

STATUS OF Wisconsin Agriculture 2014

- **The Wisconsin Farm Economy**
- **Current Outlook**
- **Wisconsin's Dairy Turnaround**



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Status of Wisconsin Agriculture, 2014

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Preface

Status of Wisconsin Agriculture is an annual agricultural situation and outlook report authored (except where noted) by faculty in the Department of Agricultural and Applied Economics, University of Wisconsin-Madison. The report contains three parts. Part I provides an overview of the financial environment in the Wisconsin farming sector. In Part II, market analysts review conditions in major Wisconsin commodity sub-sectors over the past year and offer their forecasts for 2014. Part III contains a special article that documents the impressive rebound in Wisconsin milk production since 2005, discusses the factors that contributed to that growth, and identifies opportunities and constraints that will affect future growth.

Status of Wisconsin Agriculture 2014 and previous editions can be downloaded at: <http://www.aae.wisc.edu/pubs/status/>. If you do not have internet access, contact Kathy Martin Taylor, Department of Agricultural and Applied Economics, UW-Madison, 427 Lorch Street, Madison, WI 53706, to obtain a printed copy.

The faculty of the Department of Agricultural and Applied Economics welcomes your comments and questions on material in this report. We also encourage your suggestions regarding rural Wisconsin issues that we might address in subsequent editions.

Acknowledgements

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Status of Wisconsin Agriculture, 2014

Executive Summary

Summary

Wisconsin net farm income was up about 14 percent in 2013. The state's farmers netted about \$3.75 billion, \$550 million more than in 2012 and just short of the record \$3.8 billion net farm income earned in 2011. Dairy led the way in terms of increased farm revenue. Gross milk sales in 2013 were a record \$5.6 billion, about \$400 million more than 2012, because Wisconsin farmers produced 1.7 percent more milk and were paid the second highest average milk price on record.

Other livestock producers also fared well in 2013. Gross sales of meat animals were up \$35 million over 2012 (2 percent). Poultry and egg sales were also up \$35 million, a gain of 7 percent. Revenue from miscellaneous livestock and livestock products (e.g., sheep and goat milk) was also 7 percent greater than it was in 2012.

Crop producers also did well, though not as well as livestock producers. Despite a bin-busting crop, feed grain (mainly corn) producers earned \$200 million less in 2013 than they had in 2012, a year of devastating drought. That's because the very short 2012 corn crop brought high prices, while prices for 2013's much larger crop fell off sharply. Revenues from soybean and fruit crops about equaled those in 2012. Vegetable growers' gross receipts were up \$100 million, more than 25 percent from 2012.

Wisconsin farmers spent \$260 million more to produce crops and livestock products in 2013 than in 2012, a smaller increase than seen in recent years. They spent less for fertilizer and fuel but paid about \$100 million more for hired labor.

Wisconsin farmers have been able to substantially strengthen their collective balance sheet, thanks to three back-to-back years of good net income and an increase in land values. The most recent data available show that on December 31, 2012, they held assets valued at \$75.5 billion (up 8 percent from a year earlier) and had debts totaling \$8.37 billion (down 8 percent). During 2012,

farm equity (assets minus debt) increased by \$6.3 billion and the debt-to-asset ratio decreased from 0.13 to 0.11. This indicates a very strong financial position.

2013 Review

The U.S. economy picked up a little steam in 2013, though growth can hardly be called robust. Third quarter year-over-year GDP growth was 4.1 percent, indicating a slow but steady increase since the fourth quarter of 2012, when it was near zero. The combination of stronger GDP growth and slowly falling unemployment rates encouraged domestic consumer spending on food. Foreign consumers bought U.S. farm commodities at a record pace in 2013, taking advantage of lower prices for major export commodities like corn and soybeans.

With the exception of labor, most farm production inputs in 2013 cost about the same as they did in 2012. Although larger plantings required more fertilizer use, fertilizer demand and supply were in reasonably good balance, resulting in lower prices than 2012. Fuel prices were also down a bit. Credit was readily available and cheap, but farmers appeared to be using profits more than loans to finance new machinery and other assets. Cash rents remained high because of increased plantings based on expected high crop returns, but they have not increased at the same rate as land values.

Wisconsin dairy farmers received record-high gross milk revenue in 2013, but high feed costs cut into the net earnings of those who purchased most of their feed. Still, milk production set a new record—27.7 billion pounds—marking nine years of steady growth. Wisconsin dairy farmers milked 3,000 more cows in 2013 than a year earlier and annual milk per cow increased 1.7 percent to almost 22,000 pounds. Both domestic and foreign demand was firm. U.S. dairy exports reached a level representing 16 percent of total milk production as the U.S. took advantage of milk production shortfalls in major competing export countries. Domestic consumption of dairy

products was up overall, but the product mix continued to shift: U.S. consumers drank less milk and ate more cheese and yogurt.

Total U.S. meat production and consumption were virtually the same as in 2012. Only broiler production was up (2 percent); production of pork, turkey and lamb were all down marginally. Domestic per capita meat consumption was up a pound to 203.2 pounds, marking the third year of fairly stable consumption following steady fall-offs from the 221.6 pounds consumed in 2007. Meat exports continued strong in 2013. While exports and imports of beef were pretty much a wash, the U.S. came out ahead on other meats: Net exports of pork, broilers and turkey were between 14 and 19 percent of production.

U.S. corn and soybean growers recovered—or perhaps over-recovered—from 2012’s drought-diminished crops. Due in part to a late start from cold, wet weather, corn producers planted about 2 million fewer acres than they did in 2012. But they harvested nearly the same area as last year and brought in near-record yields of 160 bushels per acre. The result was a record crop of 14 billion bushels. That will mean plenty of corn at low prices and still leave ending stocks for the 2013-14 marketing year at 1.8 billion bushel. Wisconsin corn growers harvested about 465 million bushels from 3.2 million acres. Reduced usage of the short 2012 corn crop along with growing confidence in a huge 2013 harvest caused corn prices to slide during 2013. U.S. average corn prices dropped from \$7 per bushel in January to \$4.27 by November.

Soybean planting was also affected by 2013’s late spring, but like corn, the crop benefited from excellent growing conditions once planted. The U.S. soybean harvest was up about 200 million bushels from 2012. Wisconsin producers harvested 63 million bushels of soybeans in 2013. Like corn prices, soybean prices also fell over the year—but much less dramatically. Central Illinois soybean prices were \$14.18 per bushel in January and \$13.36 in November.

Most Wisconsin vegetable growers had to wait much longer than usual to plant their crops, but delayed planting did not materially affect yields. Fruit growers were actually helped by the late spring as pollination occurred when chances of frost were near zero. Potato production in Wisconsin and nation-wide was down from 2012

because fewer acres were planted. Wisconsin grew 1,000 fewer acres, and yields were down a bit from 2012 due to delayed planting. The smaller crop generated much stronger prices than in 2012, but not as strong as 2011. Wisconsin cranberry growers produced a whopping 5.5 million barrels (100 pounds), 15 percent more than in 2012. The large crop will intensify a growing surplus problem in the cranberry industry.

2014 Preview

The U.S. economy is expected to grow at an annual rate of 2.5 percent in 2014. Inflation should remain low, around 1.5 percent, but USDA expects food prices to rise faster than the overall consumer price index. U.S. net farm income will be down from 2013 due to lower expected prices for corn and soybeans. But livestock producers’ bottom line will benefit from resulting lower feed prices. U.S. agricultural exports are expected to be down from 2013 despite lower prices for major export commodities because of larger crops in competing countries.

The situation for farm input prices will be mixed. Lower corn and soybean prices will dampen enthusiasm for expanding acreage of these crops. This could lead to some discounting of fertilizer and seed prices from 2013 and put a lid on land rents. Interest rates should remain low, but loan demand is not expected to jump significantly. The cost of some items, notably fuel and labor, are largely determined by conditions outside of the farm sector.

Milk prices in 2014 will drop, because cheaper feed will spur an expansion in U.S. milk production. Domestic use of dairy products should continue its slow growth, but exports will be off from 2013 because our principal competitors—New Zealand and the European Union—will expand milk production. Expect the Wisconsin average milk price to decrease in the range of \$0.75 to as much as \$1 per hundredweight below 2013’s \$20.25 near-record all-milk price. Lower feed costs in 2014 means the milk price-feed cost margin will show a much smaller drop than the milk price, keeping income over feed costs close to 2013 for those dairies buying feed.

Meat production in 2014 should be up a bit, but output and prices by species will vary. USDA expects beef output to drop about 6 percent, generating higher prices for slaughter cattle and even

stronger prices for feeder cattle, because lower feed costs will increase feedlot demand. Pork production will likely set a new record, causing prices to fall by around 5 percent. Broiler production is also expected to set a new record, dropping prices by 2–10 cents per pound from 2013. Turkey production will likely increase slightly, but prices should remain close to 2013's. Domestic meat consumption could drop by about a pound per person, but meat exports should remain close to 2013 levels.

Large corn and soybean crops in 2013 will generate low prices in 2014. USDA's December 2013 forecast for the 2013-14 marketing year is a range of \$4.05–\$4.75 per bushel for corn; \$11.50–\$13.50 for soybeans. Storage in anticipation of stronger prices later in the season is risky given the magnitude of supplies, though there may be some local opportunities for basis improvement. Low prices will likely discourage plantings in 2014, but not by enough to significantly improve prices unless another 2012-like weather disaster occurs. A marketing plan and sound risk management strategies will pay a premium in 2014.

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This year's special article examines the remarkable turnaround in Wisconsin milk production that began in the middle of the last decade. Production peaked in 1988 at 25 billion pounds and then began a 16-year slide, falling to 22 billion pounds by 2004. Broad concerns about the loss of dairy plant capacity and dairy infrastructure mounted, spawning several initiatives to halt the slide in milk production. Since 2004, production has increased to nearly 28 billion pounds. Dairy farmers and dairy plants are rapidly modernizing. There is a clear sense of confidence throughout the Wisconsin dairy sector. Based on interviews with dairy industry leaders, we identify the myriad of factors that drove this turnaround and speculate on competing factors that will influence future growth.

I. Status of the Wisconsin Farm Economy

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Wisconsin Farm Income

Thanks to much more favorable weather, production of most Wisconsin farm commodities was higher in 2013 than in 2012. But larger production brought lower prices for many products, reducing the value of the higher yields. Higher costs also cut into net revenues. Nevertheless, Wisconsin farmers fared very well. We estimate that in the aggregate, they will net more than \$3.75 billion in 2013, \$550 million more than in 2012 and less than \$100 million short of the record net farm income of \$3.84 billion set in 2011.

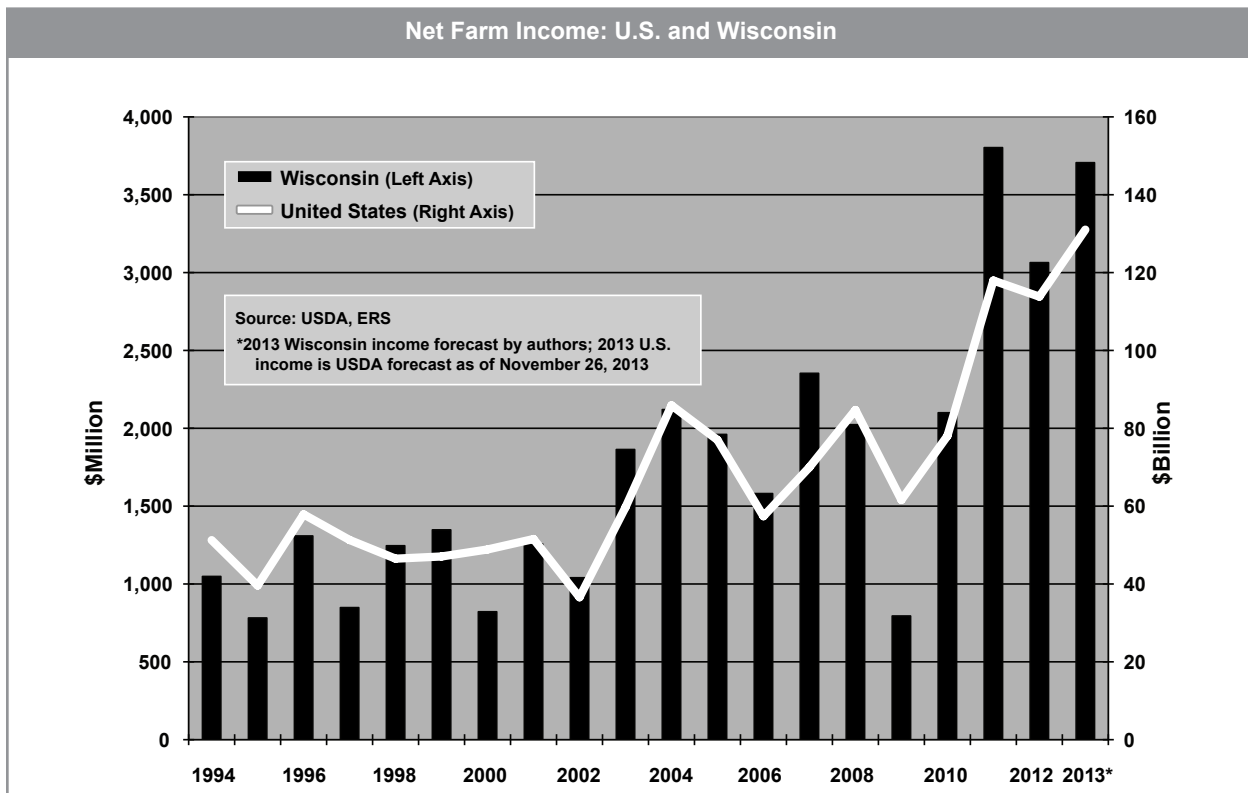
Wisconsin crop farmers are expected to gross about \$400 million more

than last year. But that gain is due entirely to a negative \$530 million inventory adjustment to 2012 crop revenue.¹ Cash receipts from the sale of feed grains (primarily corn) were down about \$200 million. Receipts from sales of wheat, soybeans, and fruit were also down from 2012, but vegetable crop revenue was up 25 percent.

Revenues from all livestock products were up from 2012, with poultry and eggs showing the largest percentage gain in sales revenue. Wisconsin dairy farmers earned about \$400 million more on higher production and higher milk prices. Dairy revenue set a new record in 2013.

Input costs were up in 2013, but the overall increase—\$260 million—was more modest than seen in recent years. Fertilizer costs were down about 6 percent and fuel costs were 2.3 percent lower. But Wisconsin farm electric bills went up by 8 percent. And larger crops elevated marketing, storage and transportation costs by 12 percent.

By historical standards, Wisconsin net farm income has been very strong for the last three years, averaging more than \$3.5 billion. This is more than double the average annual net farm income for 2001–2010. Measured in real dollars, Wisconsin net farm income has kept up with inflation for the last 10 years (with the exception of 2009).



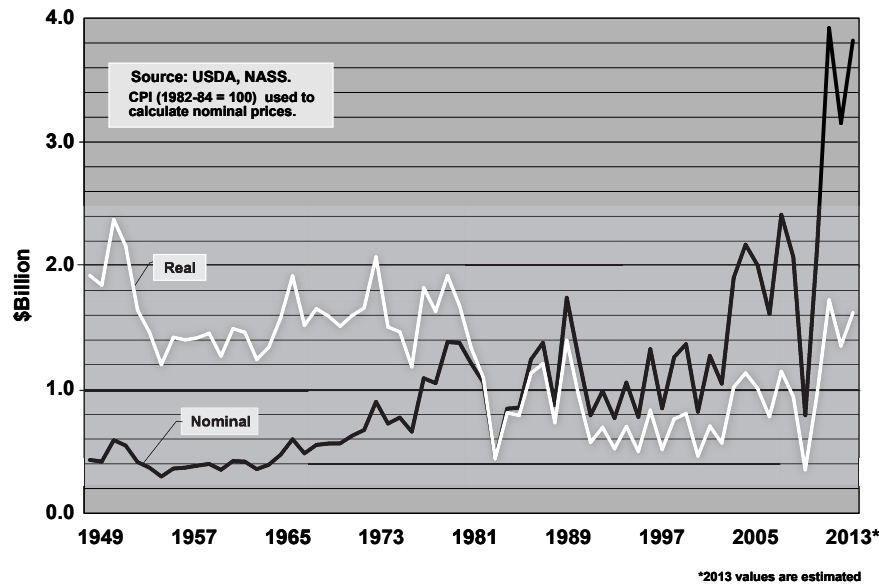
1. The large inventory adjustment in 2012 was due to drought-related sales of commodities in 2012 that were produced in 2011. There is insufficient information to forecast inventory adjustment in 2013.

Derivation of Wisconsin Net Farm Income (\$1000)

	<i>2011</i>	<i>2012</i>	<i>2013 (est.)</i>
Value of crop production:			
Food grains	148,798	142,816	140,000
Feed crops	2,188,463	2,315,908	2,110,000
Oil crops	659,393	908,539	890,000
Fruits and tree nuts	215,362	254,306	250,000
Vegetables	373,871	372,361	470,000
All other crops	533,768	566,044	570,000
Home consumption	2,900	3,456	4,000
Inventory adjustment	250,593	-529,930	0
Total Crops	4,373,148	4,033,500	4,434,000
plus: Value of livestock production:			
Meat animals	1,374,032	1,417,172	1,450,000
Dairy products	5,233,137	5,229,464	5,600,000
Poultry and eggs	402,703	465,017	500,000
Miscellaneous livestock	366,077	383,057	430,000
Home consumption	18,688	16,211	17,000
Value of inventory adjustment	58,937	60,533	0
Total Livestock	7,363,003	7,626,825	8,037,000
plus: Revenues from services and forestry:			
Machine hire and custom work	67,177	151,724	160,000
Forest products sold	21,480	21,480	20,000
Other farm income	237,169	649,604	700,000
Gross imputed rental value of farm dwellings	970,063	990,955	1,050,000
Total	1,295,889	1,813,763	1,930,000
equals Value of agricultural sector production	13,032,040	13,474,088	14,401,000
less: Purchased inputs:			
Farm origin	2,417,074	2,692,296	2,760,000
Manufactured inputs	1,626,356	1,910,367	1,930,000
Other purchased inputs and services	2,116,631	2,277,618	2,450,000
Total	6,160,061	6,880,281	7,140,000
plus: Government transactions:			
+ Direct government payments	196,018	281,827	300,000
- Motor vehicle registration and licensing fees	12,792	13,038	15,000
- Property taxes	360,000	390,000	400,000
Total	-176,774	-121,211	-115,000
equals Gross value added	6,695,205	6,472,596	7,146,000
less: Depreciation	1,479,228	1,574,618	1,560,000
equals Net value added	5,215,977	4,897,978	5,546,000
less: Payments to stakeholders			
Employee compensation (total hired labor)	711,013	848,067	940,000
Net rent received by non-operator landlords	155,579	313,242	340,000
Real estate and non-real estate interest	535,559	536,105	550,000
Total	1,375,121	1,697,414	1,830,000
Equals Net Farm Income	3,840,856	3,200,564	3,756,000

Source: Economic Research Service, USDA. Values for 2013 are authors' forecasts based on November 27, 2013, U.S. income estimates (<http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx#27396>).

Nominal and Real Wisconsin Net Farm Income



Wisconsin Farms and Family Farm Household Income²

After falling steadily from the 1940s through the early 1980s, Wisconsin farm numbers have stabilized at around 80,000. Part of that had to do with the way USDA defines a farm: any place that produced and sold (or normally would have) at least \$1,000 in agricultural products during a given year. That sets the bar pretty low, and with price inflation, it's getting lower. The reported stability also reflects that more retired farmers continue to live on their farms instead of moving to town, and that more rural residents whose main occupation is not farming are selling enough farm products to meet the definition of a farm.

USDA's Economic Research Service has developed a farm typology system that emphasizes the diversity of farming operations.³ The typology focuses on family farms, defined as farms for which the majority of the

business is owned by the operator and related individuals. Non-family farms are non-family corporations and other farms for which a majority of the business is owned by individuals or entities other than the operator or operator's family.

Their system lays out seven categories of family farms:

- **Retirement farms.** Operators say they're retired.
- **Off-farm occupation farms.** Operators say farming isn't their primary occupation.
- **Low-sales farms.** Annual gross cash farm income (GCFI) less than \$150,000.
- **Moderate-sales farms.** Annual GCFI between \$150,000 and \$349,999.
- **Midsized family farms.** Annual GCFI between \$350,000 and \$999,999.

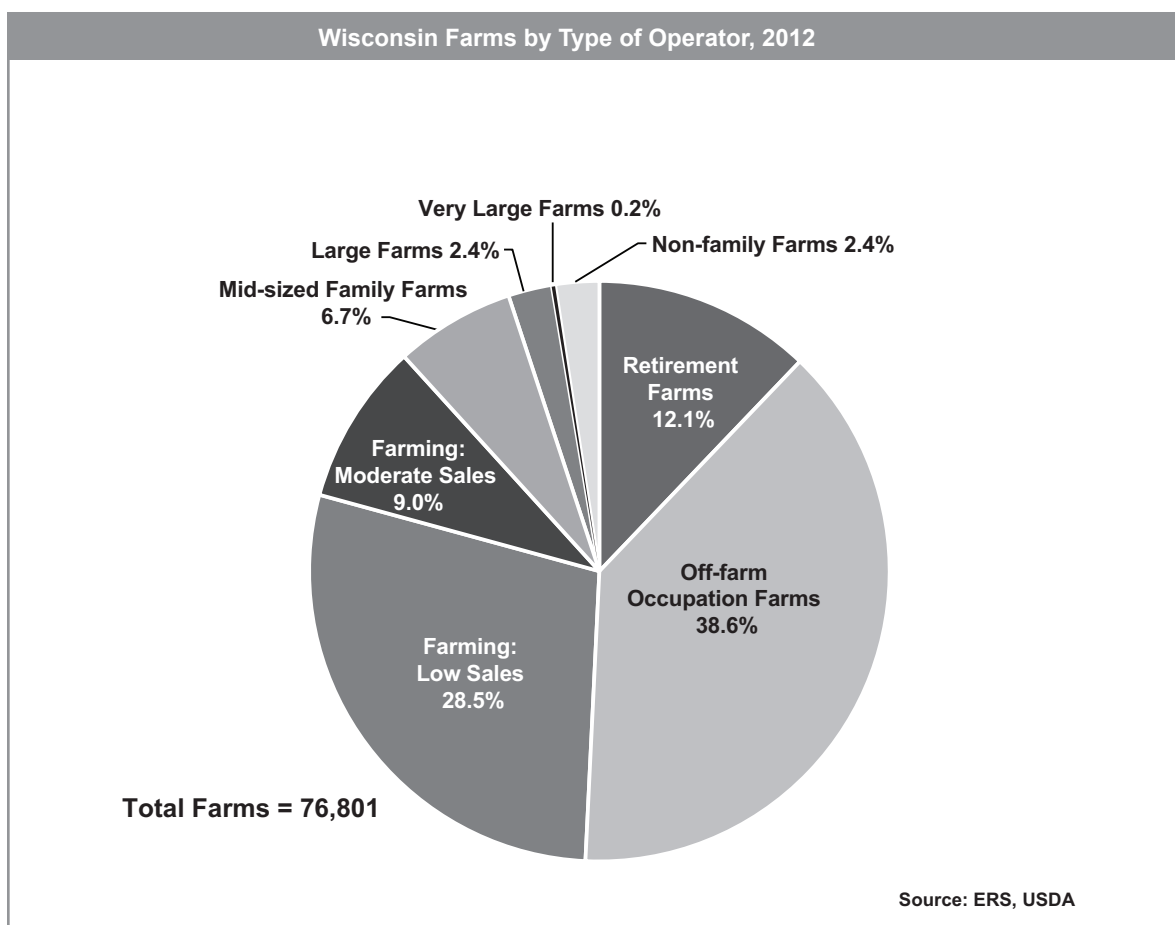
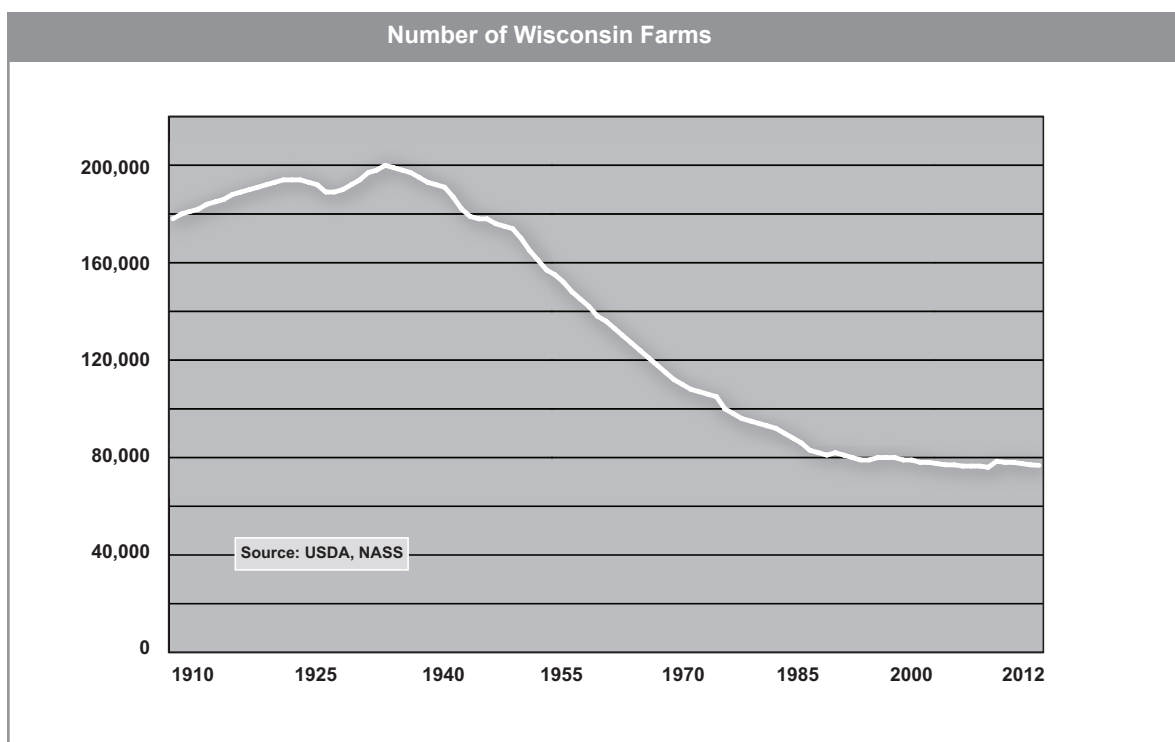
- **Large family farms.** Annual GCFI between \$1,000,000 and \$4,999,999.
- **Very large family farms.** Annual GCFI \$5,000,000 or more.

Just over half of Wisconsin farmers in 2012 fell into the retirement and off-farm occupation categories. Another 28.5 percent were low-sales farms. The remainder (21 percent) had gross cash farm income in excess of \$150,000. There were only 145 family farms in the very large category, with farm sales of more than \$5 million. The non-family farm count was 1,875, but the average volume of sales for non-family farms is not reported.

The amount and source of household income for family farms differs substantially across farm type. Retirement and off-farm occupation farms both earned negative farm income in 2012. Other sources of income more than offset farm losses,

2. This section draws from Hoppe, Robert and James McDonald, "The Revised ERS Farm Typology: Classifying U.S. Farms To Reflect Today's Agriculture," USDA, ERS, Amber Waves, May 6, 2013.

3. Revisions in farm typology definitions prevent making comparisons between 2012 and earlier years.



Sources of Income for Wisconsin Family Farm Households, 2012

Farm Household Type	Farm households	Operator Household Income			Percent of household income from off-farm sources	Household income as percent of U.S. average
		From farming sources	From off-farm	Total		
	Number	Dollars	Dollars	Dollars	Percent	Percent
Retirement Farms	9,327	-3,118	68,311	65,193	104.8%	91.5%
Off-Farm Occupation Farms	29,663	-4,292	124,231	119,939	103.6%	168.3%
Farming: Low Sales	21,868	5,579	47,071	52,650	89.4%	73.9%
Farming: Moderate Sales	6,921	46,623	37,293	83,916	44.4%	117.7%
Mid-size Family Farms	5,127	125,460	48,565	174,025	27.9%	244.2%
Large Farms	1,875	305,694	46,751	352,445	13.3%	494.5%
Very Large Farms	145	793,615	47,208	840,824	5.6%	1,179.7%
All Family Farms	74,926	21,618	79,454	101,072	78.6%	141.8%

Source: ERS, USDA, Agricultural Resource Management System. Comparable data are not reported for non-family farms because these farms do not have a designated household operator.

but for operators of retirement farms, household income fell short of the U.S. average. Household income for operators of off-farm occupation farms was \$120,000, 168 percent of the national average.

For family farms whose operators claimed farming as an occupation, farm income increased with farm size (as measured by gross farm income) and off-farm income as a percent of total household income decreased. All but the low sales category had household income above the national average. But for midsize and larger family farms, two or more families usually shared the household income, making comparison with the national average misleading.

As a class, the 22,000 family farms in the low sales category are financially hard-pressed. These farms typically rely primarily on operator and family labor. They generate very low

net income from farming, requiring off-farm employment to supplement household income, which gives them less time to focus on farming. And even with off-farm income, household income was well under the national average in 2012.

Wisconsin Farm Balance Sheet

The balance sheet for Wisconsin farmers has increased each year since 2009, when milk prices tanked. At the end of 2012, farmers' equity (net worth) was more than \$67 billion, \$10 billion (18 percent) greater than at the end of 2009. This increase came from record farm earnings combined with strong gains in farmland values. Total farm debts are up, but only marginally since 2009. In 2012, Wisconsin farmers paid down their debts by about \$700 million. Farmers are using their recent earnings to retire debt more than to help fund capital purchases.

The value of farm equipment on Wisconsin farms at the end of 2012 was up about \$1.5 billion from a year earlier. Wisconsin farmers were comfortable in upgrading their equipment lines while corn and soybean prices were strong. But these purchases do not appear to have been financed with new debt given that non-real estate debt fell slightly from 2011 to 2012.

Real estate debt of Wisconsin farmers at the end of 2012 was about \$600 million less than a year earlier. This decline in mortgage debt is somewhat surprising given that the value of land and buildings held by Wisconsin farmers rose more than \$2 billion from 2011 to 2012. Falling mortgage debt, coupled with rising real estate values, is a sign that Wisconsin farmers are not going on debt-financed buying binges.

Wisconsin Farm Balance Sheet—December 31, 2008–2012

	2008	2009	2010	2011	2012
Farms (No.)	78,001	78,001	78,001	77,001	76,801
	\$Billion				
Current Assets					
Livestock inventory	0.83	0.93	0.76	0.82	0.88
Crop inventory	2.00	1.88	2.11	2.81	2.78
Purchased inputs	0.37	0.42	0.40	0.44	0.58
Cash invested in growing crops	0.05	0.07	0.08	0.08	0.11
Prepaid insurance	0.06	0.06	0.06	0.07	0.07
Other ¹	3.50	2.69	3.06	2.35	4.05
Total Current Assets	6.82	6.04	6.46	6.55	8.48
Non-Current Assets					
Investment in cooperatives	47.22	47.94	48.91	52.53	54.85
Land and buildings ²	9.34	8.68	9.52	8.36	9.56
Farm equipment	6.23	7.13	7.03	7.36	8.85
Breeding animals	3.17	2.90	2.92	3.10	2.98
Total Non-Current Assets	56.85	58.46	59.10	63.36	67.01
Total Farm Assets	63.67	64.50	65.56	69.91	75.50
Current Liabilities					
Notes payable within one year	0.54	0.62	0.54	0.50	0.60
Current portion of term debt	0.71	0.81	0.83	0.89	0.79
Accrued interest	0.19	0.22	0.24	0.26	0.24
Accounts payable	0.17	0.18	0.21	0.17	0.26
Total Current Liabilities	1.62	1.84	1.81	1.82	1.89
Non-Current Liabilities					
Nonreal estate	1.17	1.37	1.21	1.19	1.07
Real estate	4.03	4.47	5.36	6.06	5.42
Total Non-Current Liabilities	5.20	5.84	6.56	7.26	6.48
Total Farm Liabilities	6.83	7.68	8.38	9.08	8.37
Farm Equity	56.84	56.82	57.18	60.84	67.12

1. Includes accounts receivable, certificates of deposit, checking and saving balances, and any other financial assets of the farm business.

2. The value of the operators' dwelling and any associated liabilities were included if the dwelling was owned by the farm business.

Source: Agricultural Resource Management System (ARMS), Economic Research Service, USDA.

II. Current Outlook: Wisconsin Agricultural Commodities, Production Inputs and the General Economy

In this section, analysts discuss the current economic situation and the 2014 outlook for Wisconsin agriculture. We begin with a discussion of the general U.S. economy, which has a major impact on agriculture through its effect on domestic food demand and agricultural exports. Next, conditions and prospects for major farm inputs are discussed. Finally, commodity specialists offer their insights on what happened in 2013 and what to expect in 2014 for major Wisconsin farm commodities: dairy, livestock and poultry, corn and soybeans, and fruits and vegetables. Readers are encouraged to contact authors for more current or more specific information regarding their analyses.

General Economy and Agricultural Trade

William D. Dobson (608-262-6974)

Synopsis

The U.S. economy continues to emerge gradually from the Great Recession of 2008 and 2009. Barring unforeseen shocks or self-inflicted wounds, real GDP growth of about 2.5 percent is expected in 2014. Likely bright spots for the economy in 2014 include strong auto sales, a continued but slowing recovery in housing, innovations in energy production, and wealth effects produced by high stock prices and the housing rebound. The economy's strengths are traceable, in substantial part, to the Federal Reserve's low short-term interest rate policies and quantitative easing. If the U.S. economy is to strengthen further, the Fed will need to continue those monetary policies in 2014 and craft a gradual, non-disruptive exit from quantitative easing (expanding the money supply). The Fed's December 2013 announcement that it will reduce bond purchases by \$10 billion per month (from \$85 billion to \$75 billion per month) represents a suitable start toward an orderly exit from quantitative easing.

Inflation promises to remain low at about 1.4 percent in 2014, which will allow the Fed's low interest rate

policies to continue. However, USDA forecasts that food prices will rise faster than the overall CPI. While the overall unemployment rate declined modestly in 2013 to about 7.3 percent, the aggregate figures mask important weaknesses in the U.S. job market. Sustained real GDP growth of 3 to 4 percent per year will be needed to produce healthy, robust job growth.

U.S. net farm income reached a record \$131 billion in 2013 but is likely to decline modestly in 2014, mainly because of lower corn and soybean prices. Net income for livestock and poultry producers will rebound as lower feed prices reduce the profit squeeze of the previous two years. USDA's long-term forecasts show net farm income declining after 2015 to levels below the robust 2013–2015 period. But for 2016 to 2022, net farm income is forecast to remain above 2001–2010 levels.

The meteoric rise in farmland prices throughout much of the Midwest appears to be waning. Prospective flat or declining farmland prices reflect a number of developments, including lower corn and soybean prices, EPA policies that reduce corn use for ethanol production, and uncertainties about the Farm Bill, interest rate and other policies that influence the general economy.

The USDA predicts that farm exports will decline modestly from FY 2013's record \$141 billion to about \$137 billion in FY 2014. U.S. dairy exports are expected to be about \$5.9 billion in FY 2014, down 3.7 percent from the record set in FY 2013. Policy skirmishes continue—most notably affecting the important Transpacific Partnership Pact. One bone of contention relates to charges that Japan is weakening the yen to spur its exports. These skirmishes will delay the Transpacific Partnership Pact but are not likely to derail it.

The Post-Great Recession U.S. Economy

Macroeconomic statistics in the accompanying table present a mixed picture of the U.S. economy. U.S. real GDP growth is likely to average about 2.5 percent in 2014. Unfortunately, the 4.1 percent GDP growth rate for the third quarter of 2013 does not foreshadow similar growth in 2014, because it reflects a large, one-time buildup of business inventories. In effect, that will cannibalize growth in subsequent quarters. For reasons noted below, strong, sustainable real GDP growth in the 3–4 percent range will continue to elude the economy, despite the measures contained in the \$787 billion 2009 fiscal stimulus package and the Federal Reserve's

Macroeconomic Statistics for the U.S. Economy					
<i>Year or Quarter</i>	<i>Real GDP Growth</i>	<i>Unemployment Rate</i>	<i>Inflation Rate (CPI)</i>	<i>Housing Starts</i>	<i>Federal Surplus or Deficit (FY)</i>
	<i>%</i>	<i>%</i>	<i>%</i>	<i>(Mil. Units)</i>	<i>\$ Billion</i>
2000	3.7	4.0	3.4	1.573	236.1
2001	0.8	4.7	2.8	1.601	126.9
2002	1.8	5.8	1.6	1.710	-160.3
2003	2.5	6.0	2.3	1.854	-377.1
2004	3.6	5.5	2.7	1.950	-412.8
2005	3.1	5.1	3.4	2.073	-318.7
2006	2.7	4.6	3.2	1.812	-248.2
2007	1.8	4.6	2.9	1.342	-161.5
2008	-0.3	5.8	3.8	0.900	-454.8
2009	-2.8	9.3	-0.3	0.554	-1,415.7
2010	2.5	9.6	1.6	0.586	-1,294.2
2011	1.8	8.9	3.1	0.612	-1,296.8
2012	2.8	8.1	2.1	0.783	-1,089.2
2013 Q1	1.1	7.7	1.4	0.957	-307.2
Q2	2.5	7.6	0.0	0.869	90.7
Q3	4.1	7.3	2.6	0.894	-170.5

*Source: IHS Global Insight, U.S. Executive Summaries, 2010-2013.

low interest rate policies. However, absent important shocks (e.g. disruptions to markets for U.S. exports or self-inflicted wounds caused by government shutdowns or premature interest rate increases by the Fed), the U.S. economy is likely to see continued modest growth.

Unemployment figures trended downward to about 7.3 percent in the third quarter of 2013. In December 2013, the unemployment rate dropped to 6.7 percent. The lower rate also reflected an uptick in the number of higher-paying manufacturing and construction jobs.

However, important weaknesses are concealed in the aggregate unemployment figures: Labor force participation rates are at a 35-year low of about 63 percent; long-term unemployment remains high; part-time

jobs continue to replace full-time positions; many new jobs are still of the low-paying variety; and the unemployment rate for 16-to-24-year-olds remains especially high. Moreover, the unemployment rate will likely remain elevated until we see increased demand for employers' products and more robust economic growth.

Bright spots do exist. Light vehicle sales in the U.S. (especially for pickups and SUVs) are likely to rise to about 15.9 million units in 2014—levels not seen since before the Great Recession. Housing starts for the first three quarters of 2013 rose to about 45 percent of pre-recession (2004 and 2005) levels. Housing starts are likely to remain on a reasonably strong upward trajectory, although the heady increases in both housing prices and sales in

California, Arizona, Nevada and Texas are tapering off. Energy innovations (especially fracking and the oil and gas shale production) promise to stimulate both short- and long-run economic growth.

Inflation rates—measured by the CPI—remained subdued in 2013 at about 1.4 percent. Inflation promises to remain low in 2014, allowing the Federal Reserve to continue to stimulate the economy using a near-zero short-term interest rates and quantitative easing (printing money) under its QE3 program. The USDA forecasts that food prices will rise more than the overall CPI, averaging 2.5 to 3.5 percent in 2014.

Prominent economists, including former Treasury Secretary Lawrence Summers and Nobel laureate Paul Krugman, argue that the nation

needs additional fiscal stimuli to boost consumer demand and put the economy on a strong, sustainable growth path. They suggest that U.S. deficit's decline to \$680 billion in fiscal 2013 (4.1 percent of GDP) has brought the deficit to a manageable level (down from 6.8 percent of GDP in fiscal 2012) so that borrowing for stimulus spending could be financed at low interest rates. They also note that the Congressional Budget Office projects that deficits will remain relatively low and manageable for the next five years before turning upward in the face of increased federal outlays for health care and other entitlement programs. They see this period of low deficits as an opportunity to provide additional stimuli without creating high deficits that could downgrade U.S. credit, spur higher interest rates and slow economic growth.

Such calls will likely go largely unheeded. The Congressional deadlock in October 2013 that resulted in a partial government shutdown arose in part over spending and other budget issues. Congressional budget disagreements are likely to be with us as long as the GOP holds the House and the Democrats control the Senate and the White House.

The bipartisan committee led by House Budget Committee Chair Paul Ryan (R-WI) and Senate Budget Committee Chair Patty Murray (D-WA) crafted a budget bill that increases spending by \$45 billion in fiscal 2014 and \$18 billion in fiscal 2015 for defense and domestic programs over limits specified in sequester provisions of the Budget Control Act of 2011. The spending increases will be paired with certain revenue increases and budget cuts that will kick in over the next 10 years, supposedly leading to a net deficit reduction of \$23 billion over the 10-year period. This bill, which was approved by the House and

Senate in December 2013, makes only small changes in spending and revenues—the predicted 10-year \$23 billion net deficit reduction is equivalent to only 0.67 percent of federal spending for fiscal 2013. But the bill will avoid another partial government shutdown and help facilitate an increase in the federal debt limit in early 2014.

The Critical Role of the Fed

In the absence of fiscal policy stimuli, the Fed is the de facto source of government support of aggregate demand in the United States. Continued support by the Fed will be exceedingly important for the economy.

Many of the favorable developments noted earlier are a consequence of low interest rates, including increased auto sales (easy credit) and housing growth (low mortgage payments). The Fed's low interest rate policy under QE1, QE2 and QE3 have strongly supported the U.S. stock market by making stocks more profitable than bonds and CDs over the past few years.

Higher stock and housing prices produce a wealth effect. Estimates vary on how large this wealth effect is—earlier studies suggest that a one dollar increase in wealth will produce increases in consumer spending of two to four cents. If such wealth effects continue in 2014, there will be positive impacts on consumer spending and GDP. But the lofty stock price increases of 2013 almost certainly will not be repeated in 2014.

The Fed's lower interest rate policy allows federal government to finance its deficits and debt at relatively low cost. But even increases in interest rates as low as 1 or 2 percent would substantially increase U.S. Treasury borrowing costs. A Heritage Foundation study projected

that given the moderate rate increases now being forecast, the federal government's net interest costs would more than double in less than five years and more than triple by the end of the decade. More ominously, if interest rates for financing U.S. government debt rose from the FY 2013 level of 2.43 percent to the 6–8 percent rates we saw in the 1990s, government interest payments between 2014 and 2023 would be \$1.4 trillion higher. For obvious reasons, both the Obama Administration and the Congress are eager to avoid a return to the rates of the 1990s.

Fed Vice Chair Janet Yellen—a proponent of near-zero short-term interest rates and continuing QEs—has been confirmed as the replacement for Ben Bernanke, whose second term as Fed Chairman ends in January 2014. Many analysts expect Yellen to pursue interest rate policies similar to those of her predecessor. She plans to emphasize both improving employment and keeping inflation near target levels.

Policy Uncertainties

Policy uncertainties continue to represent risks for the U.S. economy. Many businesses are unsure whether consumer demand will be strong enough to support additional investment and hiring. A few such policies deserve mention. The Affordable Care Act has created uncertainty about business costs and consumer purchasing power. And sequester measures included in the Budget Control Act of 2011 have raised concerns about how government spending and aggregate demand will affect 2014 and subsequent years.

Policies of trading partners have created uncertainties about demand for our exports and competition from imports. In 2013 Japan launched a three-pronged

approach—dubbed “Abeconomics,” after Japan’s Prime Minister Shinzo Abe—to stimulate the economy through monetary, fiscal and structural reform policies. While this has given Japan’s economy at least a temporary boost, it is unclear whether it will be enough to extricate Japan from multiple economic “lost decades.” However, Abeconomics has substantially devalued the yen, making Japan’s exports more competitive and caused U.S. business interests to accuse Japan of manipulating its currency to gain an unfair trade advantage.

The 17-member euro zone has managed to remain intact, but it continues to show weakness despite budget austerity and a promise by the European Central Bank to buy as many government bonds as necessary to strengthen financially troubled countries. After showing promising growth in the second quarter of 2013, the euro zone slumped back to near-zero growth in the third quarter and is expected to exhibit subpar growth in 2014. U.S. officials and those from other countries are increasingly concerned that Europe isn’t pulling its weight in supporting global growth and trade.

Farm Income

The USDA estimates that U.S. net farm income will total 131 billion in 2013, which is up 15 percent from the agency’s estimated net farm income for 2012. In nominal terms, that’s the highest net farm income on record. Adjusted for inflation, it’s the highest since 1973.

While this is generally good news for farmers, caution flags are fluttering. Harvest-time prices for the record 2013 U.S. corn crop were down more than 40 percent from what they were for the drought-shortened 2012 crop. This put U.S. corn prices at a 3-year low. For 2014 and beyond, a change in EPA regu-

lations may cause ethanol producers to use less corn. In November 2013, EPA proposed to reduce the amount of corn-based ethanol that refiners must include in their fuel mixes. The minimum usage requirement would drop from 13.8 billion gallons in 2013 to 12–13.2 billion gallons in 2014. There will be a 60-day public comment period before the new rules would go into effect in the spring of 2014. Many agricultural groups strongly oppose the EPA proposal. Many oil companies support it.

In late 2013, the anticipation of lower crop prices has caused the meteoric rise in Midwestern land prices to taper off (see section on farm inputs). There are reports that many corn and soybean farmers are attempting to negotiate lower cash rents for 2014 to compensate for the expected decline in crop revenue and a lack of decline in crop production expenses.

The longer-term outlook for Midwestern farmland prices is rosier, however. Excess capacity in U.S. agriculture is currently near zero, and small increases in productivity in world agriculture will tighten global supplies. Coupled with increased demand, driven by growth in world population and incomes, that points to higher prices for both farm products and farmland over the longer-run.

The drop in crop prices and farm income has also caused some weakening in the boom in farm equipment purchases. But this fall in demand may have a soft landing, going by the market for Deere & Company stock, which is regarded as a bellwether for net farm income, especially for crop producers (two thirds of Deere’s revenue comes from the farm sector). The price of Deere shares showed abundant variation but, on average, moved mostly sideways from mid-to-late 2013.

Deere stock buyers’ may think that the high net farm incomes of 2013 will diminish gradually. This may reflect lower feed costs and higher incomes of livestock and poultry producers as a result of the end of the 2012 drought.

USDA’s long-term net farm income forecasts provide good news for farmers—with the usual dose of caution. The agency’s February 2013 baseline report for 2013 through 2022 forecasts that net farm income will remain high through 2015, then decline from the near-record high levels of 2013 through 2015 to plateau at modestly lower levels. But these lower net farm income levels would still be above the averages for 2001 through 2010. The modestly lower long-term forecasts reflect stronger U.S. domestic demand from a recovering overall economy, a weaker U.S. dollar, strong foreign exports and continued biofuel demand. This forecast is reasonable, but obviously it cannot reflect nearly inevitable and unpredictable shocks to the farm economy.

Agricultural Exports

USDA forecasts that U.S. agricultural exports for FY 2014 will total \$137 billion, down \$3.9 billion (2.8 percent) from FY 2013’s record \$140.9 billion. USDA expects the agricultural trade balance to remain strongly positive but decline from \$37.1 billion in 2013 to \$27.5 billion in 2014. That would represent the smallest positive agricultural trade balance since 2009.

FY 2014 corn exports are forecast to total about \$7.4 billion, up a third from the depressed, drought-limited levels of FY 2013. U.S. exports of oilseeds and products exhibit a substantially different pattern, declining to \$28.8 billion, down 10 percent from 2013’s total of \$32.1 billion.

Total exports of livestock, poultry, and dairy products are forecast to reach \$31.8 billion in FY 2014, up 1 percent from a year earlier. Pork exports showed the largest gain, up more than 6 percent from 2013. The USDA projects that U.S. dairy exports will total \$5.9 billion in fiscal 2014, down 3.7 percent from the 2013 figure but 23 percent above the average for 2010 through 2013.

The U.S. Dairy Export Council's (USDEC's) forecasts for 2014 are generally similar to USDA's. The USDEC predicts that strong demand for U.S. dairy exports early in 2014 will trigger a rebound in world milk supplies later in the year, which in turn will increase the supply of exportable dairy products available from other major exporting countries. Given this, the USDEC believes that while U.S. dairy exports will remain robust in the year to come, the value of 2014 U.S. dairy exports probably will not reach the 2013 level.

Mexico, Canada and Asia are expected to remain the dominant destination for U.S. agricultural exports in 2014. China is forecast to reduce imports of U.S. farm products in fiscal 2014 by about \$2 billion from year-earlier levels. However, given the many uncertainties facing the Chinese economy, it is difficult to assess whether this is a plausible forecast.

In 2013, a Chinese firm made a major investment in the U.S. pork business. China's largest pork producer, Shuanghui International Holdings, acquired Smithfield Foods (2012 revenues of \$13 billion). The acquisition may increase U.S. pork exports to China, at least in the short-run if, as expected, Smithfield initially operates as a wholly-owned

subsidiary of Shuanghui and gains a captive market in China. However, Shuanghui's acquisition of producer-processor-marketer Smithfield will permit the Chinese firm to acquire valuable swine genetics and production technologies that may decrease China's reliance on pork imported from the U.S. over the longer-run.

Trade policy skirmishes have slowed a major new trade agreement, the Transpacific Trade Partnership (TPP), but they haven't derailed it. U.S. officials hope to complete negotiations on the pact within a few months. The TPP, involving 12 countries in the Pacific area, would lower tariffs and non-tariff barriers of trading partners and expand Pacific-area trade. Late in 2013, negotiations were delayed by squabbles relating to currency manipulation (especially involving Japan), intellectual property, and competitive advantages of state-owned firms in Viet Nam, Malaysia and Singapore. These disputes appear headed for resolution. Moreover, key leaders of the House and Senate have agreed upon legislation that will give the Obama Administration Trade Promotion Authority ("fast track" negotiating authority) needed to gain approval of the TPP agreement. Fast track negotiating authority allows the Administration to submit a trade agreement to the Congress for an up or down vote with no amendments. This authority is important for securing approval of the TPP because other countries would be reluctant to enter into any agreement that could be amended by the Congress.

Disputes over Country of Origin Labeling (COOL) continue to fester. Canada and Mexico have objected to a U.S. requirement (included in the

2008 Farm Bill) for labeling of meat products made from their cattle and hogs. World Trade Organization (WTO) dispute panels agreed that the U.S. rules are an unwarranted protectionist measure. The U.S. has modified the labeling requirements, but maintains that the comprehensive COOL is needed to provide proper information to consumers. Certain U.S. meat processors strongly oppose the revised U.S. labeling requirements, arguing that they would require separate, costly handling, slaughtering and processing facilities for Canadian or Mexican livestock. In late 2013, a federal judge blocked a request for a preliminary injunction to implementing the COOL requirements for Canadian and Mexican livestock products. The new COOL requirements became effective in late November 2013. In response, Canada and Mexico have called for a new WTO compliance hearing. Canada also has asked the WTO for authority to impose up to \$1 billion in new tariffs on a range of U.S. products, including meat, apples, jewelry and furniture. At present, it is unclear how—or if—the dispute will be resolved.

Efforts continue to complete negotiations under the Doha Round of the WTO, which began in 2001. But the rancorous Doha Round trade negotiations appear destined to produce little or nothing. Many major trading nations have largely given up on the effort, opting instead to pursue regional trade agreements such as the TPP. The failure of the Doha Round has also raised questions about the WTO's ability to settle disputes. If the WTO's mechanisms for settling disputes become ineffective, it could be a major setback for world trade.

Farm Production Costs

Bruce Jones (608-265-8508)

Production Inputs

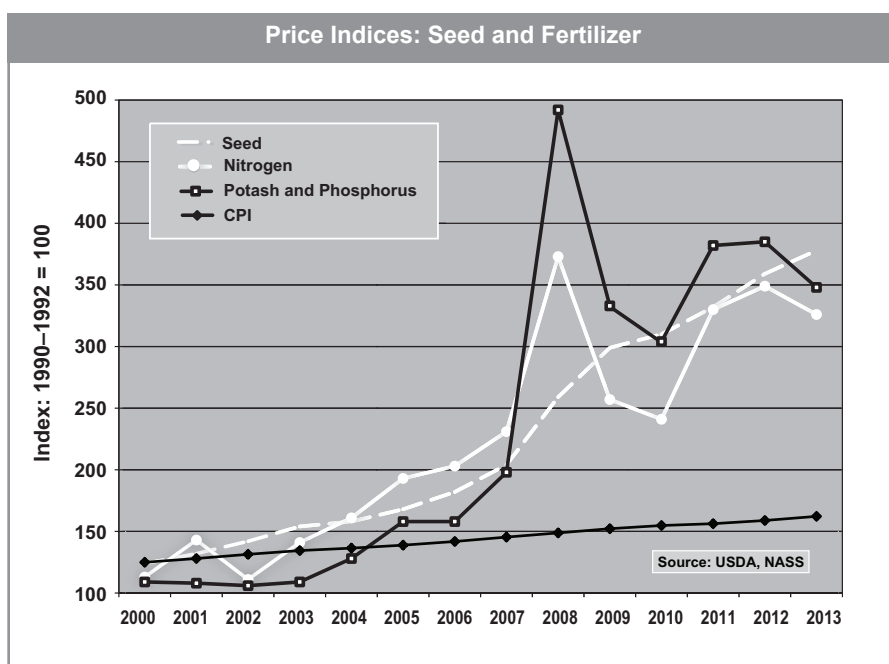
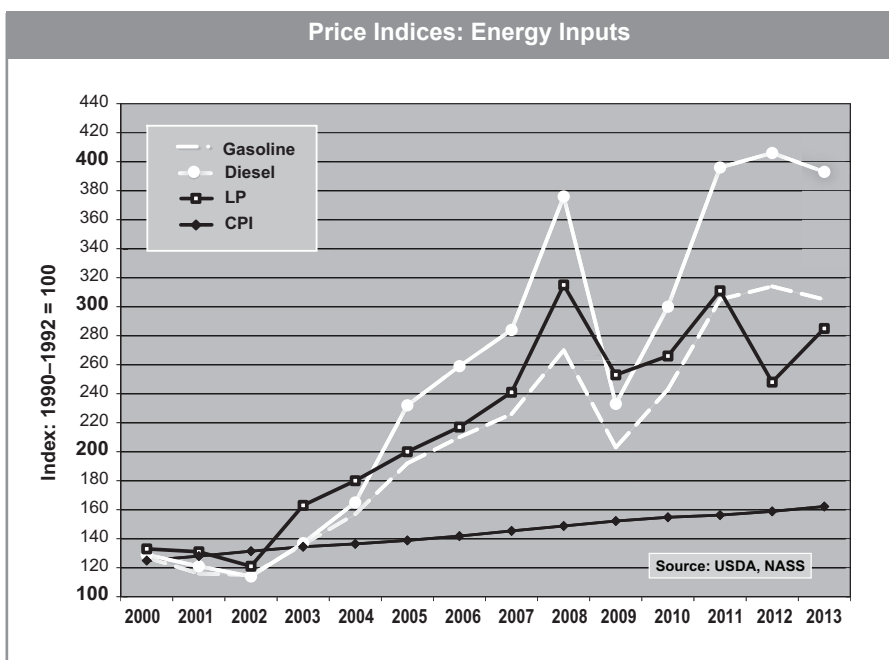
Prices for seed, fertilizer and fuels have risen at rates well above inflation since 2000. Seed and fertilizer prices doubled between 2000 and 2007 and nearly doubled again between 2007 and 2013. Fuel price have surged too, though a bit more slowly of late: They doubled from 2000 to 2007, and since then gas prices have gone up about 20–25 percent while diesel has climbed 40–45 percent. While fuel prices haven't gone up as much as other inputs, they're still increasing above the inflation rate for the general economy.

The U.S. Department of Energy predicts that gasoline and diesel prices will hold steady or fall in 2014. This forecast is based on the expectations that crude oil prices will stay near 2013 levels while mark-ups and margins are scaled back, particularly in the last half of the year.

Prices for nitrogen, potash and phosphorus have leveled off and declined over the last couple of years. This is a sign that fertilizer supply and demand generally have been in balance, unlike the situation near the end of the last decade.

The recent downtrend in fertilizer prices may signal that supply is getting ahead of demand. This is particularly true for potash. Last September, it was reported by Bloomberg that OAO Uralkali, the world largest potash producer, would be boosting output and cutting prices. The resulting price war in the potash market that has benefited farmers.

Unlike fertilizer prices, prices for crop seeds have climbed steadily since 2008. This reflects strong demand due to increases in planted

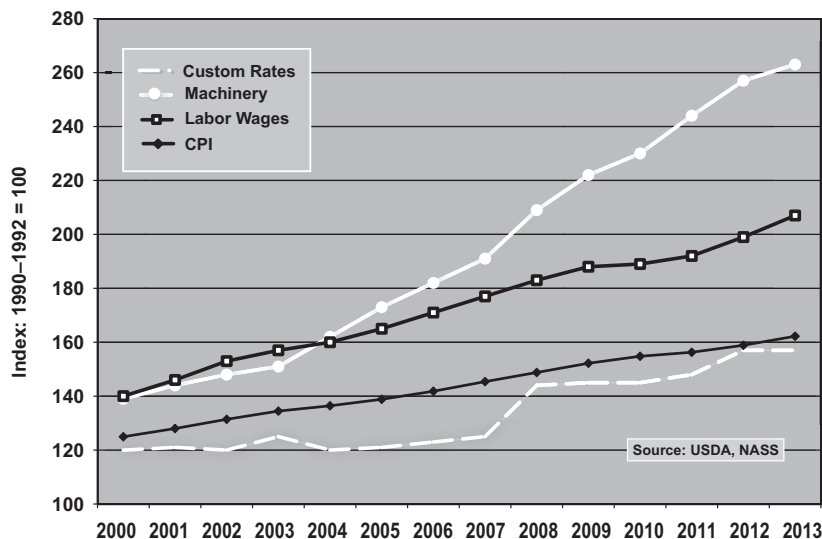


acreage of corn and soybeans and the higher prices of GMOs.

Farmers' machinery and labor costs have been rising steadily over the last decade. Machinery costs are up 70–75 percent for 2003–2013, while wages are up about 40 percent. These increases are well above the general inflation rate.

In contrast, rates for custom fieldwork have stayed pretty much in line with inflation. This suggests that the full costs of machinery are not being built into custom rates charged to farmers, which in turn suggests that there may be an excess machinery capacity in the farm sector. This could be the result of farmers taking

Price Indices: Capital and Labor Resources



on custom jobs in order to offset some of the fixed costs of purchasing machinery and equipment. Or it could mean that the increasing capacity and greater efficiency of custom operators' machinery has allowed them to keep rates in check

Credit Conditions

Access to credit has not been an issue for most Midwestern farmers in recent years, thanks to the farm economy's record profits and the fact that the value of farm real estate—the principal source of collateral for farm loans—has been booming. These favorable conditions have put farmers in a strong borrowing position. But many of them have opted not to borrow, preferring to use their profits to retire debt and build up credit reserves that can be tapped in the future.

The favorable conditions in farm credit markets are not a recent development. Banker surveys reported by the Chicago Federal Reserve Bank indicate that farm loan demand has been declining for

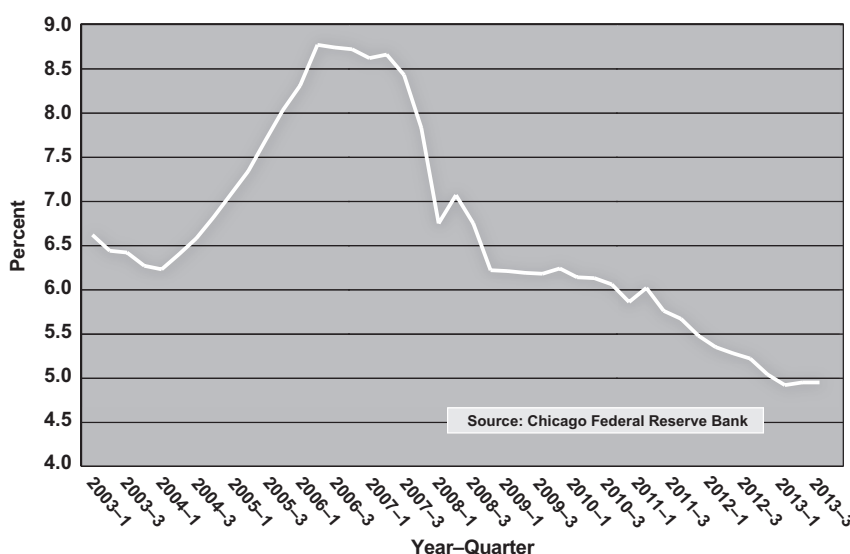
over a decade, while repayment has been on the rise. These favorable trends are very different than those that preceded the farm financial crisis of the 1980s. In the early 1970s there was widely held, bullish belief that farm incomes would increase steadily. This optimism encouraged farmers to take on sizeable new debt, most of which they used to buy farmland that they expected to rise

in value. Lenders shared this optimism and willingly accommodated farmers' loan demands.

The demand for farm loans remained strong through the last half of the 1970s even though farm incomes were lower than expected and loan repayments steadily declined. Eventually, farmers and lenders came to see that farm incomes were going to remain low. When this happened, the brakes were put on farm credit demands and the farm credit crisis began. Fortunately, we do not seem to be headed for a repeat of this scenario, because farmers' loan demands are dropping and repayment rates are rising.

Ironically, farmer demand for credit has been declining at a time when interest rates have been falling. The Federal Reserve's accommodating monetary policy has kept interest rates low for nearly five years. This has made it easier for the U.S. Treasury to finance the federal government's massive budget deficit. But it can't go on forever, so it is almost a certainty that interest rates will be rising in the future. When this happens, farmers and the U.S. government will be paying considerably more for credit.

Interest Rates on Farm Operating Loans



Cash Rents

Since the late 1980s, cash rents for farmland have been on the rise in Wisconsin, Illinois and Iowa. Rents in these three states have tended to move together except in the 1999–2008 period, when cash rents rose at greater rates in Wisconsin than in the two neighboring cash grain states. In the last five years, rents have risen more sharply. Cash rents are up about 46 percent in Wisconsin and about 50 percent higher in Iowa. Rents in Illinois only increased 37 percent over the 2008–2013 period.

This spike in cash rents corresponds with the high prices farmers have

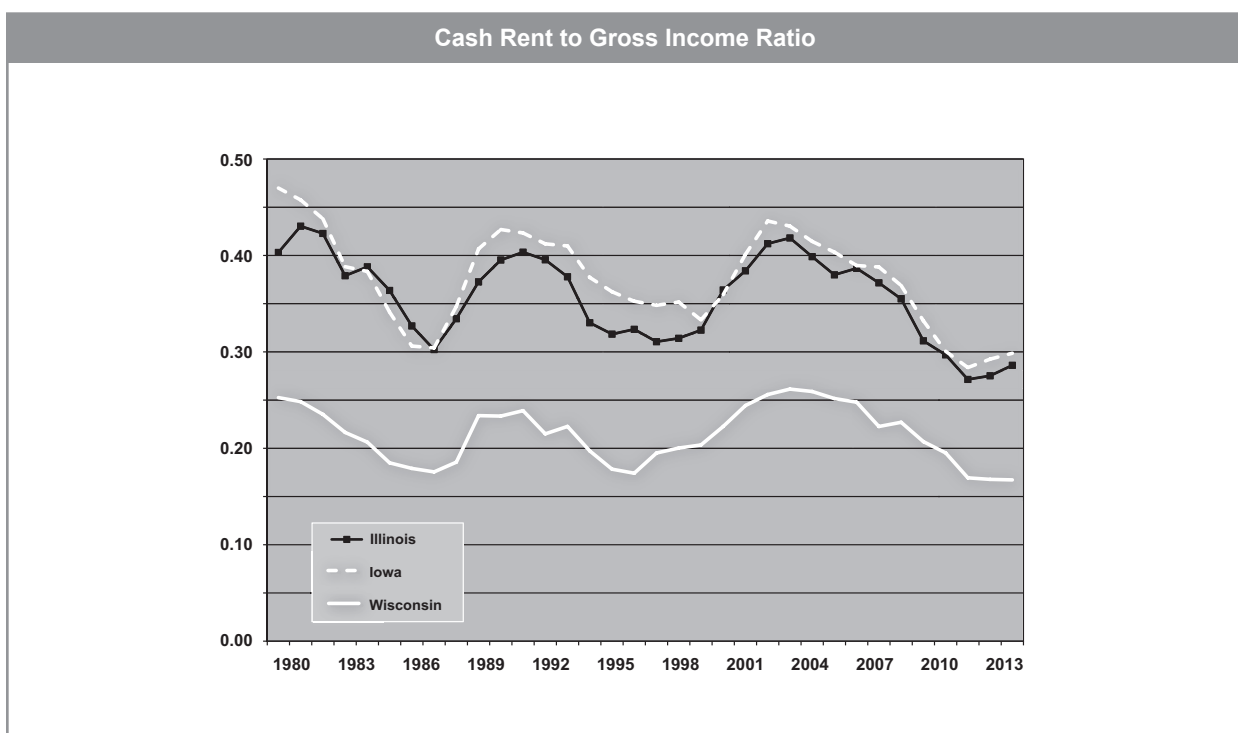
received for corn and soybeans in recent years. The favorable prices have yielded high returns, increasing the competition for rented land and allowing farmers to pay more to rent it.

While cash rents for farmland have risen, they have not kept pace with gross returns from raising corn. The ratio of cash rents to gross revenues generally fell over the 2003–2011 period.

That changed beginning in 2011, as cash rents rose relative to gross returns in both Illinois and Iowa. This suggests that high crop returns are starting to be reflected in the cash rent bids of farmers of these

major cash grain states. This is not the case in Wisconsin however. The rent-to-gross-income ratio in America's Dairyland has continued to fall, though not as steeply as it had prior to 2011.

While cash rents have risen dramatically, they have not kept pace with farmland values. For the 2008–2013 period, farmland values rose about 70 percent in Illinois and more than doubled in Iowa. Wisconsin farmland values saw more modest growth, increasing only about 14 percent. This is a pretty good sign that there's not an unsustainable bubble lurking in Wisconsin's farm real estate market.



Dairy

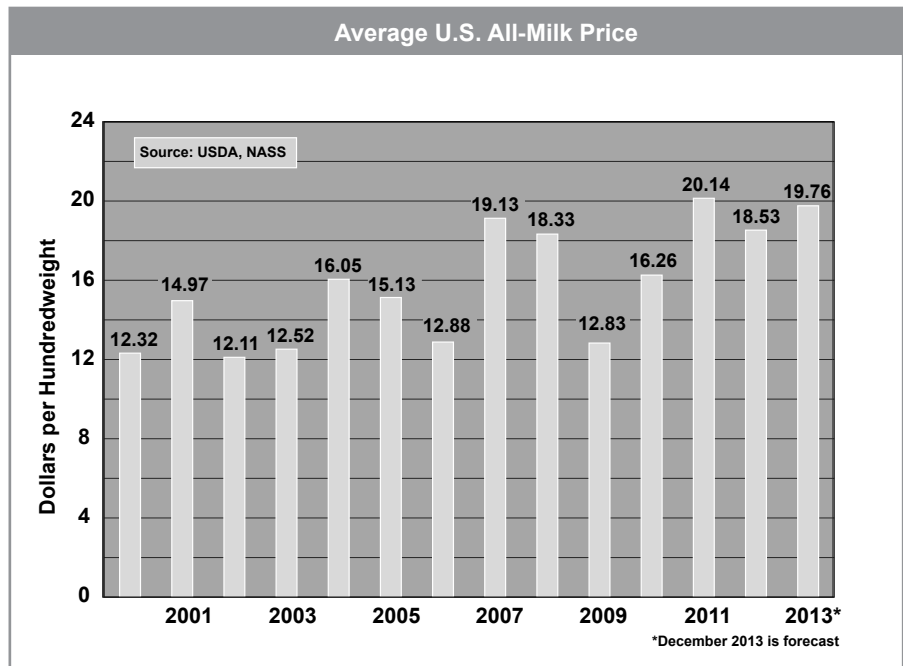
Mark Stephenson (608-890-3755)
and Bob Cropp (608-262-9483)

Current Dairy Situation

Dairy producers in many parts of the country have been trying to restore balance sheets that were damaged by borrowing necessitated by low milk prices in 2009 and high feed prices in 2012. Last year brought the second-highest milk price year on record. For many producers, it was the third consecutive year of milk price recovery. However, high feed prices continued to challenge dairy farmers who purchase the majority of their rations. A cold, wet start to the growing season in the Upper Midwest, followed by many summer months of dry weather, put pressure on forage supplies in much of the nation. Western producers, who were faced with unusually high forage prices, found 2013 to be another financially stressful year.

Dairy growth in western states has been shifting the geographic center of milk production westward for many years. However, the intensive production model favored in the West, which exploits economies of scale to reduce total costs of production, has been severely tested in recent years. Higher, more volatile feed costs have strained profit margins for western producers who purchase a large share of their feed. At the same time, many producers in traditional dairy regions—the Upper Midwest and Northeast—have grown their operations to take advantage of the same scale economies, but with a land base that at least meets their forage needs. This has partially insulated them from fluctuating feed costs.

In a fairly good milk price year like 2013, the western states, including California, Idaho, New Mexico, Arizona and Texas, saw production



drop in the first three quarters. In contrast, Wisconsin, Minnesota, Michigan and New York have all shown significant growth in milk production. Preliminary data indicate that 2013 Wisconsin milk production totaled 27.7 billion pounds. This is 1.7 percent higher than 2012 and represents the 9th consecutive annual increase.

Feed Prices

The National Agricultural Statistics Service (NASS) calculates the value of the dairy ration. With a much better growing season and a large crop acreage, 2013's corn and soybean harvest was larger than in the previous two years, when widespread drought suppressed yields and left

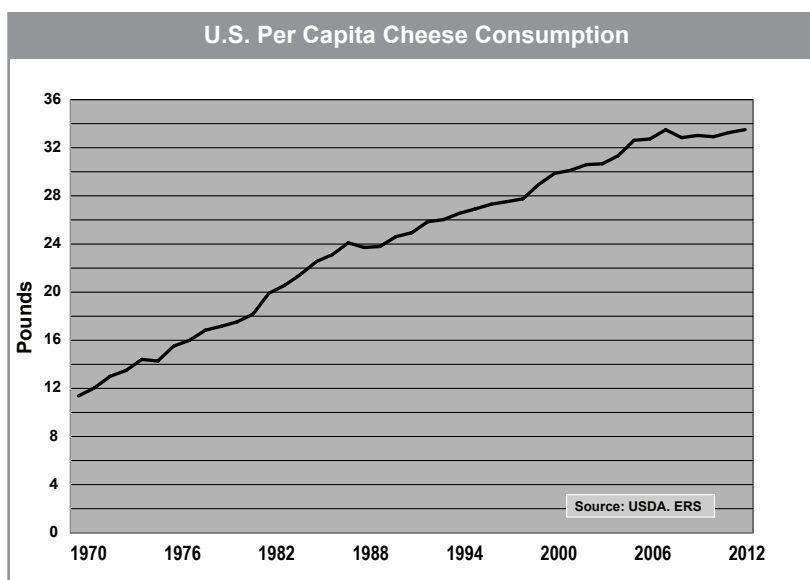
U.S. Milk Production: 2012 and Preliminary 2013			
	2012	2013*	Percent Change
United States:			
Average number of milk cows (1,000)	9,232	9,229	-0.032%
Milk per cow (pounds)	21,696	21,861	+0.761%
Total milk production (billion lbs.)	200.3	201.8	+0.728%
Wisconsin:			
Average number of milk cows (1,000)	1,270	1,273	+0.2%
Milk per cow (pounds)	21,440	21,762	+1.5%
Total milk production (billion lbs.)	27.224	27.695	+1.7%
Source: 2012 - USDA, NASS; 2013 - Author's estimates			
*Estimated			

many fields unharvested. Prices for coarse grain declined through the harvest months. As an example, this past year NASS corn prices peaked in March 2013 at \$6.49 but had declined 34 percent to \$4.27 per bushel by November. Although alfalfa and soybean prices did not decline by as large a percentage, the NASS value of the ration for Wisconsin dairy producers dropped from a high of \$13.82 per hundred pounds of milk in June of 2013 to \$9.79 by November.

Dairy Product Demand

As described earlier in this publication, the U.S. economy has been stubbornly slow to crawl out of the 2008–2009 recession. Unemployment, now at less than 7 percent, has declined, but not to the target level sought by the Federal Reserve. Income elasticity and changing tastes and preferences have put a damper on fluid milk sales in the United States. Current consumption has fallen to about 19.5 gallons per capita, 10 gallons less than 30 years ago.

While fluid milk and ice cream sales have declined, sales of cheese, butter and notably yogurt have increased. The aggregate per capita domestic consumption of dairy products has increased steadily over the last 40 years at a rate of about 0.33 percent annually, while the U.S. population has increased at an annual rate of just over 1 percent. The resulting total increase in domestic demand would not have been enough to sustain the growth in milk production (up an average of 1.39 percent per year) over the same time period. Over the last 40 years, Wisconsin's annual growth in milk production has lagged the U.S. average (1.01 percent), but over the last decade America's Dairyland has stepped up, boosting production each year by an average of 2.26 percent.

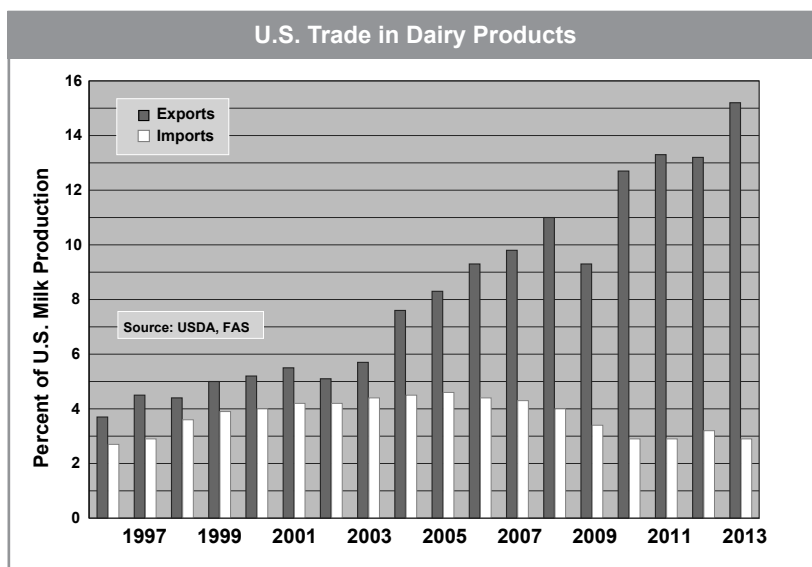


Dairy Exports

U.S. trade in dairy products has been favorable for both imports and exports. Imports have declined as a percent of milk production, in part because we are producing excellent cheeses that were once available only as imports, and in part because the U.S. dollar has remained historically weak compared to the euro, making imports from Europe relatively expensive.

Export opportunities have been truly extraordinary. The following chart shows the increase in export sales of milk solids as a percent of U.S. milk production. Last year, New Zealand

finished its production season in extreme drought. What had begun as a very promising season for producers there ended poorly, with total milk production down 1.3 percent for its season (June 2012–May 2013). Production dropped in the European Union for the opposite reason: excessive rain in the latter half of its season (April 2012–March 2013), diminishing European milk production and exports. The United States was well positioned to take advantage of those shortfalls. U.S. exports of milk solids for 2013 will be equivalent to about 15.5 percent of total milk production compared to 13.5 percent for 2012.

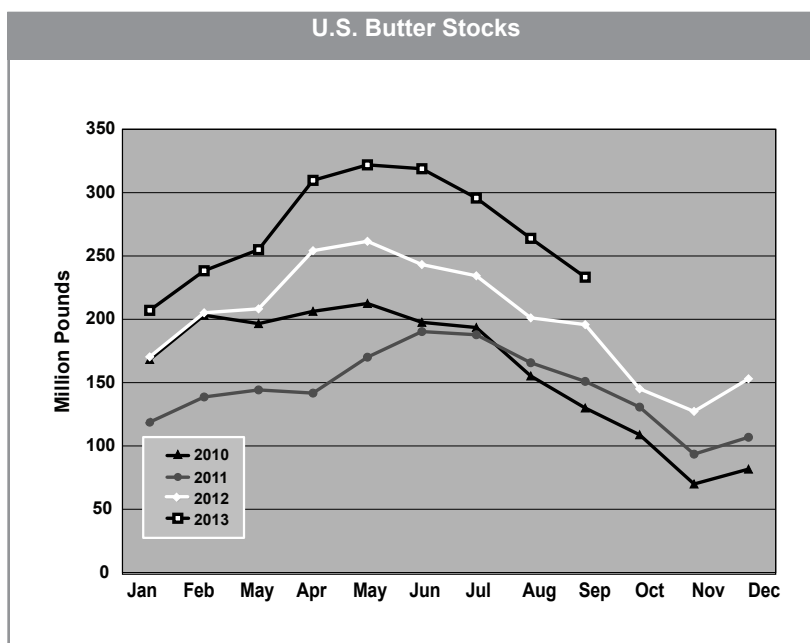
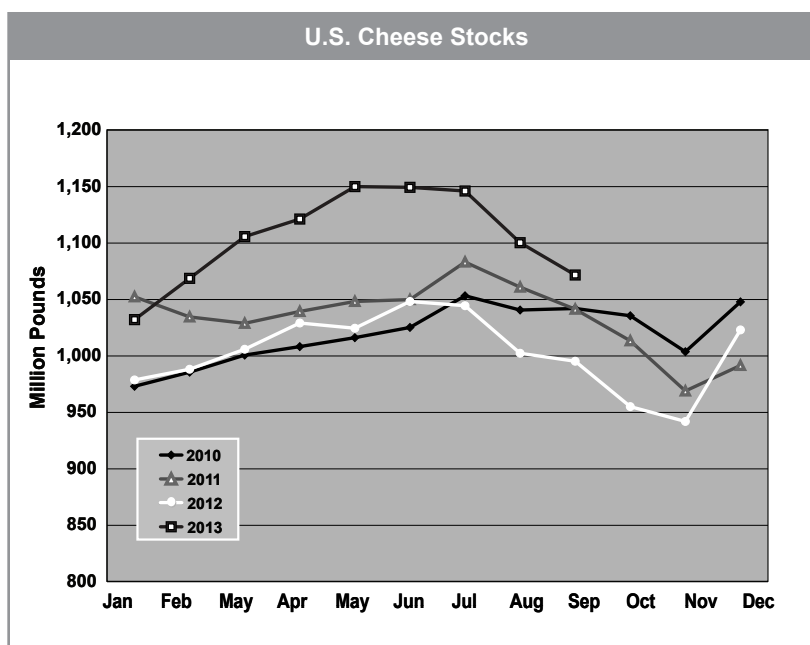


Although the U.S. is still a relative newcomer in the world dairy market, we are already the third largest exporter behind New Zealand and the European Union. Those two each hold roughly a 35 percent share of world exports, while the U.S. accounts for 20 percent. It takes a while to cultivate new markets and learn your customers' preferences. For example, in the U.S., a standard product is yellow cheddar cheese sold by the pound, but the currency of world trade is Gouda cheese sold by the kilogram. While we manufacture butter with 80 percent butterfat, the world standard is 82 percent. We produce nonfat dry milk when the world expects skim milk powder. These differences seem small, but they're important. We must address them to in order to expand export market opportunities.

We are beginning to make significant inroads to more consistent export sales. U.S. milk drying plants are adding capacity to make whole milk powder—a product in great demand in world markets. U.S. firms are exploring new opportunities to sell unrefrigerated UHT milk into Asian markets. Growth in export sales will help maintain prices for our increased milk production in the long run.

Dairy Stocks

U.S. dairy products typically sell at a discount to those from Europe and Oceania on world markets. In the fall of 2012, thanks to a tightening of world stocks, U.S. prices for cheese and butter climbed above world market prices. Ultimately, this caused U.S. export sales to slow and domestic stocks to increase. The U.S. was carrying unusually large stocks of butter and cheese through the first half of 2013. However, when U.S. prices returned to a discount relative to world prices, export sales picked up and our stocks began to recede. By the



fourth quarter of 2013, stocks of dairy products were still high by historical standards, but back to more comfortable levels.

Average milk prices for 2013

Milk prices during each of the first 10 months of 2013 were above previous-year levels, resulting in the second-highest average U.S. all-milk price. The Class III price is estimated to average near \$18 per

hundredweight, about \$0.55 higher than in 2012. A 2013 Class IV price near \$19 would be about \$3 higher above 2012, and the U.S. average all-milk price at \$19.95 would be about \$1.40 higher. The record Wisconsin average all-milk price was \$20.32 in 2011. Wisconsin's average milk price for 2013 is estimated near \$20.25, \$0.90 higher than in 2012 and very close to the 2011 record.

The 2014 Dairy Outlook

It is no longer enough to keep our eyes on domestic milk production and consumption of dairy products. With more than 15 percent of our milk solids being exported, the United States affects world markets and world markets affect us. Europe is now more than halfway through their production season, and although it had a slow start through its flush, production there is now showing strong gains. New Zealand had a slow start, but its pasture growth is favorable, so milk supplies there are forecast to increase by 5 percent for the production year. USDA is forecasting U.S. milk production to increase 1.8 percent in 2014. Individually and collectively, the top three world exporters will all have increased their milk production, so dairy products are available for export.

China is the world's largest buyer of dairy products. China is also a fairly large and growing milk producer, but its production is down by about 5 percent, partly due to a very warm summer and partly because licensing restrictions tied to the melamine crisis have driven many smaller farms out of dairying. Large dairy operations in China are still expanding, but they have not been able to keep pace with the growth in demand. China and much of Southeast Asia will import more dairy products in 2014.

U.S. dairy companies have also increased sales into the Middle East and North Africa. These have been a traditional destination for butter and powder sales, but cheese exports to this region have also increased and are expected to remain strong.

Strong world demand for butter and powder has kept prices for those products fairly high. Because of these strong sales, Class IV prices

have been higher than Class III prices for all but one month of 2013 and in recent months, greater by more than \$2.00 per cwt. We are expecting Class IV prices to be above Class III for most of 2014, but with the gap narrowing by the spring flush. Using milk powder for standardizing cheese vats is prohibitively expensive at these prices, leading most cheese plants to source their extra milk solids from raw milk. This reduces yields in cheese vats but it will help to keep Class III prices firm even with more milk available.

Class III prices began to tumble at the end of 2012 despite tightening domestic stocks of cheese. This happened in large part because the U.S. cheese prices were well above Oceania prices, making our cheese non-competitive. The good news is that U.S. cheese prices are currently below world prices, which should promote continued strong cheese export sales.

We also expect domestic sales to remain resilient. Economic growth has been slow but steady. Third quarter 2013 GDP was up 4.1 percent from year-earlier levels. Unemployment has been decreasing slowly, but there is concern that consumers may not be ready to go on a spending spree. In fact, there is concern about deflation due to conservative consumer behavior. Restaurant sales have not been

exceptional (although the Restaurant Performance Index has remained above the level usually indicating a contraction) and there has been almost no increase in retail prices of all dairy products in the Consumer Price Index.

In 2014, we project milk prices to decline somewhat from the 2013 averages. Feed prices have declined to the point where improved margins will almost certainly stimulate expanded milk production. Coupled with greater production from New Zealand and Europe, this will put more dairy products on world markets. We think that there is good demand for that additional product, but it will clear the markets at a slightly lower average prices.

We forecast an average U.S. All Milk price of about \$19.25, down about 65 cents per hundredweight from 2013. Powder prices are finding more support in global markets, and we project that Class IV prices may drop by only about 50 cents while Class III prices will decline by about 75 cents. This implies that Wisconsin milk prices will decline more than the average U.S. milk price. The situation we forecast would widen the already significant gap between Class III and IV prices to nearly \$3 in the year ahead. Product sales opportunities will cause those prices to converge over the longer run.

2014 Milk Price Forecasts

	<i>Quarter</i>			
	<i>Jan-Mar</i>	<i>Apr-Jun</i>	<i>Jul-Sep</i>	<i>Oct-Dec</i>
Class III	\$18.05±0.50	\$17.15±0.30	\$16.85±0.15	\$16.90±0.35
Class IV	\$19.30±0.35	\$18.50±0.05	\$18.05±0.15	\$18.00±0.05
WI All Milk	\$19.90±0.40	\$19.05±0.30	\$18.65±0.15	\$18.65±0.05

Livestock and Poultry

Pat Luby (608) 265-8137

2013 in Review

Meat Production Flat in 2013

Total meat production rose about one-quarter of one percent in 2013 from 2012 levels. The U.S. produced 93.3 billion pounds of meat, which is about 1 percent below 2008's record of 93.9 billion pounds. Broiler output was up about 2 percent, but pork production was about what it was a year ago. Beef production was down about 1 percent, turkey production was down about 2 percent and lamb output was down a tiny bit.

U.S. meat production has been flat for the last five years after rising for decades. This is blamed on sluggish economic and employment growth since the Great Recession of 2008-09, rising feed costs and periodic severe drought conditions in the western U.S.

Mixed Trends in Red Meat and Poultry Output in Recent Decades

Meat production trends have been mixed over the last six decades. Beef output exploded from 1952 to 1976, increasing 275 percent increase from 9.3 billion to 25.7 billion pounds. In 2013 the nation produced 25.9 billion pounds of beef, just a bit more than it did 37 years ago. Next year it will produce less: USDA forecasts beef production will drop about 1–2 billion pounds in 2014

Pork production has followed a different path. It had more than doubled from 11.3 billion pounds in 1975 to 23.2 billion pounds in 2013. Pork output has seen nearly straight-line growth since the mid-1980s and could catch beef production in 2014.

Meanwhile, broiler production tripled from 1952 to 1976 and tripled again from 1976 to 2005, but it has leveled off since then, rising less than 7 percent in the last eight years.

Turkey output rose 138 percent from 2.6 billion pounds in 1984 to a record 6.2 billion pounds in 2008, but has fallen 6 percent during the last five years.

Annual Volatility in the Cattle and Hog Markets has Declined Over time

Analysts are predicting relatively small changes in both production and price in the meat sector for 2014. This follows the trends of recent decades.

From 1952 to 1979, the average year-to-year absolute change in beef production was 5.6 percent. From 1979 to 2013, it averaged only 1.9 percent per year. The average change in the annual production of pork was 6.7 percent from 1952 to 1979 but fell to 3.5 percent from 1979 to 2013. These changes are likely the result of concentration in the beef and pork production sectors—large operators are less capable of making large changes in output because of high fixed costs.

Similarly, from 1952 to 1979, average annual choice cattle prices changed 10.2 percent. The average annual change from 1979 to 2013 was only 5.7 percent. The average

annual change in hog prices was 17 percent from 1952 to 1979; only 12.4 percent from 1979 to 2013.

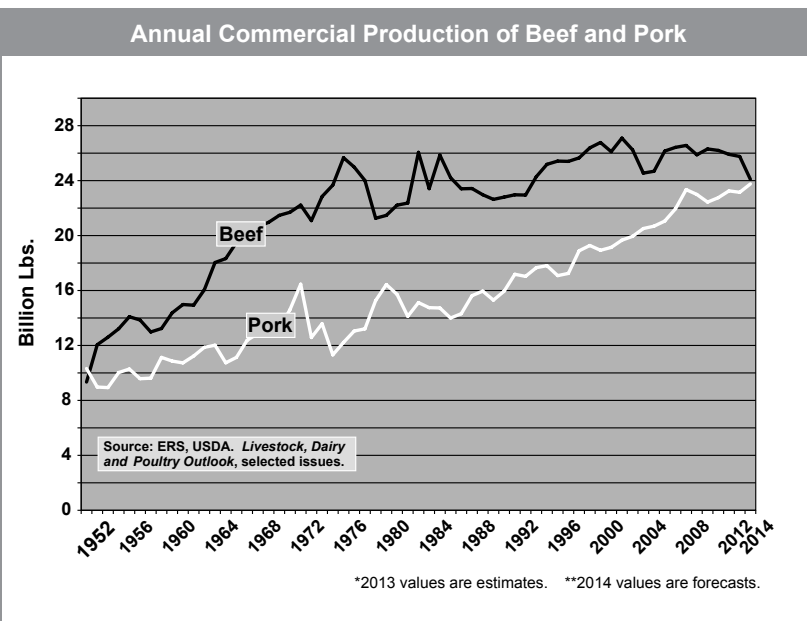
Reduced output and price volatility is beneficial to both producers and packers. Producers face less price risk and packers can more consistently operate closer to optimal capacity.

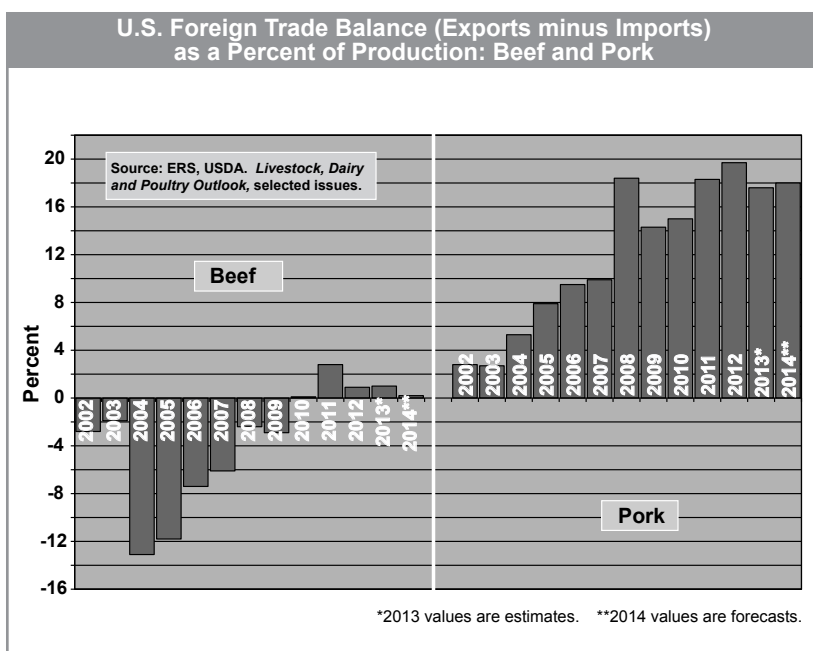
Meat Exports Continue Firm

Exports continue to be a bright spot for meats. For decades, the United States imported 5–10 percent of the beef it consumed. Since 2010, there has been a near balance between beef exports and imports.

Until 1995, the U.S. imported slightly more pork than it exported. Exports slightly exceeded imports from 1996 through 2003. Since then, pork exports have grown rapidly. More than 20 percent of U.S. pork is now exported, while only 2–4 percent is imported.

Broiler and turkey exports slightly exceeded imports for many years, but exports of both began to expand in the 1990's. Net exports (by weight) now account for nearly one-fifth of broiler production and about one-eighth of turkey output.

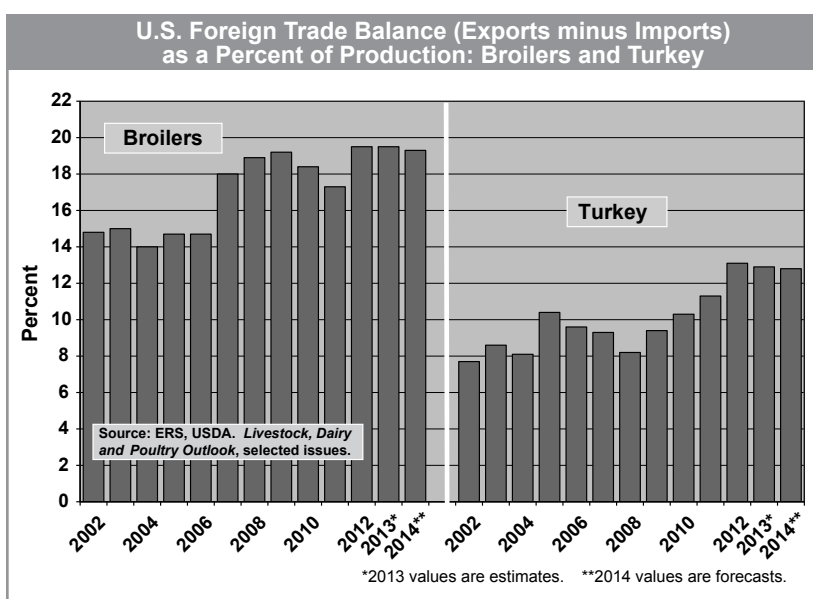




Cattle Prices Higher in 2014

The annual average price of choice cattle has risen more than 50 percent in the last five years, and with the cutback in production, it should edge higher in 2014. Meanwhile, the annual average price of feeder cattle in 2013 was about the same as in 2012, about \$146 per hundred-weight, up about 52 percent since 2009. With corn prices likely lower in 2014, feeder cattle prices should set a new record high.

Total cow slaughter in 2013 was near the 6.45 million slaughtered in 2012. Dairy cow slaughter was up about 2 percent while other cow slaughter dropped 2 percent. Cow slaughter has ranged between 6.1 and 6.7 million head for the last seven years. This is well above the 4.8 million head slaughtered in 2005, but far below the record of 10.4 million head set in 1975. With improved range conditions and hay supplies, analysts expected cow slaughter to decline a bit in 2014. Cow prices were up very little in 2013 from a year earlier but they averaged 70 percent higher than in 2009. Cow prices are expected to increase modestly to set a new record in 2014.



Hog Prices Expected to Dip

Pork production is expected to be about 1-2 percent higher in 2014, as both hog numbers and average weights edge upward. Annual pork output has been extremely stable for the last six years, ranging between 22.4 and 23.4 million pounds. The 2013 output of about 23.2 million pounds was about the same as a year earlier, but it was still a tiny bit below the record high set in 2008. A new record high is expected to be set in 2014.

Hog breeding numbers have shown unprecedented stability for the last 17 quarters, trending sideways between 5.7 and 5.9 million.

2014 Forecast

Meat Production Will Be Stable Again in 2014

For the fourth consecutive year, U.S. meat production is likely to total about 93–94 million pounds in 2014. In fact, USDA's December 10 forecast suggests that it could approach 2008's record of 93,937 million pounds.

Beef Output Should Be Lower Again in 2014

U.S. cattle numbers peaked in 1975, but thanks to increased productivity, annual beef production did not peak until 2002 when it hit 27.1 billion pounds. USDA is forecasting that beef production will reach 24.2 billion pounds in 2014, down nearly 6 percent from 2013. Annual U.S. beef output has not been below 24 billion pounds since 1993.

Hog prices in 2013 averaged about 6 percent higher than a year earlier, about 2 percent shy of the record high set in 2011 but about 55 percent above the 2009 average. Hog prices are expected to average about 5 percent lower in 2014 than a year earlier.

Broiler Prices a Little Lower in 2014

Although broiler production has slowed during the past decade, it set a new record high of nearly 38 billion pounds in 2013. This was up nearly 2 percent from 2012 but up less than 3 percent from five years ago. Thanks to a 25 percent price increase from 2011 to 2013 and the expectation of lower feed costs, broiler output is expected to reach a record high of nearly 39 billion pounds 2014, while prices fall between 2 and 10 cents per pound from 2013 levels.

Turkey Prices Likely a Little Higher in 2014

Turkey prices slipped about 6 percent in 2013 from the previous year's record high. They should match 2013 or edge a little higher in 2014 but will likely remain several percentage points below the 2012 peak. Turkey production should rise a bit but remain 4–5 percent below the record set in 2008.

Lamb Output Down a Little, Prices Likely Up a Little In 2014

After falling for years to an annual low of 149 million pounds in 2011, lamb production rose to the 156–157 million pound range during the last two years. It should decline a little from that level in 2014. Lamb prices fell hard in 2012 from a very strong 2011 record high and eased downward in 2013, but should rebound in 2014.

Egg Output Up Again in 2014, Prices Down

U.S. table egg production has trended steadily upward since 2008. Year-over-year gains in production in 2012 and 2013 were larger, at 1.9 percent and 2.6 percent, respectively. Production in 2013 was a record high 6.9 billion dozen. An additional 1–2 percent increase is forecast for 2014. Egg prices have risen 18 percent in the last five years, but they are likely to fall 8–10 percent in 2014.

Exports Continue Strong

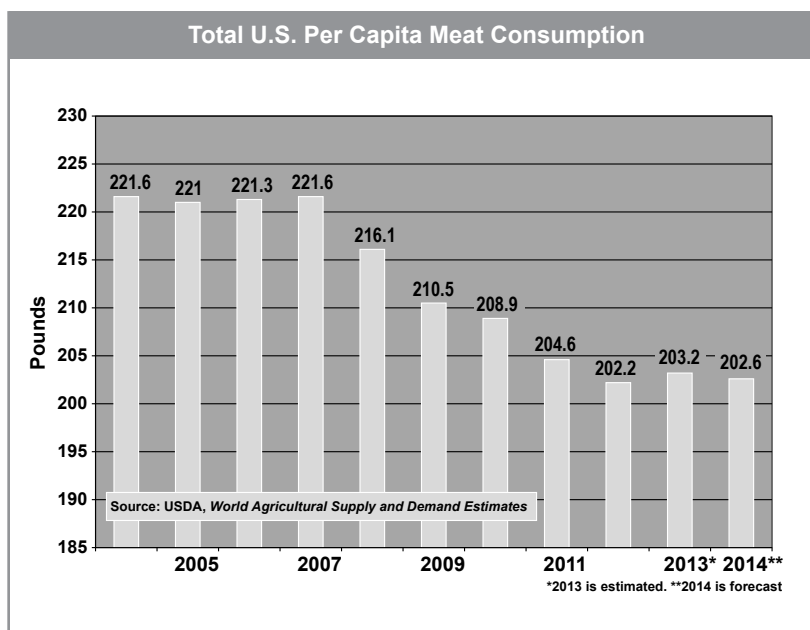
Net beef exports have continued relatively strong since hitting a low in 2003 due to concerns about BSE. Although beef exports have slowed recently, beef imports fell 46 percent from 2004 to 2011. As a result, a negative trade balance (imports exceeded exports by over 3.5 billion pounds 2004 and 2005) has turned a positive for the last several years. This is expected to continue in 2014.

Pork exports rose 147 percent from 2004 to a record high in 2012. They fell about 6 percent in 2013 but are expected to rebound in 2014. Pork

imports have been stable since 2008, creating a positive trade balance of over 4 billion pounds since 2009. This should continue in 2014. Broiler exports have risen 55 percent since 2004. They were up about 2 percent in 2013 and should rise slowly again in 2014. Turkey exports have been strong, particularly since 2009, reaching a record high of 800 million pounds in 2012. They are expected to approach that record in 2014 on the heels of a 4 percent drop in 2013.

Per Capita Meat Consumption Nearly Stable in 2014

Meat consumption per capita, which peaked at 221.6 pounds in 2004 and again in 2007, fell 8 percent during the next five years to 202.2 pounds in 2012. During the five-year decline, beef consumption per person fell 12 percent, pork fell 10 percent, broilers were down 6 percent and turkey dropped 9 percent. Lamb consumption, though very small, was up a trifle. Consumption per person appears to have stabilized, rising to about 203.5 pounds in 2013. A decline of less than a pound per person is expected in 2014.



Corn and Soybeans

Brenda Boetel¹ (715 425-3176)

2013 in Review

Corn prices were quite volatile in 2013. January's U.S. cash corn prices averaged \$7.03 per bushel, down from \$8.34 per bushel in August 2012 but significantly above the \$4.27 per bushel price in November 2013. Soybean prices were more stable. They started the year at \$14.18 per bushel in Central Illinois—down from an August 2012 high of \$18.14—and ended in November at \$13.36.

Marketing year 2012/13 started with very tight stocks of corn, which in turn led to high prices and decreased usage. Total corn usage decreased by 11.3 percent from 2011/12 marketing year; while total soybean usage decreased by 1.8 percent.

Prices stayed high in spring 2013 as planting delays raised concern about how many acres would be planted and potential yield losses due to later planting. Only 5 percent of the corn crop was planted by April 28. That's late: About half the crop had been planted by April 28 the previous year, and in the past five years, an average of 31 percent has been in the ground by then. Corn planting in 2013 was the slowest since 1984. Farmers actually planted 2 million fewer acres than they'd indicated they would in March, and 600,000 fewer soybeans acres were planted than intended. Nonetheless, planted acreage in 2013 was the 2nd highest ever for corn (behind 2012), and the 4th highest ever for soybeans (2009 was the record).

Weather slowed planting of soybeans as well as corn. Planting of

the 2013 soybean crop didn't get underway in all 18 major soybean producing states until May. Only 44 percent of the intended crop had been planted by May 26, compared with 87 percent on that date the previous year. Planting was 85 percent completed nationwide by June 16, however, Wisconsin still lagged behind normal.

Despite 2013's slow start, weather conditions were dramatically better than in 2012. By August 2013, the percentage of both corn and soybeans acres rated good or excellent was the highest since 1990. Corn acres harvested were the 2nd highest ever (behind 2012), and soybean acres harvested were the 4th highest ever (2010 was the record). With return to trend yields, corn production in 2013 is forecast to set a record at 13.99 billion bushels, while the soybean crop is forecast to be the 3rd largest at 3.26 billion bushels.

Usage of both corn and soybeans is forecast to increase in the 2013/14 marketing year, but supply is up more than demand. Corn's supply-to-use ratio (13.7 percent) is the highest since 2008/09, so producers should not expect corn prices to rebound to \$5 per bushel in the 2013/14 marketing year. And while corn acres planted will likely decline a bit in 2014, barring a return to 2012 weather conditions, fall 2014 U.S. corn prices could go lower still.

Soybeans will likely average between \$11 and \$13 per bushel in the 2013/14 marketing year. Prices will near \$13 in late 2013 and decline throughout the marketing year.

Corn

U.S. corn supplies in the 2013/14 marketing year are expected to be up considerably (by over 24 percent) due to the record production and decreased usage. Although almost 2 million fewer acres were planted than in 2012 (95.3 million vs. 97.2 million acres), only 200,000 fewer acres were harvested (an exceptionally large share of 2012's acres weren't harvested due to drought.) Harvested corn acreage in 2013 was the second highest on record. Coupled with the projected above-trend yield of 160.4 bushels per acre, the U.S. is forecast to have produced a record 13.99 billion bushels in 2013.

Wisconsin growers planted 4.1 million acres of corn (down 250,000 acres from 2012) and harvested 3.2 million acres (down 100,000 acres). Wisconsin corn producers averaged 145 bushels per acre, better than 2012's 121 bushels per acre but below the trend line yield of 148.6 bushels per acre.

Total usage of corn in 2012/13 is estimated to have dropped by 11.3 percent from 2011/12 levels. High corn prices in late 2012 and early 2013 led to decreased usage in all categories: feed and residual, seed and industrial use, and exports. Usage should be up in all categories in 2013/14 over the previous marketing year, but only to 2010/11 levels.

Feed and residual demand was down 4.9 percent in 2012/13, primarily due to significant liquidation of the cow herd, decreased hog inventories and reductions in cattle feeding. Demand for corn for feed is projected to be up 20 percent in 2013/14 as the number of beef cows

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U.S. Corn Balance Sheet (Sep–Aug)								
Marketing Year	06/07	07/08	08/09	09/10	10/11	11/12	12/13*	13/14**
Million Bushels (Except as Noted)								
Beg. Stocks	1,967	1,304	1,624	1,674	1,708	1,128	989	824
Imports	12	20	14	10	28	29	162	30
Acres Planted (Mil.)	78.3	93.5	86.0	86.5	88.2	91.9	97.2	95.3
Acres Harvested (Mil.)	70.6	86.5	78.6	79.6	81.4	84.0	87.4	87.2
% Harvested	90.2	92.5	91.4	92.0	92.2	91.4	89.9	91.5
Yield (Bu./A.)	149.1	150.7	153.9	164.7	152.8	147.2	123.4	160.4
Production	10,535	13,038	12,101	13,110	12,447	12,360	10,780	13,989
Total Supply	12,514	14,362	13,739	14,792	14,262	13,517	11,932	14,824
Feed & Residual	5,595	5,913	5,254	5,159	4,792	4,557	4,333	5,200
Food/Seed/Industrial	3,490	4,387	4,953	5,938	6,428	6,428	6,044	6,350
Ethanol	2,119	3,049	3,677	4,568	5,021	5,000	4,648	4,950
Exports	2,125	2,437	1,858	1,987	1,835	1,543	731	1,450
Total Demand	11,210	12,737	12,065	13,084	13,054	12,528	11,108	13,050
Ending Stocks	1,304	1,624	1,674	1,708	1,128	989	824	1,792
Stocks to Use (%)	11.63	12.75	13.87	12.95	8.64	7.89	7.42	13.73
Average Farm Price (\$/Bu.)	\$3.04	\$4.20	\$4.06	\$3.55	\$5.18	\$6.22	\$6.89	\$4.05— \$4.75
*USDA Estimate as of December 2013								
**USDA Forecast as of December 2013								
Source: USDA, <i>World Agricultural Supply and Demand Estimates</i>								

slaughtered in 2014 will likely be down a bit from 2013's levels, which in turn were down about 2 percent from the number killed in 2012. Net feedlot placements in 2013 are on par with 2012 but will likely increase slightly in 2014. The largest increase in corn used as feed will be for swine and poultry as broiler and hog production expand.

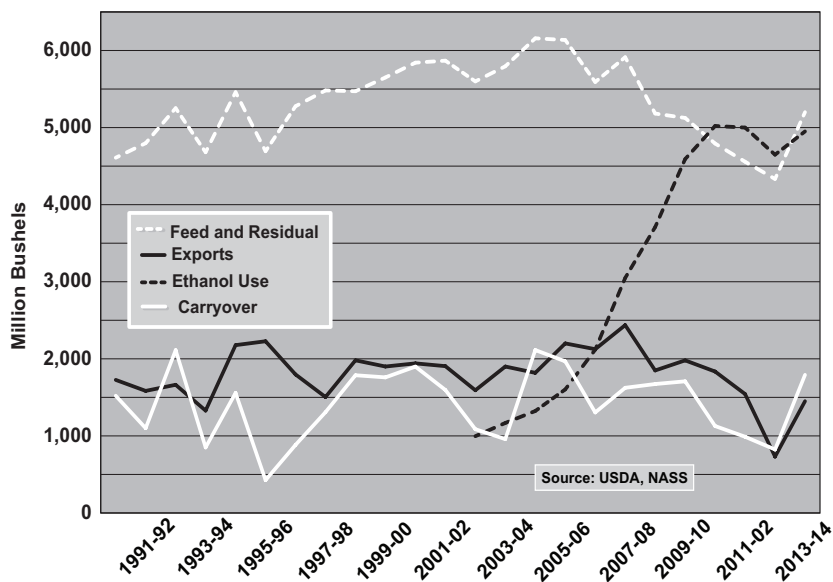
Ethanol was the largest corn use category in 2012/2013 for the third consecutive year, although demand for corn ethanol use decreased 7 percent from 2011/12 marketing year. The USDA projects 4.95 billion

bushels of corn will be used for ethanol and its co-products in the 2013/14 marketing year, up 6.5 percent from 2012/13. Corn usage for ethanol is determined by domestic consumption of ethanol, net ethanol trade and changes in ethanol stock levels. Domestic ethanol consumption is influenced by biofuels policy and ethanol price. A new EPA proposal reduced the blend wall to 13.01 billion gallons for 2014 from the previous mandate of 14.4 billion gallons. This will limit any additional increases in corn used for ethanol production.

Domestic ethanol consumption was stable between 2011/12 and 2012/13. The overall decline in ethanol production was due to changes in trade and inventory. 2012/13 had 793 million gallons less (285 million bushels) net exports than in 2011/12. Additionally 2012/13 saw a decrease in ethanol stocks from 2011/12 of almost 101 million gallons compared to a year-over-year decrease of 62 million gallons in 2011/12.

Ethanol production has increased recently. It was 1.5 percent higher in the last three months of the 2012/13

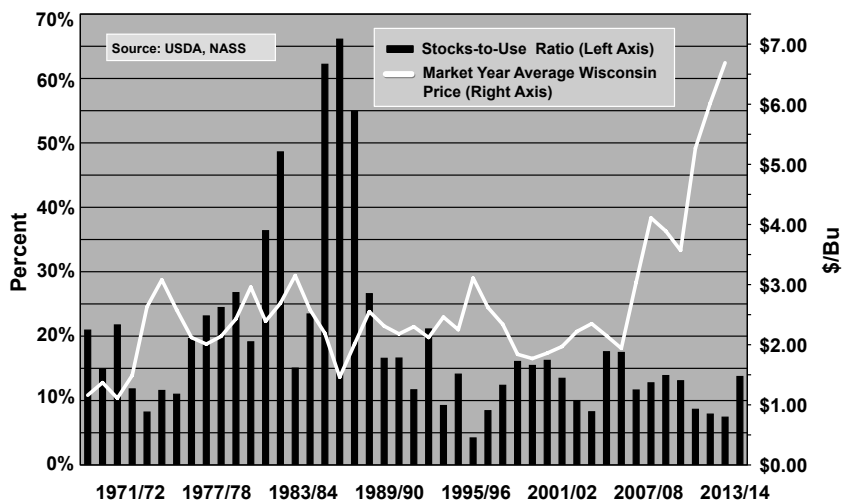
U.S. Corn Usage by Category



marketing year than the same period in 2011/12; and 9 percent higher in the first three months of the 2013/14 marketing year than the same period in 2012/13. This increase is likely due to changes in trade rather than changes in domestic ethanol consumption. Note however that ethanol production for the first quarter of 2013/14 is comparable to the first quarter production in 2011/12.

Corn exports in 2012/13 were 52.6 percent below 2011/12 levels; however, they will be back close to 2011/12 levels in 2013/14. The U.S. is typically the world's largest exporter, averaging about 60 percent of the world corn exports between 2003/04 and 2007/08. In the 2012/13 marketing year, however, the U.S. share fell to 18 percent. The U.S. should recoup some of its share, providing about 31 percent of global corn exports in the 2013/14 marketing year.

Corn: U.S. Stocks to Use vs. Wi Average Farm Price



China creates uncertainty in the world corn market. It has been the world's 2nd largest exporter in some years and imported corn in others. The USDA may revise projections for Chinese imports from the U.S. downward for 2013/14, since the Chinese recently rejected several cargos of U.S. GMO corn. China has already committed to buying 80 percent of the estimated 2013/14 total, but Chinese corn buyers have put further purchases on hold.

Although demand for corn is projected to be up 17.5 percent over 2012/13, supply of corn is projected to be up even more at 24.2 percent. This means a buildup of stocks. Ending stocks are forecast at 1.79 billion bushels, the highest since 2005/06's 1.97 billion bushel carryover and more than double the 2012/13 carryover of 824 million bushels. The 2013/14 carryover translates to an ending stocks-to-use ratio of 13.7 percent, the highest since 2008/09, when corn prices averaged \$4.06 per bushel.

USDA projects an average U.S. corn price between \$4.05 and \$4.75 for the 2013/14 marketing year, compared to the record-high average price of \$6.89 in 2012/13. Prices have not averaged below \$5.00 per bushel since 2009/10, when the average price was \$3.55.

U.S. producers have reversed positions from a year ago, when they were receiving record prices, and they're wondering how long the low prices will continue. The futures market is currently signaling a premium of 21 cents per bushel for storage into July 2014. A reasonable rate for on-farm storage is 2 cents per bushel per month plus a one-time handling fee of 20 cents per bushel. The market is currently not paying enough to cover either commercial or on-farm storage into July. Yet many producers are continuing to store on the basis of hope-based risk management practices (i.e., they're hoping prices will rise).

Basis improvement is probably the best chance producers have to benefit from storage in 2014. Producers who are currently storing should be looking for strong basis as a sell signal. They should also be extremely cautious about storing into July 2014 or beyond, because a large crop will likely wipe out any basis improvements seen in early 2014.

Corn prices are not likely to improve much in the 2014/15 marketing year. Higher prices would require smaller foreign production, smaller U.S. crops or increased demand. Foreign production will likely remain near 2013/14 levels, which were up 46 percent from 2005/06.

Many analysts expect U.S. corn acreage to decline. But even if planted acreage drops 4 percent to 91.5 million acres and harvested acreage drops to 83.25 million acres (91 percent of planted acres), given yields similar to last year's 60.4 bushels per acre, the 2014 crop

would be 13.4 billion bushels, the 2nd largest on record. Barring terrible weather such as we saw in 2012 or a much smaller than expected acreage, the U.S. crop won't be down much. Demand will likely increase in 2014/15, due to population growth outside of the U.S. and an expansion in the domestic livestock industry. But added demand isn't likely to offset the large production and carryover.

Crop revenue insurance has potential for many producers in 2014. The largest risk for prices relates to the potentially large supply. Markets will likely not incorporate this supply information into the December 2014 price until after the February insurance prices are established.

Soybeans

Soybean prices were high in 2012/13, but did not keep pace with the skyrocketing corn prices. The average U.S. soybean price in 2012/13 was \$14.40, and the average Wisconsin price received was \$14.28. Prices have since fallen for the 2013/14 marketing year and Wisconsin soybean prices have averaged \$12.57 for the first three months. Prices will likely continue to tumble until early summer 2014.

U.S. soybean supply in 2012/13 is forecast at 3.24 billion bushels. This assumes 2012/13 production of 3.03 billion bushels, a 169-million-bushel carryover from 2011/12 and imports of only 36 million bushels. Marketing year 2012/13 usage is down from 2011/12 in all categories—crushing, exports and seed use. With total supplies of 3.24 billion bushels and total usage of 3.1 billion bushels, ending stocks are estimated to be 141 million bushels. The 2012/13 stocks-to-use ratio is estimated to be only 4.6 percent.

Production in marketing year 2013/14 is projected at 3.26 billion bushels, with Wisconsin producing

62.8 million bushels. The average U.S. yield of 43 bushels per acre is up, and has almost returned to 2010/11 yields of 43.5 bushels per acre. Wisconsin's 2013/14 yield is forecast at 40 bushels per acre, compared to 39 bushels per acre in 2012/13 and 46.5 in 2011/12.

Total soybean supplies for 2013/14 are forecast at 3.4 billion bushels (up 5.7 percent from 2012/13), under the record-setting 2006/07 supplies of 3.66 billion bushels, but similar to 2010/11 supplies of 3.5 billion bushels. Beginning stocks of 141 million bushels (16.6 percent under 2012/13) is the lowest since 2009/10, when stocks were 138 million bushels.

Total usage is forecast to increase in 2013/14, with the largest increase coming from exports. Crushing volume is forecast at 1.69 billion bushels, up from 1.68 billion in 2012/13, but down from the record 1.8 billion bushels in 2006/07. Exports are forecast at 1.48 billion bushels, up from 1.32 billion bushels in 2012/13. Projected seed usage of 87 million bushels is down from 89 million bushels in 2012/13. U.S. soybean ending stocks for 2013/14 are forecast to be 150 million bushels (up 6.4 percent from 2012/13), indicating a stocks-to-use ratio of 4.6 percent.

World soybean production of 284.9 million metric tons is up 6.3 percent from 2012/13, while usage levels of 270.9 million metric tons are up 4.9 percent. The world stocks-to-use ratio will increase in 2013/14 to 26 percent, up from 23.3 percent in 2012/13 and 21.5 percent in 2011/12 but down from 28.6 percent in 2010/11. The lowest world stocks-to-use ratio since 2000 occurred in 2001/02 and was 19.3 percent.

Soybean prices will likely continue to weaken in 2014. U.S. acreage is expected to be up in spring 2014 due to the relationship between soybean

U.S.Soybean Balance Sheet (Sep–Aug)								
Marketing Year	06/07	07/08	08/09	09/10	10/11	11/12	12/13*	13/14**
Million Bushels (<i>Except as Noted</i>)								
Beg. Stocks	449	574	205	138	151	215	169	141
Imports	9	10	13	15	14	16	36	25
Acres Planted (Mil.)	75.5	64.7	75.7	77.5	77.4	75.0	77.2	76.5
Acres Harvested (Mil.)	74.6	64.1	74.7	76.4	76.6	73.8	76.2	75.7
% Harvested	98.5	99.0	98.7	98.5	99.0	98.4	98.7	98.9
Yield (Bu/A)	42.7	41.7	39.7	44	43.5	41.9	39.8	43.0
Production	3,188	2,677	2,967	3,359	3,329	3,094	3,034	3,258
Total Supply	3,647	3,261	3,185	3,512	3,495	3,325	3,239	3,423
Crush Sep/Aug	1,808	1,803	1,662	1,752	1,648	1,703	1,689	1,690
Exports	1,116	1,159	1,283	1,501	1,501	1,365	1,320	1,475
F/S/R	149	93	101	108	130	88	90	109
Total Demand	3,073	3,056	3,047	3,361	3,280	3,156	3,098	3,274
Ending Stocks	574	205	138	151	215	169	141	150
Stocks to Use (%)	18.7	6.7	4.5	7.0	6.6	5.4	4.6	4.6
Average Farm Price (\$/Bu.)	\$6.43	\$10.10	\$9.97	\$9.59	\$11.30	\$12.50	\$14.40	\$11.50–\$13.50
*USDA Estimate as of December 2013								
**USDA Forecast as of December 2013								
Source: USDA, <i>World Agricultural Supply and Demand Estimates</i>								

and corn price. Currently the soybean-to-corn-price ratio is 2.93, indicating that soybeans are relatively more profitable than corn. If soybean acreage increases in 2014, and the U.S. experiences trend line yields, carryover for 2014/15 could increase to 210 million bushels, compared to 150 million bushels in 2013/14.

The South American crop is off to a good start and production is expected to be up from the record-high 2012/13 levels. Although China is currently buying soybeans in large quantities, demand for U.S. exports will decrease once the South American crop is harvested in spring 2014, assuming that Brazil can solve its logistical shipping problems.

A reduction in the biodiesel targets from the Renewable Fuels Standards freezes biodiesel production at 1.28 billion gallons in 2014. Biodiesel production is currently on track for 1.7 billion gallon production, and 2013 production can be carried over into 2014. This carryover could reduce 2014 production to near 1 billion gallons.

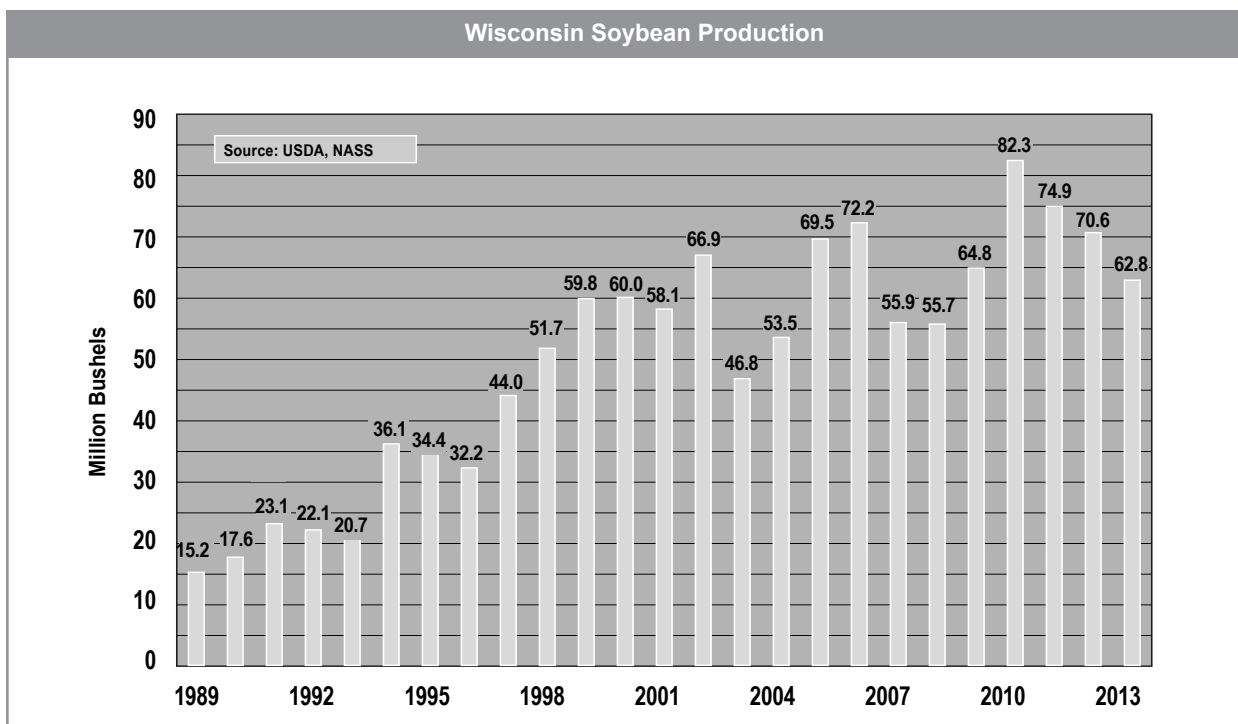
Producers should not store soybeans into 2014. The market is currently inverted and has little upside potential. There is potential for soybean prices to dip below \$10.50 per bushel in summer 2014. Producers should consider price risk management strategies for both old crop production and their intended 2014 production.

Summary

Marketing corn and soybeans was relatively simple during most of 2013. Prices were high and above cost of production. Although most producers cannot achieve the highest price, it was almost a challenge to market corn or soybeans at a loss. That situation has changed. Although soybeans can still be priced at a profit, the corn price is now below 2013's cost of production. Soybean prices could well drop below cost of production at some point in 2014. Marketing will be significantly more challenging in 2014.

Ideally, producers will have marketed their old crop soybeans by now. Corn storage provides only limited profit potential through basis improvement. Producers need to be careful about storing corn into the summer as large crops have the potential to destroy any basis improvements. Large acreage and good weather would cause both corn and soybean prices to drop in summer 2014.

A marketing plan is essential for 2014. Producers should consider various marketing strategies, including crop insurance. Producers also will likely want to have a significant portion of their projected soybean and corn production priced by April or May, 2014. Producers need to consider their financial position and how much downside price risk they can tolerate relative to the limited upside potential. Much of this downside price risk will occur in the spring and summer 2014 when acreage intentions and weather conditions become clearer.



Fruits and Vegetables

A.J. Bussan¹ (608 262-3519)

Many of the production estimates for fruits and vegetables usually reported by USDA's National Agricultural Statistics Service were suspended in 2013 due to sequestration-related budget cuts. Consequently, estimates reported in this section are derived from industry-specific market reports, trade associations, limited publicly available contract information and personal contacts with industry experts. For the most part, statistics that follow are not based on published USDA reports.

Like other Wisconsin farmers, fruit and vegetable growers faced a challenging start to the production season. Cold, wet weather and lingering snow cover across most of the state delayed planting until mid-to late April and beyond. The planting season was more favorable on coarse-textured soils that did not require much time to dry. Combined with warm May weather, this led to rapid emergence and good early growth for many vegetables in the central part of the state. Planting on medium textured soils was a challenge through May and June due to frequent rains. Dormancy broke late in perennial crops such as apples, cherries, cranberries, mint and others, but this led to pollination during near ideal conditions.

Potatoes and Vegetables

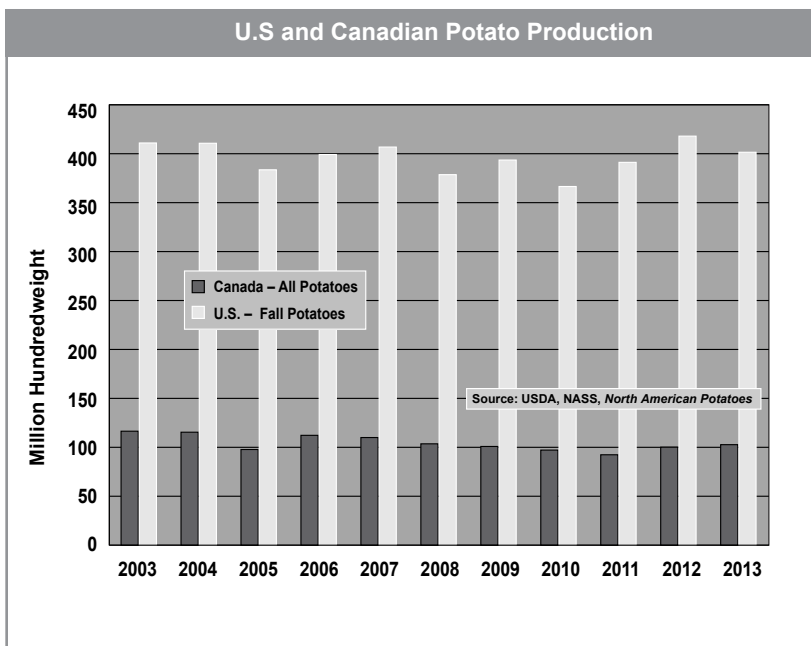
Potatoes

The 2013 North American (United States and Canada) fall potato crop was 3 percent lower than 2012. The U.S. crop was down 4 percent.

Open-market prices were below cost of production during much of the 2012 market season (September 2012 to May 2013) due to long supplies. The 2013 fall potato crop was smaller due to a 50,000-acre reduction in planting. While yields increased across the U.S. by 6 hundredweight per acre, the 1.5 percent increase in yield did not offset the nearly 5 percent drop in planted acres.

Planted potato acreage in Wisconsin in 2013 was down 1,000 acres from 2012. Ultimately, 63,000 acres were harvested. Industry estimates put the average yield for the state at 435 hundredweight per acre, with total production of 27.4 million hundredweight. Yields for the 2013 crop in Wisconsin were slightly less than in 2012 due to the later planting and subsequent delay in tuber initiation, but solid content and overall quality is better due to fewer days of heat stress.

Potato crop utilization estimates for the 2013 crop are as follows: 10 percent seed potatoes, 24 percent for chipping, 19.5 percent for processing, and 46.5 percent of the crop for fresh market. Prices paid for the 2012 crop through May were 10–25 percent of 2011 crop prices. Subsequently, potato seed prices in spring 2013 were low relative to recent years. Fresh market prices increased rapidly in late June and July due to low summer production volumes in southern states and limited availability of stored crop during that time of year. Early harvest fresh market prices were good to excellent and above \$20 per hundredweight through July and August. Current market prices are around \$10 per hundredweight for fresh potatoes. That's two to three times the 2012 price but only one-third to one-half the price in 2011. Prices for seed potatoes have increased along with fresh market prices. Contract prices for chipping and processing were



1. AJ Bussan is a professor and Extension vegetable crop production specialist, Department of Horticulture, UW-Madison.

strong, leading to positive returns following the 2012 production year. Prices for 2014 are under negotiation.

Potato planting was delayed until after April 2—about 30 days later than in 2012—due to late snow cover. Warm May conditions led to relatively rapid crop emergence and good early growing conditions, but cloudy and wet weather slowed potato crop progress through June. Wisconsin potato harvest began in July for canning and fresh markets, while harvest for early processing and chipping began in early to mid-August. The 2013 crop bulked into September, allowing average or slightly above average yields.

Snap Beans

Wisconsin continues to lead the nation in snap bean production. Several planting challenges occurred during June because of rainy weather, and several late-planted fields were stressed by high temperatures the last week of August and first two weeks of September. Nevertheless, yield and quality were good to excellent with production projected to outpace initial contract plans.

Adoption of new snap bean varieties with increased resistance to root rot over the past 3–5 years has more than doubled yields. Many fields in 2013 produced in excess of 7 tons per acre under irrigation, with some fields reported at 11 or more tons of clean beans. These yields are substantially higher than those achieved as recently as 2008 or 2009. As a result, production volumes will remain about the same for 2014, but acreage will likely be reduced.

Processed snap bean consumption has been relatively flat since 2000. While per capita U.S. consumption today is about 20 percent less than in 2000, increased population and a

slight increase in exports has maintained about the same level of total consumption.

Sweet Corn

Wisconsin continues to be among the top producing states for processing sweet corn. Wet weather posed challenges for planting during May and June. However, growing season conditions were near ideal for sweet corn production, leading to good yields and quality.

As in the case of snap beans, sweet corn yield has increased substantially. Wisconsin yields are almost double what they were 15 years ago. Yields for sweet corn under irrigation commonly range between 8 to 10 tons/acre or higher. Non-irrigated yields are more variable, but have shown similar increases.

Utilization is shifting from canned corn to frozen. The current ratio of frozen to canned utilization of the sweet corn harvest is about 3:2 compared to 1:1 in 2000. In addition, about 25 percent of all processed corn is exported, and foreign customers are also showing an increasing preference for frozen corn. Total consumption of processed sweet corn was up by 10 percent from 2000 through 2012.

Peas

Trade estimates suggest pea acreage remained constant in 2013, while yields increased slightly. Total U.S. production of peas for processing has decreased by about 30 percent since 2000. Frozen processed production has declined about 15 percent, while consumption of canned peas has declined by about 50 percent over that time.

Cabbage for Sauerkraut

Wisconsin remains the leading state in production of cabbage for sauerkraut. Nationally, production of

sauerkraut has declined by more than 20 percent since 2006. This correlates with a 25 percent reduction in per capita consumption of sauerkraut in the U.S. since 2000. In addition, sauerkraut packers have decreased carryover volumes by 60–70 percent. Carryover volume was consistently 50 percent or more of total consumption up to 1995, but now is barely 25 percent. This can be attributed to several factors including increased capacity for production (more rapid packaging) and consolidation of production within fewer plants.

Dry Edible Beans

Wisconsin producers planted and harvested 5,400 acres of dry edible beans during the 2013 crop year. Lima beans have long been part of the Wisconsin vegetable crop mix with most of the production ultimately being canned. Production is concentrated in the east central and northeastern parts of the state.

Onions

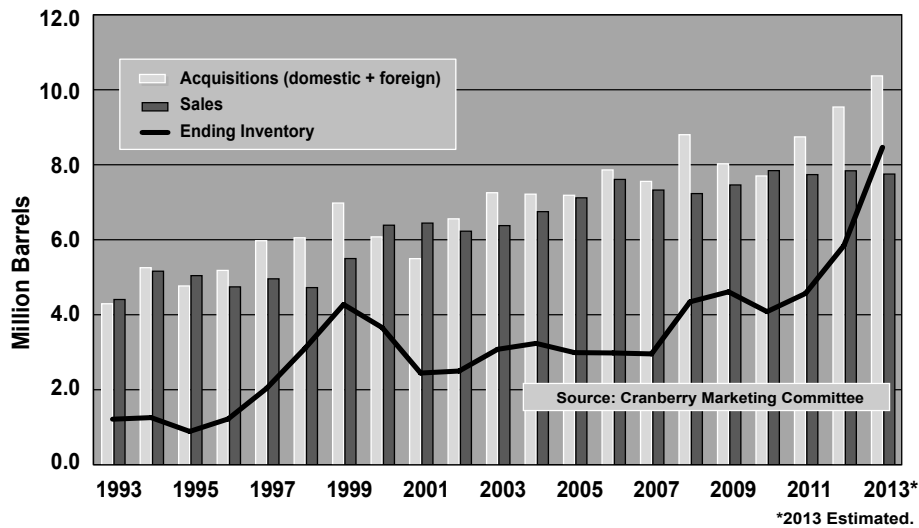
In 2013, onion producers planted about the same number of acres as in 2012, but yields were much higher on average. While production varied across different regions of the state, the overall production was up due to good growing conditions that occurred after a delay in planting. Markets have also been good to excellent.

Fruits

Apple and Cherries

While no official data are available for 2013 apple or cherry crops, very poor yields due to poor pollination in 2012 and excellent conditions for pollination in 2013 led to good to excellent yields for Wisconsin apple and cherry producers.

U.S. Cranberries: Handler Acquisitions, Sales and Ending (August 31) Inventory



Cranberries

Industry sources place the 2013 state cranberry crop in a range of 5.5 to 5.6 million barrels. That would be a new record, being 700–800 million barrels above the previous record set in 2012. The huge crop reflects nearly ideal growing conditions, resulting in an average yield estimated at about 300 barrels per acre. If confirmed, this would obliterate the previous record yield of 252 barrels per acre set in 2008.

The cranberry industry is experiencing several major challenges, the most critical being a growing oversupply. For the last several years, supply has grown faster than demand, leading to higher inventories and lower prices paid to growers. It is possible that the added carryover from the very large 2013 crop could put ending inventory in excess of one year's sales.

Wisconsin has been the source of much of the growth in U.S. produc-

tion, but a significant factor in the highly-integrated North American cranberry market has been an explosion in cranberry production in Quebec. Quebec's production is approaching that of Massachusetts, the second leading U.S. cranberry-producing state.

The cranberry surplus has sharply reduced prices for many cranberry growers. Ocean Spray Cooperative, the major cranberry handler in Wisconsin and nationwide, has insulated some of its grower-members (A Pool members) from lower prices by paying them based on net margins for Ocean Spray branded products. But Ocean Spray B Pool members (paid a "market" price) and growers selling fruit to independent handlers have recently experienced prices in the \$10–25 per barrel range. This is generally considered to be below full cost of production for most growers and below cash cost of production for many.

The nature of potential sales outlets for Wisconsin cranberry growers has been altered over the last three years. While Ocean Spray members produce the majority of that state's cranberry crop, two other long-time buyers of Wisconsin cranberries—Cliffstar and Clement-Pappas—that actively competed with Ocean Spray for growers' fruit were acquired by larger diversified food processors. Cliffstar, was bought by Cott, a large international beverage company, while Clement-Pappas was purchased by Lassonde, a Quebec-based juice and food specialty company. Questions are being raised about how these shifts will alter fruit procurement in the state. Adding to the uncertainty, as the private cranberry companies were being purchased, a new cranberry cooperative—United Cranberry Growers Cooperative—was formed.

III. Special Article:

Bringing Back the Milk

What's behind the turnaround in Wisconsin dairying?

by Ed Jesse and Bob Mitchell¹

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Introduction

Without doubt, the most significant chapter in the history of Wisconsin agriculture happened around the beginning of the 20th century, when the Badger State was growing its milk industry and earning the title of America's Dairyland. But the second most important chapter may have started around the beginning of the 21st, when the state's dairy industry took steps to prevent that title from slipping away.

Early in the past decade, the College of Agricultural and Life Sciences, UW-Madison, and Cooperative Extension, UW-Extension, published a series of leaflets under the title *Rethinking Dairyland*.² The tone was somber. Between 1985 and 2001, Wisconsin milk cow numbers had fallen from 1.9 million to 1.3 million, a loss of 38,000 cows per year. The third leaflet in the series offered this discouraging forecast:

*"Projecting (1985-2001) Wisconsin cow number and yield per cow trends to 2015 shows state milk production at about 16 billion pounds, about 8 billion pounds less than 2001. Cutting the annual cow loss in half, to 19,000 cows per year, would still result in 2015 milk production about 1 billion pounds less than 2001. If cow numbers held steady at the 2001 level, milk production in 2015 would be about 5 billion pounds higher than 2001. Yield increases above trend would not materially alter these projections – reducing the decline in cow numbers is much more important than increasing yield as a means of growing Wisconsin milk production. Stated differently, a continuation of the annual loss in dairy cows that has been experienced since 1985 cannot be offset by even very optimistic gains in milk per cow."*³

That prediction was made about 10 years after Wisconsin reached a troubling milestone. In August of 1993, California passed Wisconsin to become the nation's top milk producer. It wasn't a surprise—the only question for market analysts was exactly when the tipping point would be reached—but it was a blow to the state's collective ego, and more important, raised concerns about whether Wisconsin's century-old dairy industry still had either the will or the means to compete.

"That was a pivotal point," recalls David Ward, dairy policy director at the Cooperative Network, who at the time was both a dairy farmer and a representative to the State Assembly. "We were at a crossroads. Did we go forward and rebuild our dairy industry, modernize it, or do we go the way of other traditional dairy states that see their dairy industries in this continuous decline?"

"For some people, the attitude was 'So what? We lose a few farms, we still have a large dairy industry,'" Ward adds. "Then it started slapping us in the face that we're going to start affecting the processing industry. We're going to get to the point where a lot of cheese plants were closing."

Plant closings were a concern, agrees John Umhoefer, Executive Director of the Wisconsin Cheese Makers Association. "You often heard that the middle-size cheese maker was an endangered species. There were a few artisans and there were the big guys. We were losing six to twelve factories every year. That's significant. Today that would be 5 or 10 percent of the factories in the state. I don't think anyone was writing their own obituary at the time, but it couldn't have continued. The industry wouldn't have survived in its present form with California making more and more cheddar and more and more mozzarella."

1. Ed Jesse is an emeritus professor in the Department of Agricultural and Applied Economics, University of Wisconsin-Madison. Bob Mitchell is news manager for the UW-Madison College of Agricultural and Life Sciences.

2. The 8-part series of leaflets can be downloaded at <http://www.aae.wisc.edu/www/pub>. Expanded background materials for the leaflets are also available at this site.

3. "Facing up to the Western Dairy Boom." *Rethinking Dairyland*, Leaflet #3, September 2002.

Fortunately, the projected decline in Wisconsin milk production and bleeding of the state's dairy infrastructure did not materialize. To the contrary, since 2004, Wisconsin milk cow numbers have slightly increased and yield gains have accelerated. As a result, in 2009 the state shot past its previous annual milk production record (25 billion pounds in 1988). In 2013, estimated milk production approached 28 billion pounds, setting a new record for the fourth year in a row.

So it turns out that the dismal prediction recounted above was flat-out wrong. Wisconsin milk production will not drop to 16 billion pounds by 2015. Rather, it's likely that within the next few years, Wisconsin's dairy farmers will be producing twice that much.

Long-term trends are hard to break. What happened to cause the dramatic turnaround in the Wisconsin dairy industry is the topic of this special article. Guided by the insights of a number of industry leaders,⁴ we first describe the nature of the turnaround, then discuss the major drivers, and finally, we speculate on what to expect in the future—the opportunities and threats that will influence continued revitalization of the state's dairy sector.

How Things Changed

More Cows, More Milk per Cow

Wisconsin cow numbers bottomed out in March 2005 at 1.233 million head (Figure 1). In September 2013, the total number of dairy cows on Wisconsin dairy farms was 1.272 million head. This is a modest gain of 39,000 cows from the trough, but monthly cow numbers are stable to increasing. This kind of stability in cow numbers is in striking contrast to the freefall that occurred during the 1990s.

The trend in milk yield per cow in Wisconsin also changed course beginning in 2005 (Figure 2). The annual average change in milk per cow increased from

Fig. 1: Wisconsin Milk Cows

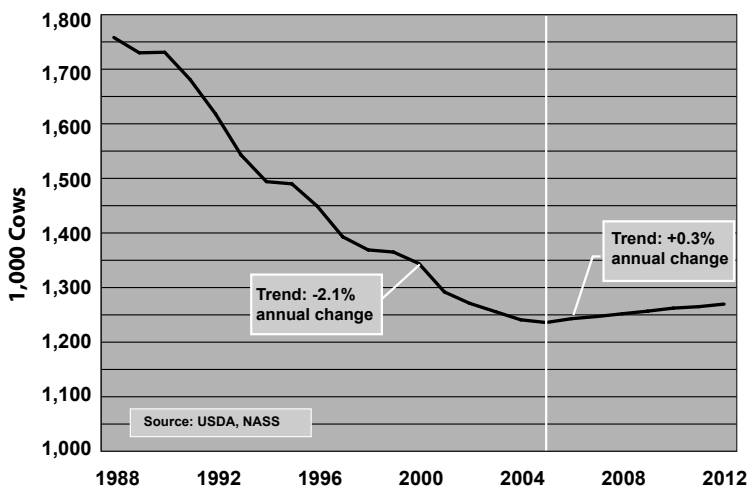
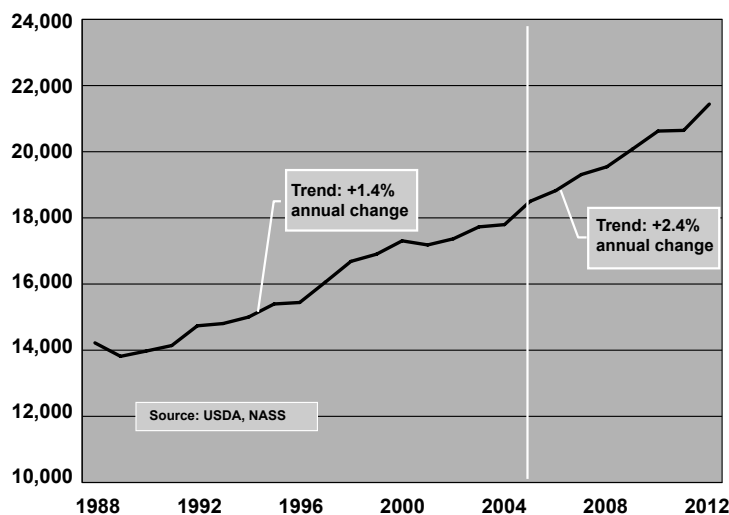


Fig. 2: Wisconsin Milk Per Cow



1.4 percent from 1989 to 2004 to 2.4 percent from 2005 to 2012. Wisconsin went from 22nd among states in milk per cow in 2004 to 14th in 2012. Over the same time, Wisconsin narrowed the gap in yield per cow with California from 3,343 pounds to 2,021 pounds.

More cows, each producing a lot more milk, has sharply elevated total Wisconsin milk production. Starting from just over 22 billion pounds in 2004, the state produced

4. The authors would like to thank the following individuals for contributing their insights: Ben Brancel, Secretary, Department of Agriculture, Trade and Consumer Protection; Al Koepke, Koepke Farms, Oconomowoc; Tom Lyon, former CEO, Cooperative Resources International; Sam Miller, Managing Director of Agriculture Banking, BMO Harris Bank; Bill Oemichen, CEO, and David Ward, Director of Dairy Policy, Wisconsin Cooperative Network; John Umhoefer, Executive Director, Wisconsin Cheese Makers Association; John Vries, Baldwin Dairy and Future Farm; Jim Wedeberg, Dairy Pool Manager, Coulee Region Organic Produce Pool.

more than 27 billion pounds in 2012 and produced an estimated 27.6 billion pounds in 2013 (Figure 3). Omitting 2011, when poor-quality feed dropped yield per cow well under trend, Wisconsin milk production has increased by an average 722 million pounds per year since 2005

Change in Dairy Farm Structure

The annual change in the average size of Wisconsin dairy herds has accelerated rapidly since 2005 (Figure 4). The average herd size grew by 11 cows between 2010 and 2012.

“In the 1960s and ‘70s a number of people tried to get big and failed. It was in the 90s that people learned how to manage big operations,” recalls Tom Lyon, former CEO of Cooperative Resources International, who has advised on several initiatives targeting the dairy decline. “They began to get tremendous milk levels out of these 500- or 800- or 1,000-cow-herds. People tried that in the 70s, but mostly they got a whole lot of mastitis.”

A lot of the growth in farm size was the result of a new generation of farm sons and daughters who wanted to continue farming, but in a different way.

“The business model for a farmer with three sons in 1985 was to divide the farm between sons—each got 80 acres, so they had four farms,” says Sam Miller, who directs agricultural lending for BMO Harris Bank. “In the early ‘90s, that shifted to ‘Let’s stay farming together and we’ll take our 80 cows up to 400.’ They were still dairy producers but everything changed—how you handled the cattle, the feeding, the housing, the milking. The additional component was, they couldn’t do it all themselves, so employee management became a big part of it.”

We can only estimate how much of Wisconsin’s milk comes from larger farms, because USDA stopped reporting state-level herd distribution data in 2007. In that year, Wisconsin had 250 herds with more than 500 cows that accounted for 22 percent of the state’s total milk production. Extrapolating to 2013 based on the rate of growth from 2005 to 2007, we estimate that the state now has more than 400 herds milking more than 500 cows accounting for about 40 percent of total milk production.

Fig. 3: Wisconsin Milk Production

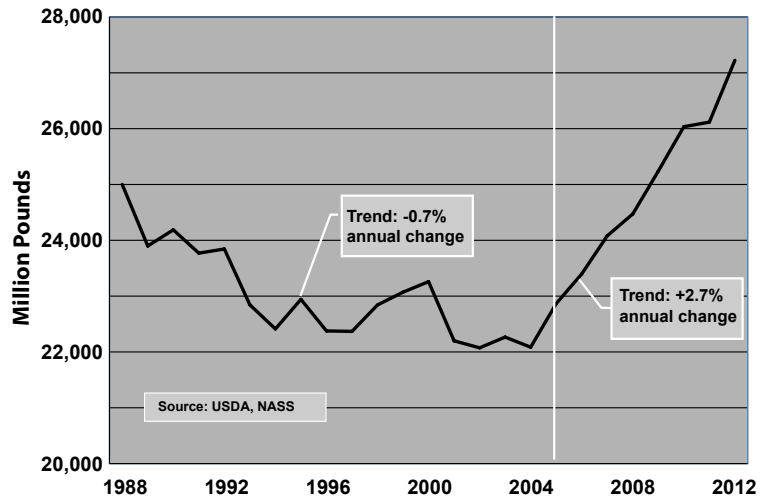
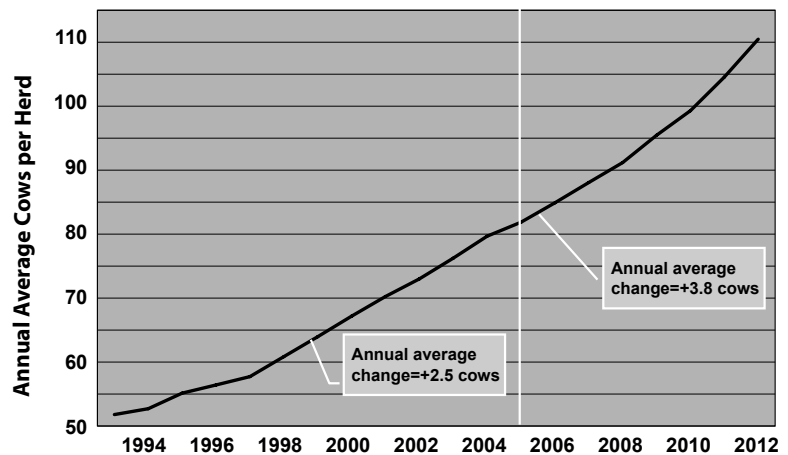


Fig. 4: Wisconsin Average Dairy Herd Size



Much of the uptick in Wisconsin milk production has come from the increasing number of larger herds. These herds typically use housing, milking and overall management methods that result in higher yields per cow than the state average. In 2007, the average annual yield per cow for herds larger than 500 cows was more than 3,000 pounds above the state average yield.

Wisconsin’s larger dairy operations are quite competitive with their counterparts in other states. Comparing milk per cow for herds larger than 500 cows, Wisconsin’s rank among states in 2007 was 4th, behind Michigan, Washington and Pennsylvania, but well ahead of California in 12th place. Although they got into it relatively late in the game, larger Wisconsin dairies have

learned how to outperform dairies in most states where large dairies are the norm.

What about the other end of the scale? Again, herd distribution data aren't available, but while average herd size has increased, attrition in Wisconsin dairy herds has slowed since 2004 (Figure 5). This may seem to be an anomaly, but it can be explained by a solid and perhaps growing core of smaller dairy operations that have adopted production and marketing practices that enable them to remain profitable despite generally lower milk yields. Chief among these is management-intensive rotational grazing, which trades higher milk yields for lower costs. A 2004 survey by the Wisconsin Agricultural Statistics Service estimated that there were about 2,200 Wisconsin dairy herds practicing management-intensive rotational grazing in that year.⁵ The average herd size for grazers was 58 cows. Since grazers feed little or no grain during the grazing season, their purchased feed costs are lower and they have less invested in the equipment and land required to grow and store feed. Some grazers earn a price premium by marketing their milk through value-added products that highlight the grass-fed source.

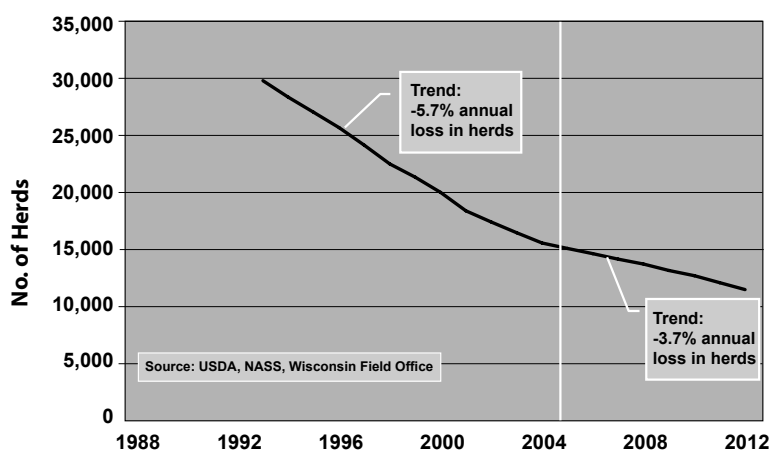
Wisconsin also has a large and growing number of organic milk producers who are restricted from using some yield-enhancing practices. Most organic producers also use management-intensive rotational grazing (organic rules require that cows be on pasture at least 120 days per year and get at least 30 percent of dry matter from pasture during that time).

Wisconsin organic producers have several outlets for their milk. The largest is Organic Valley, which currently has more than 500 member farms throughout Wisconsin, about two-thirds located in the southwestern part of the state. Herd size ranges from 20 to about 400 and averages about 65, says Jim Wedeberg, co-founder and dairy pool director for Coulee Region Organic Produce Pool, the co-op behind the Organic Valley brand.

Wisconsin leads the nation in number of organic dairy farms and ranks third in organic milk production. Wedeberg says the state's organic dairy herds are growing in size, and many are shifting from stanchions barns to free stalls and parlors, and there's considerable interest in robotic milking.

Wedeberg believes Wisconsin is positioned to gain a

Fig. 5: Wisconsin Licensed Dairy Herds



Note: Licensed herd data only available from 1993. Data prior to August 2003 includes a small number of goat and sheep dairy herds.

larger share of organic milk sales. “We have organic producers in the West who are struggling because of the cost of land, and water,” he notes. “An acre of almonds takes a lot less water than an acre of alfalfa, so conventional or organic is having trouble competing. I feel that the Midwest through the MidAtlantic is where organic has the most growth potential.”

Another subset of smaller dairy producers is Amish farmers. There were more than 600 licensed Wisconsin Grade B dairy farms water-cooling milk in cans in November 2013. All or most are operated by Amish farmers whose beliefs prohibit them from using electricity to cool milk in bulk tanks. Clark, Vernon and Monroe Counties, where most Amish dairy farmers are located, accounted for 72 percent of the state's Grade B can shippers in 2013. What proportion of Amish dairy farmers would be considered grazers is unknown.

The Wisconsin mix of large and small dairy farmers is symbiotic. Large farmers contribute significantly to an expanding milk supply to processors, encouraging investment and innovation in that sector. That strengthens markets for smaller dairies. Small farmers help maintain the state's dairy infrastructure, which is based on both number of customers and volume of milk. Large numbers of smaller dairy farms help sustain their local rural communities, benefiting both themselves and the owners and employees of larger dairies. Finally, smaller operations pair well with the smaller artisan cheese plants that have played a big role in advancing the Wisconsin brand (more on that shortly).

5. Wisconsin Agricultural Statistics Service, Wisconsin Dairy Grazing Operations 2004 and 2009, March 2005. Note reported 2009 estimates are forecasts based on 2004 survey responses.

“We need the 50–60 cow guys,” says John Vrieze, St. Croix dairy farmer who helped found the Dairy Business Association. “I look at a neighbor milking 60 cow as my colleague. We use the same infrastructure, sell milk to the same plant, buy tractors from the same dealer. The fewer (operations we have), the less infrastructure I have to sell to and buy from.”

Changes in Location of Production

Milk production is widespread throughout Wisconsin, with herds reported in all but a few far northern counties. Clark, Fond du Lac and Marathon counties ranked first through third in milk production in 2012, with Manitowoc and Dane counties filling out the top five. These top five counties accounted for 24 percent of total state milk production and 35 percent of the growth in production since 2004. Only eight counties dropped in milk production between 2004 and 2012, with the largest decline (22 percent) in rapidly urbanizing Waukesha County.

Following many years of fairly stable regional production patterns, there has been a significant expansion in milk production in the east central region of the state. Six of the 10 counties showing the largest increases in milk production between 2004 and 2012 — Fond du Lac, Kewaunee, Manitowoc, Brown, Calumet and Outagamie — are in this region

Adding Sheboygan and Winnebago counties to the six east central counties showing the largest recent production gains forms a geographical “dairy donut” with Lake Winnebago as the donut hole. Dairy growth in this eight-county area is unique in several respects, as shown in Table 1.

Although the combined dairy donut counties lost a slightly higher percentage of their dairy farms between 2004 and 2012 than did the rest of the state, the region gained 46,000 dairy cows (18 percent). That compares with a 1.7 percent aggregate loss of cows in other counties. Average herd size grew at more than twice the rate in other counties, increasing the difference in herd size from 37.7 cows per farm to 86.8 cows. Milk yield increased 2,000 pounds per cow more in the “donut” than in other counties.

As a result of more cows producing more milk per cow than other counties, the dairy donut counties increased milk production by 49 percent between 2004 and 2012, more than three times the rate of increase in the rest of the state. The share of Wisconsin milk produced in the region increased from 22 percent to 27 percent.

Table 1. Change in Selected Wisconsin Dairy Statistics

<i>Item</i>	<i>Dairy Donut Counties</i>	<i>Rest of State</i>
<i>No. of Licensed Dairy Farms</i>		
2004	2,282	13,418
2012	1,632	10,005
Absolute Change	-650	-3,413
Percentage Change	-28.5%	-25.4%
<i>No. of Milk Cows</i>		
2004	253,900	987,100
2012	300,000	970,000
Absolute Change	46,100	-17,100
Percentage Change	18.2%	-1.7%
<i>Average Herd Size</i>		
2004	111.3	73.6
2012	183.8	97.0
Absolute Change	72.5	23.4
Percentage Change	65.1%	31.8%
<i>Average Milk per Cow (Pounds/year)</i>		
2004	19,508	17,356
2012	24,634	20,447
Absolute Change	5,126	3,091
Percentage Change	26.3%	17.8%
<i>Total Milk Production (1,000 pounds)</i>		
2004	4,953,220	17,131,780
2012	7,390,000	19,833,900
Absolute Change	2,436,780	2,702,120
Percentage Change	49.2%	15.8%
<i>Average Milk per Farm (Pounds)</i>		
2004	2,170,561	1,276,776
2012	4,528,370	1,982,379
Absolute Change	2,357,809	705,603
Percentage Change	108.6%	55.3%

Finally, farms in the dairy donut counties produced an average of more than 4.5 million pounds per farm in 2012, more than double the average per-farm production in other counties. The 2004–2012 increase in milk per farm in the region was more than the average 2012 per farm production in the rest of the state.

Drivers of Change

What mended the malaise that had knocked Wisconsin's dairy industry back on its heels? Each of the dairy industry leaders we spoke with told the story a bit differently, emphasizing different technologies, organizations or policy changes. But there's a general point of agreement: It didn't happen on its own. There was a lot of strategic thinking behind the turnaround.

Organizing for Change

An early initiative dates to August 1985, when UW President Katherine Lyall appointed a 32-member Wisconsin Dairy Task Force 1995 (DTF) to "develop a comprehensive strategy to maintain and further develop a profitable and viable Wisconsin dairy industry." Members represented all phases of the dairy industry—dairy input and credit suppliers, dairy farmers, processors, legislators and state agency heads. A technical support committee included state and university experts.

Two years later the group reported back. Setting an overall tone, the DTF took issue with a U.S. Office of Technology finding that the Midwest dairying would lose its competitive advantage to the Southwest: "This... assumes a stagnancy that simply does not exist. It presumes that the Wisconsin dairy industry is neither willing nor able to adapt to changing conditions. The Task Force believes otherwise."⁶

But there clearly was a lot of work to do in all phases of the industry. The DTF's 34-page "summary" report included assessments and 75 detailed recommendations on farm structure, facilities and equipment, processing and marketing, milk pricing, ag education, research needs, animal health, farm management, inputs and services, taxes and more.

Many of these recommendations bore fruit in the form of providing impetus for agency and legislative initiatives noted below and in strengthening and redirecting dairy-related research and extension within the University of Wisconsin. As one example, state funding was secured to create the UW-Extension Center for Dairy Profitability to enhance dairy farmers' management skills. Later, Extension agricultural programming was reorganized to create multidisciplinary teams to bring together faculty and staff from various academic disciplines to comprehensively address issues like dairy management, dairy modernization and milk quality.

A focus on adding value

The concern about competition from Western dairy states wasn't just about volume of milk. California was also becoming home to a relatively small number of very big plants designed to produce large quantities of commodity cheese. Wisconsin's processors were at a disadvantage. They lacked the economies of scale and had to pay more for milk: The state's shrinking milk production created intense competition for what was left. It was obvious that Wisconsin plants couldn't make the same cheese for the same price. So they began to focus on a different market: higher quality, higher value specialty cheeses.

"The industry wouldn't have survived in its present form with California making more and more cheddar and more and more mozzarella," says John Umhoefer of the Wisconsin Cheese Makers Association. But by moving to value-added products, Wisconsin could take full advantage of its generations-deep cheese making expertise and the versatility of its smaller and mid-sized plants.

"Our cheese makers had the ability to adapt. It was not a great leap for them," Umhoefer says. "They are able to switch gears. You can't underplay that knowledge of cheese making. They can mess with temperature, time, pH, cultures—it's a complicated mix. California couldn't turn on a dime and make specialty cheese at the time. They were making what their plants were designed to make."

The timing was perfect. The new focus on higher-value products coincided with the emergence of a new breed of customers—more particular about what they ate and affluent enough to pay a premium for what they wanted.

"We had a tremendous change among consumers. They were becoming very interested in how their food was produced and where it came from," explains Tom Lyon. "And we had a class of people who willing to pay more for specialty foods. It wasn't just in dairy—look at how many smaller wineries and small breweries have popped up. It goes to people being more discerning about what they buy, and about people in the dairy business deciding they could make a living supplying niche markets and specialty foods."

The innovation on the part of the state's cheese makers has been supported by research, technical assistance and professional development programs offered by the UW Center for Dairy Research (CDR), and by the Wisconsin Milk Marketing Board, which helps fund CDR and has focused on making "artisan" and "quality" synonymous with the Wisconsin cheese brand.

6. The Future of the Dairy Industry in Wisconsin: Serious Challenges, Tremendous Potential. Executive Summary of the Wisconsin Dairy Task Force 1995. p. 2

The value-added focus has also created synergy between the state's smaller and larger processing plants. Larger plants use most of the milk and make most of the cheese, but smaller plants account for many of the highest-value specialty cheeses that help build the Wisconsin brand.

"The smaller (plants) drive the quality message, that we are the state that makes the good cheese. We are the state that gets in the magazines because of our exotic cheeses. That's the tip of the spear in marketing," Umhoefer says. "And cheese rises up the volume chain. Many varieties that are now mainstream—mozzarella, asiago, feta—began as specialty products. Distributors say that we make a better commodity cheese. They offer grades to their buyers—a 'deluxe,' a 'good' or a 'value' mozzarella, and the deluxe will be a Wisconsin product. It sells for a penny or two more, and that's a lot of money."

The quality message didn't just help sell cheese. It also helped sell Wisconsin as a good place to make it.

"Around 2005 the processing industry started to recognize that there's a real brand value to Wisconsin," recalls Ben Brancel, Wisconsin Secretary of Agriculture, Trade and Consumer Protection. "Although they might come from Canada or China or somewhere else in the U.S., they saw that there was a brand value to processing their products in Wisconsin and being recognized as Wisconsin dairy. Processors recognized this was a great place to invest and they started making investments, both to enhance the type and style of the cheese they were making and to improve their efficiency."

Changes in regional competitive advantage

Ethanol mandates and greatly expanded use of corn for motor fuel significantly altered regional profitability patterns by sharply increasing prices for corn, a staple in dairy rations. Higher corn prices caused returns over feed costs to fall steeply in Western states where producers typically purchase all or most of their dairy feeds. Dairy farmers in states like Wisconsin, who generally grow their own grains and forages, fared much better. Even dairies that purchase feed pay less in Wisconsin than in the West, because they buy from nearby farms and so don't have to shoulder the same transportation costs.

Wisconsin also benefited from consistent growth in domestic cheese consumption and from producing larger volumes of specialty cheese that displaced exports. In contrast, declining consumption of fluid milk put regions with predominantly fluid milk sales at a disadvantage.

New Producer Organizations

A key reason that Wisconsin's dairy industry was able to engineer significant change in a relatively short time is that it is well organized. There are many groups representing milk producers and the firms that supply them or market their products, and pretty much all of them played a part in the push for new policies and programs to help the industry retool. It would be a tall order to document the contributions of all of them, but it's worth noting two new ones created specifically to help milk producers and milk plants modernize and expand.

The Professional Dairy Producers of Wisconsin

(PDPW) formed in 1992 with about 40 members and has grown to more than 1,600 members. While dairy producer interests are a major concern of Wisconsin's general farm organizations, PDPW is distinct in its exclusive focus on dairy and its exclusive dairy farmer membership base.

The idea for PDPW was hatched by a small group of dairy farmers who were on the advisory board of UW-Extension's Center for Dairy Profitability, recalls Al Koepke, Oconomoc milk producer, one of the founders. A key audience was young adults interested in growing their parents' single-family farms into multi-family operations.

"The idea was to provide programs on how to get along with people," Koepke says. "How do you get along with fathers, sons, wives, spouses? How do you work with employees? Those aren't exciting topics, but they're definitely necessary to get a multi-family business run."

PDPW stated objectives are to provide educational-based programs focused on the business-side of dairying, build more profitable businesses, foster a positive image for the profession, and provide an atmosphere for producer-to-producer networking.

"We were all successful (and we realized that) what we were doing, nobody can just step in off the street and start doing it," Koepke says. "We wanted it to be a positive attitude, and to be educational, informing people. The majority of our members are young. They're looking for new ideas."

PDPW sponsors and organizes educational workshops and conferences that cover a wide range of dairy management issues but stressing business and financial management of the dairy business. The group decided at the outset not to get directly involved in lobbying. "Our theory is, you inform your members about the politics and let them decide what they want to do about it and talk to (their) legislators," Koepke explains. The organization communicates with members about legislative matters through its monthly Capitol Links newsletter. PDPW

also seeks opportunities to provide input into public policy that affects dairying through membership on agency committees and other formal and ad hoc advisory groups.

The Dairy Business Association of Wisconsin (DBA), founded in 2001, has a mission similar to PDPW—to promote the growth and success of all dairy farms in Wisconsin by fostering a positive business and political environment—and like PDPW it sponsors educational forums and provides opportunities for producer networking. But DBA is decidedly more politically active, lobbying for favorable legislation at the state and federal level and maintaining a Political Action Committee.

DBA grew out of an after-hours conversation at a PDPW meeting, says St. Croix county dairy farmer John Vries, the group's first president. Since PDPW had opted to focus on education rather than lobbying, DBA founders were looking for a mechanism to influence public policy.

“DBA was created to turn around state government, to get some common sense regulations in place. We knew we had to be regulated...but we battled a lot with state government at the DNR level,” says Vries. “State government wasn’t doing anything to motivate us to stay in the industry, to gear up and get out of the red barn and white fences and go to free stalls, to get to the size of dairy where we could specialize, where we could bring our kids back into the business.”

Among its activities, DBA lists funding a dedicated environmental attorney and registered lobbyists, advising members about relevant statutes, regulations and on-farm situations, preparing and revising federal and state legislation, and participating in legal reviews and interpretation of regulatory rules and state statutes.

PDPW and DBA have given Wisconsin dairy farmers a stronger voice in determining their own destiny. These new organizations helped shift the primary focus from elevating the price of milk to improving business management skills and improving the competitive position of the state's dairy farmers.

State Initiatives and Policy Changes

Through much of the 1990s, the effort to make Wisconsin dairying more competitive focused largely on reforming the federal milk pricing system, which was generally viewed as being skewed in the favor of producers in the South and East. But by the early 2000s, industry leaders concluded that it would be more productive—and feasible—to focus on encouraging the state's milk producers to modernize and expand.

“We were really concerned that if we didn’t have the milk here, we’d lose the infrastructure. If we lost the infrastructure, game over. It wouldn’t matter how much we invested. We wouldn’t get the dairy industry back in this state. We saw that happen with the swine industry; once we lost the processing plants, it went down rapidly,” recalls Bill Oemichen, President and CEO of the Cooperative Network.

Dairy industry leaders and policy makers began to work on a series of initiatives, including tax incentives, regulatory reform, financial assistance and others designed to smooth the way for producers who wanted to expand or modernize their operations.

The Livestock Siting Law

A key objective of efforts to grow Wisconsin's milk supply was to bring uniformity and predictability to rules governing where large livestock operations could be established.

Wisconsin had a patchwork of zoning regulations pertaining to where farms could be established, and a state senator had proposed a moratorium on livestock expansions over 1,000 animal units—which at the time amounted to 750 cows—recalls David Ward, a state representative at the time. “We had Balkanization of counties and townships, each with a different set of rules. Animal agriculture needed predictability if it was to grow,” he says.

The process for establishing a new Confined Animal Feeding Operation (CAFO) “was kind of a jumbled-up mess,” agrees John Vries, recalling his experience expanding his St. Croix County dairy operation in the late 1990s. “Every government entity was being pressured to be more restrictive, because people in Wisconsin were used to that little red barn. They weren’t used to that 500-cow free stall barn. There were environmental concerns, aesthetic concerns, (concerns about) big guys pushing out the little guys, economic concerns. Many people were well-meaning, but we were jumping through so many hoops.”

Conformity in siting rules was on the legislative agenda for the late Rod Nilsestuen, DATCP Secretary under Gov. Doyle. The result was the Livestock Facility Siting Law, which became effective May 2006, creating state standards and procedures that local governments must use if they choose to require permits for establishing or expanding livestock operations. The law set new standards for managing waste, odors and runoff; spelled out a process and timelines for permit applications, and set up a siting review board to handle appeals.

“You knew that if you couldn’t meet those standards, there was no point in applying,” Ward says.

From a lenders perspective, “livestock siting was huge,” says Sam Miller of BMO Harris Bank. “We had to know that (an operation) would get permitted before we would lend the money. We needed that certainty.”

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)

DATCP has recently spearheaded several initiatives supporting Wisconsin dairying, including those leading to the enactment of favorable tax policies (see below). In 2004, DATCP created the Value Added Dairy Initiative (VADI), which consists of three elements.

The Grow Wisconsin Dairy Team is a multi-agency collaboration created to: (1) Coordinate and focus resources for dairy farmers modernizing their businesses and (2) Add value to milk produced in Wisconsin by focusing on new marketing opportunities. Through 2007, the team had provided assistance to more than 800 dairy farmers. Besides offering consulting, the team has provided \$3 million in grants to dairy producers, processors and local dairy groups for modernization, product development, and other dairy development projects.

The Dairy Business Innovation Center was created in 2004 to provide technical support to specialty and artisan cheese makers through a network of 20 consultants. DBIC provided guidance in business planning, product development, facilities assessment, packaging and labeling, and developing markets. DBIC was funded by a \$1 million federal earmark. DATCP provided administrative support but there was no direct state funding.

The DBIC program ended in September 2012. Its federal funding had dried up two years earlier due to a Congressional ban on earmarks. While it operated, the program assisted 200 dairy entrepreneurs, coordinated more than 120 projects to increase market share for Wisconsin dairy products and assisted with seven plant relocations, according to Dan Carter, who helped found DBIC.⁷

The Value Added Dairy Initiative Dairy Processor Grant program offers grants up to \$35,000 on a competitive basis to fund projects that involve processor modernization or product or market development. Recipients must provide matching funds of at least 50 percent.

Wisconsin Department of Commerce (DOC)

The last of the 75 recommendations issued by the Dairy Task Force 1995 was to establish a “dairy council” of producers, processors, marketers, suppliers, UW experts and others, with the aim of creating a useful dialog, a common agenda and “a more harmonious voice for Wisconsin’s dairy industry.”⁸

Gov. Tommy Thompson addressed that charge in 1993 when he announced a new initiative called Dairy 2020, “a framework for collaboration...and a place for planning and action,” to be undertaken by the DATCP and the UW System. In 1994 the Department of Development (soon to be renamed Commerce) signed on and was provided with funding for a Dairy 2020 director and related activities. A Dairy 2020 Council of producers, processors and others, guided the initiative. In 2002, Thompson’s successor, Gov. Scott McCallum, announced two new programs under the Dairy 2020 banner administered through the Department of Commerce.

The Dairy 2020 Early Planning Grant (EPG) program was designed to “...encourage and stimulate the start-up, modernization, and expansion of Wisconsin dairy farms.” EPG grants of up to \$3,000 covered 75 percent of the cost of consultant fees to develop a business plan and other professional services for dairy farm start-up, modernization or expansion. Over 10 years, the EPG program provided more than \$2.5 million to help more than 900 Wisconsin dairy farmers work through the numbers.

“It increased the likelihood that if a farm went forward with a plan it would be successful, because they had budgets and had talked about systems changes and got bids before it got built, so they kept down cost overruns,” says Sam Miller, BMO Harris Bank’s agricultural lending director. “If a they didn’t go through with (the expansion) it was considered a success, because they didn’t lose their net worth by making a poor decision.”

The Milk Volume Production (MVP) program channeled funds from the Community Development Block Grant program to help finance dairy expansions. Its intended purpose was to, “...support Wisconsin’s dairy industry by easing the financial burden on dairy farmers who want to modernize and expand their herd size.” The MVP program provided low-interest loans of up to \$500 per cow for the purchase of up to 400 cows. The loans were written at an interest rate of 4 percent for a 7-year term.

7. Herzog, Karen “Dairy Innovation Center to Shut Down.” Milw. Journal-Sentinel. Sept. 13, 2012.

8. The Future of the Dairy Industry in Wisconsin, p. 34

“MVP provided ‘patient capital’—a seven-year loan with no payment the first year, interest payments only the second year, and amortized payments the next five years,” explains Sam Miller. “Banks were willing to lend \$1,000 per cow, but farmers needed another \$500–600. This helped mitigate that.”

The Dairy 2020 incentive programs ended in June 2011, when the newly enacted state budget eliminated the Department of Commerce. Funding for Dairy 2020 was transferred from Commerce to DATCP and reincarnated as the Grow Dairy 30x20 initiative in June 2012.⁹ The name describes the overall goal: Getting the state’s milk production to 30 million pounds by the year 2020. A key feature is the Grow Wisconsin Dairy Grant program, which awards up to \$5,000 for one of two purposes: 1) Planning for developing and expanding a dairy business; and 2) setting up a team to help existing operations improve their management and profitability.

“Transitioning our dairy farms to the next generation is a key” use for the 30x20 planning grants, says DATCP Secretary Brancel. “The next focus is to help people identify weakness in their operation and find the expertise to develop solutions so that they can stay profitable. (Several) people have told us they wouldn’t be farming if it hadn’t been for the grants and access to a team of consultants that helped them reorganize.”

An Agricultural Development Zone program, not a dairy-specific initiative, provides state income tax credits to agribusinesses that locate or expand in four designated regions of the state. The stated purpose of this program is to “...assist Wisconsin in regaining its prominence in the dairy industry and in dairy processing production.” Tax credits can be earned for 3 percent of investments in real and personal property and 50 percent of investments in environmental remediation. Credits for job creation depend on the number of jobs and wages and benefits paid. To be eligible for credits, one-fourth of new hires must be from designated target groups.

Wisconsin Housing and Economic Development Authority (WHEDA)

The Farm Asset Reinvestment Management (FARM) program administered by WHEDA provides a 25 percent guarantee for a loan made to finance purchase of machinery, equipment, facilities, land, or livestock or to improve facilities. It covers an equity gap for farmers whose assets alone didn’t provide sufficient collateral for an expansion or modernization. “We call it a back-end guarantee: The guarantee value doesn’t drop as loan

went down, which allows us to lend more than we would have otherwise,” explains Sam Miller. The maximum guarantee of \$200,000 has made FARM most useful for expansions of up to about 250 cows, he says.

Favorable tax treatment

Use Value Assessment was adopted in Wisconsin in 1995 and fully implemented in 2000. Use-value assessment links farmland assessments to the land’s ability to generate agricultural income rather than property’s market value. Prior to its adoption, what a farm paid in property taxes was heavily influenced by the land’s potential residential and business development value. A Wisconsin Department of Revenue report noted that in 2002, total agricultural land taxes were about half what they would have been if farmland had been assessed at market value. Use value assessment wasn’t enacted specifically for dairy farmers, and it doesn’t completely shield larger dairies, because townships can shift a portion of the tax burden from the land to the buildings. But it helped, especially for those producing milk near the urban fringe.

The Dairy Investment Tax Credit (DITC) program, enacted in 2004, provided an income tax credit of 10 percent of new investment in dairy farm working assets such as milking parlors, manure handling equipment and feed storage. The maximum investment eligible for the credit was \$500,000, meaning the maximum credit available was \$50,000. The tax credits were applied to the producer’s annual Wisconsin income tax in the tax year the investment is made. Excess credits could be carried forward for up to five years.

The program was created to give the industry confidence, says Bill Oimeichen of Cooperative Network, who helped devise the program. “We thought the state and the industry needed to give the message that this really is a good place to be a dairy producer. With the DITC, the state was saying we’re behind you on this. You take the risk, we’re going to give you 10 percent back as a tax credit.”

Milk producers readily embraced the program. “The Legislative Fiscal Bureau had estimated that state farmers would claim \$6–7 million worth of credits the first year; the actual figure was around \$13 million,” recalls David Ward. “We thought the fiscal impact would be quite limited, (but according to the state Department of Revenue, over all five years) it’s had close to a \$2 billion impact” in terms of the total value of milk production facilities built with help from the credit.

9. Legislative Reference Bureau. “Transfer of Dairy 2020 Functions and Administration of Investment Tax Credits,” Paper 238. June 2, 2011.

According to the DOR, in 2005 (the second year of eligibility), 8,796 dairy producers claimed Investment tax credits of almost \$42 million. Of that, \$14.5 million was used to offset taxes owed in 2005, and the balance could be carried forward through 2010. The \$42 million credit translates to a \$420 million in spending for new facilities in 2005 alone.¹⁰

While every producer was eligible, the DTIC's biggest impact was on small or medium-sized operations, says David Ward. Bankers reported that the credit was a deciding factor for farmers considering medium-sized expansions—investments of \$100,000–\$500,000. For projects of \$500,000 to \$1 million or more, the credit was welcome but not a deciding factor. “They had already made the decision to reinvest,” Ward says.

The Dairy Manufacturing Facility Investment Credit was a similar incentive offered to dairy processors beginning in 2007. The credit was 10 percent of investment in modernizing or expanding dairy manufacturing facilities up to a maximum credit of \$200,000. Unlike the DTIC, there was an annual cap on total credits (\$700,000 in 2008). In 2007, 14 dairy processors applied for dairy manufacturing credits based on reported investments of \$42.4 million.

Dairy-specific tax credits were rescinded in the 2015 State Budget signed in June 2013. They were replaced with a broad, non-specific “manufacturing and agriculture” credit program administered by DATCP. Since the program is not targeted to a specific industry and lacks specifics on how it will be applied, it's not clear whether it will provide the same incentives for dairy upgrades and expansion. “I think there's a good chance that it will have as much benefit or more so than individually targeted tax credits, but I think it has to be defined more so than it is presently,” says DATCP Secretary Ben Brancel.

Affordable Health Care For Farmers

Surveys conducted in 2003 and 2004 by Wisconsin's Farm Credit network indicated that a major reason that farmers were leaving production agriculture was lack of accessibility to comprehensive health care. The average producer paid three times as much for health insurance as a salaried worker and twice as much as other self-employed individuals, says Bill Oemichen. “Dairy farming was viewed as risky, so many farmers were denied insurance. And 95 percent of the state's producers did not have 24-hour coverage. If they were in work status—meaning the minute they stepped off their back

step—they weren't covered.” That's because many families were insured through a spouse's off-farm job, and such policies were issued with the idea that work-related injuries would be covered by workers compensation.

Legislation passed in 2004 enabled the creation of health care cooperatives. The Farmers Health Cooperative Wisconsin, created in 2007, provided a range of benefits including preventive care and 24-hour coverage. Even farmers who didn't join a health co-op benefited, because other insurers began offering similar coverage in order to remain competitive, Oemichen says.

Can Revitalization be Sustained?

Opportunities

U.S. per capita cheese consumption has increased steadily. Cheese production now absorbs close to half of the U.S. milk supply. As the leading state in cheese production, Wisconsin is well positioned to compete in this expanding cheese market. The cheese world has changed dramatically due to the industry's depth and breadth of both knowledge and facilities.

Specialty cheese, now accounting for nearly 20 percent of Wisconsin cheese production, represents a particularly promising opportunity. Many specialty cheese varieties produced in the state are import substitutes, so the roughly \$2 billion in annual U.S. cheese import value represents an opportunity for further exploitation.

Along with cheese comes whey. Whey used to be a costly waste disposal problem for cheese plants, but now it's a value-added product that generates additional revenue which boosts the ability of cheese plants to pay for milk. Expanded higher-value uses of whey proteins and other whey components as a food ingredient and in nutritional and pharmaceutical products promise growing markets for whey.

Proximity to major population centers suggests an opportunity to market more Wisconsin milk as higher-valued beverage milk and fresh dairy products (e.g., yogurt, cottage cheese). Sales of Wisconsin milk for fluid use in distant markets have been restricted by federal milk marketing order pricing rules that are designed to preserve local markets for local producers. Federal orders will probably not disappear soon, but market forces will increasingly trump regulations in determining where milk is produced and where dairy products move.

10. Reported by the Wisconsin Federation of Cooperatives: <http://www.wisconsinagconnection.com/story-state.php?Id=1391&yr=2007>.

Challenges

Land values have a large influence on the cost of producing dairy feed and the competitiveness of dairying. Among the top ten dairy states, Wisconsin ranks fourth in average farm real estate value.

Until 2007, increases in Wisconsin farmland values appeared to have been driven mainly by non-farm demand, which has softened considerably with the recent recession. Subsequent increases have been related more to farmer demand driven by higher profitability from crop production. Subsequent increases in Wisconsin land values will be influenced primarily by prices for corn. As noted elsewhere in this report, we should not expect the level of corn prices seen recently to continue.

Environmental concerns will continue to be an issue. Milk producers are becoming increasingly adept at keeping nutrients from manure and runoff out of aquifers and waterways. They're motivated by economics and enabled by technology. Like whey and slaughterhouse offal, manure has moved up the value chain, from waste product to co-product. It is marketed through brokers and used to generate energy, and other higher-value uses will follow.

Nevertheless, the public is wary. In 2013 there were multiple front-page news stories about manure spills in Dane county and estrogen in well water in eastern Wisconsin. Bigger farms are bigger targets, noted a recent Milwaukee Journal Sentinel article. "I don't think that the focus or the controversy about CAFOs is going to evaporate," said Andrew Craig, a DNR staffer who regulates manure use, in that story. "I just think it's going to increase."¹¹

A growing concern involves karst soil substrates—layers of fractured pervious bedrock that can channel dissolved contaminants into aquifers. Such strata underlies Wisconsin's most dairy-dense region—the dairy donut surrounding Lake Winnebago. This is still an emerging issue, but it could lead to additional limitations on the spreading of manure—and possibly the number of cows—in affected areas.

Many factors—science, education, politics and more—will influence how this plays out. But it's safe to say that the extent to which the general public will support expansion in dairying will depend in large part on its confidence that the industry is managing manure and natural resources appropriately.

There are also concerns about emissions of greenhouse gases (GHG) and the impact of more extreme and volatile weather on milk producers. The Innovation Center for U.S. Dairy has pledged to reduce dairy's GHG emission by 25 percent by 2020 and is partnering in a new \$10 million USDA-funded project focused on these issues.¹² The good news is that this project is based at UW-Madison and much of the work will be done on UW research stations and Wisconsin Discovery Farms, so Wisconsin producers should have ready access to the expertise needed to meet these challenges.

Water quantity. Wisconsin is water-rich compared to Western states, but there are concerns about competing uses. It's an issue particularly in the Central Sands, a growth area not just for dairying, but for other industries as well (for example, a 1,500-acre, world-class golf resort is planned for Adams County). Questions there have to do with whether pumping from high-capacity wells draws down water levels in lakes and streams and shallow residential wells.¹³ "The public will continue to demand more regulation on quantity of water (used) for any one reason," says Secretary Brancel. "There's going to have a willingness on the part of policymakers (to acknowledge) that water for agriculture creates value to our state," he says. "And continued research will be needed on maximizing efficiencies to minimize water use. Producers are in many cases using their water more than once, but I don't think we're there yet."

Immigrant workers, both documented and undocumented, have become a critical source of labor on many larger Wisconsin dairy farms. Changes in federal immigration policies that would restrict immigrant workers from employment in the United States could sharply increase labor costs and constrain dairy growth.

Cheese plant location has been driven in recent years partly by tax exemptions, grants and incentives offered by states and municipalities to lure employment-generating enterprises. In the extreme (Hillmar Cheese in the Texas panhandle) these incentives have provided several million dollars for a single plant. Incentives offered by Wisconsin for relocation or expansion have been very modest in comparison. While Wisconsin offers many advantages to new or expanding cheese plants, these can be partly offset by investment incentives that the state cannot afford.

11. Berquist, Lee and Barrett, Rick. "Cattle abuse video puts spotlight on Wisconsin's mega farms." Milw. Journal-Sentinel. Dec. 28, 2013.

12. "CALs leads new project to help dairy farms be greener and more resilient" College of Agricultural and Life Sciences, UW-Madison news release. May 7, 2013

13. Miller, Nicole. "Vanishing Waters." Grow Magazine. UW-Madison College of Agricultural and Life Sciences. Spring 2012.

Animal rights advocates are well funded and seem to be gaining ground in dictating food supplier purchase decisions. Some of these groups use public relations techniques that malign common dairy production practices in attempts to discourage consumption of milk and dairy products. While the chance of these efforts significantly cutting milk consumption seems low at this time, the threat is there.

Future of Dairying in Wisconsin

A dairy producer survey conducted by the Wisconsin field office of the National Agricultural Statistics Service (NASS) in 2007 showed that 24 percent of respondents planned to expand in the next five years compared to 27 percent who planned to exit dairying. Three percent planned to downsize and the remaining 46 percent intended to continue milking the same number of cows. Among those planning to expand, 17 percent expected to grow their herds by 10–50 percent and 6 percent intended to grow by more than 50 percent.¹⁴

Perhaps a more revealing indication of future growth comes from a survey of Wisconsin dairy plants conducted by Wisconsin/NASS in early 2009. Only 3 percent of respondents planned to quit processing milk in the next four years and another 3 percent intended to decrease their volume processed. Fourteen percent expected to remain at the same level. The remaining 80 percent of plants surveyed planned to expand: 59 percent by less than 25 percent, 15 percent by 26–50 percent, and 6 percent by more than 50 percent.¹⁵ The upshot is that the industry is definitely prepared to handle additional milk production

“There’s been a new capacity created in the last couple of years,” says John Umhoefer. “There’s been a bit of a building boom among the cheese makers, and they would like to see a new cycle of growth on the farm. What you’ll hear is that there’s not enough milk around. And what’s behind that is that they’ve got buyers. They won’t make (cheese) if there are no buyers. There’s always been this pull in the last 10 years.”

These results are consistent with shifts in dairy feed costs that favor milk producers in places like Wisconsin who employ diversified crop/dairy systems and grazing with limited concentrate supplementation. In turn, dairying offers Wisconsin crop producers a way to add value.

“We can sustain this growth because we still have a lot of natural resources, a lot of products exiting this state without any value added,” notes DATCP Secretary Ben Brancel. “We have huge volumes of corn, of soybeans, of wheat, leaving the state that could be fed through livestock.”

Other important positives for the future of Wisconsin dairying include reasonably strong and broad support from state government and a positive producer attitude. While understandably limited by state budget restrictions, Wisconsin has implemented several programs involving direct financial assistance to dairy farmers and processors as well as other programs that provide significant non-monetary support. New dairy organizations have increased producer optimism and confidence by providing Wisconsin dairy farmers a stronger voice in legislative and administrative matters as well as invaluable opportunities to learn from each other.

Wisconsin dairying will face future challenges. The most significant challenges will more likely be social and environmental than economic. Siting of larger dairies continues to be problematic. Despite new administrative rules that improve transparency and consistency in the permitting process, the simple fact remains that dairy cows and people not accustomed to dairy cows don’t mix very well. Much of the recent growth in Wisconsin dairying has been in karst areas, raising hard questions about the effect of possible restrictions on application of dairy manure.

The revitalization of Wisconsin’s dairy industry clearly demonstrates that the industry is capable of meeting these challenges through the aggressive coordinated action of stakeholders. Consequently, the future for Wisconsin dairying is bright; brighter than it has been for 25 years.

14. Wisconsin Field Office, National Agricultural Statistics Service, USDA, 2007 Dairy Producer Survey, Madison, WI: July 2007.

15. Wisconsin Field Office, National Agricultural Statistics Service, USDA, Dairy Plant Investment Survey, Madison, WI: March 2009.

