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Producer Choices for the Seed Cotton Program: An Examination of AFPC's Seed Cotton Decision Aid Efforts

Working Paper 19-2

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Executive Summary

Provisions in the Bipartisan Budget Act of 2018 established seed cotton as a Title I covered commodity in the farm bill, which made seed cotton eligible for enrollment in ARC or PLC beginning in the 2018 crop year. Seed cotton includes both the cotton lint and cotton seed, whereas, prior to 2014, only the lint was covered. Generic base acres were eliminated, therefore, landowners and producers with generic base had to: 1) reallocate generic base acres to seed cotton, other covered commodities, or unassigned acres, 2) update the Price Loss Coverage yield for seed cotton, and 3) elect either Agriculture Risk Coverage (ARC) or Price Loss Coverage (PLC) for seed cotton base.

To help landowners and producers make informed decisions regarding generic base acres, the Agricultural and Food Policy Center (AFPC) at Texas A&M University created a decision aid. The decision aid guided users through the options for base reallocation, payment yield update, and program election for each Farm Service Agency (FSA) farm number and estimated potential payments over a five-year period resulting from each decision.

AFPC educated producers on the seed cotton provisions and availability of the decision aid through 38 extension meetings, attended by 3,255 producers and FSA personnel, and four videos that were accessible on the AFPC website. A help desk, run by AFPC staff, was available for decision aid-related questions and consultations. The help desk was utilized by over 200 producers, either by phone or in person. Through the decision aid, AFPC helped producers make decisions on 992,077 generic base acres. The majority of decision aid users were Texans; however, the tool was also utilized by people in 14 other cotton producing states. Registered users (those who created an account) totaled 1,712 and FSA farm numbers entered reached 6,547. These results do not account for additional users who entered data and received results but did not register.

The optimal generic base decisions varied from producer to producer and farm number to farm number. Through development of the decision aid, AFPC's goal was to help inform producers as they made these lasting decisions that will likely affect their bottom lines as well as their land values.

Introduction

The Bipartisan Budget Act of 2018 reestablished cotton as a covered commodity under Title I of the farm bill as seed cotton. Seed cotton is defined as unginned upland cotton which includes both the cotton lint and the cotton seed. The new law eliminates generic base acres (previous cotton base) and creates a need for land owners and producers with generic base acres to make three decisions for each Farm Service Agency (FSA) farm that has generic base acres.

Land owners and producers can:

1) reallocate generic base acres to seed cotton, other covered commodities, or unassigned acres,
2) update the Price Loss Coverage yield for seed cotton, and
3) elect either Agriculture Risk Coverage (ARC) or Price Loss Coverage (PLC) for seed cotton base (Schnepf, R., 2018).

Base acres are tied to the land, and changes to base acres have only occurred two times (2002 and 2014) since their establishment in the mid-1980s. Reallocation of generic base acres is a lasting decision and one that could affect the value of the land. The owner of the farm is responsible for deciding how to reallocate generic base and whether to update the seed cotton yield, while the producer makes the election between ARC and PLC (United States Department of Agriculture Farm Service Agency (USDA FSA), 2018). Making decisions on acreage reallocation, yield update, and program election is likely to affect the producer's bottom line because they will affect the producer's farm program payments (ARC or PLC payments). Over the past 30 years, payment rate differences between covered commodities have shown cotton receiving higher government payments on a per acre basis than most covered commodities (other than peanuts and rice). However, both ARC and PLC payments are determined by

current and future market conditions for each crop as well as program parameters established in the 2014 Farm Bill and the Bipartisan Budget Act of 2018. Therefore, allocating generic base to seed cotton is not necessarily the right decision for every producer or landowner depending on their other crop alternatives. Instead, the decisions are unique to each Farm Service Agency (FSA) farm number and the risk management goals of each operation.

The Agricultural and Food Policy Center (AFPC) at Texas A&M University developed a seed cotton decision aid to help inform producers across the United States regarding these three decisions. The decision aid is available online at www.afpc.tamu.edu. Through the decision aid, AFPC helped producers make decisions on 992,077 generic base acres.

Detailed Look at the Decisions

Owners and producers had three decisions to make for each FSA farm number that contained generic base acres. The first was to decide how to reallocate generic base acres. Owners had a choice of two options. Figure 1. Illustrates these choices.

Option 1: the number of generic base acres was multiplied by 80 percent to determine seed cotton base acres. The remaining 20 percent became unassigned base acres, which are ineligible for commodity program payments (ARC and PLC payments). If the farm's simple average of acres planted and prevented planted to upland cotton from 2009 to 2012 was greater than 80 percent of generic base acres, the number of seed cotton base acres would equal that simple average, not to exceed the number of generic base acres. If the simple average was less than the number of generic base acres, the remaining generic base acres became unassigned base acres.

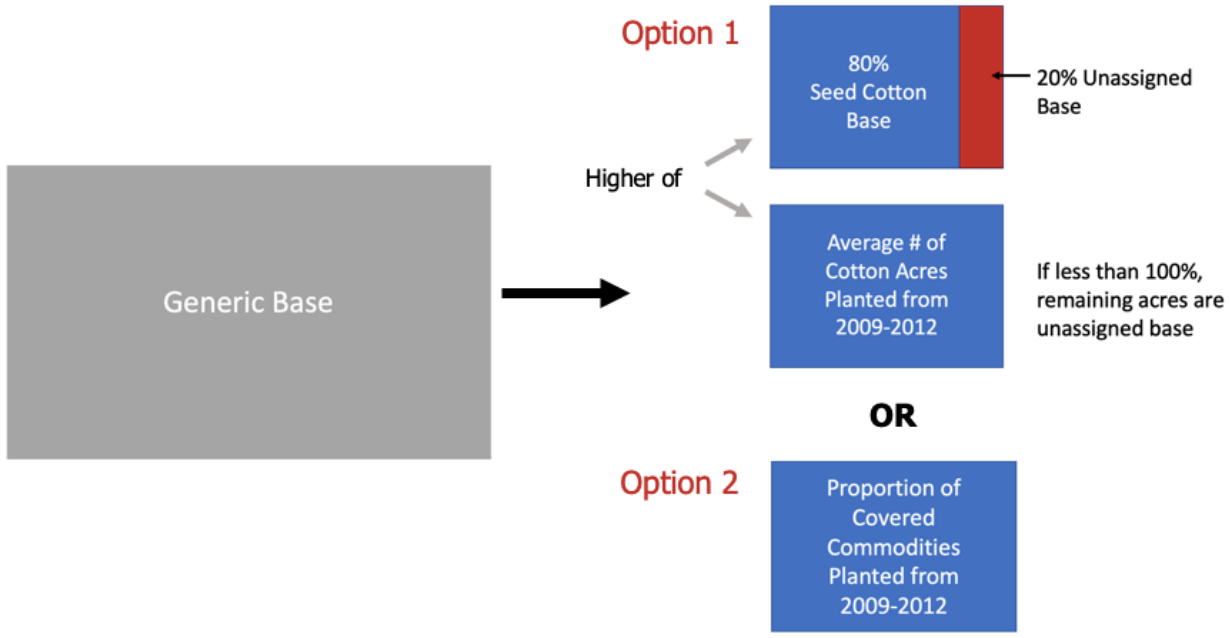

Figure 1. Illustration of Options 1 and 2.

Option 2: generic base acres were proportionally allocated to covered commodities based on the simple average of planted and prevented planted covered commodities (including upland cotton) from 2009 to 2012, including years no covered commodities were planted. This option did not result in any unassigned base acres (83 Fed. Reg. 40653, 2018).

Following the passage of the 2014 farm bill, owners had the opportunity to update their base acres determined by their 2009 to 2012 planting history and their farm payment yields based on their 2008 to 2012 yield history. The 2014 farm bill eliminated cotton as a covered commodity, thus owners with cotton base did not have the opportunity to update their base acres and farm payment yields. Instead, cotton base acres were converted to generic base acres, which were not eligible for farm program payments if cotton was planted. The 2018 Bipartisan Budget Act gives owners with generic base acres the same chance that others had

under provisions of the 2014 farm bill, therefore uses the same years of history (USDA FSA, 2018).

In order to reallocate base acres to seed cotton or other covered commodities, the farm must have been planted or prevented planted to a covered commodity or upland cotton at some time during the 2009 to 2016 crop years. Base acres on farms not meeting this requirement were converted to unassigned (USDA FSA, 2018).

Owners also had the opportunity to update the farm's payment yields for seed cotton. An owner could retain the Counter-Cyclical Payment (CCP) yield for upland cotton, established under the 2008 farm bill, converted to a seed cotton yield; or update the yield to 90 percent of a simple average of the upland cotton yields per planted acre from 2008 to 2012, excluding years cotton was not planted, converted to a seed cotton yield (83 Fed. Reg. 40653, 2018). To convert to a seed cotton yield, the upland cotton yield is multiplied by 2.4 to account for the weight of the cotton lint and the cotton seed (Schnepf, R., 2018). For any year an FSA farm number's yield per planted acre is below 75 percent of the 2008 to 2012 average county yield, a yield plug, or substitute yield, is used. The yield plug is equal to 75 percent of the simple average of the 2008 to 2012 yield per planted acre of cotton in the county (USDA FSA, 2018). The retained or updated yield became the PLC yield for the farm and will be used to calculate payments for the PLC program beginning with the 2018 crop year (USDA FSA, 2018).

A PLC yield must be determined for each covered commodity on every FSA farm number, regardless of whether the farm is enrolled in ARC or PLC. Only seed cotton base acres were eligible for a yield update, unless the generic base acres were allocated to a covered

commodity where a PLC yield did not exist on the farm. Then, an owner could update the yield for the new crop (USDA FSA, 2018).

Finally, producers on farms with generic base acres had to decide to participate in either ARC or PLC. ARC is an income support program which provides payments on base acres when actual crop revenue for a covered commodity falls below a specific guaranteed revenue (determined by the previous 5-year Olympic average of U.S. average market prices and county yields). PLC provides payments when the market price of a covered commodity falls below the reference price for that commodity, set for seed cotton at $0.367 per pound by the Bipartisan Budget Act of 2018 (83 Fed. Reg. 40653, 2018). The U.S. average seed cotton price is a weighted average of lint and cotton seed prices where the weights are the annual production of U.S. upland cotton lint and U.S. all cotton seed. The weight of all U.S. cotton seed is used because USDA data does not provide sufficient detail to determine production of only U.S. upland cotton seed.

After deciding how to reallocate generic base, update the farm payment yield, and whether to elect ARC or PLC, owners and producers enrolled their farm(s) accordingly at their FSA county office. The Bipartisan Act of 2018 required that If owners and producers did not enroll their farm by the December 7, 2018 deadline, by default, they were given Option 1 base reallocation; retained their former CCP yield, converted to seed cotton, as their PLC yield; and were enrolled into PLC (USDA FSA, 2018).

AFPC Decision Aid

AFPC developed a seed cotton decision aid to illustrate to land owners and producers the effects each decision would have on their specific farms. After the required data was

entered, the decision aid calculated expected payments based off of 500 stochastic prices and yields. Using stochastic prices and yields accounts for many of the possible realizations of future prices and county yields and provided a range of possible payments. This gave the user an idea of whether option 1 or 2 could potentially yield the most safety net protection for their farm in the form of commodity program payments. An example of the seed cotton decision input and output screens is provided in the Appendix.

Inputs

Users were not required to create an account, however, doing so allowed farms to be saved by FSA farm number so the information could be revisited. This feature was especially useful to producers with more than one FSA farm number and those who needed to go back and revise data. To create an account or begin using the decision aid, the user had to agree to a disclaimer, which stated the results of the decision aid were for educational purposes and did not guarantee future outcomes.

After logging in, users were prompted to enter the following information for each FSA farm number:

- FSA Farm Number: corresponds to the Farm Service Agency number assigned to a farm. Used to identify a farm and associate it with its respective data.
- State and County: the state and the control county for the producer. This is not necessarily the county where the particular FSA farm number is located. It is the county where the producer conducts their FSA business. This information is needed to generate the county yield plugs and the ARC county revenue parameters, which were set to automatically fill based on the county.
- 2018 Generic Base Acres: number of generic base acres, established by the 2014 farm bill, for the particular FSA farm number.
- Upland Cotton 2013 Counter-Cyclical Yield: the CCP yield for upland cotton for the particular FSA number, established by the 2008 farm bill. Needed to enable the decision aid to determine whether to retain or update the seed cotton PLC payment yield by selecting the highest potential seed cotton payment yield.

- Upland cotton planting and yield data from 2008 to 2012, separated by irrigated and non-irrigated, depending on the practice(s) implemented.
- Number of planted acres of other covered commodities from 2009 to 2012
- Program election (ARC or PLC) for other covered commodities
- Number of existing base acres for other covered commodities
- PLC yield for other covered commodities

Users needed three documents, for each FSA farm number to fill in the information required for the decision aid.

1) A history summary report letter from FSA, sent to all owners and producers with generic base acres, contained the 2008 to 2012 planting history and upland cotton CCP yield.
2) The FSA 156EZ form listed program information for other covered crops on the farm.
3) Crop insurance records provided upland cotton yield history.

The decision aid provided projected baseline prices for each covered commodity, which were used to calculate potential payments. Users had the option to use the prices provided, or enter their own. This feature allowed users to compare potential payments at different prices. Future prices are unpredictable, and AFPC does not guarantee prices. Therefore, users were required to manually enter prices. For 2018, the decision aid provided the most recent National Agriculture Statistic Service (NASS) Marketing Year Average (MYA) commodity prices. For 2019 through 2022, the decision aid provided the latest Food and Agricultural Policy Research Institute (FAPRI) baseline commodity prices.

The decision aid also contained an "Advanced Settings" section, allowing users to override the 2018 expected county seed cotton yield used to calculate potential ARC payments. While not recommended for most users, those who experienced exceptional circumstances and anticipated especially low county yields were able to customize analyses by using this setting.

Outputs

Once the required data was entered into the decision aid, users could evaluate their base reallocation, payment yield, and program election options. The decision aid also calculated potential payments, allowing producers to make better informed decisions.

The results showed how generic base acres would be allocated if the user selected Option 1 or Option 2. For Option 1, the number of seed cotton base acres and unassigned base acres were reported. For Option 2, the number of generic base acres assigned to each covered commodity was reported, as well as the new total number of base acres for each commodity.

Next, the decision aid determined the optimal payment yield to be used as the new PLC payment yield by selecting the higher of the retained CCP yield or the updated yield calculated using the 2008 to 2012 upland cotton yields. The selected yield was used to calculate potential PLC payments.

Potential payments were displayed in a results table that allowed the user to make comparisons relative to each combination of base reallocation and seed cotton program election decisions. The potential payments were only calculated for reallocated generic base acres. The potential payments were calculated over a five-year period (2018 to 2022) and displayed in a table in four sections: PLC – Option 1, PLC – Option 2, ARC – Option 1, ARC – Option 2. A potential payment value for each crop and year was calculated. The decision aid analyzed 500 draws of stochastic prices and yields. The values in the table reflect the average payment across 500 possible realizations of future prices and county yields. A user could click on any individual payment to see additional statistical information about the range of possible

payments. The ranges of payments were split into percentiles, showing the probability of the payment being above or below the reported value for the specific crop that year.

The seed cotton decision aid did not tell users which decisions to make. Rather, it presented potential outcomes of decisions, giving users more information on which to base decisions.

Decision Aid Help Desk:

Along with developing a seed cotton decision aid tool, AFPC assisted landowners and producers through a decision aid help desk. AFPC staff and graduate students received over 190 phone calls and held more than 20 one-on-one consultations to answer questions, interpret results, or enter farm information into the decision aid on the producer's behalf. Individuals who utilized the decision aid and the help desk included cotton farmers from almost every cotton-producing state along with crop insurance agents acting on behalf of their clients. Usage statistics for the decision aid reported 1,712 registered users (those who created an account) and 6,724 farms (FSA farm numbers) entered. Notably, some users entered farms without creating an account, indicating more farms were analyzed than the number reported. Over 60 percent of decision aid users were from Texas, the leading state in cotton production. Users from 14 other states also utilized the tool with Georgia, Alabama, and Mississippi among the leaders. AFPC also conducted 38 extension meetings and posted four videos to educate about the seed cotton provisions and availability of the decision aid. The meetings were attended by 3,255 producers and FSA personnel.

The decision aid was designed to be straightforward, and many users were able to navigate the tool on their own. Users with questions called the help desk for assistance.

Common decision aid inquiries included:

- Trouble shooting questions, such as how to make an account, how to save and retrieve farms, which internet browser worked best, etc.
- Data entry questions, such as where to find particular pieces of information, clarification on what pieces of information were required, and requests to have farm information entered and results reported back.
- Calculation questions, such as what equations were used and why results came out a certain way.
- Result interpretation questions, such as what the results meant and how could they be used to make decisions.
- Program election questions, such as whether or not the choice between ARC or PLC was a one-year decision (only for the 2018 crop year) and whether the choice would be available again in 2019.

Once results were calculated, producers could assess potential outcomes of each decision. The optimal choices were not always clear for every farm, so producers had to ascertain what would be best for their operation.

Generic base reallocation

Producers who overplanted or planted at least their generic base acres in upland cotton from 2009 to 2012 generally had an easy decision to make – choose Option 1. They could allocate all generic base acres to seed cotton without leaving any unassigned base. Most producers, however, underplanted upland cotton (planted less than their generic base) in those years. For those producers, Option 1 would result in a loss of up to 20 percent of their generic base acres to unassigned base, while Option 2 would not result in a loss of base acres. Historically, when base acres have been eliminated (or moved to unassigned), they are not expected to be eligible for Title I payments in the future.

Although it gave producers the opportunity to maintain 100 percent of a farm's base acres, Option 2 was not the obvious choice for producers who underplanted cotton. In general, the projected payments for other covered commodities were estimated to be lower than

projected seed cotton payments. This is where base reallocation became a tough decision for producers. The question was whether to retain all base acres and have less allocated to seed cotton or have more seed cotton base and less total base acres. Producers who had not been growing cotton and did not plan on growing cotton in the future also had to consider whether they would rather have base acres reflect what they actually produced, thus acting as a more closely aligned safety net to the crops planted on the farm.

No one wanted to lose base acres, but everyone wanted the highest potential safety net. In most cases, these requirements would have resulted in opposite decisions. The decision aid was designed to help producers evaluate the tradeoffs in situations where the optimal choices were not clear.

Tenant producers who have power of attorney on the owner's land had the legal right to make decisions on base reallocation and yield update. In these cases, the producer was encouraged to consult the owner. Whether a farm has base acres and which commodities the base is in affects the value of land, so choosing the option that reduces the total number of base acres potentially reduces the land value. In some situations, the option with less total base may increase the land value if that base is considered more valuable. While producers may see the option with higher potential payments as more favorable, the owner may take away their privilege to farm the land as a result.

Seed cotton PLC payment yield

The decision aid reported the optimal seed cotton PLC payment yield as the higher of the two options, making the yield decision simple. In every case, the higher yield was more

favorable. The responsibility of the producer was to be able to prove yield history to FSA if eligible for a yield update.

Program election

The results table compared projected payments between ARC and PLC for seed cotton over a five-year period (2018-2022). PLC payment estimates were higher than ARC estimates for most farms. There were certain counties experiencing drought where ARC payments, at least for the 2018 crop year, were expected to be higher due to low or zero expected cotton yields. Producers in this situation were tempted to choose ARC with the hope they would be provided the option to elect PLC for the 2019 crop year and beyond in the 2018 Farm Bill. Until December 20, 2018, when the 2018 farm bill was signed into law, producers were not guaranteed the option to reelect between ARC and PLC in 2019. This was almost two weeks after the deadline for seed cotton program enrollment. Therefore, producers considering ARC as a one-year decision risked having to remain in the program for multiple years if a new farm bill was not passed.

Conclusion

AFPC developed a generic base decision aid to inform producer decisions relative to the seed cotton provisions in the Bipartisan Budget Act of 2018. The goal for the decision aid was to help landowners and cotton producers make important, lasting decisions which will affect their land values and their farm's bottom line. Producers realized the importance of these decisions and utilized the decision aid and help desk for assistance. By using the decision aid, producers were able to clearly account for farm-to-farm variation and tailor their decisions accordingly to their specific operation and risk management goals.

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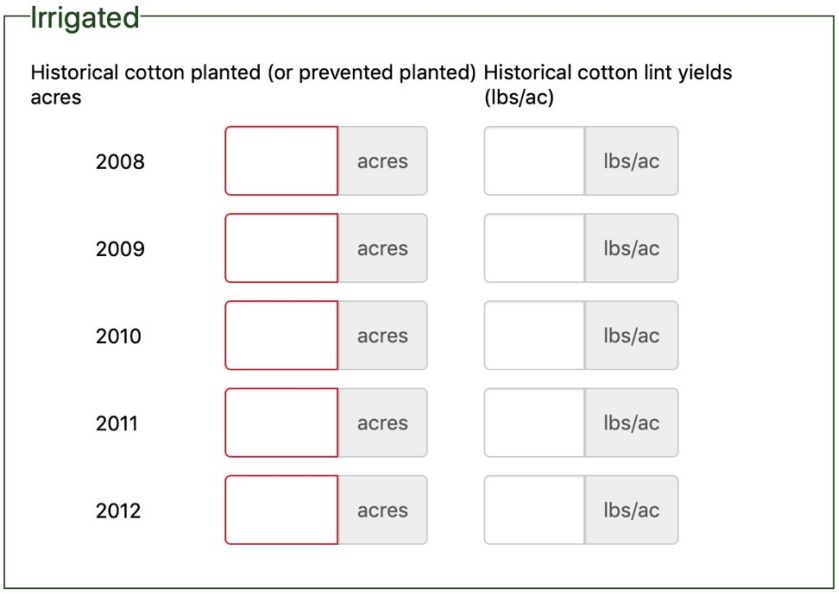
Appendix

Examples of Input and Output Screens



Potential FSA Payments on Reallocated Generic Base

Your Seed Cotton Expectations

PLC Yield: 1303

	Your Expected Price		Projected Prices	
2018	0.3582	$/lb	0.3582	$/lb
2019	0.3393	$/lb	0.3393	$/lb
2020	0.3368	$/lb	0.3368	$/lb
2021	0.3388	$/lb	0.3388	$/lb
2022	0.3415	$/lb	0.3415	$/lb

☑ **Advanced Settings** (Not recommended for most users)

If you have experienced exceptional circumstances in your county and would like to customize your analysis, check here to enable additional settings.

Override the 2018 expected county *seed* cotton yield. This override will not apply to irrigated cotton in practice-specific counties. [ ] lbs/ac

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Expected payments based on the expected prices you have entered are shown in the table below. Click an individual payment to see additional information about the range of possible payments. Values in the table reflect the average payment across 500 possible realizations of future prices and county yields. Click an individual payment to see additional information about the range of possible payments.

PLC for Seed Cotton

Option 1 Potential Payments

Crop		Reallocated Generic Base	Historical Planted %	2018	2019	2020	2021	2022	Total
Seed Cotton	PLC	800	100.00%	$40,360	$29,836	$31,914	$31,598	$29,307	$163,015

Option 2 Potential Payments

Crop		Reallocated Generic Base	Historical Planted %	2018	2019	2020	2021	2022	Total
Seed Cotton	PLC	700	100.00%	$35,315	$26,107	$27,925	$27,648	$25,644	$142,638
Corn	PLC	75	100.00%	$1,543	$1,143	$1,200	$1,186	$1,262	$6,333
Grain Sorghum	PLC	225	100.00%	$5,514	$4,993	$5,371	$5,206	$5,301	$26,385
Grand Totals				$42,372	$32,243	$34,495	$34,040	$32,207	$175,357

ARC for Seed Cotton

Option 1 Potential Payments

Crop		Reallocated Generic Base	Historical Planted %	2018	2019	2020	2021	2022	Total
Irrigated Seed Cotton	ARC	800	46.43%	$8,141	$6,632	$7,165	$6,820	$5,515	$73,818
Non-Irrigated Seed Cotton	ARC	800	53.57%	$7,012	$7,726	$7,915	$5,283	$2,866	$57,497

Option 2 Potential Payments

Crop		Reallocated Generic Base	Historical Planted %	2018	2019	2020	2021	2022	Total
Irrigated Seed Cotton	ARC	700	46.43%	$7,123	$5,803	$6,269	$5,967	$4,826	$64,591
Non-Irrigated Seed Cotton	ARC	700	53.57%	$6,135	$6,760	$6,925	$4,623	$2,508	$50,310
Corn	PLC	75	100.00%	$1,543	$1,143	$1,200	$1,186	$1,262	$6,333
Grain Sorghum	PLC	225	100.00%	$5,514	$4,993	$5,371	$5,206	$5,301	$26,385
Grand Totals				$20,316	$18,699	$19,765	$16,982	$13,897	$89,659

Save