

# The Economics of Organic Dairying

## A.S. Leaflet R2978

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### Summary and Implications

Organic dairy producers (and others who aspire to this profession) need sound economic data and analyses to make decisions. This study analyzed and evaluated the profitability of 10 organic dairies using Dairy TRANS Financial Analysis software. On average, these 10 dairies showed “good” profitability for 2013 but there was a wide range of results. 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 regardless of the production system being utilized.

### Introduction

Organic dairying continues to grow in popularity and organic dairy products continue to increase in market share. Dairy producers often pose the question if organic dairies are more profitable than conventional or grazing dairies? The answer depends on many variables and especially the management ability of the operator. The answer is the aim of this study.

### Materials and Methods

In order to give aspiring organic dairy producers a good basis for making the decision if organic dairying is the best choice for the operation, a financial study was done on 10 hand-selected dairy farms to analyze the profitability of organic dairying in 2013. Each farm used the Dairy TRANS Financial Analysis Software program to analyze profitability.

To maintain fairness in comparing farms with varying debt loads, an equity charge of 3.5% of total farm assets was used. This also allowed producers to participate without sharing debts or total net worth. Note that this changes the analysis in that the cash flow is done pre-tax and before debt service. And, the cash expenses do not include the interest expenses. This affects cash related ratios and calculations.

This organic financial summary is broken down into four parts exhibited on pages three and four. Section one is an average all 10 farms. Section two averages the three most profitable farms as depicted by return on assets and return per labor hour. Section three averages the four medium profit farms. Section four averages the three lowest profit farms. All four sections are shown in a three column format depicting dollar values, per cow values and per cwt. equivalent values for applicable income and expense items.

## Results and Discussion

### Average of All 10 Farms\*

The average farm employed 90 cows and operated 3.25 acres of productive land per cow. Assets totaled \$16,010 per cow. Cull rates average 24%. Total cash incomes per cow were \$4,171 with total cash expenses of \$2,584 giving a net cash income per cow of \$1,587. Subtract a \$5 per cow inventory loss gives a **net farm income of \$1,583 per cow** or \$142,276 per farm. Thus, after subtracting \$50,624 for equity charge, the **return to unpaid labor averaged \$1,019 per cow** or \$91,651 per farm. This gives a **return of \$25.07 per hour of unpaid labor**.

The average milk price received was \$30.41 per cwt. equivalent. Total expenses, including both equity and unpaid labor, were \$27.24 for a net income per cwt. of \$3.16. The **rate of return on assets was 8.28%** with an operating profit margin of 24.77% and an asset turnover ratio of 34.45%. Thus, on average, these 10 organic dairies show “Good” profitability for 2013.

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

### Average of the High Profit Farms

Three of the organic dairy farms earned “Superb” status on the Dairy TRANS analysis. These top profit organic farms compete quite well with ISU Extension’s top Millionaire Model Dairy Farms (MMDF) in terms of profit relative to return on assets at 16.36% and earnings of \$50.57 per hour of unpaid labor. The MMDF averaged 8.87% return on assets and earnings of \$45.54 per hour of unpaid labor.

However, it should be noted that these three high profit organic farms achieved significantly higher returns on assets relative to the MMDF and the other organic farms. The MMDF had average equity charges of \$78,822 which was very similar to the low profit organic dairies at \$78,728. 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 achieved.

These three high profit organic farms averaged 107 cows per farm and had 3.2 acres of productive land owned or rented per cow. Assets totaled \$10,300 per cow (much of the land real estate is leased). A milk price of \$30.23 per cwt. equivalent was earned in 2013 with a cull rate of 27%.

Total cash income of \$5,458 per cow was achieved with cash expenses per cow (excluding interest) of \$3,621 to achieve a net cash income of \$1,837 per cow. Adding in a positive inventory change of \$226 per cow gives a **net farm income of \$2,063 per cow**. Subtracting a \$347 equity

charge per cow gives a **return to labor of \$1,717 per cow** or \$183,097 per farm on average for the owner-operator. With 3,600 hours of unpaid labor, this equates to a **return of \$50.57 per hour**.

Thus, these high profit organic farms have very respectable labor earnings. Moreover, these high profit farms had average total production costs of \$23.08 per cwt. equivalent, including labor and equity, for a profit level of \$7.15 per cwt. equivalent--a tremendous margin of profit! This author challenges that well managed organic dairy farms can meet or exceed profit levels of other types of dairy production systems.

### Average of the Medium Profit Farms

Four farms received a Dairy TRANS profit rating of "Good or Average" for 2013. This group of producers has a very interesting make-up of production practices that merit description. This group includes an Amish producer milking around 70 cows on less than 100 acres with a 9,000 pound herd average; a fall calving semi-seasonal producer with about 50 cows on just over 100 acres with a 15,600 pound herd average; a small dairy producer milking less than 40 cows on just over 100 acres with a 8,500 pound herd average; and a very frugal dairy producer milking just over 100 cows on about 400 acres with a 8,400 pound herd average. These farms are attempting to reduce grain levels, some to zero in next year.

Thus, this medium profit organic farm group has a varied personality and gives confidence to the viability of the small organic and low-input dairy. Although it is the opinion of this author that "no grain" and "low grain" feeding are not the most profitable option, producer data is needed to prove it can be done as all of these farms were still feeding some grain in 2013. And, if the consumer market is willing to pay a premium for the "no grain" milk, it may provide another niche opportunity for those producers who have reasons to not feed grain. This data also does not answer the question if a \$4 per hundredweight milk premium is enough to off-set the higher costs per cwt. of producing "no-grain" milk.

In both the medium and high profit data sets there was a farm with an operating profit margin of 44% which set a record for farm's this author has worked with. One herd was a higher profit herd at 17,000 pounds of milk per cow annually and the other was a medium profit herd at 8,400 pounds of milk per cow annually. This ratio means that for every \$1 of income taken in by these producers, that they are able to keep \$0.44 of that dollar, for the most part.

These four medium profit organic farms averaged 66 cows per farm and had 2.8 acres of productive land owned or rented per cow. Assets totaled \$16,153 per cow (higher levels of real estate owned relative to high profit group). Cull rate average 20%. Total cash income of only \$3,389 per cow was achieved but with cash expenses per cow (excluding interest) of only \$1,676 to achieve a net cash income of \$1,714 per cow. Subtracting a \$42 inventory

change per cow gives a **net farm income of \$1,671 per cow**.

Subtracting a \$605 equity charge per cow gives a **return to labor of \$1,067 per cow** or \$70,134 per farm on average for the owner-operator. With 3,550 hours of unpaid labor this equates to **\$19.92 earnings per hour**, approximately 40% of the earnings of the high profit organic farms. They had a milk price of \$31.18 with total production costs of \$27.43 per cwt. equivalent, including labor and equity costs for a great profit level of \$3.75 per cwt. equivalent.

### Average of the Low Profit Farms

Three of the organic dairy farms analyzed fell into the low profit category with total costs of producing milk lower than the milk price they were receiving. The average low profit organic farm had 105 cows and operated 3.7 acres of productive land per cow. Assets totaled \$21,674 per cow and 2013 earned an average milk price of \$29.55 with a 26% cull rate.

Total cash incomes per cow were \$3,519 (\$130 higher than medium profit group) with total cash expenses of \$2,290 which gives a net cash income per cow of \$1,583. Inventory losses of \$21,841 gave a **net farm income of \$1,022 per cow** or \$107,623 per farm After subtracting \$78,728 for equity, the **return to labor averaged \$274 per cow** or \$28,895 per farm or **\$6.43 per hour of unpaid labor earnings**. So, even though these farms had higher net cash incomes and similar net farm incomes after inventory adjustments, their high levels of investment caused much lower levels of profitability.

The milk production level of these herds was only 797 pounds per cow lower than the medium profit herds. The average cost of producing milk was \$31.15 with total expenses, including both the equity charge and the unpaid labor for a net income per cwt. of -\$1.60. The rate of return on assets was 2.54% with an operating profit margin of 14.94% and an asset turnover ratio of 17.19%.

### Summary and Data Tables

Organic dairying can be as or more profitable than grazing and conventional dairy systems. The lower levels of grain feeding are still a questionable practice from a profitability standpoint. The tables (2 pages) which follow exhibit the detailed data of the 10 organic farms analyzed. But, remember the cash flow data is pre-tax and prior to both principal and interest payments.

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 improve dairy profits regardless of the production system being utilized. *Thanks to the dairy producers who so graciously shared their financial data for others to learn from.*

## Iowa State University Animal Industry Report 2015

Organic Dairy Farms 2013	Average of All 10 Farms			Average of High Profit Farms(3)			Average of Medium Profit Farms(4)			Average of Low Profit Farms (3)		
	/Cow			/Cow			/Cow			/Cow		
Productive Crop Acres Operated	292	3.25		341	3.20		184	2.80		388	3.69	
Average Number of Cows	90			107			66			105		
<b>Total Assets on Farm</b>	<b>\$1,439,319</b>	<b>\$16,010</b>		<b>\$1,098,719</b>	<b>\$10,300</b>		<b>\$1,062,042</b>	<b>\$16,153</b>		<b>\$2,282,957</b>	<b>\$21,674</b>	
Non-farm Income	\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0	
Family Living Expenses	\$46,160	\$513		\$50,000	\$469		\$40,000	\$608		\$50,533	\$480	
Capital Purchases	\$49,408	\$550		\$58,508	\$549		\$12,875	\$196		\$89,019	\$845	
Ending Cash Flow* before debt serv.	\$49,465			\$87,446			\$65,643			-\$10,089		
Ending Cash Flow Ratio	21.71%			22.13%			37.79%			-0.16%		
<b>Milk Price</b>	<b>\$30.41</b>			<b>\$30.23</b>			<b>\$31.18</b>			<b>\$29.55</b>		
Milk Hundred weight Equiv.	12,919	144		20,809	195		7,326	111		12,487	119	
<b>Milk Hundredweights</b>	<b>10,492</b>	<b>117</b>		<b>16,339</b>	<b>153</b>		<b>6,581</b>	<b>100</b>		<b>9,859</b>	<b>94</b>	
<b>Milk Sales</b>	<b>\$317,835</b>	<b>\$3,535</b>		<b>\$494,377</b>	<b>\$4,635</b>		<b>\$201,772</b>	<b>\$3,069</b>		<b>\$296,045</b>	<b>\$2,811</b>	
Cull Cow Sales      Cull Rate%	\$15,087      \$168      24%			\$23,752      \$223      27%			\$8,745      \$133      20%			\$14,880      \$141      26%		
Calf Sales	\$5,041	\$56		\$5,549	\$52		\$3,840	\$58		\$6,135	\$58	
Crop Sales	\$3,700	\$41		\$12,332	\$116		\$0	\$0		\$0	\$0	
Other Income	\$33,334	\$371		\$46,201	\$433		\$8,489	\$129		\$53,592	\$509	
<b>Total Cash Income</b>	<b>\$374,997</b>	<b>\$4,171</b>	<b>/Cwt.Eq.</b>	<b>\$582,211</b>	<b>\$5,458</b>	<b>/Cwt.Eq.</b>	<b>\$222,845</b>	<b>\$3,389</b>	<b>/Cwt.Eq.</b>	<b>\$370,652</b>	<b>\$3,519</b>	<b>/Cwt.Eq.</b>
Veterinary, Medicine	\$4,727	\$53	\$0.37	\$12,526	\$117	\$0.60	\$1,602	\$24	\$0.22	\$1,096	\$10	\$0.09
Dairy Supplies	\$14,720	\$164	\$1.14	\$18,134	\$170	\$0.87	\$6,058	\$92	\$0.83	\$22,856	\$217	\$1.83
Breeding Fees	\$1,656	\$18	\$0.13	\$2,364	\$22	\$0.11	\$489	\$7	\$0.07	\$2,504	\$24	\$0.20
Feed Purchased	\$54,266	\$604	\$4.20	\$82,102	\$770	\$3.95	\$25,118	\$382	\$3.43	\$65,296	\$620	\$5.23
Repairs	\$19,833	\$221	\$1.54	\$25,138	\$236	\$1.21	\$13,010	\$198	\$1.78	\$23,625	\$224	\$1.89
Seed, Chem, Fert	\$17,220	\$192	\$1.33	\$38,011	\$356	\$1.83	\$9,266	\$141	\$1.26	\$7,033	\$67	\$0.56
Fuel, Gas, and Oil	\$19,341	\$215	\$1.50	\$25,666	\$241	\$1.23	\$10,553	\$161	\$1.44	\$24,734	\$235	\$1.98
Utilities	\$7,464	\$83	\$0.58	\$11,291	\$106	\$0.54	\$4,101	\$62	\$0.56	\$8,121	\$77	\$0.65
Interest Paid -- not included												
Labor Hired	\$21,213	\$236	\$1.64	\$34,860	\$327	\$1.68	\$9,790	\$149	\$1.34	\$22,797	\$216	\$1.83
Rent, Lease and Hire	\$41,732	\$464	\$3.23	\$106,652	\$1,000	\$5.13	\$9,490	\$144	\$1.30	\$19,802	\$188	\$1.59
Property Taxes	\$5,531	\$62	\$0.43	\$4,499	\$42	\$0.22	\$4,046	\$62	\$0.55	\$8,543	\$81	\$0.68
Farm Insurance	\$6,397	\$71	\$0.50	\$7,986	\$75	\$0.38	\$3,612	\$55	\$0.49	\$8,521	\$81	\$0.68
Other Cash Expense	\$18,205	\$203	\$1.41	\$17,028	\$160	\$0.82	\$13,046	\$198	\$1.78	\$26,261	\$249	\$2.10
<b>Total Cash Expense</b>	<b>\$232,306</b>	<b>\$2,584</b>	<b>\$17.98</b>	<b>\$386,257</b>	<b>\$3,621</b>	<b>\$18.56</b>	<b>\$110,181</b>	<b>\$1,676</b>	<b>\$15.04</b>	<b>\$241,188</b>	<b>\$2,290</b>	<b>\$19.32</b>
<b>Net Cash Income</b>	<b>\$142,691</b>	<b>\$1,587</b>	<b>\$11.04</b>	<b>\$195,954</b>	<b>\$1,837</b>	<b>\$9.42</b>	<b>\$112,665</b>	<b>\$1,714</b>	<b>\$15.38</b>	<b>\$129,464</b>	<b>\$1,229</b>	<b>\$10.37</b>
Inventory Change	-\$416	-\$5	-\$0.03	\$24,151	\$226	\$1.16	-\$2,772	-\$42	-\$0.38	-\$21,841	-\$207	-\$1.75
<b>Net Farm Income</b>	<b>\$142,276</b>	<b>\$1,583</b>	<b>\$11.01</b>	<b>\$220,106</b>	<b>\$2,063</b>	<b>\$10.58</b>	<b>\$109,893</b>	<b>\$1,671</b>	<b>\$15.00</b>	<b>\$107,623</b>	<b>\$1,022</b>	<b>\$8.62</b>
Equity Charge@3.5% of Asset	\$50,624	\$563	\$3.92	\$37,009	\$347	\$1.78	\$39,758	\$605	\$5.43	\$78,728	\$747	\$6.30
<b>Return to Unpaid Labor</b>	<b>\$91,651</b>	<b>\$1,019</b>	<b>\$7.09</b>	<b>\$183,097</b>	<b>\$1,717</b>	<b>\$8.80</b>	<b>\$70,134</b>	<b>\$1,067</b>	<b>\$9.57</b>	<b>\$28,895</b>	<b>\$274</b>	<b>\$2.31</b>
<b>Inventory Adjustments--Fee</b>	<b>\$8,802</b>	<b>\$98</b>	<b>\$0.68</b>	<b>\$32,465</b>	<b>\$304</b>	<b>\$1.56</b>	<b>\$7,072</b>	<b>\$108</b>	<b>\$0.97</b>	<b>-\$12,555</b>	<b>-\$119</b>	<b>-\$1.01</b>
Supplies and Other	\$770	\$9	\$0.06	\$900	\$8	\$0.04	\$1,250	\$19	\$0.17	\$0	\$0	\$0.00
Breeding Livestock	\$9,715	\$108	\$0.75	\$12,483	\$117	\$0.60	\$450	\$7	\$0.06	\$19,300	\$183	\$1.55
<b>Income Change</b>	<b>\$16,477</b>	<b>\$183</b>	<b>\$1.28</b>	<b>\$45,848</b>	<b>\$430</b>	<b>\$2.20</b>	<b>\$1,747</b>	<b>\$27</b>	<b>\$0.24</b>	<b>\$6,745</b>	<b>\$64</b>	<b>\$0.54</b>
Prepaid Expenses	-\$1,950	-\$22	-\$0.15	\$438	\$4	\$0.02	\$101	\$2	\$0.01	-\$7,074	-\$67	-\$0.57
Accounts Payable	\$0	\$0	\$0.00	\$0	\$0	\$0.00	\$0	\$0	\$0.00	\$0	\$0	\$0.00
Machinery & Equipment	\$32,937	\$366	\$2.55	\$38,503	\$361	\$1.85	\$2,875	\$44	\$0.39	\$67,452	\$640	\$5.40
Land and Buildings	-\$1,589	-\$18	-\$0.12	-\$3,500	-\$33	-\$0.17	-\$1,349	-\$21	-\$0.18	\$0	\$0	\$0.00
Other Adjustments	\$778	\$9	\$0.06	\$1,370	\$13	\$0.07	\$875	\$13	\$0.12	\$55	\$1	\$0.00
<b>Expense Change</b>	<b>-\$30,174</b>	<b>-\$336</b>	<b>-\$2.34</b>	<b>-\$36,812</b>	<b>-\$345</b>	<b>-\$1.77</b>	<b>-\$2,503</b>	<b>-\$38</b>	<b>-\$0.34</b>	<b>-\$60,433</b>	<b>-\$574</b>	<b>-\$4.84</b>
Capital Purchases Minus Sales Adj.	\$47,067	\$524	\$3.64	\$58,508	\$549	\$2.81	\$7,021	\$107	\$0.96	\$89,019	\$845	\$7.13
Depreciation COST	\$56,987	\$634	\$4.41	\$76,518	\$717	\$3.68	\$28,831	\$438	\$3.94	\$74,995	\$712	\$6.01
Depreciation FM Value	\$19,914	\$222	\$1.54	\$25,400	\$238	\$1.22	\$11,750	\$179	\$1.60	\$25,314	\$240	\$2.03
Unpaid Labor Cost	\$41,000	\$456	\$3.17	\$40,000	\$375	\$1.92	\$37,500	\$570	\$5.12	\$46,667	\$443	\$3.74
Unpaid Labor Hours	3,800	42		3,600	34		3,550	54		4,333	41	
Labor Full Time Equivalents	2.08			2.20			1.60			2.61		
<b>Labor Earnings Per Hour</b>	<b>\$25.07</b>			<b>\$50.57</b>			<b>\$19.92</b>			<b>\$6.43</b>		
Gross Income per Cwt. Eq.	\$30.41			\$30.23			\$31.18			\$29.55		
Gross Expense per Cwt. Eq.	\$27.24			\$23.08			\$27.43			\$31.15		
<b>Net Income per cwt.</b>	<b>\$3.16</b>			<b>\$7.15</b>			<b>\$3.75</b>			<b>-\$1.60</b>		

**Iowa State University Animal Industry Report 2015**

Organic Dairy Farms 2013	Average of All 10 Farms		Average of High Profit Farms(3)		Average of Medium Profit Farms(4)		Average of Low Profit Farms (3)	
	/Cow		/Cow		/Cow		/Cow	
<b>Cash Income--</b>	\$374,997	\$4,171	\$582,211	\$5,458	\$222,845	\$3,389	\$370,652	\$3,519
Adjusted Income	\$16,477	\$183	\$45,848	\$430	\$1,747	\$27	\$6,745	\$64
Total Income	\$391,474	\$4,355	\$628,059	\$5,888	\$224,592	\$3,416	\$377,397	\$3,583
<b>Cash Costs</b>	\$232,306	\$2,584	\$386,257	\$3,621	\$110,181	\$1,676	\$241,188	\$2,290
Adjusted Costs	\$16,892	\$188	\$21,697	\$203	\$4,519	\$69	\$28,586	\$271
Overhead Costs	\$91,624	\$1,019	\$77,009	\$722	\$77,258	\$1,175	\$125,394	\$1,190
Total Costs	\$340,822	\$3,791	\$484,962	\$4,547	\$191,958	\$2,920	\$395,168	\$3,752
<b>RETURN OVER COSTS</b>	\$50,651	\$563	\$143,097	\$1,342	\$32,634	\$496	-\$17,772	-\$169
Adj. Gross Return per FTE Labor.....	\$187,123		\$291,437		\$140,966		\$144,351	
Return to All Labor per FTE Labor...	\$54,428		\$97,267		\$48,370		\$19,667	
Number of Cows per FTE Labor.....	43		50		41		40	
Cwts. of Milk Sold per FTE Labor.....	5,093		7,533		4,172		3,882	
Pounds of Milk Sold per Cow.....	11,628		15,333		10,381		9,584	
Productive Crop Acres per Cow.....	3.1		3.22		2.58		3.54	
Capital Cost per Cow.....	\$782		\$600		\$776		\$970	
All Labor Costs per Cow.....	\$723		\$701		\$784		\$662	
Fixed Cost per Cow (DIRTI)	\$1,122		\$943		\$1,074		\$1,364	
Capital Invested per Cow.....	\$14,346		\$8,024		\$15,208		\$19,520	
Net Farm Income per Crop Acre.....	\$577		\$672		\$728		\$279	
Lbs. Milk Produced per Crop Acre.....	4,222		4838		4786		2853	
Adj. Gross Cash Income/Crop Acre...	\$1,498		\$1,853		\$1,591		\$1,019	
Machinery Investment/Crop Acre	\$881		\$833		\$966		\$817	
Fuel, Gas and Oil Cost/Crop Acre...	\$73		\$74		\$75		\$69	
Repair Cost per Crop Acre.....	\$78		\$71		\$91		\$69	
Fert/Chem/Seed Cost/Crop Acre.....	\$66		\$109		\$66		\$22	
Livestock over Total Investment %	17%		26.36%		15.82%		10.07%	
Cash Exp./Cash Inc.w/o Labor&Int....	55%		60.37%		47.51%		59.00%	
All Labor as Percent of Total Costs	20%		15.86%		25.18%		18.65%	
Fixed Cost as Percent of Total Cost	31%		21.10%		34.74%		36.97%	
**Net Farm Income From Operations	\$142,276		\$220,106		\$109,893		\$107,623	
**Rate of Return on Assets.....	<b>8.28%</b>		<b>16.36%</b>		<b>6.53%</b>		<b>2.54%</b>	
**Rate of Return on Equity.....	8.28%		16.36%		6.53%		2.54%	
**Operating Profit Margin.....	<b>24.77%</b>		<b>29.29%</b>		<b>28.76%</b>		<b>14.94%</b>	
**Asset Turnover Ratio.....	<b>34.45%</b>		<b>64.95%</b>		<b>24.52%</b>		<b>17.19%</b>	
**Operating Expense Ratio.....	56.51%		60.12%		47.29%		65.20%	
**Depreciation Expense Ratio.....	5.20%		4.16%		4.85%		6.72%	
**Net Farm Income Ratio.....	38.23%		35.67%		47.82%		28.00%	
Dairy TRANS Profit Status is.....	<b>Good/Average</b>		<b>Superb</b>		<b>Good/Average</b>		<b>Fair/Poor</b>	
Dairy TRANS Performance Rating	<b>68.40%</b>		<b>108.33%</b>		<b>65.50%</b>		<b>32.33%</b>	

