

The Financial Performance of Wisconsin Grazing, Organic, and Confinement Dairy Farms from 1999 to 2014

Thomas S. Kriegl
University of Wisconsin Center for Dairy Profitability
University of Wisconsin-Extension
Madison, WI
See <http://cdp.wisc.edu> for more information
December 2015

ABSTRACT: Ten Land Grant Universities plus Ontario standardized accounting rules and data collection procedures to gather, pool, summarize and analyze actual farm financial performance from many sustainable, small farming systems which then lacked credible financial data that producers need for decision-making, in a project initially sponsored by USDA IFAFS grant project #00-52501-9708.

This comparison of several dairy systems, spawned by USDA IFAFS grant project #00-52501-9708, primarily compares Wisconsin non-organic grazing dairy farm data to organic and confinement data. However, the Wisconsin data was also compared to an increasing amount of organic data collected in other parts of North America.

This report uses 357 farm years of Wisconsin grazing farm data, 174 farm years of Wisconsin organic dairy farm data and over 10,000 farm years of Wisconsin confinement data spanning 15 to 20 years to help understand the economic competitiveness of these dairy systems from 1999 to 2014.

Data from organic dairy farms are scarce.

This study used the Wisconsin Agricultural Financial Advisor (AgFA) data set. AgFA is a sample of Wisconsin dairy farms from which financial and production data are collected annually. Data were originally collected by a number of providers: Lakeshore and Fox Valley Farm Management Association, Wisconsin Farm and Business Management Inc., other independent consultants, UW-Extension agricultural agents, Wisconsin Technical College System instructors and Center for Dairy Profitability staff. Personnel affiliated with these associations helped individual farm managers reconcile their financial data.

Actual farm financial data from organic dairy farms is still scarce but increasing. Because of the scarcity of the organic data in any single year, this analysis and comparison of Wisconsin certified market organic dairy farm financial performance with other systems focuses on a 16-year average for each group. None of the summarized groups were random.

The grazing data included 7 to 41 observations per year (total of 357 farm years of data) from 1995 to 2014. Until 2006, a few organic graziers were included in the grazing group, but they represented 25% of the grazing herds in 2004 and 2005, and less than 14% in any previous year. The annual average grazing herd size ranged from 50 to 90 cows. The organic herd summaries ranged from 6 to 17 herds with an annual average herd size of 48 to 80 cows (total of 174 farm years of data). Not all organic herds were intensive graziers. The first organic summary was produced in 1999. The average confinement herd summaries ranged from 304 to 928 farms per year, with annual average herd size ranging from 76 to 204 cows from 1995 to 2014.

The number of grazing herds in the annual summaries declined substantially since 2005 because several of the grazing farms that submitted data for several years became certified organic and joined the organic group. Since 1995, at least one of the graziers in the data was transitioning to organic each year, which likely slightly reduced the financial performance of that herd and the grazing group. From 1999, the grazing data also included a few grazing farms that were receiving organic milk prices. Until 2009, the presence of these organic farms had minimal impact on the grazing group's average NFIFO, but the different cost structure began to show in 2006. Therefore, beginning with the 2006 data, the summarized Wisconsin grazing cost of production reports **do not include any herds receiving organic milk prices.**

From 1999 to 2004, more than half of the farm years of organic data were from farms that were only meeting very minimum grazing standards. As of June 17th, 2010, by definition all certified organic dairy farms in the U.S. practice MIRG. The Wisconsin organic data includes farms that grazed only enough to meet organic certification standards, along with organic farms that more seriously practice management intensive rotational grazing (MIRG).

Comparing Financial Performance of Wisconsin Organic, Grazing and Confinement Dairy Farms 1999 to 2014

Since many non-organic farmers are asking how the financial performance of organic farming compares with non-organic systems, a sixteen year simple average cost of production summary was compiled for Wisconsin organic, grazing and confinement herds.

Table 1 shows the range in annual observation numbers, herd size, NFIFO/\$ income and sixteen-year simple average NFIFO/\$ income for organic, grazing, small confinement, large confinement (more than 250 cows/herd), and the average Wisconsin confinement group.

Table 1

Dairy System	Farm # Range	Avg. Herd Size Range	16-Year Simple Average NFIFO/\$ Income	Range
Graziers	7-43	61-90	23.49%	16.17 to 32.91%
Organic	6-17	48-80	20.99%	13.53 to 26.26%
Small Confinement	55-217	62-63	14.94%	5.72 to 24.93%
All Confinement	304-660	96-204	10.04%	(3.45) to 19.33%
Large Confinement	34-80	441-644	8.79%	(7.93) to 15.52%

Several measures should be examined when analyzing financial performance and economic competitiveness because no single measure tells the whole story. However one usually is limited to just a few measures to explain the results. The primary measure used for illustrating in this report is net farm income from operations per dollar of income or as a percent of farm income (NFIFO/\$ income) based on accrual adjusted income and expenses. A similar measure is used in the non-agricultural business world. A sixteen-year simple average of these three systems is shown in Table 2.

The use of this measure is driven mainly by two factors. The organic milk price was usually much higher than the milk price received by confinement and grazing herds. The pounds of milk sold per cow by confinement herds was 30% and 36% more per cow sold by grazing and organic herds respectively. Under these circumstances, NFIFO/\$ income makes it easier to understand the relative profitability of these dairy systems.

Table 3 provides a 16-year simple average of the three systems on a per-cow basis. The per-cow basis is particularly useful for budgeting purposes.

Observations of the Financial Performance of Organic Dairy Farms.

1. Income and costs have increased dramatically for all systems from 1999 to 2014.
2. The increasing advantage that confinement herds have in lbs. milk sold per cow is a threat to the economic competitiveness of grazing and organic systems.
3. Non-organic graziers have fallen behind small confinement herds in NFIFO/cow since 2010, mainly because the small Wisconsin confinement farms were able to offset most of their purchased feed costs with the sale of small amounts of high priced feed that they raised. This peaked in 2012 and is declining with grain prices.
4. Data is scarce from any organic group especially from transitional organic.
5. By most measures, grazing systems had the lowest cost of production per unit followed by confinement herds smaller to larger. The organic cost of production averaged about \$5/CWT sold higher than non-organic herds.
6. Organic dairy farms need a price premium of about \$5/CWT sold to be economically competitive. The 8-year annual average organic price premium was \$5.14 from 1999-2005 and \$8.99 from 2006-2014 over the confinement price.
7. Organic price premiums ranged from \$2.70 to \$13.02 vs. non-organic herds.
8. Organic is most competitive when non-organic price low.
9. Wisconsin graziers usually had the highest NFIFO as a percent of income followed by organic and confinement herds smaller to larger. Organic had higher NFIFO/CWT sold for 13 of 16 years and higher NFIFO/cow 10 of 16 years.
10. Grazing practices appear to enhance profitability more than organic practices.
11. If already practicing organic – go for reward.
12. If far from organic practices, 3-5 year transition challenging.
13. Organic dairy farms appeared to be competitive with non-organic dairy farms in (1990-95) Quebec study.
14. Lbs. of milk sold/cow from organic farms similar from WI to MN to New England to Quebec.
15. In 2004, organic dairy farms in a New England study were not as competitive as
 - a) non-organic New England dairy farms
 - b) any Wisconsin dairy system
16. Since 2005, New England Organic farms have become more competitive benefitting from increased price premiums.
17. Feed costs were much higher for New England farms – especially for those which are organic.
18. Performance of Minnesota herds was fairly similar to Wisconsin's performance.
19. Be careful about comparing one dairy system in one state to a different dairy system in another state.

Table 2: Sixteen-Year (1999-2014) Simple Average Cost of Production as a Percent of Income for Wisconsin Grazing, Organic and Confinement Herds

	<u>Graziers*</u>	<u>Organic**</u>	<u>Confinement</u>
Range of Observations per Year	7 to 43	6 to 17	304 to 721
Range of Average Herd Size per Year	60 to 90	48 to 80	110 to 204
Percent of Income	100.00%	100.00%	100.00%
Expenses			
Breeding Fees	1.05%	1.01%	1.19%
Car and Truck Expense	0.74%	0.59%	0.35%
Chemicals	0.53%	0.09%	1.20%
Custom Hire (Machine Work)	3.54%	3.36%	3.23%
Custom Heifer Raising	0.16%	0.02%	0.33%
Feed Purchase	23.57%	14.55%	22.67%
Fertilizer and Lime	2.22%	2.93%	2.68%
Freight and Trucking	0.77%	1.07%	1.05%
Gasoline, Fuel, and Oil	2.67%	3.55%	2.92%
Farm Insurance	1.31%	1.67%	1.10%
Marketing & Hedging	1.08%	1.39%	0.91%
Rent	2.06%	4.05%	3.78%
Repairs all	4.33%	6.48%	4.54%
Seeds and Plants Purchased	1.75%	2.79%	2.41%
Supplies Purchased	4.15%	4.24%	2.39%
Taxes	1.42%	1.33%	0.81%
Utilities	2.33%	2.40%	1.96%
Veterinary Fees and Medicine	1.86%	1.24%	2.74%
Other Farm Expenses	2.53%	2.90%	6.20%
Combined Non-Cash Adjustments	-0.61%	-0.46%	-0.47%
Depreciation: Livestock	0.75%	0.87%	2.15%
Total Basic Cost	58.22%	56.06%	64.16%
Total Paid Interest Cost	4.17%	4.83%	4.35%
Total Paid Labor Cost	3.77%	4.78%	10.70%
Depreciation: Non-livestock	10.58%	13.34%	10.82%
Total Non-basic Cost	18.51%	22.96%	25.87%
Total Allocated Cost (Basic + Non-basic)	76.73%	79.01%	90.03%
Unpaid Labor/Management	15.10%	10.22%	5.70%
Interest On Equity	5.62%	5.08%	2.90%
Total Opportunity Cost	20.72%	15.30%	8.60%
Total Cost	97.45%	94.32%	98.63%
Total Income - Total Cost	2.55%	5.68%	1.37%
Net Farm Income from Operations (NFIFO)	23.27%	20.99%	9.97%
Gain (Loss) on Sale of All Farm Assets	0.31%	0.55%	0.44%
Net Farm Income (NFI)	23.58%	21.53%	10.41%

*The 1999 to 2005 grazing data includes a few farms that were transitioning to or certified as organic. No certified organic farms were included in grazing summaries after 2005.

** The 1999 to 2014 organic data includes certified organic herds regardless of grazing intensity.

Table 3: Sixteen-Year (1999-2014) Simple Average Cost of Production Per Cow for Wisconsin Organic, Grazing and Confinement Herds

	<u>Graziers*</u>	<u>Organic**</u>	<u>Confinement</u>
Range of Observations per Year	7 to 43	6 to 17	304 to 721
Range of Average Herd Size per Year	60 to 90	48 to 80	110 to 204
Income	\$3,323.51	\$4,177.36	\$4,557.13
Expenses			
Breeding Fees	\$35.11	\$43.43	\$54.32
Car and Truck Expense	\$24.52	\$25.18	\$16.37
Chemicals	\$16.92	\$3.58	\$55.48
Custom Hire (Machine Work)	\$117.44	\$140.48	\$145.32
Custom Heifer Raising	\$5.35	\$0.60	\$13.55
Feed Purchase	\$771.38	\$602.79	\$1,009.08
Fertilizer and Lime	\$73.85	\$119.06	\$118.88
Freight and Trucking	\$25.97	\$43.87	\$48.37
Gasoline, Fuel, and Oil	\$87.06	\$146.55	\$128.76
Farm Insurance	\$43.69	\$69.91	\$50.36
Marketing & Hedging	\$36.61	\$60.29	\$42.37
Rent	\$68.43	\$167.92	\$175.48
Repairs all	\$143.97	\$272.96	\$209.54
Seeds and Plants Purchased	\$57.79	\$115.17	\$107.01
Supplies Purchased	\$138.30	\$180.56	\$111.66
Taxes	\$47.72	\$57.40	\$38.48
Utilities	\$77.86	\$100.41	\$89.33
Veterinary Fees and Medicine	\$62.70	\$53.60	\$126.61
Other Farm Expenses	\$85.24	\$118.46	\$281.01
Combined Non-Cash Adjustments	(\$19.52)	(\$17.71)	-\$18.18
Depreciation: Livestock	\$24.72	\$33.74	\$103.10
Total Basic Cost	\$1,925.12	\$2,338.27	\$2,906.87
Total Paid Interest Cost	\$139.81	\$204.20	\$205.15
Total Paid Labor Cost	\$121.97	\$198.20	\$494.86
Depreciation: Non-livestock	\$356.47	\$559.42	\$492.68
Total Non-basic Cost	\$618.26	\$961.83	\$1,192.69
Total Allocated Cost (Basic + Non-basic)	\$2,543.37	\$3,300.10	\$4,099.56
Unpaid Labor/Management	\$509.79	\$433.92	\$265.40
Interest On Equity	\$192.52	\$228.24	\$136.07
Total Opportunity Cost	\$702.31	\$662.16	\$401.47
Total Cost	\$3,245.68	\$3,962.26	\$4,501.03
Total Income - Total Cost	\$77.83	\$215.10	\$56.10
Net Farm Income from Operations (NFIFO)	\$780.14	\$877.27	\$457.57
Gain (Loss) on Sale of All Farm Assets	\$10.38	\$22.66	\$20.67
Net Farm Income (NFI)	\$790.52	\$899.93	\$478.24

*The 1999 to 2005 grazing data includes a few farms that were transitioning to or certified as organic. No certified organic farms were included in grazing summaries after 2005.

** The 1999 to 2014 organic data includes certified organic herds regardless of grazing intensity.