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Food and Agricultural  
Policy Research Institute



University of Missouri

*March 2009*

# **US Baseline Briefing Book:**

## **Missouri Insert**

FAPRI-MU Report #02-09

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# Foreword

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The Food and Agricultural Policy Research Institute (FAPRI) provides analysis of agricultural and biofuel markets and policies for Congress and other decision makers. This report is to be used in conjunction with the 2009 US Baseline Briefing Book (FAPRI-MU report #01-09), which presents a summary of ten-year baseline projections for US agricultural and biofuel markets. This report provides a more detailed analysis of projections for Missouri agriculture. The projections provided for Missouri used conditioning assumptions consistent to those contained in the 2009 US Baseline Briefing Book, and readers are encouraged to refer to that publication for more detail on those assumptions, the FAPRI process and acknowledgments. Some of the major assumptions are included below.

## **Assumptions**

These projections are not a forecast of what will happen, but rather an analysis of what could happen if current policies remain in place and the macroeconomic projections underlying the agricultural projections come to fruition. Major assumptions include:

- Provisions of the Food, Conservation and Energy Act (FCEA, the 2008 farm bill) are incorporated.
- Provisions of the Energy Independence and Security Act (EISA, the 2007 energy bill) are incorporated.
- We assume that expiring biofuel tax and tariff provisions will be extended.
- Macroeconomic projections rely primarily on January 2009 forecasts by IHS Global Insight.

## **Things to look for this year**

Most Missouri farm commodity prices will average near levels seen in late 2008, as declining petroleum prices, a weakening global economy, a stronger dollar and improved weather in several key countries have reversed the trend of rising commodity prices that occurred in 2007 and early 2008. Missouri production expenses will also retreat in 2009, resulting in net farm income that is similar to both the 2008 estimated level and the 2007 reported level.

- Corn and soybean planted area is expected to show only modest changes from 2008 levels, following large annual changes in both 2007 and 2008.
- Inventories of beef cows, dairy cows and sows will contract in 2009, as weak consumer demand for meat and dairy products constrains output prices to levels below those required for historical average profitability.
- The extreme price volatility of the past couple of years may continue, as many of the factors that caused recent price swings remain in flux.

# Missouri vs. US cash receipts

- Missouri is much more dependent upon corn and soybean cash receipts as a percentage of total crop receipts than the US.

- Corn and soybeans generated 70 percent of Missouri crop cash receipts from 2000-2007, while accounting for only 32 percent of US crop cash receipts.

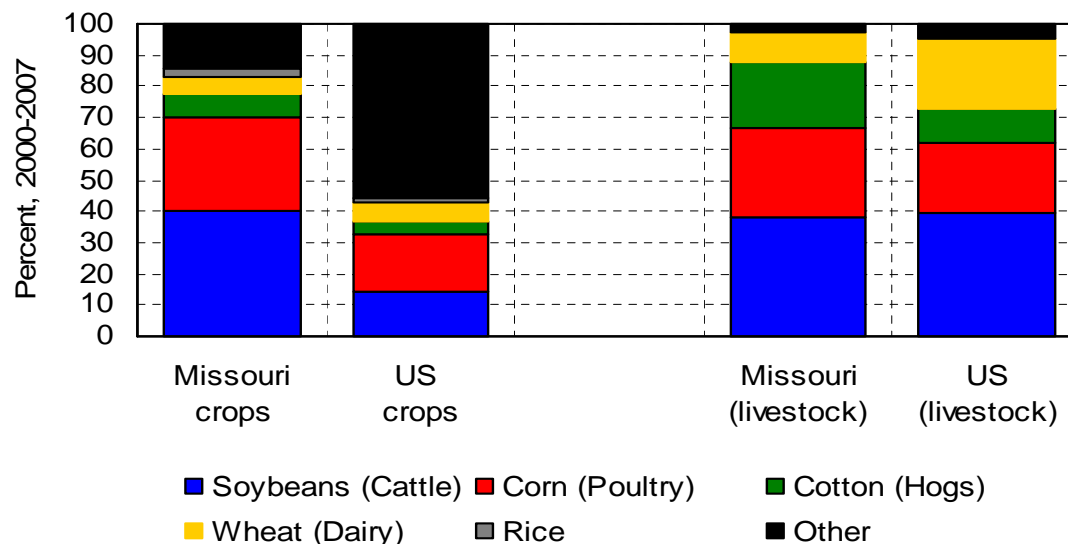
- The breakdown of livestock cash receipts is very similar between Missouri and the US. Cattle receipts accounted for 38 percent of Missouri livestock cash receipts from 2000-2007; poultry 29 percent and hogs 21 percent.

- Soybean cash receipts in Missouri accounted for more than 6 percent of the US total from 2000-2007.

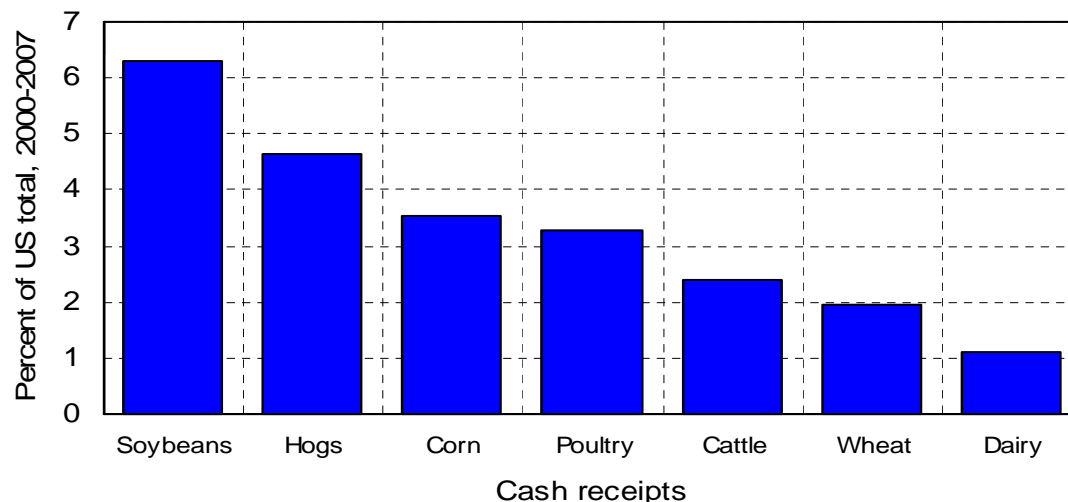
- Missouri also generates a significant portion of national receipts for hogs, corn and poultry.

- Despite the fact that Missouri cattle receipts account for just over 2 percent of national receipts, Missouri had the second largest number of beef cows in the nation in 2008, trailing only Texas.

Cash receipt factors differ for crops



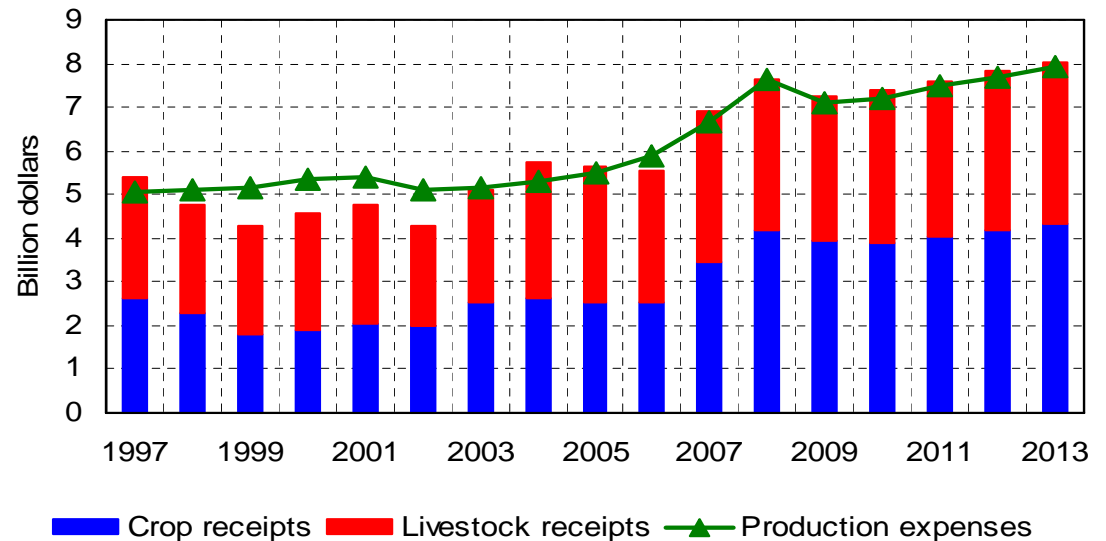
Many Missouri commodities important nationally



# Farm income

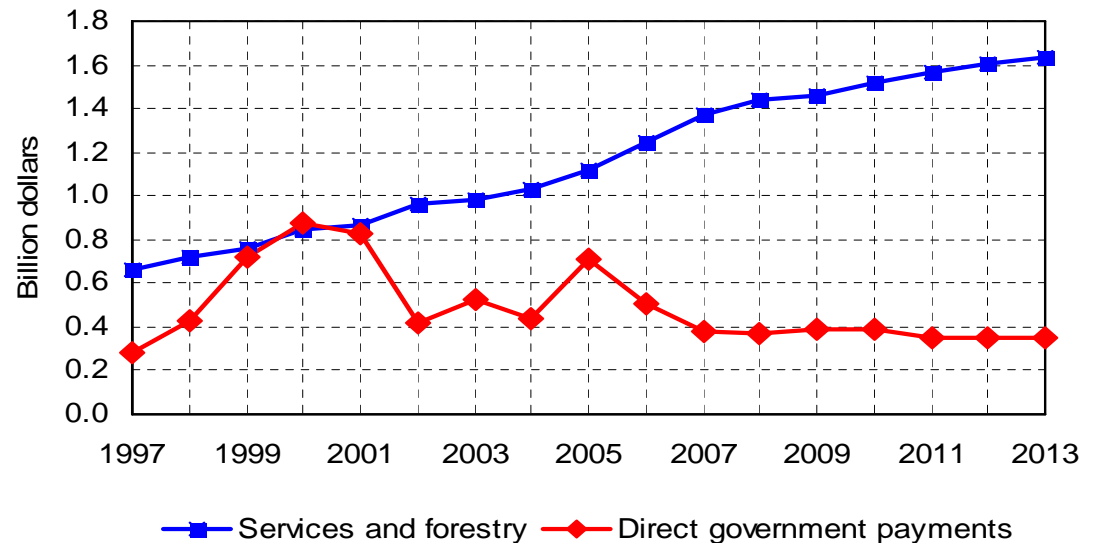
## Receipts and expenses have risen sharply

- The relationship between cash receipts for crops and livestock and production expenses has been relatively stable since 2003.
- Production costs and receipts will both fall in 2009, and growth rates after 2010 will be much slower than those experienced recently.
- After trailing livestock receipts for most of the past decade, crop receipts took on more importance in Missouri than livestock receipts beginning in 2008. This phenomenon is likely to remain in place for the next few years.



- Receipts for services and forestry are playing an increasingly important role in Missouri net farm income. Net rent paid to non-operator landlords accounts for the largest share of this category.
- Similar to weakness in crop and livestock cash receipts, services and forestry receipts will show very little growth in 2009.
- Government payments to Missouri farmers have recently been less than half of those at the beginning of this decade. If market prices continue to fall substantially, payments will be higher than those shown in the projection.

## Other receipts play an important role in Missouri



## Farm income statistics

Calendar year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	(Million dollars)										
Cash receipts	5,123	5,726	5,661	5,562	6,920	7,618	7,256	7,372	7,612	7,850	8,045
Crops	2,533	2,651	2,547	2,523	3,469	4,200	3,933	3,908	4,020	4,165	4,332
Livestock	2,590	3,075	3,114	3,039	3,451	3,418	3,323	3,464	3,592	3,686	3,713
Home consumption	13	14	16	18	15	16	17	17	18	19	19
Crops	6	4	3	2	1	1	1	1	1	1	1
Livestock	7	10	14	16	14	15	15	16	17	18	18
Inventory adjustment	-347	732	-317	135	-22	23	-28	32	38	52	59
Crops	-237	693	-390	171	89	68	49	69	56	63	66
Livestock	-109	40	73	-36	-111	-45	-77	-38	-18	-12	-7
Services and forestry	987	1,036	1,116	1,243	1,370	1,442	1,461	1,518	1,570	1,603	1,638
Mach. hire, custom work	50	56	49	81	51	64	64	62	63	62	62
Forest products sold	9	9	9	9	14	14	15	15	15	15	15
Other farm income	261	230	255	242	266	272	262	276	289	299	302
Imputed rental value	667	741	803	911	1,039	1,093	1,121	1,165	1,203	1,227	1,259
Ag sector output	5,776	7,508	6,476	6,959	8,283	9,099	8,706	8,939	9,239	9,524	9,761
Direct gov. payments	523	441	712	505	382	370	386	393	355	350	349
Production expenses	5,174	5,307	5,521	5,869	6,667	7,635	7,124	7,189	7,474	7,692	7,917
Net farm income	1,124	2,643	1,668	1,595	1,998	1,834	1,968	2,143	2,120	2,181	2,193

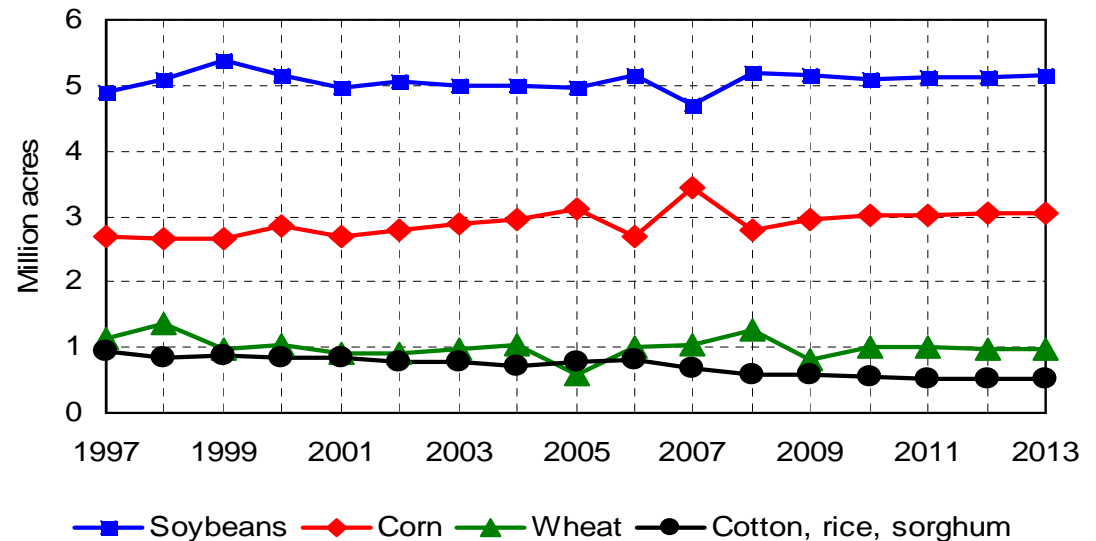
# Crops

- Total planted area for soybeans, corn, wheat, cotton, rice and sorghum will fall in 2009 by the largest amount since 2001.

- Weather conditions will play a typically large role in determining the allocation of corn and soybean acres, but at this time corn area is expected to be slightly larger than 2008, with a marginal decline in area planted to soybeans.

- 2009 winter wheat seedings were reported sharply down for Missouri. More land is expected to be devoted to the harvesting of hay this year, while cotton acreage continues to fall.

Planted area to decline in 2009

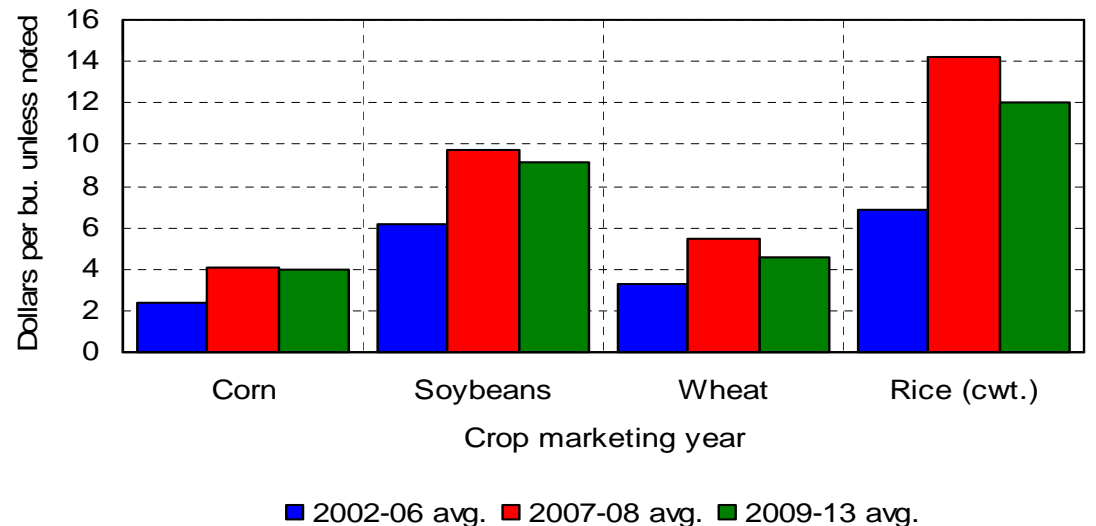


- Virtually all Missouri crop commodity prices are expected to be lower in the 2009 marketing year than either 2007 or 2008.

- Cotton is the exception to the rule, as lower supplies allow prices to begin to strengthen in 2009.

- Though crop prices will be slightly weaker in the projection than those of the past couple of years, they are still expected to be well above levels seen earlier this decade.

Crop prices to retreat but remain historically high



## Crop production and prices

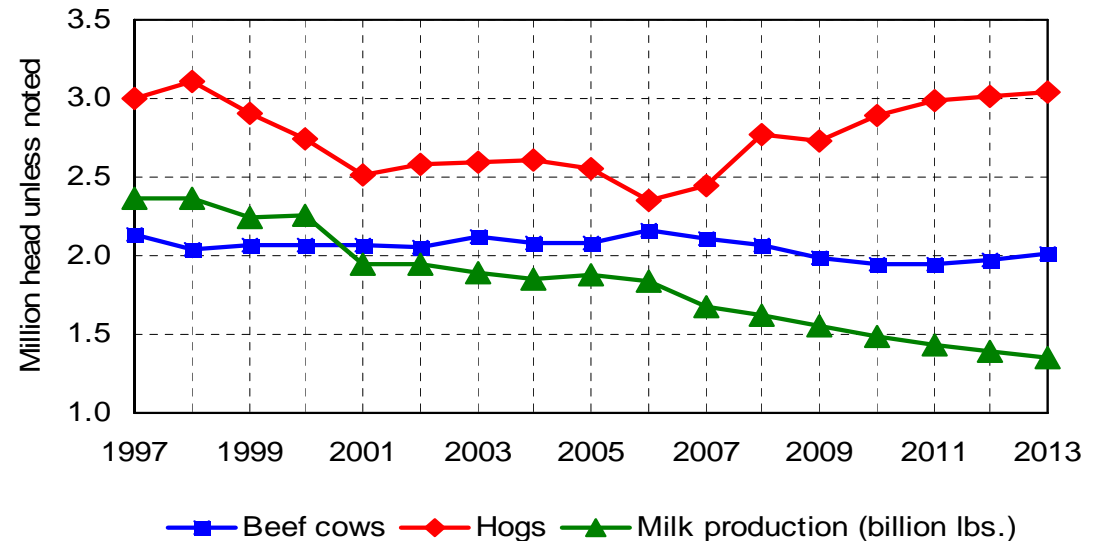
Crop year	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
<b>Area</b>	(Million acres planted unless noted)										
Corn	2.90	2.95	3.10	2.70	3.45	2.80	2.96	3.00	3.02	3.04	3.05
Soybeans	5.00	5.00	4.95	5.15	4.70	5.20	5.14	5.09	5.12	5.13	5.14
Wheat	0.96	1.05	0.59	1.00	1.05	1.25	0.80	1.00	0.99	0.98	0.98
Sorghum	0.22	0.15	0.14	0.10	0.11	0.09	0.09	0.09	0.09	0.09	0.08
Cotton	0.40	0.38	0.44	0.50	0.38	0.31	0.29	0.26	0.25	0.25	0.25
Rice	0.18	0.20	0.22	0.22	0.18	0.20	0.20	0.20	0.18	0.18	0.18
Hay (harvested)	4.25	4.35	3.97	4.14	4.05	4.20	4.31	4.28	4.23	4.20	4.18
<b>Production</b>	(Million bushels unless noted)										
Corn	302	467	330	363	458	382	409	422	431	441	449
Soybeans	146	223	182	194	175	191	194	194	197	200	202
Wheat	53	48	29	49	38	56	37	47	47	47	48
Sorghum	16	16	10	8	10	8	8	8	8	8	7
Cotton (thousand bales)	700	830	864	985	764	670	605	563	547	546	544
Rice (million cwt.)	10.5	13.3	14.1	13.7	12.3	13.2	13.7	13.7	12.2	12.3	12.8
Hay (million tons)	8.1	9.4	6.6	6.9	7.5	8.8	8.6	8.6	8.5	8.4	8.4
<b>Farm prices</b>	(Dollars per bushel unless noted)										
Corn	2.46	2.03	2.03	3.06	4.17	4.02	3.79	3.77	3.95	3.98	4.14
Soybeans	7.52	5.62	5.67	6.47	10.10	9.45	8.81	8.86	9.16	9.39	9.65
Wheat	3.09	3.24	3.35	3.52	5.17	5.84	4.50	4.46	4.59	4.67	4.78
Sorghum	2.40	1.80	1.92	3.18	3.74	3.19	3.11	3.11	3.28	3.36	3.50
Cotton (lb.)	0.60	0.41	0.47	0.45	0.57	0.44	0.50	0.55	0.57	0.58	0.60
Rice (cwt.)	7.20	6.98	6.87	9.38	11.90	16.58	12.39	11.37	11.61	12.12	12.62
Hay (ton)	64.00	58.50	65.00	75.00	110.00	104.13	93.45	89.05	88.04	87.68	87.93



# Livestock

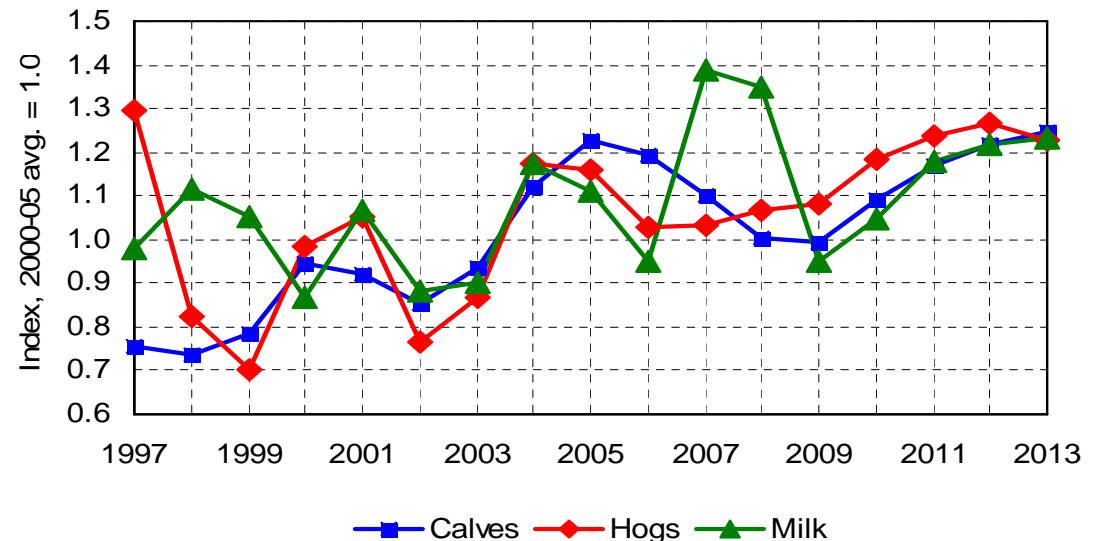
- High input costs for meat and milk production have forced many producers to reduce their animal numbers, both in Missouri and throughout the US.
- Weak consumer demand for meat and dairy products, both in the US and internationally, has kept output prices from quickly rising despite reduced supplies.
- Profitability is expected to return to hog production late this year or early in 2010. It will likely take a little longer for the cow herd to be reduced enough to restore cow-calf profits.

Animal inventories and milk production falling



- Strong meat demand beginning in 2004 helped calf prices reach record high levels, but as the economy weakened and corn prices rose, calf prices have steadily declined.
- Unprecedented international demand for pork and dairy products allowed for the combination of higher US production and strong or rising prices for pork and milk in 2007 and 2008.
- The supply of meat and milk is declining in Missouri and nationwide. When the economy improves and consumer demand recovers, the collision of stronger demand and weaker supply will allow prices to increase.

Prices weak in the short term, then rise



## Livestock sector

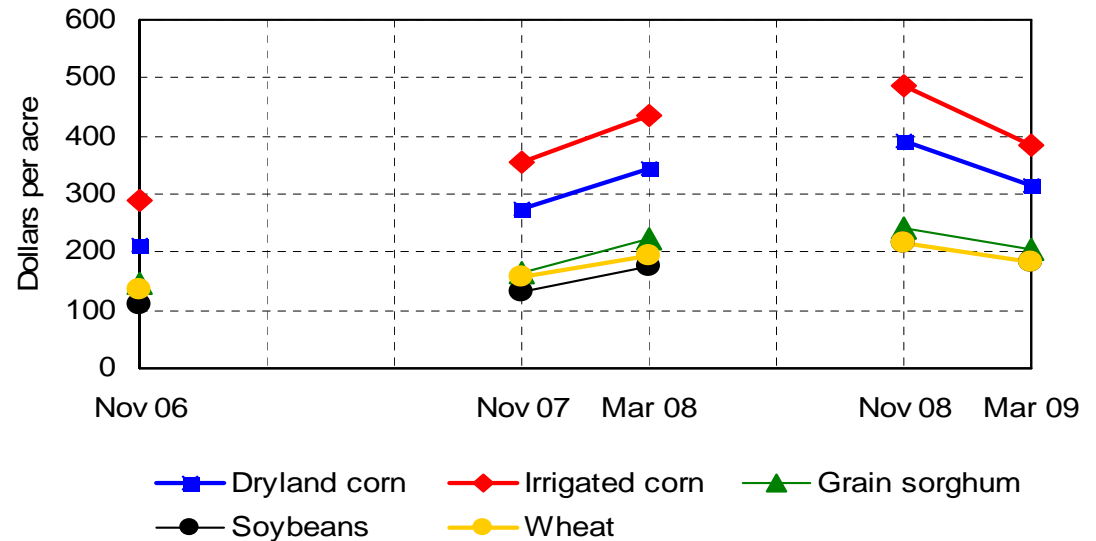
Calendar year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Inventories</b>	(Thousand head)										
Cattle & calves	4,500	4,300	4,350	4,450	4,400	4,250	4,250	4,196	4,185	4,199	4,230
Beef cows	2,116	2,085	2,081	2,166	2,106	2,070	1,992	1,952	1,952	1,977	2,011
Sows	360	340	340	345	360	375	370	365	364	368	371
Market hogs	2,590	2,610	2,560	2,355	2,440	2,775	2,730	2,897	2,983	3,014	3,040
Milk cows	129	122	117	115	112	111	107	102	97	94	91
<b>Production</b>	(Million pounds unless noted)										
Beef	1,155	1,170	1,215	1,118	1,102	1,092	1,075	1,055	1,052	1,064	1,076
Pork	1,100	1,142	1,115	1,464	1,798	2,003	2,064	2,065	2,064	2,078	2,107
Broiler *											
Turkey	724	667	628	634	630	679	659	668	680	690	699
Egg (million dozens)	155	155	159	159	157	157	155	157	160	162	164
Milk	1,886	1,847	1,875	1,840	1,678	1,615	1,557	1,488	1,437	1,394	1,353
<b>Prices</b>	(Dollars per pound unless noted)										
Cattle	0.77	0.92	0.98	0.94	0.92	0.86	0.86	0.94	0.99	1.01	1.02
Calf	1.01	1.21	1.33	1.29	1.19	1.09	1.08	1.18	1.26	1.32	1.35
Hog	0.34	0.46	0.46	0.40	0.41	0.42	0.42	0.47	0.49	0.50	0.48
Broiler *											
Turkey	0.35	0.42	0.45	0.50	0.52	0.55	0.54	0.54	0.54	0.55	0.55
Egg (dozen)	0.65	0.65	0.47	0.47	0.80	0.92	0.86	0.81	0.80	0.81	0.82
Milk (cwt.)	12.60	16.40	15.50	13.30	19.40	18.83	13.28	14.61	16.44	17.00	17.19

\* Broiler data discontinued to avoid disclosing individual operations. Broiler receipts are included in livestock receipts.

# Crop budgets

- There will be a wide range in operating costs for individual crop producers this year given the large changes in input costs that have occurred over the past few months.
- Producers that purchase inputs this spring will likely be able to pay lower prices for things like fertilizer and fuel than those who locked in these same inputs at the price levels of last fall.
- Recent estimates of operating costs show that March 2009 estimates have fallen below March 2008 estimates.

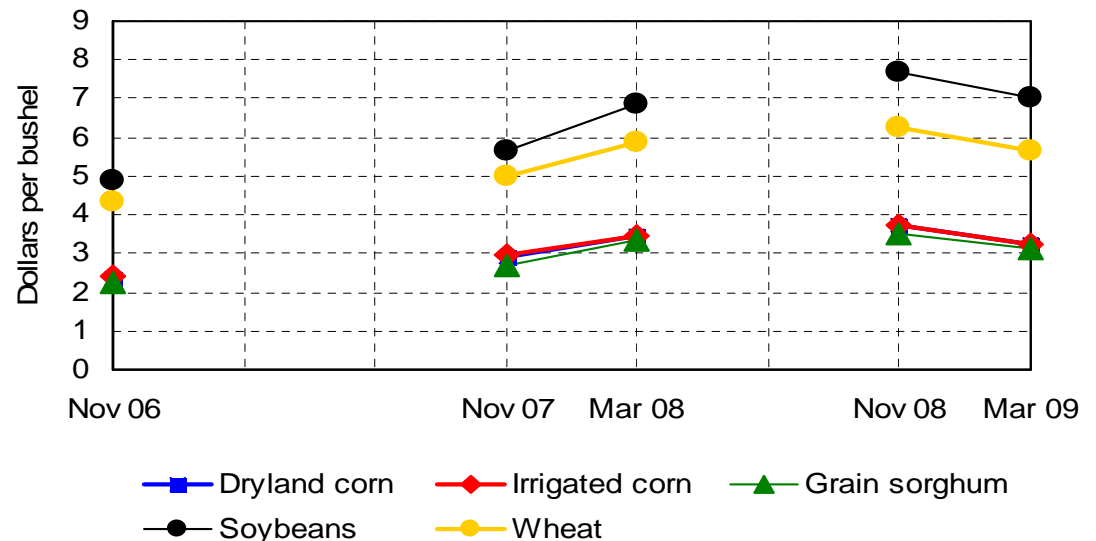
Predicted operating costs, nearby crop



- Current operating cost estimates for corn are around \$2.00 per bushel given current input prices. Ownership costs, machinery, land and overhead add another \$1.25 per bushel. Total costs for producing corn are expected to be near \$3.25 per bushel for the 2009 crop.

- The recent change in operating cost estimates highlights the importance of crude oil prices to input costs. Producers can expect the volatility in operating costs will continue due to uncertainty about future oil prices.

Predicted operating costs, nearby crop



**COSTS AND RETURN ESTIMATES FOR 2009 CROPS.**

ESTIMATED IN MARCH 2009

*Reflects Missouri farms in the 2000 acre range outside of the bootheel. Yields are better than state average with costs estimated accordingly.*

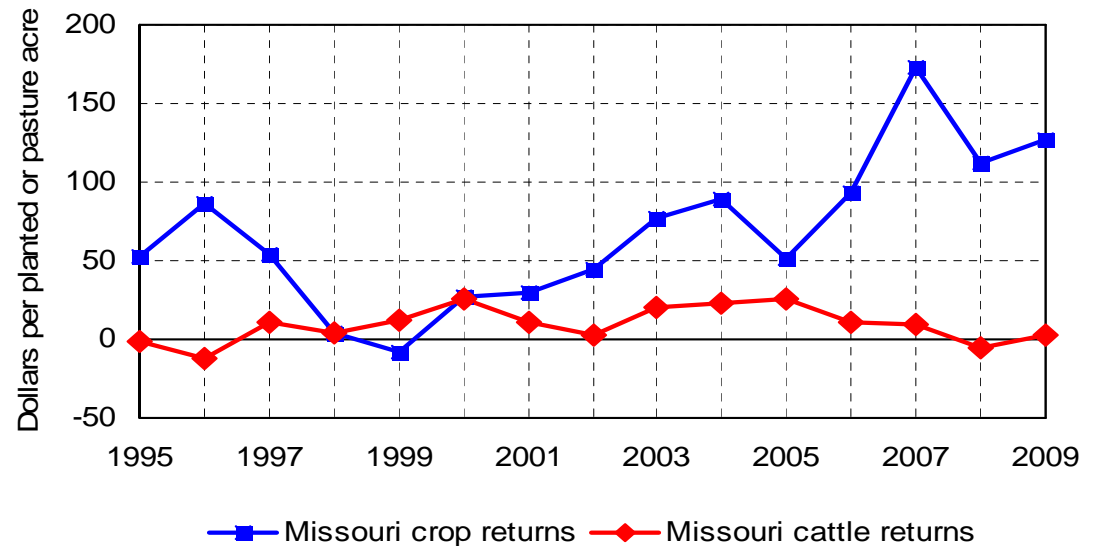
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	<b>Dryland Corn</b>	<b>Irrigated Corn</b>	<b>Grain Sorghum</b>	<b>Soybeans After Corn</b>	<b>Soybeans After Wheat</b>	<b>Soft Red Wheat</b>
<i>Yield, bushels</i>	155	200	110	50	25	60
<i>Price per bushel</i>	3.90	3.90	3.45	8.80	8.80	4.70
<b>Income per acre</b>						
Primary crop	604.50	780.00	379.50	440.00	220.00	282.00
Net payments (fixed)	14.15	14.15	14.15	14.15	0.00	14.15
<b>Total income per acre</b>	<b>\$ 618.65</b>	<b>\$ 794.15</b>	<b>\$ 393.65</b>	<b>\$ 454.15</b>	<b>\$ 220.00</b>	<b>\$ 296.15</b>
<b>Operating costs per acre</b>						
Seed	69.38	74.00	25.80	43.07	50.67	32.00
Fertilizer	123.55	156.70	112.00	76.50	36.25	87.05
Crop chemical	30.50	30.50	20.70	12.90	12.90	7.80
Crop insurance	22.00	4.00	0.00	14.00	0.00	10.00
Custom hire and rental	4.75	4.75	9.50	0.00	0.00	9.50
Mach. fuel, drying & irrigation energy	23.52	45.35	8.49	9.28	5.98	7.71
Machinery repairs and maintenance	15.50	37.59	9.62	10.36	8.16	10.40
Operator and hired labor	14.12	19.97	10.35	11.02	9.04	10.66
Operating interest	10.65	13.08	6.91	6.30	4.31	6.09
<b>Operating costs per acre</b>	<b>\$ 313.96</b>	<b>\$ 385.94</b>	<b>\$ 203.37</b>	<b>\$ 183.43</b>	<b>\$ 127.31</b>	<b>\$ 181.21</b>
<b>Ownership costs per acre</b>						
Farm business overhead	3.84	3.95	3.84	4.32	0.00	3.60
Machinery overhead	27.69	49.80	18.86	18.69	13.78	14.15
Machinery depreciation	34.92	57.07	21.85	24.65	18.54	18.24
Real estate charge	121.50	147.50	95.00	121.50	0.00	121.50
<b>Ownership costs per acre</b>	<b>\$ 187.95</b>	<b>\$ 258.32</b>	<b>\$ 139.55</b>	<b>\$ 169.16</b>	<b>\$ 32.32</b>	<b>\$157.49</b>
<b>Total costs per acre</b>	<b>\$ 501.91</b>	<b>\$ 644.26</b>	<b>\$ 342.92</b>	<b>\$ 352.58</b>	<b>\$ 159.63</b>	<b>\$ 338.70</b>
Income over operating costs per acre	304.69	408.21	190.28	270.72	92.69	114.94
Income over total costs per acre	116.74	149.89	50.73	101.57	60.37	-42.55
Operating costs per bushel	2.03	1.93	1.85	3.67	5.09	3.02
Ownership costs per bushel	1.21	1.29	1.27	3.38	1.29	2.62
Total costs per bushel	3.24	3.22	3.12	7.05	6.39	5.64

# Agricultural use values

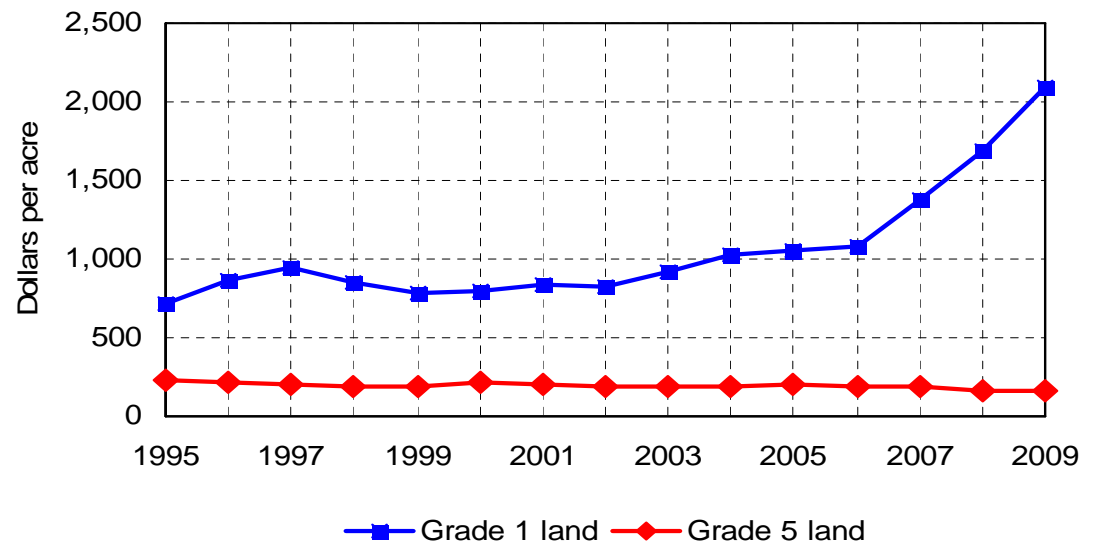
- The Missouri State Tax Commission will develop new agricultural use value recommendations for the Missouri legislature in late 2009.
- FAPRI began providing an updated approach to estimating agricultural use values after the 2005 use values were reported by the commission.
- Moving average historical returns divided by agricultural real estate interest rates are the basis for FAPRI's agricultural use value estimates.

Cattle returns move lower while crop returns stay high



- FAPRI's estimate of land grades 1-4 depends on a 10-year moving average of crop returns. Recent observations of higher crop returns are replacing the lower levels of crop returns observed 10 years ago, driving use values of grades 1-4 higher.
- FAPRI's estimate of land grades 5-7 depends on a 15-year moving average of cattle returns. Since cattle returns have continued to experience cyclical behavior similar to that of past decades, grades 5-7 use values have been relatively stable over the past few years.

FAPRI calculated grade 1 agricultural use values rise



## Missouri agricultural use values

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Missouri cropland returns (\$ per planted acre)	(8.42)	27.49	29.21	44.90	76.98	89.64	51.55	92.81	172.84	112.64	126.37
Missouri cattle returns (\$ per pasture acre)	12.56	25.05	10.45	2.35	19.88	22.56	26.28	10.85	10.06	(6.06)	2.49
Agriculture real estate loan rate, 10th fed. reserve (%)	8.85	9.64	8.25	7.48	6.88	6.93	7.55	8.35	8.23	6.99	5.99
Historical use values, State Tax Commission	(Dollars per acre)										
Grade 1 land	985		985		985		985		985		
Grade 2 land	810		810		810		810		810		
Grade 3 land	615		615		615		615		615		
Grade 4 land	385		385		385		385		385		
Grade 5 land	195		195		195		195		195		
Grade 6 land	150		150		150		150		150		
Grade 7 land	75		75		75		75		75		
Calculated use values, University of Missouri											
Grade 1 land	790	800	835	819	923	1,032	1,059	1,087	1,384	1,685	2,090
Grade 2 land	650	658	687	674	759	848	871	894	1,138	1,386	1,719
Grade 3 land	493	500	521	511	576	644	661	679	864	1,052	1,305
Grade 4 land	309	313	326	320	361	403	414	425	541	659	817
Grade 5 land	195	213	206	184	186	193	202	192	187	168	160
Grade 6 land	150	164	159	141	143	148	155	148	144	129	123
Grade 7 land	75	82	79	71	72	74	78	74	72	65	62

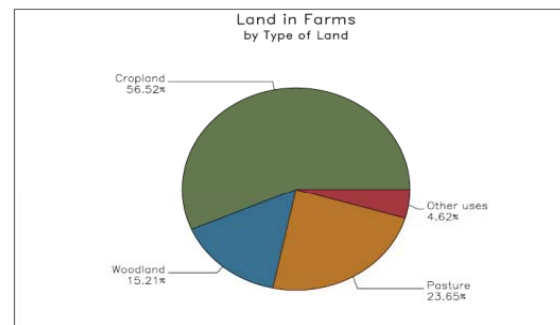
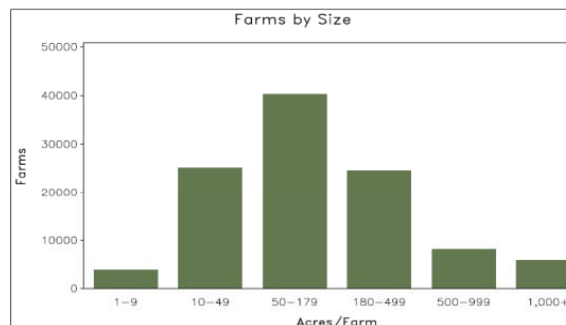
# 2007 CENSUS OF AGRICULTURE

State Profile

## Missouri



	2007	2002	% change
<b>Number of Farms</b>	107,825	106,797	+ 1
<b>Land in Farms</b>	29,026,573 acres	29,946,035 acres	- 3
<b>Average Size of Farm</b>	269 acres	280 acres	- 4
<b>Market Value of Production</b>	\$7,512,926,000	\$4,983,255,000	+ 51
Crop Sales \$3,494,938,000 (47 percent)			
Livestock Sales \$4,017,988,000 (53 percent)			
<b>Average Per Farm</b>	\$69,677	\$46,661	+ 49
<b>Government Payments</b>	\$319,519,000	\$264,475,000	+ 21
<b>Average Per Farm</b>	\$7,084	\$6,097	+ 16



United States Department of Agriculture  
National Agricultural Statistics Service

[www.agcensus.usda.gov](http://www.agcensus.usda.gov)

# 2007 CENSUS OF AGRICULTURE

State Profile

## Missouri

### Ranked items within U.S., 2007

Item	Quantity	U.S. Rank	Universe <sup>1</sup>
<b>MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)</b>			
Total value of agricultural products sold	7,512,926	12	50
Value of crops including nursery and greenhouse	3,494,938	13	50
Value of livestock, poultry, and their products	4,017,988	13	50
<b>VALUE OF SALES BY COMMODITY GROUP (\$1,000)</b>			
Grains, oilseeds, dry beans, and dry peas	2,963,208	10	50
Tobacco	5,022	12	17
Cotton and cottonseed	164,714	8	17
Vegetables, melons, potatoes and sweet potatoes	61,705	29	50
Fruits, tree nuts, and berries	4,315	41	50
Nursery, greenhouse, floriculture, and sod	121,280	28	50
Cut Christmas trees and short rotation woody crops	1,078	30	49
Other crops and hay	173,618	18	50
Poultry and eggs	1,265,166	9	50
Cattle and calves	1,676,632	9	50
Milk and other dairy products from cows	302,684	22	50
Hogs and pigs	725,738	7	50
Sheep, goats, and their products	9,580	19	50
Horses, ponies, mules, burros, and donkeys	21,369	18	50
Aquaculture	9,506	24	50
Other animals and other animal products	7,313	33	50
<b>TOP LIVESTOCK INVENTORY ITEMS (number)</b>			
Broilers and other meat-type chickens	46,654,478	10	50
Turkeys	8,604,222	4	50
Layers	7,249,420	15	50
Cattle and calves	4,292,702	6	50
Hogs and pigs	3,101,469	7	50
<b>TOP CROP ITEMS (acres)</b>			
Soybeans for beans	4,672,738	5	40
Forage-land used for all hay and haylage, grass silage, and greenchop	3,895,401	2	50
Corn for grain	3,256,195	9	49
Wheat for grain, all	881,227	13	47
Cotton, all	377,960	9	17

### Other State Highlights

Economic Characteristics	Quantity	Operator Characteristics	Quantity
<b>Farms by value of sales</b>		<b>Principal operators by primary occupation:</b>	
Less than \$1,000	30,541	Farming	45,031
\$1,000 to \$2,499	8,938	Other	62,794
\$2,500 to \$4,999	10,172	<b>Principal operators by sex:</b>	
\$5,000 to \$9,999	12,872	Male	95,071
\$10,000 to \$19,999	12,377	Female	12,754
\$20,000 to \$24,999	3,884	<b>Average age of principal operator (years)</b>	
\$25,000 to \$39,999	7,346		57.1
\$40,000 to \$49,999	6,834	<b>All operators <sup>2</sup> by race:</b>	
\$50,000 to \$99,999	5,688	American Indian or Alaska Native	826
\$100,000 to \$249,999	2,959	Asian	413
\$250,000 to \$499,999	3,197	Black or African American	226
\$500,000 or more	3,197	Native Hawaiian or Other Pacific Islander	45
Total farm production expenses (\$1,000)	6,135,205	White	158,187
Average per farm (\$)	56,900	More than one race	1,463
Net cash farm income of operation (\$1,000)	1,959,854	All operators <sup>2</sup> of Spanish, Hispanic, or Latino Origin	736
Average per farm (\$)	18,176		

(D) Cannot be disclosed. See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes.

<sup>1</sup> Universe is number of states in U.S. with item.

<sup>2</sup> Data were collected for a maximum of three operators per farm.