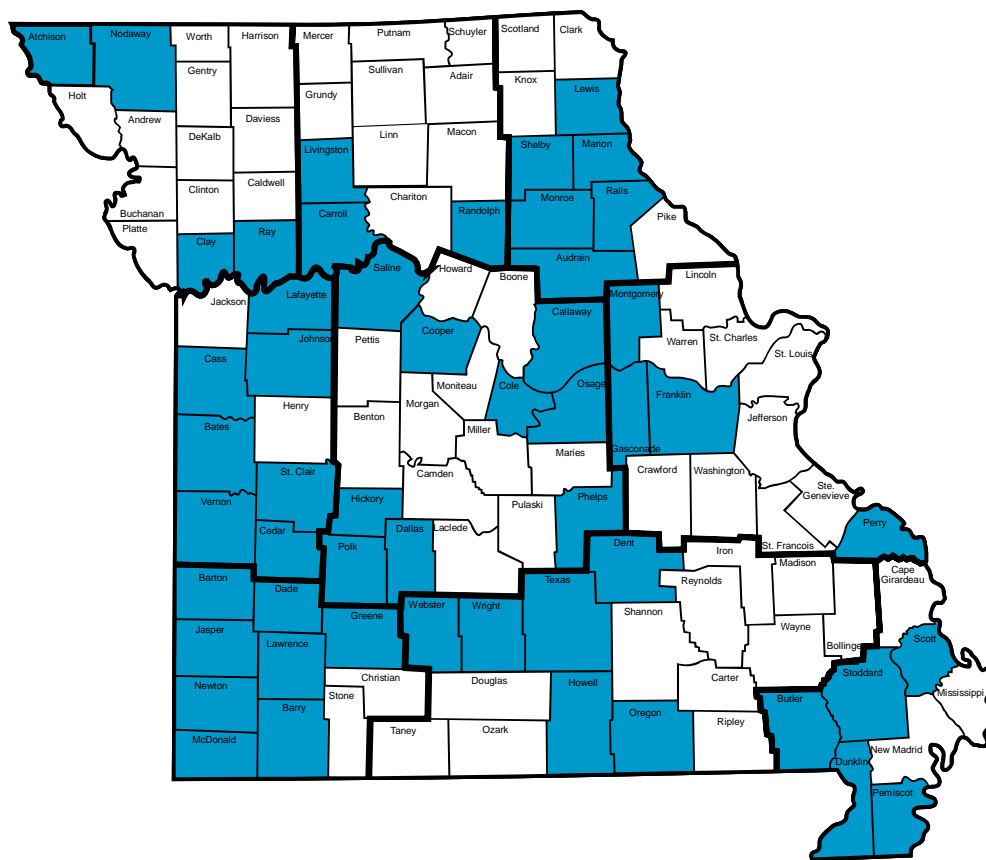


# Baseline Outlook for Missouri Representative Farms 2005-2009



Shaded areas of the cover page map are the home counties of representative farm panel members. Bolded lines on the map are boundaries for USDA-Missouri Ag Statistics Service crop reporting districts which correspond with rep farm regions in this report.

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## Executive Summary

What a difference a year makes! It's old news that 2004 was a phenomenal year virtually across the board for Missouri farms. The economic impacts of strong yields and production, and supportive government provisions are apparent in this report. A year ago, nearly one quarter of the rep farms had a negative cash balance—that is, they had extended short term credit due to prior year cash deficits. Drought was the major factor for this development. These farms needed a good year and they got it. In this baseline, all but one of the farms enters the projection period with a positive beginning cash balance built over the previous three years.

Also evident in this report is the cyclical nature of agriculture. Our estimates of future prices, based on economic fundamentals, reflect the build up of commodity stocks, particularly for soybeans. The gist of the baseline is that Missouri farms are going to be carrying cash into what looks to be some leaner years.

Input costs have climbed substantially in the last year or so, particularly for the cropping operations that depend heavily on commercial fertilizers. Our estimates hold fertilizer and fuel costs at a relatively high level through the outlook period.

The beef price cycle also has a strong influence on the rep farms since 16 farms have a beef enterprise of some sort. After some very good price years, our projections indicate that over the next five years beef price will decline and therefore risk increases for these farms.

One method of summarizing the outlook is with risk scores based on the probability of cash flow deficit, as shown in Figure 1 on the following page. We don't pretend to be able to predict the future, but the analysis does quantify the likelihood of certain futures unfolding based on what was known in early 2005. The primary concern in this outlook is cash flow, not equity, as land values are predicted to continue climbing, but at a slower rate.

We estimate that over the next two years, fourteen (35 percent) of the rep farms are projected to meet cash needs and build wealth measured in cash. These farms are classified as low risk and colored green in the charts. Farms in this risk group tend to be some of the

larger rep farms. Some have contracts to share price risk.

Near term, the hog and dairy farms have the least cash deficit risk overall, but all rep farm types have one or several farms in the low risk category with the exception of the broiler farms still carrying debt against houses.

On the other end of the risk spectrum are farms with high or severe cash deficit risk, colored orange and red. Twelve, or 30 percent of the rep farms fit into these categories, meaning they are more likely to have a year of cash shortage than a cash surplus. Reasons for this are varied, but a major factor is the size of the farms relative to the financial needs of a household.

For the fourteen farms facing moderate levels of cash risk, colored yellow, solvency is not an issue, but some operational changes may be indicated to reduce cash flow pressure to a more manageable level. This applies to more than a third of the total rep farms.

For the intermediate term, 2007 through 2009, risk generally climbs for the set of 40 farms (Figure 2), indicating that some farms in a strong cash position now will soon be facing increased risk. Across the two time periods, 16 farms shift into a higher risk category and nine farms shift into a lower risk category.

Readers should be careful to observe the assumptions that underlie the financial estimates. A major one is that farm policy provisions and funding carry forward as set in the farm bill of 2002. We know that the farm bill is set to expire before the end of the projection period and that budget cuts in some form or another are likely. These risk factors are not built into the baseline, but will be analyzed by FAPRI using the foundation presented herein.

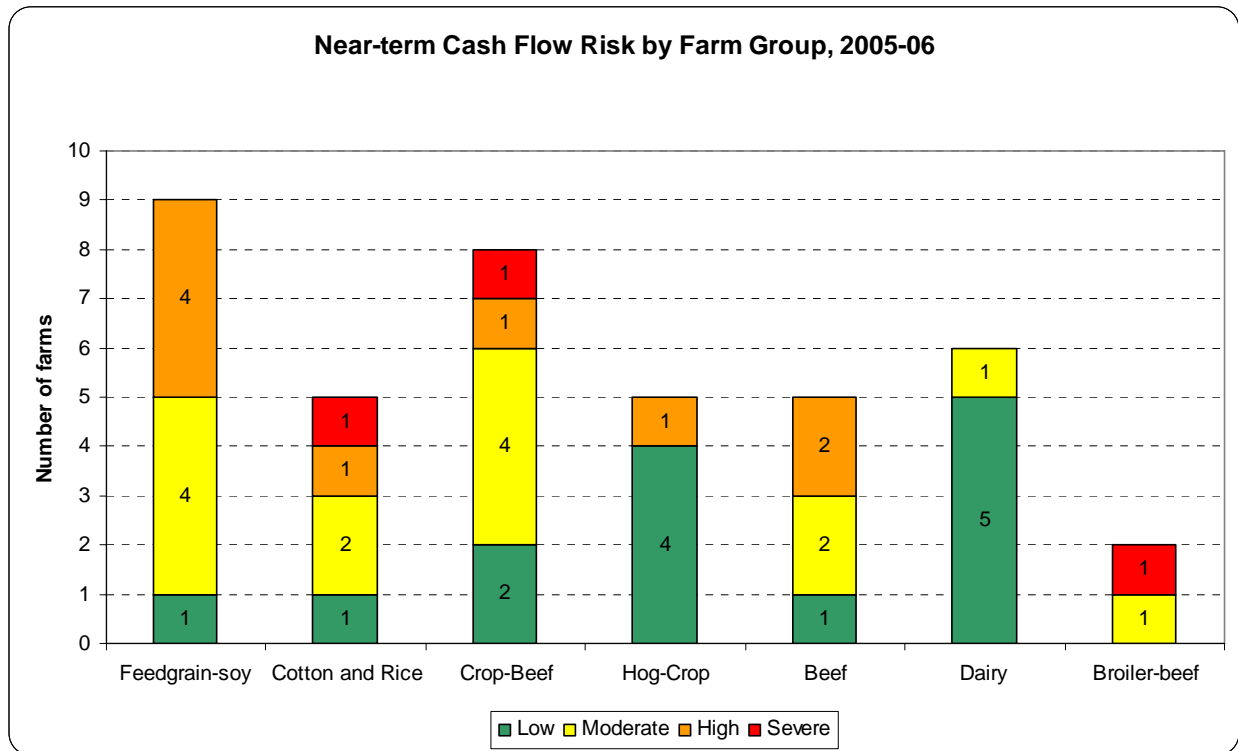


Figure 1. Near term risk scores for the 40 representative farms

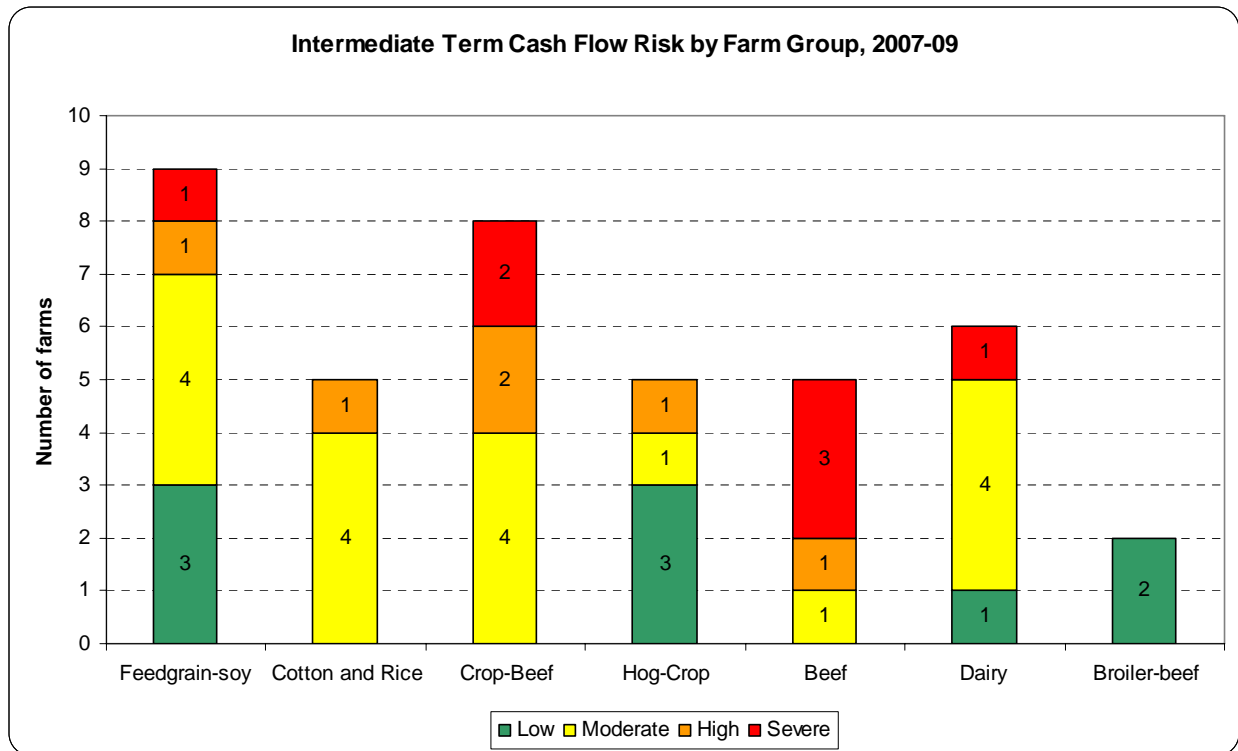


Figure 2. Intermediate term risk scores for the 40 representative farms

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## **Acknowledgement**

This work would not be possible without the cooperation of the 200 plus producers and facilitators who voluntarily participate. We are grateful for their willingness to collectively share with us how Missouri farm businesses are really operated.

## Report Readers' Guide

This report presents a five-year outlook for the representative farms under provisions of the Food Security and Rural Investment Act of 2002. Throughout this report, farms are identified by number and grouped by primary sources of income. Table 1 summarizes receipts and operator assets for the rep farms, by type of production.

There are 40 farms in the database, spanning a wide range of sizes. Projected annual receipts range from \$106,000 to \$4,314,000. Ten of the rep farms (25 percent) fit the definition of a small farm suggested by USDA with less than \$250,000 in agricultural product sales. All of the "small" rep farms have beef cattle.

The baseline simulates financial performance over eight calendar years beginning in 2002. The historical period includes 2002-04. Financial projections are for the years 2005-2009.

Individual farms are described in the tables that begin on page 4. Production and size

characteristics are shown on the left page and financial statistics (historical and projected) are listed on the right page. Farms are numbered sequentially at the top of the page. Several items are footnoted and explained in the table reference notes on page 35. The tables for each farm type group are preceded by a synopsis with specific points highlighted for all of the farms.

Table 1. Summary of Missouri rep farms database

Farm Type	Number of Farms	Total Receipts (\$1000)		Operator Assets (\$1000)	
		Min.	Max.	Min.	Max.
Feedgrain-soy	9	283	993	910	6038
Cotton and rice	5	568	1732	1009	8826
Crop-beef	8	151	667	687	4157
Pork-crop	5	306	4314	1424	6571
Beef	5	106	243	1138	2924
Dairy	6	258	1255	975	3190
Broiler-beef	2	142	204	961	1002
<b>All farms</b>	<b>40</b>	<b>106</b>	<b>4314</b>	<b>687</b>	<b>8826</b>

To find results by region rather than farm type, refer to Table 2 for a geographical sort. Regions correspond to Missouri Ag Statistics Service cropping districts as shown on the cover map.

It is important to recognize that each farm is a unique entity. Exercise caution when comparing across farms.

Table 2. Representative farm identification numbers, by region

Farm Type	North	North	North	West	East	South	South	South
	West	Central	East	Central	Central	West	Central	East
Feedgrain-soy	1	3	5	8		9		
	2	4	6					
			7					
								10
								11
								12
								13
Cotton and rice								14
Crop-beef	15	16	17	19	20	21		
			18			22		
Pork-crop			23	24	25	27		
					26			
Beef					30		31	33
							32	34
Dairy					33		34	38
							35	
							36	
							37	
Broiler-beef							39	
							40	
<b>Regional Count</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>11</b>	<b>5</b>

### Feedgrain-soy Farms

This group of nine farms ranges in size from 1100 to 3630 croplable acres. The share of planted acres is led by soybeans (54 percent), then corn (38 percent), wheat (5 percent), and grain sorghum (3 percent). Operator land tenure ranges from 23 to 62 percent. Share lease arrangements exist for all of these farms and most also have cash lease agreements. There has been a tendency for leased acres to shift from share to cash arrangements.

To generalize costs and returns per acre for this set of farms in the 2002-04 period: Total receipts, including government payments averaged \$276. Average operating costs per acre was \$167. The average cash costs of income taxes, machinery replacement, and debt reduction for the same period was \$78

per acre. Thus, on a per acre basis across the nine farms, net return available for owner withdrawal was approximately \$31 per acre of cropland.

For the five year projection period, receipts per acre are expected to average about \$281. Operating costs are \$170 and cash expenses for income taxes, machinery replacement and debt reduction are \$76 per acre. Thus, on a per acre basis across the nine farms, net return available for owner withdrawal is expected to be about \$35 per acre of cropland.

The outlook shows considerable cash flow pressure for a majority of the farms. Compared to year ago projections cash risk has increased and term debt capacity has declined.

Table 3. Cash flow risk score, feedgrain-soy rep farms

Farm num	Region	Crop acres	2005-06	2007-09
1	NW	2350	Yellow	Green
2	NW	2300	Orange	Yellow
3	NC	1700	Yellow	Yellow
4	NC	3630	Green	Green
5	NE	2240	Yellow	Yellow
6	NE	1300	Orange	Yellow
7	NE	1165	Orange	Red
8	WC	1800	Orange	Orange
9	SW	1100	Yellow	Green

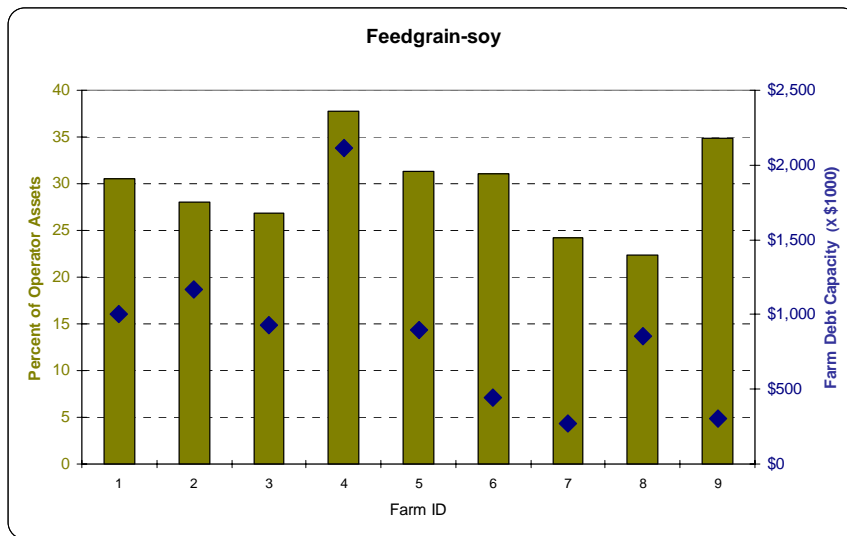


Figure 3. Estimated term debt capacity for feedgrain-soy farms



## Spotlights

### Farm 1

This northwest farm plants 2350 acres of corn and soybeans in a 50-50 rotation. Returns to family living were negative in 2002 and 2003 due to drought conditions. However, above average production in 2004 result in a positive cash position entering 2005. Entering 2005, the farm has cash reserves equivalent to 21 percent of operating expenses. At trend yields and projected prices throughout the forecast period (2005-2009), the farm faces less cash flow pressure than in previous years.

### Farm 2

This Missouri River bottom farm plants 2300 acres, one-quarter corn and three quarters soybeans. Like farm 1, above average production in 2004 allows the farm to retire short term debt and build a modest cash reserve (23.1 percent of operating expenses). Returns to family living exceed minimum levels of owner withdrawal in the last three years of the projection period (2005-2009). Cash flow risk pressure improves from high to moderate.

### Farms 3 and 4

These two Carroll County farms are similar in most respects except for the number of acres farmed – 1700 and 3630 acres. The smaller farm does have slightly higher expenses per acre. Yields have remained strong helping these farms to build some cash reserve entering 2005. The 1700 acre farm has 38 percent of operating expenses on hand entering 2005 while the 3630 acre farm has almost 81 percent. The 1700 acre farm has a higher (moderate) risk rating than the large farm (low).

### Farm 5

This northeast farm with 2240 acres of cropland experienced low corn yields in 2001 - 2003. Higher yields for corn and soybeans in 2004 allow the farm to retire short term debt and build a modest cash reserve of about 30 percent of 2005 operating expenses. The farm

is expected to cover minimum family living throughout the projection period (2005-2009).

### Farm 6

This northeast farm with 1300 crop acres raises corn, sorghum, and beans. The farm had some lean years in 2002 and 2003, but it too follows the trend of the majority of farms in this category that had much higher yields in 2004. The farm averages \$35,300 per year return to family living throughout the projection period. This is almost twice as high as 2002 and 2003. The risk rating improves from the near term to intermediate term.

### Farm 7

This farm raises crops on 1165 acres in the northeast region—most of it under share-lease agreements. The operation also owns two shares in a successful ethanol processing plant. This farm continues to face high to severe cash risk pressure. It has the highest cost to receipts ratio of this group at 77 percent. This farm is unable to keep up with rising costs.

### Farm 8

This Lafayette County farm crops corn and soybeans on 1800 acres and owns specialized equipment for custom spraying. The farm faces some significant cost to replace equipment during the projection period (2005-2009). Higher principle and interest costs in 2006-2009 cause the farm to receive a high risk rating score. This also results in an average return to family living of \$21,300.

### Farm 9

This 1100 acre farm in Barton County is the smallest farm in the feedgrain-soy group. The farm is in a grain deficit area and receives a premium price for corn. The trend in the area has been to plant less sorghum and more corn to meet the demands of the poultry industry in southwest Missouri. This farm had some low yields in 2003 but is able to retire short term debt in 2004 with higher yields. The farms' risk rating improves from moderate to low.

Table 4. **Feedgrain-soy** farms, characteristics and financial outlook

Code	NWFG2350	NWFG2300	NCFG1700	NCFG3630	NEFG2240
Farm number	1	2	3	4	5
Region	Northwest	Northwest	North Central	North Central	Northeast
County	Atchison	Ray	Carroll	Carroll	Marion
Cropland	<b>2350</b>	<b>2300</b>	<b>1700</b>	<b>3630</b>	<b>2240</b>
Acres owned	1050	1230	1020	1600	810
Acres leased	1300	1070	680	2030	1430
Nonproductive acres owned	150	68	80	160	70
Total acres operated	2500	2368	1780	3790	2310
Operator owned (%)	48	55	62	46	38
Cash leased (%)	21		7		41
Share leased (%)	31	45	31	54	21
<b>Cash receipt sources <sup>a</sup></b>					
Share of total					
All crops (%)	100	100	100	100	100
Custom work (%)					
<b>Planted acres <sup>b</sup></b>					
Total acres	<b>2350</b>	<b>2300</b>	<b>1700</b>	<b>3630</b>	<b>2240</b>
Double crop acres					
Share of total					
Corn (%)	50	24	49	45	49
Sorghum (%)					
Wheat (%)			2	3	2
Soybeans (%)	50	76	49	52	49
<b>Crop yields <sup>c</sup></b>					
Corn, bu					
2000	125	155	158	178	155
2001	132	171	160	155	117
2002	73	124	147	170	95
2003	112	136	137	172	115
2004	186	205	200	205	175
Sorghum, bu					
2000					
2001					
2002					
2003					
2004					
Wheat, bu					
2000			48	58	58
2001			60	64	56
2002			55	54	63
2003			70	70	66
2004			40	60	55
Soybeans, bu					
2000	42	48	41	39	40
2001	43	47	48	47	38
2002	36	39	49	53	41
2003	28	34	33	39	43
2004	62	62	55	60	55

Table 4. **Feedgrain-soy** farms, characteristics and financial outlook (continued)

Code	NWFG2350	NWFG2300	NCFG1700	NCFG3630	NEFG2240
Farm number	1	2	3	4	5
Near term cash risk outlook <sup>d</sup>	Moderate	High	Moderate	Low	Moderate
Intermediate term cash risk outlook	Low	Moderate	Moderate	Low	Moderate
Average operator assets (\$1000)	3535	4366	3627	6038	3036
Average return to operator assets (%)	8.3	6.7	6.7	9.2	6.9
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	20	20	20	20	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	31	28	27	38	31
Cropland value in 2002 (\$ per acre)	1879	2080	2042	1905	1922
Average operating expense/receipts (%)	62.8	54.3	55.1	48.1	67.8
Average government payments/receipts (%)	14.5	13.3	14.4	13.9	14.9
Government payments (\$1000) <sup>g</sup>					
2002	34.1	25.1	27.1	49.1	36.4
2003	83.2	25.1	27.5	50.0	37.0
2004	132.2	82.5	102.4	184.1	133.1
2005	105.5	89.1	82.2	154.5	108.4
2006	95.4	78.4	74.9	140.2	98.2
2007	88.8	69.4	69.7	129.7	92.1
2008	85.7	66.0	67.2	124.7	88.9
2009	80.4	60.5	63.5	117.4	83.5
Average	91.1	72.7	71.5	133.3	94.2
Total cash receipts (\$1000) <sup>a</sup>					
2002	416.1	446.6	432.9	876.4	497.1
2003	543.6	467.7	396.1	940.7	577.2
2004	936.6	779.0	658.2	1,244.0	851.5
2005	629.9	548.5	492.0	953.9	630.8
2006	643.1	561.5	502.0	973.9	645.1
2007	653.6	572.7	517.6	1,004.7	653.9
2008	664.7	583.4	518.5	1,006.9	666.5
2009	671.8	587.9	529.1	1,027.7	672.4
Average	652.6	570.8	511.8	993.4	653.7
Net cash farm income (\$1000) <sup>h</sup>					
2002	36.7	164.3	164.3	393.2	97.6
2003	155.4	178.7	130.7	470.9	167.9
2004	523.6	480.9	376.6	763.3	427.1
2005	234.2	252.2	213.7	482.8	205.5
2006	251.5	265.6	225.8	504.9	222.4
2007	265.7	278.8	245.3	542.3	234.5
2008	272.0	288.6	246.8	549.7	248.8
2009	277.4	287.6	258.6	570.1	253.4
Average	260.2	274.6	238.0	530.0	232.9
Return to family living (\$1000) <sup>i</sup>					
2002	-50.0	15.4	59.4	114.5	25.3
2003	-66.9	-21.9	30.1	145.4	29.3
2004	121.3	107.8	153.3	307.1	176.3
2005	81.5	33.3	78.4	171.1	78.5
2006	87.0	36.1	73.4	152.2	77.8
2007	122.2	65.8	78.6	214.1	87.6
2008	103.8	72.9	72.4	228.6	92.3
2009	101.7	56.6	74.4	230.6	79.7
Average	99.2	52.9	75.5	199.3	83.2
Average owner withdrawal assumed (\$1000) <sup>j</sup>	38.5	41.8	50.8	67.8	49.6
Beginning cash, 2005 (\$1000) <sup>k</sup>	85.09	68.51	105.63	379.77	129.77
Beginning cash/operating expenses (%) <sup>k</sup>	21.5	23.1	38.0	80.6	30.5
Probability of a cash flow deficit (%) <sup>l</sup>					
2005	26.8	54.4	25.2	13.2	38.8
2006	27.0	52.2	29.6	19.0	39.6
2007	19.4	23.6	32.2	4.8	36.8
2008	24.8	20.6	37.0	3.8	36.4
2009	24.8	30.6	37.4	5.8	37.2

Table 4. **Feedgrain-soy farms**, (continued)

Code	NEFG1300	NEFG1165	WCFG1800	SWFG1100
Farm number	6	7	8	9
Region	Northeast	Northeast	West Central	Southwest
County	Audrain	Shelby	Lafayette	Barton
Cropland	<b>1300</b>	<b>1165</b>	<b>1800</b>	<b>1100</b>
Acres owned	390	235	875	360
Acres leased	910	930	925	740
Nonproductive acres owned	40	47	197	41
Total acres operated	1340	1212	1997	1141
Operator owned (%)	32	23	54	36
Cash leased (%)	34	26	36	32
Share leased (%)	34	51	10	32
<b>Cash receipt sources <sup>a</sup></b>				
Share of total				
All crops (%)	100	93	95	100
Custom work (%)		7	5	
<b>Planted acres <sup>b</sup></b>				
Total acres	<b>1300</b>	<b>1398</b>	<b>1800</b>	<b>1465</b>
Double crop acres		233		365
Share of total				
Corn (%)	25	32	50	17
Sorghum (%)	18			8
Wheat (%)		16		25
Soybeans (%)	57	52	50	50
<b>Crop yields <sup>c</sup></b>				
Corn, bu				
2000	155	161	155	150
2001	142	130	144	125
2002	72	99	130	95
2003	119	110	111	105
2004	155	155	192	170
Sorghum, bu				
2000	118			110
2001	130			113
2002	109			105
2003	110			72
2004	145			135
Wheat, bu				
2000		59		20
2001		63		68
2002		57		45
2003		61		80
2004		51		50
Soybeans, bu				
2000	46	50	36	25
2001	49	48	50	42
2002	45	41	42	18
2003	39	37	34	25
2004	55	55	58	44

Table 4. **Feedgrain-soy** farms, (continued)

Code	NEFG1300	NEFG1165	WCFG1800	SWFG1100
Farm number	6	7	8	9
Near term cash risk outlook <sup>d</sup>	High	High	High	Moderate
Intermediate term cash risk outlook	Moderate	Severe	High	Low
Average operator assets (\$1000)	1485	1184	4046	910
Average return to operator assets (%)	6.9	3.2	4.2	10.7
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	20	20	20	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	31	24	22	35
Cropland value in 2002 (\$ per acre)	1872	2000	2210	1040
Average operating expense/receipts (%)	67.7	76.8	72.5	59.2
Average government payments/receipts (%)	16.6	13.9	13.1	13.8
Government payments (\$1000) <sup>g</sup>				
2002	18.7	16.3	30.1	16.0
2003	19.7	16.7	30.1	17.2
2004	70.0	47.6	89.3	45.0
2005	64.3	45.1	92.1	45.7
2006	60.4	41.3	83.1	43.2
2007	54.9	37.7	76.7	39.0
2008	52.7	36.2	74.6	37.6
2009	48.3	33.8	69.6	34.3
Average	56.1	38.8	79.2	40.0
Total cash receipts (\$1000) <sup>a</sup>				
2002	292.1	257.3	547.2	215.5
2003	311.0	258.9	495.5	312.5
2004	447.2	356.3	872.8	391.8
2005	328.1	274.1	601.3	286.7
2006	335.2	278.9	613.5	292.2
2007	340.7	283.8	623.1	297.2
2008	346.0	288.7	632.8	302.8
2009	347.3	291.0	637.7	304.7
Average	339.5	283.3	621.7	296.7
Net cash farm income (\$1000) <sup>h</sup>				
2002	74.9	63.5	131.1	47.2
2003	90.8	59.4	80.3	143.0
2004	218.5	148.1	440.1	215.6
2005	99.1	63.3	173.9	110.8
2006	108.7	66.9	180.7	119.1
2007	113.0	70.0	188.0	125.5
2008	120.3	71.0	197.1	132.9
2009	118.1	68.1	200.0	134.7
Average	111.8	67.9	187.9	124.6
Return to family living (\$1000) <sup>i</sup>				
2002	19.3	30.3	47.6	17.6
2003	18.0	22.7	-11.4	46.0
2004	91.1	61.4	148.9	107.3
2005	26.8	24.3	62.1	59.2
2006	30.8	18.3	32.5	55.2
2007	44.4	11.7	25.5	60.9
2008	39.6	3.4	2.3	65.3
2009	35.0	-17.7	-15.9	67.4
Average	35.3	8.0	21.3	61.6
Average owner withdrawal assumed (\$1000) <sup>j</sup>	27.5	27.5	55.1	41.8
Beginning cash, 2005 (\$1000) <sup>k</sup>	65.3	38.3	97.3	75.6
Beginning cash/operating expenses (%) <sup>k</sup>	28.5	18.2	22.8	43.0
Probability of a cash flow deficit (%) <sup>l</sup>				
2005	50.6	56.0	38.0	22.8
2006	41.6	72.8	58.4	29.2
2007	17.8	84.4	62.0	22.2
2008	26.2	91.0	72.8	22.0
2009	39.4	96.6	72.6	21.0

## Cotton and Rice Farms

This set of five bootheel farms raise rice and soybeans. One farm also plants cotton. In addition, corn, sorghum, and wheat are part of the overall crop mixes. Planted acres range from 1600 to 4500. Operator land tenure is as little as 10 percent and as high as 50. Most leased acres are done on a share basis. Steady improvement in rice yield has had a major impact on the financials of these farms.

The deterministic outlook for the U.S. rice price is above loan, but low enough to trigger CCP payments. The cotton price outlook for the period is below loan rate. Soybeans are below loan rate until 2007 then improve.

To generalize costs and returns per acre for this set of farms in the 2002-04 period: Total receipts, including government payments averaged \$402. Average operating costs per acre was \$270. The average cash costs of income taxes, machinery replacement, and debt reduction for the same period was \$95

per acre. Thus, on a per acre basis across the five farms, net return available for owner withdrawal was approximately \$37 per planted acre.

In the projection period, receipts stay at \$402 per acre, but operating costs increase to \$283. Cash expenses for income taxes, machinery replacement, and debt reduction average \$91. Thus, projected net returns available for owner withdrawal are approximately \$28 per acre.

As a group, these farms are highly sensitive to policy provisions. In the baseline, government payments average 42 percent of total receipts—assuming no payment limitations. Overall, the outlook indicates these farms are exposed to at least moderate levels of cash risk.

Table 5. Cash flow risk score, cotton and rice farms

Farm num	Region	Crop acres	2005-06	2007-09
10	SE	1600 CR		
11	SE	2000 R		
12	SE	4000 R		
13	SE	2500 R		
14	SE	4500 R		

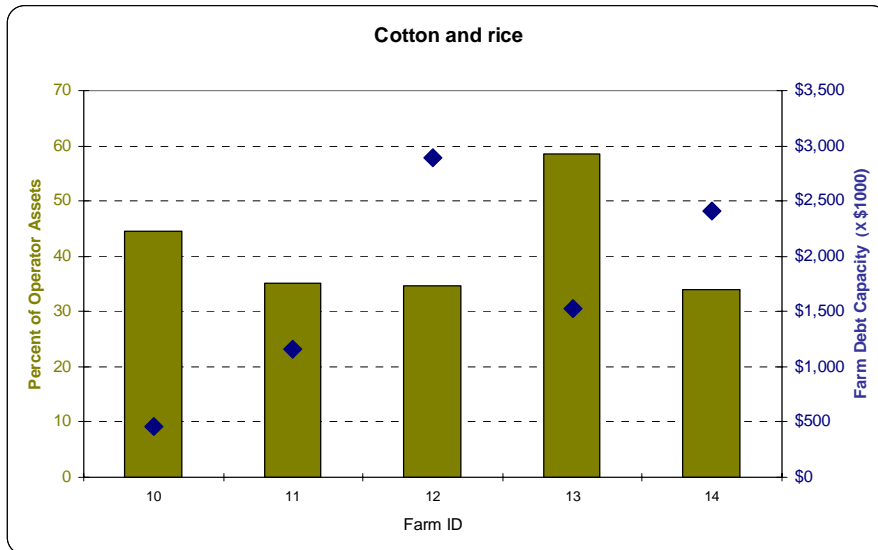


Figure 4. Estimated term debt capacity, cotton and rice farms

## Spotlights

### Farm 10

This 1600-acre farm raises irrigated cotton, soybeans, and rice and dryland cotton, soybeans and sorghum. Ninety percent of the acreage is leased. Cotton is planted on 42 percent of the acres, but makes up 57 percent of the farm receipts. This farm had two exceptional years of cotton yields in 2003 and 2004. This results in a cash reserve entering 2005 equal to 45% of operating costs. However, a return to trend yields in 2005 combined with increasing costs results in a severe to high cash risk rating.

### Farm 11

This 2000-acre farm in Butler County receives 58 percent of its income from rice. At a recent update the panel made changes to yields, prices and costs but no major structural changes. The results show a better financial outlook when compared to the baseline outlook a year ago. Recent yields have been strong which influence the yield outlook and receipts.

### Farm 12

This 4000-acre Butler County farm plants rice and soybeans on an equal number of acres. Rice provides 70 percent of the total farm receipts. This farm was recently updated. No major structural changes were made by the panel. This farm follows the general trend that

cost increases are outpacing income growth during the projection period. The farm continues to receive a moderate risk rating, indicating continuing cash flow pressure. By 2009, the farms return to family living (\$40,100) is below the minimum owner withdrawal (\$44,000).

### Farm 13

This 2500 acre Stoddard County farm plants rice, corn, wheat, and soybeans. It enters 2005 with the lowest relative cash reserve of the group. The majority of the reserve is a result of above average crop yields in 2004. While the farms struggles to generate enough cash for family living in 2005 and 2006, the farm averages more than double that amount in 2007-2009. The farm also improves its cash risk rating from high to moderate risk.

### Farm 14

This 4500-acre, multi-family farm is the largest of the crop farms. Net cash farm income exceeds \$500,000, but taxes, machinery replacement, and debt reduction consume nearly three fourths of this amount. Returns to family living average \$137,600, but there is moderate risk that returns will fall below the assumed withdrawal of \$60,600 for a single household.

Table 6. **Cotton and rice** farms, characteristics and financial outlook

Code	SECT1600	SERC2000	SERC4000	SERC2500	SERC4500
Farm number	10	11	12	13	14
Region	Southeast	Southeast	Southeast	Southeast	Southeast
County	Pemiscot	Butler	Butler	Stoddard	New Madrid
Cropland	<b>1600</b>	<b>2000</b>	<b>4000</b>	<b>2500</b>	<b>4500</b>
Acres owned	160	800	2000	375	1575
Acres leased	1440	1200	2000	2125	2925
Nonproductive acres owned	8	40	100	19	150
Total acres operated	1608	2040	4100	2519	4650
Operator owned (%)	10	41	52	16	37
Cash leased (%)	9	15	24	42	19
Share leased (%)	81	44	24	42	44
<b>Cash receipt sources <sup>a</sup></b>					
Share of total					
All crops (%)	100	100	100	100	100
Custom work (%)					
<b>Planted acres <sup>b</sup></b>					
Total acres	<b>1600</b>	<b>2200</b>	<b>4000</b>	<b>2750</b>	<b>4500</b>
Double crop acres		200		250	
Share of total					
Cotton (%)	42				
Rice (%)	17	36	50	30	33
Corn (%)		7		36	33
Sorghum (%)	3				
Wheat (%)		9		9	
Soybeans (%)	38	48	50	24	33
<b>Crop yields <sup>c</sup></b>					
Cotton, lbs					
2000	600	720 irr			
2001	743	900 irr			
2002	575	900 irr			
2003	900	1100 irr			
2004	1125	1125 irr			
Rice, cwt					
2000	59	61	62	64	61
2001	61	63	63	60	59
2002	59	59	64	60	65
2003	59	66	68	60	61
2004	65	68	71	70	70
Corn, bu					
2000		170		176	155
2001		160		166	150
2002		162		140	167
2003		170		150	169
2004		180		200	210
Sorghum, bu					
2000	100	105			
2001	115	100			
2002	106	66			
2003	100	91			
2004	100				
Wheat, bu					
2000		50		69	
2001		60		58	
2002		52		55	
2003		55		58	
2004		60		58	
Soybeans, bu					
2000	15	35 irr	38	44	44
2001	26	50 irr	47	37	38
2002	20	50 irr	40	40	38
2003	31	45 irr	48	37	38
2004	38	51 irr	50	50	52



Table 6. **Cotton and rice** farms, characteristics and financial outlook (continued)

Code	SECT1600	SERC2000	SERC4000	SERC2500	SERC4500
Farm number	10	11	12	13	14
Near term cash risk outlook <sup>d</sup>	Severe	Moderate	Moderate	High	Moderate
Intermediate term cash risk outlook	High	Moderate	Moderate	Moderate	Moderate
Average operator assets (\$1000)	1009	3547	8826	2806	7547
Average return to operator assets (%)	5.5	5.0	5.3	7.2	6.5
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	20	20	20	20	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	44	35	35	59	34
Cropland value in 2002 (\$ per acre)	1375	2200	2080	2000	1582
Average operating expense/receipts (%)	78.0	72.7	74.8	75.3	71.5
Average government payments/receipts (%)	27.9	21.8	26.3	22.2	22.6
Government payments (\$1000) <sup>g</sup>					
2002	176.0	240.1	805.4	303.8	530.9
2003	96.4	194.4	562.3	234.7	393.7
2004	199.4	132.4	351.7	244.6	394.1
2005	170.3	181.3	484.7	252.4	413.4
2006	164.8	175.8	477.4	246.2	404.7
2007	157.9	159.5	432.8	229.2	375.1
2008	153.9	156.3	427.1	226.8	370.4
2009	143.2	148.8	405.6	215.8	351.5
Average	158.0	164.3	445.5	234.1	383.0
Total cash receipts (\$1000) <sup>a</sup>					
2002	470.5	630.6	1,615.2	941.7	1,641.6
2003	687.9	895.8	2,245.0	988.8	1,679.6
2004	696.6	813.1	1,811.8	1,242.8	2,024.9
2005	558.3	743.0	1,694.2	1,039.9	1,663.1
2006	565.3	751.6	1,714.1	1,052.8	1,691.3
2007	568.4	761.3	1,733.6	1,070.3	1,716.4
2008	574.7	772.2	1,752.9	1,081.8	1,736.0
2009	574.3	777.8	1,764.2	1,095.8	1,753.7
Average	568.2	761.2	1,731.8	1,068.1	1,712.1
Net cash farm income (\$1000) <sup>h</sup>					
2002	68.7	162.2	431.4	228.2	536.0
2003	276.2	385.1	1,061.6	254.8	545.6
2004	281.1	274.3	615.6	479.5	853.9
2005	127.4	206.5	480.6	263.4	475.1
2006	133.1	215.3	503.4	275.0	503.1
2007	135.5	226.4	525.0	292.3	528.7
2008	141.0	236.3	534.8	302.8	539.7
2009	137.4	229.6	524.7	305.4	544.6
Average	134.9	222.8	513.7	287.8	518.2
Return to family living (\$1000) <sup>i</sup>					
2002	36.5	65.2	220.2	52.9	176.2
2003	144.5	157.5	540.2	58.6	144.3
2004	151.7	77.7	100.6	160.6	296.4
2005	-19.2	81.5	58.7	32.5	138.8
2006	44.3	61.2	85.1	19.3	124.9
2007	42.6	70.0	93.8	57.3	167.0
2008	33.0	75.9	47.3	86.5	130.7
2009	15.6	47.5	40.1	68.9	128.2
Average	23.2	67.2	65.0	52.9	137.9
Average owner withdrawal assumed (\$1000) <sup>j</sup>	55.1	33.0	44.0	33.0	60.6
Beginning cash, 2005 (\$1000) <sup>k</sup>	194.2	209.4	743.1	180.8	450.6
Beginning cash/operating expenses (%) <sup>k</sup>	45.1	39.0	61.2	23.3	37.9
Probability of a cash flow deficit (%) <sup>l</sup>					
2005	96.8	15.0	44.4	47.0	26.6
2006	50.2	27.6	42.6	50.6	27.0
2007	53.2	25.0	42.8	37.4	21.0
2008	57.8	22.0	48.2	26.8	30.8
2009	67.8	38.4	48.6	35.4	32.0

### Crop-beef Farms

This group of eight diversified farms receives income from cow-calf and beef feeding enterprises and cash grains. Cropland acres range from 240 to 1850 and cow herd size ranges from 40 to 200. Cattle are as much as 53 percent of receipts. All farms in this set raise corn and soybeans. Seven also raise wheat and three produce grain sorghum. Compared to the straight crop farms, a larger share of land is owned by the operators.

Return on assets is expected to be in a range of 3.7 to 7.5. Program payments make up 6 to 13 percent of receipts. Payments as a percentage of returns to family living average 88 percent across the set of farms. Term debt capacity as a percent of operator assets varies within a rather narrow range from 22 to 30 percent.

The outlook for the crop-beef farms is not uniform, but generally reflects climbing costs and flat to declining receipts, depending on the share of receipts from the beef enterprise.

Table 7. Cash flow risk score, crop-beef farms

Farm num	Region	Crop acres	Cows	2005-06	2007-09
15	NW	1850	200 + Bk	Yellow	Orange
16	NC	1485	100	Green	Orange
17	NE	1460	80	Yellow	Yellow
18	NE	500	50	Orange	Yellow
19	WC	1400	150 + F	Green	Yellow
20	EC	380	40	Yellow	Red
21	SW	240	150	Red	Red
22	SW	1800	150 + Bk	Yellow	Yellow

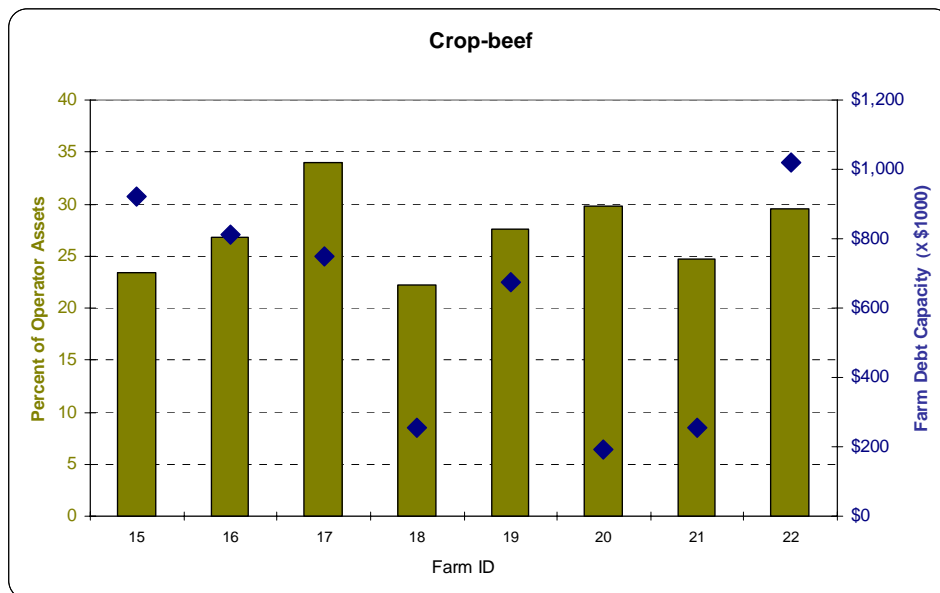


Figure 5. Estimated term debt capacity, crop-beef farms

## Spotlights

### Farm 15

This northwest farm plants 1850 acres to corn and soybeans and runs a cow-calf enterprise with 200 cows. The farm suffered through back to back droughts in 2002 and 2003. Fortunately, it fully recovered in 2004 due to exceptionally good yield and carries no short-term debt into the projection period. However, with trend yields the farm narrowly covers the assumed owner withdrawal of \$33,800. In 2009, the farm is scheduled to replace harvesting equipment which leads to a much higher probability of cash flow deficit.

### Farm 16

This Livingston County farm plants 1485 acres and earns 12 percent of receipts from a 100 cow beef herd. Ten percent of crop acres are in the conservation and wetland reserve programs. Financially the outlook for this farm is positive; however, cash deficit risk is projected to climb with increasing production costs. This farm has the lowest cost to receipts ratio of the group.

### Farm 17

This northeast farm raises corn, beans and wheat on 1460 acres and runs 80 beef cows on 244 acres of forage. One-half of the farm is leased. The farm has the capacity to provide a modest family living, but is expected to face liquidity issues. Projected return on assets is the highest of the group.

### Farm 18

This northeast farm is one of the smaller farms in the dataset with 500 acres of row crops and 50 beef cows. The data show that the contribution to family income from the business is expected to average \$16,300. Lumpy machinery replacement has a substantial impact on the cash flow of this farm.

### Farm 19

This Bates County farm earns 79 percent of receipts from the 1400 crop acres. In addition, the business runs 150 beef cows and backgrounds all offspring. Steers are held for finishing on the farm. The farm maintains a relatively high stocking rate due to a heavy fertility program. The near term outlook for the farm is positive with low risk of not providing the minimum owner withdrawal of about \$50,000. Risk climbs rapidly in the out years due to the beef price cycle.

### Farm 20

This Perry County diversified farm crops 380 acres and raises calves from 40 beef cows on 190 acres of forage. Grass and clover seed sales are a major contributor to income. Return to family living is above the minimum owner withdrawal until beef prices decline in 2007. Cash deficit risk reaches a severe level from that point forward. Clearly, this farm will have to curtail owner withdrawal in the intermediate term.

### Farm 21

This Dade County farm earns the majority of its income from the 150-cow beef herd and crops 240 acres. Corn, wheat and bean yields are well below the national averages. This farm requires an outside source of income to support a household as modeled in the baseline.

### Farm 22

This Barton County farm crops 1800 acres in addition to raising and backgrounding calves from 150 beef cows. Two center pivots allow the farm to irrigate corn and soybeans. With double cropping, 2400 crop acres are harvested. The outlook is positive, but with moderate cash risk. The outlook has changed little from a year ago. Cash pressure peaks in 2006 at 42 percent and declines in future years as the farm retires intermediate debt.

Table 8. **Crop-beef** farms, characteristics and financial outlook

Code	NWCB1850	NCCB1485	NECB1460	NECB500
<b>Farm number</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>
Region	Northwest	North Central	Northeast	Northeast
County	Nodaway	Livingston	Monroe	Audrain
<b>Cropland</b>	<b>1850</b>	<b>1485</b>	<b>1460</b>	<b>500</b>
Acres owned	950	975	730	250
Acres leased	900	510	730	250
<b>Forages</b>	<b>1000</b>	<b>340</b>	<b>400</b>	<b>120</b>
Acres owned	600	155	132	120
Acres leased	400	185	268	
Nonproductive acres owned	140	70	86	35
<b>Total acres operated</b>	<b>2990</b>	<b>1895</b>	<b>1946</b>	<b>655</b>
Operator owned (%)	56	64	49	62
Cash leased (%)	18	23	36	38
Share leased (%)	26	13	15	
<b>Beef herd</b>				
Mature beef cows (hd)	<b>200</b>	<b>100</b>	<b>80</b>	<b>50</b>
Cattle backgrounded (hd)	146		70	35
Cattle fed on farm (hd)				
<b>Cash receipt sources <sup>a</sup></b>				
Share of total				
Crops (%)	81	88	90	87
Beef (%)	17	12	10	13
Hay and/or seed (%)	1			
Custom work (%)	1			
<b>Planted acres <sup>b</sup></b>				
<b>Total acres</b>	<b>2850</b>	<b>1825</b>	<b>1916</b>	<b>655</b>
Double crop acres			56	35
Share of total				
Corn (%)	32	18	30	25
Sorghum (%)				8
Wheat (%)		5	7	4
Soybeans (%)	32	49	42	44
Hay and/or seed (%)	7	5	4	8
Improved pasture (%)	28	13	17	11
Conservation reserve (%)	1	10		
<b>Crop yields <sup>c</sup></b>				
<b>Corn, bu</b>				
2000	140		180	155
2001	140	125	131	115
2002	87	115	105	121
2003	123	111	89	115
2004	190	175	175	158
<b>Sorghum, bu</b>				
2000				118
2001				115
2002				128
2003				115
2004				149
<b>Wheat, bu</b>				
2000			58	51
2001		68	64	48
2002		60	57	50
2003		85	85	48
2004		60	60	48
<b>Soybeans, bu</b>				
2000	40		46	46
2001	45	39	44	40
2002	28	47	43	49
2003	33	31	31	45
2004	55	60	57	61

Table 8. **Crop-beef** farms, characteristics and financial outlook (continued)

Code	NWCB1850	NCCB1485	NECB1460	NECB500
Farm number	15	16	17	18
Near term cash risk outlook <sup>d</sup>	Moderate	Low	Moderate	High
Intermediate term cash risk outlook	High	High	Moderate	Moderate
Average operator assets (\$1000)	4157	3161	2337	1144
Average return to operator assets (%)	6.0	5.4	7.5	6.7
Assumed operator debt Jan 1, 2002 (%) <sup>e</sup>	20	20	20	20
Term debt capacity Jan 1, 2005 (%) <sup>f</sup>	23	27	34	22
Cropland value in 2002 (\$ per acre)	1918	1570	1513	1872
Average operating expense/receipts (%)	71.9	55.6	60.8	64.4
Average government payments/receipts (%)	11.7	12.0	13.0	13.3
Government payments (\$1000) <sup>g</sup>				
2002	69.6	17.9	24.8	9.8
2003	29.9	18.1	23.5	9.3
2004	112.8	57.5	77.6	30.1
2005	87.6	60.4	68.1	27.6
2006	80.1	53.5	62.9	25.6
2007	75.0	47.4	57.6	23.4
2008	73.2	44.9	55.6	22.5
2009	68.0	41.8	51.1	20.8
Average	76.8	49.6	59.1	24.0
Total cash receipts (\$1000) <sup>a</sup>				
2002	492.5	398.4	373.5	169.5
2003	599.0	387.3	387.2	173.6
2004	884.0	565.5	595.5	237.9
2005	660.9	412.8	455.8	179.9
2006	661.6	417.8	459.8	181.5
2007	666.6	424.2	465.8	182.2
2008	673.2	428.7	471.2	184.5
2009	674.9	430.6	473.5	184.0
Average	667.4	422.8	465.2	182.4
Net cash farm income (\$1000) <sup>h</sup>				
2002	52.7	175.9	104.5	57.9
2003	141.5	160.3	122.3	58.3
2004	422.2	330.3	316.1	119.2
2005	204.1	177.2	177.1	61.2
2006	207.5	185.6	182.2	65.3
2007	209.6	191.6	193.4	69.0
2008	217.1	199.7	201.2	71.1
2009	202.0	202.5	202.7	70.5
Average	208.1	191.3	191.3	67.4
Return to family living (\$1000) <sup>i</sup>				
2002	-41.1	90.9	15.3	19.9
2003	-26.0	67.0	10.4	14.8
2004	130.1	164.5	108.2	44.7
2005	53.7	81.6	63.0	11.4
2006	55.7	76.8	56.4	8.2
2007	42.2	61.5	74.8	15.4
2008	53.9	52.0	73.8	20.6
2009	-36.5	48.8	73.9	25.8
Average	33.8	64.1	68.4	16.3
Average owner withdrawal assumed (\$1000) <sup>j</sup>	35.2	49.6	35.2	16.6
Beginning cash, 2005 (\$1000) <sup>k</sup>	97.0	186.2	75.1	33.4
Beginning cash/operating expenses (%) <sup>k</sup>	21.2	79.0	27.0	28.2
Probability of a cash flow deficit (%) <sup>l</sup>				
2005	37.4	14.2	27.4	56.4
2006	37.8	18.2	32.8	67.8
2007	44.2	33.0	24.8	49.0
2008	39.8	49.4	24.0	38.4
2009	73.4	55.2	26.4	32.2

Table 8. **Crop-beef** farms (continued)

Code	WCCB1400	ECCB380	SWCB240	SWCB1800
Farm number	19	20	21	22
Region	West Central	East Central	Southwest	Southwest
County	Bates	Perry	Dade	Barton
Cropland	<b>1400</b>	<b>380</b>	<b>240</b>	<b>1800</b>
Acres owned	530	120	175	1350
Acres leased	870	260	65	450
Forages	<b>440</b>	<b>190</b>	<b>600</b>	<b>555</b>
Acres owned	220	65	465	500
Acres leased	220	125	135	55
Nonproductive acres owned	80	25	10	30
Total acres operated	1920	595	850	2385
Operator owned (%)	43	35	77	79
Cash leased (%)	34	45	9	2
Share leased (%)	23	20	14	19
<b>Beef herd</b>				
Mature beef cows (hd)	<b>150</b>	<b>40</b>	<b>150</b>	<b>150</b>
Cattle backgrounded (hd)	124			100
Cattle fed on farm (hd)	61			
<b>Cash receipt sources <sup>a</sup></b>				
Share of total				
Crops (%)	79	69	41	88
Beef (%)	21	11	53	12
Hay and/or seed (%)		18	6	
Custom work (%)		2		
<b>Planted acres <sup>b</sup></b>				
Total acres	<b>2180</b>	<b>750</b>	<b>1098</b>	<b>2955</b>
Double crop acres	340	180	258	600
Share of total				
Corn (%)	24	17	9	16
Sorghum (%)			2	9
Wheat (%)	16	11	5	21
Soybeans (%)	40	28	11	38
Hay and/or seed (%)	5	37	37	3
Improved pasture (%)	15	7	37	13
<b>Crop yields <sup>c</sup></b>				
Corn, bu				
2000		143	95	145 180 irr
2001	114	156	98	150 190 irr
2002	108	80	113	155 155 irr
2003	89	122	93	117 183 irr
2004	158	159	128	161 210 irr
Sorghum, bu				
2000			90	110
2001			95	115
2002			75	105
2003			83	80
2004			104	145
Wheat, bu				
2000		52	48	50
2001	59	55	57	70
2002	42	43	35	55
2003	75	53	48	80
2004	60	53	45	50
Soybeans, bu				
2000		44	20	33 25 irr
2001	34	39	32	15 40 irr
2002	22	32	23	45 32 irr
2003	25	36	31	31 45 irr
2004	43	50	37	45 48 irr

Table 8. **Crop-beef** farms (continued)

Code	WCCB1400	ECCB380	SWCB240	SWCB1800
Farm number	19	20	21	22
Near term cash risk outlook <sup>d</sup>	Low	Moderate	Severe	Moderate
Intermediate term cash risk outlook	Moderate	Severe	Severe	Moderate
Average operator assets (\$1000)	2532	687	1077	3578
Average return to operator assets (%)	5.1	4.2	3.7	6.6
Assumed operator debt Jan 1, 2002 (%) <sup>e</sup>	20	20	20	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	28	30	25	29
Cropland value in 2002 (\$ per acre)	1623	1898	1120	1144
Average operating expense/receipts (%)	63.7	61.8	61.0	65.1
Average government payments/receipts (%)	12.3	9.5	5.9	13.4
Government payments (\$1000) <sup>g</sup>				
2002	28.0	6.8	6.6	38.2
2003	25.2	6.1	3.6	37.6
2004	69.5	18.3	11.7	105.8
2005	64.1	17.3	9.9	98.2
2006	59.4	15.8	9.4	93.4
2007	54.6	14.4	8.7	85.8
2008	52.5	13.9	8.4	82.8
2009	49.3	12.9	7.9	76.9
Average	56.0	14.9	8.9	87.4
Total cash receipts (\$1000) <sup>a</sup>				
2002	355.5	127.2	133.2	574.5
2003	429.3	164.7	145.3	722.8
2004	579.5	193.3	173.1	797.7
2005	458.1	156.5	156.3	647.5
2006	458.5	156.5	152.2	654.3
2007	461.9	159.4	151.3	659.8
2008	464.4	160.0	149.4	665.4
2009	463.6	161.5	146.9	667.3
Average	461.3	158.8	151.2	658.9
Net cash farm income (\$1000) <sup>h</sup>				
2002	74.7	43.5	48.7	161.6
2003	150.6	75.1	57.3	311.5
2004	292.2	99.2	81.5	371.6
2005	166.4	60.0	63.5	220.6
2006	167.6	62.2	60.0	230.7
2007	171.8	61.7	61.6	240.8
2008	175.9	63.0	60.1	249.6
2009	173.5	60.9	56.1	249.3
Average	171.0	61.6	60.3	238.2
Return to family living (\$1000) <sup>i</sup>				
2002	36.9	15.2	14.7	48.4
2003	77.3	23.9	6.7	122.6
2004	164.2	49.4	6.1	144.2
2005	92.4	31.2	4.2	63.2
2006	82.0	27.0	-1.5	54.7
2007	67.7	13.2	-7.6	75.3
2008	65.1	19.2	-9.5	76.7
2009	54.6	10.7	-19.2	81.7
Average	72.3	20.3	-6.7	70.3
Average owner withdrawal assumed (\$1000) <sup>j</sup>	49.6	27.5	22.0	47.4
Beginning cash, 2005 (\$1000) <sup>k</sup>	149.6	23.6	-14.5	184.5
Beginning cash/operating expenses (%) <sup>k</sup>	51.3	24.4	-15.7	43.2
Probability of a cash flow deficit (%) <sup>l</sup>				
2005	4.6	25.6	94.6	37.0
2006	9.4	46.8	94.0	41.8
2007	30.2	92.8	96.8	31.6
2008	32.8	81.2	94.0	30.6
2009	48.6	93.0	96.6	28.0

## Pork-crop Farms

The group of five hog farms are a diverse set engaged in several enterprises, but each receives the greatest share of income from the pork production unit. A variety of production phases, sizes, and management levels are reflected. These are essentially mature operations, nearing the end of a period of high debt for housing and equipment. These farms have struggled through a time period of historically low hog prices since 1997.

Barrow and gilt prices in this baseline follow a cyclical pattern, trending down from the high of \$52.50 per hundred live weights in 2004 to a low of \$39.70 per hundred weights in 2006. Over the projection period these farms are expected to weather the periods of low prices, but return to family living is quite volatile, requiring restraint by farm managers to hold cash in reserve for expected low price years.

Table 9. Cash flow risk score, pork-crop farms

Farm num	Region	Crop acres	Hogs	2005-06	2007-09
23	NE	0	1500 FF		
24	WC	550	2 Nurs + 70 B		
25	CT	250	200 FF + 125 B		
26	CT	0	1250 FF		
27	EC	1500	3000 GF		

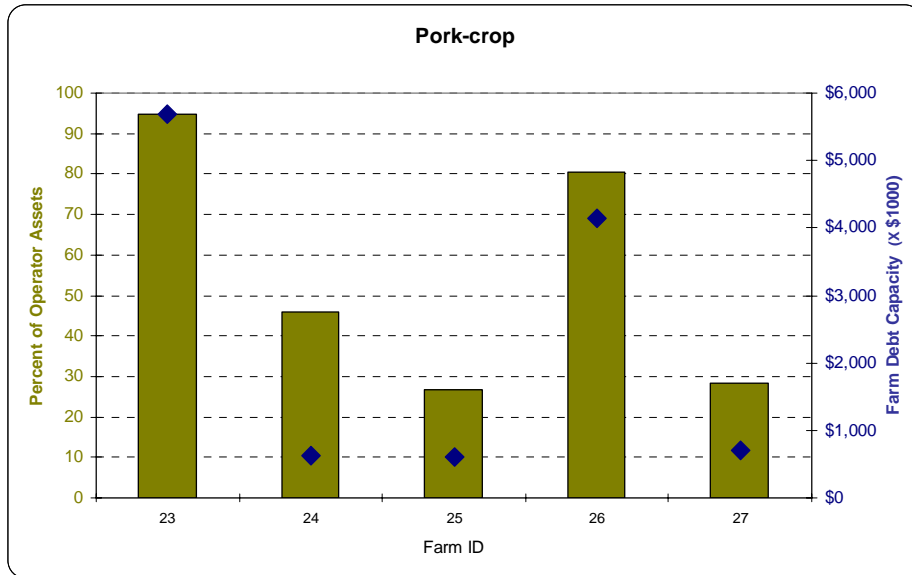


Figure 6. Estimated term debt capacity, pork-crop farms



## Spotlights

### Farm 23

This northeast farm is strictly in the business of raising hogs in a multi-site 1500 sow farrow-to-finish operation. The baseline farm simulates an operation that retires the initial debt for facilities at the end of 2006. The poorest year financially occurred in 2002, a period of low hog prices coupled with heavy debt. Returns to family living were negative, a loss in family income of about \$4.19 per hog sold. The strong prices of 2004 allow this farm to weather the remaining years of the loan and build cash reserves through the end of the simulation.

### Farm 24

This is a diverse farm with 550 acres of row crops, a 70-cow beef herd and a two-house contract nursery pig enterprise built in the mid 1990s. A relatively high level of remaining debt (30 percent) is assumed to begin the simulation in 2002. The pig enterprise provides strong risk protection from prices and production. Return on assets is expected to average 6.4 percent, with negligible cash flow risk. This analysis assumes stable contract arrangements.

### Farm 25

This farm is a traditional, diversified operation in the river hills of Osage County. Primary income is from the 200-sow farrow-to-finish unit with hogs sold on the spot market. Sow productivity is relatively high, but little gain has occurred in the last few years. The farm

also has a 125-cow beef herd and raises 225 acres of corn, sorghum, and wheat that is fed on the farm. With 20 percent initial debt, the simulation projects a farm that is able to provide a modest family living. 2004 made a huge difference in the five-year outlook for this farm that was previously projected to sink into year over year deficits under baseline assumptions.

### Farm 26\*

This rep farm reflects a farrow-to-finish operation of 1250 sows, located in the central region. Production efficiencies and costs per unit are similar, but not identical to farm 23. Annual cash expenditures exceed \$2.5 million. Years of financial struggling—some severe—paid off in 2004. Given the relatively strong price outlook for 2005, and debt retirement modeled to occur after 2006, the projection is for this farm to build wealth with relatively low cash deficit risk.

### Farm 27

This farm transitioned out of farrowing into a 3000 head wean-finish enterprise. Weaner pigs are purchased from a single source pool and finished in retrofitted housing. With 1500 acres of crops this farm relies on government payments to make up over 9 percent of receipts. This farm continues to struggle with high costs of production and is expected to carry a high risk of cash flow deficit in the projection period.

\* New representative farm panel with this baseline.

Table 10. **Pork-crop** farms, characteristics and financial outlook

Code	NEH1500	WCHBC550	CTHBC250	CTH1250	ECHC1500
Farm number	23	24	25	26	27
Region	Northeast	West Central	Central	Central	East Central
County	Monroe	Vernon	Osage	Saline	Montgomery
Cropland		<b>550</b>	<b>250</b>		<b>1500</b>
Acres owned		225	163		600
Acres leased		325	87		900
Forages		<b>285</b>	<b>330</b>		
Acres owned		215	215		
Acres leased		70	115		
Nonproductive acres owned	200	22	220	160	90
Total acres operated	200	857	800	160	1590
Operator owned (%)	100	54	75	100	43
Cash leased (%)		27	13		34
Share leased (%)		19	12		23
<b>Livestock herds</b>					
Pork production unit	<b>Farrow-finish</b>	<b>Nursery</b>	<b>Farrow-finish</b>	<b>Farrow-finish</b>	<b>Wean-finish</b>
Number of sows	1500		200	1250	
Number of pigs sold per year	33,120	32,000	4,045	26,450	3,000
Mature beef cows (hd)		<b>70</b>	<b>125</b>		
Cattle backgrounded (hd)					
Cattle fed (hd)					
<b>Cash receipt sources <sup>a</sup></b>					
Share of total					
Pork (%)	100	50	84	100	48
Beef (%)		13	11		
Crops (%)		37	5		51
Custom work (%)					1
<b>Planted acres <sup>b</sup></b>					
Total acres		<b>1015</b>	<b>605</b>		<b>1670</b>
Double crop acres		180	25		170
Share of total					
Corn (%)		10	29		34
Sorghum (%)		9	4		
Wheat (%)		18	4		10
Soybeans (%)		35	8		56
Hay and/or seed (%)		7	17		
Improved pasture (%)		21	38		
<b>Crop yields <sup>c</sup></b>					
Corn, bu					
2000		126	135		125
2001		126	112		125
2002		120	97		103
2003		90	95		125
2004		160	172		160
Sorghum, bu					
2000		125	105		
2001		125	80		
2002		80	100		
2003		60	90		
2004		115	80		
Wheat, bu					
2000		72	50		50
2001		72	44		55
2002		55	45		55
2003		67	50		80
2004		55	50		50
Soybeans, bu					
2000		19	40		45
2001		38	40		45
2002		20	39		45
2003		33	40		40
2004		45	45		50

Table 10. **Pork-crop** farms, characteristics and financial outlook (continued)

Code	NEH1500	WCHBC550	CTHBC250	CTH1250	ECHC1500
Farm number	23	24	25	26	27
Near term cash risk outlook <sup>d</sup>	Low	Low	Low	Low	High
Intermediate term cash risk outlook	Low	Low	Moderate	Low	High
Average operator assets (\$1000)	6571	1424	2387	5427	2562
Average return to operator assets (%)	10.2	6.4	5.5	5.4	5.6
Assumed operator debt in 2002 (%) <sup>e</sup>	50	30	20	40	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	95	46	27	80	28
Cropland value in 2002 (\$ per acre)	1301	1225	1667	1366	1900
Average operating expense/receipts (%)	71.3	46.1	73.8	74.3	79.2
Average government payments/receipts (%)	0.0	7.9	2.2	0.0	9.2
Government payments (\$1000) <sup>g</sup>					
2002	0.0	11.4	7.8	0.0	22.1
2003	0.0	10.6	5.5	0.0	22.7
2004	0.0	27.5	21.6	0.0	70.6
2005	0.0	27.2	14.4	0.0	66.3
2006	0.0	26.1	13.7	0.0	60.2
2007	0.0	23.9	13.1	0.0	51.9
2008	0.0	23.1	12.9	0.0	48.8
2009	0.0	21.3	12.2	0.0	48.9
Average	0.0	24.3	13.3	0.0	55.2
Total cash receipts (\$1000) <sup>a</sup>					
2002	3,180.5	246.4	477.1	2,718.5	477.0
2003	3,925.8	299.4	528.5	2,994.7	626.1
2004	5,021.8	337.9	716.8	4,063.1	790.1
2005	4,658.6	304.9	648.4	3,733.1	654.9
2006	3,891.4	304.5	553.4	3,122.9	604.2
2007	4,008.0	305.8	565.5	3,215.5	622.3
2008	4,340.7	306.8	602.6	3,480.1	656.7
2009	4,672.5	306.7	638.4	3,744.2	686.8
Average	4,314.2	305.7	601.7	3,459.2	645.0
Net cash farm income (\$1000) <sup>h</sup>					
2002	151.7	94.6	54.0	229.8	24.9
2003	621.1	147.1	98.2	389.4	149.7
2004	1,700.7	193.9	284.3	1,335.9	257.3
2005	1,689.3	159.5	198.1	1,265.8	138.9
2006	900.6	162.4	125.4	633.5	121.6
2007	984.1	166.5	131.9	693.6	130.7
2008	1,278.9	169.6	164.8	915.7	147.6
2009	1,574.2	170.1	196.8	1,141.1	164.1
Average	1,285.4	165.6	163.4	930.0	140.6
Return to family living (\$1000) <sup>i</sup>					
2002	-138.8	50.4	17.8	-18.6	-22.8
2003	81.8	70.6	31.7	31.0	4.5
2004	837.3	92.3	148.7	607.3	81.5
2005	845.8	79.0	108.8	613.1	46.8
2006	292.6	68.9	57.4	219.9	28.0
2007	683.9	71.1	51.2	490.2	25.3
2008	857.9	67.3	68.1	619.8	19.5
2009	1,028.3	59.1	90.1	747.6	22.8
Average	741.7	69.1	75.1	538.1	28.5
Average owner withdrawal assumed (\$1000) <sup>j</sup>	66.1	44.0	31.6	66.1	27.5
Beginning cash, 2005 (\$1000) <sup>k</sup>	796.3	91.5	121.5	545.3	55.7
Beginning cash/operating expenses (%) <sup>k</sup>	26.8	62.9	27.0	22.1	10.8
Probability of a cash flow deficit (%) <sup>l</sup>					
2005	1.0	1.0	1.0	1.0	35.0
2006	16.2	2.4	19.8	19.4	55.0
2007	2.0	2.0	29.8	3.4	55.0
2008	1.0	8.4	18.2	1.6	64.0
2009	1.0	21.4	9.8	1.0	62.0

## Beef Farms

All five of these farms operate cow-calf operations and sell raised calves as their primary product. Some also harvest hay and/or fescue seed as a secondary, but substantial income source. Calves are held for variable lengths of time from weaning to yearlings. Steer selling weights range from 540 to 760 lbs.

Recent price history and the projected price path for feeder calves is strong through 2007, peaking in 2005. Based simply on the price path, one would expect these farms as a group to be performing near their peak financially.

Going forward, the beef farms are expected to have increasing levels of cash deficit risk. Year ago projections indicated considerably less near term risk for these farms. Bear in mind that even with 350 cows it is difficult to support a family solely from farm receipts. Term debt capacity is lowest for the beef farms.

Table 11. Cash flow risk score, beef farms

Farm num	Region	Forage ac	Cows	2005-06	2007-09
28	CT	1560	350 Bk		
29	SW	735	200		
30	SW	935	260 Bk		
31	SC	1850	350		
32	SC	650	150 Bk		

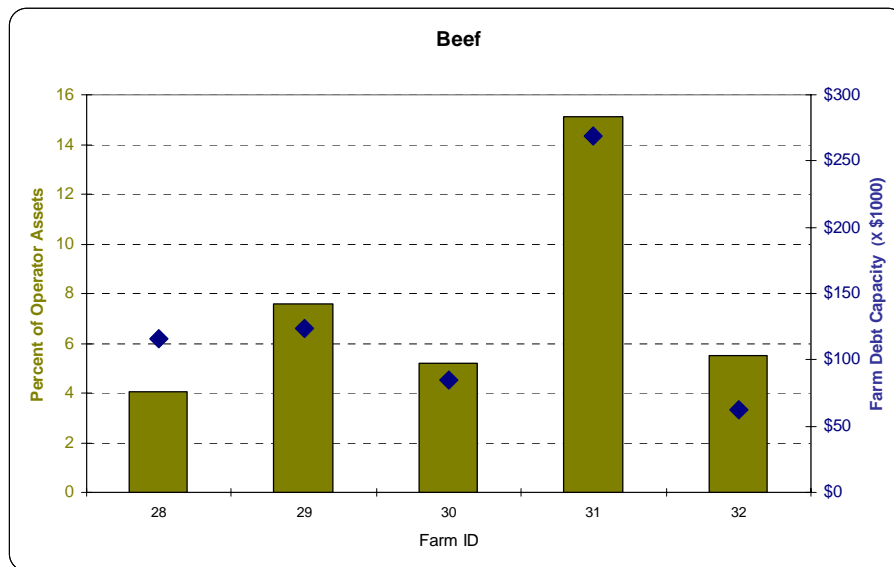


Figure 7. Estimated term debt capacity, beef farms

## Spotlights

### Farm 28

This Ozarks farm near Salem markets calves from 350-beef cows and harvests fescue seed in addition to selling some hay. Hardwood timber is also a major resource on the 2460 total farm acres. Semi-regular timber harvests are scheduled to help offset periods of poor cattle prices. With initial debt of 7 percent assumed against \$2.9 million operator assets, this farm struggles to sustain the minimum level of owner withdrawal assumed for a farm of this size (average \$27,500).

### Farm 29\*

This southwest region farm is best described as a traditional Missouri cow-calf operation with 200 cows on 735 acres of owned forage land. Calves are sold directly off the cow at an average weight of 540 pounds. Fescue seed sales are a substantial portion of receipts. However, this farm no longer earns income from a custom seed harvest enterprise due, in part, to seed contamination issues. The loss of this profitable enterprise made a large impact on the financials of this farm. At \$486, this farm has the lowest cost per cow of any of the rep beef farms. The farm is expected to generate an average of \$30,100 for family living over the projection period.

### Farm 30

This Lawrence County farm runs 260 beef cows and backgrounds home raised calves to an average weight of 760 pounds on 935 forage acres. Raised alfalfa hay provides a substantial portion of the forage needs. This farm has essentially "broken-even" in the last three years, which include a year of record beef prices. It is projected to struggle to meet the minimum of \$27,600 for household purposes.

### Farm 31

This farm runs 350 cows on 1850 forage acres in Oregon County. Forages include alfalfa and warm-season grasses. Costs per cow are relatively high at \$563. However, it is the only beef farm with average receipts in excess of \$200,000, or \$695 per cow (whole-farm basis). With strong cattle prices over the next four years, the farm is expected to meet the minimum withdrawal with less than a 50 percent probability of cash deficit.

### Farm 32

This Howell County farm raises and backgrounds calves from 150 cows on 650 forage acres. This is the only rep beef farm with no seed sales. Forages include warm season grass and alfalfa. If the household extracts an average of \$22,000, the risk of a cash flow deficit exceeds 50 percent in each year after 2005.

\* The farm has been substantially adjusted and is not comparable with prior baseline reports.

Table 12. **Beef** farms, characteristics and financial outlook

Code	CTBF350	SWBF200	SWBF260	SCBF350	SCBF150
<b>Farm number</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>
Region	Central	Southwest	Southwest	South Central	South Central
County	Phelps	Barry	Lawrence	Oregon	Howell
Total acres operated	<b>2460</b>	<b>770</b>	<b>1085</b>	<b>2000</b>	<b>825</b>
'Cropland' hay acres	40		100	90	50
Other forage acres	1520	735	835	1760	600
Timber/waste acres	900	35	150	150	175
Operator owned (%)	80	100	72	50	89
Cash leased (%)	20		28	50	11
<b>Beef herd</b>					
Mature beef cows (hd)	<b>350</b>	<b>200</b>	<b>260</b>	<b>350</b>	<b>150</b>
Average sale weight of steers (lbs)	627	540	760	600	735
<b>Cash receipt sources<sup>a</sup></b>					
Share of total Beef (%)	91	87	93	88	85
Hay and/or seed (%)	7	13	6	10	15
Custom work/timber sales (%)	2		1	2	
<b>Harvested acres<sup>b</sup></b>					
Total acres	<b>1560</b>	<b>885</b>	<b>1041</b>	<b>2125</b>	<b>650</b>
Alfalfa hay	40		100	50	50
Warm-season grass hay				40	10
Cool-season grass hay	300	310	200	200	75
Fescue seed	220	150	106	425	
Improved pasture	1000	425	635	1410	515
<b>Crop yields<sup>c</sup></b>					
Alfalfa, tns					
2000	4		5	4	4
2001	2		4	3	3
2002	3		4	4	4
2003	4		4	4	3
2004	4		4	4	4
Warm-season grass hay, tns					
2000				4	3
2001				2	2
2002				4	3
2003				4	3
2004				4	3
Cool-season grass hay, tns					
2000	2	2	2	2	2
2001	1	1	2	1	2
2002	2	2	3	2	2
2003	2	2	2	3	2
2004	2	2	2	2	2
Fescue seed, lbs					
2000	200	300	300	100	
2001	200	320	200	0	
2002	433	300	300	150	
2003	215	300	300	200	
2004	215	200	300	250	

Table 12. **Beef** farms, characteristics and financial outlook (continued)

Code	CTBF350	SWBF200	SWBF260	SCBF350	SCBF150
Farm number	28	29	30	31	32
Near term cash risk outlook <sup>d</sup>	Moderate	Moderate	High	Low	High
Intermediate term cash risk outlook	Severe	High	Severe	Moderate	Severe
Average operator assets (\$1000)	2924	1680	1647	1862	1138
Average operator assets (\$ per cow)	8353	8398	6336	5319	7584
Average return to operator assets (%)	1.7	4.4	2.3	3.1	2.1
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	7	7	7	7	7
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	4	8	5	15	5
Cropland value in 2002 (\$ per acre)	1000	1467	1225	882	1124
Average operating expense/receipts (%)	78.1	52.7	75.2	69.5	70.4
Average whole-farm cash expenses excluding family living (\$/cow)	500	486	560	563	607
Livestock compensation payment (2002)	7286	4028	7290	3078	6471
Total cash receipts (\$1000) <sup>a</sup>					
2002	191.9	106.9	144.6	218.4	96.7
2003	192.5	119.2	147.1	235.5	95.5
2004	215.9	127.9	166.1	262.0	114.6
2005	215.2	135.4	170.5	259.2	114.3
2006	203.5	129.3	159.9	247.7	107.0
2007	199.3	127.4	156.5	243.2	105.9
2008	193.0	124.2	151.6	236.9	101.9
2009	185.3	120.3	146.2	229.1	98.9
Average	199.3	127.3	157.0	243.2	105.6
Net cash farm income (\$1000) <sup>h</sup>					
2002	55.9	45.3	39.9	70.7	38.9
2003	54.0	56.0	43.7	78.8	29.8
2004	73.5	62.6	58.3	99.9	44.7
2005	65.3	67.5	55.0	91.9	40.2
2006	53.6	64.5	46.4	80.9	35.9
2007	47.8	62.1	42.9	76.3	32.6
2008	40.0	57.4	36.6	69.4	30.6
2009	28.9	54.7	26.7	59.8	24.5
Average	47.1	61.2	41.5	75.7	32.8
Return to family living (\$1000) <sup>i</sup>					
2002	39.7	26.0	25.6	49.6	26.1
2003	36.2	34.0	22.7	52.1	19.9
2004	44.4	30.0	28.5	66.4	28.8
2005	40.5	33.6	29.2	64.3	25.5
2006	29.9	32.2	18.7	54.8	20.4
2007	27.1	32.1	14.6	42.7	14.0
2008	17.5	27.2	4.9	40.3	9.4
2009	6.2	25.3	-11.2	29.1	3.4
Average	24.2	30.1	11.3	46.2	14.5
Average owner withdrawal assumed (\$1000) <sup>j</sup>	27.5	27.5	27.5	27.5	22.0
Beginning cash, 2005 (\$1000) <sup>k</sup>	44.4	13.8	2.7	92.1	13.9
Beginning cash/operating expenses (%) <sup>k</sup>	29.6	20.4	2.3	55.1	18.8
Probability of a cash flow deficit (%) <sup>l</sup>					
2005	20.2	20.4	39.0	1.0	31.2
2006	39.6	26.4	62.0	5.0	53.0
2007	48.8	31.6	71.8	16.6	71.2
2008	65.6	52.4	81.6	19.0	80.4
2009	81.2	62.0	93.0	45.4	87.4

## Dairy Farms

The representative dairy farms are as diverse as Missouri's industry, ranging in size from 85 to 400 cows. Each farm is unique in its approach to producing milk. Beginning debt levels in the baseline are variable due to differing investments in facilities.

The deterministic baseline all milk price path, which does not adequately reflect price volatility as does the stochastic analysis, declines in every projection year from a high of \$14.28 to \$13.50 by 2009. For perspective,

annual Missouri average milk prices have run from \$12.30 to \$16.39 the last three years. Milk income loss (MILC) payments have been an important contribution to the rep dairies in periods of low prices.

The near term outlook for the dairies indicates another good year for 2005. In future years, receipts are flat to declining while costs climb. This outlook does not include any type of counter-cyclical program after the expiration of MILC.

Table 13. Cash flow risk score, dairy farms

Farm num	Region	Forage ac	Cows	2005-06	2007-09
33	EC	350 + 240 C	150		
34	SW	340	85		
35	SW	245	110		
36	SW	600	400		
37	SW	350	230		
38	SC	420	150 + Bk		

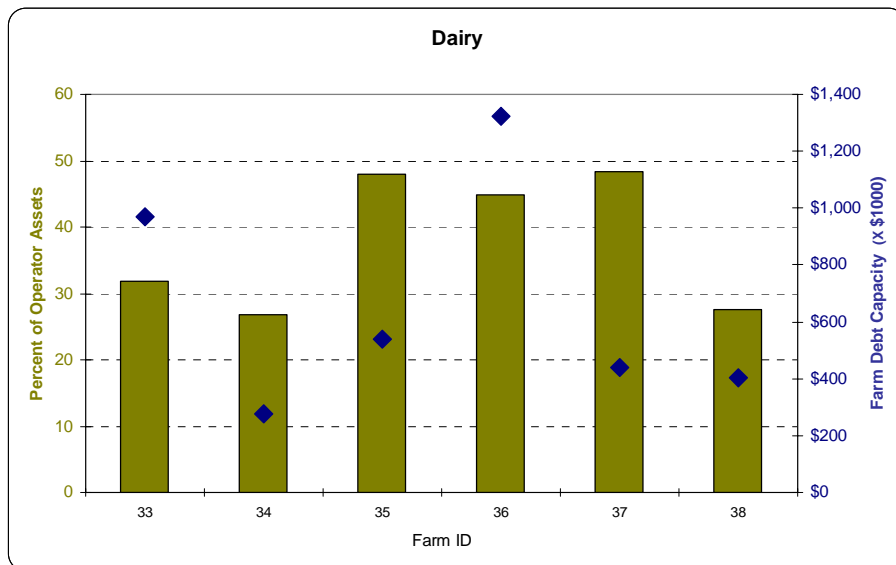


Figure 8. Estimated term debt capacity, dairy farms



## Dairy Spotlights

### Farm 33

This 150-cow dairy located in the Missouri River hills produces milk with a moderate investment in confinement facilities. In addition to growing all forage requirements for the dairy, the farm raises corn and soybeans on 240 acres of bottomland. Asset values are relatively high, partially influenced by the farms' proximity to St. Louis and the resulting demand for recreational land. Of the six rep dairies, this farm has the second highest level of milk production per cow at 21,300 lbs. This farm is expected to provide a household income of \$44,000 with low to moderate risk.

### Farm 34

This farm is a traditional 85-cow dairy that raises alfalfa and corn silage. The panel is nearing retirement from milking and has made few capital improvements in recent years. Rolling herd average is 18,600 pounds. Under the initial debt assumption of 20 percent, this farm is not likely to generate the minimum owner withdrawal of \$27,600 throughout the projection period.

### Farm 35

This 110-cow farm in Barry County is a hybrid of grazing and traditional dairying. Investments in waste management and mechanical harvesting machinery are relatively low. The farm raises all forages, but also purchases a high quantity of feed. Rolling herd average is the highest of the rep dairies at 21,500 lbs and costs per hundredweight of milk is the lowest. With 30 percent initial debt, the farm is projected to return an average of \$86,500 for family living.

### Farm 36

This 400-cow farm in the southwest operates a comparatively new confinement facility, grows corn silage as a portion of the forage requirements and purchases another 735 tons of alfalfa hay. Rolling herd average is 20,500 pounds. With debt remaining against facilities, the business is projected to generate an annual average of \$127,300 for family living.

### Farm 37

This 230-cow grazing dairy has the lowest costs per cow of any of the rep dairy farms, but not the lowest cost per unit of milk sold. Over 400 tons of hay is purchased and heifers are developed off-site for a fee allowing the farm to maintain the milking herd on relatively few acres (1.5 acres per cow). With an initial debt load of 30 percent and a rolling herd average of 14,000 lbs, the farm is expected to generate the \$55,100 minimum withdrawal with a low level of cash risk.

### Farm 38

This farm is unique among the rep dairies because a substantial portion of resources are dedicated to retaining dairy steers on the farm. However, steer sales comprise only 6 percent of the total receipts. Milk production averages 19,100 pounds per cow. The farm feeds a combination of raised and purchased forages and houses the cows on pasture. It is expected to generate a modest family living, but carries enough risk of cash flow deficit to receive only a moderate risk rating.

Table 14. Dairy farms, characteristics and financial outlook

Code	ECDY150	SWDY85	SWDY110	SWDY400	SWDY230	SCDY150
Farm number	33	34	35	36	37	38
Region	East Central	Southwest	Southwest	Southwest	Southwest	South Central
County	Franklin	Christian	Barry	Dade	Dade	Wright
Crop and hayland	420	230	180	450		170
Acres owned	320	230	150	450		170
Acres leased	100		30			
Other forages	170	110	65	150	350	250
Acres owned	130	55	65	150	280	250
Acres leased	40	55			70	
Timber/waste acres owned	155	20	30	120	10	80
Total acres operated	745	360	275	720	360	500
Operator owned (%)	81	85	89	100	81	100
Cash leased (%)	19	15	11		19	
<b>Dairy herd</b>						
Mature dairy cows (hd)	150	85	110	400	230	150
Milk per cow (lbs)	21,300	18,600	21,700	20,800	14,000	19,100
Forages purchased (tns)				980	415	360
<b>Cash receipt sources <sup>a</sup></b>						
Share of total						
Milk (%)	82	86	89	93	91	94
Cows, heifers, baby calves (%)	9	14	11	7	9	9
Dairy stocker steers (%)						7
Crops (%)	9					
<b>Harvested acres <sup>b</sup></b>						
Total	590	340	245	600	350	420
Alfalfa	40	80	60		52	
Corn silage	60	30		135		
Perennial grass mixes	50	120	125	315	88	135
Annual grass mixes	30		30		140	35
Improved pasture	170	110	30	150	70	250
Corn, grain	135					
Soybeans	105					

Table 14. Dairy farms, characteristics and financial outlook (continued)

Code	ECDY150	SWDY85	SWDY110	SWDY400	SWDY230	SCDY150
Farm number	33	34	35	36	37	38
Near term cash risk outlook <sup>d</sup>	Low	Moderate	Low	Low	Low	Low
Intermediate term cash risk outlook	Moderate	Severe	Low	Moderate	Moderate	Moderate
Average operator assets (\$1000)	3188	1075	1226	3190	975	1524
Average return to operator assets (%)	5.7	4.7	9.7	8.5	14.6	7.7
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	20	20	30	30	30	20
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	32	27	48	45	48	27
Cropland value in 2002 (\$ per acre)	2246	1531	1375	1199	976	1021
Average operating expense/receipts (%)	64.9	71.9	58.3	76.3	65.9	70.9
Average whole-farm cash expenses, excluding family living (\$/cow)	3487	2732	3184	2819	1920	2803
excluding family living (\$/cwt)	16.60	14.93	15.02	13.95	14.38	14.70
Average government payments/receipts (%)	2.1	0.6	0.6	0.2	0.4	0.5
Government payments (\$1000) <sup>g</sup>						
2002	41.0	23.6	32.4	45.9	39.3	37.8
2003	28.8	16.1	23.0	24.5	24.5	24.5
2004	16.6	1.9	2.7	2.9	2.9	2.9
2005	23.3	7.9	11.3	11.5	11.5	11.5
2006	10.9	0.0	0.0	0.0	0.0	0.0
2007	10.2	0.0	0.0	0.0	0.0	0.0
2008	9.9	0.0	0.0	0.0	0.0	0.0
2009	9.2	0.0	0.0	0.0	0.0	0.0
Average	12.7	1.6	2.3	2.3	2.3	2.3
Total cash receipts (\$1000) <sup>a</sup>						
2002	526.2	240.6	359.3	1092.0	478.2	445.6
2003	553.8	240.4	361.4	1107.4	480.6	445.7
2004	654.6	279.4	417.4	1361.8	576.4	533.4
2005	619.8	267.0	400.8	1275.7	548.3	509.5
2006	605.1	256.7	386.8	1253.2	532.5	490.3
2007	604.8	256.0	386.3	1250.8	531.8	489.6
2008	605.2	255.0	385.7	1247.4	530.6	487.7
2009	605.5	254.5	385.6	1246.8	530.4	486.1
Average	608.1	257.8	389.0	1254.8	534.7	492.6
Net cash farm income (\$1000) <sup>h</sup>						
2002	137.2	60.3	134.8	202.2	136.8	113.2
2003	183.5	66.3	146.4	211.0	146.7	124.3
2004	252.8	87.7	181.8	431.8	220.0	193.1
2005	225.6	80.7	170.1	348.4	194.8	168.6
2006	221.5	81.2	171.5	340.9	193.9	155.4
2007	216.3	76.6	166.4	316.9	187.7	147.2
2008	214.1	71.9	161.4	290.9	182.0	138.2
2009	206.1	64.9	157.2	267.6	177.3	131.2
Average	216.7	75.0	165.3	312.9	187.2	148.1
Return to family living (\$1000) <sup>i</sup>						
2002	47.9	25.5	72.5	70.7	68.7	58.1
2003	90.4	26.3	73.1	73.9	70.3	64.8
2004	109.4	35.9	84.9	199.1	116.8	97.4
2005	95.1	32.2	89.1	161.0	100.3	86.7
2006	83.5	29.2	88.2	141.1	97.3	74.7
2007	91.5	31.3	91.5	144.8	93.5	68.2
2008	84.0	27.6	84.2	110.8	88.0	69.6
2009	71.1	7.7	79.6	79.0	86.9	62.2
Average	85.0	25.6	86.5	127.3	93.2	72.3
Average owner withdrawal assumed (\$1000) <sup>j</sup>	44.0	27.5	44.0	46.2	55.1	44.0
Beginning cash, 2005 (\$1000) <sup>k</sup>	125.8	11.6	108.5	216.9	103.5	98.7
Beginning cash/operating expenses (%) <sup>k</sup>	31.9	6.2	47.0	23.4	29.3	28.9
Probability of a cash flow deficit (%) <sup>l</sup>						
2005	3.0	43.6	1.0	7.0	5.4	3.4
2006	12.8	42.0	4.0	17.0	13.8	19.6
2007	8.6	44.0	3.0	15.4	18.0	29.6
2008	12.4	49.6	8.4	28.4	25.0	24.8
2009	25.0	77.2	13.2	39.2	26.6	37.0

## Broiler-beef Farms

The broiler-beef farms were built and are maintained in cooperation with the integrator firms who contribute critical data for the analysis through the consensus process. Several assumptions underlie these farms for baseline analysis.

For both farms it assumed that the poultry units came online in 1997 with 90 percent financing for the houses—other real estate assets owned free and clear by the operator. With a ten year loan, debt payments expire after 2006. Broiler house technology is held constant with a 40 X 400 foot, curtain sided building, heated with propane. In keeping with the local markets in southwest Missouri, the nominal market value of existing units is held constant. Additional costs are applied in 2005

and 2006 to cover significant building repairs. Income taxes make up a substantial share of the costs in this analysis, particularly after loan payout.

A critical assumption for the baseline analysis—made for the broiler-beef farms only—is that no owner withdrawal is extracted from the business. Thus, it is implied that an off-farm source of income is available to support the household.

Contract terms, though different for each rep farm, have been relatively stable the past few years and are modeled at a flat rate in the projection period.

Table 15. Cash flow risk score, broiler-beef farms

Farm num	Region	Brlr. Houses	Cows	2005-06	2007-09
39	SW	4	50		
40	SW	6	50		

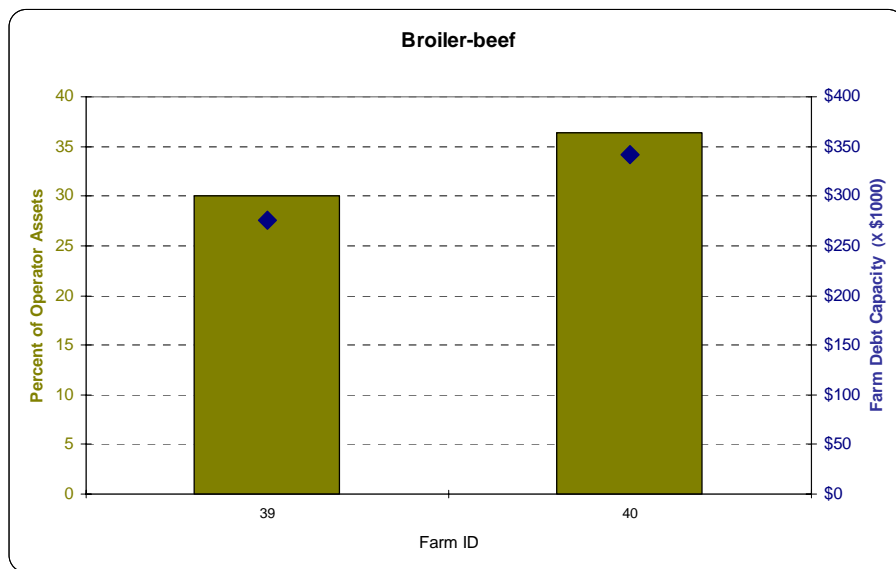


Figure 9. Estimated term debt capacity, broiler-beef farms

## Broiler-beef Spotlights

### Farm 39

This farm raises 6 flocks per year in a 4 house complex. Receipts come from the broilers and beef calves only. All 210 acres are owned. Hay is harvested by a custom operator for a fee. Land values have escalated rapidly in recent years due to population pressure in the region.

Under loan, the farm struggles to make payments on the 90 percent financing. After the loan, and with fresh repairs to the buildings, farm net returns are expected to average \$33,600, or \$8416 per house (no managerial labor costs).

### Farm 40

This farm raises 6 to 7 flocks a year in a 6 house complex on 120 owned acres. An additional 40 acres of pasture is leased. A portion of receipts come from fescue seed. All haying equipment is owned by the operator.

As modeled, the farm has a negative return in the last year of the loan when repairs are required. Post loan, farm net returns are expected to average \$32,800, or \$5461 per house (no managerial labor costs).

Table 7. **Broiler-beef** farms, characteristics and financial outlook

Code	SWBRBF4	SWBRBF6
<b>Farm number</b>	<b>39</b>	<b>40</b>
Region	Southwest	Southwest
County	McDonald	Lawrence
Total acres operated	<b>210</b>	<b>160</b>
'Cropland' hay acres	40	65
Other forage acres	160	95
Timber/waste acres	10	
Operator owned (%)	100	75
Cash leased (%)		25
<b>Poultry &amp; livestock</b>		
Broiler production		
Number of houses	4	6
Sale weight of birds (lbs)	4.40	3.91
Mature beef cows (hd)	50	50
<b>Cash receipt sources <sup>a</sup></b>		
Share of total		
Broiler (%)	79	84
Beef (%)	21	14
Hay and/or seed (%)		2
<b>Harvested acres <sup>b</sup></b>		
Total acres	<b>200</b>	<b>260</b>
Cool-season grass hay	40	65
Fescue seed		65
Improved pasture	160	130
<b>Crop yields <sup>c</sup></b>		
Cool-season grass hay, tns		
2000	3	3
2001	3	3
2002	3	3
2003	3	3
2004	3	3
Fescue seed, lbs		
2000		150
2001		150
2002		200
2003		200
2004		400

Table 16. **Broiler-beef** farms, characteristics and financial outlook (continued)

Code	SWBRBF4	SWBRBF6
<b>Farm number</b>	<b>39</b>	<b>40</b>
Near term cash risk outlook <sup>d</sup>	Moderate	Severe
Intermediate term cash risk outlook	Low	Low
Average operator assets (\$1000)	961	1002
Average return to operator assets (%)	7.5	6.4
Assumed operator debt, Jan 1, 2002 (%) <sup>e</sup>	19	27
Term debt capacity, Jan 1, 2005 (%) <sup>f</sup>	30	36
Cropland value in 2002 (\$ per acre)	1537	1585
Average operating expense/receipts (%)	46.0	53.7
Livestock compensation payment (2002)	1017	1044
Total cash receipts (\$1000) <sup>a</sup>		
2002	139.9	204.3
2003	142.1	204.6
2004	144.3	209.0
2005	145.2	207.1
2006	142.5	204.2
2007	142.6	204.7
2008	141.0	202.9
2009	140.7	202.9
Average	142.4	204.3
Net cash farm income (\$1000) <sup>h</sup>		
2002	71.1	100.2
2003	73.4	97.8
2004	80.0	102.4
2005	79.3	98.1
2006	69.7	86.5
2007	70.7	87.5
2008	84.2	102.8
2009	81.2	99.2
Average	77.0	94.8
Return to family living (\$1000) <sup>i</sup>		
2002	20.2	23.3
2003	13.2	12.5
2004	16.9	11.7
2005	14.5	4.2
2006	0.7	-10.6
2007	29.9	36.6
2008	36.4	35.6
2009	34.7	26.1
Average	23.2	18.4
Beginning cash, 2005 (\$1000) <sup>k</sup>	50.3	48.5
Beginning cash/operating expenses (%) <sup>k</sup>	76.3	44.5
Probability of a cash flow deficit (%) <sup>l</sup>		
2005	1.0	24.2
2006	44.6	98.2
2007	1.0	1.0
2008	1.0	1.0
2009	1.0	1.0





## Table Reference Notes

The term “average” in the financial tables always refers to an average of the variable for the five projection years 2005-2009.

- a. Cash receipts is total gross revenue from all sources, including cash sales in the market, insurance indemnities, and government payments for crops that may not be planted. For a minority of farms this figure also includes a relatively small income from custom farming activity.
- b. Planted acres may exceed total crop acres due to double and triple cropping practices. Forage crops are labeled as harvested acres for beef and dairy farms. These acres may be harvested mechanically (hay, haylage, silage) and/or grazed.
- c. Yield data are as reported by the panels via update meetings or surveys. Irrigated crops are denoted by “Irr,” otherwise yields are dryland. Soybean yields are for full season crops.
- d. Cash risk outlook is scored based on the probability of cash flow deficit (see I) over two time periods. Near term is the calendar years 2005 and 06. Intermediate term is the period 2007-09. Low risk is less than a 25 percent chance of cash flow deficit in any year of the time period; moderate risk is 25 to 49 percent, high risk is 50 to 74 percent, and severe risk is greater than a 75 percent probability of a cash flow deficit.
- e. A beginning level of term debt on January 1, 2002 is assumed for each of the farms. Loan length is the same for all the farms, but interest rates are localized. The values of assets and liabilities, and therefore debt ratios, fluctuate from this starting point.
- f. Term debt capacity ratio is a crude estimate of the debt capacity limit for the farm going into the projection period. Projected receipts and expenses are used to estimate cash available for servicing debt. The loan calculations assume a ten-year loan at 7.5 percent interest. The debt ratio is calculated in relation to operator assets at fair market value.
- g. Government payments include all receipts provided through the commodity titles of the farm bills, including direct (fixed) payments, counter-cyclical payments, and marketing loan benefits. Dairy market loss payments and the livestock compensation program are included where applicable.
- h. Net cash farm income is total cash receipts less all farm operating expenses, i.e., all cash expenses for production including interest payments on all outstanding debt. (See Appendix A).
- i. Annual return to family living is the farm’s after-tax bottom line for the given year. It is the residual after all other cash expenses are deducted from current year receipts. This calculation includes carryover debt, but not carryover cash from prior years. (See Appendix A).
- j. Owner withdrawal is the minimum amount assumed to be extracted from the business for household purposes. It is also used as a proxy for the value of managerial labor in determining rates of return.
- k. Beginning cash in 2005 is the cash reserve accumulated by the farm in the three historical years of the analysis. It is an estimate of the cash cushion the farm has going into the projection period, expressed as a percent of the projected operating expenses in 2005.
- l. Annual probability of cash flow deficit is the chance that total receipts will be less than total cash expenses as a result of price and production risk. Alternatively, it is the chance that returns to family living will be less than the minimum owner withdrawal (See Appendix A).

## APPENDIX A Procedural Notes and Assumptions

The representative farm approach treats a farm business unit as a unique system characterized by local features and resources that are adapted to by the farm manager. Local conditions are internalized in the creation and simulation of each farm.

Primary data are initially developed and continuously validated by Missouri producers via a consensus process. Producers establish farm structure, size, farming practices, costs of production and associated financial requirements for the representative farm based on their individual operations. In some cases, data points are cross-referenced with published sources to test assumptions or to verify and explain differences. Business size, structure and management practices are held constant for the simulation period, 2002-2009.

For simulation, actual yield, price, and operating costs data are used for the years 2002-04. The historical period provides some perspective of financial performance with known values and sets a footing for simulation over the five year projection period.

### Accounting procedures

The accounting method used to model rep farm financials is a cash-basis, whole-farm, after-tax approach. The cash flow statement is the primary tool of this analysis and returns to family living are considered to be the bottom line, i.e., cash *available* for owner withdrawal from *current year* earnings.

Farm financial statements are generated using FLIPSIM software, property of the Texas Agricultural Experiment Station maintained at the Agricultural and Food Policy Center, Texas A&M University. National price estimates are generated by the FAPRI consortium at the University of Missouri and Iowa State University. Table A.1 shows the deterministic prices used to build financial performance estimates for the rep farms. (See discussion on stochastic analysis below).

Rep farms are assumed to participate in government programs as eligible. Applicable farm bill provisions are incorporated over the life of the simulation. Provisions of the 2002 farm bill are applied to the years 2002-09. With the exception of the dairy program, it is assumed that the current farm bill remains intact through 2009. The milk income loss contract (MILC) program applies only to the years 2002-2005 in this baseline. It is further assumed for the baseline that the rep farms do not encounter limitations on the level of government payments and the current farm bill is fully funded without budget cuts.

For rep farms participating in the multi-peril crop insurance program, eligible crops are assumed to be insured with a basic plan at 100 percent price and 65 percent yield protection.

Only income generated with farm business assets is included in receipts, not off-farm wage income. On some farms a relatively small

Table A.1. National, season-average prices, FAPRI deterministic projections (\$ per)

Commodity	2002	2003	2004	2005	2006	2007	2008	2009
Corn, bu	2.32	2.42	1.94	2.13	2.19	2.22	2.23	2.26
Sorghum, bu	2.32	2.39	1.76	1.97	1.96	1.99	2.01	2.04
Wheat, bu	3.56	3.40	3.35	3.21	3.24	3.31	3.36	3.42
Soybeans, bu	5.53	7.34	5.10	4.72	4.99	5.27	5.41	5.42
Cotton, lb	0.445	0.618	0.430	0.435	0.455	0.457	0.463	0.481
Long rice, cwt	4.61	7.69	7.60	7.14	7.16	7.45	7.61	7.78
Cottonseed, tn	101.00	111.00	103.19	106.62	114.56	118.31	120.38	121.27
Soybean meal (44%), tn	173.18	244.22	150.99	149.72	158.92	166.18	169.59	170.42
All hay, tn	92.40	85.50	87.19	87.66	88.84	90.26	91.25	92.31
Cull cows, lb	0.392	0.466	0.526	0.507	0.489	0.480	0.464	0.442
Feeder steers, lb	0.863	0.952	1.118	1.071	1.004	0.984	0.948	0.906
Fed steers, lb	0.670	0.847	0.848	0.830	0.804	0.790	0.768	0.746
Cull sows, lb	0.237	0.282	0.437	0.402	0.337	0.353	0.382	0.408
Barrow and gilts, lb	0.349	0.395	0.525	0.480	0.397	0.411	0.446	0.484
Missouri all milk, cwt	12.30	12.60	16.39	14.28	13.97	13.77	13.58	13.50

portion of total receipts are generated from custom farming enterprises and are included in the analysis.

Each farm is modeled as a sole proprietorship with four tax exemptions, subject to federal, Missouri and self-employment taxes.

With the exception of the broiler-beef rep farms, an annual charge for unpaid managerial labor, or more appropriately called owner withdrawal is deducted from the farm business as a lump sum. Household expenses are not itemized.

The level of owner withdrawal assumed for the beginning year (2002) varies for each farm within a range of \$15,000 to \$60,000 and is inflated thereafter. Any other family labor is treated as hired labor and deducted as a cash expense.

The tables below illustrate how summary statistics are developed for all farms shown in this report. The sample farm crops 1850 acres of corn and beans and runs 200 beef cows.

Table A.2 shows the receipts portion of a modified cash flow statement with three years of historical data and three projected years

Table A.2. Modified cash income statement, sample rep farm

	2002	2003	2004	2005	2006	2007
<b>Cash income (net of share lease)</b>						
1 Cash receipts for crops	301,383	445,780	630,793	411,229	431,815	449,233
2 Cow-calf receipts	113,103	123,362	140,415	139,347	131,001	128,268
3 CCP payments	0	0	42,362	28,523	23,191	13,801
4 Fixed payments	29,083	29,083	29,083	29,083	29,083	29,083
5 LDP payments	36,362	768	42,526	17,985	7,250	0
6 Lump sum payments (LCP)	4,176	0	0	0	0	0
7 Indemnity payments	8,380	0	0	0	0	0
<b>8 Total cash receipts</b>	<b>492,487</b>	<b>598,993</b>	<b>885,179</b>	<b>626,167</b>	<b>622,340</b>	<b>620,385</b>
<b>Farm expenses (net of share lease)</b>						
9 Seed	54,645	55,606	56,278	57,714	58,654	59,470
10 Fertilizer	60,523	53,558	60,114	62,009	62,107	61,709
11 Crop chem	43,492	44,949	44,877	45,474	44,826	44,386
12 Custom hire	9,817	9,886	10,062	10,255	10,375	10,599
13 Hauling/drying/other harvest	8,797	12,575	19,233	14,822	14,530	14,300
14 Crop insurance premiums	6,534	7,040	7,722	6,975	6,534	6,534
15 Cash rent for cropland	50,000	51,500	51,500	51,500	51,500	51,500
<b>16 Sum listed crop costs</b>	<b>233,808</b>	<b>235,114</b>	<b>249,786</b>	<b>248,749</b>	<b>248,526</b>	<b>248,498</b>
17 Cow-calf direct cost	12,879	13,150	12,956	13,228	13,270	13,436
18 Cow-calf purchased feed and hay	4,809	16,434	4,992	4,655	4,129	4,338
19 Purchased beef cattle	7,954	8,295	9,468	9,472	8,840	8,645
20 Cash rent for pastureland	12,000	12,000	12,000	12,000	12,000	12,000
<b>21 Sum listed beef costs</b>	<b>37,642</b>	<b>49,879</b>	<b>39,416</b>	<b>39,355</b>	<b>38,239</b>	<b>38,419</b>
22 Hired labor	37,912	39,323	39,610	40,374	41,428	42,522
23 RE and property taxes	15,289	15,807	16,391	16,849	16,821	17,061
24 Accounting and legal	1,036	1,052	1,071	1,092	1,104	1,128
25 Unallocated maintenance	27,500	30,000	30,534	31,597	32,080	32,619
26 Utilities	8,384	8,784	8,009	8,389	8,110	7,873
27 Whole farm fuel	13,066	13,689	15,110	15,827	15,302	14,853
28 Farm insurance	6,700	7,300	7,430	7,572	7,661	7,827
29 Miscellaneous	2,090	2,123	2,161	2,174	2,179	2,203
30 Conservation work	5,144	5,198	5,290	5,321	5,335	5,393
<b>31 Sum unallocated overhead costs</b>	<b>117,121</b>	<b>123,276</b>	<b>125,606</b>	<b>129,195</b>	<b>130,020</b>	<b>131,479</b>
<b>32 Sum all listed costs</b>	<b>388,571</b>	<b>408,269</b>	<b>414,808</b>	<b>417,299</b>	<b>416,785</b>	<b>418,396</b>
<b>33 Gross margin</b>	<b>103,916</b>	<b>190,724</b>	<b>470,371</b>	<b>208,868</b>	<b>205,555</b>	<b>201,989</b>

(deterministic). Cash receipts for crops and the cow-calf enterprise (lines 1 and 2) are the market returns from ag product sales. Government payments are estimated on lines 3 through line 6. Counter cyclical and loan deficiency payments are estimated given FAPRI's baseline market prices. In 2002, this farm received a lump sum payment through the livestock compensation program and a crop insurance indemnity payment as a result of drought conditions. In 2006 and 2007, deterministic crop prices are projected to be at a level low enough to trigger a counter cyclical payment, but above the loan rate.

Table A.2 also includes the cash farm operating expenses for the sample farm. Direct costs are allocated to an enterprise, but overhead costs are collected and estimated for the whole farm as structured by the panel. Gross margin (line 33) is total cash receipts (line 8) less the sum of all listed cash expenses (line 32). It is the cash earned within the year after operating expenses, excluding interest.

Five costs components are deducted from gross margin to arrive at net earnings for the

year. They are: 1) interest payments, including carryover interest, if any, 2) principal payments on debt service, including carryover, if any, 3) the down payment(s) on new loan(s) for the difference in trade-in values when replacing depreciable assets, 4) estimated income and self-employment taxes, and 5) a charge for managerial labor, also called owner withdrawal. These charges are tracked for the sample farm in a modified cash flow statement, Table A.3.

Machinery and equipment is replaced on a schedule as determined by the practices of the panel and financial feasibility. For example, say the farm plans to purchase a combine and corn head (new or used) every 8 years. All major depreciable assets for the farm have a similar, but independent replacement schedule. When replacement is due, a cash transaction occurs and, if necessary, a new intermediate loan is created—such as in 2004 for the sample farm (line 47).

Income and self-employment tax liabilities are deducted on line 51. Section 179 rules and

Table A.3. Modified cash flow statement, sample rep farm

	2002	2003	2004	2005	2006	2007
34 Beginning cash reserves	0	0	0	96,211	97,902	99,149
35 Interest earned on reserve	0	0	0	293	312	330
36 Gross margin	103,916	190,724	470,371	208,868	205,555	201,989
<b>37 Cash available</b>	<b>103,916</b>	<b>190,724</b>	<b>470,371</b>	<b>305,372</b>	<b>303,769</b>	<b>301,468</b>
38 LT interest	17,904	16,378	14,798	13,163	11,471	9,720
39 IT interest	11,409	7,715	7,376	7,528	5,541	9,692
40 Op interest	21,903	20,331	22,184	18,006	18,070	18,243
41 Carryover op interest	0	4,820	4,149	0	0	0
<b>42 Total interest expense</b>	<b>51,216</b>	<b>49,244</b>	<b>48,507</b>	<b>38,697</b>	<b>35,082</b>	<b>37,655</b>
43 LT principal payment	43,604	45,130	46,710	48,344	50,036	51,788
44 IT principal payment	36,284	39,273	46,309	30,055	32,572	29,980
45 Operating loan carryover	0	73,141	58,439	0	0	0
<b>46 Total debt reduction</b>	<b>79,888</b>	<b>157,544</b>	<b>151,458</b>	<b>78,399</b>	<b>82,608</b>	<b>81,768</b>
<b>47 Down payment on trade-in</b>	<b>13,953</b>	<b>0</b>	<b>5,264</b>	<b>13,778</b>	<b>0</b>	<b>19,900</b>
48 Federal income taxes	0	7,883	109,716	34,459	42,292	31,492
49 Missouri income taxes	0	1,492	17,249	5,647	6,821	5,147
50 Self-employment taxes	0	529	8,907	2,692	3,363	2,488
<b>51 Total taxes</b>	<b>0</b>	<b>9,904</b>	<b>135,872</b>	<b>42,798</b>	<b>52,476</b>	<b>39,127</b>
52 Sum listed cash demands	145,057	216,692	341,101	173,672	170,166	178,450
<b>53 Return to family living</b>	<b>(41,141)</b>	<b>(25,968)</b>	<b>129,270</b>	<b>35,196</b>	<b>35,389</b>	<b>23,539</b>
54 Annual owner withdrawal	32,000	32,471	33,059	33,798	34,454	35,176
<b>55 Annual net earnings</b>	<b>(73,141)</b>	<b>19,522</b>	<b>158,799</b>	<b>1,398</b>	<b>935</b>	<b>(11,637)</b>
56 Cumulative cash position	(73,141)	(58,439)	96,211	97,902	99,149	87,842

income averaging are built into the federal tax calculations.

The sample farm illustrates the handling of short term debt and the effects of carryover debt. Coincidentally, the first year of simulation for the sample rep farm was a year of very poor crop yields and low receipts. Gross margin (line 36) less cash expenses for principal and interest, machinery replacement, and income taxes (line 52), leave this farm with negative returns to family living of -\$41,141 (line 53). This balance is prior to any owner withdrawal from the business for family living. With an assumed owner withdrawal of \$32,000 (line 54) the farm completes the year with annual net earnings of -\$73,141 (line 55). The farm must create new short-term borrowing to cover the short fall. Thus, in 2003, the farm is charged \$73,141 for the 2002 loss (line 45), plus \$4820 interest for new borrowing (line 41).

In 2003, receipts and gross margin are up from the previous year. In fact, if the carryover principal and interest payments are ignored, annual net earnings for the year, after an owner withdrawal, are \$19,522 (line 55). Thus, the farm partially services the carryover debt from 2002. Still, after two years, the business has accumulated a cash deficit of -\$58,439 (line 56) which carries forward to 2004.

In 2004, receipts are at a record high. The farm has net earnings of \$158,799 for the year (line 55). After fully servicing the carry over debt, the owner has \$129,270 that can be withdrawn from the business. We assume the owner takes \$33,059 for household purposes

(line 54) which leaves the farm with a \$96,211 (line 56) surplus to carry forward into the projection period. The operating loan in 2005 is offset by this amount.

Deterministically, the sample farm continues to build cash through 2006. In 2007 the farm has negative net earnings, primarily due to higher operating costs and a cash expense for machinery replacement of \$19,900 (line 47). In effect, the household is still living off of the benefits accrued in 2004, but is not projected to gain wealth (measured in cash) over the three projection years.

**Debt on farms**

To simulate future cash flows, farm debt in the baseline is an assumed value based on the type of farm (asset turnover rate), historical profitability, and the business phase as indicated by the panel members. This assumption is particularly important for livestock, dairy, and poultry farms with a potentially wide range of investment in facilities.

For all rep farms, an initial term debt level is set for the beginning of the simulation period (January 1, 2002) and the simulation forces annual principal and interest payments on schedule. The assumed level of initial term debt appears in the financial tables. The rule regarding term length places a farm in the middle of the loan term. For example, crop farms start with a 20 year real estate loan with 10 years remaining. Exceptions to the rule are made for farms with high investment in single purpose buildings. For all baseline farms, current assets and liabilities are assumed to be zero on January 1, 2002.

Table A.4. Average debt to asset ratios for farm businesses, 2003.

Sales	Cash grains	Corn	Soybeans	Cotton	Beef	Hogs	Dairy	Poultry	All
<b>Missouri</b>									
Under \$100	8.5	**	9.6	**	5.1	**	**	**	5.7
\$100 to \$250	16.5	15.8	7.3	**	5.3	**	10.7	**	10.8
\$250 to \$500	8.1	13.6	24.7	**	12.1	**	10.6	**	13.2
\$500 to \$1000	12.4	23.1	**	14.2	18.6	**	**	19.3	14.7
Over \$1000	17.2	**	**	17.0	19.0	4.6	**	**	10.8
All sales classes	11.9	16.4	13.9	14.2	6.1	5.4	9.2	17.3	12.7
<b>U.S.</b>									
Under \$100	5.3	7.3	7.5	7.0	7.0	9.8	10.0	20.2	8.2
\$100 to \$250	12.9	14.0	11.0	10.3	9.2	13.5	13.1	15.7	11.5
\$250 to \$500	15.3	15.5	16.1	19.1	10.5	18.2	16.7	20.6	14.7
\$500 to \$1000	14.9	16.7	17.1	11.8	14.1	22.0	19.1	23.4	15.5
Over \$1000	29.2	18.5	18.6	16.8	11.9	16.8	29.4	26.6	20.4
All sales classes	14.2	14.1	11.9	12.4	8.9	17.7	17.3	23.7	13.0

Source: USDA ARMS survey.

\* Sales in \$1000. \*\* Data not available.

USDA data on farm debt is presented for comparison with the debt loads assumed in the rep farm baseline. According to USDA, the average total debt for Missouri farms, as a percent of assets, has declined from the recent high of 15.1 percent in 1998 to 12.5 percent in 2003.

Beginning with 2003, it is possible to sort debt to asset ratios by sales class and major enterprise at the state level, as shown in Table A.4. The Missouri ratios do not seem to follow the relatively predictable patterns seen in the national data.

The distribution of actual debt to asset ratios carried by farm businesses is strongly related to the type of farm enterprises. Figure A.1 indicates the distribution of debt nationally according to USDA data for 2001, the most year recent available. The greatest share of farms with high debt was in the pork group, while the greatest share of farms with relatively low debt were in the beef group.

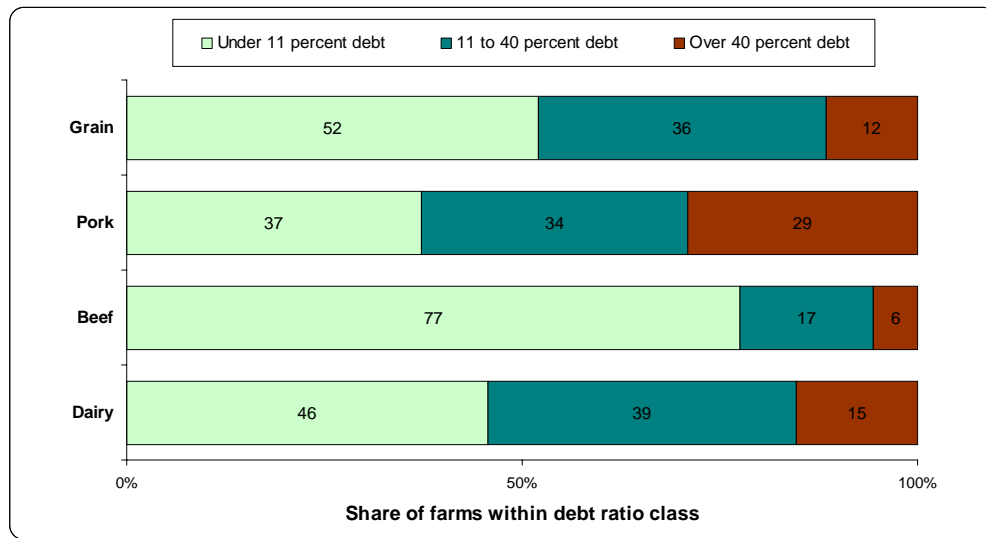


Figure A.1. Distribution of debt on U.S. farms. Source: USDA, 2001.

**The stochastic approach**

To simulate future farm financial performance, prices and production are estimated stochastically. That is, prices and yields for the commodity are randomly drawn 500 times from a distribution determined by historical price and production interactions. The values shown in the financial tables earlier in this report are the mean of the 500 simulations of price and production interactions.

Price estimates are based on FAPRI stochastic projections for the U.S. agricultural sector published in March 2004. For each rep farm, the stochastic national prices are adjusted to fit individual rep farm marketing opportunities.

With regard to production, unique distributions are developed for each rep farm. Projected crop yields, livestock sale weights, birth rates, and milk per cow are allowed to vary as they have locally for the past ten years. Some farms have greater variability in production and therefore greater risk. Think of the classic example of a dryland farm with highly variable yields versus an irrigated farm with a more narrow yield variation.

Figure A.2 illustrates the mechanisms of the stochastic analysis to reflect inherent uncertainty in commodity markets.

Assuming average weather, yields grow steadily in the deterministic baseline (top panel). Also shown are two of the 500 draws on soybean yields used to drive the stochastic analysis.

For each of the 500 alternative futures, price projections reflect the joint effects of all the random supply and demand factors (middle panel). Prices generally exceed the deterministic baseline when yields are below average. Random factors affecting demand also play an important role, so it is possible to have lower than average production and lower than average prices in the same year.

Panel three shows that in ten percent of the 500 alternative futures, the 2005 soybean price falls below \$3.76 per bushel.

In ten percent of the 500 alternative futures, the 2005 soybean price exceeds \$5.88 per bushel.

Table A.5 presents deterministic and stochastic price paths for selected commodities.

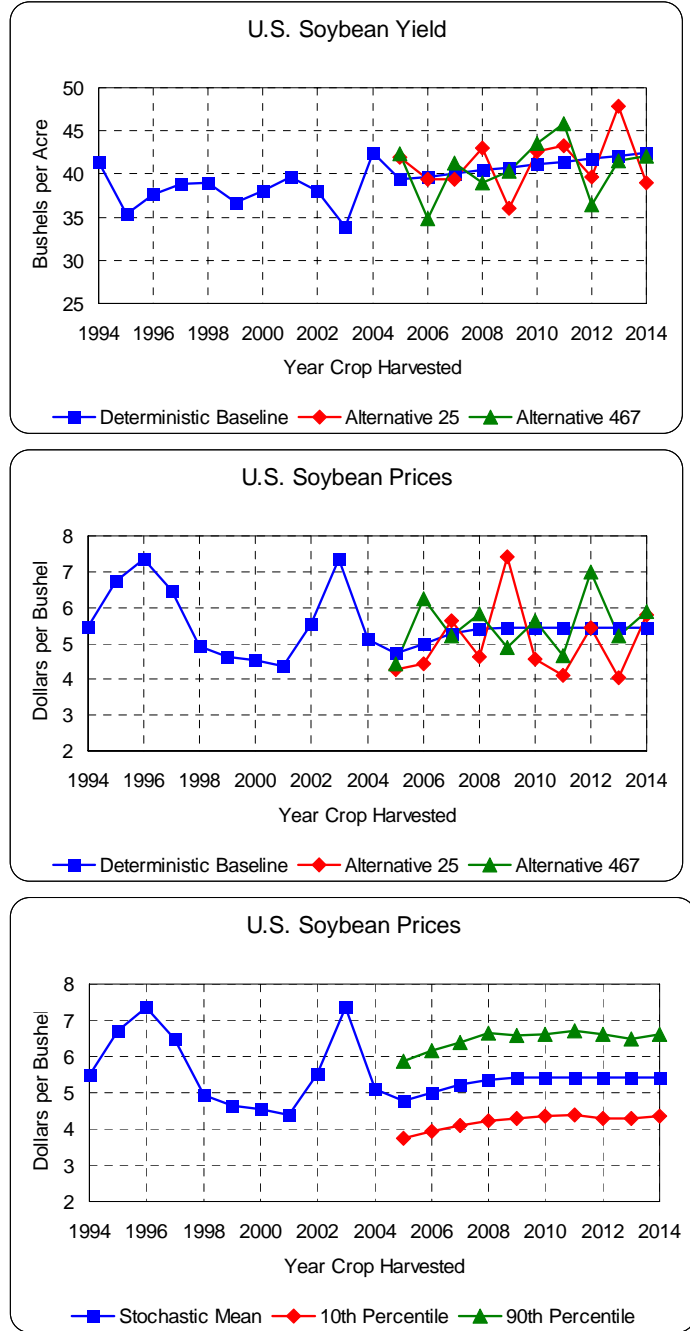


Figure A.2. Soybean price and yield projections: deterministic and potential futures.

Table A. 5. Selected stochastic analysis results, FAPRI baseline, January 2005.

	2004	2005	2006	2007	2008	2009	2010
<b>Corn Price, \$ per bushel</b>							
Deterministic Baseline	1.94	2.13	2.19	2.22	2.23	2.26	2.28
Stochastic Mean		2.14	2.18	2.21	2.22	2.25	2.27
10th Percentile		1.79	1.79	1.81	1.75	1.82	1.85
90th Percentile		2.52	2.62	2.64	2.71	2.72	2.76
<b>Soybean Price, \$ per bushel</b>							
Deterministic Baseline	5.10	4.72	4.99	5.27	5.41	5.42	5.43
Stochastic Mean		4.76	5.01	5.24	5.37	5.41	5.42
10th Percentile		3.76	3.93	4.09	4.23	4.28	4.34
90th Percentile		5.88	6.16	6.39	6.63	6.59	6.61
<b>Nebraska Steer Price, \$ per cwt</b>							
Deterministic Baseline	84.75	83.04	80.43	79.03	76.84	74.61	73.12
Stochastic Mean		83.18	80.52	78.87	76.75	74.53	72.98
10th Percentile		75.93	73.91	71.57	69.13	65.50	64.68
90th Percentile		89.89	86.97	86.02	84.35	81.91	82.40
<b>Barrow and Gilt Price, \$ per cwt</b>							
Deterministic Baseline	52.51	47.99	39.66	41.11	44.58	48.41	46.79
Stochastic Mean		48.00	39.67	40.95	44.52	48.15	46.54
10th Percentile		43.69	34.23	34.43	37.89	40.86	39.40
90th Percentile		52.82	44.81	46.80	50.87	55.60	54.30
<b>Milk Price, \$ per cwt</b>							
Deterministic Baseline	16.04	13.93	13.60	13.39	13.18	13.09	13.08
Stochastic Mean		13.85	13.60	13.41	13.23	13.11	13.12
10th Percentile		12.61	12.16	12.14	11.90	11.78	11.75
90th Percentile		15.04	14.82	14.61	14.59	14.44	14.52



## APPENDIX B

### Representative Farm Panel Members

The listing below names 177 active producers plus 23 individual facilitators for this set of rep farms, current as of the date of this report. For many of the rep farms, data has been developed in cooperation with producers not shown because they have since retired from farming or become inactive for other reasons. In a few instances, currently active panel members are

not listed due to ongoing organizational changes in the farms to ensure proper representation within each panel. The county designation identifies the location of the main farming operation for each producer. The authors express their appreciation to all panel members for their cooperation in this project.

#### Feedgrain-soy farms

No. 1	2350 crop acres Brooks Hurst – Panel facilitator and Atchison County producer Sam Graves – Atchison Steve Alexander – Nodaway	NWFG2350  Lyle Brown – Atchison Terry Ecker – Nodaway
No. 2	2300 crop acres Tom Waters – Panel facilitator and Ray County producer Dwight McMullen – Ray Max Hockemeier – Ray	NWFG2300  Steve Ewert – Clay
No. 3	1700 crop acres Parman Green – Panel facilitator, MU Extension Ag Business Specialist James Wheeler – Carroll Ron Linneman – Carroll Kyle Durham - Carroll	NCFG1700  Gerald Kitchen – Saline Jack Harriman – Saline Mike Ritchhart – Carroll
No. 4	3630 crop acres Parman Green – Panel facilitator, MU Extension Ag Business Specialist Mike Hisle – Saline Glenn Kaiser – Carroll Mark Casner - Carroll	NCFG3630  Todd Gibson – Carroll Ronald Jenkins – Carroll
No. 5	2240 crop acres John Schaffer – Panel facilitator and Lewis County producer Jerry Ketsenburg – Ralls Bill Goldinger – Marion	NEFG2240  Earl Gard – Marion
No. 6	1300 crop acres Mary Sobba – Panel facilitator, MU Extension Ag Business Specialist Andy Adam - Audrain Donnie Schwartz – Audrain Jim Gastler – Callaway Richard Primus – Audrain	NEFG1300  Jules Willott – Audrain Jon Robnett – Audrain Ralph Windman – Montgomery
No. 7	1165 crop acres Grover Gamm - Lewis Sam Cobb – Montgomery	NEFG1165  Dale Samp - Randolph
No. 8	1800 crop acres Neil Bredehoeft – Panel facilitator and Lafayette County producer Ron Catlett – Saline Lynn Fahrmeier – Lafayette	WCFG1800  Ellis Dieckhoff – Lafayette Dennis Schneider – Lafayette
No. 9	1100 crop acres Don Lucietta – Barton Darrel Crockett - Vernon	SWFG1100  Dale Norwood – Barton Eric Lawrence - Barton

**Cotton and Rice farms**

No. 10	1600 crop acres Tate Castillo, Panel facilitator, MU Extension Agronomy Specialist Danny Davis – Dunklin Johnny Watkins – Pemiscot Brian Waldrop – Pemiscot	SECT1600 Rance Daniels – Dunklin Tony Watkins – Pemiscot
No. 11	2000 crop acres Bruce Beck – Panel facilitator, MU Extension Agronomy Specialist, Rice Floyd Page – Butler Will Spargo – Butler	SERC2000 Rick Spargo – Butler Tom Bonifield – Butler
No. 12	4000 crop acres Bruce Beck – Panel facilitator, MU Extension Agronomy Specialist-rice C.P. Johnson – Butler Rodney Eaker – Butler Rusty Eaker – Butler	SERC4000 Frank Smody – Butler Jim Bieller – Butler
No. 13	2500 crop acres C.D. Stewart – Stoddard	SERC2500 Andy Turman – Stoddard
No. 14	4500 crop acres Tom Jennings – Scott	SERC4500 Scott Wheeler – Stoddard

**Crop-beef farms**

No. 15	1850 crop acres + 200 beef cows Mike Killingsworth, Panel facilitator, Killingsworth Ag Services Jack Baldwin – Nodaway Gary Ecker – Nodaway	NWCB1850 Kevin Rosenbohm – Nodaway Roger Vest – Nodaway
No. 16	1485 crop acres + 100 beef cows Kevin Hansen, Panel facilitator, MU Extension Ag Business Specialist Greg Cooper – Carroll Jim Schreiner - Livingston	NWCB1485 John Cramer - Livingston David Williams - Livingston
No. 17	1460 crop acres + 80 beef cows Gary Noel and Darren Hoffman, Panel facilitators, NRCS Micah Lehenbauer – Ralls Phillip Thompson – Ralls Don Griffin – Ralls	NECB1460 Tuley Elliott – Ralls Danny Benson – Ralls
No. 18	500 crop acres + 50 beef cows Mary Sobba – Panel facilitator, MU Extension Ag Business Specialist Rodney Willingham – Audrain Henry Borgmeyer – Audrain	NECB500 Adam Blaue – Montgomery John Houston – Audrain
No. 19	1400 crop acres + 150 beef cows + finishing steers Al Decker, Panel facilitator, MU Extension Livestock Specialist Doug Cox - Bates Lonny Duckworth - Bates	WCCB1400 Jerrell Fischer – St. Clair Kyle Fischer - Bates
No. 20	380 crop acres + 40 beef cows Frank Wideman and Roy Hibbard, Panel facilitators, MU Extension LeRoy Lukefahr – Perry Dean Lukefahr – Perry Greg Haertling – Perry	ECCB380 Brian and Dianna Koenig – Perry Kevin Bachmann – Perry
No. 21	240 crop acres + 150 beef cows Brian Gillen, Panel facilitator, Lockwood High school Vo-Ag Mike Theurer – Dade Randall Erisman – Dade Gary Wolf – Lawrence Steve Allison – Dade	SWCB240 Ray Hunter – Lawrence Chuck Daniel – Dade James Nivens – Lawrence

No. 22	1800 acres crops + 150 beef cows Rose Ann & Rodney Overman – Barton Jerry Schnelle – Barton	SWCB1800 Mark Whittle – Barton Russ Massa – Barton
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**Pork-crop farms**

No. 23	1500 sows farrow-to-finish Jim Fisher – Montgomery Jerry Epperson – Montgomery	NEH1500 Scott Hays – Monroe Kathy Chinn – Shelby
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No. 24	550 acres crop acres + 70 beef cows + 2 contract nursery pig units Wayne Prewitt, Panel facilitator, MU Extension Ag Business Specialist Gary Waltz – Jasper Lawrence Tally – Vernon Bill Handly – Vernon	WCHBC550 Ronnie Means – Barton Tommy Wait – Vernon
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No. 25	250 crop acres + 125 beef cows + 200 sows farrow-to-finish Jeremia Markway, Panel facilitator, Fatima High school Adult Ag Instructor Leo Brandt – Osage Luke Deeken – Osage	CTHBC250 John Muenks – Osage Doug Luebbering – Cole
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No. 26	1250 sows, farrow-to-finish Don Nicodim, Panel facilitator, Executive Vice President, Missouri Pork Association Paul Benedick – Saline Marty Phillips – Cass Leroy Vollmer – Cooper	CTH1250 Phil Howerton – Johnson Brent Sandidge – Saline
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No. 27	1500 crop acres + 3000 head grow-finish hogs Gary Hoette, Panel facilitator, MU Extension Agronomy Specialist Harold Clark – Montgomery Bill Deichman – Audrain Mark Stevens – Montgomery	EHC1500 Mike Grosse – Montgomery Charles Grosse – Montgomery Jim Foster – Montgomery
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**Beef farms**

No. 28	1560 forage acres + 350 beef cows Ken Lenox – Phelps George Barnitz – Dent	CTBF350 Tom Gollhofer – Dent Doug & Pat Black – Phelps
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No. 29	735 forage acres + 200 beef cows Tony Rickard, Panel facilitator, MU Extension Dairy Specialist Eugene Miekley – Barry Larry Henbest – Barry Jerry Davis - Barry	SWBF200 Basil Ferguson – Newton Kent Arnaud – Barry
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No. 30	935 forage acres + 260 beef cows + backgrounding Eldon Cole, Panel facilitator, MU Extension Livestock Specialist Rod Lewis – Lawrence Nolan Kleiboeker - Newton	SWBF260 Ben Kaal – Lawrence Steve Parker – Lawrence
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No. 31	1850 forage acres + 350 beef cows Stacy Hambleton, Panel facilitator, MU Extension Ag Business Specialist Calvin Crawford – Oregon Wilbur Spreutels – Oregon	SCBF350 Carol Grimes – Oregon Don Johnson – Oregon
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No. 32	650 forage acres + 150 beef cows Randy Saner, Panel facilitator, MU Extension Livestock Specialist Cindy Ulm – Howell Becky Day – Howell Al Vance – Howell	SCBF150 Don Proffitt – Howell Charlie Rymer – Howell
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**Dairy farms**

- No. 33 150 cows + 350 forage acres + 240 acres crops ECDY150  
 Matt Herring, Panel facilitator, MU Extension Agronomy Specialist  
 Bob Riegel – Franklin Daryl Rademacher – Gasconade  
 Charles Rademacher – Gasconade Eugene Scheer – Franklin  
 Roy Koelling, Jr. – Gasconade
- No. 34 85 cows + 340 forage acres SWDY85  
 Stacey Hamilton, Panel facilitator, MU Extension Dairy Specialist  
 Norman Backs – Dade Herb and Deann Dighero - Lawrence  
 Danny Dover – Lawrence Doug Owen – Webster  
 Craig Westfall – Polk
- No. 35 110 cows + 245 forage acres SWDY110  
 Tony Rickard, Panel facilitator, MU Extension Dairy Specialist  
 Rex Henderson – Barry Robert Pointer - Barry  
 Phil Schad – Barry Steve Chapman – Barry  
 Jerry Varner – Barry
- No. 36 400 cows + 600 forage acres SWDY400  
 Stacey Hamilton, Panel facilitator, MU Extension Dairy Specialist  
 Daryl Davis – Greene Wayne Whitehead – Webster  
 Steve Gallivan – Dallas Freddie Martin – Hickory  
 Robert Hensley – Polk
- No. 37 230 cows + 350 forage acres SWDY230  
 Stacey Hamilton, Panel facilitator, MU Extension Dairy Specialist  
 Bernie VanDalfsen – Jasper Jeff Buckner – Cedar  
 Charles Fletcher – Barry
- No. 38 150 cows + 420 forage acres + backgrounding dairy steers SCDY150  
 Ted Probert, Panel facilitator, MU Extension Dairy Specialist  
 David Hutsell – Wright Nathan Roth – Wright  
 David and Rhonda Gray – Wright Ted and Barbara Sheppard - Texas

**Broiler-beef farms**

- No. 39 4 broiler house + 50 beef cows SWBRBF4  
 Jim Durham, Panel facilitator, Simmons Foods  
 Jerry Evans – Newton Bill Wilson – McDonald  
 Murphy Biglow – McDonald
- No. 40 6 broiler houses + 50 beef cows SWBRBF6  
 Mike Lucareillo, Panel facilitator, Tyson Foods  
 David Brittenham – Lawrence Cliff Fitchpatrick – Newton  
 Ron Campbell – Lawrence Roger Schnake – Lawrence

## APPENDIX C

### Panel Updates

Since publication of the most recent baseline outlook in April of 2004, meetings have been held with the following panels to update the database. Farm panels meet on a two-year schedule to review alignment of the rep farm with their own operations and adjust and/or

revalidate simulation prices, production, practices, and costs. Few structural changes were made to the farms in this round of interviews, indicating that the panels are stable in their current growth.

Farm Number	Region	Farm Type	Updates
<b>New Panels</b>			
26	Central	Pork-crop	1250 sows, farrow-to-finish
<b>Farms with structural changes</b>			
29	Southwest	Beef	Removed custom fescue seed enterprise
35	Southwest	Dairy	Increased milking herd from 95 to 110 cows
<b>Farms re-validating operations (prices, production, costs)</b>			
8	West Central	Feedgrain	
10	Southeast	Cotton	
11	Southeast	Rice	
12	Southeast	Rice	
20	East Central	Crop-beef	
23	Northeast	Pork-crop	
25	Central	Pork-crop	
30	Southwest	Beef	
31	South Central	Beef	
32	South Central	Beef	
33	South Central	Dairy	
39	Southwest	Broiler	
40	Southwest	Broiler	
<b>Removed for this baseline</b>			
ECCB1700	East central	Crop-beef	
SECT3000	Southeast	Cotton	
SERC400	Southeast	Rice	

APPENDIX D  
**Missouri Yield History**  
 USDA-NASS data

<b>Corn, bu</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>Avg.</b>
Northwest	135.7	126.2	91.2	94.7	166.0	122.8
North Central	146.7	129.2	114.4	97.4	151.0	127.7
Northeast	157.2	123.3	95.2	113.6	159.0	129.7
West	130.1	127.6	99.4	79.3	158.0	118.9
Central	140.7	136.5	107.5	95.1	161.0	128.2
East	142.1	130.5	89.4	116.7	156.0	126.9
Southwest	144.5	144.0	117.0	108.8	134.0	129.7
South Central	112.4	119.7	103.8	117.1	130.0	116.6
Southeast	148.7	158.8	145.0	151.8	160.0	152.9
State Total	143.0	133.0	105.0	108.0	159.0	129.6

**Sorghum, bu**

Northwest	85.2	76.8	90.0	60.0	87.1	79.8
North Central	102.4	89.0	92.9	60.0	104.0	89.7
Northeast	106.2	105.9	107.4	91.0	126.9	107.5
West	83.0	85.3	63.2	61.3	100.9	78.7
Central	96.7	98.3	86.9	62.1	106.6	90.1
East	92.8	100.6	80.6	78.3	109.5	92.4
Southwest	84.5	101.7	82.8	75.7	105.2	90.0
South Central	78.6	73.5	81.7	60.0	61.5	71.1
Southeast	88.5	88.0	80.2	84.7	95.0	87.3
State Total	92.0	94.0	85.0	77.0	108.0	91.2

**Soybeans, bu**

Northwest	37.4	39.0	31.6	25.7	50.0	36.7
North Central	37.5	35.6	37.4	24.9	45.0	36.1
Northeast	42.1	41.1	38.7	32.1	47.0	40.2
West	23.2	36.1	26.2	21.9	47.0	30.9
Central	36.6	41.2	36.2	28.0	48.0	38.0
East	42.1	42.8	35.7	34.1	49.0	40.7
Southwest	15.5	32.9	21.9	26.9	33.0	26.0
South Central	31.2	35.7	31.5	31.9	37.0	33.5
Southeast	30.8	34.6	34.8	39.2	41.0	36.1
State Total	35.0	38.0	34.0	29.5	46.0	36.5

**Wheat, bu**

Northwest	43.5	44.8	47.7	62.3	53.0	50.3
North Central	50.6	50.3	52.0	65.1	50.0	53.6
Northeast	56.4	53.8	53.1	68.2	57.0	57.7
West	48.0	55.7	41.4	62.9	49.0	51.4
Central	47.9	51.7	43.2	62.7	48.0	50.7
East	46.8	50.6	42.5	55.9	47.0	48.6
Southwest	45.9	52.5	37.8	61.3	47.0	48.9
South Central	42.6	47.1	32.9	47.0	48.0	43.5
Southeast	57.7	56.0	46.9	56.3	57.0	54.8
State Total	52.0	54.0	45.0	61.0	52.0	52.8

<b>Cotton, lb</b>	668.0	834.0	796.0	874.0	1041.0	842.6
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<b>Rice, cwt</b>	57.0	59.5	60.5	61.3	68.0	61.3
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