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Economic Impact of Higher Crop and Input Prices on AFPC's Representative Crop Farms

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Introduction

This report is a follow-up to AFPC Briefing Paper 22-01[1] that analyzed the impact of higher fertilizer prices on the Agricultural and Food Policy Center's (AFPC's) representative farms at the request of U.S. Representative Julia Letlow. The current report analyzes the economic impacts of higher crop and major input prices on AFPC's 64 representative crop farms. The analysis was requested by Senator John Boozman, Ranking Member, Senate Committee on Agriculture, Nutrition, and Forestry.

Background

Input suppliers around the world are having a tough time meeting demand for most of the major crop inputs. While there are likely many causes, the most cited revolve around the pandemic and the resulting supply chain and distribution problems that have persisted. Some inputs such as fertilizer have these issues but have also been hit with import duties on imported phosphorus and urea ammonium nitrate solutions by the U.S. International Trade Commission. These factors, along with the Russian invasion of Ukraine (both major fertilizer exporters), have further limited the availability of fertilizer and led to even higher prices.

AFPC, in collaboration with the Food and Agricultural Policy Research Institute (FAPRI), released an updated outlook for our 94 representative crop and livestock farms in March 2022.[2] The Russian invasion has also greatly reduced corn and wheat exports from Ukraine which has led to higher crop prices around the world.

Data and Methods

Model

For over 30 years, AFPC has maintained a farm-level policy simulation model (FLIPSIM) developed by Richardson and Nixon (1986) for analyzing the impact of proposed policy changes on U.S. farms and ranches. AFPC currently uses a next generation simulation model – Farm Economics and Solvency Projector (FarmESP) – developed by Dr. Henry Bryant, that moves to the Python platform and includes all of the previous generation's policy and tax capabilities with a significant upgrade in terms of crop insurance capabilities.

Data

The data to simulate farming operations in FarmESP comes primarily from AFPC's database of representative farms. Information to describe and simulate these farms comes from panels of farmers (typically 4-6 producers per location) located in major production regions in 21 states across the United States. The farm panels are re-

[1] https://www.afpc.tamu.edu/research/publications/files/711/BP-22-01-Fertilizer.pdf
[2] https://www.afpc.tamu.edu/research/publications/files/714/BP-22-3.pdf

Table 1: Average Percentage Change in Representative Farm Input Cost/Acre from 2021 to 2022.

	Seed	Nitrogen Fertilizer	Phosphorus & Potassium Fertilizer	Herbicide	Insecticide	Fungicide	Fuel & Lube
Percentage Change 2021 to 2022	16.58%	133.62%	92.75%	64.23%	40.25%	36.02%	86.63%

convened frequently to update the representative farm data. The representative farms are categorized by their primary source of receipts – for example, feedgrain, wheat, cotton and rice. The representative farm database has been used for evaluating the impacts of proposed policies in the past seven farm bills. As noted above, this report focuses on AFPC's 64 representative crop farms (Figure 1). Appendix A contains additional descriptions of the 64 representative crop farms while Appendix B provides the names of producers, land grant faculty, and industry leaders who cooperated in the panel interview process to develop the representative farms.

While producers are unquestionably facing higher prices for inputs, it is less clear how high input prices are translating into increases in the cost of production. For example, some producers locked in input prices last year before the significant run-up in prices, and we expect that most producers will reduce input use in response to higher prices. Consequently, for this analysis, we sent each of the 489 representative farm panel members an email to solicit the amount spent per acre on inputs for last year (2021 crop year) and the amount they expect to spend this year. The percentage change for each category was calculated for each respondent. An average across the 83 respondents representing crop farms is presented in Table 1. Appendix

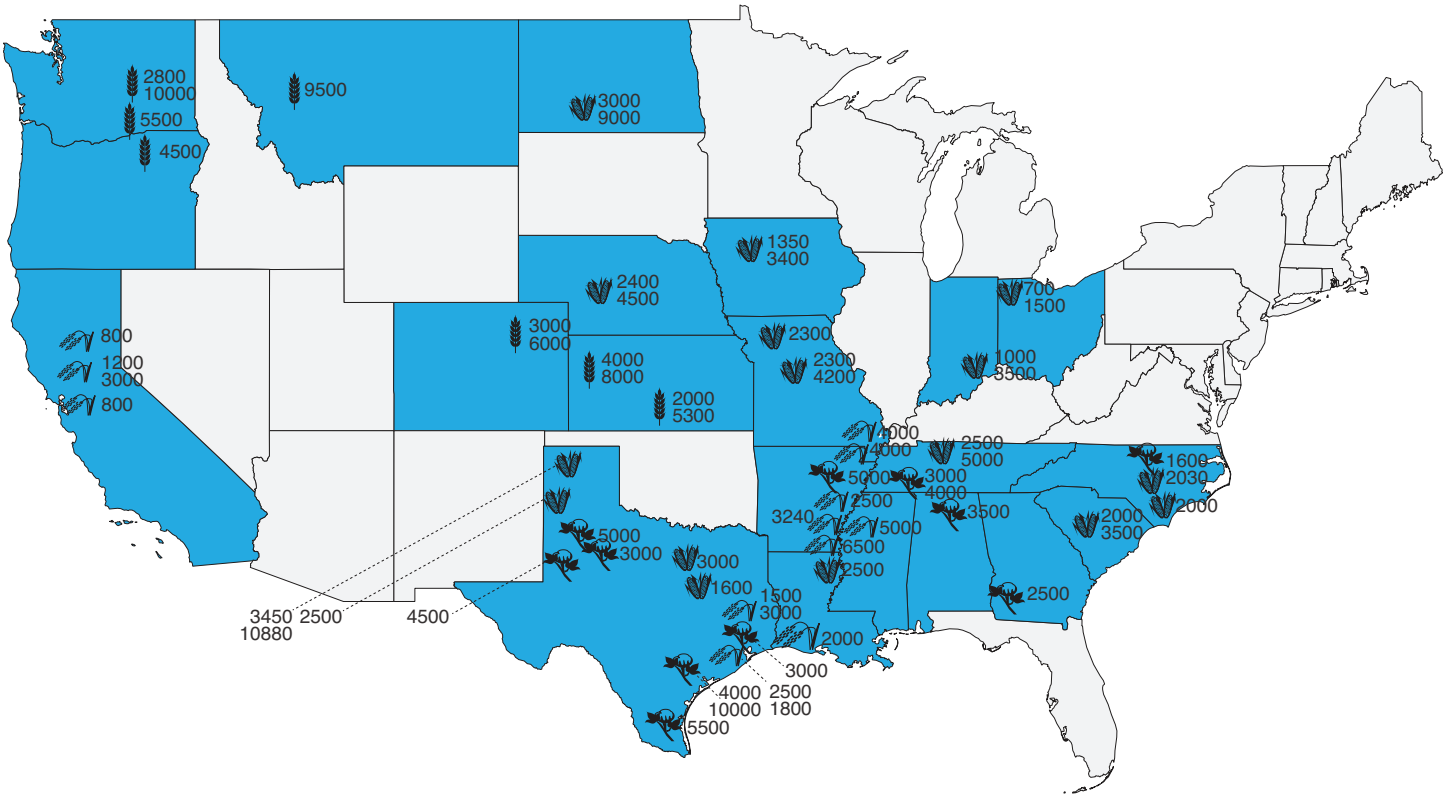

Figure 1: Location of AFPC Representative Crop Farms by Type.

Table 2: Projected Commodity Prices in FAPRI April 2022 Update Marketing Years 2021/22 and 2022/23.

	2021/22	2022/23	Percentage Change
Corn ($/bu)	$5.78	$6.06	4.84%
Wheat ($/bu)	$7.60	$8.08	6.32%
Soybean ($/bu)	$13.27	$14.22	7.16%
Grain Sorghum ($/bu)	$5.87	$6.14	4.60%
Barley ($/bu)	$5.27	$5.60	6.26%
Oats ($/bu)	$4.30	$4.00	-6.98%
Upland Cotton ($/lb)	$0.91	$0.871	-4.29%
Seed Cotton ($/lb)	$0.464	$0.443	-4.53%
Peanuts ($/lb)	$0.238	$0.24	0.84%
Sunflower Seed ($/lb)	$0.318	$0.324	1.89%
Canola ($/lb)	$0.318	$0.295	-7.23%
All Rice	$15.80	$15.84	0.25%
Long Grain Rice ($/cwt)	$13.75	$14.03	2.04%

C contains histograms that show while there were outliers at either extreme, in most cases the responses were very similar. Also, note that relative to the modest increases for most commodity prices, input costs have increased significantly more. In addition, 78% of the respondents indicated they were cutting application rates or adjusting management practices to mitigate rising input costs this growing season.

Updated commodity prices for the 2021/22 and 2022/23 marketing years and policy variables were obtained from the FAPRI-MU Bulletin #01-22 entitled U.S. Agricultural Market Snapshot, April 2022[3] (Table 2). Importantly, for many crops, the 2021/22 marketing year is still underway – as a result, prices for crops harvested in 2021 were updated as well. It is also worth noting that we are still months away from the start of the 2022/23 marketing year for most crops, so the commodity prices used in this report are very preliminary. Across all commodities, soybeans are expected to see the largest increase in marketing year average prices over the two years (7.16 percent) followed by barley and wheat at just over six percent each.

Each representative farm was simulated using the FarmESP model assuming the annual inflation rates from Table 1 and projected prices from Table 2. AFPC's representative farms are all assumed to be full-time, commercial-scale family operations.

Results

This analysis focuses on the change in net cash farm income for 2022 (relative to 2021) to determine whether expected commodity price increases are likely to offset input cost increases as reported by the representative farm panelists. The ending cash balance on hand at the end of 2022 is also reported to provide an indication of

[3] https://www.fapri.missouri.edu/publication/u-s-agricultural-market-snapshot-april-2022/

Table 3. Representative Feed Grain and Oilseed Farm Results.

Name	Planted Area --Acres--	NCFI 2021 --$1,000--	NCFI 2022 --$1,000--	NCFI Difference 2022 minus 2021 --$1,000--	NCFI Difference --$/Acre--	Ending Cash 2022 --$1,000--
Feedgrain and Oilseed						
IAG1350	1,350	446	242	-204	-151.01	177
IAG3400	3,400	1,349	968	-381	-112.11	1,014
NEG2400	2,400	1,344	897	-446	-185.96	1,698
NEG4500	4,500	2,009	1,259	-749	-166.46	1,856
NDG3000	3,000	770	505	-265	-88.41	850
NDG9000	8,750	2,730	2,041	-689	-78.77	3,711
ING1000	1,050	446	338	-108	-102.73	394
ING3500	3,500	1,381	919	-462	-132.13	1,440
OHG700	700	301	50	-251	-358.49	160
OHG1500	1,500	780	94	-687	-457.81	678
MOCG2300	2,300	1,034	889	-145	-63.13	1,260
MOCG4200	4,200	1,962	1,673	-289	-68.85	2,786
MONG2300	2,300	1,090	886	-205	-88.91	718
LANG2500	2,500	772	126	-646	-258.28	588
TNG2500	2,875	806	386	-420	-145.99	660
TNG5000	5,500	1,928	1,025	-903	-164.16	2,051
NCSP2000	2,000	623	147	-476	-237.96	273
NCC2030	2,030	674	492	-182	-89.62	707
SCC2000	2,000	617	89	-529	-264.45	404
SCG3500	3,500	1,394	342	-1,052	-300.65	1,363
TXNP3450	3,192	1,589	791	-799	-250.20	1,797
TXNP10880	10,180	4,694	2,202	-2,492	-244.79	6,394
TXPG3000	2,470	667	247	-419	-169.74	-118
TXHG3000	3,000	570	211	-359	-119.66	556
TXWG1600	1,600	294	109	-185	-115.82	61
Average				***-534***	***-176.64***	

whether net farm income is high enough in 2022 to pay all other obligations such as principal payments, family living expenses, and taxes. Projections beyond this crop year for input costs were not possible due to the extreme volatility in input prices.

In the results that follow, the first two letters of a farm name reflect the state abbreviation followed by letters (in many cases) describing geographic location and type of farm (e.g., G for feedgrain, W for wheat, etc.). Some locations have both a moderate- and large-sized farm, while others have only one farm size of that type in the region. The number in a farm's name indicates the total acres on the farm. Additional information about the

Table 4. Representative Wheat Farm Results.

Name	Planted Area --Acres--	NCFI 2021 --$1,000--	NCFI 2022 --$1,000--	NCFI Difference 2022 minus 2021 --$1,000--	NCFI Difference --$/Acre--	Ending Cash 2022 --$1,000--
Wheat						
WAW2800	2,640	714	291	-423	-160.38	685
WAW10000	8,500	2,296	975	-1,321	-155.38	1,970
WAAW5500	2,600	291	103	-189	-72.61	20
ORW4500	2,250	327	211	-116	-51.48	129
MTW9500	5,301	1,356	809	-547	-103.24	1,084
KSCW2000	2,600	618	459	-159	-61.00	844
KSCW5300	7,327	1,484	1,049	-434	-59.26	2,165
KSNW4000	3,000	536	316	-220	-73.32	279
KSNW8000	7,600	2,191	1,498	-694	-91.27	2,508
COW3000	1,688	324	271	-53	-31.39	227
COW6000	4,000	429	193	-236	-59.00	-301
Average				***-399***	***-83.48***	

representative farms can be found in AFPC Working Paper 22-3 by Outlaw et al., March 2022.[4] The breakdown of the 64 crop farms by type is as follows:

- Feedgrain: 25
- Wheat: 11
- Cotton: 13
- Rice: 15

Tables 3-6 contain the simulation results for each of the representative crop farms. The primary economic variables evaluated are net cash farm income in 2021 versus 2022 (along with the difference between the two) and ending cash balances at the end of 2022. Net cash farm income is a traditional measure of profitability while the ending cash balance provides an indication of the farm's cash flow situation after paying for principal payments, family living withdrawals, and federal income taxes.

Net Cash Farm Income

Net cash farm income on the representative feed grain and oilseed farms is projected to decline by an average of $534,000 from 2021 to 2022 across the 25 feedgrain and oilseed farms (Table 3). On a per-acre basis, this translates into an average reduction of $177 per acre. The size of the operation does not appear to be a major factor as the two largest farms in this category – NDG9000 and TXNP10880 – experience declines of $79 per acre (2nd lowest) and $245 per acre (7th highest).

[4] https://www.afpc.tamu.edu/research/publications/files/714/BP-22-3.pdf

Table 5. Representative Cotton Farm Results.

Name	Planted Area --Acres--	NCFI 2021 --$1,000--	NCFI 2022 --$1,000--	NCFI Difference 2022 minus 2021 --$1,000--	NCFI Difference --$/Acre--	Ending Cash 2022 --$1,000--
Cotton						
TXSP4500	4,500	961	105	-855	-190.06	768
TXEC5000	5,000	1,202	493	-709	-141.75	1,618
TXRP3000	3,000	247	16	-230	-76.72	63
TXMC3000	3,000	423	306	-117	-39.07	540
TXCB4000	4,000	902	301	-601	-150.29	947
TXCB10000	10,000	2,609	1,103	-1,506	-150.56	3,443
TXVC5500	5,500	1,705	942	-763	-138.79	2,625
ARNC5000	5,000	2,534	1,295	-1,239	-247.85	2,875
TNC3000	3,000	1,081	509	-573	-190.87	1,597
TNC4000	4,100	1,150	358	-791	-193.03	1,162
ALC3500	4,375	1,756	1,171	-585	-133.78	2,655
GAC2500	2,500	1,317	351	-966	-386.52	1,233
NCNP1600	1,600	381	3	-377	-235.91	-70
Average				***-716***	***-175.01***	

The wheat farms are facing an average reduction in net cash farm income of $399,000 across the 11 farms from 2021 to 2022. This results in an average decline in net cash farm income of $83 per acre. The moderate-size Colorado wheat farm (COW3000) faces the smallest reduction per acre ($31) while the moderate-size Washington wheat farm (WAW2800) faces the largest reduction per acre ($160).

The 13 representative cotton farms are facing an average reduction in net cash farm income of $716,000 from 2021 to 2022. On a per-acre basis, this equates to a $175 per-acre reduction across the farms. The second smallest cotton farm (GAC2500) had the largest per-acre reduction at $387, and the reduction on the largest cotton farm (TXCB10000) was slightly less than the average across all farms at $151 per acre.

The 15 representative rice farms face the largest reduction in net cash farm income per farm ($880,000) and per acre ($442) relative to the other farm types. The California rice farms are expected to face the largest decline in net cash farm income relative to 2021 at around $700,000 per farm. In addition, while all the farm types mentioned above are facing significant reductions in expected net cash farm income in 2022 (relative to 2021), all of the farms (other than rice) are still expected to at least break even if price and yield projections

Table 6. Representative Rice Farm Results.

Name	Planted Area --Acres--	NCFI 2021 --$1,000--	NCFI 2022 --$1,000--	NCFI Difference 2022 minus 2021 --$1,000--	NCFI Difference --$/Acre--	Ending Cash 2022 --$1,000--
Rice						
CAR1200	1,200	584	-189	-772	-643.68	257
CAR3000	3,000	901	-1,449	-2,350	-783.24	-1,483
CABR800	800	416	-183	-598	-748.01	-161
CACR800	800	117	-539	-656	-819.43	-728
TXR1500	600	66	-166	-232	-387.02	-557
TXR3000	1,500	239	-563	-802	-534.56	-785
TXBR1800	900	209	-212	-421	-467.46	-281
TXER2500	2,500	871	-146	-1,017	-406.93	677
LASR2000	1,200	322	-224	-545	-454.33	-155
ARMR6500	6,500	2,444	944	-1,500	-230.73	2,713
ARSR3240	3,240	983	52	-931	-287.31	661
ARWR2500	2,500	715	154	-561	-224.48	-255
ARHR4000	4,240	1,002	-175	-1,176	-277.46	-29
MSDR5000	5,000	1,969	1,249	-720	-143.95	2,010
MOBR4000	4,000	970	58	-912	-228.05	429
Average				***-880***	***-442.44***	

hold. That is not the case with the representative rice farms – on average, 10 of the 15 rice farms are expected to face negative net cash farm income in 2022.

Ending Cash Balances in 2022

All but one (TXPG3000) of the feed grain farms, one of the wheat farms (COW6000), and one of the cotton farms (NCNP1600) are expected to end 2022 with a positive ending cash balance. By contrast, only six (CAR1200, TXER2500, ARMR6500, ARSR3240, MSDR5000 and MOBR4000) of the 15 representative rice farms are expected to end 2022 with a positive ending cash balance. Four of the six rice farms that have positive cash flow have a significant amount of other crops on the operation such as (corn, soybeans and cotton). As most commodity prices have risen to profitable levels over the past four years, rice prices have remained relatively flat which means that very little (if any) cash has been accumulated to help weather economic storms such as higher input costs.

Summary and Conclusions

As the nation struggles to recover from the COVID-19 pandemic, a number of supply chain disruptions continue to wreak havoc on agricultural input markets, both in terms of availability and prices. The purpose of this report was to analyze the impact that increased input prices are having on AFPC's 64 representative crop farms. To carry out that work, we reached out to our 489 representative farm panel members to obtain estimates of the amount they spent on inputs last year and the amount they expect to spend this year. Following are the key highlights of the analysis:

- A major point of reference for this report – net cash farm income in 2021 – included a significant amount of ad hoc assistance. Absent another infusion of assistance in 2022, we estimate that significant increases in input prices will result in a huge decline in net cash farm income in 2022 (compared to 2021).

- Despite the significant reduction from 2021, high commodity prices will likely still result in positive net cash farm income for most of AFPC's representative farms. The noticeable outlier is rice – two-thirds of the rice farms are facing losses in 2022.

- Finally, much of our analysis hinges on producers being able to lock in high commodity prices at average yields. With drought ravaging half of the country (and many other areas facing excess moisture), this assumption may be overly optimistic. This is perhaps the most important point to note because producers are beginning to plant a crop that will require them to put an enormous – indeed historic – amount of capital at risk.

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Appendix A

Representative Farm Characteristics

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING FEED GRAINS AND OILSEEDS

IAG1350 IAG1350 is a 1,350-acre northwestern Iowa (Webster County) grain farm. The farm is moderate-sized for the region and plants 810 acres of corn and 540 acres of soybeans annually. Seventy percent of this farm's 2021 receipts come from corn production.

IAG3400 This 3,400-acre large-sized grain farm is located in northwestern Iowa (Webster County). It plants 2,040 acres of corn and 1,360 acres of soybeans each year, realizing 70 percent of receipts from corn production.

NEG2400 South-central Nebraska (Dawson County) is home to this 2,400-acre grain farm. This farm plants 1,600 acres to corn and 800 acres to soybeans. The farm splits its corn acres evenly between yellow and white food-grade corn. Seventy-three percent of gross receipts are derived from corn sales.

NEG4500 This is a 4,500-acre grain farm located in south-central Nebraska (Dawson County). This operation plants 3,000 acres of corn and 1,000 acres of soybeans each year. Remaining acres are planted to alfalfa. A portion (25 percent) of the corn acreage is food-grade corn. In 2021, 76 percent of total receipts were generated from corn production.

NDG3000 NDG3000 is a 3,000-acre, moderate-sized, south central North Dakota (Barnes County) grain farm that plants 500 acres of wheat, 1,000 acres of corn, and 1,500 acres of soybeans. One hundred acres are enrolled in the Conservation Reserve Program. The farm generated 40 percent of 2021 receipts from soybean sales and 47 percent from corn sales.

NDG9000 This is an 9,000-acre, large-sized grain farm in south central North Dakota (Barnes County) that grows 4,500 acres of soybeans, 2,500 acres of corn, 1,250 acres of wheat, and 500 acres of barley annually. The remaining acreage is enrolled in the Conservation Reserve Program. Soybean and corn sales accounted for 82 percent of 2021 receipts.

ING1000 Shelby County, Indiana, is home to this 1,000-acre moderate-sized feedgrain farm. This farm annually plants 475 acres of corn, 525 acres of soybeans, and 50 acres of wheat that is double cropped with soybeans. Due to this farm's proximity to Indianapolis, land development pressures will likely constrain further expansion of this operation. Fifty-five percent of 2021 receipts came from corn sales.

ING3500 ING3500 is a large-sized grain farm located in east central Indiana (Shelby County). This farm plants 1,750 acres to corn and 1,750 acres to soybeans each year. In 2021, 59 percent of gross receipts were generated by corn sales.

OHG700 This is a 700 acre, moderate sized grain farm in north western Ohio (Henry County). This farm planted 350 acres of corn and 350 acres of soybeans in 2021. Fifty-six percent of 2021 receipts were generated by corn sales.

OHG1500 This is a 1,500 acre, large-sized grain farm in north western Ohio (Henry County). This farm planted 675 acres of corn, 675 acres of soybeans, and 150 acres of wheat in 2021. Fifty-six percent of 2021 receipts were generated by corn sales.

Appendix Table A1. Characteristics of Panel Farms Producing Feed Grains.

	IAG1350	IAG3400	NEG2400	NEG4500	NDG3000	NDG9000	ING1000	ING3500	OHG700	OHG1500
County	Webster	Webster	Dawson	Dawson	Barnes	Barnes	Shelby	Shelby	Henry	Henry
Total Cropland	1,350.00	3,400.00	2,400.00	4,500.00	3,000.00	9,000.00	1,000.00	3,500.00	700.00	1,500.00
Acres Owned	250.00	850.00	600.00	2,150.00	720.00	4,000.00	350.00	1,225.00	350.00	375.00
Acres Leased	1,100.00	2,550.00	1,800.00	2,350.00	2,280.00	5,000.00	650.00	2,275.00	350.00	1,125.00
Assets ($1000)										
Total	3,565.00	11,879.00	7,219.00	21,515.00	4,888.00	23,144.00	4,218.00	13,292.00	3,694.00	4,910.00
Real Estate	2,815.00	9,072.00	4,510.00	16,322.00	3,177.00	16,012.00	3,412.00	10,974.00	3,127.00	3,127.00
Machinery	653.00	2,272.00	1,528.00	3,857.00	1,081.00	4,603.00	543.00	1,333.00	350.00	1,053.00
Other & Livestock	96.00	535.00	1,181.00	1,336.00	631.00	2,529.00	263.00	985.00	217.00	729.00
Debt/Asset Ratios										
Total	0.15	0.18	0.15	0.16	0.16	0.18	0.17	0.16	0.17	0.16
Intermediate	0.08	0.27	0.22	0.17	0.20	0.31	0.21	0.19	0.14	0.22
Long Run	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.18
2021 Gross Receipts ($1,000)*										
Total	1,283.10	3,058.80	2,911.10	5,014.40	1,695.70	5,281.90	877.20	3,300.20	595.40	1,309.70
Corn	898.80	2,150.80	2,125.00	3,799.90	794.00	2,061.90	477.50	1,948.40	334.00	727.90
	0.70	0.70	0.73	0.76	0.47	0.39	0.54	0.59	0.56	0.56
Wheat	0.00	0.00	0.00	0.00	225.80	692.00	29.10	0.00	1.20	108.10
	0.00	0.00	0.00	0.00	0.13	0.13	0.03	0.00	0.00	0.08
Soybeans	384.30	908.00	782.20	883.50	675.30	2,274.50	370.40	1,351.00	250.20	464.00
	0.30	0.30	0.27	0.18	0.40	0.43	0.42	0.41	0.42	0.35
Barley	0.00	0.00	0.00	0.00	0.00	227.90	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Hay	0.00	0.00	0.00	324.60	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	3.80	6.40	0.60	25.50	0.20	0.90	9.90	9.70
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01
2021 Planted Acres**										
Total	1,350.00	3,400.00	2,400.00	4,300.00	3,100.00	9,000.00	1,050.00	3,500.00	700.00	1,500.00
Corn	810.00	2,040.00	1,600.00	3,000.00	1,000.00	2,500.00	475.00	1,750.00	350.00	675.00
	0.60	0.60	0.67	0.70	0.32	0.28	0.45	0.50	0.50	0.45
Wheat	0.00	0.00	0.00	0.00	500.00	1,250.00	50.00	0.00	0.00	150.00
	0.00	0.00	0.00	0.00	0.16	0.14	0.05	0.00	0.00	0.10
Soybeans	540.00	1,360.00	800.00	1,000.00	1,500.00	4,500.00	525.00	1,750.00	350.00	675.00
	0.40	0.40	0.33	0.23	0.48	0.50	0.50	0.50	0.50	0.45
Barley	0.00	0.00	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
Hay	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
CRP	0.00	0.00	0.00	0.00	100.00	250.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00

*Receipts for 2021 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 PANEL FARMS PRODUCING FEED GRAINS AND OILSEEDS

MOCG2300 MOCG2300 is a 2,300-acre grain farm located in central Missouri (Carroll County) and plants 1,150 acres of corn and 1,150 acres of soybeans annually. This farm is located in the Missouri River bottom, an area with a large concentration of livestock production. This farm generated 60 percent of its total revenue from corn and 40 percent from soybeans during 2021.

MOCG4200 This is a 4,200-acre central Missouri (Carroll County) grain farm with 2,310 acres of corn and 1,890 acres of soybeans. This farm is located in the Missouri River bottom, an area with a large concentration of livestock production. Corn sales accounted for 68 percent of farm receipts and soybeans accounted for 32 percent in 2021.

MONG2300 MONG2300 is a 2,300-acre diversified northwest Missouri grain farm centered in Nodaway County. MONG2300 plants 1,125 acres of corn, 1,125 acres of soybeans, and 50 acres of hay annually. The farm also has a 300-head cow-calf herd. Proximity to the Missouri River increases marketing options for area grain farmers due to easily accessible river grain terminals. In 2021, 54 percent of the farm's total receipts were from corn, 44 percent from soybeans, and 1 percent from cattle sales.

LANG2500 This is a 2,500-acre northeast Louisiana (Madison Parish) diversified grain farm. This farm harvests 500 acres of rice, 875 acres of soybeans, 375 acres of cotton, and 750 acres of corn. For 2021, 57 percent of farm receipts came from corn and soybean sales.

TNG2500 This is a 2,500-acre, moderate-sized grain farm in West Tennessee (Gibson County). Annually, this farm plants 1,025 acres of corn, 1,475 acres of soybeans, and 375 acres of wheat (planted before soybeans) in a region of Tennessee recognized for the high level of implementation of conservation practices by farmers. For 2021, 46 percent of farm receipts were from sales of corn and 45 percent from soybeans.

TNG5000 West Tennessee (Gibson County) is home to this 5,000-acre, large-sized grain farm. Farmers in this part of Tennessee are known for their early and continued adoption of conservation practices, including no-till farming. TNG5000 plants 2,500 acres of corn, 500 acres of wheat, 2,500 acres of soybeans (500 of which are double-cropped after wheat). The farm generated 58 percent of its 2021 gross receipts from sales of corn and 36 percent from soybeans.

NCSP2000 A 2,000-acre diversified farm located in southern North Carolina (Bladen County). NCSP2000 plants 400 acres of peanuts, 1,100 acres of corn, and 500 acres of soybeans. Seventy percent of receipts for this farm came from corn and soybean sales in 2021; thirty percent of receipts came from peanut sales.

NCC2030 This is a 2,000-acre grain farm located on the upper coastal plain of North Carolina (Wayne County). NCC2030 plants 400 acres of corn, 200 acres of wheat, and 1,000 acres of soybeans annually. Corn accounted for 29 percent of this farm's 2021 receipts, while soybeans accounted for 40 percent.

SCC2000 SCC2000 is a moderate-sized, 2,000-acre grain farm in South Carolina (Orangeburg County) consisting of 800 acres of corn, 550 acres of cotton, 250 acres of peanuts, and 400 acres of soybeans. Forty-six percent of the farm's receipts were from corn sales during 2021.

SCG3500 A 3,500-acre, large-sized South Carolina (Clarendon County) grain farm with 1,800 acres of corn, 750 acres of cotton, 600 acres of peanuts, and 350 acres of soybeans. The farm generated 53 percent of 2021 receipts from corn sales and 5 percent from soybean sales.

Appendix Table A2. Characteristics of Panel Farms Producing Feed Grains.

	MOCG2300	MOCG4200	MONG2300	LANG2500	TNG2500	TNG5000	NCSP2000	NCC2030	SCC2000	SCG3500
County	Carroll	Carroll	Nodaway	Madison	Gibson	Gibson	Bladen	Wayne	Clarendon	Clarendon
Total Cropland	2,300.00	4,200.00	2,300.00	2,500.00	2,500.00	5,000.00	2,000.00	2,000.00	2,000.00	3,500.00
Acres Owned	1,380.00	1,800.00	1,610.00	500.00	625.00	1,375.00	700.00	225.00	550.00	1,400.00
Acres Leased	920.00	2,400.00	690.00	2,000.00	1,875.00	3,625.00	1,300.00	1,775.00	1,450.00	2,100.00
Assets ($1000)										
Total	13,564.00	19,711.00	14,097.00	4,793.00	6,046.00	13,135.00	5,626.00	2,748.00	4,013.00	8,800.00
Real Estate	11,550.00	16,010.00	12,642.00	2,280.00	4,046.00	9,100.00	3,693.00	1,533.00	2,425.00	5,406.00
Machinery	1,187.00	1,840.00	986.00	1,849.00	1,451.00	2,439.00	1,519.00	815.00	1,091.00	2,092.00
Other & Livestock	826.00	1,861.00	470.00	663.00	549.00	1,596.00	414.00	400.00	496.00	1,302.00
Debt/Asset Ratios										
Total	0.16	0.15	0.16	0.18	0.18	0.15	0.16	0.08	0.13	0.14
Intermediate	0.18	0.08	0.21	0.27	0.28	0.22	0.15	0.27	0.11	0.16
Long Run	0.17	0.17	0.16	0.17	0.16	0.16	0.17	0.00	0.17	0.18
2021 Gross Receipts ($1,000)*										
Total	1,785.30	3,228.70	1,968.50	2,247.50	1,912.80	4,161.30	1,871.70	1,373.90	1,808.00	3,823.00
Corn	1,075.10	2,179.10	1,056.80	758.40	871.60	2,392.30	1,019.00	394.60	816.00	1,975.90
	0.60	0.68	0.54	0.34	0.46	0.58	0.54	0.29	0.45	0.52
Wheat	0.00	0.00	0.00	0.00	185.70	284.90	0.00	109.70	2.70	7.60
	0.00	0.00	0.00	0.00	0.10	0.07	0.00	0.08	0.00	0.00
Soybeans	706.30	1,040.90	861.20	516.60	854.40	1,480.30	267.60	537.10	172.20	183.30
	0.40	0.32	0.44	0.23	0.45	0.36	0.14	0.39	0.10	0.05
Cotton	0.00	0.00	0.00	418.10	0.00	0.00	0.00	0.00	538.60	843.30
	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.30	0.22
Peanuts	0.00	0.00	0.00	0.00	0.00	0.00	582.80	0.00	255.60	759.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.14	0.20
Rice	0.00	0.00	0.00	498.60	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Hay	0.00	0.00	37.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	3.90	8.60	12.80	55.80	1.20	3.80	2.30	332.60	22.80	54.00
	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.24	0.01	0.01
2021 Planted Acres**										
Total	2,300.00	4,200.00	2,750.00	2,500.00	2,875.00	5,500.00	2,000.00	1,600.00	2,000.00	3,500.00
Corn	1,150.00	2,310.00	1,125.00	750.00	1,025.00	2,500.00	1,100.00	400.00	800.00	1,800.00
	0.50	0.55	0.41	0.30	0.36	0.46	0.55	0.25	0.40	0.51
Wheat	0.00	0.00	0.00	0.00	375.00	500.00	0.00	200.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.13	0.09	0.00	0.13	0.00	0.00
Soybeans	1,150.00	1,890.00	1,125.00	875.00	1,475.00	2,500.00	500.00	1,000.00	400.00	350.00
	0.50	0.45	0.41	0.35	0.51	0.46	0.25	0.63	0.20	0.10
Cotton	0.00	0.00	0.00	375.00	0.00	0.00	0.00	0.00	550.00	750.00
	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.28	0.21
Peanuts	0.00	0.00	0.00	0.00	0.00	0.00	400.00	0.00	250.00	600.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.13	0.17
Rice	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
Hay	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRP	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pasture	0.00	0.00	430.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Receipts for 2021 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 PANEL FARMS PRODUCING FEED GRAINS AND OILSEEDS

TXNP3450 This is a 3,450-acre diversified grain farm located on the northern High Plains of Texas (Moore County). This farm plants 1,206 acres of cotton, 1,294 acres of irrigated corn, 260 acres of irrigated sorghum for seed production, and 432 acres of irrigated wheat annually. Fifty-two percent of total receipts are generated from corn sales.

TXNP10880 TXNP10880 is a large-sized diversified grain farm located in the Texas Panhandle (Moore County). This farm annually plants 4,454 acres of cotton (3,962 irrigated/492 dryland); 3,962 acres of irrigated corn; 1,272 acres of grain sorghum (530 irrigated for seed production/492 dryland/250 irrigated for commercial use); and 492 acres of dryland winter wheat. Forty-five percent of 2021 cash receipts were derived from corn sales.

TXPG3000 The Texas Panhandle is home to this 3,000-acre farm (Deaf Smith County). Annually, wheat is planted on 350 acres, 1,530 acres planted to corn, 240 acres are planted to cotton , and grain sorghum is planted on 350 acres. Eighty-three percent of 2021 cash receipts were generated by corn sales.

TXHG3000 This 3,000-acre grain farm is located on the Blackland Prairie of Texas (Hill County). On this farm, 2,000 acres of corn, 500 acres of cotton, and 500 acres of wheat are planted annually. Grain sales accounted for 74 percent of 2021 receipts with cotton accounting for twenty-three percent of sales. Forty beef cows live on 300 acres of improved pasture and contribute approximately two percent of total receipts.

TXWG1600 This 1,600-acre farm is located on the Blackland Prairie of Texas (Williamson County). TXWG1600 plants 800 acres of corn, 300 acres of sorghum, 400 acres of cotton, and 100 acres of winter wheat annually. Additionally, this farm has a 40-head beef cow herd that is pastured on rented ground that cannot be farmed. Grain sales accounted for 62 percent of 2021 receipts with cotton accounting for 36 percent of sales.

Appendix Table A3. Characteristics of Panel Farms Producing Feed Grains.

	TXNP3450	TXNP10880	TXPG2500	TXHG3000	TXWG1600
County	Moore	Moore	Deaf Smith	Hill	Williamson
Total Cropland	3,450.00	10,880.00	2,500.00	3,000.00	1,600.00
Acres Owned	2,588.00	4,160.00	1,875.00	450.00	150.00
Acres Leased	862.00	6,720.00	625.00	2,550.00	1,450.00
Assets ($1000)					
Total	9,637.00	22,978.00	7,084.00	3,098.00	2,078.00
Real Estate	6,891.00	12,800.00	3,989.00	1,276.00	1,385.00
Machinery	1,245.00	4,985.00	2,193.00	1,261.00	466.00
Other & Livestock	1,501.00	5,192.00	902.00	561.00	227.00
Debt/Asset Ratios					
Total	0.12	0.13	0.17	0.19	0.15
Intermediate	0.13	0.18	0.25	0.30	0.15
Long Run	0.15	0.16	0.17	0.18	0.17
2021 Gross Receipts ($1,000)*					
Total	3,425.00	10,957.00	2,429.00	1,440.10	757.80
Corn	1,739.10	4,767.70	1,431.10	897.80	329.80
	0.51	0.44	0.59	0.62	0.44
Wheat	134.00	88.80	181.80	155.20	34.90
	0.04	0.01	0.08	0.11	0.05
Cotton	1,363.50	5,087.80	714.30	340.30	276.70
	0.40	0.46	0.29	0.24	0.37
Grain Sorghum	187.80	1,010.50	31.60	0.00	96.70
	0.06	0.09	0.01	0.00	0.13
Cattle	0.00	0.00	0.00	27.60	0.00
	0.00	0.00	0.00	0.02	0.00
Other	0.60	2.20	70.30	19.20	19.70
	0.00	0.00	0.03	0.01	0.03
2021 Planted Acres**					
Total	3,192.00	10,180.00	2,500.00	3,300.00	1,600.00
Corn	1,294.00	3,962.00	1,000.00	2,000.00	800.00
	0.41	0.39	0.40	0.61	0.50
Wheat	432.00	492.00	534.00	500.00	100.00
	0.14	0.05	0.21	0.15	0.06
Cotton	1,206.00	4,454.00	783.00	500.00	400.00
	0.38	0.44	0.31	0.15	0.25
Grain Sorghum	260.00	1,272.00	183.00	0.00	300.00
	0.08	0.13	0.07	0.00	0.19
Pasture	0.00	0.00	0.00	300.00	0.00
	0.00	0.00	0.00	0.09	0.00

*Receipts for 2021 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING WHEAT

WAW2800 This is a 2,800-acre moderate-sized grain farm in the Palouse of southeastern Washington (Whitman County). It plants 1,840 acres of wheat and 800 acres of dry peas. Disease concerns dictate rotating a minimum acreage of peas to maintain wheat yields. This farm generated 68 percent of 2021 receipts from wheat.

WAW10000 A 10,000-acre, large-sized grain farm in the Palouse of southeastern Washington (Whitman County). Annually, this farm allocates 5,800 acres to wheat and 2,700 acres to dry peas. Diseases that inhibit wheat yield dictate the rotation of a minimum acreage of peas. Wheat sales accounted for 67 percent of 2021 receipts.

WAAW5500 South-central Washington (Adams County) is home to this 5,500-acre, large-sized wheat farm. Annually, this farm plants 2,600 acres of wheat in a wheat-fallow rotation. Additionally, 300 acres are enrolled in CRP. In 2021, 98 percent of the farm's income came from wheat.

ORW4500 ORW4500 is a 4,500-acre large-sized grain farm located in northeastern Oregon (Morrow County). This farm plants 2,250 acres annually in a wheat-fallow rotation. Ninety-four percent of this farm's 2021 total receipts came from wheat sales.

MTW9500 North-central Montana (Chouteau County) is home to this 9,500-acre farm on which 3,534 acres of wheat (1,920 acres of winter wheat, 1,344 acres of spring wheat, and 544 acres of Durham), 589 acres of barley, and 1,178 acres of dry peas are planted each year. MTW9500 uses no-till production practices. In 2021, 55 percent of receipts came from wheat.

KSCW2000 South central Kansas (Sumner County) is home to this 2,000-acre, moderate-sized grain farm. KSCW2000 plants 800 acres of winter wheat, 1,100 acres of soybeans, 200 acres of cotton, and 500 acres of corn each year. For 2021, 22 percent of gross receipts came from wheat.

KSCW5300 A 5,300-acre, large-sized grain farm in south central Kansas (Sumner County) that plants 2,385 acres of winter wheat, 1,590 acres of corn, and 3,352 acres of soybeans. Twenty-seven percent of this farm's 2021 total receipts were generated from sales of winter wheat.

KSNW4000 This is a 4,000-acre, moderate-sized northwest Kansas (Thomas County) grain farm. This farm plants 1,200 acres of winter wheat (wheat-fallow rotation), 1,200 acres of corn, and 600 acres of sorghum. This farm generated 39 percent of 2021 receipts from wheat and 61 percent of its receipts from feed grains.

KSNW8000 KSNW8000 is a 8,000-acre, large-sized northwest Kansas (Thomas County) grain farm that annually plants 1,200 acres of winter wheat, 5,470 acres of corn, 800 acres of sorghum, and 130 acres of soybeans. The farm generated 11 percent of receipts from wheat and 89 percent from feed grains during 2021.

COW3000 A 3,000-acre northeast Colorado (Washington County), moderate-sized farm that plants 1,012 acres of winter wheat and 675 acres of corn each year. COW3000 has adopted minimum tillage practices on most of its acres. This farm generated 63 percent of its receipts from wheat and 35 percent from corn.

COW6000 A 6,000-acre, large-sized northeast Colorado (Washington County) wheat farm. It plants 2,000 acres of wheat, 1,000 acres of millet, and 1,000 acres of corn. During 2021, 58 percent of gross receipts came from wheat sales and 24 percent came from corn sales.

Appendix Table A4. Characteristics of Panel Farms Producing Wheat.

	WAW2800	WAW10000	WAAW5500	ORW4500	MTW9500	KSCW2000	KSCW5300	KSNW4000	KSNW8000	COW3000	COW6000
County	Whitman	Whitman	Adams	Morrow	Chouteau	Sumner	Sumner	Thomas	Thomas	Washington	Washington
Total Cropland	2,800.00	10,000.00	5,500.00	4,500.00	9,500.00	2,000.00	5,300.00	4,000.00	8,000.00	3,000.00	6,000.00
Acres Owned	800.00	2,500.00	2,500.00	2,000.00	5,000.00	700.00	1,325.00	600.00	2,100.00	2,100.00	3,000.00
Acres Leased	2,000.00	7,500.00	3,000.00	2,500.00	4,500.00	1,300.00	3,975.00	3,400.00	5,900.00	900.00	3,000.00
Assets ($1000)											
Total	3,834.00	12,447.00	2,586.00	2,222.00	9,432.00	3,205.00	7,433.00	4,671.00	10,050.00	4,677.00	6,994.00
Real Estate	2,696.00	8,324.00	1,896.00	1,495.00	6,701.00	2,129.00	4,294.00	3,451.00	6,457.00	4,254.00	5,691.00
Machinery	585.00	2,397.00	562.00	592.00	1,895.00	503.00	1,650.00	1,012.00	2,077.00	264.00	1,282.00
Other & Livestock	553.00	1,727.00	128.00	135.00	836.00	573.00	1,488.00	208.00	1,516.00	160.00	21.00
Debt/Asset Ratios											
Total	0.14	0.14	0.15	0.17	0.18	0.11	0.15	0.18	0.14	0.15	0.16
Intermediate	0.14	0.19	0.05	0.21	0.19	0.02	0.23	0.22	0.14	0.05	0.14
Long Run	0.17	0.15	0.17	0.16	0.20	0.17	0.17	0.18	0.18	0.16	0.16
2021 Gross Receipts ($1,000)*											
Total	1,683.20	5,762.40	863.50	644.10	2,485.50	1,140.80	2,790.10	1,149.80	3,893.90	556.40	1,183.40
Corn	0.00	0.00	0.00	0.00	0.00	286.10	927.00	470.40	2,988.00	196.20	283.50
	0.00	0.00	0.00	0.00	0.00	0.25	0.33	0.41	0.77	0.35	0.24
Wheat	1,139.10	3,798.40	849.00	603.30	1,344.40	250.60	752.20	449.10	432.20	351.20	687.10
	0.68	0.66	0.98	0.94	0.54	0.22	0.27	0.39	0.11	0.63	0.58
Soybeans	0.00	0.00	0.00	0.00	0.00	339.00	1,107.80	0.00	116.50	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.30	0.40	0.00	0.03	0.00	0.00
Cotton	0.00	0.00	0.00	0.00	0.00	264.10	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00
Grain Sorghum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	224.20	348.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.09	0.00	0.00
Barley	3.10	28.70	1.50	0.00	190.20	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.01	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Millet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	212.80
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
Dry Peas	410.40	1,493.90	0.00	0.00	559.50	0.00	0.00	0.00	0.00	0.00	0.00
	0.24	0.26	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Other	130.60	441.40	13.00	40.70	391.40	1.20	3.20	6.10	9.10	9.00	0.10
	0.08	0.08	0.02	0.06	0.16	0.00	0.00	0.01	0.00	0.02	0.00
2021 Planted Acres**											
Total	2,640.00	8,700.00	2,900.00	2,250.00	5,301.00	2,600.00	7,327.00	3,000.00	7,600.00	1,987.50	4,000.00
Corn	0.00	0.00	0.00	0.00	0.00	500.00	1,590.00	1,200.00	5,470.00	675.00	1,000.00
	0.00	0.00	0.00	0.00	0.00	0.19	0.22	0.40	0.72	0.34	0.25
Wheat	1,840.00	5,800.00	2,600.00	2,250.00	3,534.00	800.00	2,385.00	1,200.00	1,200.00	1,012.50	2,000.00
	0.70	0.67	0.90	1.00	0.67	0.31	0.33	0.40	0.16	0.51	0.50
Soybeans	0.00	0.00	0.00	0.00	0.00	1,100.00	3,352.00	0.00	130.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.42	0.46	0.00	0.02	0.00	0.00
Cotton	0.00	0.00	0.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Grain Sorghum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00	800.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.11	0.00	0.00
Barley	0.00	0.00	0.00	0.00	589.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Millet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,000.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Dry Peas	800.00	2,700.00	0.00	0.00	1,178.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.30	0.31	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
CRP	0.00	200.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	300.00	0.00
	0.00	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00

*Receipts for 2021 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING COTTON

TXSP4500 The Texas South Plains (Dawson County) is home to this 4,500-acre, large-sized cotton farm that grows 4,380 acres of cotton (2,880 dryland, 1,500 irrigated), and 120 irrigated acres of peanuts. Cotton sales comprised 93 percent of 2021 receipts.

TXEC5000 This 5,000-acre farm is located on the Eastern Caprock of the Texas South Plains (Crosby County). Annually, 4,700 acres are planted to cotton (2,230 irrigated and 2,470 dryland) and 300 acres to dryland wheat. In 2021, cotton sales accounted for 96 percent of gross receipts.

TXRP3000 TXRP3000 is a 3,000-acre cotton farm located in the Rolling Plains of Texas (Jones County). This farm plants 1,800 acres of cotton and 1,200 acres of winter wheat each year. The area is limited by rainfall, and the farm uses a conservative level of inputs. Seventy-eight percent of 2021 farm receipts came from cotton sales. Fifty head of beef cows generated three percent of farm receipts.

TXMC3000 This 3,000-acre cotton farm is located on the Coastal Plain of southeast Texas (Wharton County). TXMC3000 farms 450 acres of sorghum, 1,500 acres of cotton, and 1,050 acres of corn. In 2021, cotton sales comprised 59 percent of total cash receipts on this operation.

TXCB4000 A 4,000-acre cotton farm located on the Texas Coastal Bend (San Patricio County) that farms 2000 acres of cotton, 1,600 acres of sorghum, and 400 acres of corn annually. Sixty-nine percent of 2021 cash receipts were generated by cotton.

TXCB10000 Nueces County, Texas is home to this 10,000-acre farm. Annually, 5,000 acres are planted to cotton, 4,500 acres to sorghum, and 500 acres of corn. Cotton sales accounted for 67 percent of 2021 receipts.

TXVC5500 This 5,500-acre farm is located in the lower Rio Grande Valley of Texas (Willacy County) and plants 2,550 acres to cotton (425 irrigated and 2,125 acres dryland), 2,295 acres to sorghum (170 irrigated and 2,125 dryland), and 255 acres of corn. In 2021, 51 percent of TXVC5500's cash receipts were generated by cotton sales.

ARNC5000 This 5,000-acre farm is located in northern Arkansas (Mississippi County) and plants 2,500 acres to cotton, 500 acres to corn, 1,000 acres of soybeans, and 1,000 acres to peanuts. In 2021, 54 percent of ARNC5000's cash receipts were generated by cotton sales.

TNC3000 A 3,000-acre, moderate-sized West Tennessee (Fayette County) cotton farm. TNC3000 consists of 825 acres of cotton, 1,375 acres of soybeans, and 800 acres of corn. Cotton accounted for 36 percent of 2021 gross receipts, with corn and soybeans contributing 31 percent and 31 percent, respectively.

TNC4000 TNC4000 is a 4,000-acre, large-sized West Tennessee (Haywood County) cotton farm. This farm plants 1,000 acres of cotton, 2,000 acres of soybeans, 700 acres of corn, and 400 acres of wheat each year. During 2021, cotton sales generated 31 percent of gross receipts.

Appendix Table A5. Characteristics of Panel Farms Producing Cotton.

	TXSP4500	TXEC5000	TXRP3000	TXMC2500	TXCB4000	TXCB10000	TXVC5500	ARNC5000	TNC3000	TNC4000
County	Dawson	Crosby	Jones	Wharton	San Patricio	Nueces	Willacy	Mississippi	Fayette	Haywood
Total Cropland	4,500.00	5,000.00	3,000.00	2,500.00	4,000.00	10,000.00	5,500.00	5,000.00	3,000.00	4,000.00
Acres Owned	500.00	1,250.00	875.00	180.00	600.00	1,500.00	1,750.00	1,000.00	300.00	400.00
Acres Leased	4,000.00	3,750.00	2,125.00	2,320.00	3,400.00	8,500.00	3,750.00	4,000.00	2,700.00	3,600.00
Assets ($1000)										
Total	3,892.00	5,269.00	2,035.00	3,059.00	4,055.00	11,916.00	9,485.00	13,653.00	3,941.00	6,083.00
Real Estate	733.00	1,862.00	1,491.00	916.00	1,765.00	5,147.00	5,583.00	6,687.00	1,277.00	2,476.00
Machinery	2,198.00	1,972.00	321.00	1,490.00	1,399.00	3,859.00	1,789.00	4,526.00	1,384.00	2,553.00
Other & Livestock	961.00	1,435.00	223.00	654.00	891.00	2,910.00	2,114.00	2,439.00	1,280.00	1,054.00
Debt/Asset Ratios										
Total	0.17	0.10	0.28	0.20	0.17	0.18	0.15	0.15	0.13	0.16
Intermediate	0.24	0.11	0.15	0.30	0.24	0.31	0.25	0.24	0.20	0.20
Long Run	0.17	0.17	0.33	0.17	0.19	0.18	0.18	0.15	0.17	0.18
2021 Gross Receipts ($1,000)*										
Total	2,695.00	2,976.40	874.10	1,906.70	2,712.30	6,947.40	4,556.00	5,437.70	2,475.90	3,268.90
Corn	0.00	0.00	0.00	388.50	166.80	241.40	190.00	502.80	742.10	688.30
	0.00	0.00	0.00	0.20	0.06	0.04	0.04	0.09	0.30	0.21
Wheat	0.00	0.00	137.60	0.00	0.00	0.00	0.00	0.00	0.00	231.10
	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.07
Soybeans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	659.30	746.50	1,183.80
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.36
Cotton	2,503.90	2,848.70	685.30	1,313.70	1,889.60	4,746.90	2,360.40	2,949.10	905.00	1,045.40
	0.93	0.96	0.78	0.69	0.70	0.68	0.52	0.54	0.37	0.32
Grain Sorghum	0.00	0.00	0.00	140.50	617.00	1,835.80	882.70	0.00	0.00	0.00
	0.00	0.00	0.00	0.07	0.23	0.26	0.19	0.00	0.00	0.00
Peanuts	113.90	0.00	0.00	0.00	0.00	0.00	0.00	1,108.10	0.00	0.00
	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00
Cattle	0.00	0.00	29.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	77.20	127.80	21.60	64.00	38.80	123.20	1,122.80	218.40	82.20	120.30
	0.03	0.04	0.03	0.03	0.01	0.02	0.25	0.04	0.03	0.04
2021 Planted Acres**										
Total	4,500.00	5,000.00	3,000.00	2,410.00	4,000.00	10,000.00	5,100.00	5,000.00	3,000.00	4,100.00
Corn	0.00	0.00	0.00	655.00	400.00	500.00	255.00	500.00	800.00	700.00
	0.00	0.00	0.00	0.27	0.10	0.05	0.05	0.10	0.27	0.17
Wheat	0.00	300.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	400.00
	0.00	0.06	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Soybeans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,000.00	1,375.00	2,000.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.46	0.49
Cotton	4,380.00	4,700.00	1,800.00	1,455.00	2,000.00	5,000.00	2,550.00	2,500.00	825.00	1,000.00
	0.97	0.94	0.60	0.60	0.50	0.50	0.50	0.50	0.28	0.24
Grain Sorghum	0.00	0.00	0.00	300.00	1,600.00	4,500.00	2,295.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.12	0.40	0.45	0.45	0.00	0.00	0.00
Peanuts	120.00	0.00	0.00	0.00	0.00	0.00	0.00	1,000.00	0.00	0.00
	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00

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**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING COTTON

ALC3500 A 3,500-acre cotton farm located in northern Alabama (Lawrence County) that plants 1,050 acres to cotton, 1,050 acres to corn, 1,400 acres of soybeans and 875 acres to wheat (double cropped with soybeans) annually. This farm was early to adopt no-till cropping practices. Cotton sales accounted for 31 percent of total farm receipts during 2021.

GAC2500 Southwest Georgia (Decatur County) is home to a 2,500-acre cotton farm that plants 1,250 acres to cotton, 800 acres to peanuts, and 450 acres to corn. In 2021, farm receipts were comprised of cotton sales (44 percent), corn (18 percent), and peanut sales (34 percent). The farm also runs a 125-head beef cow herd, generating 3 percent of 2021 receipts.

NCNP1600 A 1,600-acre diversified farm located in northern North Carolina (Edgecombe County). NCNP1600 plants 320 acres of peanuts, 240 acres of corn, 640 acres of cotton, and 400 acres of soybeans. Twenty-four percent of receipts for this farm came from peanut sales in 2021, 46 percent from cotton sales and 27 percent came from corn and soybean sales.

Appendix Table A6. Characteristics of Panel Farms Producing Cotton.

	ALC3500	GAC2500	NCNP1600
County	Lawrence	Decatur	Edgecombe
Total Cropland	3,500.00	1,250.00	1,600.00
Acres Owned	350.00	1,250.00	600.00
Acres Leased	3,150.00	0.00	1,000.00
Assets ($1000)			
Total	6,688.00	11,944.00	4,122.00
Real Estate	2,956.00	8,985.00	2,741.00
Machinery	1,825.00	1,554.00	1,225.00
Other & Livestock	1,907.00	1,405.00	155.00
Debt/Asset Ratios			
Total	0.15	0.16	0.16
Intermediate	0.25	0.25	0.16
Long Run	0.17	0.17	0.16
2021 Gross Receipts ($1,000)*			
Total	3,485.10	3,729.40	1,401.70
Corn	888.40	647.90	168.00
	0.26	0.17	0.12
Wheat	641.20	0.00	0.00
	0.18	0.00	0.00
Soybeans	726.20	0.00	202.00
	0.21	0.00	0.14
Cotton	1,120.90	1,642.70	651.50
	0.32	0.44	0.47
Peanuts	0.00	1,266.80	337.10
	0.00	0.34	0.24
Cattle	0.00	99.10	0.00
	0.00	0.03	0.00
Other	108.30	73.00	43.10
	0.03	0.02	0.03
2021 Planted Acres**			
Total	4,375.00	2,750.00	1,600.00
Corn	1,050.00	450.00	240.00
	0.24	0.16	0.15
Wheat	875.00	0.00	0.00
	0.20	0.00	0.00
Soybeans	1,400.00	0.00	400.00
	0.32	0.00	0.25
Cotton	1,050.00	1,250.00	640.00
	0.24	0.46	0.40
Peanuts	0.00	800.00	320.00
	0.00	0.29	0.20
Pasture	0.00	250.00	0.00
	0.00	0.09	0.00

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**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING RICE

CAR1200 CAR1200 is a 1,200-acre moderate-sized rice farm in the Sacramento Valley of California (Sutter and Yuba Counties) that plants 1,200 acres of rice annually. This farm generated 100 percent of 2021 gross receipts from rice sales.

CAR3000 This is a 3,000-acre rice farm located in the Sacramento Valley of California (Sutter and Yuba Counties) that is large-sized for the region. CAR3000 plants 3,000 acres of rice annually. In 2021, 100 percent of gross receipts were generated from rice sales.

CABR800 The Sacramento Valley (Butte County) is home to CABR800, a 800-acre rice farm. CABR800 harvests 800 acres of rice annually, generating 100 percent of 2021 farm receipts from rice sales.

CACR800 CACR800 is an 800-acre rice farm located in the Sacramento Valley of California (Colusa County). This farm harvests 800 acres of rice each year. During 2021, 100 percent of farm receipts were realized from rice sales.

TXR1500 This 1,500-acre rice farm located west of Houston, Texas (Colorado County) is moderate-sized for the region. TXR1500 harvests 600 acres of rice. The farm generated 99 percent of its receipts from rice during 2021.

TXR3000 TXR3000 is a 3,000-acre, large-sized rice farm located west of Houston, Texas (Colorado County). This farm harvests 1,500 acres of rice annually. TXR3000 realized 100 percent of 2021 gross receipts from rice sales.

TXBR1800 The Texas Gulf Coast (Matagorda County) is home to this 1,800-acre rice farm. TXBR1800 generally plants a third of its acres to rice annually and fallows the remainder. The farm generated 98 percent of its receipts from rice during 2021.

TXER2500 This 2,500-acre rice farm is located in the Texas Gulf Coast (Wharton County). TXER2500 harvests 1,250 acres of rice each year. The farm also grows 1,250 acres of corn. Seventy-five percent of 2021 receipts came from rice sales.

LASR2000 A 2,000-acre southwest Louisiana (Acadia, Jeff Davis, and Vermilion parishes) rice farm, LASR2000 is moderate-sized for the area. This farm harvests 1,000 acres of rice and 200 acres of soybeans. During 2021, 63 percent of gross receipts were generated from rice sales.

ARMR6500 ARMR6500 is a 6,500-acre diversified rice farm in southeast Arkansas (Desha County) that plants 650 acres of rice, 3,900 acres of soybeans, and 1,950 acres of corn. For 2021, 11 percent of gross receipts came from rice sales, 34 percent from corn sales, and 54 percent from soybean sales.

Appendix Table A7. Characteristics of Panel Farms Producing Rice.

	CAR1200	CAR3000	CABR800	CACR800	TXR1500	TXR3000	TXBR1800	TXER2500	LASR2000	ARMR6500
County	Sutter	Sutter	Butte	Colusa	Colorado	Colorado	Matagorda	Wharton	Acadia	Desha
Total Cropland	1,200.00	3,000.00	800.00	800.00	1,500.00	3,000.00	1,800.00	2,500.00	2,000.00	6,500.00
Acres Owned	360.00	900.00	320.00	240.00	405.00	0.00	0.00	0.00	200.00	1,200.00
Acres Leased	840.00	2,100.00	480.00	560.00	1,095.00	3,000.00	1,800.00	2,500.00	1,800.00	5,300.00
Assets ($1000)										
Total	4,154.00	15,677.00	5,838.00	4,706.00	2,722.00	2,042.00	1,203.00	2,071.00	2,982.00	11,717.00
Real Estate	2,696.00	11,365.00	4,377.00	4,254.00	1,503.00	109.00	142.00	96.00	1,566.00	6,285.00
Machinery	844.00	3,640.00	1,189.00	419.00	1,165.00	1,576.00	897.00	1,148.00	1,218.00	3,109.00
Other & Livestock	613.00	672.00	272.00	32.00	53.00	357.00	165.00	827.00	199.00	2,323.00
Debt/Asset Ratios										
Total	0.12	0.18	0.16	0.18	0.20	0.22	0.19	0.11	0.19	0.15
Intermediate	0.03	0.20	0.11	0.08	0.21	0.27	0.22	0.18	0.22	0.26
Long Run	0.17	0.17	0.18	0.18	0.17	0.19	0.20	0.19	0.19	0.15
2021 Gross Receipts ($1,000)*										
Total	2,219.40	5,816.80	1,598.30	1,436.30	930.10	2,092.80	1,162.80	2,760.20	1,539.10	6,169.50
Corn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	677.00	0.00	2,062.30
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.33
Soybeans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.50	3,336.70
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.54
Rice	2,215.60	5,811.70	1,598.10	1,434.60	919.90	2,087.00	1,162.40	2,081.20	957.60	661.80
	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.75	0.62	0.11
Other	3.80	5.00	0.10	1.60	10.20	5.80	0.40	2.10	500.00	108.70
	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.33	0.02
2021 Planted Acres**										
Total	1,200.00	3,000.00	800.00	800.00	600.00	1,500.00	600.00	2,500.00	1,200.00	6,500.00
Corn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,250.00	0.00	1,950.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.30
Soybeans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	3,900.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.60
Rice	1,200.00	3,000.00	800.00	800.00	600.00	1,500.00	600.00	1,250.00	1,000.00	650.00
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.83	0.10

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**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2021 CHARACTERISTICS OF PANEL FARMS PRODUCING RICE

ARSR3240 ARSR3240 is a 3,240-acre, large-sized Arkansas (Arkansas County) rice farm that harvests 1,458 acres of rice, 1,458 acres of soybeans, and 324 acres of corn each year. Fifty-seven percent of this farm's 2021 receipts came from rice sales.

ARWR2500 East central Arkansas (Cross County) is home to this 2,500-acre rice farm. Moderate-sized for the region, ARWR2500 annually plants 1,250 acres each to rice and soybeans. During 2021, rice sales generated 64 percent of gross receipts.

ARHR4000 ARHR4000 is a 4,000-acre large-sized northeast Arkansas (Lawrence County) rice farm that annually harvests 2,400 acres of rice, 1,400 acres of soybeans, and 200 acres of corn. Rice sales accounted for 75 percent of 2021 farm receipts.

MSDR5000 MSDR5000 is a 5,000-acre Mississippi Delta (Bolivar County) rice farm that annually harvests 1,667 acres of rice and 3,333 acres of soybeans. Rice sales accounted for 42 percent of 2021 farm receipts. Soybeans account for 58 percent of receipts.

MOBR4000 MOBR4000 is a 4,000-acre Missouri Bootheal (Pemiscot County) rice farm. The farm annually harvests 1,320 acres of rice, 1,800 acres of soybeans and 880 acres of corn. Rice sales accounted for 46 percent of farm receipts in 2021.

Appendix Table A8. Characteristics of Panel Farms Producing Rice.

	ARSR3240	ARWR2500	ARHR4000	MSDR5000	MOBR4000
County	Arkansas	Cross	Lawrence	Bolivar	Pemiscot
Total Cropland	3,240.00	2,500.00	4,000.00	5,000.00	4,000.00
Acres Owned	648.00	1,250.00	1,000.00	3,000.00	1,000.00
Acres Leased	2,592.00	1,250.00	3,000.00	2,000.00	3,000.00
Assets ($1000)					
Total	6,465.00	8,580.00	10,226.00	20,437.00	11,456.00
Real Estate	3,969.00	6,704.00	6,339.00	15,493.00	7,392.00
Machinery	1,711.00	1,757.00	3,421.00	3,518.00	3,359.00
Other & Livestock	785.00	119.00	466.00	1,426.00	704.00
Debt/Asset Ratios					
Total	0.16	0.15	0.18	0.17	0.20
Intermediate	0.22	0.21	0.20	0.25	0.28
Long Run	0.17	0.14	0.18	0.17	0.18
2021 Gross Receipts ($1,000)*					
Total	2,899.40	2,011.60	3,609.40	4,206.80	2,894.80
Corn	330.10	0.00	177.10	0.00	698.10
	0.11	0.00	0.05	0.00	0.24
Wheat	4.70	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
Soybeans	891.70	727.50	700.60	2,409.60	857.50
	0.31	0.36	0.19	0.57	0.30
Rice	1,671.20	1,283.70	2,729.00	1,790.40	1,339.10
	0.58	0.64	0.76	0.43	0.46
Other	1.60	0.40	2.70	6.90	0.10
	0.00	0.00	0.00	0.00	0.00
2021 Planted Acres**					
Total	3,240.00	2,500.00	4,240.00	5,000.00	4,000.00
Corn	324.00	0.00	200.00	0.00	880.00
	0.10	0.00	0.05	0.00	0.22
Soybeans	1,458.00	1,250.00	1,400.00	3,333.00	1,800.00
	0.45	0.50	0.33	0.67	0.45
Rice	1,458.00	1,250.00	2,640.00	1,667.00	1,320.00
	0.45	0.50	0.62	0.33	0.33

*Receipts for 2021 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2021 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

Appendix B

Representative Farm Panel Members and Facilitators

FEED GRAIN FARMS

Indiana

Facilitators

Mr. Scott Gabbard - Extension Educator, Shelby County, Purdue Cooperative Extension

Panel Participants

Mr. David Brown
Mr. Gary Everhart
Mr. Jason & Dan Foltz
Mr. Darrell Linville
Mr. Ken Simpson
Mr. Doug Theobald
Mr. Kevin Carson
Mr. Andy Fix
Ms. Carmen Hawk
Mr. Gary Robards
Ms. Angie Steinbarger
Mr. Jeremy Weaver

Iowa

Facilitators

Mr. Jerry Chizek - County Extension Director, Webster County

Panel Participants

Mr. Doug Adams
Mr. Dean Black
Mr. A.J. Blair
Mr. Tyler Lane
Mr. Steve Peterson
Mr. Brent Wells
Mr. Loren Wuebker
Mr. Brad Black
Mr. Perry Black
Mr. Gregg Hora
Mr. Jay Lynch
Mr. Doug Stanek
Mr. Kent Wuebker

Missouri - Central

Facilitators

Mr. Parman Green

Panel Participants

Mr. Joe Brockmeier
Mr. Kevin Casner
Mr. Kyle Durham
Mr. Todd Gibson
Mr. Jack Harriman
Mr. Mike Hisle
Mr. Glenn Kaiser
Mr. David Kipping
Mr. Craig Linneman
Mr. James Wheeler
Mr. Michael Brockmeier
Mr. Mark Casner
Mr. Dennis Germann
Mr. Dale Griffith
Mr. Todd Hensiek
Mr. Preston Hisle
Mr. Marc Kaiser
Mr. Robert Kipping
Mr. Mike Ritchhart

Missouri - Northwest

Facilitators

Mr. Peter Zimmel - FAPRI, University of Missouri

Panel Participants

Mr. Terry Ecker
Mr. Russell Miller
Mr. Nick Rosenbohm
Mr. Curtis Lewis
Mr. Matt Rosenbohm
Mr. Andrew Stoll

FEED GRAIN FARMS (CONTINUED)

Nebraska - Central

Facilitators

Ms. Sarah Sivits
Mr. Bruce Treffer - Extension Educator, Dawson County

Panel Participants

Mr. Jim Aden
Mr. Bart Beattie
Mr. Pat Luther
Mr. Clark McPheeters
Mr. Cody Peden
Mr. Dave Rowe
Mr. Dan Strauss
Mr. Rob Anderson
Mr. Greg Hueftle
Mr. Tim Maline
Mr. Scott McPheeters
Mr. Rod Reynolds
Mr. Paul Stieb

North Dakota

Facilitators

Mr. Randy Grueneich - County Extension Agent, North Dakota State University
Dr. Bryon Parman - Extension Associate-Farm Management, North Dakota State University

Panel Participants

Mr. John Robert Anderson
Mr. Jim Broten
Mr. Mike Clemens
Mr. Leland Guscette
Mr. Jason Haugen
Mr. Greg Shanenko
Mr. Eric Broten
Mr. Wade Bruns
Mr. Mark Formo
Mr. Rob Hanson
Mr. Charlie Kreidelcamp
Mr. Anthony Thilmony

Ohio

Facilitators

Mr Alan Leininger - County Agent, OSU Extension
Mr. Eric Richer - County Agent, OSU Extension

Panel Participants

Mr. Austin Arps
Mr. Dean Bixel
Mr. Mark Drewes
Mr. Todd Hesterman
Mr. Eric Johnson
Mr. Jeremy Tedrow
Ms. Jan Bernath
Mr. Scott Conrad
Mr. Matt Eggers
Mr. Tim Holbrook
Mr. Chris Rettig
Mr. Kevin Thierry

Ohio - Napoleon

Facilitators

Mr Alan Leininger - County Agent, OSU Extension
Mr. Eric Richer - County Agent, OSU Extension

Panel Participants

Mr. Austin Arps
Mr. Dean Bixel
Mr. Mark Drewes
Mr. Todd Hesterman
Mr. Eric Johnson
Mr. Jeremy Tedrow
Ms. Jan Bernath
Mr. Scott Conrad
Mr. Matt Eggers
Mr. Tim Holbrook
Mr. Chris Rettig
Mr. Kevin Thierry

FEED GRAIN FARMS (CONTINUED)

South Carolina

Facilitators

Mr. Scott Mickey
Dr. Nathan Smith

Panel Participants

Mr. Neal Baxley
Mr. Chris Cogdill
Mr. Sam DuRant
Mr. Steven Gamble
Mr. Tommy Lee
Mr. John Michael Parimuha
Ms. Vikki Brogdon
Mr. Harry DuRant
Mr. Jason Gamble
Mr. Barry Hutto
Mr. Joe McKeower

Tennessee - Trenton

Facilitators

Mr. Jeff Lannom - Extension Agent & County Director, Weakley County
Mr. Chris Narayanan
Mr. Philip Shelby - Extension Agent, Gibson County
Mr. Tim Smith - County Extension Agent, Obion County

Panel Participants

Mr. Steven Agee
Mr. Kenneth Barnes
Mr. Mike Brundige
Mr. Kaleb Dinwiddie
Mr. Bobby Garner
Mr. Brent Griggs
Mr. Rob Holman
Mr. Todd Littleton
Mr Ben Moore
Mr. David Oliver
Mr. John Parrish
Mr. Hedrick Shoaf
Mr. Keith Steele
Mr. James Wall
Mr. Jay Yeargin
Mr. Brent Baier
Mr. Randy Boals
Mr. John Chester
Mr. Mike Freeman
Mr. Derek Griffin
Mr. Gary Hall
Mr. Josh Little
Mr. Jason Luckey
Mr. Scotty Ogg
Mr. Eric Owen
Mr. Eric Partee
Mr. Kevin Smethwick
Mr. Seth Taylor
Mr. Jody Wright

Texas - Northern Blackland Prairie

Facilitators

Mr. Zach Davis - County Extension Agent, Hill County

Panel Participants

Mr. Chad Kaska
Mr. Chad Radke
Mr. Todd Kimbrell, Jr.
Mr. John Sawyer

Texas - Northern High Plains

Facilitators

Mr. Marcel Fischbacher - County Extension Agent, Moore County

Panel Participants

Mr. Tommy Cartrite
Mr. Justin Garrett
Mr. Casey Kimbrell
Mr. Chandler Preston
Mr. Stan Spain
Mr. Dee Vaughan
Mr. Brent Clark
Mr. Kelly Hays
Mr. Tom Moore
Mr. Jon Reznik
Mr. Darren Stallwitz
Ms. Linda Williams

FEED GRAIN FARMS (CONTINUED)

Texas - Panhandle

Facilitators

Mr. Rick Auckerman - County Extension Agent, Texas Cooperative Extension

Panel Participants

Mr. Michael Carlson
Mr. Roy Carlson
Mr. Greg Chavez
Mr. Steve Hoffman
Mr. Bob Meyer
Mr. Tom Schlabs

Texas - Southern Blackland Prairie

Facilitators

Mr. Cooper Terrill - County Extension Agent, Williamson County

Panel Participants

Mr. Terry Pekar
Mr. Herbert Raesz
Mr. Ken Seggern

Texas - Southwest

Facilitators

Mr. Samantha Korzekwa - County Extension Agent, Uvalde County

Panel Participants

Mr. Jimmy Carnes
Mr. Ralph Hesse
Mr. Mark Landry
Mr. Danny Parker

WHEAT FARMS

Colorado

Facilitators

Mr. Dennis Kaan - Director, Golden Plains Area Extension, Colorado State University
Mr. Brent Young - Ag and Business Management Specialist, Colorado State University

Panel Participants

Mr. Matt Campbell
Mr. John Deering
Mr. Joel Dracon
Mr. Mario Dracon
Mr. Barney Filla
Mr. Dale Hansen
Mr. Barry Hinkhouse
Mr. Shane Leoffler
Mr. Trent Twiss

Kansas - Northwest

Facilitators

Dr. Dan O'Brien - Area Extension Director, Kansas State University
Mr. Mark Wood - Extension Agricultural Economist, Kansas Farm Mgmt. Association

Panel Participants

Mr. Tanner Brown
Mr. Craig Busse
Mr. Steve Busse
Mr. Rich Calliham
Mr. Sam Crouse
Mr. Aaron Horinek
Mr. Lee Juenemann
Mr. Daniel Leebrick
Mr. Kenan Reeh
Mr. Tyler Roe
Mr. Steve Schertz

Kansas - South Central

Facilitators

Mr. Randy Hein - County Extension Agent, Sumner County
Mr. Jeff Seiler - County Extension Agent, Sedgwick County

Panel Participants

Mr. Colton Day
Mr. Dennis Gruenbacher
Mr. Doug Hisken
Mr. Aaron Lange
Mr. Jeff Neises
Mr. Kent Ott
Mr. Steve Schmidt
Mr. Mike Slack
Mr. Nick Steffen
Troy & Julia Strnad
Mr. Tim Turek
Mr. Phil White
Mr. Robert White

Montana - North Central

Facilitators

Mr. Lochiel Edwards

Panel Participants

Mr. Darin Arganbright
Mr. Steve Bahnmiller
Mr. Duane Beirwagen
Mr. Will Roehm
Mr. Dan Works

Oregon - North Central

Facilitators

Jon Farquharson

Panel Participants

Mr. Dana Heideman
Mr. Bill Jepsen
Mr. Joe McElligott
Mr. Craig Miles
Mr. Eric Orem
Mrs. Shannon Rust
Mr. Tim and Shannon Rust

WHEAT FARMS (CONTINUED)

Washington

Facilitators

Mr. Aaron Esser - County Director, WSU Extension

Panel Participants

Mr. Trevor Jantz
Mr. Mike Miller
Mr. Travis Simonson
Mr. Traven Smith
Mr. Ron Jirava
Mr. Justin Simonson
Mr. Tim Smith
Mr. Steve Taylor

Washington - Palouse

Facilitators

Dr. Janet Schmidt - Extension Faculty, Washington State University
Mr. Steve Van Vleet - Extension Agronomist, Washington State University

Panel Participants

Mr. Ben Barstow
Mr. Ian Clark
Mr. Aaron Gfeller
Ms. Kenda Hergert
Ms. Heidi Kopf
Mr. Gary Largent
Mr. Steve Mader
Mr. Clark Miller
Mr. Chris Schultheis
Mr. Steve Teade
Mr. Gavin Clark
Mr. Scot Cocking
Mr. David Harlow
Mr. Dean Kinzer
Mr. Brian Largent
Mr. Michael Largent
Ms. Amy McKay
Mr. Bruce Nelson
Mr. David Swannack
Mr. Jon Whitman

COTTON FARMS

Alabama

Panel Participants

Mr. James Blythe
Mr. Jarred Darnell
Mr. William Lee
Mr. Paul Clark
Dr. Steve Ford
Ms. Larkin Martin

Arkansas

Facilitators

Mr. Ethan Brown
Dr. Brad Watkins - Research Assistant Professor, U. of Arkansas Cooperative Extension

Panel Participants

Mr. Chad Costner
Mr. Todd Edwards
Mr. Cole Hawkins
Mr. Kenny Jackson
Mr. Heath Donner
Mr. Paul Harris
Mr. Justin Hawkins

Georgia - Southwest

Facilitators

Ms. Nan Bostick - County Extension Coordinator, Decatur County
Mr. Cody Powell
Dr. Adam Rabinowitz

Panel Participants

Mr. Andy Bell
Mr. Greg Mims
Mr. Brad Thompson
Mr. Jerry Jones
Mr. Willard Mims
Mr. Raymond Thompson

North Carolina

Facilitators

Mr. Daryl Anderson - County Extension Agent
Dr. Blake Brown
Mr. Gary Bullen
Mr. Kevin Johnson - County Extension Director, Wayne County

Panel Participants

Mr. Landis Brantham, Jr.
Mr. Willie Howell
Mr. Danny C. Pierce
Mr. Bryant Worley
Mr. Michael Gray
Mr. David B. Mitchell, Sr.
Mr. Craig West

South Carolina

Facilitators

Mr. Jonathan Croft
Mr. Scott Mickey
Dr. Nathan Smith

Panel Participants

Mr. Jimmie Griner
Mr. John McLaurin
Mr. Landrum Weathers
Mr. Dean Hutto
Mr. David Tindal

COTTON FARMS (CONTINUED)

Tennessee

Facilitators

Mr. Walter Battle - Co-Director, Haywood County Extension
Mr. Chris Narayanan
Ms. Lindsay Stephenson
Mr. Jeff Via - County Extension Director, Fayette County

Panel Participants

Mr. Alex Armour
Mr. Chuck Dacus
Mr. Lee Graves
Mr. Rob Karcher
Mr. John King
Mr. Hassell Smith
Mr. Link Carlton
Mr. Willie German
Mr. Ed Karcher
Mr. Allen King
Mr. Kinney McRae

Texas - Coastal Bend

Facilitators

Mr. Bobby McCool - County Extension Agent, San Patricio County and Aransas County
Mr. Mark Miller - Chief Operations Officer, Texas AgFinance
Mr. Jeff Nunley - Executive Director, South Texas Cotton & Grain Association
Mr. Jason Ott - County Extension Agent, Nueces County
Mr. John Parker - Vice President, Texas AgFinance

Panel Participants

Mr. Travis Adams
Mr. Colin Chopelas
Mr. Jon Gwynn
Mr. Larry McNair
Mr. Toby Robertson
Mr. David Weaver
Mr. Marvin Beyer, Jr.
Mr. Jimmy Dodson
Mr. Darrell Lawhon
Mr. Andrew Miller
Mr. Darby Salge
Mr. Jon Whatley

Texas - Eastern Caprock

Facilitators

Ms. Caitlin Jackson

Panel Participants

Mr. Lloyd Arthur
Mr. Mark Schoepf
Mr. Brooks Ellison
Mr. Conner Wilmeth

Texas - Mid Coast

Facilitators

Mr. Jeff Nunley - Executive Director, South Texas Cotton & Grain Association
Mr. Jimmy Roppolo - General Manager, United Ag

Panel Participants

Mr. Daniel Gavranovic
Mr. Michael Popp
Mr. Mike Watz
Mr. Duane Lutringer
Mr. Darrell Schoeneberg

Texas - Rio Grande Valley

Facilitators

Mr. Matthew Rodriguez - County Extension Agent

Panel Participants

Mr. Jerry Chappell
Mr. Spence Pennington
Mr. Zachary Swanberg
Mr. Joe Pennington
Mr. Ivan Salazar
Mr. Mark Willis

COTTON FARMS (CONTINUED)

Texas - Rolling Plains

Facilitators

Mr. Steven Estes - County Extension Agent, Texas AgriLife Extension

Panel Participants

Mr. Larry Lytle
Mr. Cody Roberts
Mr. Mike Sloan
Mr. Rick Vickers
Mr. Terry White
Mr. Michael McLellan
Mr. Brian Sandbothe
Mr. Dale Spurgin
Mr. Ferdie Walker

Texas - Southern High Plains

Facilitators

Mr. Gary Roschetzky - County Extension Agent, Dawson County

Panel Participants

Mr. Terry Coleman
Mr. Kirk Tidwell
Mr. Donald Vogler
Mr. Will Cozart
Mr. Johnny Ray Todd
Mr. David Warren

RICE FARMS

Arkansas

Facilitators

Mr. Chuck Capps
Mr. Steve Kelley
Mr. Steven Stone
Dr. Brad Watkins - Research Assistant Professor, U. of Arkansas Cooperative Extension
Mr. Gus Wilson

Panel Participants

Mr. John Gates
Mr. Andy Gill
Mr. Joe Mencer
Mr. Jim Whitaker
Mr. Andrew Gill
Mr. Tad Keller
Mr. Matt Miles
Mr. Sam Whitaker

Arkansas - East Central-Arkansas County

Facilitators

Mr. Bill Free - Riceland Foods, Inc.
Dr. Brad Watkins - Research Assistant Professor, U. of Arkansas Cooperative Extension

Panel Participants

Mr. Brandon Bauman
Mr. Monty Bohanan
Mr. Stephen Hoskyn
Mr. Garth Jessup
Mr. Derek Bohanan
Mr. Dusty Hoskyn
Mr. David Jessup

Arkansas - East Central-Cross County

Facilitators

Dr. Brad Watkins - Research Assistant Professor, U. of Arkansas Cooperative Extension
Mr. Rick Wimberley - County Extension Agent - Staff Chair, U. of Arkansas Cooperative

Panel Participants

Mr. Corbin Brown
Mr. Byron Holmes, Jr.
Mr. Roger Pohlner
Mr. John Cooper
Mr. Bryan Moery

Arkansas - Northeast-Lawrence County

Facilitators

Mr. Michael Andrews
Mr. Bryce Baldridge
Ms. Courtney Sisk
Dr. Brad Watkins - Research Assistant Professor, U. of Arkansas Cooperative Extension

Panel Participants

Mr. Greg Baltz
Mr. Ricky Burris
Mr. Doug Cox
Mr. Joe Richardson
Mr. Jeremy Baltz
Mr. Ronald Cavenaugh
Mr. Bruce Manning
Mr. Vic Stone

California - Butte County

Facilitators

Dr. Luis Espino
Mr. Tim Johnson - President and CEO, California Rice Commission

Panel Participants

Mr. Seth Fiack
Mr. Peter Rystrom
Mr. Derek Sohnrey
Mr. Imran Khan
Mr. Josh Sheppard

RICE FARMS (CONTINUED)

California - Colusa County

Facilitators

Dr. Luis Espino
Mr. Tim Johnson - President and CEO, California Rice Commission

Panel Participants

Mr. Don Bransford
Mr. Leo LaGrande
Mr. Alex Struckmeyer
Ms. Kim Gallagher
Mr. Charles Marsh

California - Sutter County

Facilitators

Ms. Whitney Brim-DeForest - UCCE Farm Advisor
Mr. Tim Johnson

Panel Participants

Mr. Bard Anderson
Mr. Tom Butler
Mr. Ned Lemenager
Mr. Jon Munger
Mr. Michael Rue
Mr. Rob Van Dyke
Mr. Paul Baggett
Mr. Mike DeWit
Mr. Charley Mathews
Mr. Rick Nelson
Mr. Don Traynham
Ms. Nicole Van Vleck

Louisiana - Northeast

Facilitators

Mr. Scott Franklin

Panel Participants

Mr. Ed Greer
Mr. John Owen
Mr. Heath Herring
Mr. Russ Ratcliff

Louisiana - Southwest-Acadiana

Panel Participants

Mr. Al Cramer
Mr. David Lacour
Mr. Jackie Loewer
Mr. Christian Richard
Mr. Tommy Faulk
Mr. Alan Lawson
Mr. Micah Loewer
Mr. Fred Zaunbrecher

Mississippi - Cleveland

Facilitators

Mr. Zach Gaylor - Extension Agent

Panel Participants

Mr. Michael Aguzzi
Mr. Gary Fioranelli
Mr. Kirk Satterfield
Mr. Austin Davis
Mr. Randy Howarth

Missouri

Facilitators

Mr. Trent Haggard - Director, Fisher Delta Research Center

Panel Participants

Mr. John Anderson
Mr. Rance Daniels
Mr. Jim Priggel
Mr. Alex Clark
Mr. Russ Hoggard
Mr. Will Spargo

RICE FARMS (CONTINUED)

Texas - Bay City-Matagorda County

Panel Participants

Mr. Dillon Berglund
Mr. Coleman Franz
Mr. Paul Sliva
Mr. Barrett Franz
Mr. Joey Sliva

Texas - Eagle Lake-Colorado County

Panel Participants

Mr. Allen Anderson
Mr. Kenneth Danklefs
Mr. W.A. "Billy" Hefner, III
Mr. Patrick Pavlu
Mr. Andy Anderson
Mr. Craig Guthman
Mr. Ira Lapham
Mr. Bryan Wiese

Texas - El Campo-Wharton County

Panel Participants

Mr. Daniel Berglund
Mr. Mark Rasmussen
Mr. Glen Rod
Mr. Timothy Gertson
Mr. L.G. Raun
Mr. Tommy Turner

PEANUT FARMS

North Carolina - Conway

Facilitators

Dr. Blake Brown
Mr. Gary Bullen
Mr. Bob Sutter

Panel Participants

Mr. Clarke Fox
Mr. Wayne Harrell
Mr. Brad West
Mr. Ray Garner
Mr. Donny Lassiter
Mr. Donnie White

North Carolina - Elizabethtown

Facilitators

Dr. Blake Brown
Mr. Gary Bullen
Mr. Matthew Strickland
Mr. Bob Sutter

Panel Participants

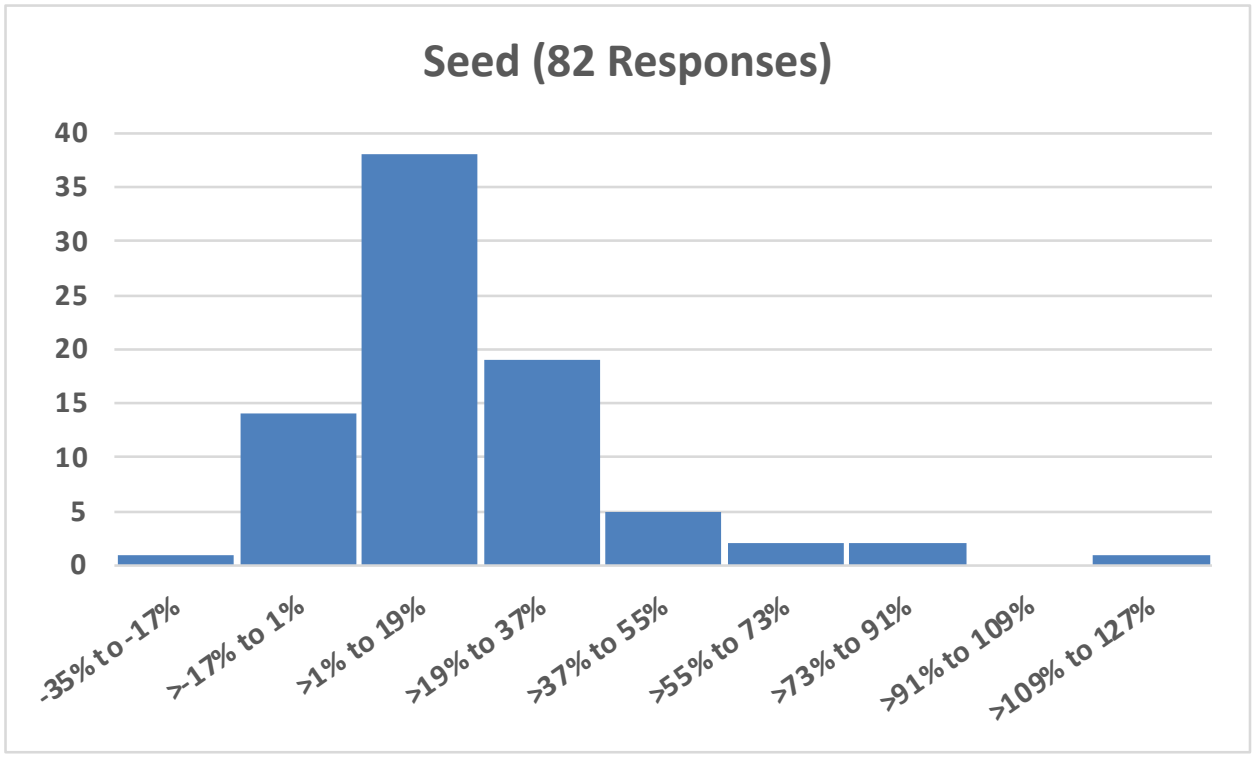
Mr. Robert Byrd
Mr. Jart Hudson
Mr. Dan McDuffie
Mr. Dan Ward
Mr. Wade Byrd
Mr. Alex Jordan
Mr. Sean Morris
Mr. Wilbur Ward

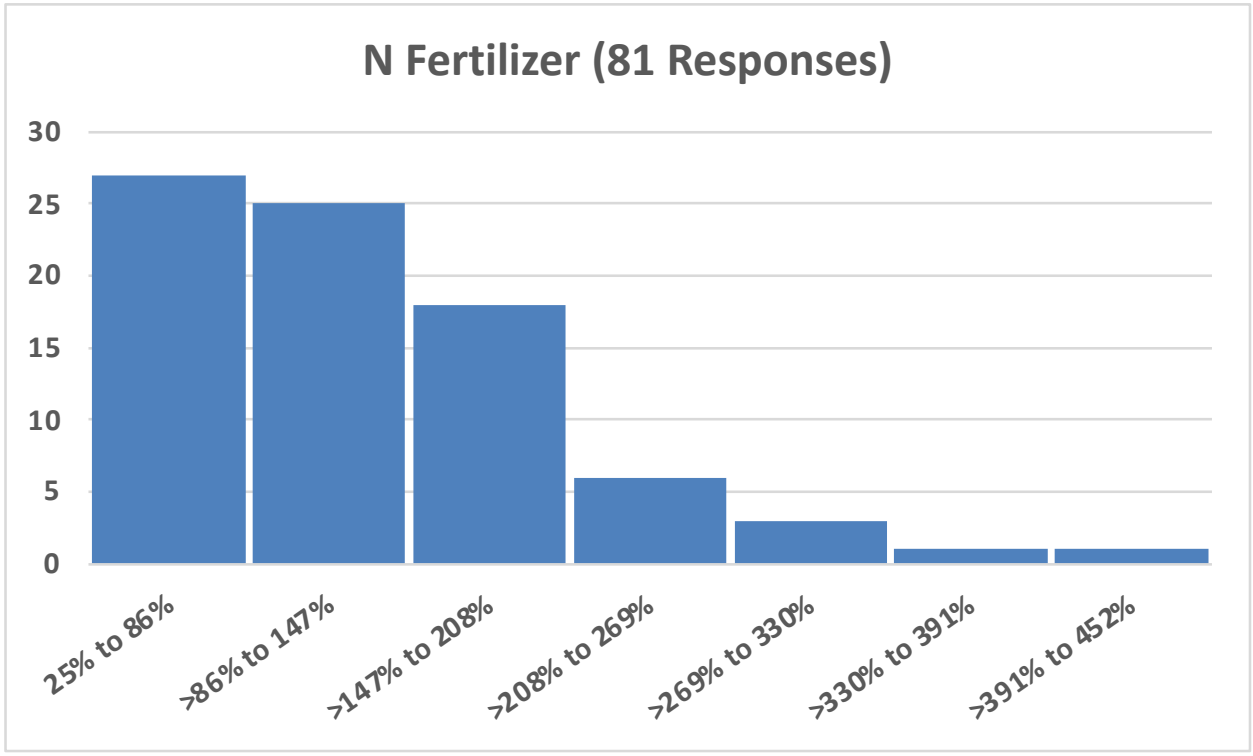
Appendix C

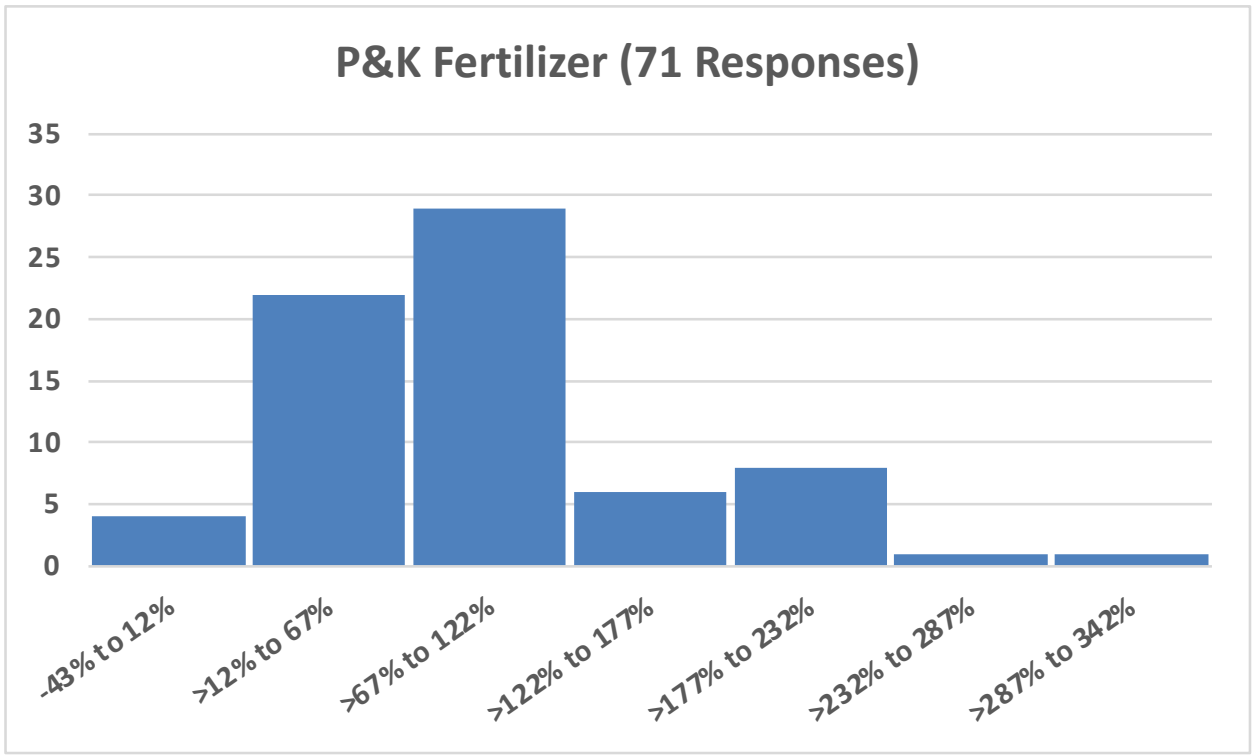
Histograms of Producer Responses for Each Input Category

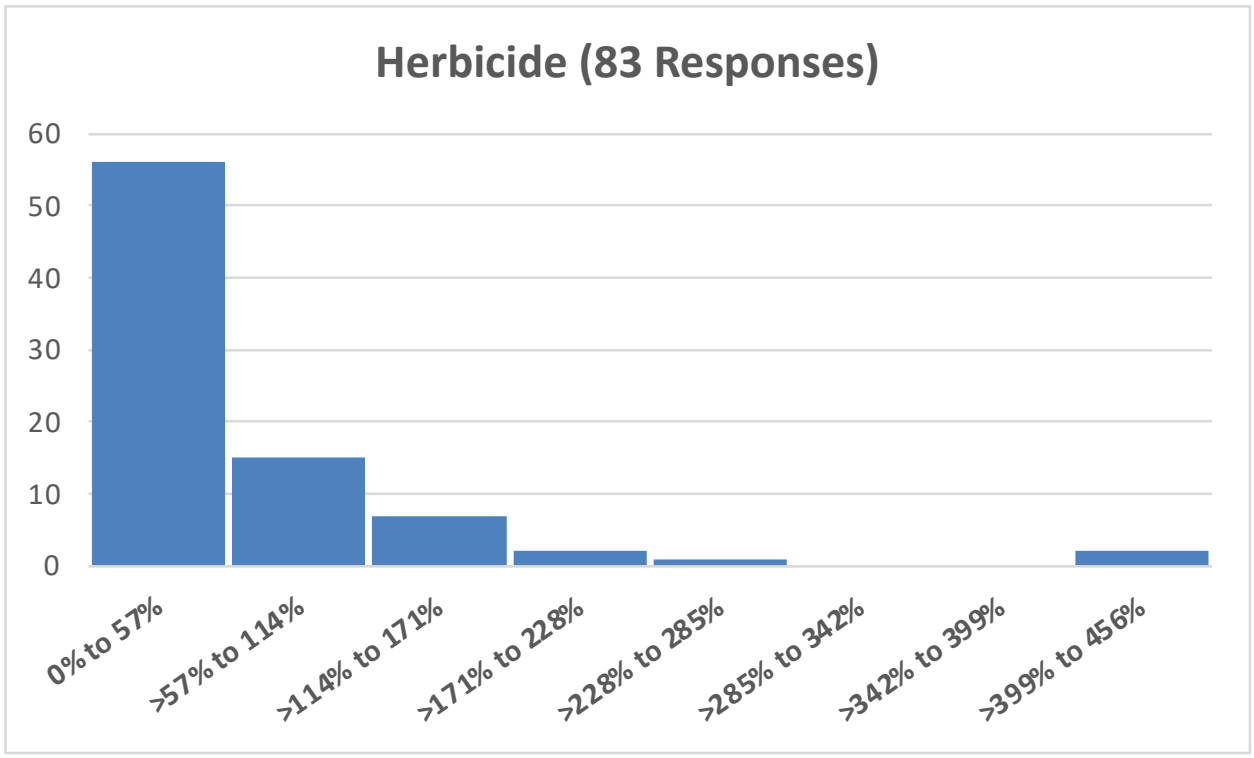
Histograms of the seven cost categories are included to provide additional detail on the ranges and magnitudes of producer responses. These charts are used to display the frequency distribution of responses falling into ranges (the numbers of ranges and their respective magnitudes are dependent on the numbers of responses from our producers and their relative scales). The histograms display ranges of responses across the x-axis and the associated bars report the number of responses falling into each of the stated ranges on the y-axis. The x-axis labels indicate the upper and lower bounds of the range.

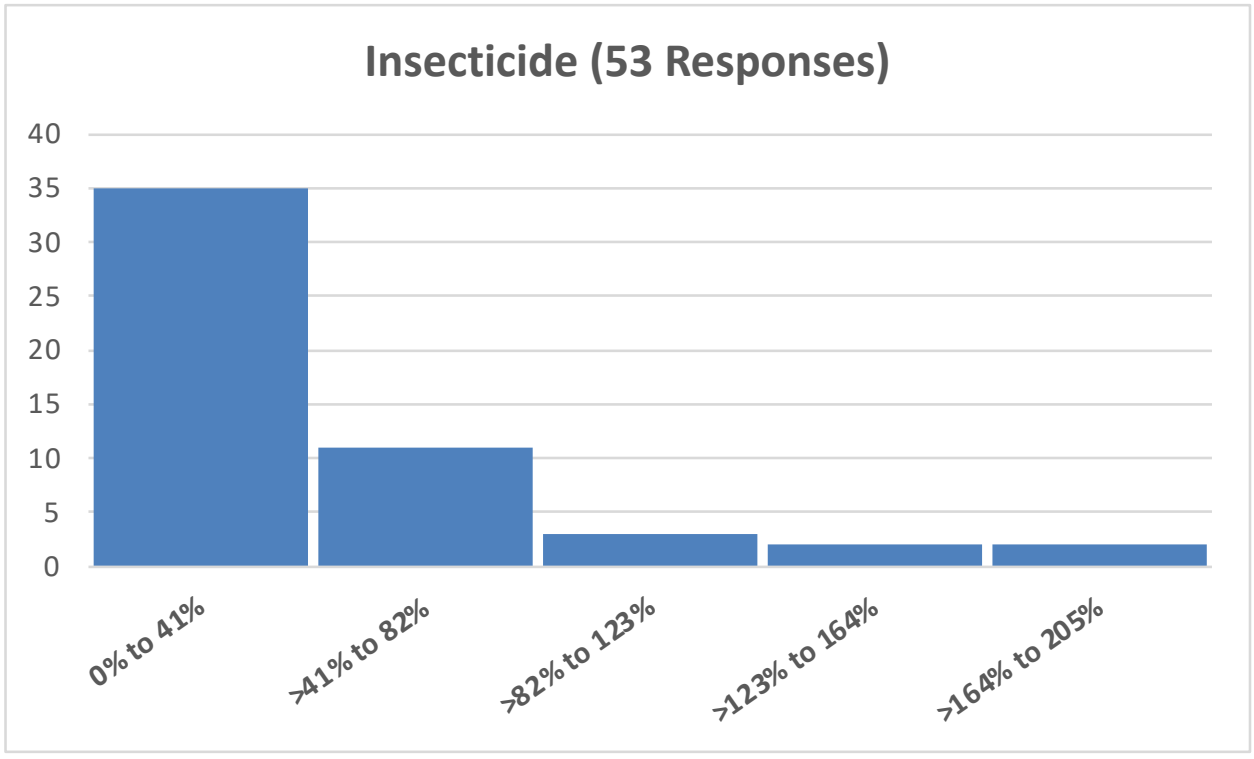
The simple averages of responses for the categories often fall in the range with the most responses, but, sometimes, due to magnitudes on some of the less frequent ranges, the average falls slightly outside of the range of the most frequent responses. For example, the seed average cost increase across all responses was 16.58% and almost half (38 of 82) of the responses fall within that 1% to 19% range. This pattern also holds for phosphorous and potash fertilizer, insecticide, and fuel and lube. Conversely, the simple average nitrogen fertilizer increase (133.62%) falls within the range with the second greatest number of responses (25 responses were between 86% and 147% while 27 were between 25% and 86%). The herbicide and fungicide categories also followed this pattern where the simple average is between the range with the second greatest number of responses.

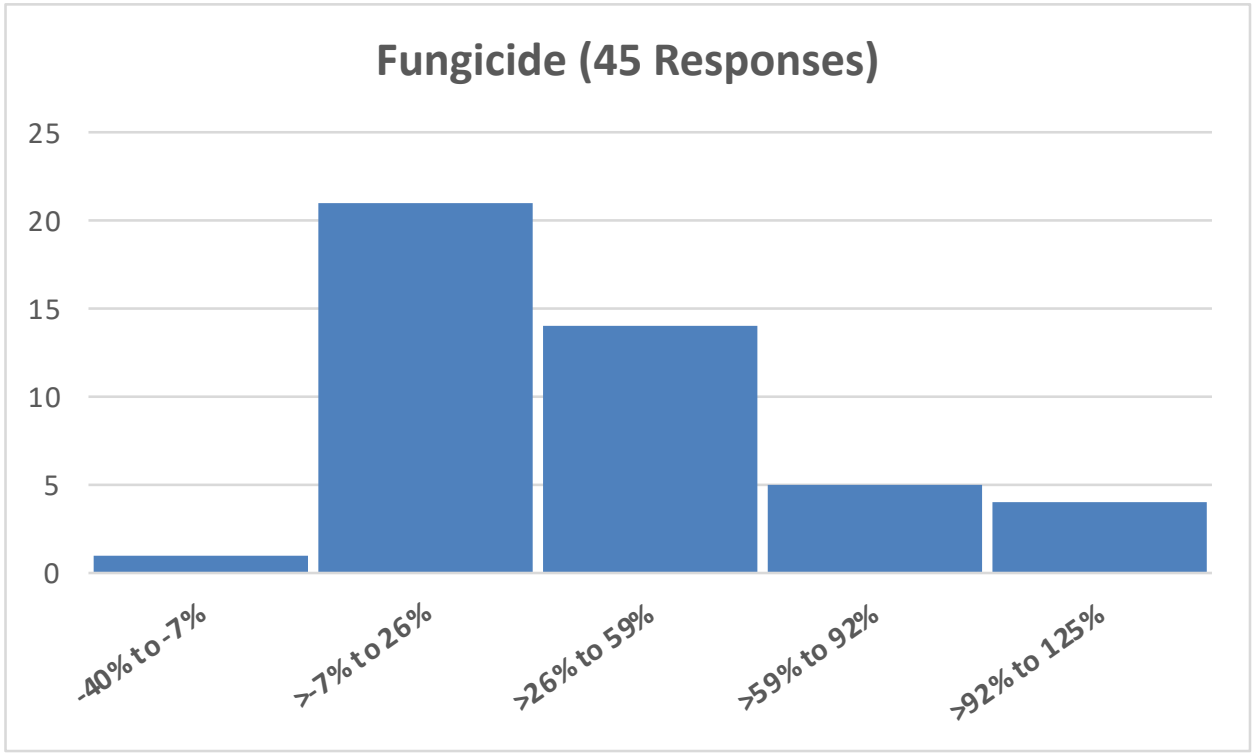


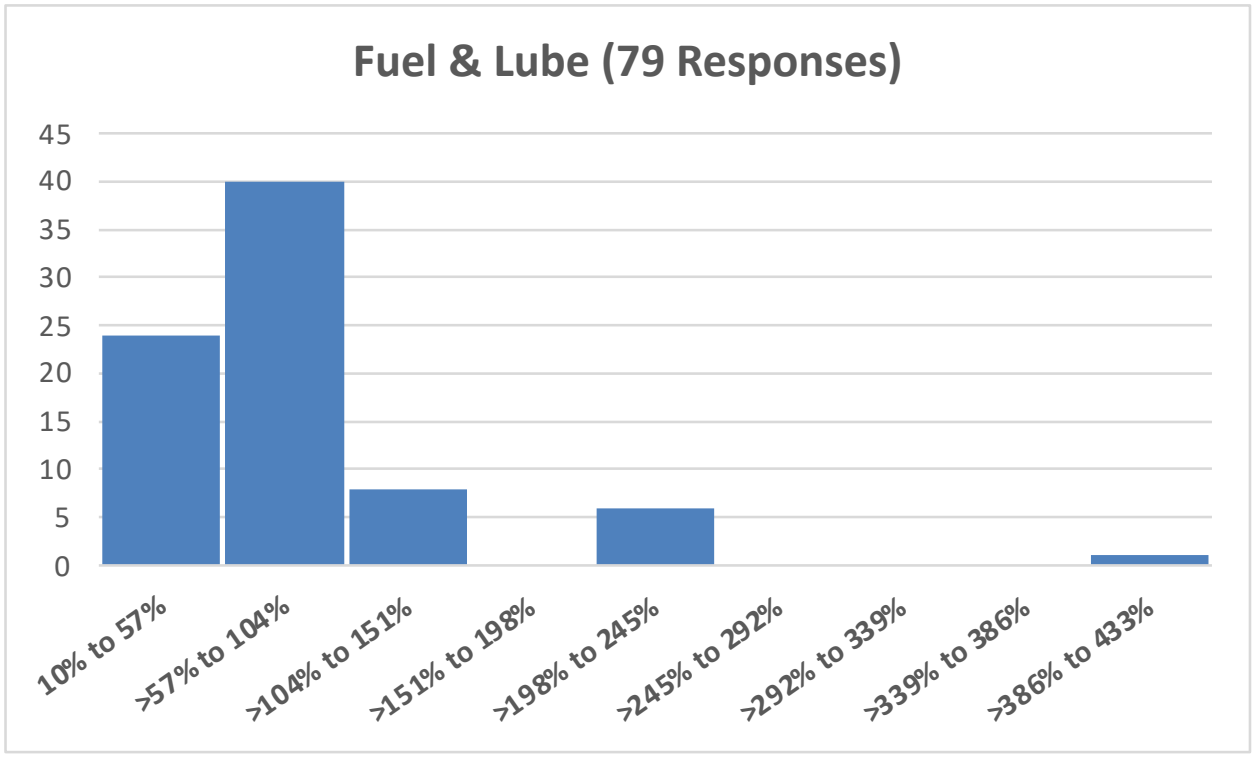

N Fertilizer (81 Responses)
30
25
20
15
10
5
0
25% to 86%
>86% to 147%
>147% to 208%
>208% to 269%
>269% to 330%
>330% to 391%
>391% to 452%


P&K Fertilizer (71 Responses)
35
30
25
20
15
10
5
0
-43% to 12%
>12% to 67%
>67% to 122%
>122% to 177%
>177% to 232%
>232% to 287%
>287% to 342%


Herbicide (83 Responses)
60
50
40
30
20
10
0
0% to 57%
>57% to 114%
>114% to 171%
>171% to 228%
>228% to 285%
>285% to 342%
>342% to 399%
>399% to 456%


Insecticide (53 Responses)
40
35
30
25
20
15
10
5
0
0% to 41%
>41% to 82%
>82% to 123%
>123% to 164%
>164% to 205%


Fungicide (45 Responses)
25
20
15
10
5
0
-40% to -7%
>-7% to 26%
>26% to 59%
>59% to 92%
>92% to 125%


Fuel & Lube (79 Responses)
45
40
35
30
25
20
15
10
5
0
10% to 57%
>57% to 104%
>104% to 151%
>151% to 198%
>198% to 245%
>245% to 292%
>292% to 339%
>339% to 386%
>386% to 433%