IOWA STATE UNIVERSITY Extension and Outreach



Organic Dairy Profits in SW Wisconsin, 2014

by Dr. Larry Tranel, Dairy Specialist, ISU Extension and Outreach NE / SE Iowa

Interest continues to grow in organic dairying by consumers, producers and processors. Organic dairying has its production challenges but good profits can be earned for producers who manage the organic system well. The proof is in the numbers.

Iowa State University Extension teamed up with CROPP Cooperative/Organic Valley to analyze the 2014 profits of nine Wisconsin dairy farms. The results were broken down into four sections, each shown in a three column format depicting dollar values, per cow values, and per cwt. equivalent values for applicable income and expense items. The four sections include 1) Average of all 9 farms 2) "High Profit" group consisting of the three most profitable farms, 3) "Medium Profit" group consisting of the three next most profitable farms, and 4) "Low Profit" group consisting of the three least profitable farms. Profitability was determined based on 1) return on assets 2) return to unpaid labor hour, and 3) net return per cwt. equivalent of milk produced. Each farm used the Dairy TRANS Financial Analysis program to analyze profitability.

To maintain fairness in comparing farms with varying debt loads, an equity charge of 4% of total farm assets was used. So, whether the assets were owned or borrowed, the charge was equal across all farms. This also allowed producers to participate without sharing confidential information about debts or total net worth. Note that this impacts the analysis in that the cash expenses do not include interest expense. This affects cash related ratios and calculations.

The Average of All 9 Farms*

The average farm employed 65 cows and operated 4.44 acres of productive land per cow. Assets totaled \$25,089 per cow. Total cash incomes per cow were \$5,278 with total cash expenses of \$3,664 giving a net cash income per cow of \$1,614 (without interest expense). Add a \$495 per cow inventory gain gives a net farm income of \$2,108 per cow or \$137,046 per farm. After subtracting \$63,857 for an equity charge, the return to unpaid labor averaged \$1,126 per cow or \$73,189 per farm. This gives a return of \$16.29 per unpaid labor hour.

The average milk price received was \$31.28 per cwt. equivalent. Total expenses, including both equity and unpaid labor, were \$30.11 for a net income per cwt.

equivalent of \$1.17. The **rate of return on assets was 4.85%** with an operating profit margin of 20.97% and an asset turnover ratio of 24.83%. Thus, these nine dairies show "Average" profitability for 2014.

On average, these farms handled 32 cows per FTE (Full Time Equivalent of labor or 3,000 hours/yr.) selling 4,173 cwt. equivalents of milk per FTE and 13,582 pounds of milk sold per cow. These data sets defy traditional milk production logic, with the Low Profit group having the highest milk production per cow, producing 15.8% more than the High Profit group and 10% more than the Medium Profit group.

The major point that is causing the inverse relationship of profit versus milk production in the data set is that the highest producing herd, producing over 2,000 lbs more milk per cow than any other farm, just barely ended up in the Low Profit group. This producer also had good labor efficiency but shortage of acres caused high purchased feed costs--the main reason this producer fell into the Low Profit group. Interesting to note, the highest profit farm focused on fall calving but this producer's pay price was similar to the average.

The Average of the High Profit Farms

The three High Profit organic farms compete quite well with other dairy systems in terms of profit relative to return on assets at 7.74% and earnings of \$27.71 per hour of unpaid labor. Return on assets ranged from 5% to 10.6%. The bottom line is that these high profit organic farms can not only compete with the best of the grazing and conventional dairy systems, but may have the least risk due to the more stable milk price received.

The High Profit farms averaged 74 cows per farm and had 4.24 acres of productive land owned or rented per cow. Assets totaled \$21,062 per cow. A milk price of \$31.41 per cwt. equivalent was earned in 2014. Total cash income of \$4,589 per cow was achieved with cash expenses (excluding interest) of \$2,839 per cow to achieve a net cash income of \$1,749 per cow. Adding in a positive inventory change of \$495 per cow gives a **net farm income of \$2,244 per cow**.

Subtracting an \$825 equity charge per cow gives a return to labor of \$1,419 per cow or \$104,539 per farm on average for the owner-operator. With 4,400 hours of unpaid labor, this equates to a return of \$27.71 per hour—a respectable labor return. Labor efficiency is often highly correlated with profit with the milking parlor often having major impact. The High Profit farms tended to milk in a TRANS lowa Low Cost Parlor or similar type with one of these producers handling 72 cows per FTE. The High Profit farms are

correlated to labor efficiency with significantly more cows per FTE; cwts. of milk sold per FTE; and higher returns to labor per FTE.

Total cost of production for the High Profit farms ranged from \$22.64 to \$30.52 per cwt equivalent with an average of \$26.97 per cwt. equivalent for a profit level of \$4.44 per cwt. equivalent--a good margin of profit! Again, this total production cost includes the opportunity cost of both equity and unpaid labor.

The Average of the Medium Profit Farms

Three farms received a Dairy TRANS profit rating of "Average" for 2014. These Medium Profit organic farms averaged 64 cows per farm and had 6.53 acres of productive land owned or rented per cow. Due to the high ratio of acres to cows, this group had significant crop sales relative to the other farms, maybe an unfair comparison. Assets totaled \$33,856 per cow due to high owned acreages per cow. Total cash income was higher than the other groups at \$6,079 per cow, mainly due to crop sales. Cash expenses (excluding interest) were \$3,924 per cow to achieve a net cash income of \$2,154 per cow. Adding a \$515 inventory change per cow gives a **net farm income of \$2,670 per cow**.



Subtracting a \$1,323 equity charge per cow gives a return to labor of \$1,347 per cow or \$85,735 per farm on average for the owner-operator(s). With 5,963 hours of unpaid labor this equates to \$14.70 earnings per hour. This group had a milk price of \$31.31 with total production costs of \$30.03 per cwt. equivalent, including labor and equity costs for a profit level of \$1.27 per cwt. equivalent.

The rate of return on assets was 4.86% with an operating profit margin of 25.16% and an asset turnover ratio of 19.67% meaning it takes five years to earn enough gross income to pay for all the assets. A benchmark is three years (33% asset turnover ratio).

Thus, this data set teaches well that high net farm income, even after being inventory adjusted, does not show the full picture of profitability or production costs. This is the reason why opportunity costs of both unpaid labor and equity need to be accounted for in order to fairly compare one farm to another. The opportunity cost is what the unpaid labor and equity could have earned being employed elsewhere. This data set may also teach the balance between acres managed and cows milked, as high or low acres per cow lessened profit, but again, tough to infer with limited data.

The Average of the Low Profit Farms

The three Low Profit organic dairy farms had total costs of producing milk higer than the milk price they were receiving with an average price of \$31.12 and an average cost of \$33.33 for a net income per cwt. equivalent of -\$2.22. These farms averaged 58 cows with only 2.38 acres of productive land per cow. Note the purchased feed in this group averaged \$2,271 per cow—over three times greater than other groups and probably the biggest reason these producers fell into the Low Profit group. Assets totaled \$20,554 per cow.

Total cash incomes were \$5,247 per cow with total cash expenses of \$4,431 per cow which gives a net cash income of \$843 per cow. Inventory gains of \$472 per cow gave a **net farm income of \$1,315 per cow** or \$75,822 per farm. Subtracting \$46,529 for equity, the **return to labor averaged \$508 per cow** or \$29,293 per farm or \$6.46 per hour of unpaid labor earnings. The rate of return on assets was 1.95% with an operating profit margin of 6.66% and an asset turnover ratio of 28.37%.

Bottom Line

Organic dairying can be as or more profitable as conventional grazing and confinement dairy systems. Due to the small data set, no inference should be drawn correlating milk production per cow and profits. Labor efficiency is a great strength of the High Profit farms with significantly more cows per FTE (42 vs. 25 and 28); more cwts. sold per FTE (4,913 vs 3,302 and 4,304); and more net return per FTE (\$68,053 vs. \$38,575 and \$19,178).

Fertilizer and seed cost per acre tend to be higher for the High Profit farms over time. However, 2014 saw many farms invest more crop inputs with the Low Profit group in Wisconsin spending significant sums per acre. It is the opinion of this author that some of this expense was a "make up" from past or a "build up" for future fertility levels trying to maximize yield on limited acres. Optimum fertility levels tend to translate into higher profits by increasing feed production per acre and less purchased feed costs per cow.

The following two pages exhibit the detailed data of the nine farms analyzed. Remember, cash expense data does not include interest expense. Also, realize this study represents nine hand-selected farms so may not be representative of all Wisconsin organic dairy farms.

It is hoped this study will assist current and aspiring organic dairy producers to both budget and benchmark their dairy operations to better plan for future profitability. Producers are also urged to consider using the Dairy TRANS Financial Analysis to analyze and further improve dairy profits.

*Note: The "average" is calculated as the sum of the individual five farms for each item, not a previous item's sum divided by another item's sum, which yields slightly different results.

| Organic Dairy Farms 2014 | Average o | f All 9 F | arms | Average o | f High P | rofit | | | m Profit | Average o | f Low P | rofit |
|---|-------------|-----------------|---------|-------------|-----------------|---------|--|----------|----------|-------------|------------------|---------|
| Wisconsin | | /Cow | | Farms(3) | /Cow | | Farms(3) | /Cow | | Farms (3) | /Cow | |
| Productive Crop Acres Operated Average Number of Cows | 288 65 | 4.44 | | 312 74 | 4.24 | | 416 64 | 6.53 | | 137 58 | 2.38 | |
| Total Assets on Farm | \$1,630,801 | \$25,089 | | \$1,551,575 | \$21,062 | | \$2,155,528 | \$33,856 | | \$1,185,301 | \$20,554 | |
| Milk Price | \$31.28 | + _0,000 | | \$31.41 | V =1,00= | | \$31.31 | 400,000 | | \$31.12 | V =0,00 : | |
| Milk Hundred weight Equiv. | 12,332 | 190 | | 12,375 | 168 | | 13,518 | 212 | | 11,105 | 193 | |
| Milk Hundredweights | 8,746 | 135 | | 9,047 | 123 | | 8,259 | 130 | | 8,932 | 155 | |
| Milk Sales | \$272,489 | \$4,192 | | \$283,554 | \$3,849 | | \$258,396 | \$4,059 | | \$275,515 | \$4,778 | |
| Cull Cow Sales Cull Rate% | \$16,691 | \$257 | | \$14,700 | \$200 | | \$23,825 | \$374 | | \$11,549 | \$200 | |
| Calf Sales | \$7,906 | \$122 | | \$9,276 | \$126 | | \$7,310 | \$115 | | \$7,131 | \$124 | |
| Crop Sales | \$19,897 | \$306 | | \$4,091 | \$56 | | \$55,601 | \$873 | | \$0 | \$0 | |
| Other Income | \$26,072 | \$401 | | \$26,404 | \$358 | | \$41,872 | \$658 | | \$9,940 | \$172 | |
| Total Cash Income | \$343,055 | \$5,278 | /Cwt Fa | \$338,026 | \$4,589 | Cwt Fa | \$387,004 | \$6,079 | /Cwt.Eq. | · · | \$5,274 | Cwt Fa |
| Veterinary, Medicine | \$3,320 | \$51 | \$0.27 | \$2,798 | \$38 | \$0.23 | | \$36 | \$0.17 | | \$85 | \$0.44 |
| Dairy Supplies | \$17,307 | \$266 | \$1.40 | \$16,382 | \$222 | \$1.32 | | \$438 | \$2.06 | | \$133 | \$0.69 |
| Breeding Fees | \$1,904 | \$29 | \$0.15 | \$805 | \$11 | \$0.07 | | \$17 | \$0.08 | | \$66 | \$0.34 |
| Feed Purchased | \$70,171 | \$1,080 | \$5.69 | \$43,696 | \$593 | \$3.53 | | \$563 | \$2.65 | | \$2,271 | \$11.80 |
| Repairs | \$21,463 | \$330 | \$1.74 | \$14,795 | \$201 | \$1.20 | | \$532 | \$2.51 | \$15,726 | \$273 | \$1.42 |
| Seed, Chem, Fert | \$21,145 | \$325 | \$1.71 | \$20,720 | \$281 | \$1.67 | | \$335 | \$1.58 | | \$371 | \$1.93 |
| Fuel, Gas, and Oil | \$18,156 | \$279 | \$1.47 | \$14,424 | \$196 | \$1.17 | | \$425 | \$2.00 | | \$226 | \$1.17 |
| Utilities | \$7,034 | \$108 | \$0.57 | \$9,127 | \$124 | \$0.74 | | \$94 | \$0.44 | | \$104 | \$0.54 |
| Interest Paid not included | \$0 | • | • • • • | \$0 | Ť | \$0.00 | | * - | \$0.00 | | , - | \$0.00 |
| Labor Hired | \$19,414 | \$299 | \$1.57 | \$37,544 | \$510 | \$3.03 | | \$178 | \$0.84 | • | \$162 | \$0.84 |
| Rent, Lease and Hire | \$27,638 | \$425 | \$2.24 | \$24,115 | \$327 | \$1.95 | | \$600 | \$2.83 | | \$357 | \$1.85 |
| Property Taxes | \$4,502 | \$69 | \$0.37 | \$2,221 | \$30 | \$0.18 | 7 | \$103 | \$0.48 | | \$82 | \$0.43 |
| Farm Insurance | \$4,377 | \$67 | \$0.35 | \$6,020 | \$82 | \$0.49 | \$4,558 | \$72 | \$0.34 | \$2,552 | \$44 | \$0.23 |
| Other Cash Expense | \$21,747 | \$335 | \$1.76 | \$16,502 | \$224 | \$1.33 | | \$533 | \$2.51 | \$14,825 | \$257 | \$1.34 |
| Total Cash Expense | \$238,177 | \$3,664 | \$19.31 | \$209,148 | \$2,839 | \$16.90 | \$249,836 | \$3,924 | \$18.48 | \$255,546 | \$4,431 | \$23.01 |
| Net Cash Income | \$104,878 | \$1,614 | \$8.50 | \$128,877 | \$1,749 | \$10.41 | \$137,167 | \$2,154 | \$10.15 | \$48,589 | \$843 | \$4.38 |
| Inventory Change | \$32,168 | \$495 | \$2.61 | \$36,454 | \$495 | \$2.95 | \$32,817 | \$515 | \$2.43 | \$27,234 | \$472 | \$2.45 |
| Net Farm Income | \$137,046 | \$2,108 | \$11.11 | \$165,331 | \$2,244 | \$13.36 | | \$2,670 | \$12.57 | | \$1,315 | \$6.83 |
| Equity@ | \$63,857 | \$982 | \$5.18 | | \$825 | \$4.91 | | \$1,323 | \$6.23 | | \$807 | \$4.19 |
| Return to Labor | \$73,189 | \$1,126 | \$5.93 | | \$1,419 | \$8.45 | | \$1,347 | \$6.34 | | \$508 | \$2.64 |
| Inventory Adjustments Feed | | \$374 | \$1.97 | \$26,123 | \$355 | \$2.11 | | \$353 | \$1.66 | | \$421 | \$2.19 |
| Supplies and Other | \$476 | \$7 | \$0.04 | \$0 | \$0 | \$0.00 | | \$28 | \$0.13 | | -\$6 | -\$0.03 |
| Breeding Livestock | \$16,117 | \$248 | \$1.31 | \$22,800 | \$310 | \$1.84 | | \$170 | \$0.80 | | \$255 | \$1.33 |
| Income Change | \$40,893 | \$629 | \$3.32 | \$48,923 | \$664 | \$3.95 | | \$551 | \$2.60 | | \$671 | \$3.48 |
| Prepaid Expenses | \$633 | \$10 | \$0.05 | \$0 | \$0 | \$0.00 | The state of the s | \$30 | \$0.14 | | \$0 | \$0.00 |
| Accounts Payable | \$64 | \$1 | \$0.01 | \$0 | \$0 | \$0.00 | _ | \$0 | \$0.00 | - | \$3 | \$0.02 |
| Machinery & Equipment | \$4,525 | \$70 | \$0.37 | _ | \$174 | \$1.04 | - | -\$97 | -\$0.46 | - | \$120 | \$0.62 |
| Land and Buildings | \$20,563 | \$316 | \$1.67 | \$0 | \$0 | \$0.00 | - | \$830 | \$3.91 | - | \$153 | \$0.80 |
| Other Adjustments | \$4,551 | \$70 | \$0.37 | \$1,802 | \$24 | \$0.15 | _ | \$183 | \$0.86 | - | \$4 | \$0.02 |
| Expense Change | -\$30,207 | -\$465 | -\$2.45 | -\$14,637 | -\$199 | -\$1.18 | - | -\$945 | -\$4.45 | -\$15,801 | -\$274 | -\$1.42 |
| Capital Purchases Minus Sales Adj. | \$38,932 | \$599 | \$3.16 | _ | \$368 | \$2.19 | _ | \$981 | \$4.62 | _ | \$472 | \$2.45 |
| Depreciation COST | \$34,359 | \$529 | \$2.79 | \$37,692 | \$512 | \$3.05 | \$48,160 | \$756 | \$3.56 | \$17,225 | \$299 | \$1.55 |
| Depreciation FM Value | \$17,654 | \$272 | \$1.43 | - | \$181 | \$1.08 | - | \$313 | \$1.47 | - | \$341 | \$1.77 |
| Unpaid Labor Cost | \$54,333 | \$836 | \$4.41 | \$50,667 | \$688 | \$4.09 | | \$1,031 | \$4.86 | | \$809 | \$4.20 |
| Unpaid Labor Hours | 5,081 | 78 | | 4,400 | 60 | | 5,963 | 94 | | 4,880 | 85 | |
| Labor Full Time Equivalents | 2.26 | | | 2.28 | | | 2.50 | | | 1.99 | | |
| Labor Earnings Per Hour | \$16.29 | | | \$27.71 | | | \$14.70 | | | \$6.46 | | |
| Gross Income per Cwt. Eq. | \$31.28 | | | \$31.41 | | | \$31.31 | | | \$31.12 | | |
| Gross Expense per Cwt. Eq. | \$30.11 | | | \$26.97 | | | \$30.03 | | | \$33.33 | | |
| Net Income per cwt. | \$1.17 | | | \$4.44 | | | \$1.27 | | | -\$2.22 | | |
| | | | | | | | ,=. | | | , | | |

| Organic Dairy Farms 2014 Wisconsin | | /Cow | | | /Cow | | /Cow | | /Cow |
|--|----------------------|---------|----------------------|---------------------|---------|-----------------------|---------|------------------------|---------|
| Cash Income | \$343,055 | \$5,278 | | \$338,026 | \$4,589 | \$387,004 | \$6,079 | \$304,135 | \$5,274 |
| Adjusted Income | \$40,893 | \$629 | | \$48,923 | \$664 | \$35,086 | \$551 | \$38,668 | \$671 |
| Total Income | \$383,947 | \$5,907 | | \$386,949 | \$5,253 | \$422,090 | \$6,630 | \$342,803 | \$5,945 |
| Cash Costs | \$238,177 | \$3,664 | | \$209,148 | \$2,839 | \$249,836 | \$3,924 | \$255,546 | \$4,431 |
| Adjusted Costs | \$8,725 | \$134 | | \$12,469 | \$169 | \$2,270 | \$36 | \$11,435 | \$198 |
| Overhead Costs | \$118,168 | \$1,818 | | \$111,458 | \$1,513 | \$149,849 | \$2,354 | \$93,196 | \$1,616 |
| Total Costs | \$365,069 | \$5,616 | | \$333,076 | \$4,521 | \$401,955 | \$6,313 | \$360,177 | \$6,246 |
| RETURN OVER COSTS | \$18,878 | \$290 | | \$53,873 | \$731 | \$20,135 | \$316 | -\$17,374 | -\$301 |
| Adj. Gross Return per FTE Labor | | ΨΣΟΟ | | \$199,210 | Ψίσι | \$162,805 | ψοτο | \$166,859 | φοστ |
| Return to All Labor per FTE Labor | | | | \$68,053 | | \$38,575 | | \$19,178 | |
| Number of Cows per FTE Labor | | | | 42 | | φου,στο 25 | | ψ13,178 28 | |
| Cwts. of Milk Sold per FTE Labor | | | | 4,913 | | 3,302 | | 4,304 | |
| Pounds of Milk Sold per Cow | | | | 12,508 | | 13,383 | | 14,855 | |
| Productive Crop Acres per Cow | | | | 3.96 | | 6.00 | | 2.27 | |
| Capital Cost per Cow | \$1,306 | | | \$1,048 | | \$1,705 | | \$1,164 | |
| All Labor Costs per Cow | \$1,198 | | | \$1,175 | | \$1,296 | | \$1,124 | |
| Fixed Cost per Cow (DIRTI) | \$1,782 | | | \$1,378 | | \$2,383 | | \$1,585 | |
| Capital Invested per Cow | \$23,791 | | | \$19,876 | | \$32,693 | | \$18,806 | |
| Net Farm Income per Crop Acre | | | | \$841 | | \$519 | | \$688 | |
| Lbs. Milk Produced per Crop Acre | | | | 4252 | | 2537 | | 6826 | |
| Adj. Gross Cash Income/Crop Acre | | | | \$1,742 | | \$1,171 | | \$2,789 | |
| Machinery Investment/Crop Acre | \$1,087 | | | \$1,073 | | \$818 | | \$1,369 | |
| Fuel, Gas and Oil Cost/Crop Acre | | | | \$49 | | \$67 | | \$121 \$160 | |
| Repair Cost per Crop Acre | | | | \$73 \$82 | | \$82 | | \$163 | |
| Fert/Chem/Seed Cost/Crop AcreLivestock over Total Investment % | . \$98 13% | | | 13.74% | | \$ 60 9.72% | | \$153 14.91% | |
| Cash Exp./Cash Inc.w/o Labor∬ | | | | 49.52% | | 58.14% | | 80.95% | |
| All Labor as Percent of Total Costs | | | | 25.34% | | 21.01% | | 17.47% | |
| Fixed Cost as Percent of Total Cost | | | | 31.85% | | 37.25% | | 24.31% | |
| **Net Farm Income From Operations | \$137,046 | | | \$165,331 | | \$169,984 | | \$75,822 | |
| **Rate of Return on Assets | | | | 7.74% | | 4.86% | | 1.95% | |
| **Rate of Return on Equity | | | | 7.74% | | 4.86% | | 1.97% | |
| **Operating Profit Margin | | | | 31.09% | | 25.16% | | 6.66% | |
| **Asset Turnover Ratio | | | | 26.07% | | 19.67% | | 28.73% | |
| **Operating Expense Ratio | | | | 52.70% | | 52.58% | | 70.75% | |
| **Depreciation Expense Ratio | | | | 3.62% | | 4.89% | | 5.52% | |
| **Net Farm Income Ratio | | | | 43.67% | | 42.33% | | 23.33% | |
| Dairy TRANS Profit Status is | Average | | (| Great/Good | | Average | | Fair/Poor | |
| Dairy TRANS Peformance Rating | 52.44% | | | 70.67% | | 53.33% | | 33.33% | |
| by Larry Tranel, Dairy Field Sp | ecialist, Iow | a State | <mark>Univers</mark> | ity Extensio | n | | | | |

Thanks to Brian Wickline, Monroe County Agricultural Extension Agent, West Virginia for his critical review of this publication and thanks to the many dairy producers who so graciously shared their financial data for others to learn from.

Thanks also to Wade Miller, Joe Klein and Gerry Cohn and Organic Valley Cooperative for their assistance in soliciting farmer participation and funding costs of collecting and analyzing data.

For more information visit the ISU Dairy Team at:

www.extension.iastate.edu/dairyteam or www.extension.iastate.edu/dubuque/dairy

Larry Tranel, Dubuque County ISU Extension, 14858 West Ridge Lane, Dubuque, IA 52003, tranel@iastate.edu

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.

