STATUS OF WISCONSIN AGRICULTURE, 2003

Current Wisconsin Farm Financial Conditions

Situation and Outlook for Farm Products and Inputs

Special Articles

- *The Status of Health Insurance Coverage for Wisconsin Dairy Farmers*
- *Use of Genetically-Modified Crops in Wisconsin*
- *Woodlands of Opportunities and Challenges*

Department of Agricultural and Applied Economics
College of Agricultural and Life Sciences
University of Wisconsin-Madison

Cooperative Extension
University of Wisconsin-Extension

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An Annual Report by:

Department of Agricultural and Applied Economics
College of Agricultural and Life Sciences
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and

Cooperative Extension
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PREFACE

Status of Wisconsin Agriculture is an annual agricultural situation and outlook report authored by faculty in the Department of Agricultural and Applied Economics. The report contains three parts. Part I provides a brief overview of the financial environment in the Wisconsin farming sector. In Part II, market analysts review current conditions in major Wisconsin commodity subsectors and offer their forecasts for 2003. Part III contains special articles dealing with longer-term issues facing Wisconsin agriculture.

Additional copies of this report may be purchased for $5 postpaid. Send requests to Ms. Linda Davis, Department of Agricultural and Applied Economics, UW-Madison, 427 Lorch Street, Madison, WI 53706. Copies may also be downloaded free from the Internet in either Adobe Acrobat® or MS-Word® format at http://www.aae.wisc.edu/www/pub/

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 on rural Wisconsin issues that we might address in subsequent editions.

Acknowledgements

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SUMMARY

In 2001, Wisconsin net farm income recovered marginally from depressed 2000 levels. Dairy farmers earned $555 million more revenue from higher milk prices. But this gain was largely offset by higher production costs and smaller government farm payments Wisconsin farmers ended the year with net farm income of about $900 million, $173 million more than the revised 2000 number.

Unfortunately, milk prices reverted to 2000 levels in 2002. This cut about $600 million from Wisconsin farm cash receipts relative to 2001. Cattle and hog prices were also off sharply from year-earlier levels. Grain and soybean prices showed improvement late in the year but not nearly enough to offset losses on the livestock side.

A new farm bill passed in 2002 promises to prop Wisconsin farm income at even higher levels than the legislation it replaced. Most important to the state is the Milk Income Loss Contract (MILC) program, which makes direct payments to dairy farmers when milk prices fall below specified levels. For 2002, MILC payments are expected to compensate for about a third of Wisconsin dairy farmers' reduced income from the marketplace.

Overall, we expect Wisconsin net farm income in 2002 to be in the range of $600–700 million, down $200–300 million from 2001 and even less than the depressed level of 2000.

Things will improve in 2003.

- Milk prices will climb as the year progresses. The 2003 average Wisconsin all-milk price is expected to end up about $13.55 per hundredweight, $1.45 higher than 2002 but well under 2001's $14.80. Most Wisconsin dairy farmers will fetch MILC payments exceeding $1 per hundredweight early in the year, but these will decline to only a few cents in the fall. Adding MILC payments to marketplace returns will elevate average Wisconsin milk revenue in 2003 to $14.00–14.50 per hundredweight.

- Cattle prices in 2002 averaged about $5 per hundredweight lower than 2001. With slaughter down in 2003, choice cattle prices should be up about $3 over last year, but utility cow prices will show only marginal gains. Feeder cattle prices could be as much as $8 higher.

- Hog prices in 2002 were down almost one-fourth from year-earlier levels. Smaller supplies of pork and competing meats should raise hog prices by about $5 per hundredweight to $40 in 2003.

- U.S. average prices for the corn crop harvested in 2001 were about a dime per bushel above year-earlier levels. A short national 2002 harvest could yield season-average prices in the $2.35 range, sharply higher than seen over the last four seasons. Wisconsin enjoyed almost a 20 percent larger corn harvest in 2002 while many other corn-producing states suffered drought-induced shortfalls.

- Drought also affected the national soybean crop in 2002, which was down nearly 6 percent from 2001. But higher yields in Wisconsin more than offset smaller planted acres, resulting in 15 percent larger soybean production. The short national soybean crop is expected to elevate average prices to near $5.50 per bushel, more than $1 over what farmers received for the 2001 crop and the highest soybean price since 1997/98.

- Farm production expenses will be a mixed bag in 2003. Seed prices will moderate from 2002. Fertilizer prices are expected to be unchanged or marginally higher. Fuel prices are a big unknown given uncertain political conditions in the Middle East. Continued low interest rates will keep farm credit to creditworthy borrowers inexpensive by historical standards. No significant changes are expected in land rents, but the cost of purchasing land will be higher because of speculative non-farm investor pressures.

Positive factors on the Wisconsin farm scene in 2003 outweigh negative factors. On net, we estimate that Wisconsin net farm income this year will be in the $900 million to $1.1 billion range.

Wisconsin farmers in the aggregate remain in good financial shape. While total debt went up by $900 million between 1997 and 2001, assets gained more than $13 billion in value. This $12-billion gain in equity comes entirely from higher land values. Land values are increasing at the same time that returns to farming remain low, indicating that non-farm demand is responsible for the gains.

The divergent directions of land values and farm revenues is creating an ironic credit situation for an increasing number of Wisconsin farmers: They possess land-inflated assets more than sufficient to serve as collateral for operating loans that are not earning enough revenue to repay. This is not a sustainable situation.

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The three special articles in this year's report address (1) the problem of inadequate health care coverage for Wisconsin dairy farm families; (2) the incidence of Wisconsin farmers' use and misuse of genetically modified crops; and (3) the importance of farm woodlots to Wisconsin farmers and the Wisconsin economy.

I. Financial Situation in the Wisconsin Farm Economy

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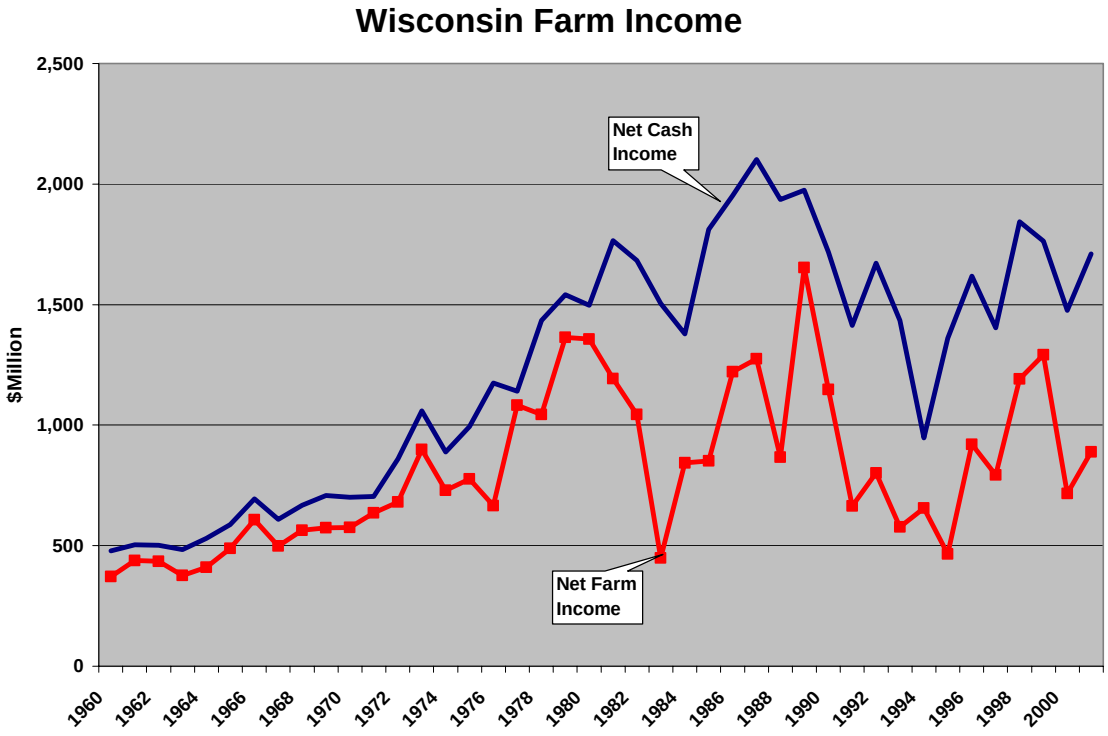
Farm Income: Past, Present and Future

The aggregate net farm income of Wisconsin farmers was $888 million in 2001, up $173 million from 2000 but $400 million less than 1999. Farm-derived income was up by $650 million, mainly due to much higher milk prices compared to 2000. But the cost of farm inputs increased by $266 million and government farm payments were off by $188 million.

Net *cash* income (which does not account for depreciation, change in inventory value, or the imputed rental value of farm dwellings) was up $236 million in 2001. The larger gain in net cash income relative to net farm income came largely from major reductions in inventory values reflected in the net farm income figure.

Both measures of farm income in 2001 were above their respective nominal averages for the previous 10 years. But both were well below average farm income during the decade of the 1980s.

Final numbers will show that Wisconsin farm income, sub-par in 2001, slipped even further in 2002. USDA is forecasting a decline in U.S. net farm income of $9.5 billion for 2002.



Derivation of Wisconsin Net Farm Income

		1999	*2000*	*2001*
	Value of crop production:			
	Food grains	18,931	21,004	28,660
	Feed crops	566,366	623,426	577,001
	Oil crops	169,020	209,909	185,293
	Fruits and tree nuts	91,373	67,217	75,240
	Vegetables	343,989	389,443	368,531
	All other crops	181,003	187,144	197,381
	Home consumption	5,461	5,391	5,461
	Inventory adjustment	107,816	(151,159)	(93,369)
	Total Crops	1,483,959	1,352,375	1,344,198
plus:	**Value of livestock production**:			
	Meat animals	701,020	816,715	838,643
	Dairy products	3,146,262	2,688,309	3,243,272
	Poultry and eggs	229,454	235,769	249,473
	Miscellaneous livestock	116,951	125,537	132,799
	Home consumption	15,093	16,324	16,528
	Value of inventory adjustment 2/	(4,421)	(42,380)	(52,788)
	Total Livestock	4,204,359	3,840,274	4,427,927
plus:	**Revenues from services and forestry:**			
	Machine hire and custom work	64,329	51,029	94,619
	Forest products sold	161,000	160,000	151,682
	Other farm income	179,333	191,635	268,873
	Gross imputed rental value of farm dwellings	413,394	471,743	425,634
	Total	818,056	874,407	940,808
equals	**Value of agricultural sector production**	6,506,374	6,067,056	6,712,933
less:	**Purchased inputs:**			
	Farm origin	1,029,865	1,066,680	1,110,513
	Manufactured inputs	733,147	799,981	818,556
	Other purchased inputs	1,457,838	1,448,113	1,652,189
	Total	3,220,850	3,314,774	3,581,258
plus:	**Government transactions:**			
+	Direct Government payments	503,046	603,213	415,110
-	Motor vehicle registration and licensing fees	13,436	12,518	14,241
-	Property taxes	338,165	352,868	349,192
	Total	151,445	237,827	51,677
equals	**Gross value added**	3,436,968	2,990,110	3,183,352
less:	**Depreciation**	880,003	925,596	956,218
equals	**Net value added**	2,556,965	2,064,514	2,227,134
less:	**Payments to stakeholders**			
	Employee compensation (total hired labor)	550,071	628,672	614,692
	Net rent received by non-operator landlords	231,961	210,692	223,180
	Real estate and non-real estate interest	482,888	509,408	500,902
	Total	1,264,920	1,348,772	1,338,774
equals	**Net farm income**	1,292,045	715,741	888,360

Source: Economic Research Service, USDA.

Applying this nearly 21 percent drop to Wisconsin suggests net state farm income in the vicinity of $700 million, which would be below 2000.

Lower milk prices in 2002 will chop an estimated $600 million from Wisconsin dairy farmers' milk checks. But lower marketplace returns will be partially offset by Milk Income Loss Contract (MILC) payments, which are expected to total about $200 million in 2002.

The farm income picture in 2003 looks brighter. With normal weather, milk prices are expected to exceed 2002 levels by about $1.50 per hundredweight. Higher prices for cattle, hogs and corn will also help boost farm income. We anticipate 2003 net farm income in the range of $900 million to $1.1 billion.

The Wisconsin Farm Balance Sheet

On the surface, Wisconsin farmers' aggregate balance sheet looks strong. Total assets grew by 50 percent from 1997 to 2001, from $26 billion to $39 billion. Over the same period, total farm debt increased by only $530 million, yielding a gain in farm equity of nearly 60 percent.

Farmers' recent wealth gains result entirely from real estate appreciation. In nominal dollars, farm assets other than real estate have been practically constant since 1980 at about $10 billion. Real estate assets tumbled $7 billion during the decade of the 1980s and slowly made up that loss in value during the 1990s. Since 1998, the rise in farm real estate value has been unprecedented — farmland has increased in value at an annual average rate of $3.72 billion. The annual gain in farm real estate value between 1998 and 2001 was more than twice as much as annual net cash farm income in those years.

Separating farm assets and equity into real estate and other assets shows a disturbing trend. Since 1990, Wisconsin farmers increased non-real estate debt by $1 billion while non-real estate asset values fell slightly. So farmers' equity in non-real estate assets fell by more than $1 billion. The "wealth increase" of Wisconsin farmers as measured by equity gains is paper wealth backed by speculative pressure on land values. Whether or not this wealth will ever be captured is equally speculative.

Creditworthiness

The creditworthiness of Wisconsin farms can be measured by two ratios: 1) debt to asset and 2) interest expense to operating returns to assets (operating returns to assets equals net farm operating income *before* subtracting interest expense). The first ratio gauges farmers' collateral position. The second reflects their ability to repay loans. Low values for the debt-to-asset ratio are desirable because they mean total borrowings are low relative to the assets which directly or indirectly serve as collateral for loans. Low values for the ratio of interest expense to operating returns to assets are also desirable because they suggest a greater likelihood that interest payments on debts will be paid in full.

Since about 1980, the collateral position of Wisconsin farms, as reflected by the debt-to asset ratio, has generally held steady or strengthened. However, the

repayment position of Wisconsin farms has weakened, as reflected by an upward trend in the ratio of interest expense to operating returns to assets since 1960. That ratio continued to climb throughout the 1980–2001 period.

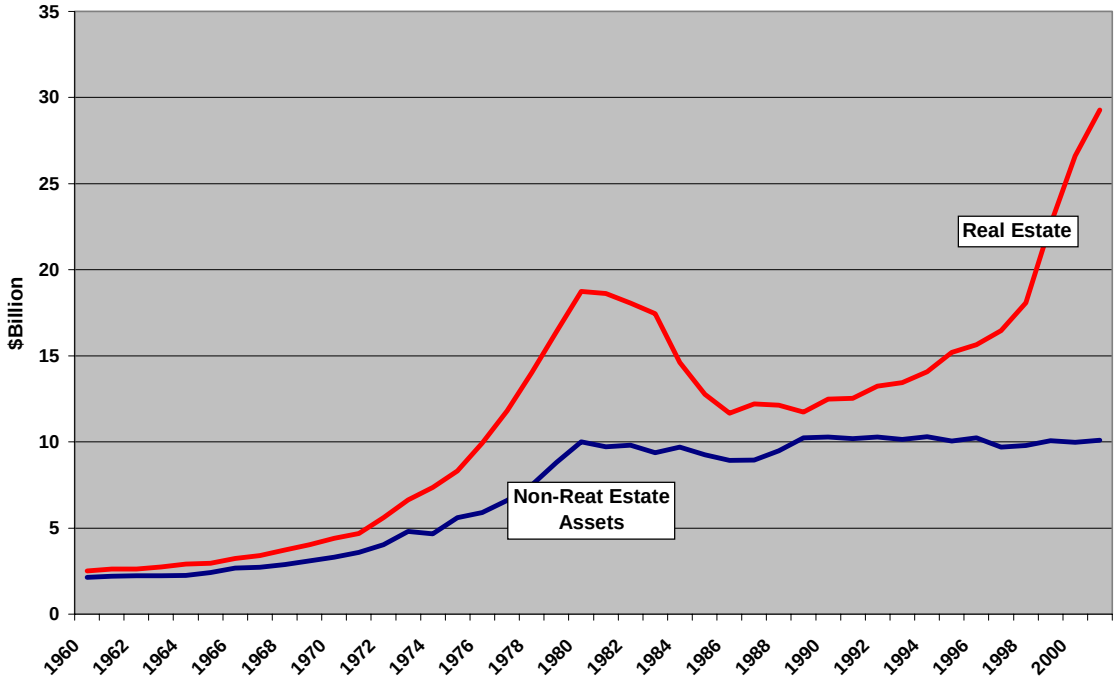
The declining repayment capacity of Wisconsin farms cannot be attributed to high interest rates on farm debts because interest rates have been generally declining over the last decade. The deterioration in the repayment capacity of farms results from falling operating returns to farm assets.

Wisconsin Farm Business Balance Sheet ($1,000), December 31, 1997-2001

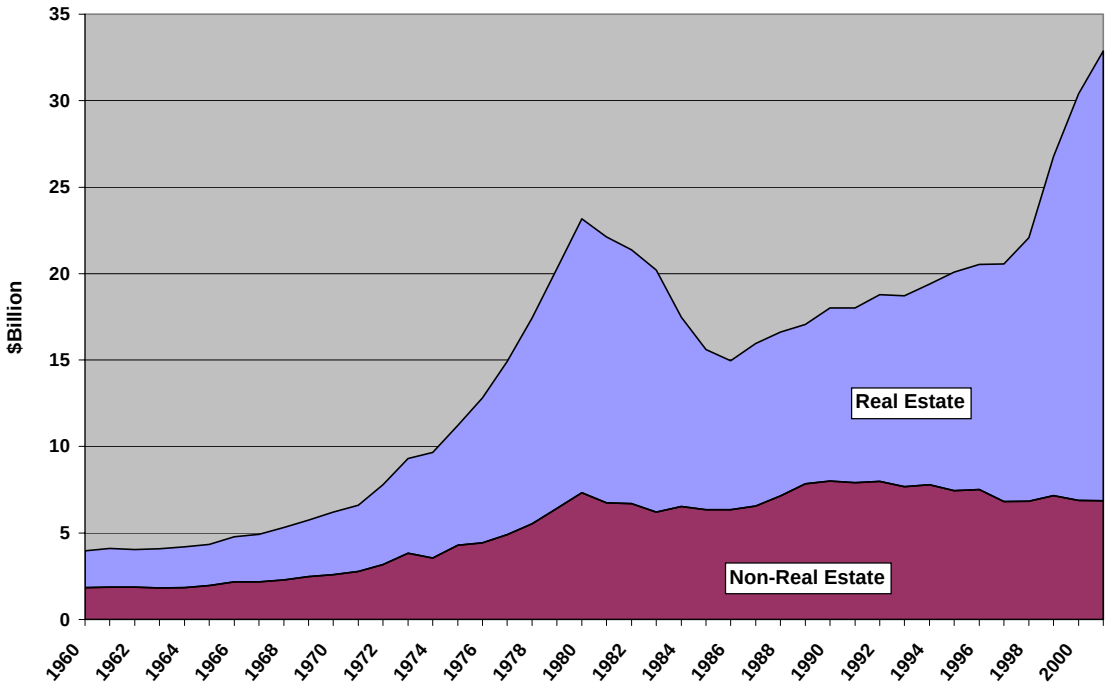
	1997	*1998*	*1999*	*2000*	*2001*
Farm assets:					
Real estate	16,475,944	18,092,265	22,624,713	26,617,309	29,279,040
Livestock and poultry	2,603,593	2,866,996	3,217,654	3,077,426	3,217,654
Machinery and motor vehicles	3,732,912	3,730,807	3,738,888	3,738,597	3,787,128
Crops	1,313,213	1,147,081	1,022,401	854,243	760,874
Purchased inputs	236,935	243,512	194,642	236,709	203,670
Financial	1,818,267	1,804,916	1,895,269	2,072,774	2,117,715
Total Assets	26,180,864	27,885,577	32,693,567	36,597,058	39,366,081
Farm debt:					
Real estate					
Farm Credit System	727,241	766,324	805,897	824,528	913,329
Farm Service Agency	118,278	106,813	99,910	95,534	94,032
Commercial banks	1,113,040	1,198,089	1,314,092	1,412,713	1,477,204
Life insurance companies	70,250	77,336	82,866	75,731	76,855
Individuals and others	719,904	712,775	712,775	702,948	717,239
CCC storage & drying loans	0	0	0	0	0
Subtotal	2,748,712	2,861,337	3,015,539	3,111,454	3,278,658
Nonreal estate					
Farm Credit System	802,896	832,146	790,978	855,938	978,852
Farm Service Agency	163,856	148,775	153,845	151,341	151,888
Commercial banks	1,303,817	1,339,125	1,312,575	1,393,214	1,387,923
Individuals and others	610,202	635,627	657,874	690,768	702,368
Subtotal	2,880,771	2,955,673	2,915,272	3,091,260	3,221,032
Total Debt	5,629,483	5,817,010	5,930,811	6,202,714	6,499,690
Equity	20,551,381	22,068,567	26,762,756	30,394,344	32,866,391

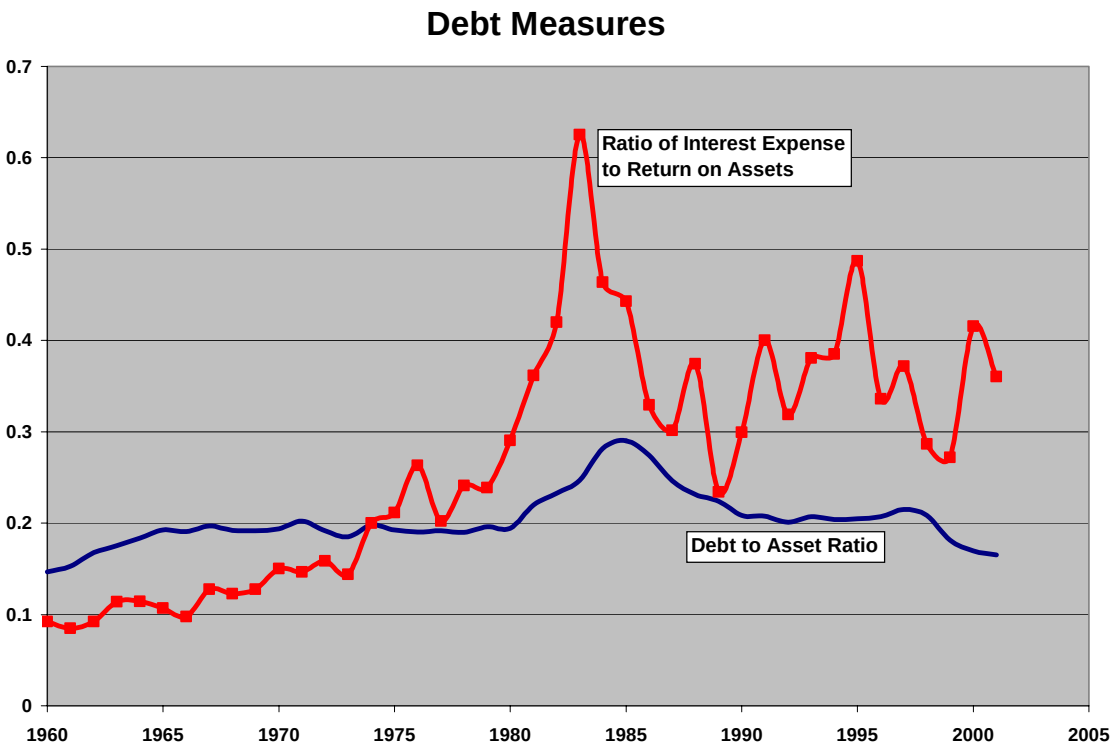
Source: Economic Research Service, USDA

Wisconsin Farm Assets



Wisconsin Farm Equity




Debt Measures
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
Ratio of Interest Expense to Return on Assets
Debt to Asset Ratio

II. Current Outlook for Wisconsin Agricultural Commodities and Inputs

In this section, marketing and farm management specialists in the Department of Agricultural and Applied Economics offer their insights on economic conditions for Wisconsin agriculture by commodity subsector. Interested readers are encouraged to contact these specialists for more current or more detailed information.

Dairy

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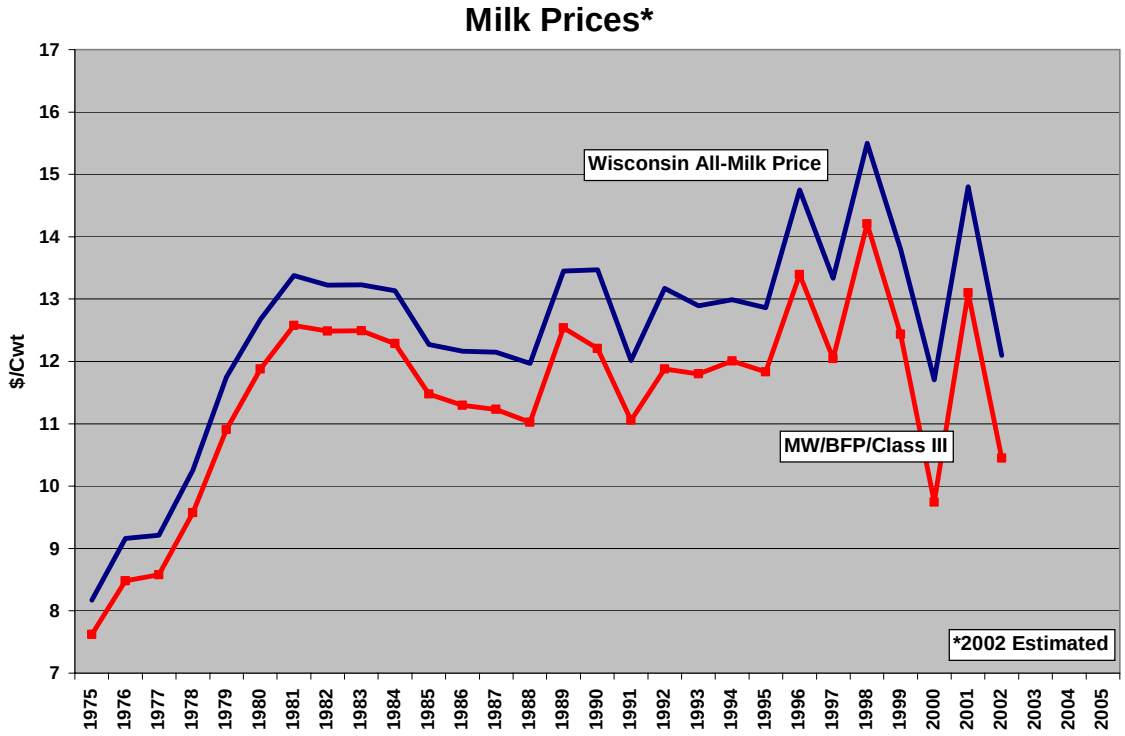
2002 in Review

The past year was, at best, a very disappointing one for dairy producers. Although lower milk prices were forecast for 2002, prices ended up much lower than expected. Dairy producers had not seen milk prices this low since the late 1970's. The base price, Class III (milk used for cheese), will average about $10.45 per hundredweight for 2002 compared to $13.10 for 2001. Wisconsin dairy producers will receive an average all-milk price for 2002 close to $12.10 per hundredweight. That is $2.70 lower than 2001's average all-milk price of $14.80, the second highest average Wisconsin milk price on record.

A long spell of low milk prices has increased dairy producers' financial stress. Those who made major capital investments in expanded or new dairy operations within the last three years have been hit the hardest. It normally takes a couple of years to get a new operation up and running. Milk prices were also very depressed all of 2000, when Wisconsin producers received an average all-milk price of only $11.70 per hundredweight. So, for the past three years, milk prices were favorable only for most of 2001.

The low milk prices were offset somewhat by government payments mandated in the 2002 Farm Bill. Under the Milk Income Loss Contract (MILC) program, dairy producers were eligible to receive lump-sum transition period payments for milk marketed between December 2001 and September 2002 and monthly payments since September. Farmers receive payments based on how much milk they market, and payments per farm are limited to 2.4 million pounds of milk marketed within a marketing year (October 1st through September 30th). About 85 percent of Wisconsin producers market less than 2.4 million pounds of milk per year.



The transition payments ranged from $0.7695 per hundredweight for December 2001 to $1.4535 per hundredweight for September 2002. MILC payments for the remainder of 2002 were: October, $1.5930; November, $1.3905; and for December, $1.4265. For all of 2002, payments averaged $1.2060 per hundredweight. The lump-sum transition period checks, which arrived in mid-October, helped producers catch up on payments to feed suppliers and other vendors. MILC payments now provide a major income supplement to most Wisconsin dairy producers. Adding the average 2002 payments of $1.2060 brings the average all-milk price for the year to about $13.30 per hundredweight for most Wisconsin dairy producers.

With a federal support price of only $9.90 per hundredweight, milk prices will remain highly volatile. Milk is produced every day of the year and is highly perishable. Dairy producers can't store milk and wait for better prices. Consequently, small changes in market conditions — either the quantity of milk marketed or in commercial sales of milk and dairy products — can cause large changes in farm-level milk prices. Market forces explain why milk prices were depressed during 2002 and suggest higher milk prices in 2003.

Wisconsin's milk cow numbers and overall milk production continue to decline. Wisconsin milk cow numbers dropped 1.7 percent from 2001 levels, while milk production per cow increased 1.2 percent. State farms produced about 22 billion pounds of milk during 2002, a 0.5 percent decline from the previous year.

This decline in Wisconsin cow numbers and overall production is not mirrored at the national level. U.S. milk cow numbers increased 0.3 percent and milk per cow increased 2.4 percent, resulting in a milk production increase of 2.7 percent. Most of the growth in both figures occurred in Western states — California, Idaho, New Mexico and Arizona. Milk prices are driven by national market conditions, not just by what is going on in Wisconsin.

Also helping to depress milk prices was a continuing weakness in sales of beverage milk and other dairy products. Commercial disappearance of all dairy products increased at an annual rate of about 2 percent from 1985 through 2000. But it increased by only 0.4 percent in 2001 and by 0.5 percent in 2002.

Growth from 1985 through 2000 was driven by strong annual increases in cheese sales ranging from 2 percent to more than 3 percent. Cheese sales have slowed considerably over the past two years. Sales of American cheeses did climb 3 percent in 2001, but other cheeses, notably Italian varieties, declined 0.1 percent. Latest data for 2002 (January through September) show only slight improvement. Commercial disappearance of all dairy products was up 0.5 percent, with American cheeses up 2.1 percent, other cheeses up 0.7 percent and beverage milk up 0.3 percent.

Wisconsin and U.S. Milk Production, 2001-2002

	Wisconsin	*United States*
No. of Milk Cows (Million head):		
2001	1.292	9.115
2002	1.270	9.140
Percent Change	-1.7	+0.3
Milk per Cow (Pounds):		
2001	17,182	18,139
2002	17,390	18,570
Percent Change	+1.2	+2.4
Total Milk Production (Bil. Lbs.):		
2001	22.2	165.3
2002	22.1	169.7
Percent Change	-0.5	+2.7

Source: 2001:USDA, National Agricultural Statistics Service.
2002: Author's Estimate

Commercial Disappearance of Dairy Products, 2001-2002

Total Commercial Use (Milk Equivalent, Fat Basis), Billion Lbs.	
2001	169.4
2002	170.2
Change in Commercial Use, Jan-Sep 2002 versus Jan-Sep 2001	
All dairy products	+0.5%
Butter	+1.8%
American cheese	+2.1%
Other cheese	+0.7%
Nonfat dry milk	-5.7%
Fluid (beverage) milk	+0.3%

Source: USDA, *Dairy Market News*

Sluggish cheese sales may be due to a slower growing economy and a shift in consumer eating habits. About 60 percent of cheese is consumed in restaurants and other food service outlets. The softness in cheese sales was in the restaurant and other food service area, where the bulk of Italian cheese is consumed. Following the terrorist attacks of September 11, 2001, consumers shifted eating habits. They have been eating out less, choosing instead to buy prepared foods that can be easily microwaved and served at home. These prepared food products contain less cheese and other dairy products than do restaurant pizza and Italian dishes. In addition, in an attempt to recapture consumer expenditures, some pizza and hamburger chains have expanded their menus to include chicken and fish.

Commercial disappearance might have been stronger if retail prices of milk and dairy products had declined more. However, the demand for most dairy products is inelastic — sales are not highly responsive to price changes. As of October 2002, retail prices of all dairy products were down 2.5 percent compared to a year ago, with whole milk 5.3 percent lower, cheese 2.4 percent lower and butter 20.6 percent lower. In comparison, retail prices for all foods were up 0.9 percent, while retail prices for meat, fish, poultry and eggs were 1.3 percent lower.

There have been claims that increased dairy imports, particularly casein and other milk protein concentrates (MPC) are a major reason for lower milk prices. Increased imports of MPC are a real concern, but they are not a major reason for 2002's lower milk prices. No doubt some MPC imports were used in place of domestic nonfat dry milk, thereby increasing government purchases of surplus nonfat dry milk. But nonfat dry milk contains 33 percent to 36 percent protein whereas MPC may range from 40 percent to over 80 percent protein.

Some of the higher-protein MPC's are used as nutritional enhancements in food products where nonfat dry milk or other domestic dairy products would not have been used.

Commercial disappearance of nonfat dry milk was down about 25 percent in 2002. This was mainly due to less use of nonfat dry milk to standardize raw milk for cheese making. Cheese making is a major use of nonfat dry milk, but depressed cheese prices removed much incentive to add nonfat dry milk to raw milk to increase cheese yield.

There have been many suspects blamed for low milk prices in 2002, but there is one major culprit: Almost 3 percent more milk was produced while only 0.5 percent more milk was consumed.

2003 Outlook

Farm-level milk prices will gradually improve during the first quarter of 2003, and they will show greater strength during the remainder of the year. The long period of low milk prices will discourage dairy expansions and encourage more exits. But MILC payments will likely delay some exits, making the milk-price recovery take longer than it has during earlier price troughs.

The combination of lower milk prices and higher feed prices have yielded an unfavorable milk/feed price ratio — below 3.0 since March 2002 and as low as 2.23 in September. Historically, a ratio less than 3.0 slows milk production. Either farmers feed less grain and concentrates, which reduces milk per cow, or buy fewer replacements to offset higher feed expenses. The milk/feed price ratio was well above 3.0 all of 2001 and encouraged herd expansions. So it seems reasonable to assume that in 2003 U.S. milk cow numbers will once again decline by at least 0.5 percent. This would cull the nation's herd to about 9.1 million head.

Corn and soybean prices are higher than a year ago, and hay prices — especially for high-quality hay — are up substantially in some areas. Compared to November of last year, hay was up 26 percent in California, 24 percent in Idaho and 10 percent in Wisconsin. But hay prices were down 13 percent in Minnesota and 9 percent in New Mexico.

The milk/feed price ratio will increase during the year. Further, good herd managers do not cheat cows out of feed and sacrifice milk per cow. Unless the summer gets extremely hot or feed quality drops substantially, the annual increase in milk per cow should be back to normal, ranging around 2 percent. Under these assumptions, the increase in milk production for 2003 will slow to about 1.5 percent which would yield 172.3 billion pounds of milk nationwide.

Growth in commercial disappearance should improve some from its poor performance of the past two years. A growth of at least 1 percent, yielding commercial disappearance near 171.9 billion pounds, seems like a reasonable forecast.

Milk Supply and Use Factors, 2003		
	Value	***Change from 2002***
Milk cow numbers (million head)	9.095	-0.5%
Milk per cow (pounds)	18,940	+2.0%
Total milk production (billion pounds)	172.3	+1.5%
Commercial disappearance (billion pounds)	171.9	+1.0%

Source: USDA, NASS. 2002 are author's estimates

For milk prices to show substantial improvement, stocks of butter and cheese must be worked off. As of November 30th, butter stocks totaled 136.3 million pounds, up 135 percent from a year ago and 327 percent above the 5-year average for November (table 5). Total cheese stocks were 698 million pounds, 11 percent above a year ago, and 21 percent above the 5-year average for November. Nonfat dry milk stocks as of October 31st were nearly 1.3 billion pounds, 93 percent of which were government stocks. These stocks were up 45 percent from a year ago and 210 percent above the 5-year average for October.

Stocks of Dairy Products, November 30, 2002			
	Butter	***All natural cheese***	***Nonfat dry milk***
November 30, 2002	136.3	698.0	1,279.4
November 30, 2001	57.9	631.3	885.0
November 30 Average, 1997-2001	31.9	577.6	412.9
November 30, 2002, stocks as Percent of:			
2001	235%	111%	145%
Five-year Average	427%	121%	310%

Source: USDA Dairy Market News. Nonfat dry milk stocks are as of October 31st

Class III prices for the first quarter of 2003 will remain below $11 per hundredweight. During the second quarter Class III prices may rise from the low $11.00's to end near $12. They will reach $13.25 or higher by September. Class III prices may be about $13 for October and decline seasonally to $12 by December.

Class III prices will average about $11.85 for the year and the average Wisconsin all-milk price will be about $13.55, up $1.45 per hundredweight from 2002. Producers will also receive MILC payments on eligible milk (under the 2.4-million-pound annual limit). These payments will average well over $1 per hundredweight for the first quarter, but may fall to zero by September with a Class III price above $13. For the year, MILC payments are expected to average $0.60 to $0.70 per hundredweight. Added to $13.55, the average pay price for most Wisconsin dairy producers would be about $14.15 to $14.25 per hundredweight.

These forecasts are conservative. It's highly probable that milk prices will be in the ranges we predict, and they are more likely to be toward the high end of these ranges than the lower. If milk cow numbers decline less than expected, or milk per cow is higher, or commercial disappearance grows less, or some combination of the above occurs, milk prices will be lower. If cow numbers decline more than expected, hot weather depresses milk yields and commercial disappearance is stronger, milk prices could be considerably higher by the third quarter.

Dairy producers may want to closely monitor Class III futures prices during 2003. If monthly futures prices approach or exceed their 10-year averages, producers may wish to lock in prices for some of their future milk production. Remember that milk prices are highly volatile. A rather small change in either milk production or commercial sales can cause sharp changes in farm level milk prices.

2003 Wisconsin All-Milk Price Forecasts

Months	***Dollars Per Hundredweight****
Jan.-Mar.	$10.25 to $10.80
Apr.-Jun.	$11.20 to $11.90
Jul – Sept.	$12.50 to $13.25
Oct. – Dec.	$13.00 to $12.00
Average Annual Class III Price	$11.85
Average Annual All Milk Price	$13.55

*Author's estimates. Price range shown is from the first to the last month of the quarter

Livestock and Poultry

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2002 In Review

Most livestock and poultry prices fell below expectations during 2002. Total meat production increased for the 20th consecutive year. An increase was anticipated but the increase was larger than expected. Total meat output during the first three quarters was up 3, 4, and 5 percent, respectively, from the preceding year. This followed a 4 percent increase in the fourth quarter of 2001. The 12-month total meat output from October 2001 through September 2002 was 85.5 billion pounds. This increase, 3.3 billion pounds more than had been produced the previous 12-month period, was more than the live and wholesale markets could handle.

Just as the meat production increased, the terrorist attacks of September 11, 2001, further slowed the economy causing demand to weaken and intensifying downward price pressure.

Not all of the large increase in meat production could be sold at the going price in 2002, and more than 500 million additional pounds entered freezers for future sale and consumption. Throughout most of 2002, freezer stocks of beef, pork and poultry were at all-time highs. In late 2002, freezer stocks of meat were still more than 20 percent above any previous level for the date. With a higher-than-predicted increase on top of record meat production and record freezer stocks to merchandise, wholesale meat prices were on the defensive through much of the year.

Meat Output Likely Lower in 2003

After increasing for 20 consecutive years, total meat production is expected to drop slightly in 2003. Following a year of record-high production and stagnant growth in economic activity and employment, the weighted-average price of cattle, hogs, broilers and turkey were about 12 percent below 2001 and about equal to the lows reached in 1995, 1998 and 1999. The consequent poor returns to most producers in 2002 and an uncertain economy are likely to reduce meat production a bit in 2003.

Beef Output Likely Down in 2003

Beef production has risen 18 percent during the last nine years to an all-time high of almost 27 billion pounds in 2002, but should decline by 1–3 percent in 2003. The number of cattle and calves on farms and ranches has fallen 7 percent from a cyclical high in 1996. However, during that time, the average weight of cattle slaughtered rose 9 percent, which more than offset the smaller decline in the number slaughtered and allowed total beef production to reach a new high.

As we enter 2003, the number of cattle in feedlots is well under a year ago. The average weight of cattle slaughtered declined rapidly during the fourth quarter of 2002, indicating that feedlot inventories were more in line with demand. The widespread drought in the West has reduced the supply of feeders from that area. Total beef output should decline a bit as fewer cattle are slaughtered the and the average weight of cattle slaughtered rises only slightly

compared with 2002, allowing total beef output to decline a bit.

Winter weather conditions in the Southern and Central Great Plains, where most cattle are fed, can have a major influence on the amount of beef produced during the following year. This point was driven home by the adverse cold and wet winter weather in these areas in 2000-2001 and the very favorable mild and dry weather in 2001-2002. An unfavorable wet and cold winter in cattle feeding areas would further reduce beef output in 2003.

Choice Cattle Prices Higher in 2003

Choice cattle prices (Texas-Oklahoma) averaged about $67 per cwt. in 2002, down about $5 from the eight-year high of $72 achieved in 2001. However, as the rapid pace of cattle slaughter eased in the fourth quarter of 2002, choice cattle prices improved markedly. With the number of cattle in feedlots well below last year as we enter 2003, average prices for the year should return to average in the lower $70s in the new year.

Cow Slaughter Steady in 2002; Likely Down a Bit in 2003

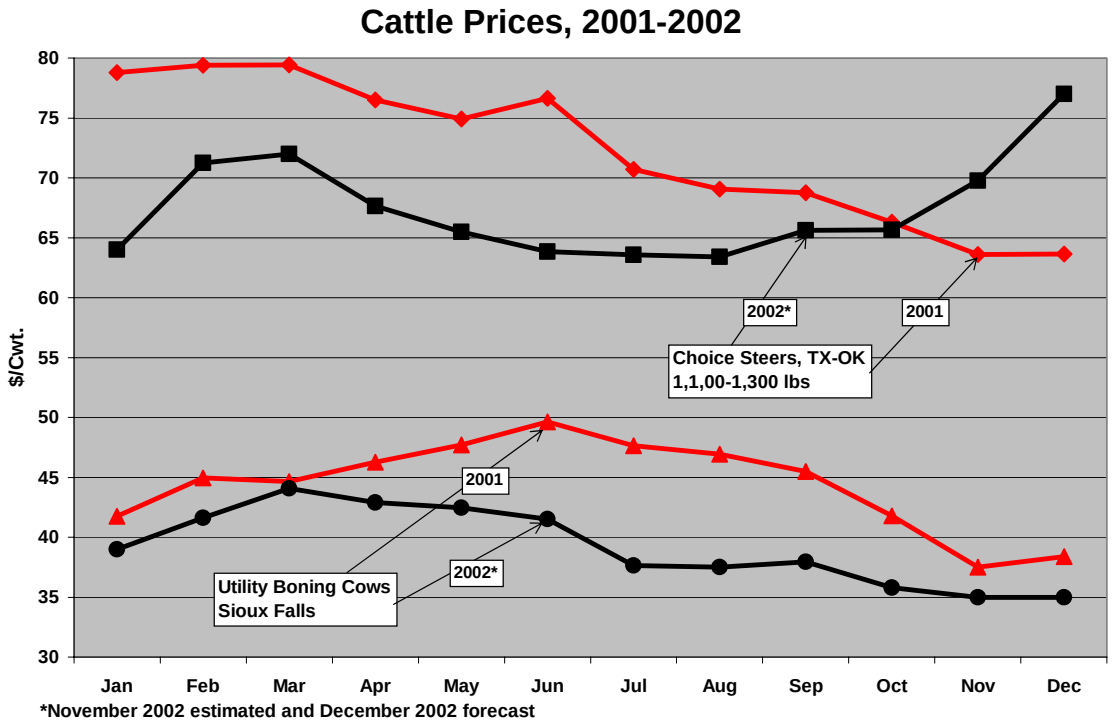
The number of cows slaughtered in 2002 showed little change from 2001. Federally-inspected cow slaughter has trended sidewise during the past five years. It ranged between 5.4 million and 5.9 million head per year, and was in the middle of the range during the last two years. After being down 11 percent during the first quarter of 2002, the number of dairy cows slaughtered was up considerably during the second half of the year and reached the 2001 total for the year.

Cow slaughter is expected to be down slightly in 2003. Improved prices for feeder cattle and calves will likely slow the marketing of beef cows. Dairy cow slaughter should be up a little, particularly early in the year.

Cow Prices Down in 2002; Likely a Little Higher in 2003

Boning utility cow prices fell about $5 per hundredweight in 2002 from the eight-year high of $44.40 (Sioux Falls) reached in 2001. Some mild recovery is likely in 2003 as the number of cows slaughtered and the quantity of competing meats produced falls. But significant price recovery won't happen until the amount of frozen boneless beef in storage is merchandised and consumed. These stocks reached an all-time monthly high of 463 million pounds on November 1, up 35 percent from the previous year and up 34 percent during the previous four months.

Having so much boneless beef in freezers was a key factor in the weak cow market in 2002. Intensive competition from food service outlets featuring alternative menus may have been a negative force against fast food hamburger restaurants and cow prices during the last year.



Feeder Cattle Prices Lower in 2002; Likely Higher in 2003

Feeder steer prices were hit by lower choice cattle prices and slightly higher feed grain prices in 2002. They should recover a bit in 2003, but may not quite reach their 2000 and 2001 averages. Feeder cattle prices collapsed from a mid-2001 high to a late-April 2002 low but improved steadily through the rest of the year to average near $80 per cwt. (Oklahoma City). The average price in 2003 should be closer to the $88.20 average price in 2001 and the $86.17 average in 2000. The late 2002 price recovery, spurred by higher choice cattle prices and lower feed prices in the fourth quarter, should carry into 2003. As usual, the direction of feeder cattle prices later in the year will be influenced by feed prices, which in turn will be influenced by weather in the Corn Belt next summer.

Pork Production Up in 2002; Likely Lower in 2003

Pork production rose about 3 percent in 2002, a bit more than expected, to an all-time record high of about 19.5 billion pounds. Almost all of the increase occurred during the second and third quarters when output rose 5 percent above the 2001 total. Pork production has been relatively stable during the past 5 years, between 18.9 billion and 19.5 billion pounds each year.

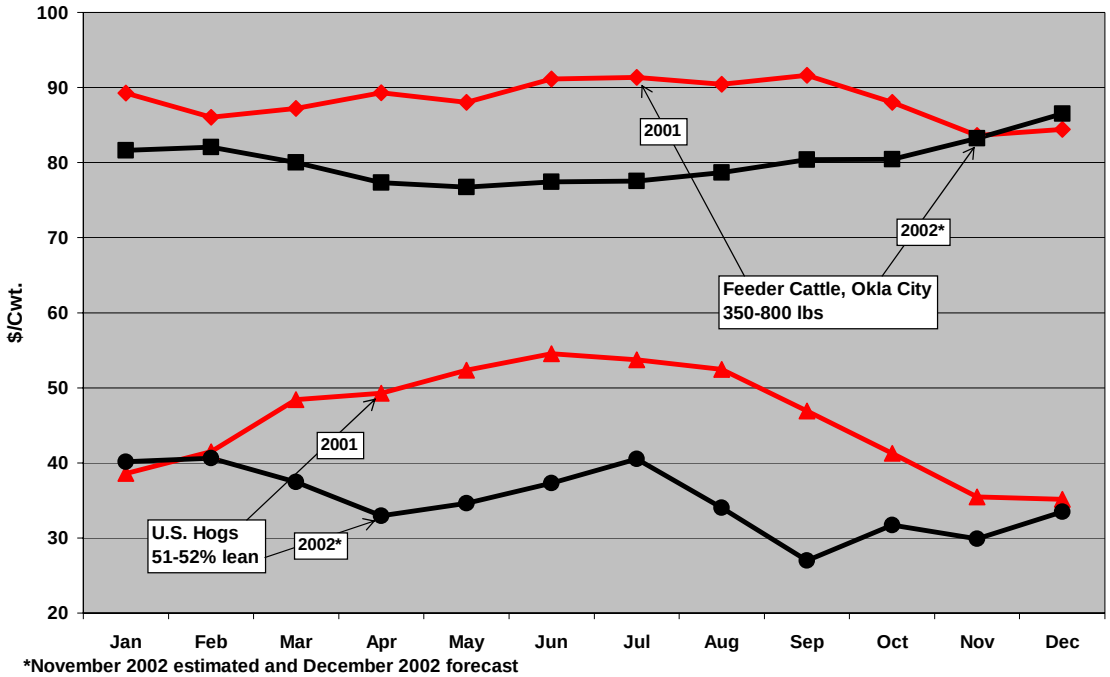
Low hog prices and slightly higher feed prices in 2002 will likely lead to a modest decline of about 2-3 percent in pork output in 2003. The number of pigs born has declined each month beginning in June. In addition, the average weight of hogs slaughtered has been below the preceding year since September, a rare event during the last several decades.

The decades-long decline in the Wisconsin hog industry continued during 2002. The September 1, 2002, survey of hog producers indicated that the number of hogs on Wisconsin farms had fallen 14 percent below a year earlier. Wisconsin hogs represented 0.8 percent of the U.S. total compared with 1 percent a year ago. In the mid-1900's, Wisconsin's hog population was more than 4 percent of the U.S. total.

Hog Prices Much Lower in 2002; Expected to be Rise in 2003

Hog prices averaged a little below $35 per cwt. ($47, lean) during 2002, much lower than expected. They averaged about 24 percent below 2001 and not much above the very low averages reached in 1998 and 1999. An unexpectedly large increase and a record large total of competitive meat production, particularly of beef, weighed on hog prices. In addition, very large freezer stocks of pork, averaging 22 percent above those of 2001, and a larger spread between the retail price of pork and the price of hogs all led to the sizable decline in hog prices.

Feeder Cattle and Hog Prices, 2001-2002



*November 2002 estimated and December 2002 forecast

Hog prices are expected to rebound in 2003 and should average above $40 ($54, lean) per cwt. The price rebound will come from a modest decline in hog and pork production, a leveling-off of the production of competing meats, a working-off of extremely large frozen pork inventory and a slightly lower marketing price spread. As always, unexpected changes in weather, geopolitical events and business conditions can influence pork and hog prices.

Broiler Output Up and Prices Lower in 2002; Prices Likely Higher in 2003

Broiler production increased about 3.5 percent in 2002 to a record total of about 32.5 billion pounds. It was the 28th consecutive annual increase. Broiler production has doubled since 1988. Increases have averaged more than one billion pounds per year during the last 14 years.

Weaker wholesale prices in 2002 and higher cost of feed led to lower returns to broiler producers in 2002 and will likely result in a smaller increase in broiler output in 2003. Broiler prices were lower in 2002 in the face of record large production of competing meats and record large frozen inventories influenced by a ban on broiler imports by Russia for several months early in the year. Wholesale broiler prices in 2002 fell about 6 percent from 2001 to the lowest level in 9 years but should rebound in 2003 as the supply of competing meats declines a bit.

Turkey Output Up; Prices Down in 2002; Prices Should Be Higher in 2003

Turkey production was up nearly 2 percent to over 5.6 billion pounds in 2002, with all of the increase coming in the first half of the year. During the last six years, production has been relatively flat, up only 3 percent. That's in sharp contrast to the 1980s and early 1990s. Turkey output more than doubled, up 122 percent, from 1982 to 1996. Turkey production is not expected to change much in 2003 with average prices up a bit.

Meat Exports Down a Bit in 2002; Little Change Seen in 2003

Net exports of poultry, beef and pork as a percentage of production rose rapidly from the mid-1980's into the late 1990's but have leveled off or declined slightly during the past 5 years. Last year brought another small decline. While we sent more beef to South Korea and Mexico and more pork to Japan, these gains were more than offset by declining exports of beef to Japan and reduced exports of chicken and turkey to Russia. In addition, we imported more red meat from Canada. No significant changes in net meat trade are expected in 2003.

Egg Output Up a Bit in 2002; Little Change Seen in 2003

Egg production increased 1 percent in 2002, keeping annual consumption at 252.6 eggs per person. Egg prices rallied in the fourth quarter of 2002 but the annual average was down slightly from 2001. Little change in annual

production or average price is anticipated in 2003.

Meat Consumption Per Capita Up Six Pounds in 2002; Decline Expected in 2003

Reversing a two-year decline, meat consumption per capita rose six pounds in 2002 to more than 219 pounds. The large increase in consumption and reduced exports more than offset larger ending inventory stocks of meat. About half of the increase was accounted for by the rise in broiler consumption to a record 79.5 pounds per person. The other half was about equally divided between beef and pork.

Annual beef consumption per person has trended sideways since 1990, between 65 pounds and 69.5 pounds. The 2002 total was equal to the 1990 total at 67.7 pounds. Pork consumption per person has trended sideways for even longer—since 1982—between 48.7 and 53.9 pounds. Per capita consumption in 2002 was about 51.5 pounds.

Broiler consumption per person has climbed consistently, from 23.5 pounds in 1960 to the new record of 79.5 pounds in 2002. Turkey consumption rose from 4.5 pounds per person in 1965 to 18.5 pounds in 1996, but has since eased back to 17.5 pounds.

Meat consumption per person is expected to decline a bit in 2003 as the population increase will likely outpace domestic meat usage.

Retail Meat Prices Little Changed in 2002; Likely a Little Higher in 2003

Retail meat prices were relatively flat during 2002 and averaged near 2001 following two years of increases. They were generally higher than in 2001 during the first half of the year and a little lower in the second half. The opposite seasonal trend is likely in 2003, with the annual averages up slightly.

Corn and Soybeans

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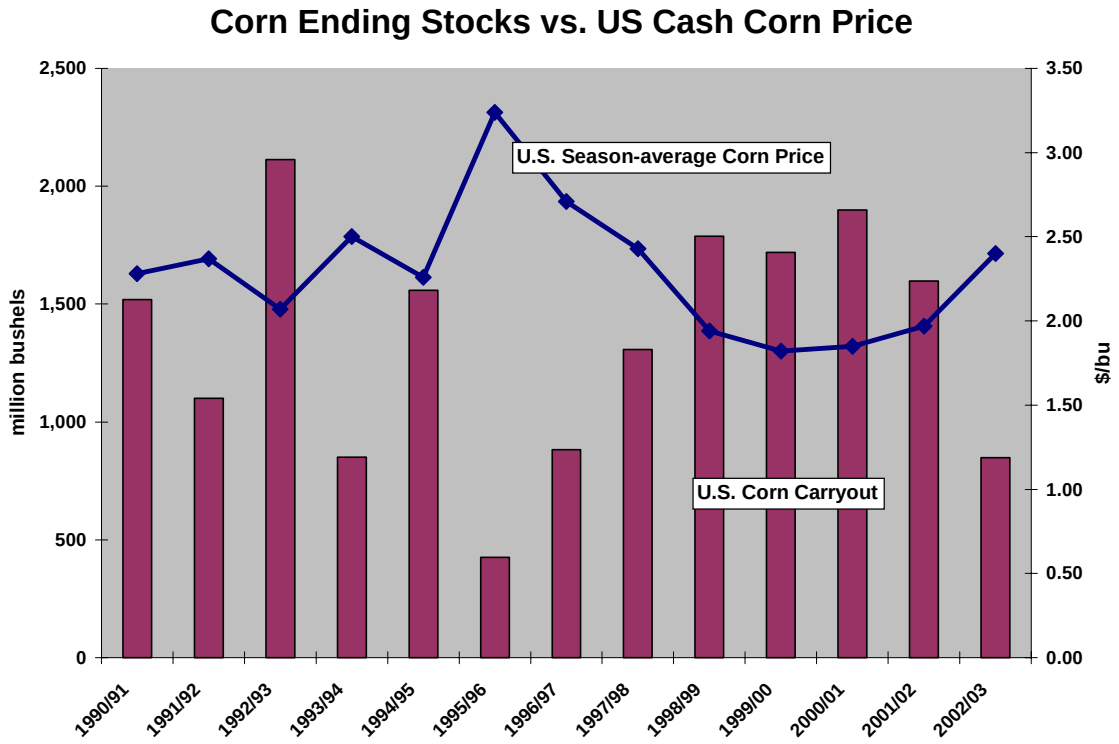
Introduction

Corn and soybean prices rebounded in 2002 to levels not seen in several years. Less-than-ideal growing conditions reduced U.S. yields below trend for the first time since the mid-1990s. The lower yields and strong demand reduced year-over-year ending stocks and provided the market with an opportunity to move towards higher prices. Some of the highest prices of the year occurred during the harvest season, something that hasn't happened since 1995.

Most Wisconsin producers faced an easier growing season than did producers to the south and west and were able to achieve reasonable yields to take advantage of end-of-season price increases. Average Wisconsin yields for corn and soybeans actually exceeded the national average — a relatively rare event.

Corn

In December USDA estimated the 2002 U.S. corn crop at 9 billion bushels. This marks the second year in a row that corn production has fallen below year-ago levels. Harvested corn acres in 2002 were up 500 thousand from the previous year, but 2002 yields only averaged 130 bushels per acre, a reduction of 6 percent from 2001. This is the first time since 1995 that U.S. corn yields have fallen below the 10-year trend. It also represents the lowest yield in five years.



US Corn Balance Sheet (Sep/Aug Crop Year)						
	ACTUAL				USDA DEC ESTIMATE	USDA DEC FORECAST
Marketing Year	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**
	Million Bushels unless otherwise indicated					
Beg Stocks	883	1,308	1,787	1,718	1,899	1,596
Imports	9	19	15	7	10	15
Acres Planted (Mil.)	79.5	80.2	77.4	79.6	75.8	79.1
Acres Harvested (Mil.)	72.7	72.6	70.5	72.4	68.8	69.3
% Harvested	91.4%	90.5%	91.1%	91.0%	90.8%	87.6%
Yield (bu/A)	**126.6**	**134.4**	**133.8**	**136.9**	**138.2**	**130.0**
Production	9,207	9,759	9,431	9,915	9,507	9,008
Total Supply	**10,099**	**11,085**	**11,232**	**11,639**	**11,416**	**10,619**
Feed & residual	5,505	5,496	5,664	5,842	5,877	5,600
Food/Seed/Ind.	1,782	1,822	1,913	1,957	2,054	2,245
Exports	1,504	1,981	1,937	1,941	1,889	1,850
Total Demand	**8,791**	**9,298**	**9,515**	**9,740**	**9,820**	**9,695**
Ending Stocks	1,308	1,787	1,718	1,899	1,596	924
Stocks To Use (%)	**14.88%**	**19.22%**	**18.06%**	**19.50%**	**16.25%**	**9.53%**
Avg. Farm Price ($/bu.)	**$2.43**	**$1.94**	**$1.82**	**$1.85**	**$1.97**	**$2.35**

Corn carryout is expected to be down in 2002/03 for the second year in a row. In December, USDA estimated the 2002/03 carryout would be 924 million bushels. This represents the lowest carryout level since 1995/96 and is a positive factor for corn prices. A carryout below 1 billion bushels generally leaves the market very sensitive to any planting concerns in the spring, so significant price volatility in coming months should be expected.

Cash corn prices for the 2002/03 crop year are expected to average above $2 per bushel for the first time in five years. In fact, prices are expected to average close to levels routinely experienced in the early 1990's.

Demand for U.S. corn is expected to fall this marketing year but will still be the third highest on record. Fueled partly by increased ethanol production, growth in industrial use continues to be impressive. The current projection for 2002/03 industrial uses is 2.25 billion bushels, a new record and the seventh consecutive record level. The industrial use projection represents a whopping 46 percent increase relative to industrial use just 10 years ago.

USDA estimates the Wisconsin corn crop totaled 392 million bushels in 2002. This is up 18.5 percent from 2001 but still below production levels of the mid-1990s. Production increased because more acres were harvested (2.9 million in 2002 versus 2.6 million in 2001) and yields were better. Wisconsin's average corn yield in 2002 was 135 bushels per acre, up eight bushels over the previous year and above the national average.

The larger Wisconsin crop coupled with a smaller national crop increased Wisconsin's share of the U.S. corn production in 2002. Wisconsin produced over 4.3 percent of the nation's corn in 2002. Ten years ago, Wisconsin's corn production share was over 5 percent.

The increase in Wisconsin's share of total corn production suggests that basis levels (the difference between local cash price and prices in the Chicago futures market) are likely to be a bit weaker this year relative to year-ago levels. This means the cash price will be lower relative to futures prices than was the case last year. In fact, this has been the case through late December 2002.

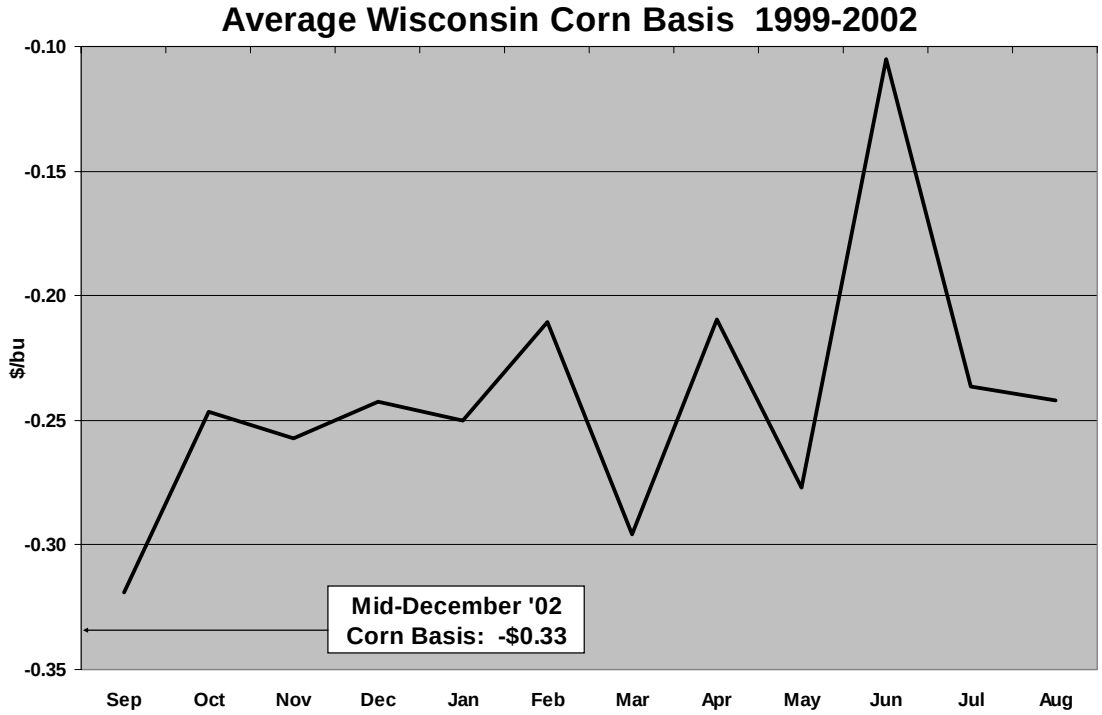
Weak basis levels coupled with a low carryout mean that corn buyers could face significant price risk as the marketing year progresses. This risk — comparable to what was common in the mid-1990s — stems from the potential for the basis to strengthen coupled with the likelihood of significant price volatility if there are any concerns about planting the 2003 crop this spring .

The conditions that could bring significant price risk to corn buyers could also provide corn producers with more attractive storage opportunities than in recent years. The likelihood of significant basis appreciation coupled with the possibility of price improvement given any planting concerns this spring makes corn storage less risky than has been the case the last few years.

Soybeans

U.S. soybean production in 2002 fell relative to the previous year's production for the first time in the new decade, but still exceeded production from the 2000/01 marketing year. The USDA projected carryout for end of the current marketing year at 190 million bushels (December estimate), a reduction of 9 percent from last year's carryout. The scenario here is not quite as bullish as in the corn market. Soybean markets are still feeling the hangover of a record South American crop, and South American production is expected to increase again this year.

Argentina production is projected to increase over 8 percent this year, and Brazilian production is expected to increase by more than 12.5 percent. Together, Argentina and Brazil are expected to outproduce the United States this year by more than 11 percent. This will be the first time that South American soybean production has exceeded U.S. production. It likely marks a permanent transition in terms of relative world production share.



Although U.S. ending stocks declined significantly for the fourth year in a row, price improvement will be limited by anticipation of increased South American production. U.S. farm prices for soybeans are expected to be higher than the last few years, but, unlike corn prices, they are not likely to rise to the average levels experienced in the early and mid-1990's. USDA estimates the average farm price for the 2002/03 marketing year will be about $5.45 per bushel.

The average farm price has been well below $5 per bushel each of the last four marketing years, but prior to that it generally averaged over $6. The last time carryout was below 200 million bushels (1996/97) farm prices for U.S. soybeans averaged over $7 per bushel.

Demand for U.S. soybeans in the current marketing year is expected to be off relative to the last couple of years. This will pressure prices despite the relatively small carryout projection. Prior to this year, soybean use set records eight years in a row. Projected use for 2002/03 is 2.75 billion bushels, in line with use levels in 1999/00.

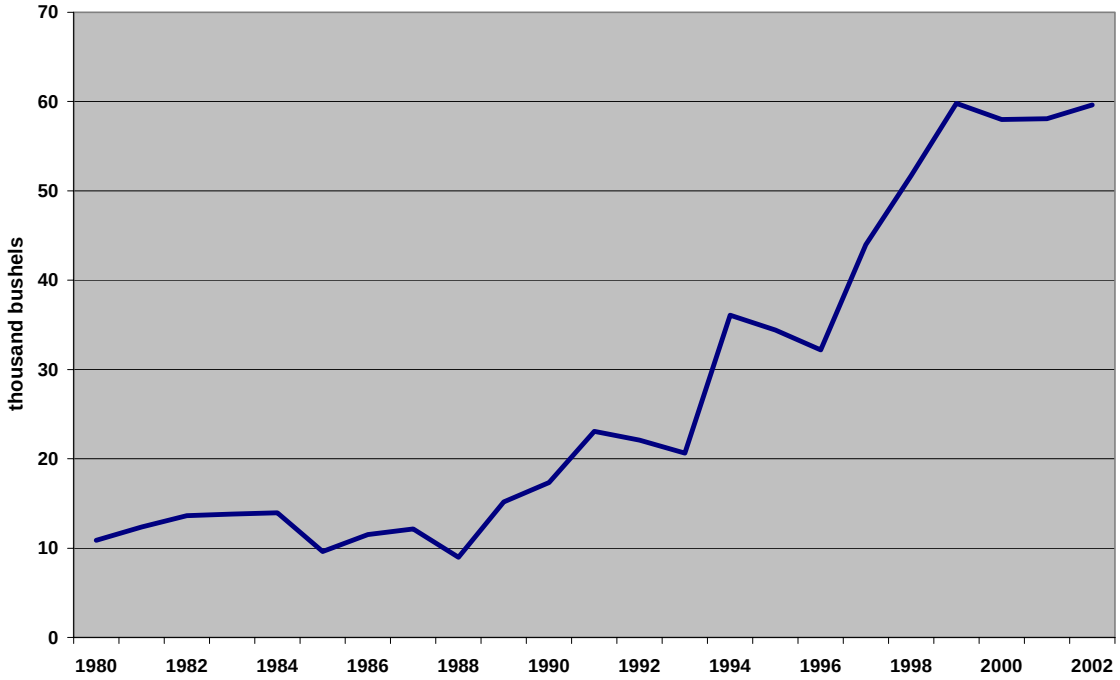
Wisconsin's harvested soybean acres were down 50,000 from a year ago to 1.52 million. In fact, with the exception of North Dakota, the entire Upper Midwest experienced lower harvested soybean acres in 2002 compared to 2001, reversing a several-year trend. North Dakota, however, continues to show large year-over-year growth. North Dakota acreage increased 25 percent from 2001, and totaled 2.63 million, 73 percent more than Wisconsin.

US Soybean Balance Sheet (Sep/Aug Crop Year)						
		ACTUAL			USDA DEC '02 ESTIMATE	USDA DEC '02 FORECAST
Marketing Year	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**
			Million Bushels unless Otherwise Indicated			
Beg Stocks	132	200	348	290	248	208
Imports	5	3	4	4	2	2
Acres Planted (Mil)	70	72	73.7	74.3	74.1	73.8
Acres Harvested (Mil)	69.1	70.4	72.4	72.4	73.0	72.2
% Harvested	98.7%	97.8%	98.2%	97.4%	98.5%	97.8%
Yield (Bu/A)	**38.9**	**38.9**	**36.6**	**38.1**	**39.6**	**37.8**
Production	2,689	2,741	2,654	2,758	2,891	2,730
Total Supply	**2,826**	**2,944**	**3,006**	**3,052**	**3,141**	**2,940**
Crush Sep/Aug	1,597	1,590	1,578	1,640	1,700	1,655
Exports	873	801	973	996	1,063	930
Feed/Seed/Residual	156	205	165	169	171	165
Total Demand	**2,626**	**2,595**	**2,716**	**2,804**	**2,933**	**2,750**
Ending Stocks	200	348	290	248	208	190
Stocks To Use	**7.60%**	**13.41%**	**10.68%**	**8.84%**	**7.09%**	**6.91%**
Avg. Farm Price	**$6.47**	**$4.93**	**$4.63**	**$4.54**	**$4.38**	**$5.45**

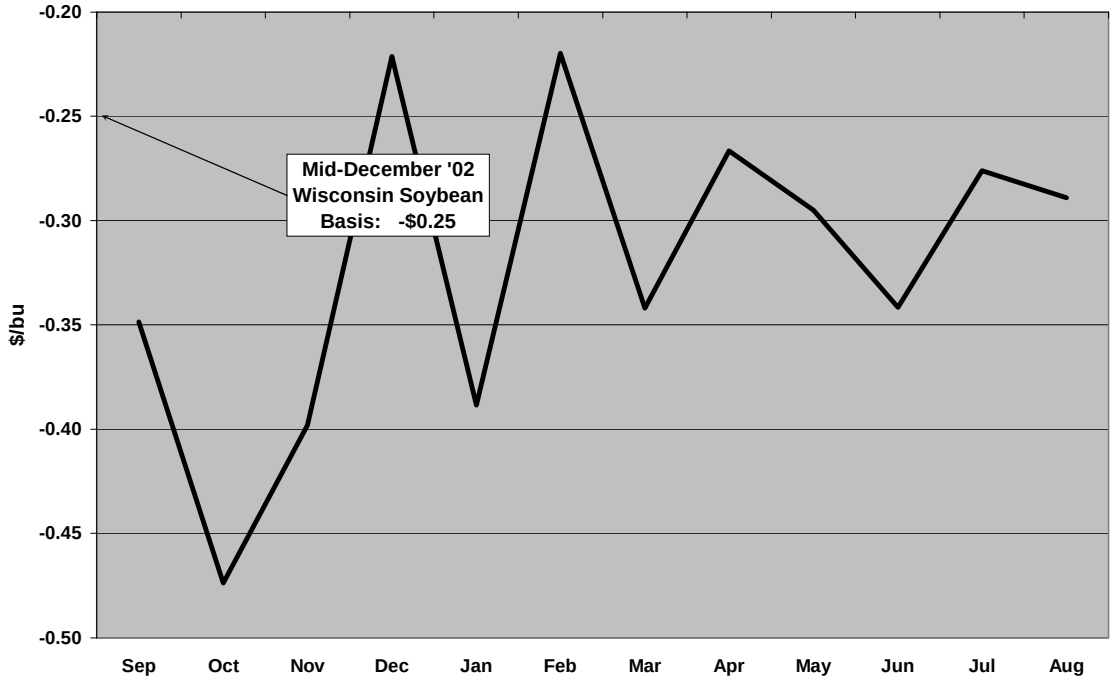
Despite the small drop in acreage, Wisconsin's 2002 soybean production exceeded 2001 by about 15 percent. This increase came from significant improvement in yields. Wisconsin averaged 44 bushels to the acre in 2002, compared to 37 bushels in 2001. As was the case for corn, Wisconsin's soybean yield exceeded the national average.

Wisconsin basis levels for soybeans are in line with historical averages for this time of year. Soybean basis does not usually improve dramatically from December on. This suggests that for storage to make sense, futures prices for later delivery must be well above prices for immediate delivery. In other words, the cash price must move from about 25 cents under a low futures price (in mid-December, when the charts shown here were made, this would have been the January contract) to being 25 cents below a higher futures price for a later delivery date (say the March or May contract).

Wisconsin Soybean Production



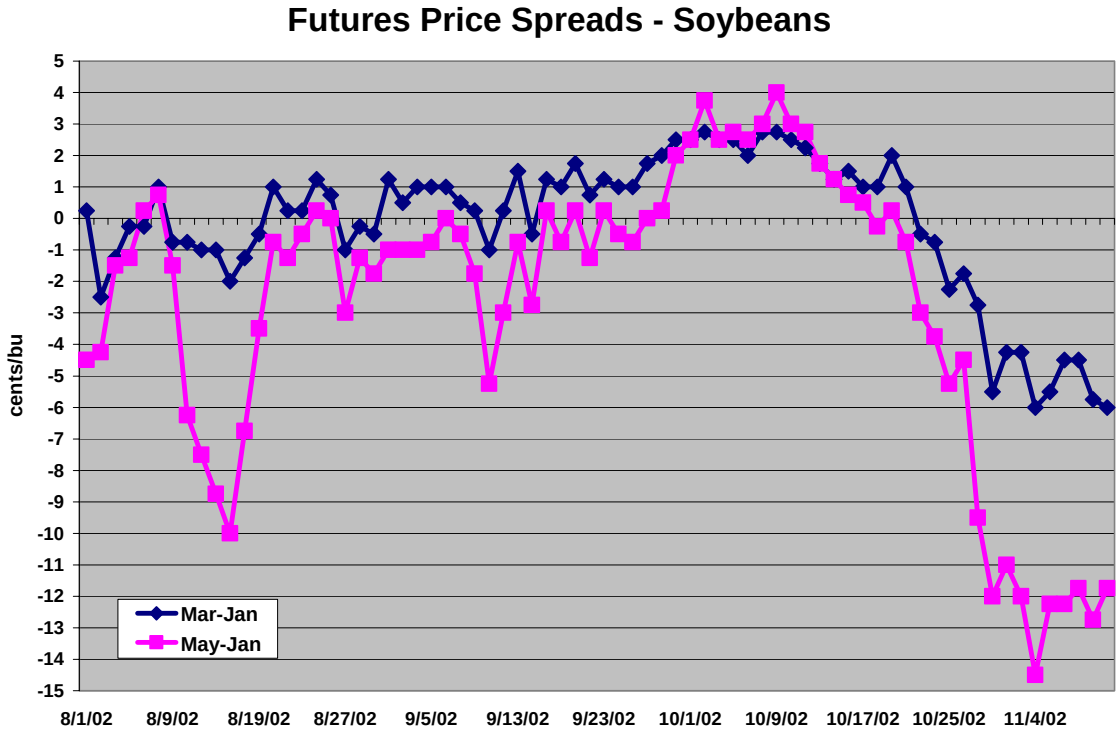
Average Wisconsin Soybean Basis 1999-2002



The problem this year, however, is that prices for later delivery are actually lower than nearby prices. Thus, with basis already relatively strong, unless futures prices rally cash prices are likely to fall as distant delivery dates approach. This is illustrated in the chart below, which shows the relationship between the January futures contract and both the March and May futures contracts in December. Note that futures prices for May delivery are well below those for January delivery.

The combination of relatively strong basis levels and an inverted futures market (where prices for later delivery dates are below prices for closer dates) makes storing soybean an extremely risky strategy. The only way soybean storage will pay this year is if there is a significant rally in the futures market that pushes cash prices higher. Such a scenario is possible, but less likely than in the corn market because of the expectation of record South American production.

Consequently, producers who want to speculate on higher prices for soybeans later in the marketing year can reduce their risk by selling their actual soybeans and buying call options in the futures market. The worst than can happen with such a move is that prices won't rally and producers will lose the premium paid for the option. Producers who store soybeans could face substantial losses if futures prices don't rally and cash prices deteriorate as the marketing year progresses.



Farm Inputs, Credit and Land

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Production Inputs

Prices paid by U.S. farmers for inputs such as fertilizer, agricultural chemicals and fuel were generally lower in 2002 than in 2001. The exception was seed prices, which rose nearly 7 percent from 2001, about the same year-to-year increase experienced in 2001.

Recent increases in seed prices probably resulted from some controversies related to GMO (genetically modified organism) crops. Negative media accounts about GMO corn in the human food supply in 2000 and 2001 made many farmers wary about planting GMO. Concerns about finding a market for GMO corn led to strong demand and sharply higher prices for non-GMO hybrids.

Barring more negative news about GMO crops, seed prices are expected to rise at rates close to the general rate of inflation in 2003. Farmers' demand for seed will more closely match seed companies' inventories.

Both fuel and fertilizer prices dropped substantially in 2002 from historically high levels in 2001. Fuel prices dropped roughly 7.5 percent while fertilizer prices fell more than 12 percent. Fuel and fertilizer prices are tied to oil prices, which were abnormally high in 2000 and 2001.

Oil prices have been relatively stable and low over the last half of 2002. Since most fertilizer used in 2003 will have been manufactured and priced based on oil prices of the last half of 2002, it is likely that fertilizer prices will be unchanged or only slightly higher in 2003.

Fuel is another matter. The fuel to be used in the first half of 2003 is in distributors' tanks and priced based on recent crude oil prices, but fuel for use in the second half of 2003 has not yet been produced or priced. The fuel that will power the 2003 harvest could be more expensive if something disrupts the flow of oil in world markets. An invasion of Iraq or other military actions in the Middle East would likely disrupt the flow of oil, raising prices to levels at least as high as experienced in 2000.

Farm Prices Paid Indices (1990-92 = 100)

	1999	*2000*	*2001*	*2002*
Seed	121	124	132	141
Fertilizer	105	110	123	108
Ag Chemicals	121	120	120	119
Fuel	93	134	119	110

Source: Agricultural Outlook, ERS-USDA, December 2002 & 2001

Farm Credit

According to the Federal Reserve Bank of Chicago, Wisconsin bankers are reporting a decline in farm loan repayments and increases in loan renewals and extensions for the third quarter of 2002. This is not surprising given that returns to dairy farmers were low throughout most of 2002..

Banks are reported to be tightening collateral requirements in anticipation of increased repayment problems with agricultural loans. Between the second and third quarter of 2002, 21 percent of bankers in the Seventh Federal Reserve District said they were requiring more collateral. This could translate into restricted credit availability for farmers whose resources are limited.

Seventh District bankers foresee some increase in farm foreclosures and liquidations over the fourth quarter of 2002 and the first quarter of 2003 compared to what was experienced over the same period a year ago. This seems to be a reasonable expectation in light of farmers' recent earnings and cash flow problems.

Interest rates on farm loans have declined roughly 75 basis points between the third quarter of 2001 and the third quarter of 2002. The interest rate on farm operating loans fell from 8.01 percent in 2001 to 7.17 percent in 2002. The interest rate on farm real estate loans fell from 7.47 percent to 6.83 percent.

Without these lower interest rates, loan delinquency rates and farm loan repayment problems would be more common in light of farm commodity prices. Fortunately, farmers have not faced high interest rates along with low commodity prices.

Interest rates throughout the U.S. economy have been both stable and relatively low the last two years. This has been due to actions taken by the Board of Governors of the Federal Reserve (Fed) designed to stimulate the U.S. economy. The Fed will probably adhere to these low interest rate policies as long as unemployment remains high and inflation remains low. Given that only a modest economic turnaround is expected in 2003, there is good reason to assume that the Fed will continue to keep interest rates low throughout the coming year. We expect interest rates on farm loans to stay near their current levels throughout 2003. This would change if the economy rebounds more than expected or if inflation rates start rising rapidly.

Cash Rents for Wisconsin Farm Land

Cash rents paid on Wisconsin crop land averaged $66 per acre in 2002, the same as what was paid in 2001 and $1 above average reported rents for 2000. Cropland rents in Wisconsin are relatively low compared to what is paid in adjacent states, reflecting a shorter growing season and resulting lower yields.

Stability in cropland rents is not surprising given that crop returns have been flat in recent years at near breakeven levels. Cropland cash rents are likely to stay at current levels barring any unexpected sharp increase in crop prices.

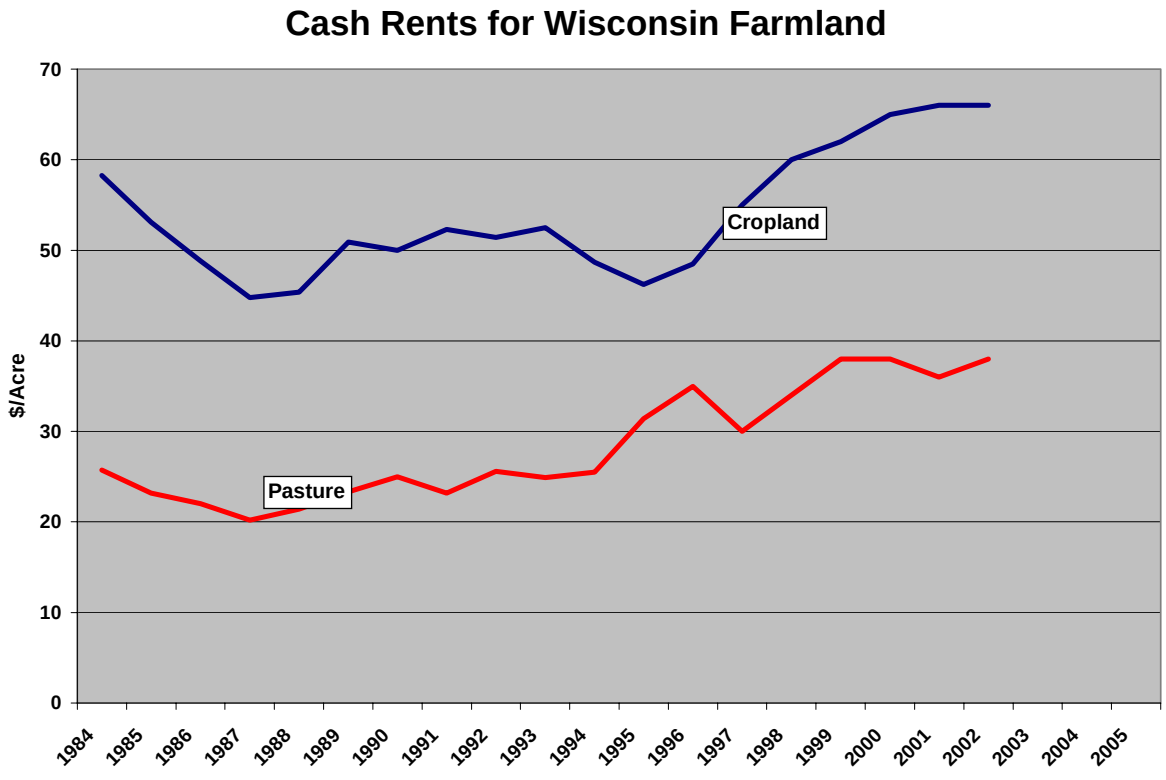
Pasture rents in Wisconsin were up $2 per acre to $38 in 2002. This is the same as the average rent paid in Wisconsin in 1999 and 2000. Pasture rents in Wisconsin are well above those in neighboring states, reflecting our larger dairy cow numbers.

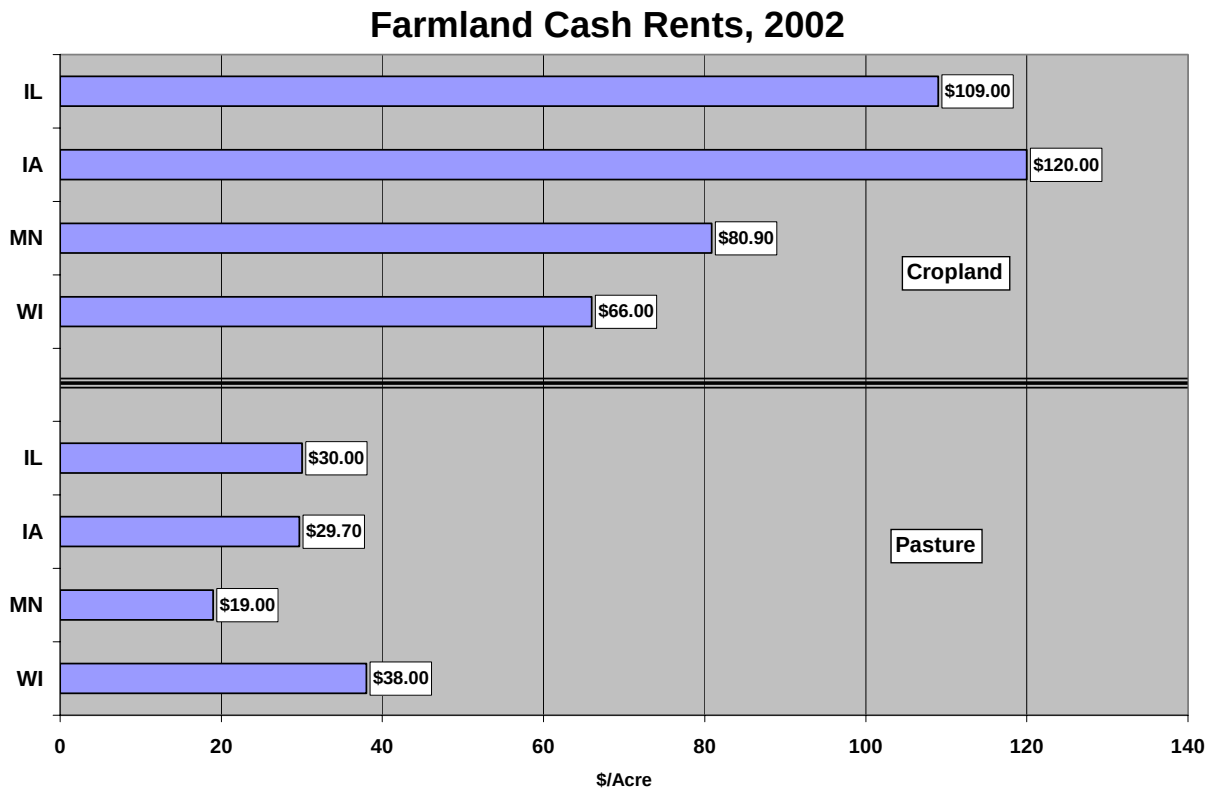
Given that dairy and beef returns are relatively low, demands for pasture land are not likely to be up in 2003. Accordingly, we see little upward pressures on pasture rents.

Farmland Values

The Wisconsin Agricultural Statistics Service estimates that average Wisconsin farm cropland values increased $200 per acre (10.5 percent) in 2002, to $2,100 per acre. This is less than the $300 per acre year-to-year gains shown in 2000 and 2001. Since 1998, the market value of Wisconsin cropland has increased 86 percent.

The robust growth in farmland values over the last few years is inconsistent with the relatively low returns to farming over the same period. The Wisconsin farmland market is clearly being buttressed by non-farm residential and recreational demand. Buyers are willing to pay prices for farmland that are well above the values reflected by current returns from farming. This entry of non-farmers into the Wisconsin farmland market has put consistent upward pressure on farm real estate values throughout the state. Farmland values increased at rates in excess of 10 percent per year everywhere except the north-central part of the state. Land appreciation was not restricted to heavily urbanized areas such as Milwaukee, Madison or the Fox River Valley.





Average Annual Rates of Growth (%) in Wisconsin Farm Land Values

District	*1987-1995*		*1996-2001*	
	Land Continuing in Farming	*Land Diverted from Farming*	*Land Continuing in Farming*	*Land Diverted from Farming*
North-West	1.82	2.58	13.75	13.07
North-Central	2.25	2.58	6.93	10.41
North-East	2.61	4.63	14.41	10.74
West-Central	4.13	5.01	11.52	21.11
Central	2.48	3.99	14.15	10.98
East-Central	3.22	6.99	13.39	20.28
South-West	3.43	6.74	12.26	10.05
South-Central	5.28	8.18	12.45	18.76
South-East	4.56	1.19	16.82	11.45

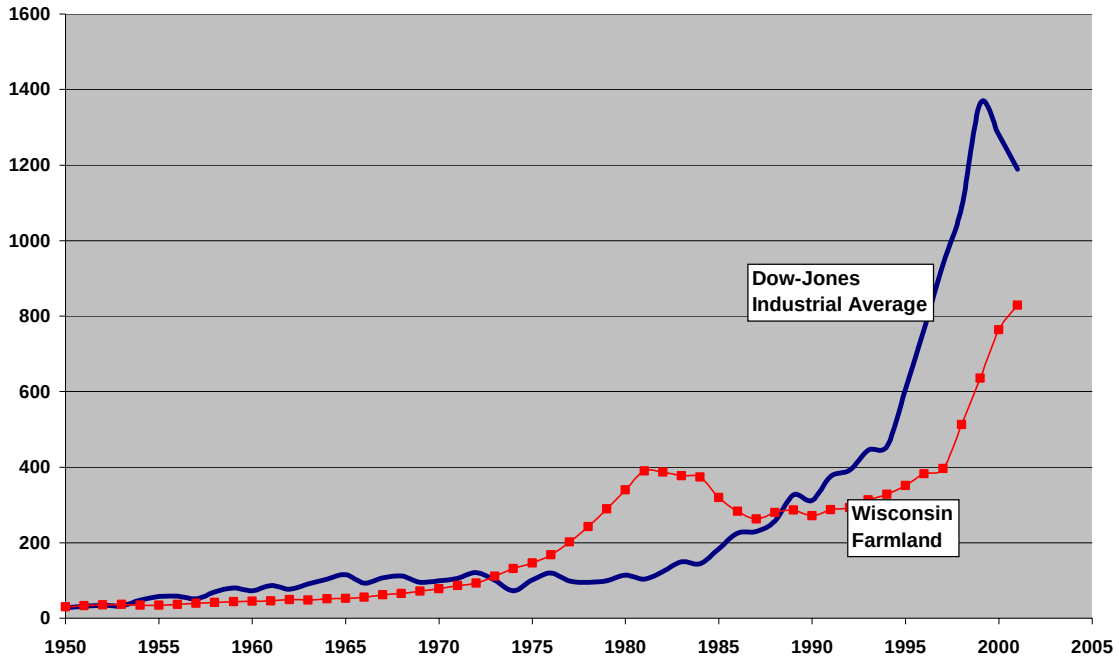
Source: Wisconsin Agricultural Statistics Service

Other Midwestern states are showing similar increases in farmland value. The November 2002 Federal Reserve Bank of Chicago's *Ag Letter* reported the following increases for the year ending October 1, 2002: Iowa –5 to 10 percent; Michigan – 8 percent; Northern Illinois – 3 to 5 percent; Northern Indiana – 4 to 7 percent; and Wisconsin – 6 to 8 percent

Over the long haul, Wisconsin farmland has yielded annual returns — i.e. capital gains — comparable to returns from stock market investments. Stock values grew at an average annual rate of about 4 percent per year from 1950 through 1979 and then at an average annual rate of 13.5 percent beginning in 1980. Wisconsin farmland values grew by an average of 4 percent per year from 1950 to 1973 and then skyrocketed at a rate of roughly 17 percent per year through the rest of the 1970s. Farm real estate values then fell by roughly 5 percent per year from 1980 to 1987. Beginning in 1988, farmland values stabilized and started climbing by about 9 percent per year.

The stock market's strong performance in recent years may explain why farmland values have grown despite low returns to farming. The "irrational exuberance" that fueled the stock market may have crept into the farmland market as well. This has serious implications for farmland values. It suggests that the farmland market could be headed for a correction much like the one that has haunting the stock market since 2000.

Value of Industrial Stocks and Wisconsin Farmland
(1970-1972 = 100)



Part III: Special Articles

The Status of Health Insurance Coverage for Wisconsin Dairy Farmers

Jeremy D. Foltz, Carol J. Roth, and Bradford L. Barham
Program on Agricultural Technology Studies (PATS)

"*We have gone without health insurance for 12 years because decent health insurance is just too costly. This is money that is hard to justify with all the bills and then living expenses. So, we take the risk of going without. That's one more worry on our shoulders, hoping that nothing serious happens to anyone in our family.*" –Wisconsin dairy farmer, 100-cow herd.

Wisconsin dairy farmers work in one of the most dangerous occupations in the United States. Thousands of them, along with their families, are at an even higher risk because they do not have adequate health insurance coverage. This creates problems not only for Wisconsin's farm families but also for the vitality of the dairy sector, which generates billions of dollars of farm and manufactured product sales and is the backbone of the state's agricultural sector.

What does the lack of adequate health insurance coverage mean for dairy farmers and their families? Many dairy farmers are forced to choose which family members will be insured and which ones will not, or whether to go without health insurance entirely. Current solutions in both the public sector (e.g. Badger Care) and private sector (e.g. co-ops, off-farm work or private pay insurance) do not effectively address this issue. Lack of adequate health insurance coverage may spur current dairy farmers to exit the business and discourage prospective farmers from getting started. Choosing any other occupation would likely improve their chances to secure better health insurance coverage for themselves and their families.

Health Insurance Coverage

A closer look at this problem presents an alarming picture. Results from a survey of a representative sample of dairy farms indicated that almost 20 percent of Wisconsin dairy farm families are completely uninsured.[2] About another 25 percent of Wisconsin dairy farm families have at least one uninsured family member. Four out of five Wisconsin dairy farm families have no preventive care coverage. Most of those with insurance have only major medical coverage with high deductibles. Wisconsin dairy farm families are far more likely to be uninsured, underinsured or lack preventative care

[2] In 2001, the Program on Agricultural Technology Studies (PATS) conducted a mail survey of 1,600 dairy farmers randomly chosen from the state's dairy producer list. Of the 1,600, 54 percent (869) returned useable data. Along most major indicators (e.g. size of farm, age of producer, etc.) available this sample is representative of the state's dairy producers.

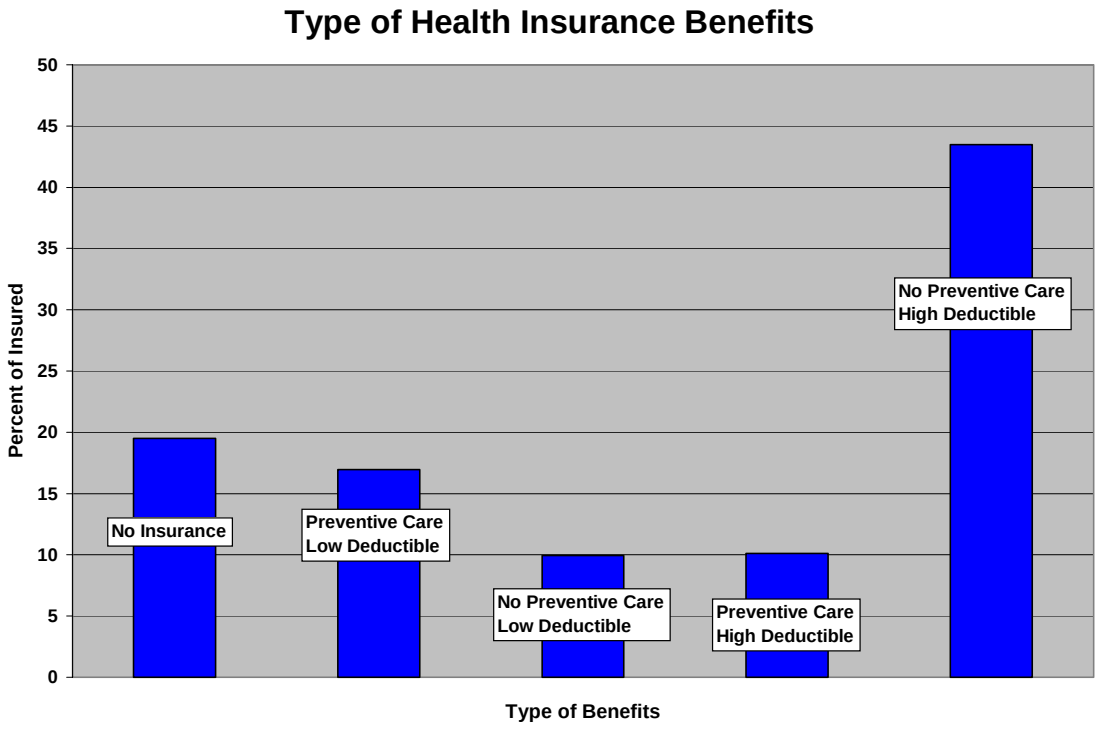
coverage than are non-farm households in the state. They are also more likely to lack such coverage than are families operating other types of farm enterprises.

The chart below shows in detail the types of health insurance coverage of dairy farm families, including those without coverage. Most dairy farmers who have health insurance have minimal coverage. The plurality of dairy farmers (43 percent) had only catastrophic coverage (a deductible greater than $500 and no preventive care). Only 17 percent had the type of coverage most Wisconsin residents would consider adequate: preventive care with a low deductible.

Farm spouses, because they are more likely to work off-farm, have higher rates of coverage than do primary farm operators. What is surprising is that children are less likely than their parents to have health insurance coverage. In addition, dairy farm families with children under 18 living at home were no more likely to have health insurance than those without children.

Sources of Health Insurance

The majority of dairy farm families purchase health insurance directly from an insurance agent, which is generally the most expensive way to buy it. About a quarter of dairy farmers get health insurance through off-farm jobs. Although in the past many cooperatives (e.g. milk processors) and farm organizations provided health insurance benefits to their members, most no longer do so. Only 6 percent of dairy farmers get their health insurance in this way. In addition, while Badger Care and other publicly provided insurance programs in Wisconsin have been some of the most successful in the nation, very few Wisconsin dairy farmers benefit from them.



Source of Health Insurance		
	Percent of Insured	***Percent of all Dairy Farmers***
Purchased directly from insurance agent	58	49
Benefit from off-farm employment	28	23
Purchased directly from coop or farm organization	6	5
Federal Program (Medicare, Medicaid, etc)	4	3
State Program (Badger Care, Risk Sharing Plan, etc.)	3	2
Other	1	1
No Insurance	n/a	17

Insurance by Farm Size

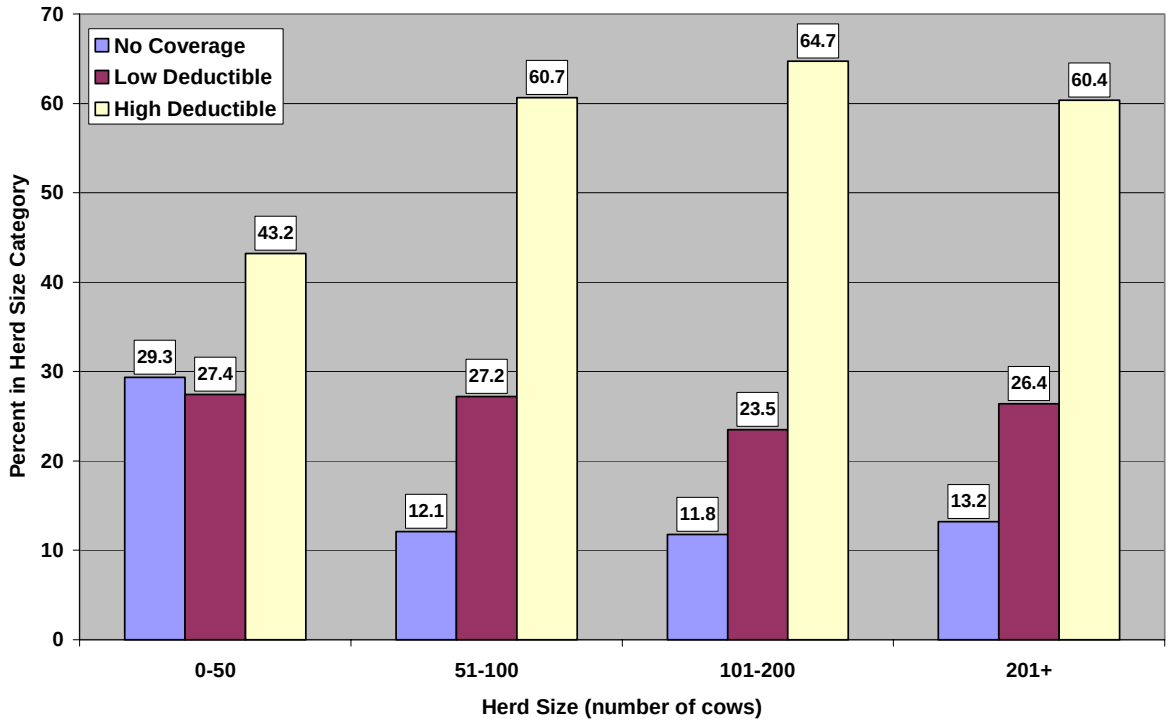
The dairy farm health insurance crisis is most acute for those who operate small farms, but the problem exists even for larger operations. Those who milk fewer than 50 cows are least likely to have coverage. Interestingly, types of coverage are about the same across the three largest herd-size categories. So are the rates of no coverage (12 percent). This suggests that while the lack of adequate health insurance is most serious for the smallest farms, the problem cuts across all sizes of dairy farms.

Health Insurance and Farm Structure

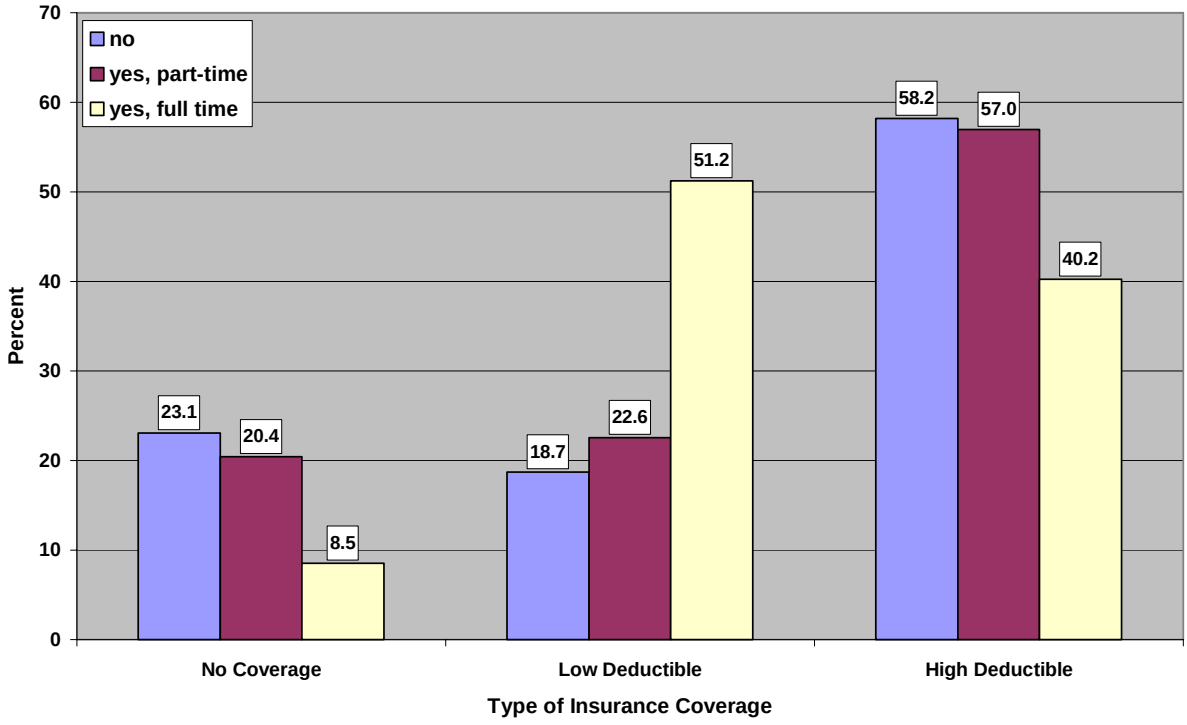
Problems with access to health insurance may have significant long-term effects on the overall health of the dairy industry. Problems finding affordable health insurance may dissuade potential dairy farmers from starting up and encourage current farmers to get out. While more than a quarter of those with insurance get it through off-farm work, this strategy has its limitations. It still usually provides coverage with a high deductible. In addition, when family members work off the farm, they have less time to contribute to the dairy enterprise. This puts a cap on the number of cows a family farm can reasonably handle and likely reduces the income it can generate from farming.

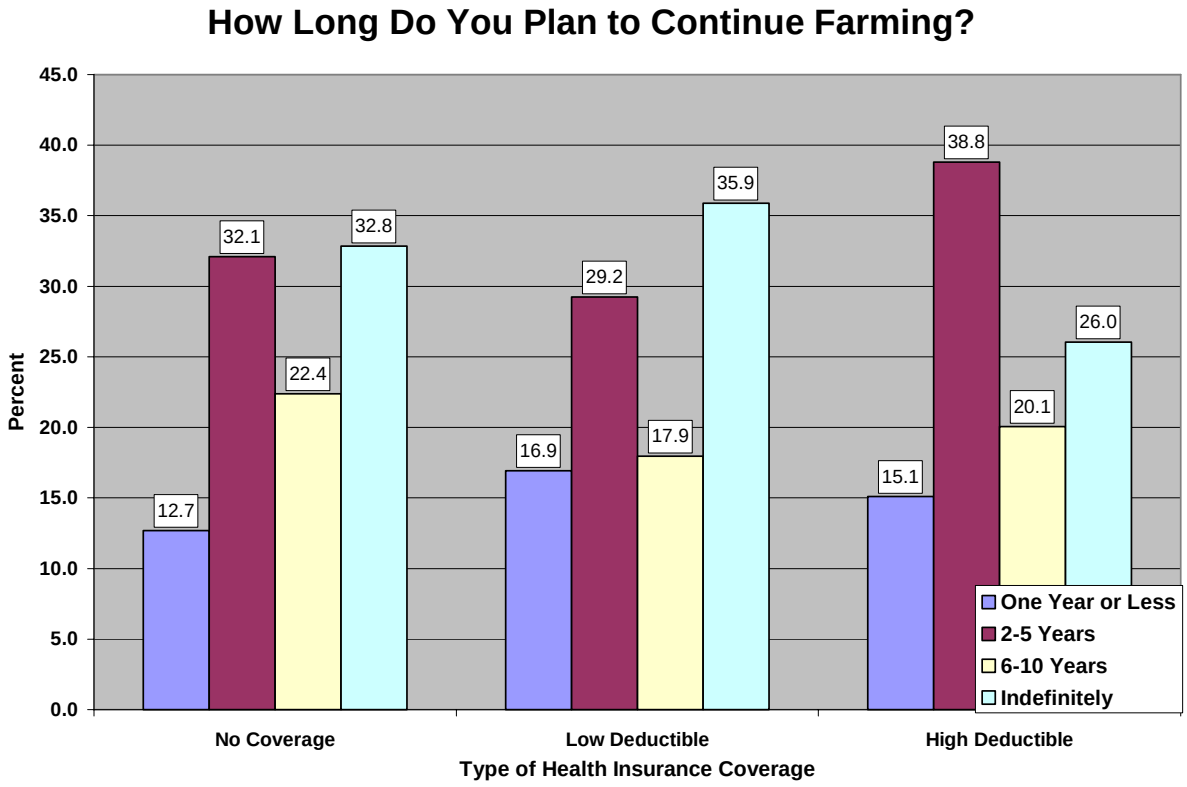
No distinct pattern is evident when looking at the relationship between types of health insurance coverage and the future plans of Wisconsin dairy farmers. Farmers with no coverage are as likely to exit the business as those with coverage that features a low deductible. Those with high deductibles were more likely to say that they would only be in the business for another 2 to 5 years than were farmers in the other categories. Although more refined research is warranted, for those currently operating dairy farms, the nature of their health insurance coverage is not directly related to their future plans. Health insurance is probably a more immediate need and directly related to day-to-day cash flow.

Health Insurance Coverage by Dairy Farm Size



Did your spouse work off-farm?





This finding is bolstered by other evidence from the dairy farm surveys suggesting that health insurance coverage is only a minor factor in predicting how satisfied farmers say they are with their quality of life.

Challenges in Seeking Solutions to the Health Insurance Crisis

Current programs to address the health insurance needs of uninsured or underinsured Wisconsin citizens have features that may limit the participation of dairy farmers and their families.

Badger Care

Less than 5 percent of the dairy farmers surveyed participated in Badger Care, a statewide program currently targeted at uninsured children. While Badger Care works for some families, there are several barriers that limit eligibility for many farm families. Depreciation on assets is treated as income, falsely inflating the incomes of farmers. Only families with children under 19 living in the household are eligible. And some rural physicians do not accept payment through this program. The Badger Care Program would need revision in order to adequately address dairy farm families' health insurance needs.

Insurance Pools

A number of proposals exist to encourage health insurance pooling, in which small business owners (from 2 to 50 employees) join a common insurance pool to spread out the risk. Participants negotiate

collectively with a health insurance provider for coverage terms at an affordable rate. Among the proposals in Wisconsin are the State's Private Employer Health Care Coverage Program (PEHCCP) and some local proposals for "purchasing alliances."

Two issues, however, are likely to limit the usefulness of insurance pools in providing health coverage for dairy farmers and their families.

Eligibility is one issue. State law requires that most of the proposed programs be for businesses with two or more employees. This excludes the many small dairy farms that would be classified as having a single employee (termed a *business of one*). The eligibility rules would need to be changed for insurance pooling to help the majority of uninsured dairy farm families.

Affordability is the other problem with insurance pools. Because farming is associated with high risks, insurance companies would charge high rates for a pool that included only farmers. For an insurance pooling system to be affordable for dairy farmers, it would need to include non-farming participants to spread the risk over a more diverse population.

Conclusion

The fact that a relatively small percentage of Wisconsin's total population lacks adequate health insurance masks critical problems for certain population groups, including Wisconsin's dairy farmers. Policy makers will be challenged to find resourceful ways to ensure that health insurance coverage is affordable, available and accessible for all Wisconsin citizens. There is no one-size-fits-all solution. Multiple strategies must be developed to allow quality health care to be provided for Wisconsin dairy farmers and others in rural areas.

When the lack health insurance enhances the likelihood that individuals will exit or not even enter dairy farming, the result could be an exodus of skilled labor and economic activity from rural areas. This affects the economic viability and quality of life not only in individual rural communities, but also throughout the agricultural sector and the state as a whole.

About the authors: Bradford Barham (608/265-3090) and Jeremy Foltz (608/262-6871) are Extension specialists and professor and assistant professor, respectively, in the Department of Agricultural and Applied Economics. Carol Roth (608/265-3463) is an outreach specialist with PATS

Use of Genetically Modified Crops in Wisconsin

Bradford L. Barham, Frederick H. Buttel, and Jeremy Foltz
Program on Agricultural Technology Studies

American farmers have embraced genetically modified organism (GMO) crops (or GMOs) with considerable enthusiasm since their commercial debut in the late 1990s. USDA estimates that in the spring 2002 planting season, nearly 75 percent of U.S. soybeans planted were herbicide-resistant (HR), and about 25 percent of U.S. corn was planted with *Bt* (insect-resistant) varieties.

Adoption in Wisconsin has been very similar. In a 2002 survey by the Program on Agricultural Technology Studies on 2001 crop choices, 76 percent of Wisconsin farmers reported using HR soybeans, 24 percent reported use of *Bt*-corn, and almost 20 percent reported use of HR corn.

Previous UW-Madison research compared the very rapid adoption of HR soybeans by Wisconsin grain farmers with the more moderate adoption of *Bt*-corn and HR corn. One major finding was that the adoption of *Bt*-corn hit a plateau in 1998, the third year it was available in the market. Since then, *Bt*-corn adoption has hovered around the 20 percent mark in Wisconsin. Another major finding was that farmers were much more likely to stick with HR soybeans than they were with *Bt*-corn, and that it was in part the relatively high rate of turnover in the use of *Bt*-corn that accounted for the plateau in adoption.

Underlying the high rate of turnover was a lower performance record for *Bt*-corn than HR soybeans. In particular, HR soybean adopters were more likely to report lower expenses and higher profits than were *Bt*-corn adopters, even though significant yield improvements were more common on *Bt*-corn than on HR soybeans. These differences between farmer adoption patterns and experiences with regard to *Bt*-corn and HR soybeans underscore a broader lesson that is emerging from the first round of agricultural biotechnologies: Products of biotechnology are very diverse in terms of their performance and importance.

The rest of this article looks briefly at the performance of *Bt*-corn as reported by Wisconsin farmers in 2002 and at their compliance with insect resistant management (IRM) practices that are part of the technology package that they agree to when they purchase the seeds. This spring we will elaborate on these findings in a report by UW-Madison and University of Minnesota researchers that provides a comparative study of GMO adoption and performance.

Performance of *Bt*-corn

In 2002, we surveyed farmers who used *Bt*-corn in 2001, asking them to compare its performance with traditional varieties. Three-quarters of respondents reported lower or much lower pest damage and accordingly higher or much higher yields. About two-thirds of

respondents reported higher or much higher expenses and about 60 percent reported higher or much higher profits. All of these indicators showed notable improvements over the same indicators reported by respondents to a 2001 survey regarding the 2000 crop year. For example, in the earlier survey, only 44 percent of farmers reported higher or much higher profits, and only 60 percent reported higher or much higher yields. These improvements in the performance indicators, along with a decline in the frequency of "disadoption" of GMO plantings, suggest that *Bt*-corn adoption rates are likely to hold firm or increase as Wisconsin farmers gain experience with the technology and learn when and where it's worth using.

An important performance indicator with respect to environmental outcomes is the reduction of insecticide use. In 2002, 31 percent of farmers reported much lower use of insecticides with the adoption of *Bt*-corn, and 13 percent reported lower use of insecticides. Only 2 percent reported higher use of insecticides. This finding is consistent with numerous on-farm studies that show a reduction in insecticide use for pests targeted by *Bt* but no decline in the use of insecticides for pests not affected by the toxin.

When asked the most important reason for using *Bt* corn, farmers reported increased corn yields first (47 percent), better insect control (22 percent), recommendation by dealer or consultant (11 percent), reduction of insecticide use (5 percent), and reduction of production costs (5 percent). These results match well with the performance outcomes, and underscore the prevailing view that *Bt*-corn is a yield-enhancing technology, especially in areas with a higher potential for European corn-borer infestations. For a variety of agronomic and environmental reasons, the European corn-borer has been less of a problem in Wisconsin than in western grain states. This probably explains why adoption rates have held steady at around 20 percent compared to higher rates in the west.

***Bt*-Corn Performance Compared To Traditional Varieties**

	Percent of respondents indicating that* Bt *corn was:				
	Much Lower	***Lower***	***No Different***	***Higher***	***Much Higher***
Yield	0.5	1.5	22.8	55.8	19.3
Expenses	2.1	6.7	24.7	58.2	8.2
Pest Damage	39.4	36.9	19.2	2.5	2.0
Profit	0.5	7.1	31.6	46.9	13.8
Insecticide Use	31.4	12.6	54.5	1.6	0.0
Labor	8.2	12.4	78.4	0.5	0.5

Compliance with Insect Resistance Management (IRM) Practices

There is a danger that insects may develop resistance to the *Bt* bacterium in *Bt* corn seed. This is the motivating concern behind the IRM practices that farmers are supposed to follow when adopting *Bt*-corn.

The degree to which this resistance evolves in the European corn- borer will influence the efficacy of *Bt*-insecticides used by non-GMO producers as well as the useful life of the current *Bt*-corn seed technologies. Therefore, as part of the contract signed for the purchase of seeds from vendors, farmers agree to comply with IRM requirements established by an intergovernmental agency group that regularly evaluates the efficacy and appropriateness of the rules. Those requirements include:

1. Plant at least 20 percent of their corn area to non-*Bt* corn in order to provide insects a refuge;

2. Plant refuge areas *within* a *Bt* field as a border, block, or strip;

3. Plant refuge areas *separate from* a *Bt*-field no further than one mile from the *Bt*-field;

4. Do not treat refuge areas with microbial *Bt* insecticides; and,

5. Use non-microbial *Bt* insecticides only at an economic threshold or upon expert recommendation.

Farmers were asked in the 2002 survey about their compliance with each of these practices (although the question didn't refer to the practices as "requirements").

Compliance with Individual IRM Requirements

	Percent of Respondents in Compliance
At least 20 percent non-*Bt* corn for refuge	90.7
When refuge acres within *Bt* field, refuge planted as border, block, or strip	80.6
When refuge acres separate from *Bt* field, refuge within ½ mile	83.0
No microbial *Bt* insecticides on refuge acres	90.5
Non-microbial *Bt* insecticides used only at economic threshold or at expert recommendation*	30.4

*Only 23 respondents reported using non-microbial *Bt* insecticides.

About 90 percent of farmers said they complied with the requirements to establish a 20 percent non-*Bt* refuge and not using microbial *Bt* insecticide on the refuge areas. About 80 percent of the respondents said they met the recommendations for the form or location of the refuge area. Only the last of the requirements — using non-microbial insecticides only at threshold levels — had low compliance, but only a small fraction of *Bt*-corn adopters actually reported using non-microbial insecticides on non-*Bt* corn acres.

Another way of looking at farmer compliance with IRM requirements is to identify the proportion of respondents with no violations, one violation or two or more violations. About 69 percent had no violations (were in full compliance with the IRM requirements), and 27 percent had only one violation. Only 4 percent were in violation of more than one IRM requirement. Overall, the compliance record of *Bt*-adopters in Wisconsin is high. That's especially true given that (1) relatively few Wisconsin farmers adopted *Bt*-corn and (2) for those who had only one violation, the violation had to do with where the refuge was located rather than not using a refuge in the first place.

When farmers were asked about their awareness of the IRM requirements, 18 percent reported that they did not know them, while 82 percent reported being aware of them. Interestingly, actual compliance with IRM requirements does not appear to be explained by this knowledge, as farmers in either category were equally likely to have no or one violation. Thus, other factors besides awareness of the requirements are likely to predict who is and is not in compliance with IRM requirements. These factors will be explored more fully in subsequent research, but certainly include on-farm constraints and possible coordination with neighbors planting choices.

Compliance with All IRM Requirements

Number of Violations	***Number of Respondents***	***Percent of Respondents***
None	144	68.9
One	57	27.3
Two or more	8	3.8
Totals	209	100.0

Conclusion

Patterns of agricultural biotechnology use in Wisconsin are very similar to those in the rest of the nation. In the case of GMOs, adoption of HR soybeans has become almost universal in about half a decade, while adoption rates of *Bt*-corn and HR corn have been much more moderate. Wisconsin farmers adopting these technologies have been generally satisfied with their performance. In the case of *Bt*-corn, that satisfaction is growing, perhaps as farmers learn more about when and where it is most appropriate to use.

Compliance among Wisconsin *Bt*-corn adopters with required insect resistance management practices is high but not universal. Whether non-compliance by a minority of producers is a problem worthy of social concern is an empirical question. The answer depends in part on the decisions made by neighboring farmers in their crop choices and their compliance in the case of GMO use. However, the fact that Wisconsin has a relatively low adoption rate of *Bt*-corn means that non-compliance is less likely to be a problem than it might be in other parts of the country because of the high potential for insect refuges on farms where non-GMO crops are being cultivated. Further research on this issue in areas where continuous corn cultivation dominates the landscape (e.g. southern Wisconsin) could help to identify whether further attention should be paid to issues of compliance.

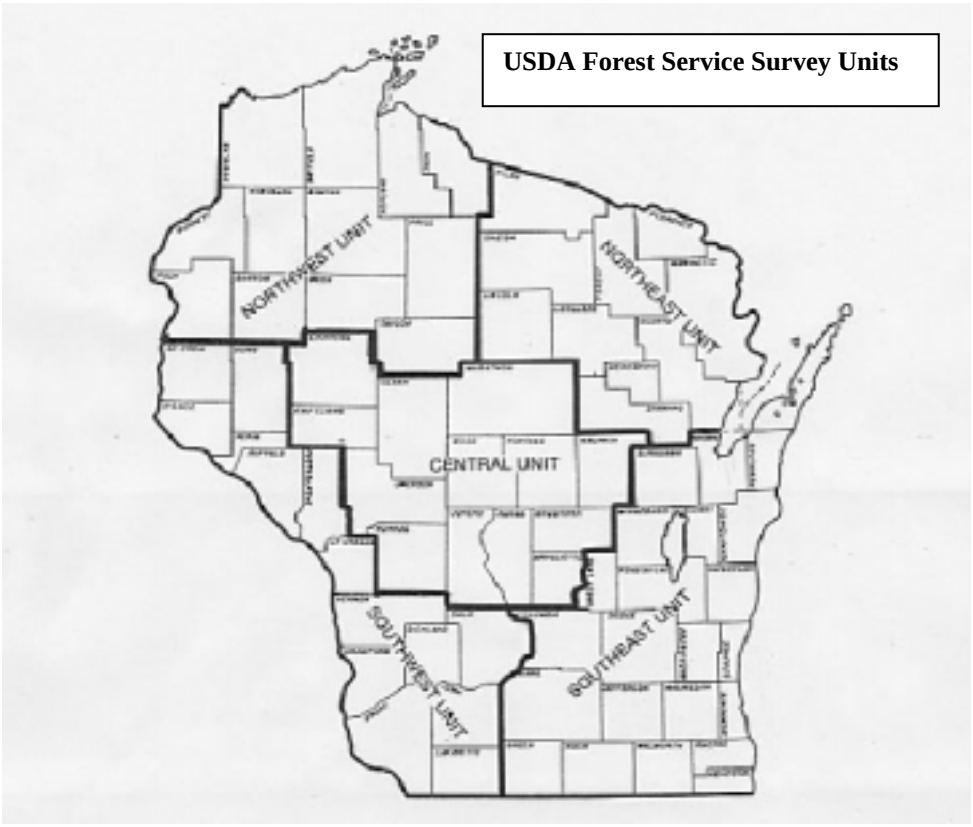
About the authors: Bradford Barham (608/265-3090) and Jeremy Foltz (608/262-6871) are Extension specialists and professor and assistant professor, respectively, in the Department of Agricultural and Applied Economics. Frederick Buttel (608/262-7156) is a professor of Rural Sociology.

Woodlands of Opportunities and Challenges

Mark Rickenbach, Scott Bowe, Jeffrey Steir and Kimberly Zeuli

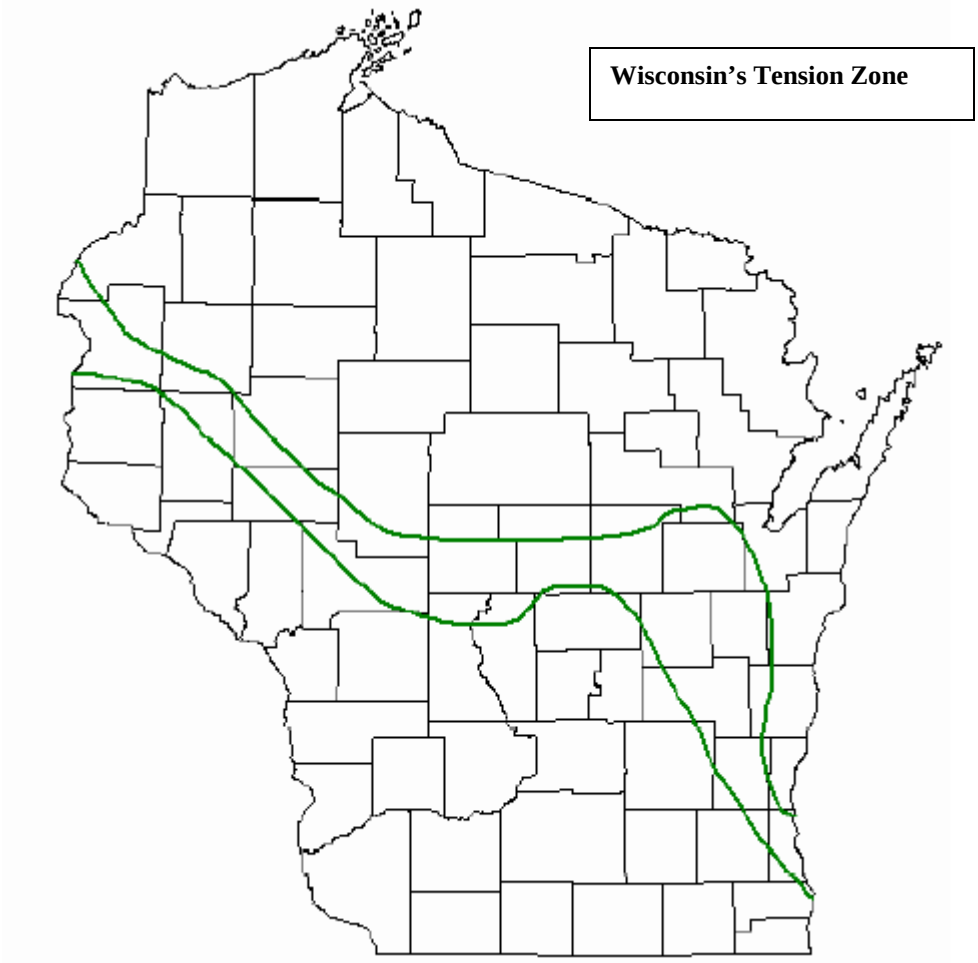
Forests and woodlands are an important component of rural life in Wisconsin. In many places they are isolated woodlots on the fringe of agriculture and suburbia. In the north, they are the dominant landscape feature. Whether isolated or dominant, woodlands and forests are rooted in Wisconsin's history, its culture and its economic and ecological future. In what follows, we will provide an overview of Wisconsin's forests and woodlands and the industry that depends on these resources for raw materials.

While woodlands and forests are found throughout the state, we will focus on those to the south. The USDA Forest Service divides the state into five geographic regions for purposes of conducting periodic forest inventories and reporting forest statistics. The most heavily forested regions are the two northern survey units which span most of the upper half of Wisconsin. The Central, Southwest and Southeast survey units are less heavily forested, have higher proportions of agricultural land and contain three-quarters of all farm forests. We will also describe some emerging and long-standing opportunities to improve forest management as well as the challenges that continue to hinder expansion in the south.



Wisconsin's Forests

Most of Wisconsin is either farm or forest. Wisconsin covers a total land area of almost 35 million acres. Roughly equal shares of the state are covered with agricultural land and forests — about 16 million acres each. The state straddles two major ecological regions: (1) the northern mixed forest which is similar to that in the Upper Peninsula of Michigan and parts of northeastern Minnesota; and (2) the southern broadleaf forest which more closely resembles the eastern hardwood forests of Indiana and Ohio. Forests in the north are adapted to a cooler climate and lighter, often sandy soils. Those in the south are favored by a more moderate climate and soils that are generally higher in nutrients than those in the north. The demarcation between these two regions is more of a band than a line. Called the "tension zone" by Curtis (1959), vegetation within the band is characterized by a rich woody flora that includes species common to both the northern and southern forest regions.



Wisconsin's forests are predominantly (84 percent) in hardwood species such as oak-hickory, elm-ash-cottonwood, maple-birch, and aspen-birch. The percentage of forestland area in hardwoods does not differ greatly between the north and the south. Nevertheless, there are significant regional differences. The northern half of the state contains 75 percent of the total area in softwood forests such as pine and spruce-fir, 80 percent of the aspen-birch type, and two-thirds of the sugar maple forests. The region south of the tension zone is better-suited to oak-hickory, although sugar maple and basswood forests do occur there as well.

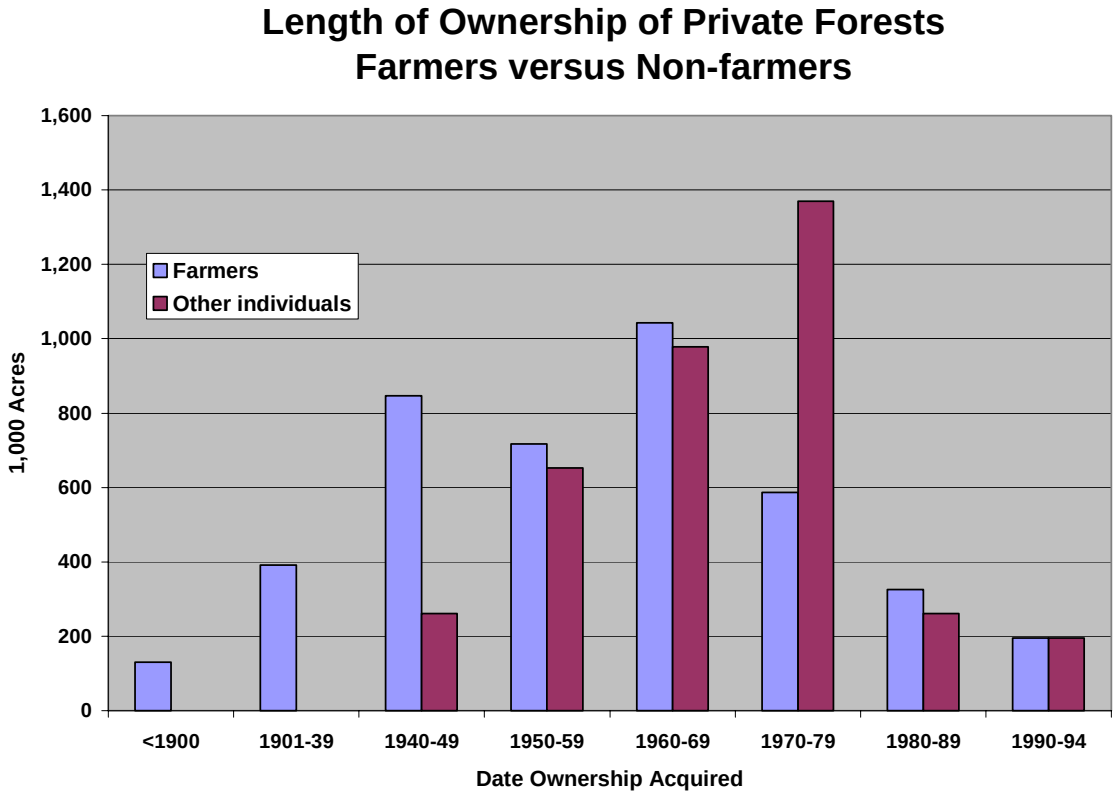
Total forestland increased from 14.5 million acres in 1968 to 16 million acres in 1997. Sixty percent of that increase occurred in the southern three survey units, where marginal farmland reverted to forest. There have also been changes in the type of forest that occurs there. In 1968, 38 percent of the forestland was oak-hickory and 15 percent was maple-basswood; by 1997 the oak-hickory type had declined only slightly to 36 percent, but the maple-basswood type had increased to 29 percent. Maple-basswood forests tend to develop on moist, nutrient-rich sites that do not experience fire or other major disturbance. Over time, and in the absence of active forest management, many of the remaining oak-hickory forests on the richer sites in the south will probably be replaced eventually by maple-basswood forests as well.

Ownership

Sixty-eight percent of all Wisconsin forestland is privately owned, and 55 percent is in the hands of approximately 250,000 individuals and families who own no timber-processing facilities This group is commonly referred to as *non-industrial private forestland* (NIPF) owners. Fifty years ago, most of these were farmers (in 1956, farmers held 41 percent of all forestland). But the numbers of farms and farmers has been declining steadily since then, and there has been a corresponding decline in the share of farm forestland. Today, the best estimates show that about 75,000 farmers own a little over 3 million acres of forestland. Average farm size increased as the number of farmers declined, but just the opposite has been true for forestland. The number of NIPF owners has been growing over time and average size of forest owned has been decreasing. Today, 70 percent of all holdings are less than 200 acres, and half of all ownerships are less than 100 acres (Leatherberry, 2001).

Farmers are different from other NIPF owners in at least two important ways. First, farmers tend to have longer tenure of ownership. This gives them greater opportunity to shape the development of their forests over time through their management decisions.

Second, farmers typically seek to earn a living from the land. Other NIPF owners hold land for myriad reasons, and in most cases economics does not rank very high. In the most recent statewide landowner survey, land value increase and timber production were



cited by only 5 percent of owners as a primary reason for ownership. Recreation and aesthetics enjoyment are the most commonly cited reasons for ownership (Leatherberry 2001). The survey broadly defines recreation such that it can include anything from hunting and bird watching to snowmobiling and ATV use.

The varied perspectives and needs of owners challenge efforts to foster sustainable forest management. The share of forest owners who actively engage in management planning by owners — long used as a barometer of thoughtful stewardship — remains at around 20 percent. In addition, the wide array of expectations for the land makes delivery of management and policy-related education information difficult. For example, what might appeal to an owner interested exclusively in better deer habitat may be irrelevant to one interested only in managing red pine for profit. Yet landowners, with highly diverse interests, levels of knowledge and experience continue to harvest and provide more than half of the timber used by the state's forest products industry (Schmidt 1998).

Forest Products Markets

Wisconsin's agricultural and tourism industries receive a great deal of media attention. This is understandable, since we lead the nation in cheese production, and our ample natural resource and vacation attractions offer a variety of tourism opportunities. Often

overlooked is the fact that Wisconsin is also the nation's number-one paper-producing state, ranking first in fine papers and sanitary paper products. The state also ranks first in millwork and high-quality children's furniture and third in hardwood veneers.

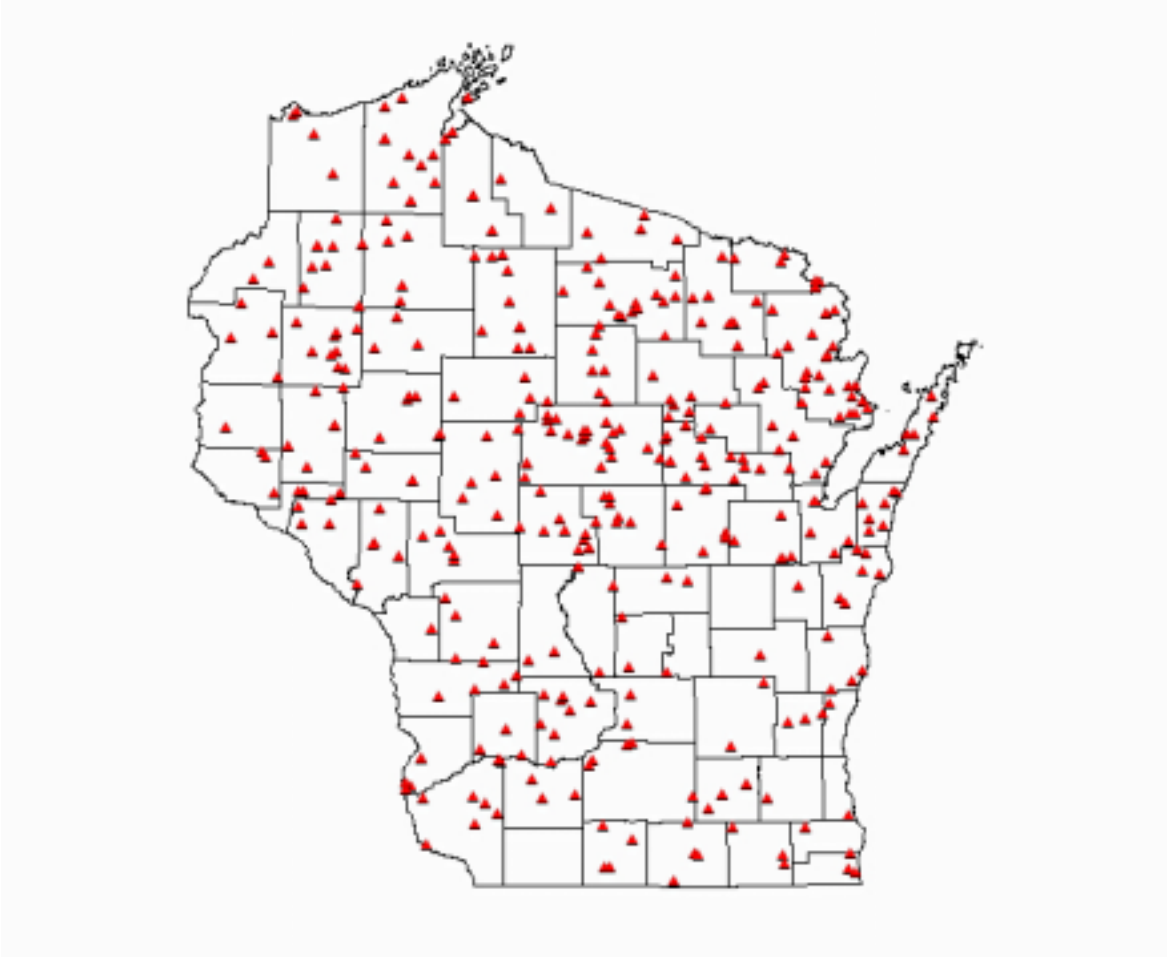
Where is Wisconsin's Forest Products Industry?

Wisconsin's forest products industry is broken down into two groups: *primary forest products producers* and *secondary forest products producers*.

Primary forest products producers are companies that obtain their raw materials directly from the forest. Sawmills and paper mills are primary forest products producers since they utilize trees as their raw material.

Wisconsin has about 400 primary forest products companies. This does not include the hundreds of small hobby mills found across the state. Though more concentrated in the heavily forested counties of the north, a number of mills are found in the southern counties.

Primary Forest Products Companies

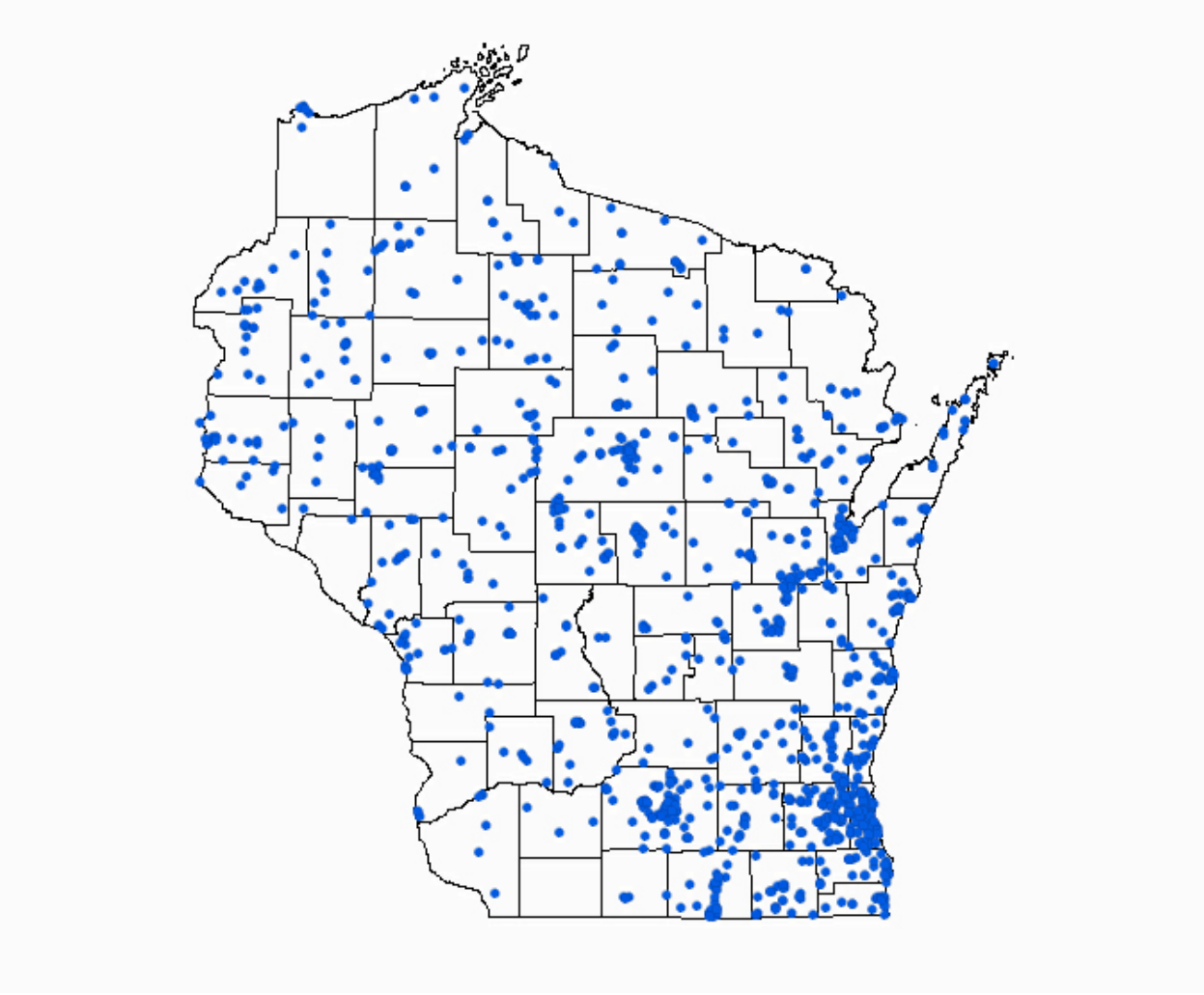


Source: Prichard 2002

Secondary forest products producers are firms that obtain their raw materials from the primary forest products producers. A furniture manufacturer that obtains its lumber from a sawmill fits into this group. Wisconsin has about 1,200 secondary forest products companies involved in solid wood manufacturing. This does not include the thousands of related companies in the paper-converting and printing industries.

Given the abundant forest resource in northern Wisconsin, one might expect the secondary forest products producers to be concentrated there. In fact, much of the secondary forest products industry is concentrated around urban areas in the southern half of the state.

Secondary Forest Products Companies



Source: Prichard 2002

Types of Forest Products Produced in Wisconsin

A variety of products are produced from Wisconsin's forest resource. The three major raw material categories include sawlogs, veneer logs and pulpwood. Sawlogs are processed into a variety of products including lumber, railroad ties and pallet cants. Lumber is further processed into value-added products such as molding, wood flooring, furniture and cabinetry. Much of the low-grade lumber is consumed by the pallet and container industry.

Wisconsin's Forest Products Categories

Product	*Production (% of Total)*
Pulpwood-based Products	65.3
Lumber	29.9
Other Wood Products	2.5
Plywood and Veneer	2.3

Source: Adapted from Hackett *et al*. 2002

Paper and composite wood products also play a large role in the forest products industry and benefit from Wisconsin's large pulpwood resource. High-quality writing paper, liner board for corrugated cardboard and medical gown fabric are a few examples of paper products manufactured in the state. Pulpwood-based production utilizes the largest raw material volume of the state's forest products industry. The large paper industry comprises most of this segment. Lumber follows, representing 30 percent of the state's raw material use.

Several composite wood product mills add to Wisconsin's forest products industry. A composite wood product refers to reconstituted wood such as a particle board panel, where wood is ground into small pieces, mixed with adhesives and formed into panels.

Forest Products Industry Economic Impact

Recent analysis shows that Wisconsin's forest product industry is significant and growing. During the period from 1994 to 1997, the industry's output increased from $14.9 billion to $17 billion (Marcoullier and Mace 1999).

The actual annual output is $10 billion higher if all of the indirect and induced economic benefits are added (Mace 2002). This represents 14.7 percent of Wisconsin's manufacturing industry output. Across the state, the forest products industry accounts for nearly 100,000 jobs, which represent more than $4.1 billion in wages and benefits.

Forest Product Economic Impact by Forest Service Region, Wisconsin, 1997

Forest Service Region	*Industry Output ($Mil.)*	*Number Employed*	*Compensation ($Mil.)*
Northwest	1,056	8,891	255
Northeast	1,667	10,650	372
Central	3,843	23,225	930
Southwest	627	5,859	154
Southeast	9,826	50,486	2,418
Total All Regions	**17,019**	**99,111**	**4,130**

Source: Mace 2002

The pulp and paper industry is responsible for 73 percent of the state's forest products output value. In fact, the pulp and paper industry is responsible for more than 50 percent of the industry output in all of the Forest Service regions except the Northwest and Southwest.

Pulp and Paper Industry Impact

Forest Service Unit	*Pulp and Paper Industry Output (% of Total)*
Northwest	27.6
Northeast	56.0
Central	66.9
Southwest	7.7
Southeast	86.6
Total, All Units	72.6

Source: Mace 2002

This regional distribution of economic impact is not surprising given the concentration of the pulp and paper industry in central and eastern Wisconsin. Southwestern Wisconsin is the only region in the state lacking a paper production facility. Forest managers in that region have a difficult time selling the pulpwood material from forest operations. Transporting pulpwood from the southwestern portion of the state to pulp and paper mills in the north is cost-prohibitive. As a result, much of the pulpwood raw material remains in the woods.

Opportunities and Challenges for Expanding Forest Management and Markets

Forests and the multitude of benefits they provide owners and society are an important resource for Wisconsin. Recent and continuing trends offer both opportunities and challenges for expanding both forest management and markets. Forest landowner cooperatives and other more traditional landowner organizations offer opportunities to foster active forest management by NIPF owners — particularly in southern Wisconsin. Federal and state agencies offer a variety of cost-share programs to help landowners meet some of their land management objectives. And forestland taxation offers both opportunities and challenges to the management and conservation of forests.

Cooperatives

Long a familiar business model for Wisconsin agriculture, forestry cooperatives have emerged as a tantalizing tool for improving both forest management and marketing. Several of these modern forest landowner cooperatives have embraced value-added processing. In particular, they seek to identify market opportunity for low-value, small-diameter trees, which are common byproducts of improving forest productivity and quality.

Forest landowner cooperatives are not a new idea. Europe and Japan have a long history of business cooperatives centered on private landowners. However, forestry cooperatives in the U.S. have fared poorly since they first formed in the 1910s. At their height, they numbered 68 (Smith and Sisock 2002). Just prior to their reemergence in 1998, only two forestry cooperatives were actively operating in the U.S. Based on preliminary data collected this year, there are 15–20 forest landowner cooperatives with several other groups considering some type of similar organization. Much of this activity is centered in the Upper Midwest region with seven cooperatives in Wisconsin. These forest landowner cooperatives, like those in the past, look to provide members with services otherwise unavailable, access to markets and increased income. Unlike prior efforts, these cooperatives also foster sustainable forestry through forest certification (Fletcher, Rickenbach and Hansen 2002), land protection and ecological restoration.

The oldest of these newer cooperatives, started in 1996, is the Sustainable Woods Cooperative (SWC) based in Lone Rock, Wis. The goals of SWC are to provide members with (1) forest management services and resources, (2) processing and marketing services, (3) education about sustainable forestry and (4) education to customers on sustainable forestry. With around 150 landowner-members, SWC combines forest certification with small-scale value-added processing and a variety of educational programs to meet these goals. With a forest base of roughly 15,000 acres, SWC primarily produces hardwood flooring, panels and sawn lumber. In the past, substantial support has come through grants from federal, state and foundation partners, but the SWC hopes to see profitability by 2003.

By standard definition, cooperatives are business organizations that are owned and controlled by those who "use" the business: the members. In the case of forestry cooperatives this means NIPF owners. Owners, who supply the cooperative with timber or who use the cooperative's services, provide the equity and govern the co-op. Under current laws, only members can provide equity capital in cooperatives (though debt capital can be acquired through conventional means such as loans and mortgages). Another defining characteristic of a cooperative is that net profits are distributed to members based on their level of use, rather than on how much they have invested in the enterprise. For instance, the relative share of timber a member markets through the cooperative determines that member's share of the cooperative's annual net profits.

Although it is most common in agriculture, the cooperative model is used extensively for a wide variety of businesses. Some challenges inherent in this model cut across sectors. Cooperatives that require substantial capital contributions to cover either start-up costs (e.g., a multi-thousand dollar sawmill) or growth (e.g., to finance mergers and acquisitions) face one of the most fundamental constraints of the business model: the ability to raise equity capital. Unlike limited liability companies (LLCs) and other types of corporations, cooperatives cannot seek capital from non-member sources. In sectors such as forestry, this means seeking large amounts of capital from a pool that is fairly limited in both breadth (numbers) and depth (liquid resources). Further, most cooperatives are limited in the returns they can offer their investors (in Wisconsin, dividends can't exceed of 8 percent annually). No other business faces this type of legally imposed ceiling on equity returns.

In the case of forestry, there is an additional investment constraint created by the fact that members who sell timber to the co-op might actually only "use" the co-op (assuming they do not take advantage of its services) once or twice in their lifetime. The motivation for members to invest in a cooperative that will serve others for most of its existence is quite low. This problem is compounded by the fact that members are also being promised very limited returns. Despite these constraints, forest landowner cooperatives in Wisconsin have taken hold. Indeed, Wisconsin is seen as a leader in forestry cooperatives in the United States.

Other Landowner Organizations

Cooperatives are not the only landowner-led organizations that seek to assist their fellow owners in the management of their land. The oldest and largest of these organizations is the Wisconsin Woodland Owners Association, which began in 1979 and currently comprises 2,200 members. WWOA was established to accomplish four goals: 1) to advance the interests of woodland owners and the cause of forestry; 2) to develop public appreciation for the value of Wisconsin's woodlands and their importance in the economy and overall welfare of the state; 3) to foster and encourage wise use and management of Wisconsin's woodlands for timber production, wildlife habitat and recreation; and 4) to educate those interested in managing Wisconsin's woodlands.

WWOA's primary approach to achieving its goals is education through landowner conferences, a magazine and other means. WWOA operates under the assumption that individual owners with good information will make good decisions about forest management and stewardship.

At a local level, a new landowner organization model has developed. Wisconsin Family Forests (WFF) seeks to organize landowners at the township level to actively engage their forests and their neighbors. Like WWOA, WFF believes that many owners don't realize the benefits of forest ownership because they lack information and assistance, or because they aren't aware of their forests' full potential. WFF consists of township alliances of local forest

landowners who share what they know and pool efforts to obtain professional assistance and additional knowledge. The local alliances focus on sustainable forestry practices, neighbors working together, strengthening community connections, and improving the management of local natural resources. Currently there are three Alliances in Wisconsin located in Waushara, Door and Wood counties.

Foresters and policymakers have often described the state's 260,000 landowners as a "faceless they." Landowner organizations provide entry points for learning about landowners and identifying appropriate policy tools. These organizations allow for greater segmentation of landowners, making their members less faceless.

Unfortunately, current landowner organizations appear to be quite homogeneous. Recent research suggests that WWOA members and SWC members in southwestern Wisconsin are more similar than different. WWOA members favor more traditional forestry practices while SWC tend toward newer ideas (e.g., restoration ecology). However, on topics such as timber harvesting and invasive species control, there is little difference (Rickenbach, Guries, and Schmoldt 2002). Hence, most landowner organizations, while segmenting portions of the landowner audience, still do little to appeal to the vast majority of NIPF owners.

Cost-Share programs

Cost-share programs provide landowners with financial assistance to carry out specific, approved practices. Generally, cost-share agreement create a contractual obligation whereby the landowner agrees to complete specific activities and ensure that they are maintained for a specified contract period in exchange for both financial and technical assistance.

Since 2001, federal cost-share programs for forestry have changed dramatically. Both the Forest Incentive Program (FIP) and Stewardship Incentive Program (SIP) have been replaced by a new program, the Forest Land Enhancement Program (FLEP). Under FLEP, each state is responsible for determining how to spend their allocation among three major areas: education, technical assistance and cost-share.

Wisconsin, with a huge backlog of cost-share requests from both federal and state programs, has opted to place all its FLEP dollars into cost-share. The state's priority areas for cost-share under FLEP include stewardship planning, tree planting, improvement thinning, invasive species control and more. Another significant change between FLEP and the previous FIP and SIP is that the oversight for the cost-share payments has moved from USDA NRCS to WDNR.

The state also continues to provide cost-share opportunities to NIPF owners through the Wisconsin Forest Landowner Grant Program (WFLGP). This program was developed by the state to assist landowner with a variety of forestry-related practices. For example, a landowner can gain assistance in developing a forest management plan for their property or cover a portion of the cost of timber stand improvement. WFLGP provides

$1 million annually, but demand currently outstrips available funds. Approved activities are funded on a first come, first serve basis. Almost every year, there is a backlog of proposals awaiting funds. Given their similarity, the arrival of FLEP should do much to reduce this backlog of WFLGP practices and offer expanded assistance.

FLEP and WFLGP are cost-share programs that focus directly on forestry-related efforts. Yet, two other programs are worth noting. The Conservation Reserve Program (CRP) encourages farmers to plant long-term, resource-conserving covers, including trees, to improve soil, water and wildlife resources. For landowners interested in aiding wildlife, the Wildlife Habitat Improvement Program may be the right choice. It cost-shares many of the same type of projects as the other cost-share program, but all the practices funded must benefit wildlife and wildlife habitat**.**

Taxation of Forestland

The Wisconsin Department of Revenue reports that full implementation of use-value assessment for agricultural lands substantially reduced both assessed values and taxes on farmland, but the equalized values of the "Forest" and non-productive "Swamp and Waste" property rose by 15–18 percent last year. The escalating costs of owning these classes of property drove landowners to search for relief. Many turned to the Managed Forest Law (MFL) program. The DNR reports that they expect almost 4,000 applications for entry into the MFL program in 2003, triple the number of applications they processed in 1990.

But farmers argue that the MFL program is not really appropriate for farm forests and certainly not for "swamp and waste" land. The Wisconsin Farm Bureau Federation made extending use-value assessment to farm forestland and non-productive wetlands one of its top legislative issues last year.

The concept of extending such a program to forestland is not at all unusual. About half of the states now assess forestland based on its use value, sometimes also called productivity value. But Wisconsin has a 75-year history with the timber yield tax, so changing to use-value assessment of forestland or creating a special program for farm forests has less appeal.

Wisconsin long ago recognized that forestland doesn't produce an annual income like agricultural land, and that forests are a valuable resource for the citizens of the state. In 1927, the Forest Crop Law (FCL) was enacted as an alternative to the real property tax on forestland. It was the first law in the nation to defer a portion of property taxes until income was realized through harvest of the timber crop. This program still exists but has been closed to new entries since 1986 when the MFL program became available. Today some 27,000 landowners have enrolled a total of 2.7 million acres of forestland in the FCL and MFL programs.

Cost-Share Programs Directed Toward or Applicable to NIPF Owners

Program	*Administration*	*Cost-share and caps*	*Typical Practices*
Wisconsin Forest Landowner Grant Program (WFLGP)	State program administered by the DNR	Up to 65 percent cost-share, maximum payment of $10,000 per year	Plan preparation. Tree planting. Timber Stand Improvement. Soil and water protection. Fencing. Wildlife improvements. Fisheries improvements. Buffer establishment. Threatened species. Historic and aesthetic enhancements.
Conservation Reserve Program (CRP)	Federal program administered by Farm Services Administration	Annual payments based on bid submitted by landowner. 50 percent cost-share for cover establishment.	Plan preparation. Tree planting. Wildlife planting. Grass establishment. Erosion control structures. Stream buffers.
Forest Landowner Enhancement Program (FLEP)	Federal program administered by the DNR	Up to 65 percent cost-share, with a maximum of $10,000 per year	Tree Planting. Timber stand improvement. Water quality improvement. Forest health. Exclusion fencing. Fish and wildlife habitat. Wildfire and other risk reduction. Restoration from wildfire and other events. Invasive species control.
Wildlife Habitat Incentives Program (WHIP)	Federal program administered by NRCS	75 percent cost-share with a maximum of $10,000 per year for 5- or 10-year contract period.	Wildlife planting. Grass establishment. Wildlife practices. Fisheries practices. Wetlands restoration. Farmstead shelterbelts. Grazing systems .
Environmental Quality Incentives Program (EQIP)	Federal program administered by NRCS	Up to 75 percent cost-share with a maximum of $10,000 per year for 5 or 10 year contract period.	Tree planting. Ecosystem management. Agricultural waste management. Stream buffers.

Adapted from a fact sheet maintained by Linda Depaul, WDNR, Division of Forestry

Both forestland tax programs require that owners have a DNR-approved forest management plan. Landowners must define their objectives for the land and then develop a set of management recommendations for management of timber, watershed protection, recreation, wildlife, endangered resources and aesthetics. Timber harvesting on tax law lands must have prior DNR approval, and a yield tax is assessed on the income from the harvest. In addition, landowners must pay a fixed tax per acre annually, currently $0.74 per acre if the land is open to the public and $1.74 per acre if it is not. No more than 80 acres may be closed per township. Landowners must make a commitment for either 25 or 50 years. With that commitment, the landowner receives an average of 80 percent property tax savings annually, according to a Legislative Audit in 1994. Forest conservation may be an added benefit. Research indicates that MFL can aid in land protection by requiring 25- or 50-year contract periods and penalties for early withdrawal (Heasley 2002).

While MFL is popular, two things hamper its full implementation. First, the DNR staff is overwhelmed by requests for approval of forest management plans. Some private sector foresters write plans using DNR guidelines, but DNR must still approve them.

Second, even for land currently enrolled, many mandatory practices have yet to be completed by enrollees. The DNR reports that 13,984 mandatory practices covering 216,415 acres ranging from tree planting to thinning and regeneration cuts have yet to be completed or accounted for. This is partly due to DNR understaffing. However, many enrollees see the MFL as a tax-relief program and are not particularly motivated to follow through on the forest management.

Conclusions

Whether for timber, wildlife, aesthetics or other values, forests contribute much to the economic diversity and social fabric of Wisconsin. Society has recognized this through a myriad of programs that seek to encourage good stewardship. Private organizations unite landowners to learn and manage. Private consultants and the forest products industry provide advice and services. The state creates cost-share, tax incentives and educational programs to foster management. There is overwhelming demand for DNR resources and assistance. All these efforts are done in the hope of maintaining forests and their multi-faceted contributions to society.

For the north, with its continuous cover of forests and forest product and wood products firms, this importance is evident in the log trucks that travel county roads and the sawmills, and pulp mills that dot the landscape. In the south, woodlands and forests are usually an afterthought. Yet, even in this agricultural landscape, trees matter. They provide recreation and income for farmers and other landowners. They may also be a haven for those escaping Madison, Milwaukee and the Twin Cities. The south is also the source of innovative thinking about forest management on small parcels.

We'll probably never think first about forests and forestry when we think about rural southern Wisconsin. But if we overlook them, we'll miss a fundamental element of the landscape, resource base and culture. Sound stewardship can improve the land, the financial well-being of the owners and the diversity of local economies. With continued nurturing and recognition, woodlands and forests can maintain and grow in their contribution to the state.

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