11.27	11.68	12.09	12.49	11.04	11.10	11.46	11.88
Purchased irrigation water	6.82	7.33	7.56	7.96	8.35	8.67	15.28	15.57	16.52	16.82
Freight and dirt hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	4.61	4.83	5.12	5.38	5.97	6.94	6.76	6.98	7.66	7.95
Hauling allowance (-)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	0.42	0.40	0.78	0.90	0.93	0.90	0.00	0.00	0.00	1.08
Interest on operating capital	0.42	0.63	1.52	2.31	2.37	2.49	3.77	3.66	4.23	4.29
<b>Total, operating costs</b>	<b>70.22</b>	<b>71.81</b>	<b>83.57</b>	<b>89.92</b>	<b>100.18</b>	<b>134.15</b>	<b>97.75</b>	<b>100.15</b>	<b>109.26</b>	<b>112.16</b>
Allocated overhead:										
Opportunity cost of unpaid labor	18.68	20.16	20.79	21.54	22.30	23.06	15.00	15.08	16.00	16.58
Capital recovery of machinery and equipment	220.36	220.78	235.77	248.04	260.31	284.84	165.00	170.95	174.19	183.47
Opportunity cost of land and quota	215.02	217.04	241.70	236.77	256.74	295.68	300.00	308.90	350.00	360.69
Taxes and insurance	21.96	22.49	27.06	28.47	30.76	35.76	53.30	55.00	60.85	63.14
General farm overhead	47.16	48.50	50.67	52.48	54.29	63.12	24.00	24.77	24.00	24.90
Coop share	19.04	19.33	19.92	20.51	18.71	21.75	25.00	25.80	35.00	36.31
<b>Total, allocated overhead</b>	<b>612.86</b>	<b>620.73</b>	<b>681.01</b>	<b>700.04</b>	<b>745.66</b>	<b>860.85</b>	<b>683.82</b>	<b>704.31</b>	<b>773.54</b>	<b>801.54</b>
<b>Costs prior to planting</b>	<b>683.08</b>	<b>692.54</b>	<b>764.58</b>	<b>789.97</b>	<b>845.83</b>	<b>995.00</b>	<b>781.57</b>	<b>804.46</b>	<b>882.80</b>	<b>913.70</b>
<b>Total costs listed</b>	<b>1,257.74</b>	<b>1,277.88</b>	<b>1,404.80</b>	<b>1,470.06</b>	<b>1,578.85</b>	<b>1,890.18</b>	<b>1,434.90</b>	<b>1,475.31</b>	<b>1,588.68</b>	<b>1,644.93</b>
<b>PP costs as % of total</b>	<b>54.3%</b>	<b>54.2%</b>	<b>54.4%</b>	<b>53.7%</b>	<b>53.6%</b>	<b>52.6%</b>	<b>54.5%</b>	<b>54.5%</b>	<b>55.6%</b>	<b>55.5%</b>

Table 243: Sugar beet production costs per planted acre: Great Plains (Minnesota and N. Dakota)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	49.74	53.87	54.99	59.16	66.64	90.57	131.73	155.03	155.15	173.96
Fertilizer 2/	76.31	78.10	91.49	97.63	121.48	72.44	98.53	75.5	97.08	116.76
Chemicals	78.19	77.77	79.06	82.27	83.56	94.78	60.25	70.36	86.08	94.49
Custom operations	37.84	40.62	40.96	41.64	42.32	19.77	17.78	22.66	19.26	28.69
Fuel, lube, and electricity	50.32	59.59	78.01	86.32	95.35	74.41	54.23	66.94	80.86	84.82
Repairs	54.64	56.07	58.47	59.67	61.67	80.39	84.04	92.92	98.99	105.39
Hired labor	56.50	58.77	60.61	62.81	65.01	61.39	63.45	74.24	72.24	84.8
Freight and dirt hauling	14.81	15.11	16.94	19.21	21.33	9.32	9.16	8.83	9.4	10.34
Miscellaneous	19.79	20.51	21.76	22.86	25.36	7.26	4.54	7.98	11.02	12.67
Hauling allowance (-)	7.41	7.90	8.38	8.80	9.76	0.00	0.00	0.00	0.00	0.00
Crop insurance	16.43	17.93	16.98	18.42	19.96	21.73	22.24	24.12	24.8	34.11
Interest on operating capital	2.04	3.25	7.69	11.54	11.86	20.81	14.4	17.51	17.84	14.55
<b>Total, operating costs</b>	<b>464.02</b>	<b>489.49</b>	<b>535.34</b>	<b>570.33</b>	<b>624.30</b>	<b>552.87</b>	<b>560.35</b>	<b>616.09</b>	<b>672.72</b>	<b>760.58</b>
Allocated overhead:										
Opportunity cost of unpaid labor	160.43	167.05	172.27	178.53	184.79	95.75	95.73	107.44	119.14	132.35
Capital recovery of machinery and equipment	173.12	175.40	187.31	197.05	206.79	78.4	82.7	101.33	102.2	125.66
Opportunity cost of land (rental rate)	132.97	136.20	151.68	148.58	161.11	148.15	164.47	199.25	214.81	242.14
Taxes and insurance	16.90	17.10	20.57	21.64	23.38	11.85	13.69	14.43	16.15	19.65
General farm overhead	39.95	40.03	41.82	43.31	44.80	9.7	12.92	13.45	14.04	16.23
Coop share	11.75	12.03	12.39	12.75	11.63	13.00	14.00	15.00	16.00	17.00
<b>Total, allocated overhead</b>	<b>535.12</b>	<b>547.81</b>	<b>586.04</b>	<b>601.86</b>	<b>632.50</b>	<b>356.85</b>	<b>383.51</b>	<b>450.90</b>	<b>482.34</b>	<b>553.03</b>
<b>Total costs listed</b>	<b>999.14</b>	<b>1,037.30</b>	<b>1,121.38</b>	<b>1,172.19</b>	<b>1,256.80</b>	<b>909.72</b>	<b>943.86</b>	<b>1,066.99</b>	<b>1,155.06</b>	<b>1,313.61</b>

Sources for budgets: ERS, USDA for 2003-2007; University of Minnesota FINBIN database for 2008-2012

<http://www.finbin.umn.edu/>

Table 244: Sugar beet - share of expenses incurred before planting

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer 2/	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Repairs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Freight and dirt hauling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hauling allowance (-)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crop insurance	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Interest on operating capital	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Allocated overhead:										
Opportunity cost of unpaid labor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Capital recovery of machinery and equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Coop share	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 245: Sugar beet prevented planting cost per acre: Great Plains (Minnesota and N. Dakota)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer 2/	15.26	15.62	18.30	19.53	24.30	14.49	19.71	15.10	19.42	23.35
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	7.55	8.94	11.70	12.95	14.30	11.16	8.13	10.04	12.13	12.72
Repairs	8.20	8.41	8.77	8.95	9.25	12.06	12.61	13.94	14.85	15.81
Hired labor	5.65	5.88	6.06	6.28	6.50	6.14	6.35	7.42	7.22	8.48
Freight and dirt hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	2.97	3.08	3.26	3.43	3.80	1.09	0.68	1.20	1.65	1.90
Hauling allowance (-)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crop insurance	1.48	1.61	1.53	1.66	1.80	1.96	2.00	2.17	2.23	3.07
Interest on operating capital	0.31	0.49	1.15	1.73	1.78	3.12	2.16	2.63	2.68	2.18
<b>Total, operating costs</b>	<b>41.41</b>	<b>44.02</b>	<b>50.78</b>	<b>54.52</b>	<b>61.73</b>	<b>50.01</b>	<b>51.63</b>	<b>52.50</b>	<b>60.18</b>	<b>67.52</b>
<b>Allocated overhead:</b>										
Opportunity cost of unpaid labor	32.09	33.41	34.45	35.71	36.96	19.15	19.15	21.49	23.83	26.47
Capital recovery of machinery and equipment	173.12	175.40	187.31	197.05	206.79	78.40	82.70	101.33	102.20	125.66
Opportunity cost of land (rental rate)	132.97	136.20	151.68	148.58	161.11	148.15	164.47	199.25	214.81	242.14
Taxes and insurance	16.90	17.10	20.57	21.64	23.38	11.85	13.69	14.43	16.15	19.65
General farm overhead	39.95	40.03	41.82	43.31	44.80	9.70	12.92	13.45	14.04	16.23
Coop share	11.75	12.03	12.39	12.75	11.63	13.00	14.00	15.00	16.00	17.00
<b>Total, allocated overhead</b>	<b>448.49</b>	<b>458.68</b>	<b>500.15</b>	<b>515.29</b>	<b>548.18</b>	<b>333.38</b>	<b>360.72</b>	<b>420.07</b>	<b>449.88</b>	<b>516.85</b>
<b>Costs prior to planting</b>	<b>489.90</b>	<b>502.70</b>	<b>550.93</b>	<b>569.81</b>	<b>609.91</b>	<b>383.40</b>	<b>412.35</b>	<b>472.57</b>	<b>510.06</b>	<b>584.37</b>
<b>Total costs listed</b>	<b>999.14</b>	<b>1,037.30</b>	<b>1,121.38</b>	<b>1,172.19</b>	<b>1,256.80</b>	<b>909.72</b>	<b>943.86</b>	<b>1,066.99</b>	<b>1,155.06</b>	<b>1,313.61</b>
<b>PP costs as % of total</b>	<b>49.0%</b>	<b>48.5%</b>	<b>49.1%</b>	<b>48.6%</b>	<b>48.5%</b>	<b>42.1%</b>	<b>43.7%</b>	<b>44.3%</b>	<b>44.2%</b>	<b>44.5%</b>

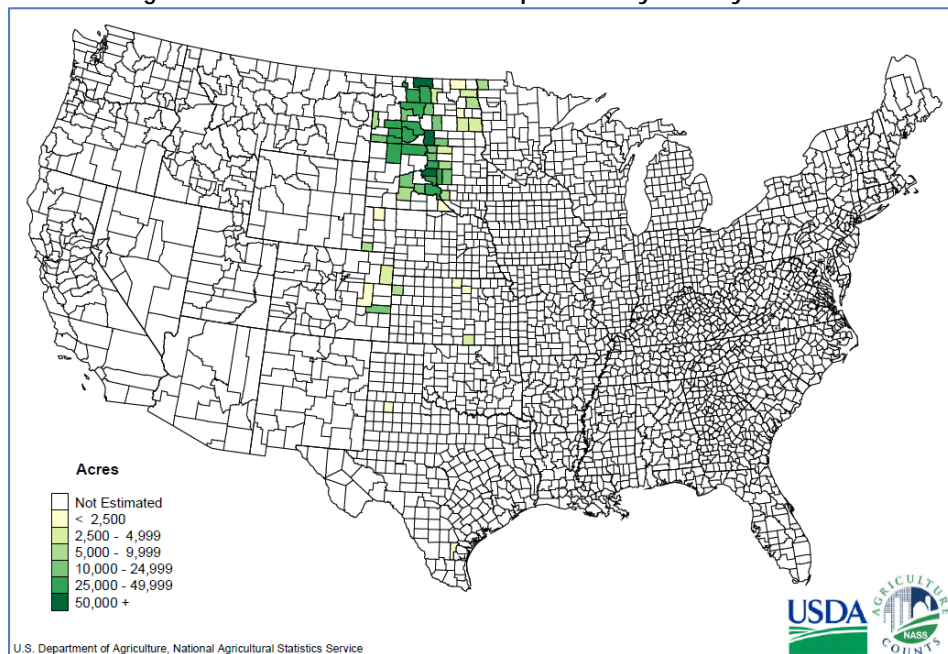
## 6.16. Sunflower seed

### Overview

Sunflower seeds are produced primarily in North Dakota (50%+ of national production in 2011) and South Dakota (32%), with lesser amounts in Texas, Kansas, Colorado, and a small handful of additional states.

The map below from NASS provides a snapshot of the main areas of production for sunflower seeds for oil. Production is concentrated in the western half of North Dakota. Non-oil sunflower seed production is much more limited and takes place in the same states.

Figure 110: Oil sunflower acres planted by county in 2012



### Sources of production cost information

Production cost information comes from the North Dakota State University Extension, which publishes budgets annually for sunflower seed and other crops, for a number of regions within the state. The USDA has no information available on sunflower production costs.

NDSU publishes separate budgets for each region where a crop is grown. In the case of sunflower seed, there are 8 budgets for oil sunflower seed, and 7 budgets for confectionery sunflower seed. We averaged costs for each type across all regions for which budgets were available. We used actual crop budget data for 2004-2012, and used price indices to come up with budget figures for 2003.

### Production practices

Sunflower seed is typically grown in a 3-4 year rotation with other crops.

There are different production practices for sunflower seed. Conventional tillage has 2 passes through the field (1 of them immediately prior to planting), plus the use of herbicides. No-till practice leaves 60%+ of the crop residue, plus a burn-down herbicide application (glyphosate or paraquat). Minimum till involves leaving 30%-60% of crop residue, and using two herbicide applications, either in the fall or in the spring.

All other effort and labor either takes place at or after planting. Planting takes place typically between May 1 and June 1. Sunflower competes well with weeds, but only after plants are well-established.

### Prevented planting experience

Prevented planting claims accounted for 47% of total sunflower indemnities over the last 20 years. For the 10-year period 2003-2012, there were \$634 million in indemnities for sunflowers, \$263 million (41%) of which were for prevented planting. Excess moisture/rain was the cause of 95% of prevented planting claims.

Claims came primarily from North Dakota (\$218m, 83%); South Dakota (\$31m, 12%) accounted for most of the rest.

### Analysis

We constructed separate budgets for oil sunflower seed and confectionery sunflower seed, both using NDSU data.

- For oil sunflower seed, preventing planting costs grew from \$78 per acre in 2003 to \$133 in 2012. As a percentage of total costs (\$145 in 2003 and \$303 in 2012), this represented a decrease from 54% to 44%.
- For confectionery sunflower seed, preventing planting costs grew from \$91 per acre in 2003 to \$160 in 2012. As a percentage of total costs (\$188 in 2003 and \$391 in 2012), this represented a decrease from 49% to 41%.

Overall, oil sunflower seed averaged 5/6 of national production over the two years 2010-2011. Applying these weights to the figures above, we get average prevented planting costs of 53% for 2003 and 43% for 2012.

Crop	Prevented planting %	
Sunflower seed (oil)	54%	44%
Sunflower seed (confectionery)	49%	41%
Weighted (5/6 oil, 1/6 confectionery)	53%	43%

The decreased share of pre-planting costs is due primarily to the *relative* decrease in the cost of machinery and land, as a percentage of total costs.

### Comparison of estimated PP cost to RMA payments

The ratio of RMA's incurred base PP payment to estimated PP costs was near 1.0 for sunflower seed (for oil) from 2003-2007 (but has since been too high, closer to 1.5). The ratio has been even higher for confectionery sunflower seed, which has lower PP costs: the ratio was close to 1.2 during 2003-2007 and fluctuated around 1.75 for the five subsequent years. Also, since 54% of PP indemnities are associated with the additional 10% coverage, all of these ratios would be 9% higher if that were taken into account ( $10\%/60\% \times 0.54 = 0.09$ ).



Figure 111: Share of costs incurred prior to planting sunflower seeds (confectionery)

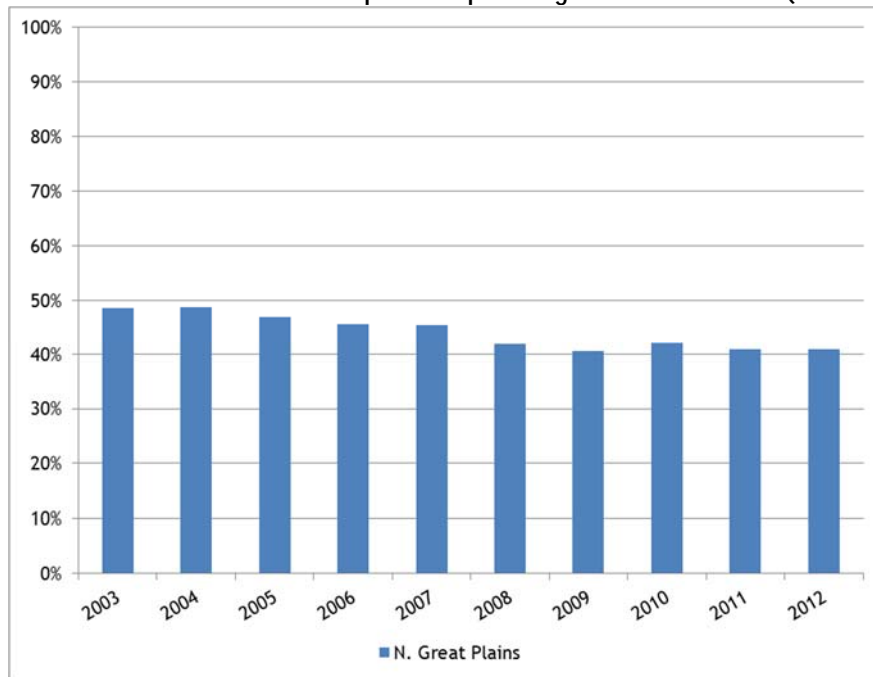


Figure 112: Share of costs incurred prior to planting sunflower seeds (oil)

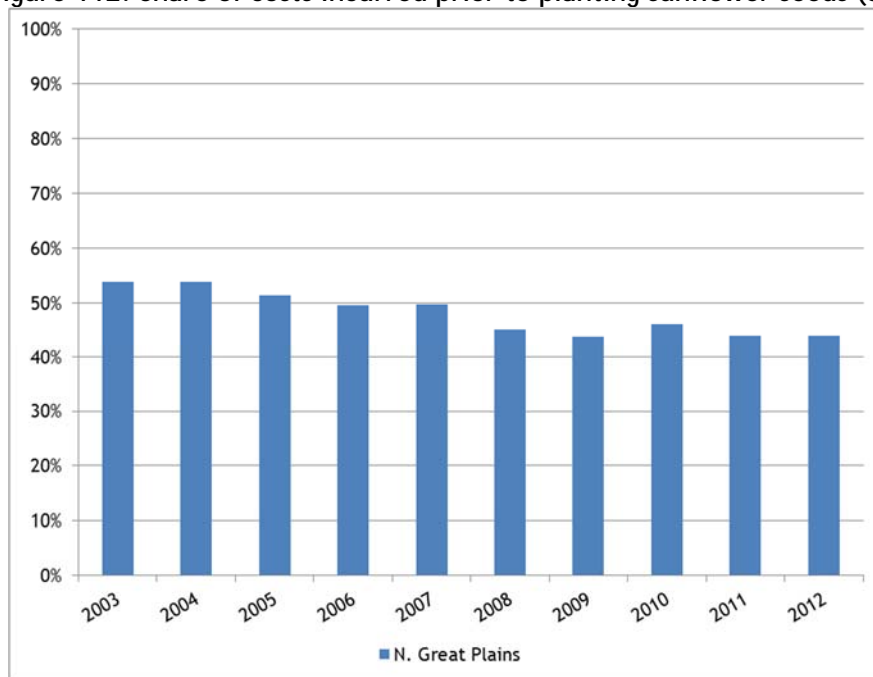
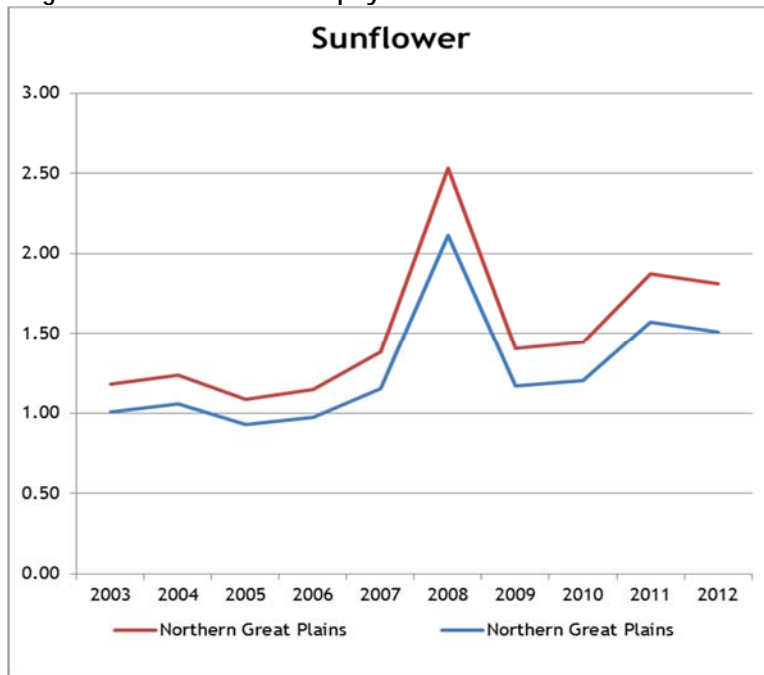


Figure 113: Ratio of RMA payment to PP costs for sunflower



### Recommendation

The ratio of the base PP payment rate to estimated PP costs is quite high, supporting the conclusion from the budget analysis that the PP factor for sunflower seed is too high. Furthermore, over half the PP indemnities are associated with the 10% buy-up, which suggests that the 60% factor is overly attractive.

We recommend reducing it to 45% to bring PP payments closer to matching estimated costs.

Table 246: Sunflower seed (confectionery) production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	19.74	20.25	20.09	21.18	22.72	25.03	37.54	39.46	42.35	44.28
Fertilizer	11.80	13.32	15.83	17.31	14.66	25.89	35.77	22.96	33.59	38.87
Chemicals	18.73	18.73	20.34	26.49	27.52	38.53	36.06	36.81	37.31	42.01
Fuel and lubrication	5.87	6.92	10.12	13.25	14.33	16.73	11.91	14.09	17.24	19.41
Repairs	10.50	10.81	11.01	11.39	11.71	11.66	13.33	13.76	14.18	14.73
Drying	2.72	2.61	2.58	2.52	2.51	2.59	2.57	2.52	2.55	2.55
Miscellaneous	5.26	5.50	5.16	5.75	6.25	13.56	15.25	15.75	18.00	18.00
Crop insurance	7.68	7.80	6.71	10.01	10.97	13.71	16.93	13.10	21.54	21.65
Interest on operating capital	2.50	2.58	2.99	4.18	4.56	5.54	4.66	4.16	4.67	4.63
<b>Total, operating costs</b>	<b>84.79</b>	<b>88.52</b>	<b>94.83</b>	<b>112.08</b>	<b>115.23</b>	<b>153.24</b>	<b>174.02</b>	<b>162.61</b>	<b>191.43</b>	<b>206.13</b>
Allocated overhead:										
<i>Returns to labor &amp; mgmt</i>	<i>37.77</i>	<i>38.76</i>	<i>41.21</i>	<i>44.64</i>	<i>50.04</i>	<i>63.53</i>	<i>73.34</i>	<i>76.04</i>	<i>81.44</i>	<i>88.06</i>
Capital recovery of machinery & equip	21.61	24.40	24.40	25.18	25.62	25.53	28.33	28.43	29.58	30.77
Opportunity cost of land (rental rate)	39.79	39.79	38.60	39.50	40.31	43.81	47.63	50.54	52.68	59.56
General farm overhead	3.61	4.25	4.14	4.24	4.27	4.24	5.55	5.56	6.70	6.84
<b>Total, allocated overhead</b>	<b>102.78</b>	<b>107.20</b>	<b>108.35</b>	<b>113.56</b>	<b>120.24</b>	<b>137.11</b>	<b>154.85</b>	<b>160.57</b>	<b>170.40</b>	<b>185.23</b>
<b>Total costs listed</b>	<b>187.58</b>	<b>195.72</b>	<b>203.18</b>	<b>225.64</b>	<b>235.47</b>	<b>290.35</b>	<b>328.87</b>	<b>323.18</b>	<b>361.83</b>	<b>391.36</b>

Source for budget(s): North Dakota State University - Extension

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values derived from 2004 data using price indices

Data reflects avge of budgets for all ND regions w/budgets: 8 for oil sunflower seed, 7 for confectionery seed

North Dakota accounts for 50% of national production

Returns to labor & management: avge for 2003-2012, used f/2008, then adjusted fwd & back using labor index

Table 247: Sunflower seed (confectionery) - share of expenses incurred before planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fuel and lubrication	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Crop insurance	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
<i>Returns to labor &amp; mgmt</i>	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 248: Sunflower seed (confectionery) prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	4.68	4.68	5.09	6.62	6.88	9.63	9.02	9.20	9.33	10.50
Fuel and lubrication	1.47	1.73	2.53	3.31	3.58	4.18	2.98	3.52	4.31	4.85
Repairs	2.63	2.70	2.75	2.85	2.93	2.92	3.33	3.44	3.55	3.68
Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	1.74	1.82	1.70	1.90	2.06	4.47	5.03	5.20	5.94	5.94
Crop insurance	3.61	3.67	3.15	4.70	5.16	6.44	7.96	6.16	10.12	10.18
Interest on operating capital	0.63	0.65	0.75	1.05	1.14	1.39	1.17	1.04	1.17	1.16
Total, operating costs	14.74	15.24	15.97	20.43	21.75	29.03	29.48	28.56	34.41	36.31
Allocated overhead:										
Returns to labor & mgmt	11.33	11.63	12.36	13.39	15.01	19.06	22.00	22.81	24.43	26.42
Capital recovery of machinery & equip	21.61	24.40	24.40	25.18	25.62	25.53	28.33	28.43	29.58	30.77
Opportunity cost of land (rental rate)	39.79	39.79	38.60	39.50	40.31	43.81	47.63	50.54	52.68	59.56
General farm overhead	3.61	4.25	4.14	4.24	4.27	4.24	5.55	5.56	6.70	6.84
Total, allocated overhead	76.34	80.07	79.50	82.31	85.21	92.64	103.51	107.34	113.39	123.59
Total costs listed	91.08	95.31	95.47	102.74	106.96	121.67	132.99	135.90	147.80	159.90
Total costs	187.66	195.72	203.18	225.64	235.47	290.35	328.87	323.18	361.83	391.36
Prevented planting %	49%	49%	47%	46%	45%	42%	40%	42%	41%	41%

Table 249: Sunflower seed (oil) production costs per planted acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	14.19	14.56	14.96	14.96	15.41	16.32	24.25	26.52	29.47	30.60
Fertilizer	13.22	14.93	17.45	19.76	17.06	29.13	40.00	26.86	39.14	44.91
Chemicals	13.16	13.16	15.38	20.87	22.31	32.94	30.44	31.06	31.56	33.26
Fuel and lubrication	5.69	6.71	9.77	12.80	13.54	15.90	11.67	13.85	16.94	19.04
Repairs	10.22	10.52	10.77	11.15	11.35	11.38	13.22	13.79	14.22	14.77
Drying	2.91	2.79	2.72	2.68	2.68	2.76	2.77	2.79	2.82	2.80
Miscellaneous	0.96	1.00	1.00	1.00	1.89	8.25	9.75	10.00	11.28	11.28
Crop insurance	6.53	6.63	5.43	7.14	6.97	10.93	12.98	9.61	18.08	18.12
Interest on operating capital	2.04	2.11	2.52	3.50	3.76	4.79	3.99	3.53	4.09	4.02
	68.92	72.41	80.00	93.86	94.97	132.40	149.07	138.01	167.60	178.80
Allocated overhead:										
Returns to labor & management	13.00	13.34	14.18	15.36	17.22	21.86	25.24	26.16	28.02	30.30
Capital recovery of machinery & equip	21.16	23.89	23.90	24.67	24.79	24.76	28.02	28.27	29.45	30.61
Opportunity cost of land (rental rate)	38.03	38.03	37.20	38.08	38.78	42.06	45.73	48.32	50.30	56.68
General farm overhead	3.56	4.19	4.08	4.18	4.17	4.14	5.52	5.57	6.71	6.85
	75.74	79.45	79.36	82.29	84.96	92.82	104.51	108.32	114.48	124.44
Total, allocated overhead										
Total costs listed	144.66	151.86	159.36	176.15	179.93	225.22	253.58	246.33	282.08	303.24

Source for budget(s): NDSU

<http://www.ag.ndsu.edu/farmmanagement/crop-budget-archive>

Notes:

Based on 2004-2012 budgets; 2003 values derived from 2004 data using price indices

Data reflects avege of budgets for all ND regions w/budgets: 8 for oil sunflower seed, 7 for confectionery seed

North Dakota accounts for 50% of national production

Returns to labor & management: avege for 2003-2012, used f/2008, then adjusted fwd & back using labor index

Table 250: Sunflower seed (oil) - share of expenses incurred before planting: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fertilizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chemicals	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fuel and lubrication	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Repairs	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Drying	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Crop insurance	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Returns to labor & management	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 251: Sunflower seed (oil) prevented planting cost per acre: North Dakota

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	3.29	3.29	3.85	5.22	5.58	8.24	7.61	7.77	7.89	8.32
Fuel and lubrication	1.42	1.68	2.44	3.20	3.39	3.98	2.92	3.46	4.24	4.76
Repairs	2.55	2.63	2.69	2.79	2.84	2.85	3.31	3.45	3.56	3.69
Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	0.32	0.33	0.33	0.33	0.63	2.75	3.25	3.33	3.76	3.76
Crop insurance	3.07	3.12	2.55	3.36	3.28	5.14	6.10	4.52	8.50	8.52
Interest on operating capital	0.51	0.53	0.63	0.88	0.94	1.20	1.00	0.88	1.02	1.01
	11.16	11.57	12.50	15.77	16.65	24.14	24.18	23.40	28.96	30.05
Allocated overhead:										
Returns to labor & management	3.90	4.00	4.25	4.61	5.17	6.56	7.57	7.85	8.41	9.09
Capital recovery of machinery & equip	21.16	23.89	23.90	24.67	24.79	24.76	28.02	28.27	29.45	30.61
Opportunity cost of land (rental rate)	38.03	38.03	37.20	38.08	38.78	42.06	45.73	48.32	50.30	56.68
General farm overhead	3.56	4.19	4.08	4.18	4.17	4.14	5.52	5.57	6.71	6.85
Total, allocated overhead	66.64	70.11	69.43	71.54	72.91	77.52	86.84	90.01	94.87	103.23
Total costs listed	77.81	81.68	81.93	87.31	89.55	101.65	111.02	113.41	123.82	133.28
Total costs	144.68	151.86	159.36	176.15	179.93	225.22	253.58	246.33	282.08	303.24
Prevented planting %	54%	54%	51%	50%	50%	45%	44%	46%	44%	44%



## 6.17. Tobacco

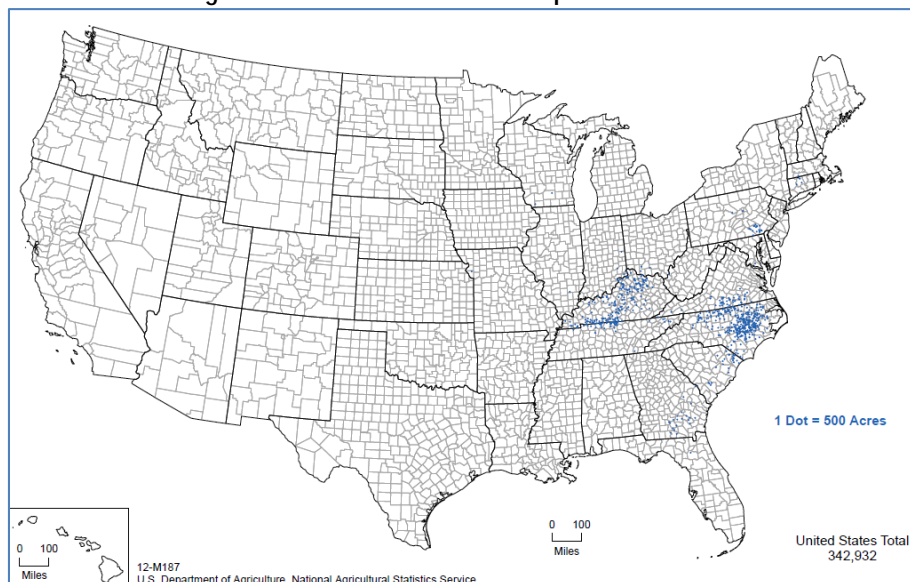
### Overview

Tobacco production in the United States occurs principally in North Carolina, Kentucky, Tennessee and Virginia. The first two of these states account for 75% of national production. Smaller quantities are produced in Connecticut and Massachusetts (cigar binder and wrapper) and in Ohio, Pennsylvania, South Carolina and Georgia. Kentucky and Tennessee produce mainly burley tobacco that is air-cured in naturally ventilated sheds. Tobacco grown on the eastern seaboard is mostly flue-cured with heated air.

There was a major change in US tobacco policy near the beginning of the period covered by this analysis. The Fair and Equitable Tobacco Reform Act of 2004 eliminated the tobacco price supports and marketing quotas that had been the mainstay of the sector for decades. Growers received buyout payments as compensation. The change led to significant adjustments in the sector. The number of tobacco farms fell significantly and by 2008, the remaining farms had increased in scale - by 26% for burley producers and by 50% for flue-cured.

We developed estimates of prevented planting costs for two regions, using Kentucky costs for the burley region and North Carolina costs for the flue-cured region. The estimates are representative of 85-90% of US tobacco production. The concentration of production in those two states and adjacent portions of neighboring states is evident in the 2012 Census map below.

Figure 114: US tobacco acres planted in 2012



### Sources of production cost information

As long as there was a tobacco price support program, USDA's Economic Research Service maintained an active program of tracking production costs for tobacco but that ended with the reform legislation. We were able to use the ERS estimates for 2003 and 2004. For subsequent years we relied on state extension service crop budgets. We found budgets for Kentucky, Tennessee, North Carolina, Georgia and Virginia for selected years but ended up using those for Kentucky and North Carolina. Kentucky crop budgets for tobacco are available at <http://www2.ca.uky.edu/agecon/index.php?p=258>. North Carolina budgets are available at <http://ag-econ.ncsu.edu/extension/tobacco-budgets>.

## Production practices

Tobacco differs from most of the other crops covered by this study in that production is very labor intensive. The need for a local labor supply tends to limit the size of tobacco farms. Tobacco plants require soils with good drainage and benefit from periodic crop rotation and planting of winter cover crops. Production is mostly non-irrigated. The USDA irrigation survey for 2008 identified only 23,614 acres of irrigated tobacco.

Seedlings are grown from pelleted seed in flotation beds in greenhouses or in plastic covered outdoor plant beds. This may be done by the tobacco farmer but more commonly the seedlings are purchased from a greenhouse business that specializes in producing them.

Developing flower heads are removed mechanically or by hand to promote growth of the lower leaves. This also stimulates growth of lateral shoots referred to as "suckers" and those are usually controlled with systemic or contact chemicals. Harvesting may be mechanical, by hand, or a combination and there are usually multiple passes through the field. Between cultivation, planting, chemical applications (herbicides, fungicides, soil fumigants and other insecticides, and sucker control), and harvesting there can be 20-25 separate field operations.

## Prevented planting experience

Tobacco was not eligible for prevented planting coverage prior to 2010 and prevented planting claims have been rare, accounting for less than half a percent of total indemnities paid in 2010 and 2011. There was virtually no use of the additional 10% coverage option. Causes of loss for prevented planting in those two years were almost entirely for excessive moisture.

## Analysis

Preplanting costs for Kentucky burley were in the 25-27% range throughout the post-quota period, with the highs in the 2005-2007 period discernible trend. For North Carolina flue-cured, they were 29-32% with no trend. The crop budget analysis, suggests a PP rate of 30% would be more appropriate.

## Comparison of estimated PP cost to RMA payments

Since the elimination of the tobacco program, RMA payments would have been consistently 20-40% higher than estimated costs that growers incur in a prevented planting situation.

Figure 115 Share of costs incurred prior to planting tobacco

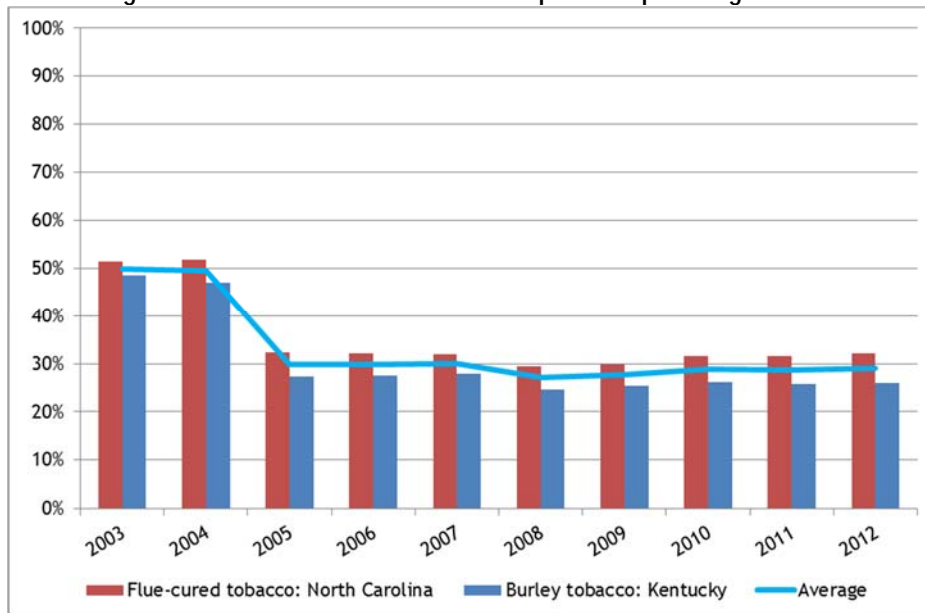
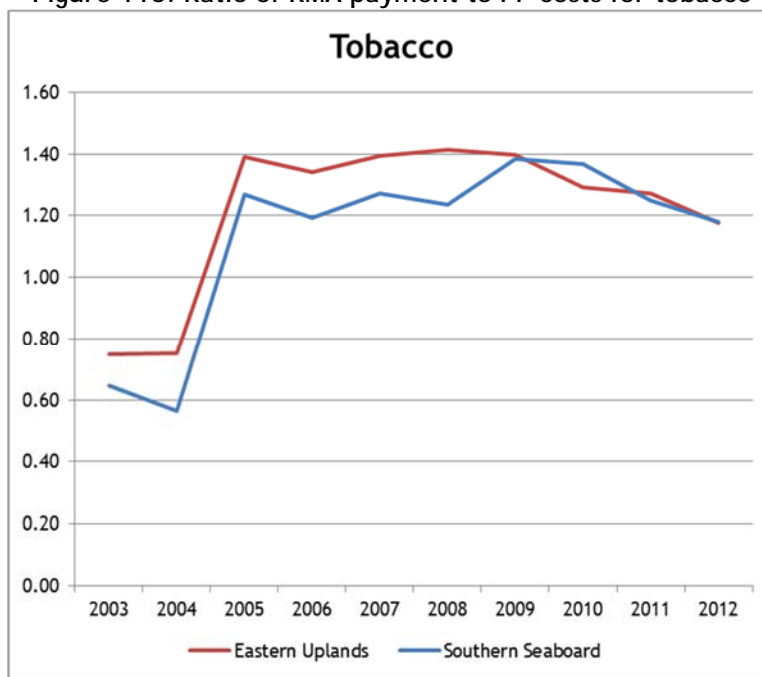


Figure 116: Ratio of RMA payment to PP costs for tobacco



**Recommendation**

We recommend reducing the PP factor to 30% to put the indemnity more or less in line with estimated PP costs.

Table 252: Burley tobacco production costs per planted acre: Kentucky

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed and plant bed	110.34	115.51	226.15	245.00	274.62	260.00	300.15	311.20	300.00	324.40
Fertilizer	333.81	356.58	253.45	272.00	333.82	425.50	298.50	273.54	425.00	431.48
Chemicals	99.47	98.65	282.69	294.18	296.48	320.00	343.02	331.51	444.00	468.50
Custom operations	13.80	13.91								
Fuel, lube, and electricity	95.28	110.93								
Repairs	82.05	83.89	163.64	167.00	172.60	186.00	189.58	193.15	191.00	197.82
Hired labor	574.81	624.96	1,026.67	1,064.00	1,101.33	1,800.00	1,849.18	1,859.02	1,485.00	1,539.14
Marketing expenses	56.84	57.12	72.50	75.00	77.00	75.00	74.53	75.94	100.00	101.80
Miscellaneous	22.22	23.65	13.53	14.00	14.37	14.00	13.91	14.18	14.00	14.25
Crop insurance	53.96	54.82	57.41	60.00	63.02	100.00	106.85	110.27	125.00	127.29
Interest on operating capital	71.33	73.60	84.23	100.92	107.75	138.96	127.77	124.04	107.94	109.43
Total, operating costs	1,513.90	1,613.62	2,180.27	2,292.10	2,440.99	3,319.46	3,303.50	3,292.84	3,191.94	3,314.10
Allocated overhead:										
Opportunity cost of unpaid labor	797.48	867.05	482.46	500.00	517.54	525.00	539.34	542.21	560.00	580.42
Capital recovery of machinery & equip	250.11	264.63	190.11	200.00	209.89	200.00	212.44	220.10	200.00	210.66
Opportunity cost of land (rental rate)	1,097.76	1,082.40	191.57	200.00	214.46	250.00	287.80	296.34	300.00	309.16
Taxes and insurance	48.58	48.85	139.41	148.00	158.50	148.00	144.17	148.77	148.00	153.56
General farm overhead	228.42	233.53	10.54	10.92	11.30	11.60	11.83	23.38	24.11	24.83
Total, allocated overhead	2,422.35	2,496.46	1,014.08	1,058.92	1,111.70	1,134.60	1,195.59	1,230.80	1,232.11	1,278.62
Total costs listed	3,936.25	4,110.08	3,194.35	3,351.02	3,552.69	4,454.06	4,499.08	4,523.64	4,424.05	4,592.72

Source for budget(s): ERS, USDA for 2003 and 2004; University of Kentucky for 2006, 2008 and 2011.

Notes:

Other years estimated using University budgets and price indexes

General farm overhead - used Corn Eastern Uplands

Table 253: Flue-cured tobacco production costs per planted acre: North Carolina

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed and plant bed	74.60	76.54	127.65	138.28	155.00	217.00	248.00	210.80	210.80	227.94
Fertilizer	302.44	338.22	158.33	169.91	208.53	383.44	383.44	292.41	292.41	296.87
Chemicals	218.39	216.59	311.95	324.63	327.17	323.08	342.14	343.21	343.21	362.15
Custom operations/hauling	8.05	8.12	46.46	47.23	48.00	48.00	96.00	96.00	96.00	101.84
Fuel, lube, and electricity	89.68	104.41	81.00	89.63	99.00	158.00	158.00	126.40	126.40	125.70
Curing fuel	476.94	607.08	320.73	354.88	392.00	550.00	440.00	357.50	357.50	355.52
Repairs/machinery costs	124.62	127.41	206.03	210.26	217.32	271.36	294.92	227.33	227.33	235.45
Hired labor	699.63	726.63	760.67	788.33	815.99	821.46	903.32	903.32	903.32	936.25
Marketing expenses	83.96	162.64								
Miscellaneous	4.26	4.53	6.78	7.01	7.20	7.20	7.20	7.20	7.20	7.33
Crop insurance	55.65	56.54	59.21	61.88	65.00	65.00	65.00	65.00	65.00	66.19
Interest on operating capital	18.29	18.87	21.60	25.88	27.63	42.71	45.03	39.15	39.15	39.69
<b>Total, operating costs</b>	<b>2,156.51</b>	<b>2,447.59</b>	<b>2,100.41</b>	<b>2,217.94</b>	<b>2,362.84</b>	<b>2,887.25</b>	<b>2,983.05</b>	<b>2,668.32</b>	<b>2,668.32</b>	<b>2,754.93</b>
Allocated overhead:										
Opportunity cost of unpaid labor	283.87	294.83								
Capital recovery of machinery and equipment	404.06	417.50	444.97	468.12	491.27	501.45	501.45	501.45	501.45	528.17
Opportunity cost of land (rental rate)	1,227.67	1,549.22	79.50	78.00	81.75	86.25	91.50	94.50	98.25	105.75
Taxes and insurance	152.02	153.76	7.87	8.28	8.95	9.93	9.69	11.91	12.53	13.21
General farm overhead	204.65	209.23	16.85	17.45	18.05	18.53	18.89	25.68	26.48	27.28
<b>Total, allocated overhead</b>	<b>2,272.27</b>	<b>2,624.54</b>	<b>549.19</b>	<b>571.85</b>	<b>600.02</b>	<b>616.16</b>	<b>621.53</b>	<b>633.54</b>	<b>638.71</b>	<b>674.41</b>
<b>Total costs listed</b>	<b>4,428.78</b>	<b>5,072.13</b>	<b>2,649.60</b>	<b>2,789.79</b>	<b>2,962.86</b>	<b>3,503.41</b>	<b>3,604.58</b>	<b>3,301.86</b>	<b>3,307.03</b>	<b>3,429.34</b>

Source for budget(s): ERS, USDA for 2003 and 2004; North Carolina State University for 2007-2011.

Notes:

Other years estimated using University budgets and price indexes

For taxes, insurance and general overhead, used ERS Southern Seaboard estimates for corn

For land cost, used 1.5 times the NASS cash rent figure for the state.

Table 254: Burley tobacco - share of expenses incurred before planting: Kentucky

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed and plant bed	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Fertilizer	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chemicals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Repairs	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Marketing expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Total, operating costs										
Allocated overhead:										
Opportunity cost of unpaid labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Capital recovery of machinery & equip	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 255: Flue-cured tobacco - share of expenses incurred before planting: North Carolina

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed and plant bed	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Fertilizer	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chemicals	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Custom operations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel, lube, and electricity	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Curing fuel	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Repairs	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Hired labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Marketing expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Miscellaneous	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Crop insurance	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Interest on operating capital	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Allocated overhead:										
Opportunity cost of unpaid labor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Capital recovery of machinery and equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Opportunity cost of land (rental rate)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Taxes and insurance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General farm overhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 256: Burley tobacco prevented planting cost per acre: Kentucky

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash expenses:										
Seed and plant bed	55.17	57.76	113.08	122.50	137.31	130.00	150.08	155.60	150.00	162.20
Fertilizer	50.07	53.49	38.02	40.80	50.07	63.83	44.78	41.03	63.75	64.72
Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	9.53	11.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repairs	8.21	8.39	16.36	16.70	17.26	18.60	18.96	19.32	19.10	19.78
Hired labor	57.48	62.50	102.67	106.40	110.13	180.00	184.92	185.90	148.50	153.91
Marketing expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	5.56	5.91	3.38	3.50	3.59	3.50	3.48	3.54	3.50	3.56
Crop insurance	0.54	0.55	0.57	0.60	0.63	1.00	1.07	1.10	1.25	1.27
Interest on operating capital	17.83	18.40	21.06	25.23	26.94	34.74	31.94	31.01	26.99	27.36
Total, operating costs	204.38	218.08	295.14	315.73	345.93	431.67	435.22	437.50	413.09	432.81
Allocated overhead:										
Opportunity cost of unpaid labor	79.75	86.71	48.25	50.00	51.75	52.50	53.93	54.22	56.00	58.04
Capital recovery of machinery & equip	250.11	264.63	190.11	200.00	209.89	200.00	212.44	220.10	200.00	210.66
Opportunity cost of land (rental rate)	1,097.76	1,082.40	191.57	200.00	214.46	250.00	287.80	296.34	300.00	309.16
Taxes and insurance	48.58	48.85	139.41	148.00	158.50	148.00	144.17	148.77	148.00	153.56
General farm overhead	228.42	233.53	10.54	10.92	11.30	11.60	11.83	23.38	24.11	24.83
Total, allocated overhead	1,704.62	1,716.12	579.87	608.92	645.91	662.10	710.18	742.81	728.11	756.25
Total pre-planting costs	1,909.00	1,934.20	875.01	924.65	991.84	1,093.77	1,145.39	1,180.31	1,141.20	1,189.06
Total costs	3,936.25	4,110.08	3,194.35	3,351.02	3,552.69	4,454.06	4,499.08	4,523.64	4,424.05	4,592.72
Prevented planting %	48%	47%	27%	28%	28%	25%	25%	26%	26%	26%



Table 257: Flue-cured tobacco prevented planting cost per acre: North Carolina

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Cash expenses:</b>										
Seed and plant bed	37.30	38.27	63.82	69.14	77.50	108.50	124.00	105.40	105.40	113.97
Fertilizer	45.37	50.73	23.75	25.49	31.28	57.52	57.52	43.86	43.86	44.53
Chemicals	76.44	75.81	109.18	113.62	114.51	113.08	119.75	120.12	120.12	126.75
Custom operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, lube, and electricity	8.97	10.44	8.10	8.96	9.90	15.80	15.80	12.64	12.64	12.57
Curing fuel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Repairs	12.46	12.74	20.60	21.03	21.73	27.14	29.49	22.73	22.73	23.54
Hired labor	69.96	72.66	76.07	78.83	81.60	82.15	90.33	90.33	90.33	93.63
Marketing expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	1.07	1.13	1.69	1.75	1.80	1.80	1.80	1.80	1.80	1.83
Crop insurance	0.56	0.57	0.59	0.62	0.65	0.65	0.65	0.65	0.65	0.66
Interest on operating capital	4.57	4.72	5.40	6.47	6.91	10.68	11.26	9.79	9.79	9.92
<b>Total, operating costs</b>	<b>256.69</b>	<b>267.07</b>	<b>309.21</b>	<b>325.91</b>	<b>345.88</b>	<b>417.30</b>	<b>450.60</b>	<b>407.33</b>	<b>407.33</b>	<b>427.41</b>
<b>Allocated overhead:</b>										
Opportunity cost of unpaid labor	28.39	29.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Capital recovery of machinery and equipment	404.06	417.50	444.97	468.12	491.27	501.45	501.45	501.45	501.45	528.17
Opportunity cost of land (rental rate)	1227.67	1549.22	79.50	78.00	81.75	86.25	91.50	94.50	98.25	105.75
Taxes and insurance	152.02	153.76	7.87	8.28	8.95	9.93	9.69	11.91	12.53	13.21
General farm overhead	204.65	209.23	16.85	17.45	18.05	18.53	18.89	25.68	26.48	27.28
<b>Total, allocated overhead</b>	<b>2016.79</b>	<b>2359.19</b>	<b>549.19</b>	<b>571.85</b>	<b>600.02</b>	<b>616.16</b>	<b>621.53</b>	<b>633.54</b>	<b>638.71</b>	<b>674.41</b>
<b>Total costs listed</b>	<b>2273.48</b>	<b>2626.26</b>	<b>858.40</b>	<b>897.77</b>	<b>945.90</b>	<b>1033.46</b>	<b>1072.13</b>	<b>1040.87</b>	<b>1046.04</b>	<b>1101.82</b>
<b>Total costs</b>	<b>4,428.78</b>	<b>5,072.13</b>	<b>2,649.60</b>	<b>2,789.79</b>	<b>2,962.86</b>	<b>3,503.41</b>	<b>3,604.58</b>	<b>3,301.86</b>	<b>3,307.03</b>	<b>3,429.34</b>
<b>Prevented planting %</b>	<b>51%</b>	<b>52%</b>	<b>32%</b>	<b>32%</b>	<b>32%</b>	<b>29%</b>	<b>30%</b>	<b>32%</b>	<b>32%</b>	<b>32%</b>

## APPENDIX A: RATIOS OF RMA PREVENTED PLANTING PAYMENTS TO ESTIMATED PP PRODUCTION COSTS BY CROP AND REGION

### Barley

Barley Basin & Range	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	150.65	151.01	167.75	154.43	203.22	347.28	307.58	257.39	421.73	349.16
Barley @ 60 %	90.39	90.61	100.65	92.66	121.93	208.37	184.55	154.43	253.04	209.50
Estimated PP cost	170.07	173.95	186.81	191.68	215.77	243.72	262.75	266.06	289.84	299.56
Ratio	0.53	0.52	0.54	0.48	0.57	0.85	0.70	0.58	0.87	0.70

Barley Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	178.17	180.74	191.18	171.51	225.53	354.93	338.47	258.07	432.02	411.37
Barley @ 60 %	106.90	108.44	114.71	102.90	135.32	212.96	203.08	154.84	259.21	246.82
Estimated PP cost	211.05	215.84	230.96	237.00	267.28	301.44	323.93	329.81	358.60	371.69
Ratio	0.51	0.50	0.50	0.43	0.51	0.71	0.63	0.47	0.72	0.66

Barley Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	137.73	130.67	149.84	132.93	176.25	267.56	268.51	217.16	318.60	395.63
Barley @ 60 %	82.64	78.40	89.90	79.76	105.75	160.54	161.11	130.29	191.16	237.38
Estimated PP cost	128.07	130.63	139.15	142.30	161.07	182.52	197.24	199.59	216.91	225.49
Ratio	0.65	0.60	0.65	0.56	0.66	0.88	0.82	0.65	0.88	1.05

Barley Northern Crescent	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	126.99	114.94	138.45	114.13	160.48	242.97	257.04	198.70	309.62	348.66
Barley @ 60 %	76.19	68.96	83.07	68.48	96.29	145.78	154.23	119.22	185.77	209.19
Estimated PP cost	127.58	130.46	139.61	143.16	161.33	182.92	196.08	198.04	215.43	223.94
Ratio	0.60	0.53	0.60	0.48	0.60	0.80	0.79	0.60	0.86	0.93

Barley Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	130.61	124.70	127.88	129.62	156.48	268.82	208.69	180.67	282.35	264.38
Barley @ 60 %	78.37	74.82	76.73	77.77	93.89	161.29	125.21	108.40	169.41	158.63
Estimated PP cost	130.98	134.13	145.36	150.66	166.12	187.46	198.22	201.24	218.63	225.88
Ratio	0.60	0.56	0.53	0.52	0.57	0.86	0.63	0.54	0.77	0.70

**Buckwheat**

Buckwheat - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	138.70	146.46	170.05
Buckwheat @ 60 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.22	87.88	102.03
Estimated PP cost	59.69	62.81	63.40	65.56	67.67	73.72	81.05	84.86	92.83	110.98
Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.95	0.92

RMA SOB liability : ND + SD + MN

Extension budgets: ND

**Canola**

Canola - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	141.74	147.79	144.49	148.98	216.83	427.48	263.26	247.53	347.87	363.84
Canola @ 60 %	85.04	88.67	86.69	89.39	130.10	256.49	157.96	148.52	208.72	218.30
Estimated PP cost	70.07	74.37	74.53	78.96	80.57	96.14	102.14	101.30	115.96	125.06
Ratio	1.21	1.19	1.16	1.13	1.61	2.67	1.55	1.47	1.80	1.75

RMA SOB liability: ND

Extension budgets: ND

Corn

Corn Eastern Uplands	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	237.25	279.03	249.24	256.84	426.24	576.80	462.24	475.85	714.71	688.95
Corn @ 60 %	142.35	167.42	149.54	154.10	255.74	346.08	277.34	285.51	428.83	413.37
Estimated PP cost	166.43	175.71	189.97	198.31	213.13	248.88	259.33	248.01	274.37	285.67
Ratio	0.86	0.95	0.79	0.78	1.20	1.39	1.07	1.15	1.56	1.45

Corn Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	324.70	385.23	328.97	365.42	595.89	812.48	624.69	630.75	960.94	970.97
Corn @ 60 %	194.82	231.14	197.38	219.25	357.53	487.49	374.81	378.45	576.56	582.58
Estimated PP cost	209.80	222.33	229.24	236.40	254.10	292.48	310.47	321.48	354.80	384.43
Ratio	0.93	1.04	0.86	0.93	1.41	1.67	1.21	1.18	1.63	1.52

Corn Northern Crescent	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	284.68	329.86	291.47	308.18	515.01	684.01	547.62	547.58	830.80	837.65
Corn @ 60 %	170.81	197.92	174.88	184.91	309.01	410.41	328.57	328.55	498.48	502.59
Estimated PP cost	199.93	210.76	217.52	226.03	242.82	280.00	292.33	260.44	287.12	298.83
Ratio	0.85	0.94	0.80	0.82	1.27	1.47	1.12	1.26	1.74	1.68

Corn Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	238.98	284.43	239.24	266.06	433.07	596.92	445.98	441.54	676.49	696.08
Corn @ 60 %	143.39	170.66	143.54	159.64	259.84	358.15	267.59	264.92	405.89	417.65
Estimated PP cost	159.09	163.54	180.79	187.87	201.57	230.01	240.45	258.73	284.02	303.90
Ratio	0.90	1.04	0.79	0.85	1.29	1.56	1.11	1.02	1.43	1.37

Corn Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	312.61	360.60	299.65	328.37	536.81	713.38	555.21	536.71	823.73	798.78
Corn @ 60 %	187.57	216.36	179.79	197.02	322.09	428.03	333.13	322.03	494.24	479.27
Estimated PP cost	180.50	188.48	182.19	186.49	186.49	204.51	222.42	223.48	238.41	257.49
Ratio	1.04	1.15	0.99	1.06	1.73	2.09	1.50	1.44	2.07	1.86

Corn Southern Seaboard	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	231.76	266.79	241.98	253.26	413.60	557.72	466.51	473.37	709.67	674.37
Corn @ 60 %	139.06	160.07	145.19	151.96	248.16	334.63	279.91	284.02	425.80	404.62
Estimated PP cost	183.62	192.23	192.77	201.35	215.74	248.39	258.40	266.82	295.24	315.86
Ratio	0.76	0.83	0.75	0.75	1.15	1.35	1.08	1.06	1.44	1.28

**Cotton**

Cotton Eastern Uplands	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	345.12	445.23	361.95	423.81	419.57	564.33	433.86	538.12	885.55	737.71
Cotton @ 50 %	172.56	222.61	180.98	211.91	209.79	282.17	216.93	269.06	442.77	368.86
Estimated PP cost	126.12	130.28	137.70	142.23	151.67	168.69	173.58	177.06	191.94	199.25
Ratio	1.37	1.71	1.31	1.49	1.38	1.67	1.25	1.52	2.31	1.85

Cotton Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	464.30	566.52	462.24	441.05	486.08	607.89	499.61	597.26	973.77	861.65
Cotton @ 50 %	232.15	283.26	231.12	220.53	243.04	303.94	249.81	298.63	486.89	430.83
Estimated PP cost	230.56	239.17	252.88	261.85	275.70	293.82	309.40	316.58	339.75	353.35
Ratio	1.01	1.18	0.91	0.84	0.88	1.03	0.81	0.94	1.43	1.22

Cotton Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	375.31	471.49	404.36	445.45	458.64	607.91	545.05	591.95	1150.40	906.33
Cotton @ 50 %	187.66	235.74	202.18	222.73	229.32	303.96	272.52	295.98	575.20	453.17
Estimated PP cost	153.90	159.27	168.13	173.84	257.70	275.69	292.49	298.68	320.46	333.84
Ratio	1.22	1.48	1.20	1.28	0.89	1.10	0.93	0.99	1.79	1.36

Cotton Mississippi Portal	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	401.04	506.17	426.16	459.90	475.87	605.48	524.32	567.32	1008.51	846.71
Cotton @ 50 %	200.52	253.09	213.08	229.95	237.94	302.74	262.16	283.66	504.26	423.35
Estimated PP cost	185.10	190.92	201.30	207.63	245.30	262.23	278.94	283.99	304.64	317.30
Ratio	1.08	1.33	1.06	1.11	0.97	1.15	0.94	1.00	1.66	1.33

Cotton Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	249.47	285.57	232.69	290.62	287.15	395.04	320.09	381.64	704.63	566.24
Cotton @ 50 %	124.73	142.79	116.35	145.31	143.57	197.52	160.05	190.82	352.32	283.12
Estimated PP cost	111.13	116.69	124.25	128.66	160.18	169.18	176.84	181.79	194.22	202.47
Ratio	1.12	1.22	0.94	1.13	0.90	1.17	0.91	1.05	1.81	1.40

**ELS Cotton**

ELS Cotton CA	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	835.79	1123.53	1122.99	1094.62	1384.91	1420.48	1276.53	1368.03	1647.17	1857.81
Cotton Ex Long Staple @ 50 %	417.90	561.76	561.50	547.31	692.46	710.24	638.26	684.01	823.59	928.90
Estimated PP cost	288.78	299.62	312.58	328.57	348.30	372.88	415.54	414.17	440.23	469.55
Ratio	1.45	1.87	1.80	1.67	1.99	1.90	1.54	1.65	1.87	1.98

RMA SOB liability: Fruitful Rim

Extension budgets: CA

**Dry Beans**

Dry Beans ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	245.89	238.01	233.83	266.30	302.27	439.03	422.97	449.27	470.22	727.22
Dry Beans @ 60 %	147.53	142.81	140.30	159.78	181.36	263.42	253.78	269.56	282.13	436.33
Estimated PP cost	83.28	85.23	84.48	89.76	91.55	98.82	109.48	119.00	124.73	138.18
Ratio	1.77	1.68	1.66	1.78	1.98	2.67	2.32	2.27	2.26	3.16

RMA SOB liability: ND + MN

Extension budgets: ND

Dry Beans NE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	334.50	317.97	320.28	377.42	416.65	651.70	620.06	628.37	661.67	900.23
Dry Beans @ 60 %	200.70	190.78	192.17	226.45	249.99	391.02	372.04	377.02	397.00	540.14
Estimated PP cost	166.69	172.45	175.25	189.54	192.07	224.62	243.86	269.54	290.37	311.40
Ratio	1.20	1.11	1.10	1.19	1.30	1.74	1.53	1.40	1.37	1.73

RMA SOB liability: MI

Extension budgets: NE

Dry Peas

Dry Peas ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	144.98	126.43	128.66	120.15	121.14	257.05	263.24	251.43	231.47	296.62
Dry Peas @ 60 %	86.99	75.86	77.20	72.09	72.68	154.23	157.94	150.86	138.88	177.97
Estimated PP cost	64.06	67.47	73.47	77.06	77.75	81.87	93.21	96.60	102.41	109.70
Ratio	1.36	1.12	1.05	0.94	0.93	1.88	1.69	1.56	1.36	1.62

RMA SOB liability: ND + MT + ID + WA

Extension budgets: ND

Flax

Flax ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	83.54	115.12	100.05	140.49	128.26	291.29	228.75	175.08	174.21	284.27
Flax @ 60 %	50.12	69.07	60.03	84.29	76.96	174.77	137.25	105.05	104.53	170.56
Estimated PP cost	58.36	61.18	60.01	61.57	62.36	66.29	74.17	75.52	80.08	86.46
Ratio	0.86	1.13	1.00	1.37	1.23	2.64	1.85	1.39	1.31	1.97

RMA SOB liability: ND

Extension budgets: ND

Grain Sorghum

Grain Sorghum Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	128.17	139.46	125.04	124.16	203.27	273.22	241.67	242.01	342.01	358.36
Grain Sorghum @ 60 %	76.90	83.67	75.03	74.50	121.96	163.93	145.00	145.20	205.21	215.02
Estimated PP cost	123.26	128.31	136.45	141.30	150.76	168.44	175.46	177.39	191.02	199.24
Ratio	0.62	0.65	0.55	0.53	0.81	0.97	0.83	0.82	1.07	1.08

Grain Sorghum Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	176.69	210.17	180.32	182.18	298.30	393.95	297.89	330.01	507.48	479.09
Grain Sorghum @ 60 %	106.01	126.10	108.19	109.31	178.98	236.37	178.73	198.00	304.49	287.45
Estimated PP cost	188.90	194.52	204.89	211.88	225.84	254.23	268.07	263.95	285.46	295.99
Ratio	0.56	0.65	0.53	0.52	0.79	0.93	0.67	0.75	1.07	0.97

Grain Sorghum Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	96.10	110.41	87.32	98.73	153.50	194.88	159.32	162.19	253.20	258.47
Grain Sorghum @ 60 %	57.66	66.25	52.39	59.24	92.10	116.93	95.59	97.32	151.92	155.08
Estimated PP cost	105.46	108.97	114.99	118.72	126.38	141.31	149.17	149.10	160.61	166.67
Ratio	0.55	0.61	0.46	0.50	0.73	0.83	0.64	0.65	0.95	0.93

Grain Sorghum Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	134.45	154.61	127.76	133.72	217.05	286.35	219.87	235.13	348.75	336.17
Grain Sorghum @ 60 %	80.67	92.77	76.66	80.23	130.23	171.81	131.92	141.08	209.25	201.70
Estimated PP cost	129.39	135.46	144.47	149.92	160.10	179.11	185.88	187.89	202.13	209.72
Ratio	0.62	0.68	0.53	0.54	0.81	0.96	0.71	0.75	1.04	0.96

### Green Peas

Green Peas MN + WI	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	265.72	258.25	288.00	291.95	383.16	589.78	486.05	433.73	639.14	574.79
Green Peas @ 40 %	106.29	103.30	115.20	116.78	153.26	235.91	194.42	173.49	255.66	229.92
Estimated PP cost	122.69	110.40	120.57	118.56	132.46	151.84	210.26	172.21	182.44	219.55
Ratio	0.87	0.94	0.96	0.98	1.16	1.55	0.92	1.01	1.40	1.05

RMA SOB liability: MN + WI + IA + IL

FINBIN budgets: MN + WI

### Hybrid Corn Seed

Hybrid Corn Seed	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	514.85	604.57	549.07	566.33	960.70	1258.59	1061.98	1039.52	1427.77	1598.70
Hybrid Corn Seed @ 60 %	308.91	362.74	329.44	339.80	576.42	755.15	637.19	623.71	856.66	959.22
Estimated PP cost	213.99	227.84	233.01	240.21	257.22	295.09	311.80	325.56	357.95	387.44
Ratio	1.44	1.59	1.41	1.41	2.24	2.56	2.04	1.92	2.39	2.48

RMA SOB liability: Heartland

Budgets: estimated ERS Heartland corn budgets



Hybrid Corn Seed	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	475.54	564.26	517.38	518.09	866.29	1132.73	929.70	868.51	1162.83	1383.56
Hybrid Corn Seed @ 60 %	285.32	338.55	310.43	310.86	519.77	679.64	557.82	521.10	697.70	830.14
Estimated PP cost	205.30	216.89	222.66	231.37	247.63	284.75	295.28	265.27	291.37	302.99
Ratio	1.39	1.56	1.39	1.34	2.10	2.39	1.89	1.96	2.39	2.74

RMA SOB liability: Northern Crescent

Budgets: estimated ERS Northern Crescent corn budgets

### Hybrid Sorghum Seed

Hybrid Sorghum Seed	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	554.62	620.32	552.73	507.83	892.13	1230.54	998.00	987.36	1264.08	1440.19
Hybrid Sorghum Seed @ 60 %	332.77	372.19	331.64	304.70	535.28	738.32	598.80	592.42	758.45	864.11
Estimated PP cost	292.67	309.26	338.48	355.78	383.00	474.60	424.55	434.31	488.48	501.23
Ratio	1.14	1.20	0.98	0.86	1.40	1.56	1.41	1.36	1.55	1.72

RMA SOB liability: Prairie Gateway

Budgets: Scaled and Indexed grain sorghum budgets based on producer interviews

### Millet

Millet ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	77.06	75.44	71.30	70.23	77.08	93.32	98.74	89.85	144.24	107.74
Millet @ 60 %	46.24	45.26	42.78	42.14	46.25	55.99	59.24	53.91	86.54	64.64
Estimated PP cost	60.88	64.10	67.84	71.31	75.43	84.80	90.47	93.36	94.94	98.84
Ratio	0.76	0.71	0.63	0.59	0.61	0.66	0.65	0.58	0.91	0.65

RMA SOB liability: CO + KS + NE + SD

Extension budgets: ND

Mustard

Mustard ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	138.11	126.85	106.87	145.07	156.04	376.41	241.58	196.91	213.68	255.19
Mustard @ 60 %	82.87	76.11	64.12	87.04	93.62	225.85	144.95	118.15	128.21	153.11
Estimated PP cost	70.41	74.35	76.29	77.98	81.87	90.34	100.77	102.77	111.95	115.31
Ratio	1.18	1.02	0.84	1.12	1.14	2.50	1.44	1.15	1.15	1.33

RMA SOB liability: ND + MT

Extension budgets: ND

Oats

Oats Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	88.15	87.28	108.32	93.01	124.39	215.11	168.84	150.09	190.56	245.89
Oats @ 60 %	52.89	52.37	64.99	55.81	74.63	129.06	101.30	90.06	114.33	147.53
Estimated PP cost	154.51	163.44	171.17	176.98	190.46	213.58	235.58	240.80	259.50	268.95
Ratio	0.34	0.32	0.38	0.32	0.39	0.60	0.43	0.37	0.44	0.55

Oats Northern Crescent	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	85.02	82.43	100.57	86.43	115.95	200.91	163.32	138.10	178.86	222.75
Oats @ 60 %	51.01	49.46	60.34	51.86	69.57	120.55	97.99	82.86	107.32	133.65
Estimated PP cost	134.73	144.20	151.90	157.60	169.57	191.82	207.26	210.36	227.63	236.26
Ratio	0.38	0.34	0.40	0.33	0.41	0.63	0.47	0.39	0.47	0.57

Oats Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	72.67	67.08	81.71	72.17	95.27	164.51	133.43	116.05	142.51	194.97
Oats @ 60 %	43.60	40.25	49.03	43.30	57.16	98.71	80.06	69.63	85.51	116.98
Estimated PP cost	113.66	120.90	127.39	132.34	141.59	157.90	171.27	175.54	188.57	195.80
Ratio	0.38	0.33	0.38	0.33	0.40	0.63	0.47	0.40	0.45	0.60

Oats Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	54.10	52.49	62.57	51.75	69.13	91.39	120.77	102.05	102.24	131.77
Oats @ 60 %	32.46	31.49	37.54	31.05	41.48	54.83	72.46	61.23	61.35	79.06
Estimated PP cost	93.82	100.62	106.53	110.81	119.76	137.37	146.89	147.37	160.39	166.82
Ratio	0.35	0.31	0.35	0.28	0.35	0.40	0.49	0.42	0.38	0.47

**Onions**

Southern Onions (Fresh - TX)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	2786.92	2217.56	2457.52	2671.14	2823.62	2992.87	3219.57	2863.99	2850.20	3896.32
Onions @ 35 %	975.42	776.15	860.13	934.90	988.27	1047.50	1126.85	1002.40	997.57	1363.71
Estimated PP cost	863.98	920.81	968.61	1031.06	1194.18	1199.65	1239.31	1349.38	1394.63	1441.75
Ratio	1.13	0.84	0.89	0.91	0.83	0.87	0.91	0.74	0.72	0.95

RMA SOB liability: TX + GA + CA + NV + NM

Extension budgets: TX fresh market onions

Northern Onions (Storage - ID)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	3079.90	3238.83	3699.71	3842.24	3565.31	4273.08	4016.03	4192.77	4902.20	5538.21
Onions @ 35 %	1077.97	1133.59	1294.90	1344.78	1247.86	1495.58	1405.61	1467.47	1715.77	1938.37
Estimated PP cost	290.36	307.76	310.52	317.59	318.71	326.99	370.84	347.76	364.88	373.93
Ratio	3.71	3.68	4.17	4.23	3.92	4.57	3.79	4.22	4.70	5.18

RMA SOB liability: ID + OR + WA

Extension budgets: ID storage onions

**Peanuts**

Peanuts Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	481.58	484.03	505.46	511.45	558.22	644.80	605.95	654.82	825.09	1041.36
Peanuts @ 50 %	240.79	242.01	252.73	255.73	279.11	322.40	302.98	327.41	412.54	520.68
Estimated PP cost	303.37	318.67	337.50	370.43	379.09	412.80	434.97	444.96	471.85	488.48
Ratio	0.79	0.76	0.75	0.69	0.74	0.78	0.70	0.74	0.87	1.07

Peanuts Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	496.62	517.56	589.91	602.43	655.33	741.41	677.37	736.37	892.84	1020.50
Peanuts @ 50 %	248.31	258.78	294.95	301.22	327.66	370.70	338.68	368.19	446.42	510.25
Estimated PP cost	292.33	310.35	335.93	356.10	379.24	419.61	425.72	441.46	476.74	491.37
Ratio	0.85	0.83	0.88	0.85	0.86	0.88	0.80	0.83	0.94	1.04

Peanuts Southern Seaboard	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	477.77	494.04	524.73	531.14	580.21	677.88	624.97	690.85	905.98	1166.52
Peanuts @ 50 %	238.89	247.02	262.37	265.57	290.10	338.94	312.49	345.43	452.99	583.26
Estimated PP cost	316.72	334.03	356.90	376.11	398.89	436.83	453.91	469.13	500.55	517.69
Ratio	0.75	0.74	0.74	0.71	0.73	0.78	0.69	0.74	0.90	1.13

### Popcorn

Popcorn - OH	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	415.09	356.33	401.37	392.75	544.80	777.63	707.34	619.26	941.86	924.50
Popcorn @ 60 %	249.05	213.80	240.82	235.65	326.88	466.58	424.40	371.56	565.11	554.70
Estimated PP cost	194.96	205.41	218.61	230.01	247.02	294.62	300.97	306.82	335.52	346.89
Ratio	1.28	1.04	1.10	1.02	1.32	1.58	1.41	1.21	1.68	1.60

RMA SOB liability: Heartland  
Extension budgets: OH

### Northern Potatoes

Northern Potatoes - ID	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	1918.83	1923.83	1902.50	2023.37	2144.08	2533.75	3149.54	2563.01	2672.97	2822.31
Potatoes @ 25 %	479.71	480.96	475.63	505.84	536.02	633.44	787.39	640.75	668.24	705.58
Estimated PP cost	679.70	711.37	754.95	836.70	927.12	1045.30	1177.02	1049.41	1190.91	1225.03
Ratio	0.71	0.68	0.63	0.60	0.58	0.61	0.67	0.61	0.56	0.58

RMA SOB liability: ID + OR + WA  
Extension budgets: ID

**Southern Potatoes**

Southern Potatoes - FL	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	2609.19	2843.32	3039.06	2411.03	2643.55	2894.98	3171.84	3158.57	3403.39	3541.97
Potatoes @ 25 %	652.30	710.83	759.77	602.76	660.89	723.75	792.96	789.64	850.85	885.49
Estimated PP cost	830.71	861.68	918.93	983.28	1063.60	1263.79	1271.40	1326.32	1445.42	1518.93
Ratio	0.79	0.82	0.83	0.61	0.62	0.57	0.62	0.60	0.59	0.58

RMA SOB liability: AL + AZ + FL + GA + TX

Extension budgets: FL

**Processing Beans**

Processing Beans - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	800.25	696.89	761.95	708.61	748.88	995.13	1105.24	910.77	1594.72	978.89
Processing Beans @ 40 %	320.10	278.76	304.78	283.44	299.55	398.05	442.10	364.31	637.89	391.56
Estimated PP cost	313.96	333.03	355.68	375.12	405.59	493.77	497.34	504.37	555.41	575.50
Ratio	1.02	0.84	0.86	0.76	0.74	0.81	0.89	0.72	1.15	0.68

RMA SOB liability: ID + OR + WA

Extension budgets: ND

Processing Beans - NY	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	449.40	458.35	463.58	454.78	429.29	610.05	591.79	547.78	825.88	769.66
Processing Beans @ 40 %	179.76	183.34	185.43	181.91	171.72	244.02	236.72	219.11	330.35	307.86
Estimated PP cost	153.71	162.22	176.16	186.27	197.72	228.09	221.47	234.47	258.46	266.38
Ratio	1.17	1.13	1.05	0.98	0.87	1.07	1.07	0.93	1.28	1.16

RMA SOB liability: NY + PA + DE + MD + NJ

Extension budgets: NY

Rice

Rice Eastern Uplands	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	335.98	372.98	392.86	477.65	592.50	755.27	732.79	812.67	924.28	925.66
Rice @ 45 %	151.19	167.84	176.79	214.94	266.62	339.87	329.75	365.70	415.93	416.55
Estimated PP cost	276.83	295.39	307.48	305.27	324.16	366.34	386.44	392.60	423.74	439.41
Ratio	0.55	0.57	0.57	0.70	0.82	0.93	0.85	0.93	0.98	0.95

Rice Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	459.32	487.78	517.51	587.91	735.33	882.62	1082.98	996.31	1267.53	1113.66
Rice @ 45 %	206.70	219.50	232.88	264.56	330.90	397.18	487.34	448.34	570.39	501.15
Estimated PP cost	433.31	441.30	469.82	489.35	520.14	588.48	638.12	648.82	698.45	723.06
Ratio	0.48	0.50	0.50	0.54	0.64	0.67	0.76	0.69	0.82	0.69

Rice Southern Seaboard	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	380.00	423.19	462.19	515.25	643.22	787.60	881.29	922.45	1145.09	1108.99
Rice @ 45 %	171.00	190.44	207.99	231.86	289.45	354.42	396.58	415.10	515.29	499.04
Estimated PP cost	309.17	326.87	340.55	325.13	345.61	393.37	417.22	420.63	455.28	474.63
Ratio	0.55	0.58	0.61	0.71	0.84	0.90	0.95	0.99	1.13	1.05

Rice Mississippi Portal	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	362.72	391.29	428.94	495.13	618.42	752.76	863.78	850.39	981.72	978.47
Rice @ 45 %	163.22	176.08	193.02	222.81	278.29	338.74	388.70	382.68	441.77	440.31
Estimated PP cost	270.22	286.63	302.76	291.49	309.71	350.11	368.01	374.00	403.33	418.45
Ratio	0.60	0.61	0.64	0.76	0.90	0.97	1.06	1.02	1.10	1.05

Rye

Rye - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	92.01	96.42	124.81	101.47	118.11	133.02	142.41	141.65	142.88	210.68
Rye @ 60 %	55.21	57.85	74.89	60.88	70.87	79.81	85.45	84.99	85.73	126.41
Estimated PP cost	54.80	57.30	57.99	60.53	61.74	66.24	72.99	75.03	79.11	85.78
Ratio	1.01	1.01	1.29	1.01	1.15	1.20	1.17	1.13	1.08	1.47

RMA SOB liability: Northern Great Plains

Extension budgets: ND

Rye - OK	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	58.37	64.03	80.73	58.92	68.96	78.40	86.47	79.60	81.59	107.29
Rye @ 60 %	35.02	38.42	48.44	35.35	41.38	47.04	51.88	47.76	48.96	64.38
Estimated PP cost	57.97	55.98	66.58	72.18	75.64	78.76	77.01	79.69	84.55	93.63
Ratio	0.60	0.69	0.73	0.49	0.55	0.60	0.67	0.60	0.58	0.69

RMA SOB liability: Prairie Gateway

Extension budgets: OK

Rye - WI	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	77.37	78.90	106.20	90.26	113.33	145.16	168.51	120.28	160.03	213.53
Rye @ 60 %	46.42	47.34	63.72	54.16	68.00	87.10	101.11	72.17	96.02	128.12
Estimated PP cost	132.24	136.51	142.86	154.58	161.60	177.25	187.05	192.20	205.70	212.70
Ratio	0.35	0.35	0.45	0.35	0.42	0.49	0.54	0.38	0.47	0.60

RMA SOB liability: Northern Crescent

Extension budgets: WI

Safflower

Safflower CA	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	266.32	253.96	267.40	262.74	233.47	399.24	618.40	302.14	359.91	518.12
Safflower @ 60 %	159.79	152.38	160.44	157.64	140.08	239.54	371.04	181.28	215.95	310.87
Estimated PP cost	173.45	183.74	198.69	196.38	213.83	278.08	208.90	212.67	240.34	247.49
Ratio	0.92	0.83	0.81	0.80	0.66	0.86	1.78	0.85	0.90	1.26

RMA SOB liability: CA

Extension budgets: CA

Safflower ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	74.38	70.34	74.14	75.22	94.34	165.39	199.41	136.57	157.06	193.42
Safflower @ 60 %	44.63	42.20	44.48	45.13	56.60	99.23	119.65	81.94	94.24	116.05
Estimated PP cost	73.08	76.83	81.97	86.18	92.25	110.00	131.03	132.13	144.87	149.71
Ratio	0.61	0.55	0.54	0.52	0.61	0.90	0.91	0.62	0.65	0.78

RMA SOB liability: ND + SD + MT

Extension budgets: ND

Silage Sorghum

Silage Sorghum Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%			229.32	187.63	313.83	274.00	336.71	300.11	376.35	391.05
Silage Sorghum @ 60 %			137.59	112.58	188.30	164.40	202.03	180.07	225.81	234.63
Estimated PP cost	129.91	135.94	145.26	150.83	160.96	180.40	187.32	188.96	203.38	211.17
Ratio			0.95	0.75	1.17	0.91	1.08	0.95	1.11	1.11

Soybeans

Soybeans Eastern Uplands	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	147.67	174.74	160.60	175.55	226.26	371.02	282.40	301.43	434.63	410.54
Soybeans @ 60 %	88.60	104.84	96.36	105.33	135.76	222.61	169.44	180.86	260.78	246.32
Estimated PP cost	120.40	126.95	133.04	147.83	153.22	167.35	180.00	193.23	206.98	214.06
Ratio	0.74	0.83	0.72	0.71	0.89	1.33	0.94	0.94	1.26	1.15



Soybeans Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	225.56	271.66	229.44	259.14	343.69	571.80	395.65	414.14	612.11	602.80
Soybeans @ 60 %	135.34	163.00	137.66	155.48	206.21	343.08	237.39	248.48	367.27	361.68
Estimated PP cost	169.60	177.49	184.15	197.15	203.37	221.47	242.20	264.27	283.49	292.85
Ratio	0.80	0.92	0.75	0.79	1.01	1.55	0.98	0.94	1.30	1.24

Soybeans Mississippi Portal	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	143.77	169.28	154.18	170.56	225.94	369.74	321.46	328.66	460.64	444.39
Soybeans @ 60 %	86.26	101.57	92.51	102.34	135.56	221.84	192.88	197.20	276.38	266.63
Estimated PP cost	156.85	164.60	171.58	176.01	182.57	199.34	213.37	229.65	246.05	254.50
Ratio	0.55	0.62	0.54	0.58	0.74	1.11	0.90	0.86	1.12	1.05

Soybeans Northern Crescent	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	210.72	244.38	209.29	232.03	309.07	517.26	360.46	369.32	548.38	534.13
Soybeans @ 60 %	126.43	146.63	125.57	139.22	185.44	310.36	216.28	221.59	329.03	320.48
Estimated PP cost	159.00	164.80	171.86	169.25	175.22	191.22	206.43	221.86	237.70	245.54
Ratio	0.80	0.89	0.73	0.82	1.06	1.62	1.05	1.00	1.38	1.31

Soybeans Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	165.81	205.34	167.49	191.41	254.43	433.74	288.87	291.52	429.86	424.04
Soybeans @ 60 %	99.49	123.20	100.49	114.85	152.66	260.24	173.32	174.91	257.92	254.42
Estimated PP cost	116.74	122.06	129.43	145.17	150.89	164.99	176.66	188.35	201.46	208.48
Ratio	0.85	1.01	0.78	0.79	1.01	1.58	0.98	0.93	1.28	1.22

Soybeans Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	190.86	231.52	197.12	223.68	287.33	487.46	337.77	347.03	522.72	505.02
Soybeans @ 60 %	114.52	138.91	118.27	134.21	172.40	292.48	202.66	208.22	313.63	303.01
Estimated PP cost	149.50	156.94	163.55	178.67	185.63	203.27	216.21	231.75	248.63	256.95
Ratio	0.77	0.89	0.72	0.75	0.93	1.44	0.94	0.90	1.26	1.18

Soybeans Southern Seaboard	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	142.47	171.54	152.50	167.91	213.73	344.16	274.05	287.92	409.87	378.26
Soybeans @ 60 %	85.48	102.92	91.50	100.75	128.24	206.50	164.43	172.75	245.92	226.96
Estimated PP cost	102.60	106.85	112.99	125.47	130.41	143.06	152.79	161.89	173.25	179.32
Ratio	0.83	0.96	0.81	0.80	0.98	1.44	1.08	1.07	1.42	1.27

**Sugar Beets**

Sugar Beets - ID	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	916.20	938.71	912.88	961.19	995.67	1047.71	1165.84	1221.54	1328.55	1721.30
Sugar Beets @ 45 %	412.29	422.42	410.80	432.54	448.05	471.47	524.63	549.69	597.85	774.59
Estimated PP cost	612.54	620.08	679.18	697.26	742.76	858.25	680.95	701.57	770.21	797.25
Ratio	0.67	0.68	0.60	0.62	0.60	0.55	0.77	0.78	0.78	0.97

RMA SOB liability: ID + OR + MT + WY

Budgets: University of ID + ERS

Sugar Beets - MI	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	741.16	758.68	753.02	763.43	805.91	812.12	924.74	976.22	1062.50	1382.86
Sugar Beets @ 45 %	333.52	341.41	338.86	343.54	362.66	365.45	416.13	439.30	478.13	622.29
Estimated PP cost	416.99	427.00	466.29	479.88	511.25	509.84	530.30	545.04	589.29	613.45
Ratio	0.80	0.80	0.73	0.72	0.71	0.72	0.78	0.81	0.81	1.01

RMA SOB liability: MI

Extension budgets: MI

Sugar Beets - FINBIN	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	817.33	844.46	823.53	827.41	873.08	887.89	983.59	1014.59	1111.48	1424.46
Sugar Beets @ 45 %	367.80	380.01	370.59	372.33	392.89	399.55	442.62	456.57	500.17	641.01
Estimated PP cost	448.19	458.19	499.00	513.56	546.40	330.26	358.56	417.45	447.21	514.67
Ratio	0.82	0.83	0.74	0.73	0.72	1.21	1.23	1.09	1.12	1.25

RMA SOB liability: MN + ND + NE +

CO

Budgets: FINBIN + ERS

Sunflower

Sunflower Oil - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	153.16	168.32	148.25	166.80	205.92	428.74	259.49	272.74	386.84	402.65
Sunflower oil @ 60 %	91.90	100.99	88.95	100.08	123.55	257.24	155.69	163.64	232.10	241.59
Estimated PP cost	91.08	95.31	95.47	102.74	106.96	121.67	132.99	135.90	147.80	159.90
Ratio	1.01	1.06	0.93	0.97	1.16	2.11	1.17	1.20	1.57	1.51

RMA SOB liability: ND + SD + MN

Extension budgets: ND

Sunflower Seed - ND	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	153.16	168.32	148.25	166.80	205.92	428.74	259.49	272.74	386.84	402.65
Sunflower seed @ 60 %	91.90	100.99	88.95	100.08	123.55	257.24	155.69	163.64	232.10	241.59
Estimated PP cost	77.81	81.68	81.93	87.31	89.55	101.65	111.02	113.41	123.82	133.28
Ratio	1.18	1.24	1.09	1.15	1.38	2.53	1.40	1.44	1.87	1.81

RMA SOB liability: ND + SD + MN

Extension budgets: ND

Processing Sweet Corn

Processing sweet corn - OR	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	544.94	538.32	534.46	550.46	592.77	1022.54	1068.02	773.30	898.49	902.96
Sweet Corn @ 40 %	217.98	215.33	213.78	220.18	237.11	409.02	427.21	309.32	359.40	361.18
Estimated PP cost	249.99	264.79	284.72	300.78	328.11	392.89	401.60	407.88	456.02	469.40
Ratio	0.87	0.81	0.75	0.73	0.72	1.04	1.06	0.76	0.79	0.77

RMA SOB liability: WA + OR + ID

Extension budgets: OR

**Tobacco**

Tobacco, Burley - KY	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	4087.68	4160.97	3476.51	3545.74	3954.05	4419.98	4573.52	4356.54	4152.10	3996.36
Tobacco @ 35 %	1430.69	1456.34	1216.78	1241.01	1383.92	1546.99	1600.73	1524.79	1453.24	1398.73
Estimated PP cost	1909.00	1934.20	875.01	924.65	991.84	1093.77	1145.39	1180.31	1141.20	1189.06
Ratio	0.75	0.75	1.39	1.34	1.40	1.41	1.40	1.29	1.27	1.18

RMA SOB liability: KY + TN

Extension budgets: KY

Tobacco, Flue cured - NC	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	4191.29	4232.67	3107.68	3063.46	3441.70	3651.05	4238.28	4067.78	3730.65	3711.51
Tobacco @ 35 %	1466.95	1481.43	1087.69	1072.21	1204.60	1277.87	1483.40	1423.72	1305.73	1299.03
Estimated PP cost	2273.48	2626.26	858.40	897.77	945.90	1033.46	1072.13	1040.87	1046.04	1101.82
Ratio	0.65	0.56	1.27	1.19	1.27	1.24	1.38	1.37	1.25	1.18

RMA SOB liability: NC + SC + VA

Extension budgets: NC

**Wheat**

Wheat Basin & Range	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	176.01	172.34	184.88	192.58	236.30	320.27	454.10	295.51	415.97	442.35
Wheat @ 60 %	105.61	103.41	110.93	115.55	141.78	192.16	272.46	177.31	249.58	265.41
Estimated PP cost	181.99	147.87	161.24	165.78	176.70	195.17	202.65	206.15	221.23	229.43
Ratio	0.58	0.70	0.69	0.70	0.80	0.98	1.34	0.86	1.13	1.16

Wheat Fruitful Rim	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	208.43	212.00	221.81	213.02	260.06	345.91	514.05	333.63	490.97	498.76
Wheat @ 60 %	125.06	127.20	133.09	127.81	156.04	207.55	308.43	200.18	294.58	299.26
Estimated PP cost	204.35	200.67	220.76	226.96	242.33	269.37	253.17	258.96	278.75	288.60
Ratio	0.61	0.63	0.60	0.56	0.64	0.77	1.22	0.77	1.06	1.04

Wheat Heartland	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	167.40	173.63	167.33	177.85	219.77	333.74	422.68	257.29	424.98	458.06
Wheat @ 60 %	100.44	104.18	100.40	106.71	131.86	200.25	253.61	154.37	254.99	274.84
Estimated PP cost	147.81	146.01	160.28	163.25	174.81	194.54	207.02	209.89	226.93	235.28
Ratio	0.68	0.71	0.63	0.65	0.75	1.03	1.23	0.74	1.12	1.17

Wheat Northern Crescent	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	194.15	196.49	201.94	197.31	238.55	353.05	477.53	316.64	466.55	503.12
Wheat @ 60 %	116.49	117.89	121.16	118.39	143.13	211.83	286.52	189.98	279.93	301.87
Estimated PP cost	145.15	159.58	174.78	178.82	191.22	212.21	205.37	208.42	224.63	232.83
Ratio	0.80	0.74	0.69	0.66	0.75	1.00	1.40	0.91	1.25	1.30

Wheat Northern Great Plains	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	116.22	120.12	115.10	131.82	167.53	321.53	246.28	192.13	323.27	296.01
Wheat @ 60 %	69.73	72.07	69.06	79.09	100.52	192.92	147.77	115.28	193.96	177.61
Estimated PP cost	117.56	111.17	121.34	124.88	133.59	149.60	155.52	157.86	170.24	176.59
Ratio	0.59	0.65	0.57	0.63	0.75	1.29	0.95	0.73	1.14	1.01

Wheat Prairie Gateway	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Liability @ 100%	120.89	115.89	120.84	119.05	152.29	196.47	288.29	178.65	246.37	292.76
Wheat @ 60 %	72.54	69.54	72.51	71.43	91.37	117.88	172.97	107.19	147.82	175.66
Estimated PP cost	108.08	106.02	115.95	119.81	127.74	141.68	143.31	146.15	157.00	163.31
Ratio	0.67	0.66	0.63	0.60	0.72	0.83	1.21	0.73	0.94	1.08

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