

Organic Dairy Farms in Wisconsin: Prosperous, Modern, and Expansive

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Executive Summary

Organic dairy farming in Wisconsin is experiencing rapid growth and capturing an increased share of the market. Although the organic dairy sector in Wisconsin is still relatively small, accounting for two percent of the state's cows, Wisconsin is one of the nation's top two producers of organic dairy products and home to the largest organic milk cooperative. The expectation of strong demand growth for organic milk products provides plenty of potential for continued expansion in organic dairy farming within the state. Yet, relatively little is known about how organic farms compare with other types of dairy operations in terms of the demographic characteristics of the farmers, size and structure of the farms, management practices and technologies utilized, their overall economic performance, and quality of life experiences.

This report fills that knowledge gap by offering the first comprehensive, descriptive picture of organic dairy farming in Wisconsin. It compares the results of a survey of organic dairy farmers in Wisconsin with a similar statewide sample of conventional and Management Intensive Rotational Grazing (MIRG) dairy farms. Data utilized in this report were collected by the UW-Program on Agricultural Technology studies from Wisconsin dairy farmers (Winter, 2003) and organic dairy farmers (Spring, 2004).

One primary performance indicator for organic dairy farms is the price premium they receive for their milk in comparison to conventional or grazing operations. Within the last five years, large organic premiums have given rise to greater improvements in income on organic dairy farms, while other types of dairy farming experienced income declines. Not surprisingly, organic dairy farmers were far more satisfied with their income and quality of life than other types of dairy farmers, and were also more optimistic about the future viability of their operations.

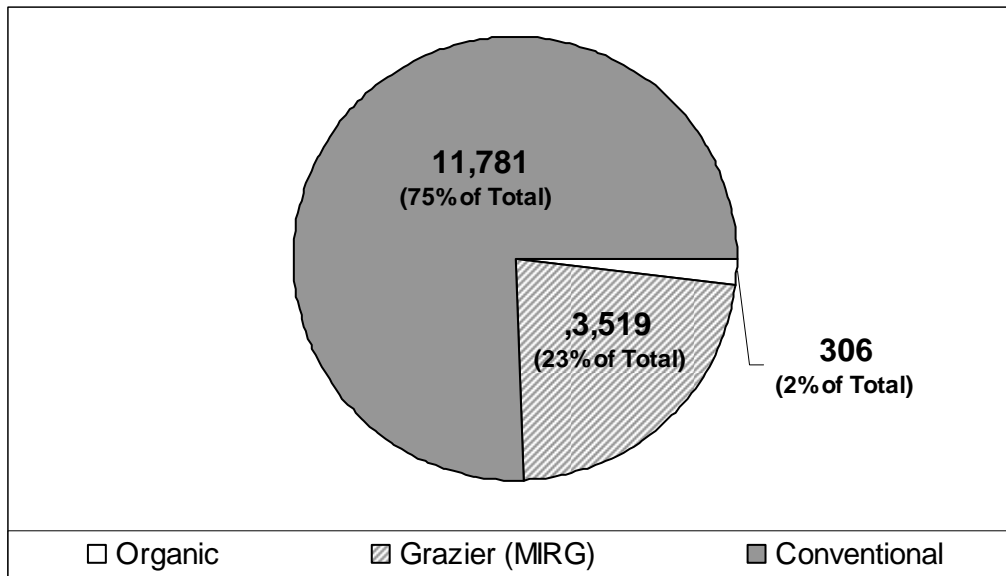
Comparisons of organic dairy farms with the other two sectors provide some surprising results. For example, despite their smaller average size than conventional dairy operations, organic dairy farmers were more likely to be milking in a parlor and housing their cows in a free-stall structure, though these facilities were predominantly retrofits rather than new structures. Or, in terms of rotational grazing strategies, organic dairy farmers tend to move their cows across pastures more frequently. One way of looking at the organic farmers is that they are "modernizing" or changing their operations more rapidly than their counterparts but with a distinctive approach that utilizes modernization strategies from distinct dairy farm systems.

The recent vitality of organic dairy farming in Wisconsin is clearly reflected in this report, but important questions remain about what path the organic dairy farm sector will take in future years, in terms of the mix of expansion of existing operations and/or new entrants.

Introduction

Organic dairy farming in Wisconsin has experienced rapid growth in farm numbers, production, and market share in recent years (Greene, 2006). That dynamism stands in contrast to the rest of the Wisconsin dairy sector in which farm numbers have declined, total production remains below historical peaks, and Wisconsin producers have lost U.S. market share to dairy farms in western states (NASS, 2004; Barham et al., 2005; Jones, 2002). Yet, as of 2004, organic dairy farms only accounted for two percent of the state's cows (NASS, 2005), so it is clear that this sector is currently still a relatively small part of the Wisconsin dairy industry. Figure 1 depicts the 15,300 dairy farms (2005) in the state separated by type (organic, grazier, conventional). One motivation for this report is to provide a deeper understanding of the potential for organic dairy farming to play a larger role in the agricultural sector in the future.

Figure 1. Number of Dairy Farmers in Wisconsin by Farm Type, 2005



Wisconsin is one of the top two producers of organic dairy products for U.S. markets (Greene, 2006). The state is also home to the largest organic milk cooperative, Organic Valley (CROPP) as well as at least five other organic buyers (Hansen, 2005). With demand for organic milk products continuing to grow rapidly, Wisconsin organic processors are enticing conventional farmers to convert with substantial price premiums (Hansen, 2005) which are on the order of 50 percent over normal milk prices. Judging by the pace of recent growth in sales and the magnitude of price premiums offered, there appears to be plenty of potential for continued growth in organic dairy farming. However, to date, we have relatively little evidence of how these farms compare with other operations in terms of the characteristics of the farmers, the farms, or their overall economic performance and quality of life. This report provides an analysis of Wisconsin organic dairy farms by comparing organic dairy farmers surveyed in 2004 with similar surveys of a statewide sample of conventional and MIRG (Management Intensive Rotational Grazing) dairy farms surveyed in 2003.

This report provides the first comprehensive picture of organic dairy farming in Wisconsin. The existing research on organic dairy farming has focused mostly on making profitability comparisons with a small sample of organic farms and other types of dairy farms in Wisconsin (Kriegel, 2006). This report compares organic dairy farms to *both* conventional and management intensive rotational grazing (MIRG) systems in terms of the demographic characteristics of the farmers, the size structure of the farms, the management practices and technologies utilized, and their overall performance. While conventional dairy continues to be the main type of dairy farm, MIRG operations comprise a significant portion (23 percent in 2003) of the state's dairy operations (Taylor and Foltz, 2005). Comparisons with graziers are interesting not only because it has emerged as an important new management style (since the 1990s), but also because graziers are among the most likely candidates to convert to an organic system given the important role of pasture usage in organic livestock management. It is our hope that these comparisons will provide insights for farmers evaluating their management practices, for policy makers and researchers that work with the dairy industry, and others interested in the health and integrity of Wisconsin's leading agricultural sector.

Methodology

The report utilizes data from two surveys done by the Program on Agricultural Technology Studies (PATS) at the University of Wisconsin – Madison. The first is a survey of Wisconsin organic dairy farmers that was conducted in the spring of 2004. The second is a survey of Wisconsin dairy farmers that was done in the winter of 2003, and is representative of the state's entire dairy sector. Both surveys were conducted using a modified Dilman method. In order to mitigate response bias, each non-respondent was contacted three times over a three month period.

The organic dairy survey was sent to every farmer on a list compiled from an organic dairy cooperative, organic certifying agency and an Amish cheese cooperative. That survey generated 185 usable responses (45 percent response rate). This report only includes the 83 producers that were marketing organically at the completion of the survey and thus does not contain the Amish sample. (A separate line of work on Amish farming is under way, and a short report on containing comparisons with alternative dairy approaches should be available from PATS in the near future.) The statewide dairy survey generated over 700 usable surveys and also had a 45 percent response rate. There were 164 management intensive rotational graziers (MIRG) farmers and 481 conventional farmers that responded to this survey according the definitions described below.

The study makes comparisons among three types of dairy farms: organic, management-intensive rotational grazing (MIRG), and conventional operations. Each of those types is briefly defined below.

- *Organic dairy operations* undergo a third-party certification process to verify that the cows do not receive any hormones (such as rBST) or antibiotics, eat organic feeds, and have access to pasture. The extent of pasture exposure and management may vary across organic farms, but both the feeds and pastures are to be raised without the use of pesticides, herbicides, or chemical fertilizers.
- *Management intensive rotational grazing (MIRG)* operations are characterized by their reliance on pastures as a source of feed during the grazing season and by moving their cows to a new paddock at least once a week.
- *Conventional operations* are characterized by either non-intensive grazing or minimal reliance on pastures for feed.

Prices for Organic Milk

One important initial indicator of the performance of organic dairy farms is the price premium they receive relative to conventional operations and the price level which organic dairy farmers report needing to remain profitable. In Table 1, organic dairy farms reported receiving \$19.50 per hundred-weight (cwt) in 2003, which was \$7.20 greater than conventional operations or a premium of almost 60 percent above typical dairy prices. In addition, when asked what price they would need to remain profitable, organic dairy farmers reported a \$16.80 price per hundred weight (cwt.), which was well below the price they were earning at the time.

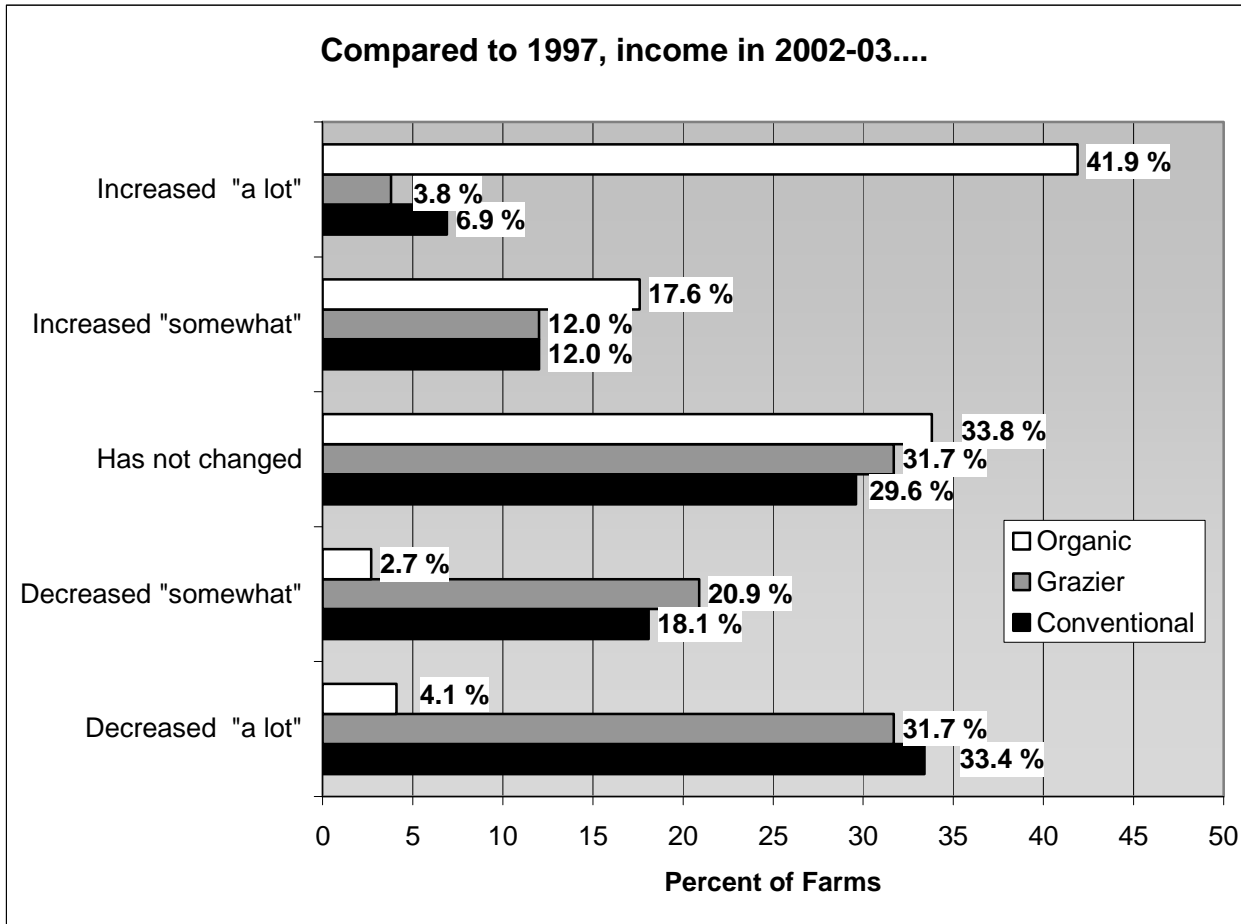
Table 1. Average Pay Price Per Cwt (2003)

	Dairy Farms by Management Type	
	Organic	Conventional
Pay Price	\$ 19.50	\$ 12.20 ¹
Pay Price Needed to Continue	\$ 16.80	

Price premiums translate into increased farm income, but do not necessarily translate into increased profitability. The additional costs incurred to produce milk organically could be sufficient to make returns to organic dairy farming comparable to other types of dairy farming. The evidence presented in Figure 2 suggests, however, that organic dairy farmers may even be more profitable. Specifically, organic dairy farmers experienced much greater improvements in income over the past five years than other types of dairy farms. Close to 60 percent of organic dairy farmers report household income increases (“somewhat” or “a lot”) between 1997 and 2003 (for organic farmers) while more than 50 percent of graziers and conventional dairy farms reported income declines over that same time period. Given that generally over 80 percent of household income comes from farming across all three dairy farm types, the strong performance of farm income on organic dairy farms is another solid indicator of high performance.

¹ This conventional milk price comes from Brian Gould’s website, “Prices Received by Wisconsin Farmers All Dairy”-2003 price assembled with data from NASS and USDA [WWW] http://www.aae.wisc.edu/future/front_cash_prices.htm

Figure 2. Income Changes on Wisconsin Dairy Farms



Demographics

Initially, organic dairy farmers seem to be very similar to other types of Wisconsin farmers in terms of their farming background, education, and years of farming. As shown in Table 2, family farming experience is the norm for all of the different types when considering farm ownership. About two-thirds (60 percent) of all three types of dairy farmers came from families who owned the farm they are currently working. However, a smaller percentage (51 percent) of organic dairy farmers was from households where as teens their parents farmed (compared to 85 percent for graziers and 90 percent for conventional farmers). In terms of education, about 14 percent of organic dairy farmers completed a college degree or more, compared to about nine percent of farmers in the other types of operations. Again, organic dairy farmers appear to have relatively comparable educational backgrounds. However, organic farmers likely received their post high school training through trade schools or apprenticeships, and graziers and conventional farmers gravitate towards 2-year colleges. In terms of years of farm operation, organic dairy farms reported, on average almost 23 years, as compared to 25-26 years in the other types. Overall, these comparisons suggest relatively small differences between organic dairy farmers and other types of dairy farmers in terms of education, farm background, and years operating the farm.

Table 2. Education and Farm Background of Wisconsin Dairy Farmers

	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Education (% of Farmers)			
Less than a high school diploma	9.6 %	17.8 %	8.9 %
High school diploma	43.4 %	45.4 %	48.8 %
Trade School/ Apprenticeship	26.5 %	8.6 %	14.0 %
College degree (2) /Some college	6.0 %	19.0 %	19.3 %
College degree (4)	9.6 %	5.5 %	6.8 %
Post-college	4.8 %	3.7 %	2.3 %
Years Farm Operating	22.8 %	25.3 %	26.4 %
Farming Background (% of Farms)			
Parents farmed (when a teen)	50.6 %	85.3 %	90.7 %
Parents owned the farm	62.7 %	59.9 %	63.7 %

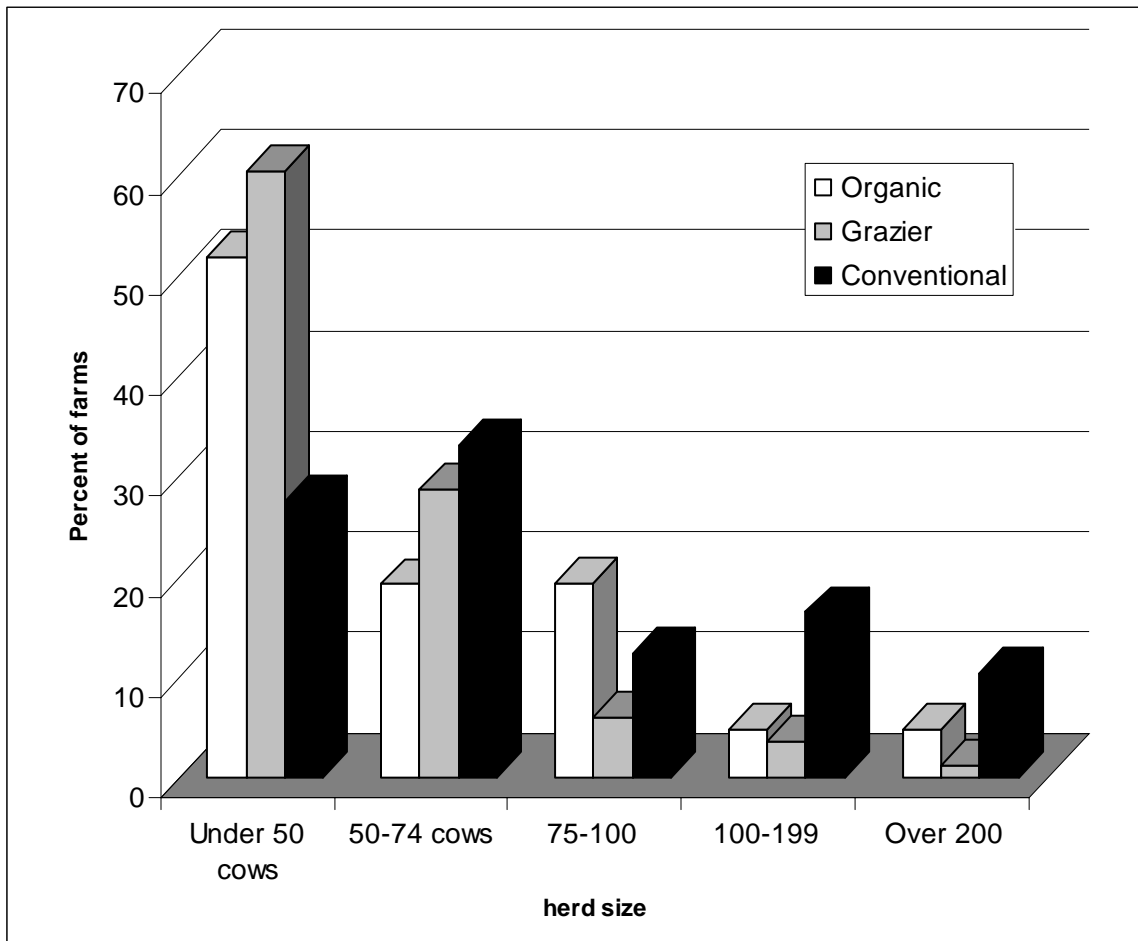
Farm Structure

The size structure of organic dairy farms is quite similar to graziers and more moderate scaled farms than the typical conventional operation. Specifically, as reported in Table 3, the average herd size of organic dairy farms is 65 cows (median 47), as compared to 48 (median 42) for graziers and 97 (median 62) for conventional operators. The average acres operated by organic farms (307) are between the total acres operated by graziers and conventional farms, but is slightly closer in size to graziers than to conventional farms. Figure 3 shows the distribution of farms by different herd size categories, providing a more nuanced view of farm structure by farm type. A somewhat larger percentage of organic dairy farms have over 100 cows (9 percent) relative to graziers (5 percent), which explain the higher average number of cows but comparable median sizes across those two groups. In contrast, almost one-fourth (25 percent) of conventional operations have over 100 cows, unlike organic dairy farms which are more likely to be relatively smaller in scale.

Table 3. Size Structure of Wisconsin Dairy Farms

	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Number of Cows (mean)	65	48	97
Number of Cows (median)	47	42	62
Total Acres Operated	307.2	244.9	399.1

Figure 3. Percent of Farmers in Different Herd Size Categories



Technologies, Management Practices, Parlors, and Housing

Technologies. With the exception of pasture management and use of biotechnology, many of the management practices of organic dairy farms are more like those of conventional dairy farmers than graziers. As shown in Table 4, organic dairy farmers have very similar adoption rates to conventional dairy farmers for computers as a farm management tool, use of the Internet for farm operation, and maintenance of production records for individual cows. Graziers use almost all the technologies listed, however, at a considerably lower rate. Organic dairy farmers are more likely to use total mixed ration equipment to mix their feed (33 percent) than graziers (14 percent) but are less likely than conventional farmers (47 percent). Organic dairy farm operations look more like grazing operators when it comes to the regular use of veterinarian services (49 percent and 46 percent, respectively) compared to conventional dairy farms (76 percent). This may stem from the constraints organic farms face on the use of certain types of veterinary medicine, but it may also be that these lower use rates are a function of better (or perhaps less well attended) herd health on farms that graze their animals. Not surprisingly, organic dairy producers report no use of rBST, primarily because it is a requirement for organic certification, while one in four (25 percent) of conventional dairy farms and one in fifteen (7 percent) graziers report use of the synthetic hormone.

Table 4. Use of Modern Technologies On Wisconsin Dairy Farms*			
Type of Technology Used (Percent Adopted)	Dairy Farms by Management Type		
	Organic	Graziers (MIRG)	Conventional
Computer as a farm management tool	42.7 %	24.7 %	41.5 %
Internet for farm information	43.8 %	28.8 %	47.1 %
Keep production records on individual cows	65.9 %	56.4%	66.5 %
Regularly scheduled vet services	49.4 %	46.9 %	75.6 %
Total Mixed Ration (TMR)	32.5 %	13.7 %	47.4 %
rBST	0.0 %	7.5 %	25.4 %

* Columns do not add up to 100% because respondents were asked to “check all that apply”.

Pasture Management. An interesting comparison emerges between organic dairy farmers and graziers when pasture management choices are examined (Table 5). Note that while both are equally likely to rely on pasture as a primary source of forage (~70 percent), organic dairy farmers are more likely to rotate their cows more frequently on their land. The differences in rotation are quite striking as about one-half (46 percent) of organic dairy farmers rotate pasture once a day or more compared to only one in four (26 percent) graziers. At the other end of the spectrum, rotational practices by farm type are reversed, with 40 percent of graziers report rotating weekly or less as compared to 25 percent of organic dairy farmers.

Table 5. Pasture Management Choices			
	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
What percent graze? (Percent of farms)	97.6 %	100.0 %	18.7 %
Pasture primary source of forages? (Percent of graziers)	69.6 %	68.5 %	36.7 %
Rotation Frequency_ (Percent of those that graze)			
Once a day or more	46.3 %	25.7 %	n.a.
Every 2-6 days	28.8 %	34.1 %	n.a.
About once a week (or less)	25.0 %	40.2 %	n.a.



Manure Management. At the other end of the productive “pipeline”, organic dairy farmers pursue a quite distinctive set of manure and nutrient management practices, compared to the other two groups. Specifically, as shown in Table 6, organic dairy farmers are far less likely to put manure directly into a spreader and/or haul daily (16 percent) compared to graziers (68 percent) and conventional dairy farmers (57 percent). Rather, they are much more likely to either store it in a lined structure (45 percent) or in a form of unlined storage (20 percent). Organic dairy farmers exhibit practices more frequently found on larger farms (Turnquist et al., 2006). This may be due to their more active manure management for use on their fields as a source of nitrogen given the organic certification restrictions on chemical fertilizers.

Table 6. Manure and Nutrient Management			
(Percent Usage by Organic, Graziers and Conventional Dairy)			
	Dairy Farms by Management Type		
	Organic	Graziers (MIRG)	Conventional
Put manure directly in spreader and/or spread daily	16.0 %	68.3 %	57.2 %
Leave manure in barn/buildings (for more than a few days)	8.0 %	1.2 %	1.8 %
Pile manure on ground, or slab, or in unlined storage	20.0 %	10.4 %	6.7 %
Store manure in lined structure	45.3 %	17.1 %	33.2 %
Other	5.3 %	3.1 %	1.0 %

Parlors and Housing. The final comparison of this section involves the milking and housing structures used on the three types of dairy farms (Table 7). The most striking feature of these comparisons is that the organic dairy farmers have the highest adoption rate of milking parlors with close to 30 percent, as compared to 9 percent among graziers and 23 percent among conventional operations. Thus, organic dairy farms are more likely to have two of the key technologies used as indicators of dairy farm modernization in Wisconsin. Even more surprising is the fact that parlor adoption is so high on organic farms given that the trend statewide has been one where parlor use is very closely related to expansions in herd size. The typical parlor adoption story on conventional dairy farms in Wisconsin has been that the expansion of herds from 50 toward 100 cows drives the adoption of parlors to replace the stanchion (stall) barn. This move, in turn, frequently allows the rapid growth of herd size (to 200 and beyond) in subsequent years because of the increased efficiency of milking operations in a parlor. Other evidence from the survey, however, does not suggest that existing organic dairy farms see

themselves as very likely to expand (as is often the case with conventional dairies) even though they have that capacity with respect to milking technology.

Similar to milking parlors is the high levels of adoption of freestall housing among organic dairy farmers as shown in Table 7. To an even greater extent than for milking parlors, the freestall housing is most often retrofitted within existing old barn structures rather than built new. The organic dairy industry is making very judicious use of the current dairy infrastructure existent in Wisconsin by renovating it to fit new technologies and new ways of managing cows. In contrast, the expanding conventional sector is much more likely to construct new buildings. Thus, in many ways the organic dairy industry is helping to renovate and preserve the old barns of rural Wisconsin.

Table 7. Housing and Milking Structures on Wisconsin Dairy Farms (Percent Usage by Organic, Graziers and Conventional Dairy)			
	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Milking System			
Stall Barn with buckets	3.6 %	22.6 %	7.0 %
Stall Barn w/pipeline	67.5 %	68.3 %	69.3 %
Flat Parlor in old barn	3.6 %	1.8 %	3.7 %
Flat Parlor in new building	0.0 %	3.7 %	0.0 %
Pit Parlor in old barn	10.8 %	1.8 %	8.4 %
Pit Parlor in new building	14.5 %	1.8 %	10.9 %
Housing			
Tie Stall Stanchion	70.8 %	88.2 %	71.7 %
Bedding pack housing in new or converted building(s)	6.2 %	6.8 %	1.0 %
Retro Freestall (existing building converted to freestall housing)	18.5 %	0.6 %	5.9 %
New or Modern Freestall	4.6 %	4.4 %	21.3 %

Overall, the management practices, technologies, and structures of organic dairy farms point to another type of modernization that is occurring in the Wisconsin dairy sector. Organic dairy farmers are adopting many of the information practices at levels comparable to the conventional farmers (even higher if we were to control for size-bias). They are adopting more intensive management techniques on pasture and manure use, and building more parlors and freestall housing structures. These data suggest that organic farmers may be in a good position to expand their role significantly in the dairy industry in the years ahead if they can meet some of the other unique challenges that organic dairy farming may face in terms of feed sourcing, cow-calf replacements, and herd health.

Comparative Performance of Dairy Farms in Wisconsin

Productivity. In daily milk production per cow, as shown in Table 8, organic farms have only slightly lower production levels than graziers and 18 percent lower levels than conventional producers. As one may possibly expect, the production levels might be lower for organic and grazer farmers who rely more on pasture rather than grain as a source of feed.

	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Milk per cow per day (mean in lbs.)	52.3	54.6	64.0

Satisfaction and Income. Organic dairy farmers appear to be very satisfied with their situations compared to other types of dairy farms. The comparisons in Table 9 provide evidence that organic dairy farming is performing very well in a variety of ways. More than three-fourths (75 percent) of the organic dairy farmers report being “somewhat satisfied” or “very satisfied” with their family’s quality of life, compared to 46 percent of graziers and 42 percent of conventional dairy farmers.

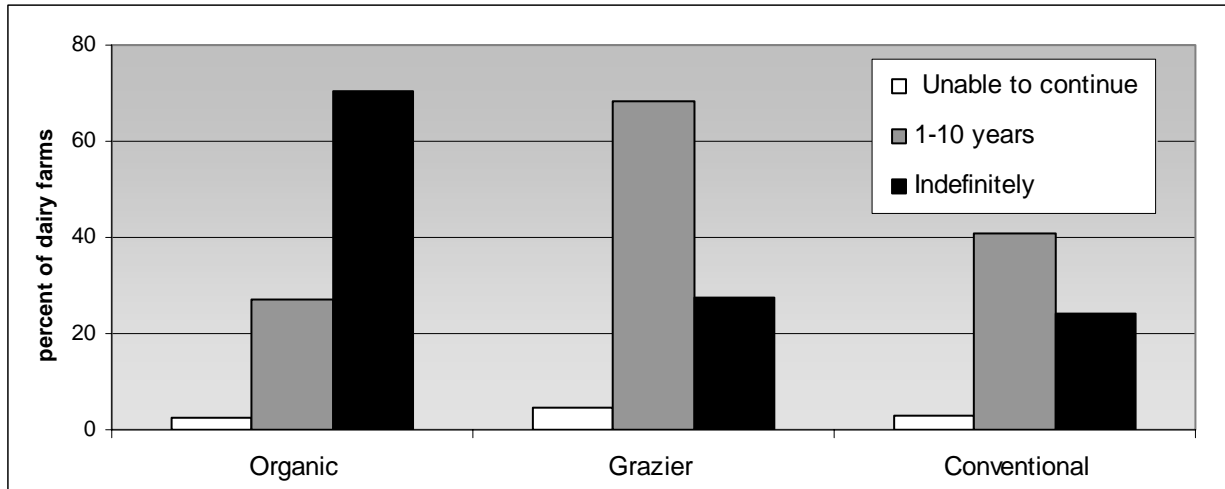
Much of this difference in satisfaction between organic dairy farmers and other types of Wisconsin dairy farmers appears to be related to their satisfaction with net farm income. Note that almost two-thirds (60 percent) of graziers and conventional farmers were very unsatisfied with this indicator compared to only a few (4 percent) of organic dairy farmers. On the flip side of this question, more than one-half (57 percent) of organic dairy farmers report being “somewhat” or “very satisfied” with their net farm income compared to 5-6 percent in the other two groups. And, as Table 9 and Table 1 suggest, this difference is almost certainly attributable to the price received for milk. Organic producers are far more likely to be somewhat or very satisfied, while the other types were very unsatisfied. Even though 2002 and 2003 were low price years for conventional milk in Wisconsin, the differences in outcomes for organic producers are nonetheless impressive. Clearly, they were insulated from the losses that other types of dairy farmers experienced.

On the other three indicators: herd health, physical demands, and stress level, the organic dairy farmers report similar levels of satisfaction as graziers and higher levels of satisfaction than conventional dairy farmers. Thus, in terms of a wide range of indicators related to satisfaction with farm life, organic dairy farms far outpaced the performance of their grazer and conventional counterparts.

Table 9. Satisfaction with Farm Life			
	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Family's quality of life			
Very unsatisfied	1.2 %	7.6 %	9.3 %
Somewhat unsatisfied	3.6 %	12.0 %	11.7 %
Satisfied	19.3 %	34.6 %	36.9 %
Somewhat satisfied	47.0 %	30.8 %	31.6 %
Very satisfied	28.9 %	15.1 %	10.4 %
Net farm income			
Very unsatisfied	3.7 %	59.1 %	60.0 %
Somewhat unsatisfied	7.3 %	23.4 %	22.4 %
Satisfied	31.7 %	11.7 %	12.4 %
Somewhat satisfied	39.0 %	3.9 %	2.8 %
Very satisfied	18.3 %	2.0 %	2.4 %
Price received for milk			
Very unsatisfied	2.4 %	77.1 %	84.8 %
Somewhat unsatisfied	2.4 %	15.0 %	10.8 %
Satisfied	13.4 %	3.9 %	2.3 %
Somewhat satisfied	34.2 %	2.6 %	0.9 %
Very satisfied	47.6 %	1.3 %	1.3 %
Herd Health			
Very unsatisfied	1.2 %	4.6 %	3.8 %
Somewhat unsatisfied	2.4 %	8.5 %	7.9 %
Satisfied	20.7 %	20.3 %	35.5 %
Somewhat satisfied	47.6 %	44.4 %	38.1 %
Very satisfied	28.1 %	22.2 %	14.7 %

It is not surprising that organic dairy farmers are far more optimistic about their future in dairy farming than graziers and conventional dairy farmers. As shown in Figure 4, close to 70 percent of organic dairy farmers report that they are likely to continue their operations indefinitely. Only one-fourth of graziers and conventional farmers reported similar intentions. If we expand the time frame further, then 85 percent of organic dairy farmers expect to farm more than 5 years, compared to about 45 percent of the other two types of farm operations. These differences are striking given the average age of primary farm operators is similar across all three farm types.

Figure 4. Expected Length of Farming Career



Finally, as shown in Table 10, debt-to-asset ratios and debt-to-cow ratios among organic dairy farmers are very similar to those of their counterparts. At least in terms of that potential risk indicator, organic dairy farms appear to be equally leveraged, and thus probably no more at risk of suffering debt problems than graziers or conventional dairy farms. In other words, their recent performance, satisfaction of family’s quality of live, and intention to continue farming well into the future, does not appear to be based on excessive leverage, at least in relative terms.

Table 10. Assets and Debts			
	Dairy Farms by Management Type		
	Organic	Grazier (MIRG)	Conventional
Percent with No Farm Debt	18.0 %	25.3%	20.2 %
Debt per cow	\$2,799	\$2,940	\$2,855
Debt-to-Asset ratio	27.2%	29.1%	29.4%

Conclusions

The recent dynamism in organic dairy farming in Wisconsin is clearly reflected in this comparative analysis. Organic dairy farmers are achieving very satisfying income and quality of life outcomes and are also the most optimistic about the future viability of their operations compared to graziers and conventional dairy farmers. Despite the moderate average size of organic dairy farms, they are using several modern technologies including parlors and free stall housing structures at a high level relative to conventional dairy farmers and management-intensive rotational graziers. Organic farming is currently a vital and growing component of the Wisconsin dairy sector especially in the West Central region of the state.

Looking forward, it seems likely that the organic dairy sector will be a vibrant part of the Wisconsin dairy industry for years to come with continued growth in production levels. But, what form will that expansion of organic dairy farming take? Will it be driven by the expansion of current *dairy* farms? Will there be a substantial role played by new entrants into organic dairy farming? If so, whom will they be -- new dairy farmers or other types of dairy farmers making the organic transition? Will the new entrants tend to be moderately sized, or will there be a few large organic dairies among the entrants? Will entry and expansion spread to other regions of the state in the future? The answers to these questions will play an important role in shaping the structure and performance of the organic dairy sector and the Wisconsin dairy industry in the years to come.

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