A Farm-Level Look at the Future of American Agriculture

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Relatively low crop prices over the past two years, as well as regional weather adversity, has been the catalyst for the passage of "ad hoc" emergency relief. This paper examines the economic and financial status of 41 representative panel farms over the 1999–2002 period. When forecasting through the life of the 1996 Farm Bill, the representative crop farms are assessed by Texas A&M's Agricultural and Food Policy Center to be in the weakest condition observed over the last decade for liquidity and the related need to refinance.

Key Words: agricultural policy, farm profitability, liquidity

A second year of relatively low prices for feed grains, cotton, wheat, rice, and soybeans, combined with regional weather adversity, has led to renewed interest in the future of American agriculture. Low prices in 1998 contributed to the approval by Congress of a "one-time" emergency spending bill that provided approximately $3 billion to grain and cotton farmers to cover price deterioration, and another $3 billion for disaster assistance. Congress is currently debating another "one-time" emergency spending measure to compensate farmers primarily for low prices, but also for regional weather disasters.[1]

Lower prices for crops in 1998 and 1999 have not been translated into lower net cash income projections by the U.S. Department of Agriculture (USDA) (*The Food and Fiber Letter*, 1999). The USDA is projecting a $53.7 billion net cash farm income for 1999, which is down about 2% from 1998. Farmers' complaints about "low agricultural commodity prices and fears of bankruptcy [forcing] foreclosures and economic ruin in rural America" (*The Food and Fiber Letter*, 1999, p. 2) do not align with the USDA's optimism about near record net cash incomes. Using

[1]Congress subsequently passed and the President signed on October 22, 1999, an $8.7 billion emergency package as part of the FY2000 Agricultural Appropriations Bill.

aggregate projections of net cash farm income as a measure of economic performance has about as much merit as saying that 1998 was average in terms of rainfall in Texas. Several months of drought followed by a few days of substantial flooding reminds Texans that it is the distribution that is important, not the "level."

The same case can be made against those who use USDA's projections of national net cash farm income as a basis for concluding that there are no economic or financial problems in agriculture. Those who do this infer that the current debate over "safety nets" and "economic crisis" is only a smokescreen to allow politicians to pump money into production agriculture. Like the Texas illustration, the *distribution* of the projected net cash farm income is the key—not the national total. Wheat, feed grain, cotton, rice, and soybean producers are not faring as well as some of the livestock sectors that benefit from cheap feed grains.

The purpose of this paper is to project the economic viability of representative crop farms in selected regions of the United States, using current prices and the most recent Food and Agricultural Policy Research Institute (FAPRI) baseline (January 1999). Although the results of representative farm analyses cannot be extrapolated to the nation to estimate net cash farm income, the simulation results can be used to monitor how well farms in major production regions economically and financially perform through 2002. The Agricultural and Food Policy Center's (AFPC's) representative crop farms are simulated using the farm-level income and policy simulation model (FLIPSIM) to project economic viability at the farm level.

Representative Farms

The AFPC representative crop farms are located in the major production regions of the U.S., illustrated by the map presented in figure 1. A brief description of the representative farms used for the present study is included in the appendix. The location of each farm was identified in consultation with the staff of both the U.S. House and Senate Agricultural Committees and the Land Grant systems in the respective states. The information necessary to simulate the economic and financial conditions at the farm level is obtained primarily from the following sources:

- Farmer panels are convened in each location to provide the data and verify that the economic model is consistent with their farming experience in the area. In all locations a panel of farmers representative of moderate size, full-time commercial farm operations is convened. In most regions, a separate panel of farmers who operate farms two to three times the scale of the moderate size farms is convened as an indicator of economies of size.

- Future projections of input and output prices and yield are obtained from FAPRI at the University of Missouri and Iowa State University. AFPC participates in the baseline development process in a review and reactive mode.

Figure 1. AFPC representative crop farms

▪ The state land grant faculty, and other USDA agency representatives (such as the Farm Service Agency, the Risk Management Agency, and the Economic Research Service), supply additional program and historical data that are important to the analysis.

The information described above is utilized in the FLIPSIM model, developed and maintained by AFPC, to simulate the economic and financial performance for each farm over the 1996–2002 time period (Richardson and Nixon, 1986).[2] For the present study, actual prices and yields are incorporated for 1996–1998. For the period 1999–2002, the FLIPSIM model incorporates the historical yield and price risk experienced by the farms to develop probabilistic projections for the key economic and financial variables in the out-years. Projected FAPRI prices for 1999–2002 are assumed to be mean prices for the stochastic simulation.

Major Assumptions

In conducting this analysis, the following seven major assumptions were incorporated:

1. Each farm begins 1996 with a 20% debt-to-asset position for both real estate and intermediate-term assets.

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[2] For a detailed description of FLIPSIM, click on the Economic Model button on the AFPC web page, online at www.afpc1.tamu.edu.

2. The farms fully participate in the available farm programs and are structured so that current payment limits are not binding.

3. The farms avail themselves of the planting flexibility freedoms allowed by the 1996 Federal Agriculture Improvement and Reform (FAIR) Act, but only with the set of crops currently grown on the operations.

4. The farms collected their share of the production flexibility contract payments as provided by the FAIR Act.

5. The 1998 market assistance payments were incorporated in 1998, while benefits from the 1998 disaster provisions were accrued in 1999. No payments were assumed based on the disaster assistance packages currently being debated in Washington.

6. All farms are analyzed assuming they purchase multi-peril crop insurance at the 50/100 level.

7. The price projections, annual rates of inflation, and annual interest rates in the January 1999 FAPRI baseline adjusted for mid-July conditions will prevail throughout the 1999–2002 planning horizon. These values are summarized in table 1.

For describing the economic and financial condition of the representative crop farms, this study employs three performance variables, defined as follows:

1. Probability of a Cash Flow Deficit, *P*(*Cash Flow Deficit*): the percentage of times the farm's annual net cash farm income does not exceed cash requirements for family living, principal payments, taxes (income and self-employment), and realized machinery replacement expenses (not depreciation). This probability is reported for 1999 and 2002 to indicate whether the cash flow risk for a farm increases or decreases over the planning horizon.

2. Probability of Refinancing Deficit, *P*(*Refinance Deficit*): the probability that cash flow deficits are greater than available cash reserves. This probability is reported for 1999 and 2002 to indicate whether the financial risk for a farm increases or decreases over the planning horizon.

3. Probability of Losing Real Net Worth, *P*(*Real Net Worth Declines*): the probability that real net worth is less than the initial net worth in 1996. This probability is reported for 1999 and 2002 to indicate whether the equity risk is increasing or decreasing over the planning horizon.

For each of the above financial variables, AFPC color-codes the results. It has been our experience that if the farm projects less than 20% probability of occurrence for each of these variables, the farm is in a fairly good economic position. Therefore, we color it green. If the probability of the adverse event is between 20% and 40%,

Table 1. Prices, PFC Payment Rates, Rates of Inflation, and Interest Rates for the January 1999 FAPRI Baseline

Description	1996	1997	1998	1999[a]	2000[a]	2001	2002
Prices:							
Corn ($/bu.)	2.71	2.43	1.95	1.85	2.16	2.10	2.17
Wheat ($/bu.)	4.30	3.38	2.65	2.70	3.06	3.25	3.34
Cotton ($/lb.)	0.6930	0.6520	0.6110	0.4900	0.5309	0.5527	0.5796
Sorghum ($/bu.)	2.34	2.21	1.70	1.55	1.81	1.98	2.05
Soybeans ($/bu.)	7.35	6.47	5.00	4.30	4.63	5.30	5.39
Barley ($/bu.)	2.74	2.38	1.95	2.05	2.03	2.06	2.13
Rice ($/cwt)	9.96	9.64	8.75	6.00	7.40	8.79	8.85
PFC[b] Fixed Payment Rates:							
Corn ($/bu.)	0.2510	0.4860	0.5612	0.3630	0.3310	0.2665	0.2587
Wheat ($/bu.)	0.8740	0.6310	0.9869	0.6370	0.5804	0.4678	0.4542
Cotton ($/lb.)	0.0888	0.0763	0.1221	0.0788	0.0708	0.0571	0.0554
Sorghum ($/bu.)	0.3230	0.5440	0.6728	0.4350	0.3973	0.3202	0.3109
Barley ($/bu.)	0.3320	0.2770	0.4227	0.2710	0.2477	0.1998	0.1941
Rice ($/cwt)	2.7660	2.7100	4.3465	2.8200	2.6027	2.1051	2.0444
Annual Rate of Change for Input Prices Paid:							
Seed prices (%)	7.73	−0.64	0.02	1.78	1.77	1.54	1.75
Fertilizer prices (%)	−1.74	−3.17	−1.31	1.49	2.24	1.23	1.26
Chemical prices (%)	−2.01	0.83	−1.36	0.77	1.73	2.12	2.12
Machinery prices (%)	2.50	−1.60	−2.50	1.08	0.50	0.24	0.24
Fuel and lube prices (%)	0.49	−10.09	−2.25	2.08	3.23	1.66	1.70
Labor (%)	8.30	2.46	4.25	4.59	5.56	4.74	4.07
Other input prices (%)	−0.06	−1.85	0.84	1.68	1.82	1.90	2.06
Annual change in CPI[c] (%)	1.66	2.26	2.38	2.37	2.39	2.40	2.42
Annual Interest Rates:							
Long-Term (%)	7.69	7.17	7.42	7.62	7.61	7.66	7.64
Intermediate-Term (%)	8.44	8.50	8.62	8.58	8.49	8.50	8.43
Savings account (%)	4.44	4.50	4.62	4.58	4.49	4.50	4.43
Annual rate of change for U.S. land prices (%)	6.18	5.82	3.19	2.43	2.35	1.22	2.01

Source: Food and Agricultural Policy Research Institute (FAPRI), the University of Missouri-Columbia and Iowa State University, Ames, 1999.

[a] 1999 and 2000 FAPRI prices are adjusted for mid-July 1999 market conditions.

[b] PFC = production flexibility contract.

[c] CPI = Consumer Price Index

then the farm is borderline for economic and financial survival, and we classify it yellow. For probabilities greater than 40%, the color red is used, and it is our experience that the farm likely will not be sustainable over the long term without significant restructuring or dependence on off-farm wealth to subsidize the operation.

Results

The following presentation discusses the results by sector: feed grains/oilseeds, wheat, cotton, and rice. A brief description of the farms and an explanation of their abbreviated names is included in the appendix.

Feed Grain/Oilseed Farms

Probably one of the most telling indicators of the position of U.S. crop agriculture is revealed by the farms in the feed grain/oilseed complex (table 2). Eleven of the 13 farms are red in terms of cash flow over the 1999 to 2002 period. The remaining two farms are yellow.

 Seven of the feed grain farms likely will have to seek off-farm sources to refinance their cash flow deficits either from commercial lenders or off-farm wealth. In addition, seven of the farms have a high probability of losing real net worth by 2002. This financial picture is "telling" because the feed grain/oilseed complex has traditionally been our strongest crop sector. AFPC now classifies 11 of the 13 farms as struggling given current FAPRI price projections (five yellow and six red).

Wheat Farms

Nine of the 10 wheat operations are under substantial cash flow pressure from 1999 through 2002 (table 3). Eight of the 10, however, likely will be able to accommodate the cash flow deficits from farm reserves. Only two of the farms are projected to have trouble in maintaining firm wealth over the 1999–2002 period. AFPC classifies six of the 10 farms as struggling (four yellow and two red) based primarily on the large probability of having cash flow deficits.

Cotton Farms

Seven of the nine cotton farms are classified red, indicating a high probability of experiencing a cash flow deficit over the 1999–2002 period (table 4). The other two farms are yellow. Only the two California and the large Texas South Plains (TXSP3697) operations appear capable of handling the cash flow deficits internally. The four farms that have a very high probability of losing equity over the period are in the Texas Rolling Plains (TXRP2500), the Texas Coastal Bend (TXCB1700), and the two Tennessee operations. When considering all factors, AFPC classifies eight of the nine cotton farms as under substantial pressure (four yellow, four red). Only the large Texas Southern Plains farm is projected green over the period, but even then a growing probability of cash flow deficits is troubling.

Table 2. Summary of Economic Viability for Representative Feed Grain/Oilseed Farms, 1999–2002

Farm Name	Overall Financial Rating[a]	P(*Cash Flow Deficit*)[b]			P(*Refinance Deficit*)[c]			P(*Real Net Worth Declines*)[d]		
		1999[e]	2002[f]	Color[g]	1999	2002	Color	1999	2002	Color
IAG950[h]	Y	59	53	R	26	23	Y	1	9	G
IAG2400	Y	53	45	R	6	16	G	2	6	G
NEG800	R	95	99	R	95	99	R	54	74	R
NEG1575	R	72	82	R	54	74	R	16	30	Y
MOCG1700	Y	38	46	R	1	1	G	1	1	G
MOCG3300	Y	45	49	R	2	7	G	1	1	G
MONG1400	R	91	99	R	91	98	R	24	65	R
TXNP1600	R	55	63	R	16	28	Y	32	40	Y
TXNP5500	G	34	39	Y	10	5	G	15	5	G
TNG900	R	80	89	R	80	83	R	63	76	R
TNG2400	Y	43	58	R	4	15	G	14	23	Y
SCG1500	R	48	63	R	26	38	Y	32	34	Y
SCG3500	G	28	29	Y	1	1	G	1	1	G

[a] Overall financial rating of each farm is based on the "color" rating for the three probabilities (defined below in footnote g) and how the probabilities increase or decrease over the planning horizon. The overall color code is green when the farm is in a good financial condition, yellow when the farm is in a cautionary situation, and red is for a farm with a high probability of developing financial problems by year 2002.

[b] P(*Cash Flow Deficit*), the probability of a cash flow deficit, is the chance out of 100 that the farm's net cash farm income will be less than net cash outflows.

[c] P(*Refinance Deficit*), the probability of refinancing a deficit, is the chance out of 100 that the farm's cash flow deficit will exceed cash reserves, thus requiring the farm to borrow to meet the deficit.

[d] P(*Real Net Worth Declines*), the probability of the farm losing real net worth, is the chance out of 100 that the farm's refinancing of deficits becomes so severe that the farm will lose real net worth over the period.

[e] 1999 refers to the column of probabilities simulated for 1999. For example, a 59 in column 1999 for the IAG950 farm indicates there is a 59% chance of the farm having a cash flow deficit in 1999.

[f] 2002 refers to the column of probabilities simulated for 2002. The 53 in column 2002 for the IAG950 farm implies that the farm has a 53% chance of a cash flow deficit in year 2002.

[g] Color refers to the column of color rating codes associated with each of the probabilities. The letters R, Y, and G denote the "colors" red, yellow, and green, respectively, and just like a stop light, they indicate the farm has a problem (R), caution (Y), or is in good shape (G). The color codes are assigned based on their associated probabilities. G = green has less than a 20% chance of occurrence; Y = yellow has from 20%–40% chance of occurrence; R = red has over 40% chance of occurrence.

[h] The first two letters of the farm name indicate the state, the "G" notations denote grain, and the Arabic numbers represent the number of acres on the farm. (Descriptions of the farms are included in the appendix.)

Rice Farms

With low ($6/cwt) rice prices projected for 1999, all nine rice farms are expected to have a high probability of a cash flow deficit (table 5). Six of the nine are projected to continue to experience significant cash flow deficits through 2002. The

Table 3. Summary of Economic Viability for Representative Wheat Farms, 1999–2002

Farm Name	Overall Financial Rating[a]	P(*Cash Flow Deficit*)[b]			P(*Refinance Deficit*)[c]			P(*Real Net Worth Declines*)[d]		
		1999[e]	2002[f]	Color[g]	1999	2002	Color	1999	2002	Color
WAW1500[h]	R	79	67	R	1	35	Y	1	20	Y
WAW4250	Y	63	50	R	1	4	G	1	2	G
NDW1760	Y	51	34	Y	1	4	G	14	23	Y
NDW4850	G	56	36	Y	1	5	G	1	3	G
KSSW1385	Y	58	52	R	1	1	G	1	1	G
KSSW3180	G	20	11	G	1	1	G	1	1	G
KSNW2325	R	84	74	R	4	43	R	1	19	G
KSNW4300	Y	74	56	R	1	15	G	1	8	G
COW2700	G	54	23	Y	4	7	G	1	1	G
COW5420	G	46	27	Y	2	2	G	1	1	G

Note: For footnotes a, b, c, d, and g, refer to corresponding footnotes in table 2.

[e] 1999 refers to the column of probabilities simulated for 1999. For example, a 79 in column 1999 for the WAW1500 farm indicates there is a 79% chance of the farm having a cash flow deficit in 1999.

[f] 2002 refers to the column of probabilities simulated for 2002. The 67 in column 2002 for the WAW1500 farm implies that the farm has a 67% chance of a cash flow deficit in year 2002.

[h] The first two letters of the farm name indicate the state, the "W" notations denote wheat, and the Arabic numbers represent the number of acres on the farm. (Descriptions of the farms are included in the appendix.)

Table 4. Summary of Economic Viability for Representative Cotton Farms, 1999–2002

Farm Name	Overall Financial Rating[a]	P(*Cash Flow Deficit*)[b]			P(*Refinance Deficit*)[c]			P(*Real Net Worth Declines*)[d]		
		1999[e]	2002[f]	Color[g]	1999	2002	Color	1999	2002	Color
CAC2000[h]	Y	58	58	R	1	16	G	1	1	G
CAC6000	Y	39	51	R	1	5	G	1	2	G
TXSP1682	Y	53	55	R	53	37	Y	3	3	G
TXSP3697	G	3	23	Y	1	3	G	1	1	G
TXRP2500	R	75	92	R	70	86	R	52	75	R
TXBL1400	Y	37	37	Y	29	26	Y	1	1	G
TXCB1700	R	97	99	R	97	99	R	75	96	R
TNC1675	R	70	97	R	58	93	R	35	87	R
TNC3800	R	79	87	R	22	81	R	1	43	R

Note: For footnotes a, b, c, d, and g, refer to corresponding footnotes in table 2.

[e] 1999 refers to the column of probabilities simulated for 1999. For example, a 58 in column 1999 for the CAC2000 farm indicates there is a 58% chance of the farm having a cash flow deficit in 1999.

[f] 2002 refers to the column of probabilities simulated for 2002. The 58 in column 2002 for the CAC2000 farm implies that the farm has a 58% chance of a cash flow deficit in year 2002.

[h] The first two letters of the farm name indicate the state, the "C" notations denote cotton, and the Arabic numbers represent the number of acres on the farm. (Descriptions of the farms are included in the appendix.)

Table 5. Summary of Economic Viability for Representative Rice Farms, 1999–2002

Farm Name	Overall Financial Rating[a]	P(*Cash Flow Deficit*)[b]			P(*Refinance Deficit*)[c]			P(*Real Net Worth Declines*)[d]		
		1999[e]	2002[f]	Color[g]	1999	2002	Color	1999	2002	Color
CAR424[h]	R	98	89	R	47	84	R	8	17	G
CAR1365	R	96	61	R	37	45	R	8	19	G
TXR2118	G	75	19	G	1	1	G	1	2	G
TXR3750	Y	84	53	R	14	24	Y	5	8	G
MOR1900	R	99	99	R	99	99	R	95	99	R
MOR4000	R	89	95	R	63	94	R	16	54	R
ARR2645	G	40	10	G	1	1	G	1	1	G
ARR3400	G	39	2	G	1	1	G	1	1	G
LAR1100	R	97	99	R	73	99	R	79	91	R

Note: For footnotes a, b, c, d, and g, refer to corresponding footnotes in table 2.

[e] 1999 refers to the column of probabilities simulated for 1999. For example, a 98 in column 1999 for the CAR424 farm indicates there is a 98% chance of the farm having a cash flow deficit in 1999.

[f] 2002 refers to the column of probabilities simulated for 2002. The 89 in column 2002 for the CAR424 farm implies that the farm has an 89% chance of a cash flow deficit in year 2002.

[h] The first two letters of the farm name indicate the state, the "R" notations denote rice, and the Arabic numbers represent the number of acres on the farm. (Descriptions of the farms are included in the appendix.)

two diversified Arkansas farms appear in the best position to handle the economic situation throughout the period. Overall, AFPC classified six of the nine farms as struggling (five red, one yellow).

Summary

All crop sectors (37 of 41 representative farm operations) are projected to be under substantial cash flow pressure from 1999–2002. These conditions are a result of low projected commodity prices and in some cases, primarily in the South, from carryover debt caused by adverse weather in 1996 and 1998. Over 50% of the farms (21 of 41) likely will have to refinance these cash flow deficits from off-farm sources.

Approximately 40% (16 of 41) of the farms are projected to experience a high probability of losing real equity over the 1999–2002 period. Because FAPRI projects annual increases in land values that exceed the projected rate of inflation through 2001, the projected real increases in real estate values offset some of the liquidity problems facing the majority of the representative farms.

Herein lies the current problem. When forecasting through the life of the 1996 Farm Bill, the representative crop farms are assessed by AFPC to be in the weakest condition observed over the last 10–15 years (including the 1980s) for liquidity and the related need to refinance. Given stable land values, our representative farms have

a greater ability to sustain net worth than in the 1980s. Therefore, addressing the shorter term liquidity needs of U.S. program crop producers appears to be a greater concern than declining collateral.

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Appendix:
Characteristics of Representative Farms

Characteristics of Panel Farms Producing Feed Grains

IAG950   A 950-acre northwestern Iowa (Webster County) moderate size grain farm that plants 475 acres of corn, and 475 acres of soybeans. The farm receives 58% of its receipts from corn. The farm owns 25% of its cultivated acreage.

IAG2400   A 2,400-acre northwestern Iowa (Webster County) large grain farm that plants 1,200 acres of corn, and 1,200 acres of soybeans. The farm generates 61% of its receipts from corn. The farm owns 16% of its cultivated acreage.

NEG800   An 800-acre south central Nebraska (Phelps County) moderate size, 100% irrigated grain farm that plants 770 acres of corn, and 30 acres of alfalfa. The farm also has 100 breeding cows. The farm generates 87% of its receipts from corn. Owned land accounts for 50% of cultivated and pasture acres.

NEG1575   A 1,575-acre south central Nebraska (Phelps County) large, 100% irrigated grain farm that plants 1,575 acres of corn. The farm generates about 97% of its receipts from corn. The farm owns 66% of the cultivated acres.

MOCG1700 A 1,700-acre central Missouri (Carroll County) moderate size grain farm with 250 acres of wheat, 550 acres of corn, and 700 acres of soybeans. This farm is located in the Missouri River bottom and supplies feed to the livestock producers in the region at a premium to other areas of Missouri. Corn generates 55% of the farm's receipts. One-half of the cultivated acres are owned.

MOCG3300 A 3,300-acre central Missouri (Carroll County) large grain farm with 100 acres of wheat, 1,319 acres of corn, and 1,881 acres of soybeans. This farm is located in the Missouri River bottom and supplies feed to the livestock producers in the region at a premium to other areas of Missouri. The farm generates about 48% of its total revenue from corn. The farm owns 48% of the total cultivated acres.

MONG1400 A 1,400-acre northern Missouri (Nodaway County) diversified grain farm with 600 acres of corn, 600 acres of soybeans, and 200 acres of hay. The farm also has 200 breeding cows. The farm generates about 68% of its total revenue from corn and soybeans, and 28% from cattle. The farm owns 50% of its cultivated and pasture acres.

TXNP1600 A 1,600-acre Northern High Plains of Texas (Moore County) moderate size, 100% irrigated grain farm with 642 acres of wheat, 280 acres of sorghum, 470 acres of corn, and 208 acres in fallow. The farm generates 70% of its total receipts from feed grains. The farm owns 20% of the cultivated acres.

TXNP5500 A 5,500-acre Northern High Plains of Texas (Moore County) large, 85% irrigated grain farm with 1,675 acres of irrigated wheat, 800 acres of dryland wheat in the corners of all pivot-irrigated fields, 275 acres of irrigated sorghum, 2,200 acres of irrigated corn, and 550 acres in fallow. The farm generates about 74% of its receipts from feed grains. The farm owns 20% of the land.

TNG900 A 900-acre western Tennessee (Henry County) grain and soybean farm with 400 acres of corn, 500 acres of soybeans, 200 acres of wheat, and 250 acres of hay. The farm generates about 77% of its receipts from corn and soybeans. The farm owns 23% of the cultivated and pasture acres.

TNG2400 A 2,400-acre western Tennessee (Henry County) grain and soybean farm with 1,200 acres of corn, 1,200 acres of soybeans, and 600 acres of wheat. The farm generates about 85% of its receipts from corn and soybeans. The farm owns 20% of the cultivated acres.

SCG1500 A 1,500-acre South Carolina (Clarendon County) moderate size grain farm with 750 acres of double-cropped wheat and soybeans, 600 acres of corn, and 150 acres of full-season soybeans. The farm generates about 64% of its total receipts from corn and soybeans. This farm enjoys high returns on double-cropped acreage, but timing will not allow more than 750 acres. The farm owns one-third of the total cultivated acres.

SCG3500   A 3,500-acre South Carolina (Clarendon County) large grain farm with 1,670 acres of double-cropped wheat and soybeans, 350 acres of full-season soybeans, 350 acres of cotton, and 1,130 acres of corn. This farm enjoys high returns on double-cropped acreage, but timing is a limiting factor. The farm generates 57% of its receipts from corn and soybeans. The farm owns 40% of the cultivated acres.

Characteristics of Panel Farms Producing Wheat

WAW1500   A 1,500-acre southeastern Washington (Whitman County) moderate size grain farm that plants 900 acres of wheat, 300 acres of barley, and 300 acres of peas. Disease problems require a rotation that includes a minimum amount of barley and peas to maintain wheat yields. The farm generates 71% of its receipts from wheat. One-half of the cultivated acres are owned.

WAW4250   A 4,250-acre southeastern Washington (Whitman County) large size grain farm that is harvesting 2,763 acres of wheat, 200 acres of barley, and 1,287 acres of peas. Disease problems require a rotation that includes a minimum amount of barley and peas in order to maintain wheat yields. Winter and spring wheat account for 78% of receipts. The farm owns 50% of the cultivated acres.

NDW1760   A 1,760-acre south central North Dakota (Barnes County) moderate size grain farm that has 704 acres of wheat, 176 acres of barley, 176 acres of corn, 352 acres of soybeans, and 352 acres of sunflowers. Rotation and disease problems will not allow more than 25% of the acres to be planted to sunflowers. The farm receives about 42% of receipts from wheat. The farm owns 10% of the cultivated acres.

NDW4850   A 4,850-acre south central North Dakota (Barnes County) large grain farm that plants 2,585 acres of wheat, 470 acres of barley, 705 acres of soybeans, 940 acres of sunflowers, and has 150 Conservation Reserve Program (CRP) acres. Rotation and disease problems will not allow more than 25% of the acres to be planted to sunflowers. Wheat accounts for about 52% of the farm's total gross receipts. The farm owns 35% of total cultivated acres.

KSSW1385   A 1,385-acre south central Kansas (Sumner County) moderate size grain farm that plants 928 acres of wheat, 138 acres of soybeans, and 319 acres of grain sorghum. The farm generates about 63% of its receipts from wheat. The farm owns 35% of the cultivated acres.

KSSW3180   A 3,180-acre south central Kansas (Sumner County) large grain farm, harvesting 2,258 acres of wheat, 652 acres of grain sorghum, 56 acres of corn, 87 acres of soybeans, and 127 acres of hay. The farm also has 67 breeding cows. The farm generates 67% of its receipts from wheat. The farm owns 10% of the cultivated acres.

KSNW2325 A 2,325-acre northwestern Kansas (Thomas County) moderate size grain farm that plants 775 acres of wheat, 155 acres of grain sorghum, 620 acres of corn, and has 775 acres in fallow. The farm generates 41% of its receipts from wheat. The farm owns 40% of the cultivated acres.

KSNW4300 A 4,300-acre northwestern Kansas (Thomas County) large grain farm, harvesting 1,948 acres of wheat, 465 acres of sorghum, 549 acres of corn, 262 acres of sunflowers, 75 acres of hay, and has 1,001 acres in fallow. The farm also has 100 breeding cows. The farm generates about 47% of its receipts from wheat. The farm owns 26% of the cropland farmed.

COW2700 A 2,700-acre northeast Colorado (Washington County) moderate size grain farm that plants 1,127 acres of wheat, 608 acres of millet, and 446 acres of corn, and will leave 519 acres fallow. The farm generates 57% of its receipts from wheat. The farm owns 31% of the cultivated acres.

COW5420 A 5,420-acre northeast Colorado (Washington County) large size grain farm that plants 1,900 acres of wheat, 500 acres of corn, 1,300 acres of millet, and has 640 acres in CRP and 1,100 acres in fallow. Wheat produces 59% of the farm's gross revenue. The farm owns 55% of the cultivated acres.

Characteristics of Panel Farms Producing Cotton

CAC2000 A 2,000-acre central San Joaquin Valley, California (Kings County), moderate size cotton farm that plants 600 acres of cotton, 600 acres of wheat, 400 acres of corn, and 600 acres of hay. The farm generates 46% of its gross income from cotton. Owned land accounts for 50% of total cultivated acres.

CAC6000 A 6,000-acre central San Joaquin Valley, California (Kings County), large cotton farm harvesting 3,000 acres of cotton, 1,500 acres of vegetables, 720 acres of wheat, 240 acres of corn, and 300 acres of hay. Vegetables on this farm vary from year to year depending on the price of the particular vegetable; however, the returns to this 1,500 acres remain relatively stable over time. Cotton generates about 70% of this farm's receipts. The farm owns 90% of the cropped acres.

TXSP1682 A 1,682-acre Texas Southern High Plains (Dawson County) moderate size cotton farm. The farm plants 1,205 acres of cotton (886 dryland and 319 irrigated), 196 acres of peanuts, and has 183 acres in CRP. This farm is just now starting to adopt the irrigation practices of its larger counterpart (TXSP3697). The farm generates 66% of its receipts from cotton. The farm owns 36% of the cultivated acres.

TXSP3697 A 3,697-acre Texas Southern High Plains (Dawson County) large cotton farm. The farm plants 2,665 acres of cotton (2,095 dryland and 570

irrigated), 285 acres of peanuts, and has 214 acres in CRP. Cotton generates 79% of this farm's receipts. The farm owns 44% of the cropped acres.

TXRP2500 A 2,500-acre Texas Rolling Plains (Jones County) cotton farm that plants 1,240 acres of cotton, and 825 acres of wheat. About 77% of this farm's receipts are derived from cotton. This farm represents the consolidation of two previous representative farms. The farm owns 16% of cultivated acres.

TXBL1400 A 1,400-acre Texas Blacklands (Williamson County) moderate size cotton and grain farm. The farm has 350 acres of cotton, 400 acres of sorghum, 550 acres of corn, and 100 acres of wheat. This farm also has 50 breeding cows which are pastured on rented land that cannot be cropped. Cotton generates 25% of the farm's receipts. The farm owns 11% of cultivated acres.

TXCB1700 A 1,700-acre Texas Coastal Bend (San Patricio County) cotton farm. The farm has 765 acres of cotton, and 935 acres of grain sorghum. Severe disease problems force this farm to plant, at a minimum, 50% of the land to grain sorghum. About 45% of this farm's receipts are from cotton. Owned land accounts for 18% of total cultivated acres.

TNC1675 A 1,675-acre southwest Tennessee (Fayette County) cotton farm, with 838 acres of cotton, 670 acres of soybeans, and 168 acres of corn. The farm generates about 50% of its cash receipts from cotton. The farm owns 13% of the cultivated acres.

TNC3800 A 3,800-acre southwest Tennessee (Haywood County) cotton farm, developed in 1998, with 2,508 acres of cotton, 760 acres of soybeans, 300 acres of wheat, and 532 acres of corn. The farm generates about 61% of its cash receipts from cotton. The farm owns 40% of the cropped acres.

Characteristics of Panel Farms Producing Rice

CAR424 A 424-acre Sacramento Valley, California (Sutter and Yuba Counties), moderate size rice farm that plants 400 acres of rice. The farm generates 94% of its gross income from rice. The farm owns 50% of the cultivated acres.

CAR1365 A 1,365-acre Sacramento Valley, California (Sutter and Yuba Counties), large rice farm that plants 1,265 acres of rice. The farm generates about 98% of its gross income from rice. The farm owns 38% of the cultivated acres.

TXR2118 A 2,118-acre west of Houston, Texas (Wharton County), moderate size rice farm that harvests 600 acres of first-crop rice, and 510 acres of

ratoon rice. The farm receives 98% of its gross receipts from rice. The farm owns 15% of the cultivated acres.

TXR3750

A 3,750-acre west of Houston, Texas (Wharton County), large rice farm that harvests 1,500 acres of first-crop rice, 1,275 acres of ratoon rice, and 200 acres of hay. The farm also has 200 breeding cows. About 95% of the farm's gross receipts are from rice. The farm owns 45% of the cultivated acres.

MOR1900

A 1,900-acre southeastern Missouri (Butler County) moderate size rice farm with 616 acres of rice, 650 acres of soybeans, and 633 acres of corn. Rice accounts for 52% of this farm's receipts. The farm owns 20% of the cultivated acres.

MOR4000

A 4,000-acre southeastern Missouri (Butler County) large rice farm with 1,710 acres of rice, 800 acres of soybeans, 1,250 acres of corn, and 240 acres of cotton. About 59% of this farm's receipts are generated from rice. The farm owns 50% of the cultivated acres.

ARR2645

A 2,645-acre Arkansas (Arkansas County) moderate size rice farm with 175 acres of medium-grain rice, 512 acres of long-grain rice, 958 acres of soybeans, 230 acres of corn, and 450 acres of wheat. About 54% of the farm's receipts come from rice. The farm owns 30% of the cultivated acres.

ARR3400

A 3,400-acre Arkansas (Arkansas County) moderate size rice farm with 325 acres of medium-grain rice, 975 acres of long-grain rice, 1,700 acres of soybeans, and 500 acres of wheat. About 65% of the farm's receipts come from rice. The farm owns 30% of the cultivated acres.

LAR1100

A 1,100-acre Louisiana (Jefferson Davis, Acadia, and Vermilion Parishes) moderate size rice farm harvesting 189 acres of medium-grain rice, 351 acres of long-grain rice, 362 acres of soybeans, and with 198 acres in fallow. About 85% of this farm's receipts are generated by rice. The farm owns 4.5% of the cultivated acres.