

Organic Agriculture in Wisconsin **2007 Status Report**



Organic Dairy Production

Prepared by:

UW-Madison Center for Integrated Agricultural Systems

Wisconsin Department of Agriculture, Trade and Consumer Protection

UW-Madison Center for Dairy Profitability

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The **Wisconsin Department of Agriculture, Trade and Consumer Protection** (DATCP) works to make Wisconsin a world leader in agriculture, food safety and consumer protection. DATCP is responsible for food safety, animal and plant health, protecting water and soil, and monitoring fair and safe business practices. The DATCP Organic Agriculture Program is housed in the Division of Agricultural Development and provides individual technical assistance and consulting to organic farmers and those wishing to begin farming organically, as well as to businesses processing organic products. For more information, visit datcp.state.wi.us or call 608-224-5120.

The **Center for Dairy Profitability** (CDP) at UW-Madison develops, coordinates and conducts interdisciplinary educational and applied research programs emphasizing business management, human resource management, production systems, finance and marketing systems that enhance dairy profitability. For more information, visit www.cdp.wisc.edu or call 608-263-5665.

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Foreword

Agriculture is the cornerstone of our state economy. It is part of who we are as a state, and generates \$51 billion annually for our economy.

Governor Doyle has made it a priority to grow Wisconsin agriculture and position our state to take advantage of growing consumer demand for organically produced food. Organic production contributes to the diversity of Wisconsin agriculture and benefits the environment, the economy and the consumer.

By the year 2025, at least 13 percent of the food products in the average U.S. household's pantry and refrigerator will be organic, according to a forecast by the Organic Trade Association.

Organic Agriculture in Wisconsin: 2007 Status Report provides a snapshot of Wisconsin's organic industry in 2007, as well as information on issues that will affect the future of our thriving organic dairy farms and businesses.

We are pleased to note that, according to the U.S. Department of Agriculture, organic farming in Wisconsin has grown by more than 90 percent in the last five years. In the last year alone, Wisconsin's entire organic industry—from processors to businesses to farms—has risen by 17 percent. This is unprecedented growth, and a great surge for our state economy.

Wisconsin ranks first nationally in organic dairy operations and organically raised livestock.

According to the National Organic Program, Wisconsin has 785 organic farms across the state—ranking second nationally. Wisconsin is also in the top five states for organic corn, soybeans, oats, barley, rye and hay production, and in the top ten for organically grown vegetables and flowers.

Farmer-owned cooperatives, world-class research, an educational system committed to sharing both discovery and best practices, and dedicated men and women who earn their livelihood from the land have all played a major role in this surge in organic agriculture.

We want to thank the Center for Integrated Agricultural Systems; the Gaylord Nelson Institute for Environmental Studies; and the Program on Agricultural Technology Studies at the University of Wisconsin-Madison for their substantial work to help grow this industry, and our state economy.

Sincerely,

Rod Nilsestuen
Secretary
Wisconsin Department of Agriculture,
Trade and Consumer Protection

Molly Jahn
Dean and Director
College of Agricultural and Life Sciences,
University of Wisconsin - Madison

Statement by the Wisconsin Organic Advisory Council

Wisconsin is home to a diverse and thriving agricultural community that runs the gamut from small family farms to large food processors, all of which add to the overall economy, character and quality of life of our state. Organic agriculture is a strong contributor to Wisconsin's food industry and has deep roots here, with our state second in the nation in numbers of organic farms and taking the lead in organic dairy cattle, livestock (excluding poultry), and herb and greenhouse acreage. Wisconsin consumers and farmers have embraced the philosophy, as well as the environmental and economic benefits, of organic production. Organic food is now available in just about every food venue you might find, from five star restaurants to farmers' markets and mainstream supermarkets. Organic is no longer only the food choice of anti-establishment types—it has matured to the point that it is synonymous with the highest quality food possible. It also is a symbol of a commitment to the ideals of protection of natural resources, wholesome food choices, preservation of family farms and an awakening re-emphasis on land stewardship.

Inside these pages you will find the story of the continued rapid growth of organic agriculture in Wisconsin. In the 1990s, grassroots farmer organizations laid the foundation for the expansion of organic agriculture in our state. University of Wisconsin-Madison research stations are conducting projects that both validate organic methods as a viable alternative and test innovative systems to further enhance and improve organic production methods. University of Wisconsin-Extension agents are hosting organic field days, workshops and networks to help both experienced and new organic farmers manage successful organic farms of all types. Organic farms and processors can be found in almost every one of Wisconsin's counties.

In 2006, Wisconsin Secretary of Agriculture Rod Nilsestuen appointed a permanent Organic Advisory Council to the Wisconsin Department of Agriculture, Trade and Consumer Protection see Appendix A on page 16). This 12-member council consists of stakeholders in the organic community, including farmers, processors, researchers, educators and consumers. This council facilitates interaction between state agencies and the organic community as well as providing timely comment on issues of concern to those engaged in organics. Educating consumers about organics, aiding farmers in transitioning to organic production and improving existing organic farms, and enhancing agricultural infrastructure serving organics are all goals of this council. Meeting dates and locations are posted on this website: www.organic.wisc.edu. All are welcome to attend.

On behalf of the thousands of organic consumers and farmers here in Wisconsin, we present *Organic Agriculture in Wisconsin: 2007 Status Report*. Join us in celebrating the success of organic agriculture in our great state.

Harriet Behar
Midwest Organic and Sustainable
Education Service
Organic Advisory Council Member

Jerry McGeorge
Organic Valley
Organic Advisory Council Member

Executive summary

Wisconsin is well positioned to reap the benefits sown by our organic farmers, processors and other businesses. With continued support for and investment in organics, Wisconsin will remain a leader in organic agriculture.

Growth of the national organic industry is booming. Sales have grown 20 percent per year for the past 15 years. Wisconsin farmers have contributed to this growth and are in a strong position to profit from this trend.

Wisconsin is a top-ranked state in organic agriculture. In 2005, the most recent year for which national data is available, only California had more certified organic farms than Wisconsin. For six years (2000-2005), Wisconsin has consistently ranked near the top of the nation for total number of certified organic farms. In 2007, a survey of organic certification organizations found that there were approximately 900 certified organic farms in the state.

Our state leads the nation in organic dairy production. More than a quarter of the nation's 87,000 organic dairy cows live in Wisconsin. Total organic milk production for the state is about 45 million gallons, or 391 million pounds, per year.

Wisconsin is also the top-ranked state in organic livestock production, and organic herb and greenhouse acreage. We are among the top three states in acres planted to organic corn, hay and silage, and number of organic beef cows.

The number of certified organic processors in Wisconsin increased 30 percent from 2005 to 2006. Add to that the seed, input and equipment businesses that support the organic industry and you have 201 companies operating in the state.

Wisconsin's organic farms and farmers are diverse. Some have hundreds of acres or animals. Others are small operations, selling at local farmers' markets or roadside stands. But they have several things in common: they share a strong desire to maintain high organic standards and, for those efforts, receive a price premium in the marketplace. In a survey by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), 70 percent of organic dairy farmers said that protecting integrity of the organic standards is the most important issue facing organic agriculture.

In addition to being the top organic dairy state, Wisconsin is also a leading grazing dairy state. Nearly a quarter of Wisconsin's dairy farms use managed grazing—they rely on pasture as the main source of forage for their cows. Our climate and grasses give Wisconsin a competitive edge for grazing. Using grazing on organic dairy farms can enhance profitability when efficiently managed.

Although USDA organic dairy standards have minimal grazing requirements, some organic milk buyers, including Wisconsin's own Organic Valley, have stricter standards requiring grazing of dairy cows. Organic Valley requires that farmers use managed grazing because of its perceived benefits for the environment, animal welfare and human health.

On average, Wisconsin's experienced organic and grazing dairy farmers are making money. A study by the UW-Madison Center for Dairy Profitability found that, on average, organic dairy farms retained 21 percent of their business earnings, once the bills had been paid. Grazing farms retained even more, at 26 percent. Confinement farms retained 14 percent of the farm's total income, but on average they retained more total dollars per farm because they had more cows.

On average, Wisconsin's organic dairies appear to be financially competitive with those in other states. Net returns on organic dairy farms in Wisconsin and Minnesota are similar. And—largely due to higher feed costs in New England—organic farms in the northeastern United States are, on average, not competitive with any type of Wisconsin dairy farm, despite higher organic milk prices in the northeast.

Wisconsin's public sector actively supports organic agriculture. In the winter of 2006, Governor Doyle appointed members of the Wisconsin Organic Advisory Council, which is developing recommendations for strengthening Wisconsin's organic industry. This council includes organic farmers and business representatives, as well as representatives from state and federal agencies and the University of Wisconsin. Earlier in 2006, DATCP hired an organic agriculture specialist (Laura Paine) to lead its Organic Agriculture Program. At the same time, UW-Madison hired a scientist (Erin Silva) to coordinate organic agriculture research and education.



Organic production in Wisconsin

How many organic farms?

We estimate that, in late 2007, there were approximately 900 certified organic farms in Wisconsin. In November 2007, we surveyed five agencies that certify most organic farms in the state (for specific agencies, see the inside front cover). These agencies reported that in 2007 they certified 928 organic Wisconsin farms. This represents a 45 percent increase from our 2005 survey of four certification agencies.

In 2005, the National Organic Program (NOP) listed 700 certified organic farms in Wisconsin. In 2006, there were approximately 785 Wisconsin farms on the NOP list, representing an increase of 15 percent in the number of certified organic farms. Figure 1 shows estimates for the number of organic farms in Wisconsin from 2001 to 2007. Although these numbers were gathered from various sources and do not agree, there is no doubt that the number of certified organic farms in our state is increasing.

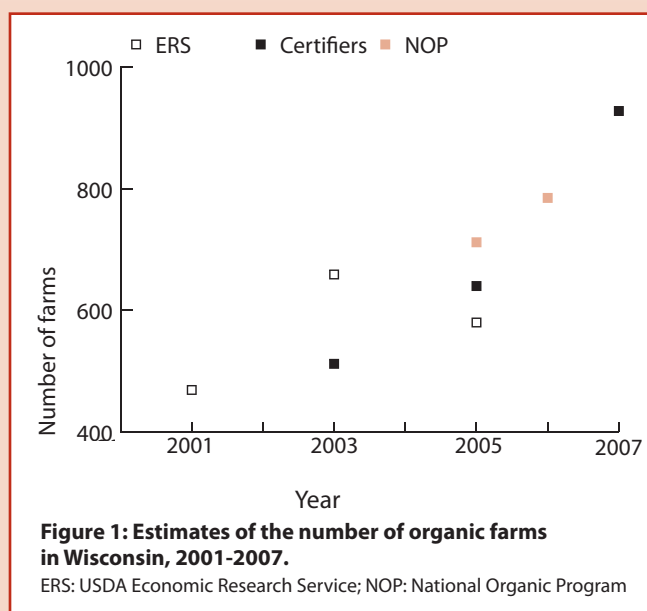
Southwestern Wisconsin remains the hub of organic production in the state. Vernon County, where Organic Valley is located, has the most certified farms (109). Northeastern counties have the fewest

Where do these numbers come from?

Organic farms are such a small proportion of the total farming population that, until recently, little data was collected on them. That is slowly changing. The Census of Agriculture, conducted every five years, is one of our best sources of data on all types of farming. We look forward to the results of the 2007 Census and are working with the Wisconsin Agricultural Statistics Service to ensure that organic farmers are included. For this report, we used numbers from several different sources, including:

The USDA Economic Research Service: The ERS provides detailed estimates of organic acreage and livestock numbers across the country, but their sampling methods can generate misleading numbers. The ERS surveys a random sample of farms in each state and then estimates total numbers of organic farms, livestock and acres based on the number of organic farms within the sample. Because organic farms comprise such a small percentage of the total, a slight difference in sample numbers can result in dramatically varied estimates from year to year. We drew from 2005 ERS data for this report.

The National Organic Program: The NOP provided us with lists of all certified operations in Wisconsin in



2006. These lists included farms, processors, distributors and other businesses. The NOP figures are our most accurate, as they are actual counts of certified farms. For this report, we only used data on certified organic farms and removed duplicate listings.

Survey of Wisconsin certifying agencies: Five major organic certification agencies provided CIAS with the numbers and locations of the Wisconsin farms they certified in 2007. While this is our most current data, we were unable to check for duplication between lists.

organic farms. Figure 2 shows the distribution of Wisconsin certified organic farms in 2006. In 2007, Midwest Organic Services Association (MOSA) certified a few farms in Oneida, Lincoln, Forest and Menominee counties.

How does Wisconsin compare?

Since 2002, Wisconsin has ranked second in the nation for total number of certified organic farms. California leads with nearly 23 percent of certified organic farms. Despite its number-two ranking, Wisconsin has only 6.8 percent of the certified farms in the nation. (Fig. 3).

Wisconsin leads the nation in organic dairy production with 22 percent of the nation’s dairy cows (Figure 4, page 3). Because milk cows account for 67 percent of the organic livestock in the United States (excluding poultry),

Wisconsin is also the top-ranked state in organic livestock production. Our state is the second-highest producer of organic hay and silage.

Wisconsin is the top state in organic herb, nursery and greenhouse production and is home to 77 percent of the acres planted to organic greenhouse and nursery crops, nursery trees and plant starts. (This includes all types of greenhouse production.) Wisconsin ranks third in the nation for acres planted to organic corn and fourth for acres planted to organic soybeans and dry beans.

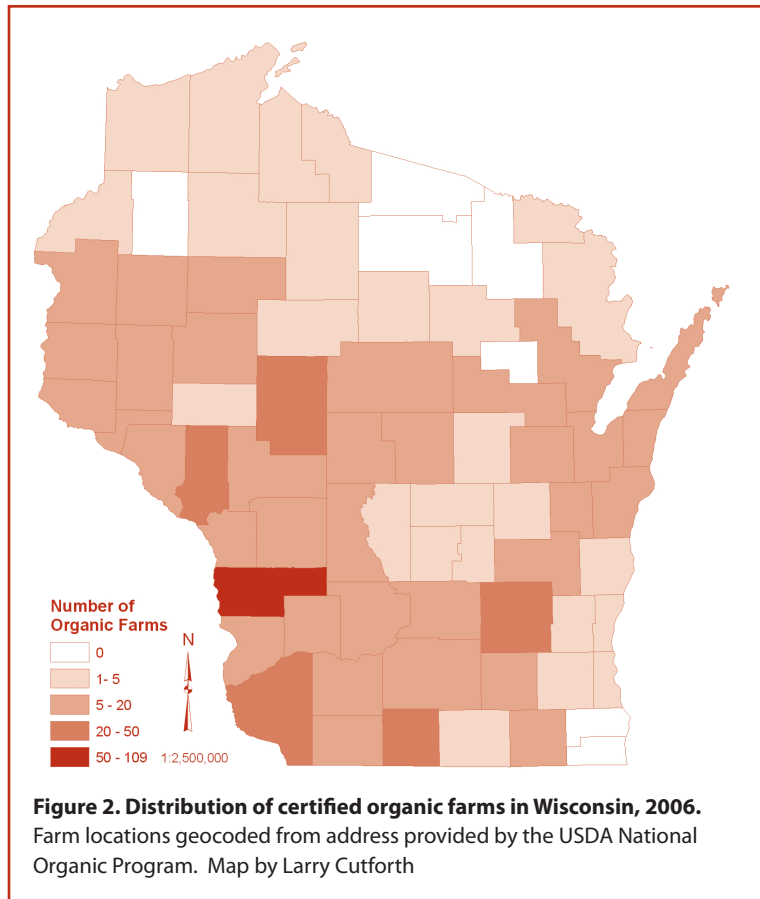


Figure 2. Distribution of certified organic farms in Wisconsin, 2006. Farm locations geocoded from address provided by the USDA National Organic Program. Map by Larry Cutforth

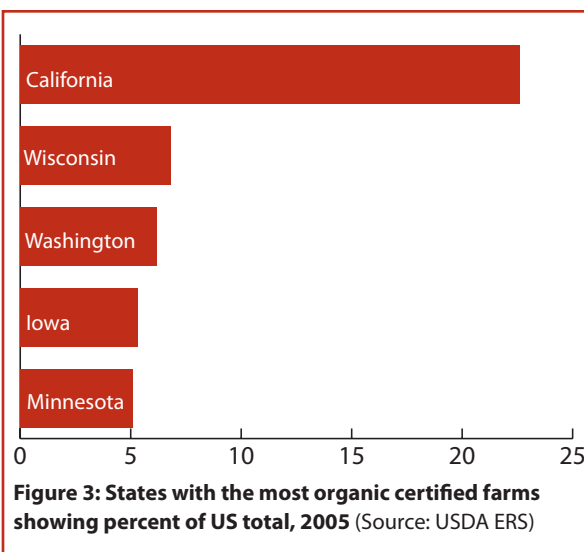
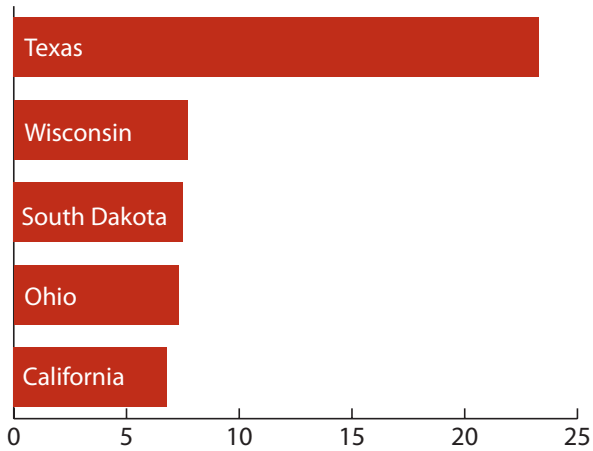


Figure 3: States with the most organic certified farms showing percent of US total, 2005 (Source: USDA ERS)

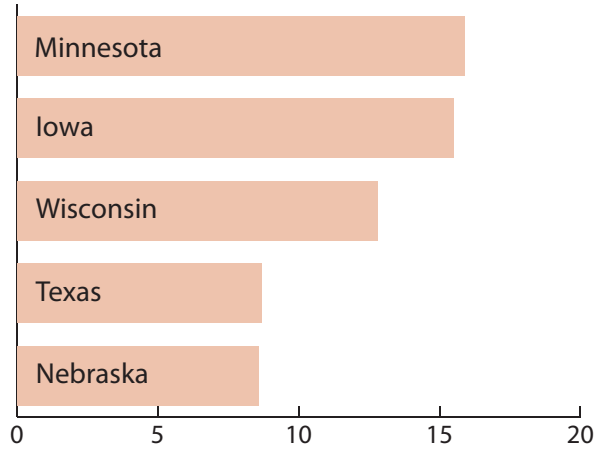
Wisconsin is a major producer of conventional processing vegetables, and we rank tenth in organic vegetable production. While Wisconsin farmers harvested about 200,000 acres of processing vegetables in 2005,¹ the ERS estimated that only 348 acres were planted in organic mixed/other vegetables that year, with only 3 acres of organic carrots. However, Wisconsin is home to a significant number of small, diversified organic vegetable operations. Focusing on farms under five acres, Wisconsin ranks third in the number of acres in organic mixed vegetables and fifth for “other” organic vegetables, including ginger, blue corn, popcorn, shallots, and other specialty crops.

¹ USDA National Agricultural Statistics Service: http://www.nass.usda.gov/Statistics_by_State/Wisconsin/index.asp#.html

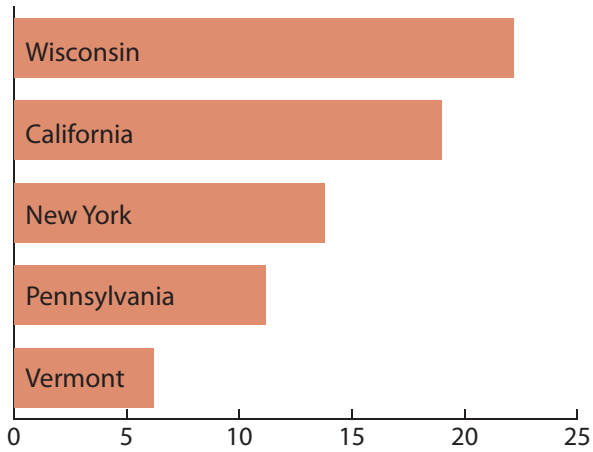
Top five states in number of organic beef cows (showing percent of US total)



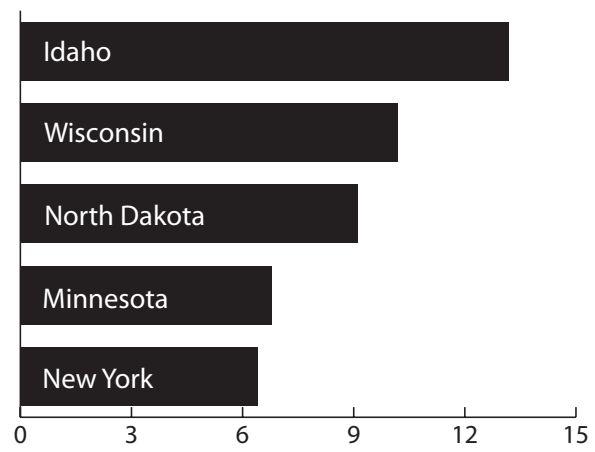
Top five states for organic corn acreage (showing percent of US total)



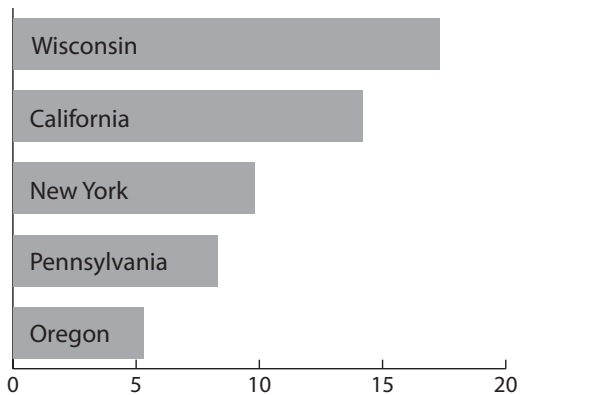
Top five states in number of organic dairy cows (showing percent of US total)



Top five states for organic hay and silage acreage (showing percent of US total)



Top five states in number of total organic livestock not including poultry (showing percent of US total)



Top five states for organic herb and greenhouse acreage (showing percent of US total)

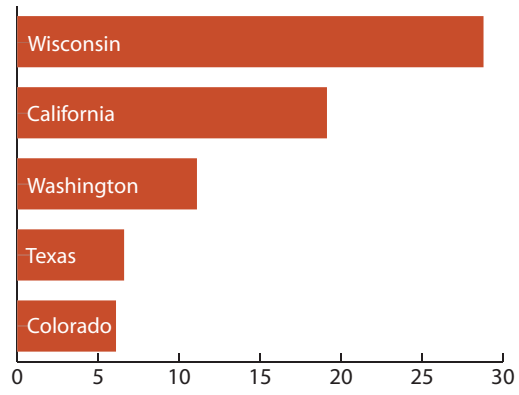


Figure 4: Wisconsin's national rankings for primary organic crops and livestock, 2005 (Source: USDA Economic Research Service)

Organic dairy farming and grazing: Profitable pastures and premium prices

National sales of organic dairy products have grown at more than 22 percent per year for the last five years. Wisconsin is clearly well-positioned to maintain the lead in this booming industry.

There's no disputing Wisconsin's dominance in organic dairying. More than a quarter of the 87,000 organic dairy cows in the United States live on the rolling pastures of Wisconsin. Total organic milk production for the state is about 45 million gallons, or 391 million pounds, per year.²

Wisconsin is also a grazing state. Nearly a quarter of Wisconsin's dairy farms use managed grazing—they rely on pasture as the main source of forage for their cows. USDA organic dairy production standards have minimal grazing requirements, but some organic milk buyers have more stringent requirements for grazing dairy cows. They require that farmers use managed grazing because of its benefits for the environment, animal welfare and human health (see “Grass is Greener,” page 11).³ Wisconsin has a natural advantage in grazing due to our climate, cool season grasses and abundant water.

Wisconsin's experienced organic and grazing dairy farmers are making money. Research at the UW-Madison Center for Dairy Profitability showed that, on average, organic dairy farms in the study retained 21 percent of their business earnings once the bills had been paid. The grazing farms retained even more, at 26 percent. Confinement farms fared poorest, retaining 14 percent of the farm's total income. The confinement farms averaged about twice as many cows as the grazing and organic herds. Therefore they retained, on average, more total dollars per farm (see page 10).

Wisconsin's organic dairies also appear to be financially competitive with those in other states. Net returns on organic dairies in Wisconsin and Minnesota are similar. And on average—largely due to higher feed costs in New England—organic dairy farms in the northeast are not competitive with any type of Wisconsin dairy farm, despite higher organic milk prices in the Northeast (see page 12).

Businesses thrive when profits are healthy, and the Wisconsin dairy industry is no exception. Organic production and managed grazing are economically, environmentally and socially sound strategies for enhancing profits on Wisconsin's dairy farms. Capitalizing on our leadership in both organic dairy production and managed grazing will help us strengthen our position as America's Dairyland. The data behind these conclusions are described below.

Picturing organic dairies in Wisconsin

Wisconsin ranked number one in organic dairy farming across the nation in 2005, with the most organic dairy farms and cows.⁴ What does organic dairy farming look like in the organic dairy state?⁵

In 2006, Laura Paine, organic agriculture specialist with DATCP, conducted a survey of organic farmers receiving USDA Organic Certification Cost-Share funding.

²USDA National Organic Program, 2005; USDA Economic Research Service, 2005; Barham, Brad, Caroline Brock and Jeremy Foltz. 2006. *Organic Dairy Farms in Wisconsin: Prosperous, Modern and Expansive*. PATS Research Report #16, Program on Agricultural Technology Studies, College of Agricultural and Life Sciences, University of Wisconsin-Madison.

³Clancy, Kate. 2006. *Greener Pastures: How grass-fed beef and milk contribute to healthy eating*. Union of Concerned Scientists.

⁴USDA Economic Research Service, 2005. Table 5: US certified organic livestock, 2005, by state. <http://www.ers.usda.gov/Data/Organic/index.htm#tables>

⁵Maine has the highest percentage of organic dairy farms of any state in the United States. See page 12.

”There’s a broad diversity in organic dairy farms across the state,” Paine said. “From modern, large farms to small family-size operations, organic dairy farming is very adaptable to different sizes.”

The survey was sent to 427 farmers, with a near 20 percent response rate. Thirty of the farmers who responded were organic dairy farmers.



Organic dairy herds in the state averaged 91 cows, with a median of 56 cows, and ranged from 400 to 16 cows. Some of the farms raised additional livestock and crops such as vegetables, beef, hogs and poultry.

The average amount of organic cropland reported among dairy farms was 337 acres. For the organic dairy farmers raising crops, the most common rotation involved two crops, primarily alfalfa and corn. Some farms reported rotations of four crops, including alfalfa, corn, oats, soybeans and wheat; while a smaller number reported no crops except pasture, or hay and pasture.

In comparison, a 2005 survey by the UW-Madison Program on Agricultural Technology Studies (PATS) found that organic dairy herds averaged 65 cows, with a median of 47 cows. They farmed an average of 307 acres. As the PATS survey was sent to more farmers than the Paine survey, the numbers may paint a better picture of organic dairy farming in our state. PATS received 185 responses, which represents a 45 percent response rate.⁶

Pasture requirement is a major national issue in organic dairying. The National Organic Standards require that dairy animals have “access to pasture,” but currently do not specify how much feed should come from pasture. Many organic graziers place high emphasis on their pasturing program, noting that grazing enhances animal welfare and provides for superior products. Some organic dairy processors, including Organic Valley, have stricter grazing standards than the national standards, at least in part as a result of customer demand for these higher standards.

Over 40 percent of the farms in Paine’s survey reported more than one acre of pasture per cow. Farmers with smaller herds of 50 cows or fewer averaged 1.6 acres per cow. Those with more than 50 cows averaged about 0.6 acres per cow, suggesting that larger farms were not relying nearly as heavily on pasture as a source of forage.

Respondents in Paine’s survey were also asked open-ended questions about vital topics affecting the viability of organic farms. Seventy percent of respondents said that the integrity of organic standards was the most important issue.

The influence of large farms and corporations entering the organic market was a central point for 30 percent of dairy farmers in the survey. Other concerns included strengthening the National Organic Program’s pasture standard, certification issues and educational needs.

When it comes to farm-specific topics of interest, respondents rated livestock production concerns number one. Crop production and soil management ranked second and third, respectively. Farmers also mentioned marketing, certification, weed and pest control, nutrient management, water quality, financial management and vegetable production.

⁶Barham. 2006. p. 7.

Financial performance of Wisconsin's organic dairies

While demographic information such as the number and size of organic dairy farms is available, actual farm financial data from organic dairy farms is scarce.

“The entire organic industry needs to be better documented, including finances,” Paine said. “There’s a lot of potential for growth in the sector.”

To help fill this research void, Tom Kriegl of the UW-Madison Center for Dairy Profitability has summarized financial information from Wisconsin dairy farms, including managed grazing farms, since 1995. He has studied Wisconsin organic dairy farms since 1999. Kriegl cautions that this data is not collected randomly. Producers volunteer their financial information.

“Managed grazing and organic production are both perceived as ways to increase the profitability of dairy farms,” said Kriegl. “Managed grazing dairies increase their profits by keeping costs lower relative to income. Organic dairy farms enjoy the organic price premium.”

Since organic and managed grazing production systems are compatible, can dairy farmers maximize their profits by combining these two systems? Kriegl’s data shows that adding managed grazing to organic dairy operations may enhance profitability. But, this doesn’t necessarily work the other way around. Grazing appears to enhance profitability more than organic production does, despite the premium price paid for organic milk.

**“Managed grazing dairies increase their profits by keeping costs lower relative to income. Organic dairy farms enjoy the organic price premium.”
- Tom Kriegl**

Kriegl compared organic, grazing and confinement farms. He used a seven-year average of key financial indicators for the comparison. For his study, Kriegl defined organic farms as those certified organic and marketing milk organically. To be considered a grazing farm, the operator must provide more than 30 percent of seasonal forage needs from grazing and must provide fresh pasture at least once every three days.

The group of grazing farms in Kriegl’s study include both organic and non-organic farms. Kriegl says the results would be similar if the organic farmers were omitted from the grazing group. He also notes that some organic dairy farms meet his definition of grazing and some do not, but any farm certified and selling organic milk is included as organic.

Confinement farms, defined as those that rely on stored feed throughout the year, include both smaller, traditional dairy farms that use mainly family labor and larger farms using primarily hired labor.

The organic dairy farmers in Kriegl’s study are an experienced group. A less knowledgeable organic dairy farmer may not reach the financial performance shown by this group.

To compare these different farm types, Kriegl used Net Farm Income from Operations (NFIFO) divided by total farm income expressed as a percentage. NFIFO is the income left over after all costs, except opportunity costs of unpaid labor, management and equity, have been accounted for. It could be described as the amount of farm earnings that could be used for family living during the year without reducing net worth.

“This calculation takes into account things other than just milk production, presenting more of a holistic picture,” Paine said.

Farm profile: R & G Miller and Sons

One hundred fifty years after his grandfather started farming on the silt loam soil north of Sun Prairie, Tom Miller, his brothers and cousins till the same land. They've added new technologies and more acres, but they carry on the farming tradition in a fundamentally similar way.

"One thing we learned early on is that it all starts with the soil," said Jim Miller, the crop manager for R & G Miller and Sons, one of the state's largest and most successful organic dairy farms.

With about 1,700 acres and a 360-cow dairy herd, the Millers sell their milk to Organic Valley, a farmer-owned cooperative. The premium price they receive, along with low costs involved in organic production, allows eight family members to make a living off the farm.

The Millers grow organic corn, soybeans and alfalfa along with some oats, rye and spelt. Almost all the crops—and 300 acres of pasture—are used to feed the cows.

"One thing we learned early on is that it all starts with the soil."

- Jim Miller

The operation was farmed conventionally until the mid-1990s.

"We started converting in 1994. It was really for both environmental and health concerns," said Tom Miller, adding that a relative had died of cancer, and several neighbors died prematurely. The Miller brothers grew leery of using chemicals.

"We just know that what we are doing is a lot better for the environment, for groundwater," said Jim. "Whatever you put on the land, eventually you're going to drink."

Certified organic in 1997, the Millers have been selling milk to Organic Valley for 10 years. The Millers say that the marketing power of Organic Valley allows them to focus on producing a high quality product worthy of price premiums which do not fluctuate throughout the year, like conventional prices.

"Our base advantage is price," said Tom. "Organic Valley is now paying about \$22.50 base price, plus more for butterfat and higher quality. So at the end of the day we are getting about \$24 per hundredweight."



The Millers say that organic dairy farming is more labor intensive, with all the crop rotation, soil testing and animal husbandry, but they enjoy what they do. And they've learned not to push the soil—or the cows—too hard. They delay planting times when necessary and make herd health a top priority, adding that their veterinary bills are low and animal longevity is high.

But the Millers say even if their market went away tomorrow, they wouldn't abandon organics. With yields approaching those of their conventional neighbors, they wouldn't have to. They've learned about good yields with row crop rotations, and to live with some weeds.

The Millers also believe organics is good for Wisconsin.

"Look at all these 300- to 400-acre dairy farms, where a great majority have only 50 to 75 cows. How many of those farms aren't making it in the conventional market?" Jim said. "The organic industry is really keeping a lot of these small farmers in business, and, frankly, excited about what they are doing."

Ron said Wisconsin's pastoral landscape and consumer support for organics helps the industry, but the state could do more to support organic farmers. He suggested offering help to farmers in transition from conventional to organic practices in the form of a short-term subsidy. Also, from a research standpoint, the University of Wisconsin could do more in exploring herd health and other issues in organic agriculture, Ron added.

For their part, the Millers see a bright future for the family farm, with young relatives interested in agriculture and a possible acre expansion.

Ron added, "We believe in the organic philosophy. We just feel pretty good about what we're doing and how we're doing it."

Farms with a higher percentage of NFIFO divided by total income retain more income. Those with a lower percentage use a larger portion of their income to cover expenses.

Kriegl used a ratio to compare farms because differences between some of the categories of income and expenses make comparisons of absolute values difficult. For example, confinement farms sold 30 to 40 percent more pounds of milk per cow than grazing and organic herds. Organic farmers received a much higher milk price.

Farm profits: In the Kriegl study, graziers retained the highest portion of the farm's total income, followed by organic dairy farmers.

Confinement farms fared poorest, retaining 14 percent of the farm's total income as NFIFO. Organic farms averaged 21 percent and grazing farms topped the chart at 26 percent. Wisconsin organic farms had higher NFIFO/Total Income percentages than confinement farms in six of seven years.

Because confinement farms averaged about twice as many cows as grazing and organic farms, and about 71 percent as much NFIFO per cow, they often retained more NFIFO per farm. When similar sized farms were compared, confinement farms retained less NFIFO per farm than grazing and organic farms did. The confinement herds similar in size to grazing and organic herds retained 17.6 percent of the farm's total income as NFIFO.

Since smaller farms may use more unpaid family labor, and the cost of unpaid labor is not included in NFIFO, this measure could show an unfair advantage for the grazing and organic farms that have smaller herds. But after adjusting for unpaid labor, Kriegl found that the cost of labor accounts for some, but not all, of the advantage of the graziers over the organic farms, and both grazing and organic farms over confinement farms.

Table 1. Simple average of NFIFO/Total income for three farm types, 1999 to 2005

	Organic farms	Grazing farms	Confinement farms
Range in number of farms participating	6-17	21-43	581-660
Average herd size range	48-64	61-68	96-133
Average pounds of milk sold per cow	14,465	15,966	20,929
Average price received per hundredweight of milk	\$19.44	\$14.83	\$14.30
Average NFIFO/Total Income	21%	26%	14%
Range of NFIFO/Total Income	14%-26%	19%-32%	7%-18%

Prices and costs: When it comes to milk prices, organic farms win hands-down. In 2006, prices for organic milk ranged from \$23 to \$30 per hundredweight, compared to conventional milk at \$12 to \$21. Other studies have found a \$5 higher average price per hundredweight for organic dairies.⁷ However, if the organic milk supply grows dramatically or if demand levels off, the price premium could drop significantly.

⁷Kriegl, Tom. 2007. *Summary of Economic Studies of Organic Dairy Farming in Wisconsin (Seven Years), New England and Quebec*. Unpublished report.

Farm profile: Lange Farms

Among the rolling hills of southwestern Wisconsin, Rich Lange operates a diverse organic farm.

“When I first started back in 1991, most people thought we were nuts,” Lange said. “But we jumped in headfirst and never looked back.”

Lange Farms has been certified organic since 1994.

At any one time, Lange is grazing about 40 head of dairy cows and 75 beef cattle, raising 40 sows farrow to finish, and pasturing 400 turkeys and 1,400 broiler chickens. With 425 tillable acres, Lange’s organic farm is reminiscent of farms past, with crops and a variety of livestock grown and raised without the use of chemicals and pesticides. But his agricultural practices use sophisticated techniques and decision-making. Practices such as soil testing, composting and crop rotation allow him to control weeds and pests naturally.

“The whole organic industry is catching on to the needs of new mothers.”

- Rich Lange

Diversity is key on the marketing end. Lange sells all of his turkeys and chickens and 20 to 25 percent of his pork through various direct markets. These include restaurants and retail stores, his on-farm storefront and other markets in Madison and Viroqua. His milk goes to Organic Valley, as does some pork and beef.

Lange is proud to say he was farmer number 46 for Organic Valley, which now cooperates with more than 1,200 organic farmers in 37 states and Canada.

Lange’s other markets provide him additional connections with sophisticated consumers who want not only healthy food that’s good for the environment, but also a connection with a farm.

“The whole organic industry is catching on to the needs of new mothers,” he said. “That’s one group of consumers really interested in organic foods for the health of their kids.”

Lange grows most of his own livestock feed, including triticale, some buckwheat and soybeans, winter barley, corn, oats and alfalfa and grass pastures.

Like any farmer, Lange faces a variety of challenges. Although he grows most of his feed, he’ll occasionally have to supplement in the winter months.

And fighting weeds is a constant battle. Lately, Lange has realized that giant ragweed—a major pest in organic fields—likes the same high organic matter conditions that he works to cultivate in his fields.

“We’ve had some real hard years,” he added. “My biggest limiting factors are feed and labor.”

With four daughters and a son ranging from age 16 to 25, only his son helps on the farm. Lange hopes his son’s interest in organics will continue to bloom.

“It’s been profitable for us,” Lange said of organic agriculture, “but not as much as I hoped it would be lately. This has been one of our low years with the summer heat and skyrocketing feed costs. I just know my profitability this year will not be like last year’s. But you just have to look at the future.”



Kriegl found that price premium is very important to the economic competitiveness of organic dairy farms. Organic farms were more financially competitive in years that the national average milk price for non-organic farmers was low.

Costs are a mixed bag. On average, Wisconsin organic farmers' purchased feed, chemical, veterinary and medicine costs were lower as a percentage of income than on the average Wisconsin grazing and confinement farms in all seven years.

Organic farms averaged higher costs as a percent of income for repairs, gas, fuel and oil, supplies, seeds, custom machine hire and rent than graziers.



Kriegl found that, compared to the average Wisconsin organic herd, confinement herds had lower costs as a percent of income in depreciation, gas, fuel and oil, utilities, supplies, property taxes, farm insurance and seeds.

Per cow performance: Kriegl's study also compared financial performance per cow, a useful measure in budgeting the start-up or expansion of any dairy system.

Confinement farms showed a slightly higher average total income per cow than organic farms, and particularly grazing farms. However, both grazing farms and organic dairies had a substantially higher NFIFO per cow than confinement farms, meaning that the income advantage in confinement dairies was lost when their higher costs were accounted for.

Table 2. Simple average of income and costs per cow for three farm types, 1999 to 2005

	Organic farms	Grazing farms	Confinement farms
Income	\$3,474	\$2,888	\$3,657
Basic costs ^a	\$1,947	\$1,585	\$2,205
Non-basic costs ^b	\$794	\$566	\$920
Allocated costs ^c	\$2,742	\$2,151	\$3,135
NFIFO	\$732	\$737	\$522

^aBasic costs include all of the cash and non-cash expenses *except* opportunity costs, interest, depreciation, paid labor and paid management. ^bNon-basic costs are interest, non-livestock depreciation, paid labor and paid management.

^cAllocated costs are basic plus non-basic costs, or all costs *except* the opportunity cost of unpaid labor, management and equity. Total income minus allocated costs equals NFIFO.

Feed costs: Organic farms had the lowest estimated total feed costs as a percent of income (including purchased and raised feed), followed by grazing farms and then confinement farms. When not indexed to income, per cow total feed costs were lowest on grazing farms, followed by organic farms, and highest on confinement farms.

Purchased feed is the largest cost item as a percent of income for conventional, organic and grazing dairies. Given the higher market price commanded by organic hay and grain, it is surprising that Wisconsin organic dairy farms had the lowest purchased feed costs as a percent of income.

Kriegl notes that the higher costs associated with purchased organic feed actually provide incentive for organic dairy farmers to raise most of their own forage and grain. Most of the organic dairy farms supplying data to Kriegl did just that.

But there are costs associated with raising feed. When estimating these costs, Kriegl included fertilizer, custom machine work, chemicals, gas, seeds and other crop expenses. He did not include land, equipment and labor expenses.

Comparing Wisconsin to other states

“Wisconsin is prime territory for successful organic dairies,” Paine said. “We have great conditions for pasture-based systems. We have a very strong dairy industry infrastructure. We have so many resources here.”

Kriegl has compared several years’ worth of financial data from dairy farms in many states to the financial performance of Wisconsin dairy systems. Again, using NFIFO as a percent of total farm income, Kriegl found that Wisconsin farms using managed grazing were competitive with managed

Grass is greener

As consumer demand increases and mainstream food companies begin offering organic products, many in the organic community have become concerned with maintaining the quality of organic products and the integrity of the organic standards.

The national organic standards govern farming systems, not just the products themselves. For livestock production, the standard emphasizes animal health and allowing animals to engage in behaviors appropriate to their species. For dairy cows, that means grazing, among other things. Grazing also reduces the risk of water and air pollution associated with high-density confinement of animals, and prevents soil erosion and other environmental degradation.



But the organic standard is vague in its pasture requirement, allowing some large confinement facilities to maintain organic certification. The USDA National Organic Program (NOP) is working to clarify that pasture access is not the same as outdoor access, and tighten standards for how much pasture must be included in an organic dairy animal’s ration.

In the meantime, some private certifying agencies and companies go beyond national requirements. Dairy farmer-members of Wisconsin-based Organic Valley must guarantee that they are following the company’s pasture policy, which includes rules on a lactating cow’s need for pasture, maximum stocking rates and access to pasture for both dry cows and young animals. The company offers a farmer-mentor program where producers can seek assistance from more experienced pasture managers.

In response to consumer pressure, the NOP recently entered an agreement with one of the nation’s largest suppliers of organic milk—Aurora Organic Dairy—that requires the company to better abide by national organic standards. Among other changes, the company must provide daily access to pasture during the growing season.

As the NOP rules evolve, Wisconsin organic dairy farmers continue to put a lot of stock in pasture management as a positive strategy to boost the health of humans, animals and the environment, and to improve their bottom line.

grazing farms elsewhere. He found similar results when comparing Wisconsin small and large confinement herds to their counterparts in other states. While data from organic dairy farms is less available, Wisconsin's organic dairy farms are likely competitive with organic dairy farms elsewhere.

A University of Minnesota study⁸ summarizing actual 2005 farm financial performance found that Minnesota organic dairies averaged 72 cows and sold 12,323 pounds of milk per cow, compared to 14,465 pounds per cow in Wisconsin. Net returns on the participating Minnesota organic dairy farms were \$822 per cow, which is fairly similar to Wisconsin, especially after accounting for some differences in handling asset values between the Minnesota and Wisconsin data, and the longer duration of the Wisconsin study.

Heading east, the University of Maine and the University of Vermont researched organic dairy farms in 2004⁹, finding the average herd size to be 48 cows. Farmers sold about 14,354 pounds of milk per cow, similar to Wisconsin's average. While Wisconsin boasts the most organic dairy cows and farms in the nation, Maine leads with the highest percentage of organic dairy farms—20 percent as of February 2007.

In 2004, New England prices for organic milk averaged \$3.21 per hundredweight more than the price received by Wisconsin organic farmers. Even with the price advantage, the New England organic dairy herds were not competitive with any type of Wisconsin herd. Revenue from milk sales

**“The value of organic dairy farming is not just in its potential for organic farmers. These systems are also an environmentally friendly way of managing the land. That produces broad benefits for the state as a whole.”
- Laura Paine**

barely exceeded expenses on the New England dairies. Other farm and non-farm income were needed to provide for family living expenses. The financial performance of New England dairy farms improved from 2004 to 2005, but not enough to change their competitiveness compared to Wisconsin.

Feed costs are much higher on New England farms than on those in the Corn Belt, especially for organic dairies. Few New England dairy farms raise grain because growing conditions are less favorable. Organic feed prices in New England are about double those in Wisconsin, while organic forage prices are about 30 percent more. This offsets much of the milk price premium enjoyed by these dairies.

These results agree with findings from research on grazing farms in the Great Lakes Grazing Network in which Wisconsin and Ontario fared the best financially, and eastern states showed the poorest performance.

While much remains to be learned about the financial performance of Wisconsin's organic dairy farms, Kriegl's study shows that organic farmers can compete economically, with price premiums.

“The value of organic dairy farming is not just in its potential for organic farmers,” added Paine. “These systems are also an environmentally friendly way of managing the land. That produces broad benefits for the state as a whole.” These benefits include clean water, abundant wildlife and a verdant rural landscape that is appreciated by both Wisconsin residents and tourists.

⁸Minnesota Department of Agriculture. 2006. *Organic Farm Business Management Annual Report: Minnesota*.

⁹Dalton, Timothy J., Lisa A. Bragg, Rick Kersbergen, Robert Parsons, Glenn Rogers, Dennis Kauppila, Qingbin Wang. *Cost and Returns to Organic Dairy Farming in Maine and Vermont for 2004*. University of Maine. November 2005.

A growing support industry for organics

Wisconsin farmers top the charts when it comes to producing a variety of organic crops and livestock products. But who supplies these farmers, and where do these products go when they leave the farm?

The number of certified organic processors in Wisconsin increased 30 percent from 2005 to 2006. Add to that the businesses that provide goods and services to the organic industry and you have 201 organic companies operating in the state, offering a wide array of products and services.

Wisconsin is home to Organic Valley, the third largest U.S. organic dairy processor with sales in excess of \$400 million for a line of products including dairy, meat, eggs, soy and produce. Organic Valley is a cooperative of more than 1,200 farmer-owners hailing from 37 states and Canada, with 487 farmers in Wisconsin.

Thirty-seven more dairy processors across the state are certified to produce organic products. Some of these businesses do contract processing for Organic Valley and other organic labels, while one-third produce products under their own labels.

Wisconsin is number one in the nation when it comes to certified organic livestock production, and there are 12 organic meat processors in the state.

Wisconsin boasts 18 organic processing facilities and packaging plants. Eleven companies produce certified organic ingredients for other products.

The state also hosts eight certified organic coffee, tea and beverage companies. Other organic products processed in the state and sold across the country include cranberries, horseradish, maple syrup, flowers, honey, bird seed and soy sauce.

In addition to processors, many other businesses have sprung up across the state to serve Wisconsin's organic farmers. These companies provide inputs such as seed, feed and equipment for organic farms.

A shortage of organic grain and hay is still a critical weak link in Wisconsin's organic dairy production system. High prices for conventional grain in 2008 could discourage farmers from transitioning to organic grain production, worsening this problem. The state lacks infrastructure to store and process enough feed to meet the needs of organic dairy farms. Several new organic feed mills have cropped up in recent years to fill the gap.

Wisconsin's organic industry needs a strong business support infrastructure. Maintaining our leadership position in organic agriculture will require increased investment in organic production, processing, seed, feed and other inputs.



Flooding on Wisconsin's organic farms

In 2007, Mother Nature brought several months of drought conditions across Wisconsin, followed in the southern part of the state by record rains and damaging downpours. In August, 20 inches of rain fell in the southern part of the state, most of it coming in heavy downpours of 3 to 6 inches in several hours. Crawford, La Crosse, Richland, Sauk and Vernon counties were hit hardest by immediate damage, but an even larger region was significantly impacted. Governor Doyle declared a state of emergency for these counties as well as Columbia, Dane, Dodge, Iowa, Jefferson, Kenosha, Lafayette, Monroe and Rock counties.

According to Laura Paine at DATCP, some vegetable farmers faced financial losses averaging \$3,463 per acre as a result of this flooding. Paine informally surveyed 25 fresh market vegetable farms and found that 67 percent reported damage to their crops from the flooding and waterlogged soils. Surveyed farms varied in size and income, ranging from large wholesale vegetable growers with thousands of acres to growers with 2 to 15 acres.



Reflecting the diversity of farms, financial losses varied dramatically from more than \$2 million for a large wholesale grower to \$280 for the smallest reported loss. The median loss was \$10,000. The estimated average loss among those reporting was 26 percent of annual income.

Several large, successful organic vegetables farms were significantly impacted. Fresh market vegetables—especially organic vegetables—are high-value crops, bringing growers \$1,000 to \$50,000 per acre in gross revenue.

Aside from crop loss, farmers also reported damaged greenhouses, packing sheds, vehicles and other equipment, with one farm reporting more than \$50,000 in infrastructure damage.

Few of these farmers have crop insurance to cover their losses. Unlike field crops such as corn and soybeans, vegetable crops have limited coverage options. Two programs, Agr-Lite and the



Noninsured Crop Disaster Assistance Program, are available to vegetable growers. Few fresh market vegetable growers are familiar with these programs, however, and complex recordkeeping requirements discourage fresh market growers from using them.

“The total impact of the flooding is difficult to quantify,” said Paine. “The economics of fresh market vegetable production are not well understood by mainstream agriculture.”

The cost of converting to organic dairy production

It takes a year to convert dairy cows to organic production. During this transition, farmers must feed their cows expensive, organic grain and use organic practices. Their costs are higher, but they don't reap the benefits of higher organic milk prices until they receive their organic certification at the end of this year.

Until mid-2007, the cost of the conversion year was eased by a provision in the national organic standards called the "80-20 rule." Dairy farmers could feed their cows 80 percent organic feed and 20 percent conventional feed for the first nine months of transition. Farmers were required to feed 100 percent organic feed during the final three months leading up to organic certification.

This rule changed in June 2007. Now, dairy cows must be fed 100 percent organic feed for the entire transition year.

Knowing that this rule would change, many dairy farmers began converting to organic production in the spring of 2006 and were certified organic before June 2007. Organic Valley added 269 dairy farmers in 2007 and processed 45% more milk than in the spring of 2006.¹⁰

While this rush to convert resulted in a brief glut of milk on the organic market in 2007, organic milk prices paid to farmers and by consumers were largely unaffected. As consumer demand for organic milk is growing rapidly, the increased supply was expected to be absorbed fairly quickly.

Forecast for the future

Nationwide, the demand for organic food exceeds domestic production. Laura Paine, DATCP, receives calls from companies across the nation looking for organic food—particularly meats and vegetables. In order to take advantage of these opportunities, we need to increase organic production.

Wisconsin's farmers are increasingly interested in making the transition to organic. Education, mentoring, research and cost-sharing will help them convert to organic production.

Paine believes that we need to organize our small and medium organic farms so that they can pool their products. This will help them meet the needs of companies wanting to buy organic foods in larger quantities than individual farms can provide.

Wisconsin needs to continue to build its capacity for organic processing, particularly for vegetables. Meat and dairy processors are stepping up to the plate and considering organic certification. Wisconsin's vegetable processing industry is in a general state of decline, which makes it harder to build our capacity for organic vegetable processing.

In order to maintain and increase our leadership in organic dairy and livestock production, Wisconsin must increase production of certified organic hay and grain. Continued investment in grazing will also help our organic dairy producers remain competitive.

Rapid national and international growth in organic food markets is expected to continue. Increased state support for organic agriculture will enable Wisconsin to capture a bigger share of these markets.

¹⁰"Organic Milk Supply Expected to Surge as Farmers Pursue a Payoff." *New York Times*, April 20, 2007.

Appendix A: The Wisconsin Organic Advisory Council

History

In 2004, Governor Doyle set a goal for Wisconsin to “lead the nation in organic agriculture.” In March of that year, he convened an Organic Summit including the Wisconsin DATCP, the University of Wisconsin-Madison College of Agricultural and Life Sciences (CAL S) and the state’s organic industry to determine how to accomplish this goal. Participants included organic farmers, companies, lenders and organizations that certify organic farms. The summit resulted in the creation of the Wisconsin Organic Agriculture Task Force to develop recommendations for fostering growth in the organic agriculture sector.

The task force met four times in 2004 and submitted a report to the governor in February, 2005. The report laid out a road map to leadership in organic production and processing. Priorities identified by the task force included creation of an educational and promotional program for Wisconsin organic products; establishment of programs that facilitate networking among organic farmers; development of coursework, degree programs and research on organic agriculture at University of Wisconsin campuses and the state’s technical colleges; and providing support and technical assistance for enhancing processing capacity. The task force’s report to the governor can be found at www.organic.wisc.edu.

To accomplish these priorities, the task force recommended establishment of a private sector Wisconsin Organic Advisory Council and an interagency implementation team to lead the effort, and the creation of organic specialist positions at DATCP and at the University of Wisconsin.

Today

All of the actions recommended by the task force have been accomplished.

- In April 2006, DATCP hired Laura Paine for the position of organic agriculture specialist.
- In August 2006, Erin Silva was hired to coordinate organic agriculture research and education at the University of Wisconsin-Madison.
- The Wisconsin Organic Advisory Council and interagency team were appointed in winter 2006 and met for the first time in February 2007.

The advisory council and interagency team meet three to four times annually. Council and team members have begun to develop detailed recommendations to carry out each of the priorities set out by the task force, among other activities.

In anticipation of renewal of the federal farm bill, the council developed recommendations that were shared with Wisconsin’s Congressional delegation. In response to the flooding of August 2007, which severely damaged crops and equipment on many organic fresh market vegetable farms in southern Wisconsin, the council developed a white paper on dealing with future natural disasters of this sort. Outreach and educational efforts include the development and printing of this document and establishment of an organic farmer mentoring program.

You can learn more about the Wisconsin Organic Advisory Council at www.organic.wisc.edu.

Organic agriculture programs at DATCP

The Organic Agriculture Program is housed in the DATCP Division of Agricultural Development. It provides individual technical

assistance and consulting to organic farmers and those wishing to begin farming organically, as well as to businesses processing organic products. Begun in April 2006, the program connects entrepreneurs with the appropriate regulatory staff. Program staff members have fielded phone calls, e-mails and in-person consultations, developed an informational packet for beginning organic farmers, sponsored workshops and trainings, and provided outreach at conferences and trade shows. In addition, this program administers the federal organic certification

cost-share program when funding is available. For more information, contact Laura Paine at 608-224-5120 or Laura.Paine@Wisconsin.gov.

Other programs available to organic producers through the Division of Agricultural Development include the Value-Added Dairy Initiative, which provides funding and technical assistance for dairy farmers and processors to make the transition to organic production and/or grazing. Other DATCP divisions that provide services to organic farmers include Food Safety and Agricultural Resource Management.

2007 Wisconsin Organic Advisory Council Members

Organic Farmers

Tricia Bross
Luna Circle Farm
Rio
Jerri Cook
Due North Organics
Rib Lake
Rich Lange
Lange Farms
Platteville

Business Representatives

Paulette Bradley
Wisconsin Organic Marketing
Alliance Cooperative
Camp Douglas
Jerry McGeorge
Organic Valley
La Farge
Robert Wills
Cedar Grove Cheese
Plain

Certification Representative

Bonnie Wideman
Midwest Organic Services Assoc.
Viroqua

Non-Profit Representative

Harriet Behar
Midwest Organic and Sustainable
Education Service (MOSES)
Gays Mills

Consumer Representative

Margaret Bert-Mittelstadt
Outpost Natural Foods Co-op
Milwaukee

At-Large Members

David Engel
Rising Sun Jersey Farm
Soldiers Grove
Christine Mason
Standard Process, Inc.
Palmyra

Jim Munsch
Deer Run Farm
Coon Valley

Coordinators

Laura Paine
Grazing & Organic Ag Specialist
Wisconsin DATCP
Erin Silva
UW-Madison Agronomy Dept.
and CIAS

Interagency Team Members

Pat Murphy
Natural Resources Conservation
Service (NRCS) State Office
Russ Raeder
Farm Service Agency (FSA)
State Office
Kevin B. Shelley
UW-Madison Nutrient & Pest
Management (NPM)
Jed Colquhoun
UW-Extension
Molly Jahn
UW-Madison CALS
Carla Wright
Wisconsin Department of Natural
Resources (DNR)
Irv Possin
Wisconsin Department of
Commerce (DOC)
Jim Gibson & Don Jaworski
Wis. Technical College System
Jennifer Heaton-Amrhein
DATCP-Agricultural Resource
Management

Appendix B: UW-Madison Organic Research

The following information was gathered through a search of the USDA Current Research Information System and updates from researchers. This list may not include all organic research occurring at UW-Madison. If you know of other projects we should include, or if you have any questions about organic research at UW-Madison, please contact Erin Silva at 608-890-1503 or emsilva@wisc.edu.

Mechanical and thermal means of inter-row suppression in corn—Kura clover living mulch for use in organic cropping systems

Researchers: Ken Albrecht (Agronomy), 608-262-2314, kaalbrec@facstaff.wisc.edu; and Nate Bard (Agronomy)

Description: Kura clover, a long-lived perennial, can be a living mulch and the sole nitrogen source for corn production. It reduces soil erosion and nitrate leaching and, when adequately suppressed, does not hurt corn grain or silage yield. We have been successful managing kura clover as living mulch with herbicide suppression, and are currently evaluating thermal and mechanical means to replace herbicides.

Farm structural change of a different kind: alternative dairy farms in Wisconsin: graziers, organic and Amish

Researchers: Brad Barham (Agricultural and Applied Economics), 608-265-3090, barham@mailplus.wisc.edu; and Caroline Brock (PhD candidate, Land Resources)

Description: This survey-based study presents the first systematic and representative comparative study on the structure, behavior and performance of multiple pasture based dairy farm strategies in Wisconsin.

Evaluation of cropping systems within organic vegetable production

Researchers: A.J. Bussan (Horticulture), 608-262-3519, ajbussan@wisc.edu; Paul Mitchell (Agricultural and Applied Economics), Scott Sanford (Biological Systems Engineering), Jed Colquhoun (Horticulture), Russ Groves (Entomology), Carrie Laboski (Soil Science), Walt Stevenson (Plant Pathology), Jim Nienhuis (Horticulture), Erin Silva (Agronomy/CIAS), Doug Reineman (Biological Systems Engineering) and others.

Description: Long-term research trials are being planned for initiation during the summer of 2008 on organically certifiable land at the Horticulture Farm on the UW-Madison Arlington Agricultural Research Station. The goal of

the project is to quantify nutrient cycling, pest population dynamics, energy inputs and economic value of different nutrient management systems based on cover cropping, manure, compost and OMRI approved fertilizers. A unique feature of this project is the comparison within organic management systems rather than comparisons between organic and conventional systems.

Crop plant nutrition and insect response in organic field crop production: linking farmer observation to University research and Extension.

Researchers: Eileen Cullen (Entomology), 608-261-1507, cullen@entomology.wisc.edu; Kevin Shelley (UW-Madison Nutrient and Pest Management Program), Robin Mit-tenthal (Entomology), and Paul Whitaker (UW-Marathon County)

Description: This project examines the link between crop plant nutrition and insect response, as well as the premise that organic soil fertility management plays a size-able role in managing insect pests. The project has three components: 1) A long-term controlled experiment at the UW-Madison Arlington Research Station comparing two methods of organic fertility management (soil balance with calcium additions, compared with a standard organic manure and legume source N-P-K sufficiency approach) in a four-crop rotation. The farmer-selected crop-insect associations examined include Soybean-soybean aphid, Alfalfa-potato leafhopper, and Corn-European corn borer; 2) Similar data collection on six established organic farms representing the two approaches to soil fertility management; 3) Undergraduate on-farm research partnerships with organic farmers and greenhouse experiment collaboration with UW-Marathon County. In 2006-07, 32 field-scale, replicated plots were established and the soil fertility treatments were initiated at Arlington. The first year of data was collected at Arlington and the cooperating farms. Collaboration with UW Marathon County will begin in 2008.

Organic soybean variety trial results

Researchers: John Gaska (Agronomy), 608-262-8273, jmgaska@facstaff.wisc.edu; Daniel Undersander (Agronomy), Josh Posner (Agronomy), Mark Martinka (Agronomy), Janet Hedtcke (Agronomy), and Kevin Shelley (UW-Madison Nutrient and Pest Management Program)

Description: The Wisconsin Organic Variety Trials give producers information on performance and characteristics of soybean varieties that could be used in an organic soybean production system. The trials were conducted using

approved organic production practices at sites certified for organic production. Seed used for the trials were either organically produced or untreated non-organic varieties.

Organic certified seed potato production in the Midwest

Researchers: Amy Charkowski (Plant Pathology), 608-262-7911, amyc@plantpath.wisc.edu; Ruth Genger (Plant Pathology), and Doug Rouse (Plant Pathology)
Description: There is a severe shortage of organically produced certified seed potatoes in the Midwest. Use of certified (low disease incidence) seed potatoes is an important strategy in controlling tuber-borne potato diseases. In 2007, we trialed seed potato production on the organic farms of 6 farmer-collaborators in different regions of Wisconsin, testing strategies to control aphid-borne viruses, the major disease challenge in certified seed potato production. Harvested tubers are undergoing tests for pathogen incidence, and data will be used as a basis for recommendations to growers.

Evaluation of approved seed treatments in organic corn production

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Nicholas Goeser (Agronomy), Edward Luschei (Agronomy), Erin Silva (Agronomy and Center for Integrated Agricultural Systems), and Josh Posner (Agronomy)
Description: The first line of defense in weed management in organic row crops is having a vigorous stand. Pre-plant seed treatments like priming and coating are, potentially, a way to enhance organic corn seedling germination, emergence and early seedling growth. We are currently utilizing greenhouse and field testing procedures to assess four organically certified seed treatments. Within each seed treatment (main plot), corn was planted at two different dates on certified organic land at the research station and on South Central Wisconsin farms. Terminal emergence percentage, seedling vigor (as assessed through plant staging and height) and grain yields have been measured and are being compared with a split-plot ANOVA.

Flame weeding in corn

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Gregg Sanford (Agronomy), Bill Stangel (UW Agricultural Experiment Station), and Josh Posner (Agronomy)
Description: Many organic growers rely heavily on flame weeding for weed control in corn. However, little data exists on the impact of the flaming on the corn itself. Treat-

ments were applied at or before the V3 (3rd collar) stage of corn. Weed counts, corn population and corn yield data are being compared.

Soil fertility management on organic vegetable farms

Researchers: John Hendrickson (Center for Integrated Ag Systems), 608-265-3704, jhendric@facstaff.wisc.edu; and Leslie Cooperband (University of Illinois)
Description: This project is assessing fertility management practices on organic vegetable farms in Wisconsin and Illinois. Information on current practices has been gathered via a mailed survey. This will be coupled with a detailed three-year analysis of specific management practices on case study farms. Input on farming methods and research questions will be integrated into emerging organic research programs at the University of Wisconsin and University of Illinois. This will be achieved via a farmer advisory panel that will meet with university faculty as they convert and manage university research farm plots using organic management practices.

The feasibility of producing organic sweet corn and snap beans for processing

Researchers: A.J. Bussan (Horticulture), 608-262-3519, ajbussan@wisc.edu; Heidi Kraiss (Horticulture), Jed Colquhoun (Agronomy), Carrie Laboski (Soil Science), and Richard Rittmeyer (Horticulture)
Description: This project is evaluating organic nutrient and weed management tactics in processing sweet corn and snap beans to determine if it is economically feasible to produce them organically in Wisconsin. Nutrient management tactics consist of the use of cover crops, commercially available compost and other organic fertilizers. Organic weed management treatments consisted of either a single management tactic or combinations of tactics including different methods and numbers of cultivations and utilization of a stale seedbed.

Comparison of oat cultivars as weed-suppressive cover crop for in organic fresh market vegetables

Researchers: Jed Colquhoun (Horticulture), 608-890-0980, colquhoun@wisc.edu; and Heidi Kraiss (Horticulture)
Description: We will determine the effectiveness of 13 oat cultivars, used as cover crops, at suppressing weeds in four fresh market vegetable crops; tomatoes, pepper, broccoli and peas. There is evidence that oat cultivars differ in their allelopathic potential and thus potential for weed suppression. We will evaluate this under field conditions to determine the cultivars' impacts on weed density and diversity and ultimately crop yield.

Comparing the economics of organic dairy production with other dairy systems

Researchers: Tom Kriegl, Center for Dairy Profitability, 608-263-5665, tskriegl@wisc.edu

Description: The organic dairy market is growing and provides substantial price premiums. Many Wisconsin dairy farmers want to know if the price premiums make the organic dairy system competitive. Actual farm financial data from Wisconsin organic farms is compared in this research with non-organic grazing and confinement farms.

Organic corn hybrid/variety trial results

Researchers: Joe Lauer (Agronomy), 608-263-7438, jlauer@facstaff.wisc.edu

Description: The University of Wisconsin Organic Corn Hybrid/Variety Trials are conducted to give corn producers information on performance and characteristics of corn hybrids and varieties that could be used in an organic corn production system. The trials were conducted using approved organic production practices at sites certified for organic production. Seed used for the trials was either organically produced or untreated.

Multi-state organic corn hybrid/variety trial results

Researchers: Joe Lauer (Agronomy, Wisconsin), 608-263-7438, jlauer@facstaff.wisc.edu; Roger Elmore (Iowa) and Peter Thomison (Ohio)

Description: The purpose of this project is to investigate differences in grain yield and quality among hybrids planted in pure and mixed stands in organic production systems. To improve the reliability of crop management decisions, five locations (three southern, two northern) were established using certified organic production practices.

Refining and implementing multifunctional management strategies for organic processing vegetables

Researchers: Paul Mitchell (Agricultural and Applied Economics), 608-265-6514, pdmitchell@wisc.edu; AJ Bussan (Horticulture), and Doug Reinemann (Biological Systems Engineering)

Description: This project focuses on examining nitrogen and energy use and economics for organic and conventional processing vegetables systems.

Risk management tools for diversified vegetable producers in the Upper Midwest

Researchers: Paul Mitchell (Agricultural and Applied Economics), 608-265-6514, pdmitchell@wisc.edu; Erin Silva (Agronomy and Center for Integrated Ag Systems), and John Hendrickson (Center for Integrated Ag Systems)

Description: This project focuses on the development of a system to help diversified vegetable farmers understand their costs of production by crop and marketing channel, and the potential benefits of crop insurance.

Marketing practices of Wisconsin potato growers

Researchers: Paul Mitchell (Agricultural and Applied Economics), 608-265-6514, pdmitchell@wisc.edu; and K. Steigert (Agricultural and Applied Economics)

Description: This project increases our understanding of how the increasing organic trend in the marketplace is affecting consumer prices for organic and conventional potato products and fresh potatoes.

On-farm research with organic graziers

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Josh Posner (Agronomy), Alfrid Krusenbaum (Organic Farmer), Ken Nordlund (School of Vet Medicine), Gary Frank (Center for Dairy Profitability), and Bob Van De Boom (Organic Farmer)

Description: Over the past two decades, research projects have been ongoing at the Krusen Grass farm in Elkhorn, Wisconsin, while it has transitioned from row crops to organic rotational grazing. Herd health, performance and productivity, farm financial and economic performance, and nutrient management have been monitored. More recently, heifers and steers are being weighed two to three times per year to evaluate weight gains with a custom grazier.

No-tillage organic soybean production in winter rye for improved weed and nutrient management in South Central Wisconsin

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Josh Posner (Agronomy), Dave Stoltenberg (Agronomy), and Emily Bernstein (Agronomy)

Description: This research project aims to develop a no-till soybean phase that follows corn and a fall-seeded rye cover crop, comparing manure management, tillage levels, soybean planting dates, and row spacing on-farm and on-station on organically managed fields. Performance variables will include measures of weed suppression, soybean yield, soybean profitability and water use.

Organic and conventional production systems in the long-term Wisconsin Integrated Cropping Systems Trials: productivity, profitability and environmental impact

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Josh Posner (Agronomy), Jon

Baldock (AGSTAT), John Hall (Michael Fields Agricultural Institute), Dwight Mueller (UW-Madison Agricultural Research Station), Darwin Frye (UW-Madison Agricultural Research Station), Bill Stangel (UW-Madison Agricultural Research Station), and Jean-Paul Chavas (Agricultural and Applied Economics)

Description: In 1989, in response to the debate about the relative agricultural sustainability of low-input and conventional systems, a large-scale, long-term study entitled the Wisconsin Integrated Cropping Systems Trials (WICST) was initiated at two locations in southern Wisconsin to compare the productivity, profitability, and environmental impact of a range of conventional and organic cropping systems.

Developing certified organic acreage at the UW-Madison Arlington Agricultural Research Station

Researchers: Janet Hedtcke (Agronomy), 608-265-2948, jlrieste@facstaff.wisc.edu; Josh Posner (Agronomy), Bill Stangel (UW-Madison Agricultural Research Station), Dwight Mueller (UW-Madison Agricultural Research Station), Darwin Frye (UW-Madison Agricultural Research Station), John Hall (Michael Fields Agricultural Institute), Kevin Shelley (UW-Madison Nutrient and Pest Management), Joe Lauer (Agronomy), John Gaska (Agronomy)

Description: With the implementation of the USDA's National Organic Program in October 2002, organic crop and livestock farming gained momentum. The decision was made to certify land for organic research at the ARS Research Station and to conduct similar trials on the Michael Fields Agricultural Institute organic farm to meet the informational needs of this growing clientele. The goal of this project was to do production research for those producers that want to grow and market organic grain. In addition to field research, our goal was to learn about the certification process (how difficult is it?) and organic grain marketing and storage issues. Currently, 22 acres are certified and another 22 are in transition.

Treatment practices and quantification of antimicrobial usage in conventional and organic dairy farms in Wisconsin

Researchers: Pamela Ruegg (Dairy Science), 608-263-3495, plruegg@facstaff.wisc.edu; and M. Pol (Dairy Science)

Description: This study developed a novel method for quantifying farm-level exposure to antimicrobials on dairy farms and compared antimicrobial usage between organic and conventional dairy herds. The overall exposure to antimicrobials on conventional farms was 5.4 defined daily

doses per cow per year. About two thirds of the antimicrobial doses used were for intramammary treatment. Penicillin, streptomycin and cephalosporin were the three compounds most frequently used for dry cow therapy and cephalosporin, pirlimycin and amoxicillin were the compounds most frequently used for treatments of clinical mastitis. Treatment practices and disease prevalence for organic herds, including compounds and administration routes, were compared between organic and conventional herds.

Relationship between antimicrobial usage and antimicrobial susceptibility of Gram-positive mastitis pathogens

Researchers: Pamela Ruegg (Dairy Science), 608-263-3495, plruegg@facstaff.wisc.edu; and M. Pol (Dairy Science)

Description: The relationship between usage of antimicrobials and antimicrobial susceptibility of mastitis pathogens was studied using isolates obtained from organic and conventional dairy herds. The amount of exposure to two antibiotics commonly administered for treatment of mastitis (penicillin and pirlimycin) was associated with resistance, but amount of exposure to many other commonly used antimicrobials was not associated with resistance.

A dose-response effect between exposure to pirlimycin, and the minimum inhibitory concentration of pirlimycin was observed for all isolates. The usage of penicillin was associated with reduced susceptibility of *Staph. aureus* and *coagulase-negative staphylococci spp.* However, the usage of cephalosporin was not associated with reduced susceptibility for any pathogen.

Appendix C: Resources and organizations

University of Wisconsin Programs

The resources and organizations listed below provide support for organic farmers. If you know of others that should be included in future reports, contact Cris Carusi at cecarusi@wisc.edu or 608-262-8018. See Appendix B on page 18 for a list of researchers conducting projects with organic agriculture components.

University of Wisconsin Center for Cooperatives (UWCC) strives to study, promote and research cooperative action as a means of meeting the economic and social needs of people. 608-262-3981; www.uwcc.wisc.edu

Center for Integrated Agricultural Systems (CIAS) is a sustainable agriculture research center at the UW-Madison. 608-262-5200; www.cias.wisc.edu

Program on Agricultural Technology Studies (PATS) is a research and extension unit at UW-Madison that examines the implications of new agricultural technologies. 608-265-2908; www.pats.wisc.edu

Wisconsin Integrated Cropping Systems Trial (WICST) is a long-term trial comparing six Wisconsin cropping systems for productivity, profitability and environmental impact. 608-262-0876; www.cias.wisc.edu/wicst

UW-River Falls is offering a Sustainable Agriculture Option within its Crop & Soil Science Major and will be having organic production classes in 2008. 715-425-3345 www.uwrf.edu/college-of-agriculture/

While University of Wisconsin-Extension currently has no specific organic programs, Extension agents across the state address production and business management decisions for organic farming systems; www.uwex.edu

Non-profit Organizations

A number of non-profit organizations that research or promote organic agriculture and food in Wisconsin.

The Cornucopia Institute engages in research and advocacy supporting sustainable and organic agriculture. 608-625-2042; cornucopia.org

GrassWorks, Inc. links farmers through local networks and promotes grass-based farming to increase the number of successful graziers in Wisconsin. 715-261-6009; www.grassworks.org

Madison Area Community Supported Agriculture Coalition (MACSAC) promotes and supports local Community Supported Agriculture (CSA) farms in southern Wisconsin. 608-226-0300; www.macsac.org

Michael Fields Agricultural Institute (MFAI) is devoted to developing an agriculture that can sustain the land and its resources and seeks to revitalize farming with research, education, technical assistance and public policy. 262-642-3303; michaelfieldsagainst.org

Midwest Organic and Sustainable Education Service (MOSES) promotes sustainable and organic agriculture through information, education and research. MOSES organizes the largest organic farming conference in the country: the Upper Midwest Organic Farming Conference. 715-772-3153; www.mosesorganic.org

Organic Certification Agencies

Private certification agencies accredited by the USDA's National Organic Program (www.ams.usda.gov/nop) provide independent, third-party assurance that organic food is produced and processed according to U.S. organic standards. The following certifiers are based in Wisconsin. For a list of certifiers in the Midwest, visit www.mosesorganic.org

Midwest Organic Services Association (MOSA)
PO Box 821, 122 W Jefferson St, Viroqua, WI 54665
Bonnie Wideman, 608-637-2526
mosa@mosaorganic.org, www.mosaorganic.org

Nature's International Certification Services (NICS)
PO Box 131 224 State Hwy 56, Viroqua, WI 54665
Dave Engel, 608-637-7080,
david.engel@naturesinternational.com
www.naturesinternational.com

OCIA, NE WI Organic Chapter LLC
N5364 Hemlock Lane, Kewaunee, WI 54216
Karen Kinstetter, 920-388-4369 h, 920-388-3408 w
kkinstetter@itol.com

Oregon Tilth, Inc. - Midwest Office
P.O. Box 269, Viroqua, WI 54665
Dave Engel, 608-637-8594
dave@tilth.org, www.tilth.org/index.html

Wisconsin OCIA #1
5381 Norway Drive, Pulaski, WI 54162
Peggy Linzmeier, 920-822-2629
mnmsgang@netnet.net, www.ociawi1.com

