



Organic Dairy Farm Models in Iowa, 2015

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

Profits continue to evolve for organic dairy producers thanks to continued organic demand by consumers. Iowa State University Extension and Outreach teamed up with CROPP Cooperative/Organic Valley and the Extension Risk Management Education consortium* to analyze the 2015 profits of 11 Iowa dairy farms.

Please note up front that this is a very small data set of hand selected farms thought to be good models of management for the various organic dairy systems. Thus, the “average” of this data set is suspected to be somewhat or possibly even significantly better than the average organic dairy farm in Iowa.

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) an “Average” of all 11 farms 2) a “Higher Profit” group consisting of the six most profitable farms 3) a “Lower Profit” group consisting of the five least profitable farms and 4) a “No Grain” group consisting of three farms that fed no grain and received a premium for doing so. 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 any cash flow numbers in that the cash expenses do not include interest expense. This also affects cash related ratios and calculations.

The Average of All 11 Farms*

The average organic dairy farm in this study employed 80 cows and operated 289 acres of productive land per cow. Assets totaled \$17,752 per cow. Total cash incomes per cow were \$5,179 with total cash expenses of \$2,859 giving a net cash income per cow of \$2,320 per cow. This net cash income is 50% higher than in 2014, which was \$1,545 per cow. Subtracting a \$438 per cow inventory loss gives a **net farm income of \$1,881 per cow** (\$1,647 per cow in 2014)

or \$150,514 per farm (\$120,332 in 2014). After subtracting \$56,663 for an equity charge, the **return to unpaid labor averaged \$1,173 per cow** (\$1,001 per cow in 2014) or \$93,852 per farm (\$73,155 in 2014). This gives a **return of \$23.55 per unpaid labor hour** (\$19.49 in 2014).

The average milk price received was \$36.80 per cwt. equivalent (\$31.57 in 2014). Total expenses, including both equity and unpaid labor, were \$32.13 (\$30.94 in 2014) for a net income per cwt. equivalent of \$4.67 (\$0.63 in 2014). The **rate of return on assets was 7.34%** (4.7% in 2014) with an operating profit margin of 27.51% (17.01% in 2014) and an asset turnover ratio of 31.55% (32.39% in 2014).

On average, these farms handled 39 cows per FTE (Full Time Equivalent of labor or 3,000 hours/yr.) selling 4,461cwt. equivalents of milk per FTE and 11,611 pounds of milk per cow. These data sets again defy traditional milk production logic, with the High Profit group having the lowest milk production per cow. However, the main reason for the inverse relationship in 2015 is that three “no grain” farms earned their way into the “Higher Profit” status farms with less milk per cow but receiving a \$5 premium for their milk. The producers in the Higher Profit group that fed more normal grain levels produced approximately 13,000 lbs of milk per cow, similar to Lower Profit farms.

The Average of the Higher Profit Farms

The Higher Profit organic farms compete quite well with other dairy systems in terms of profit relative to return on assets at 8.60% and earnings of \$26.21 per hour of unpaid labor (down from \$38.78 in 2014). Return on assets ranged from 7.03 % to 12.51% in this group and total cost of production ranged from \$28.85 to \$34.46 per cwt equivalent. Production costs were higher for this group due to the three “no grain” producers included. *The bottom line is that these high profit organic farms can not only compete with the best of dairy systems, but may have the least risk, due to the more stable milk price received. This is, of course, dependent on the future of the organic milk market.*

These High Profit organic farms averaged 73 cows per farm with 231 acres of land owned or rented per cow. Assets totaled \$17,323 per cow. A milk price of \$38.50 per cwt. equivalent was earned in 2015. The average milk price is relatively high due to half the farms earning the “no grain” price premium. These high profit farms had average total production costs of \$31.82 per cwt. equivalent, including labor and equity, for a profit level of \$6.68 per cwt. equivalent--a very good margin of profit! Again, this total production cost includes the opportunity cost of both equity and unpaid labor.

Total cash income of \$4,125 per cow was achieved with cash expenses (excluding interest) of \$1,989 per cow to achieve a net cash income of \$2,137 per cow. Subtracting an inventory change of \$75 per cow gives a **net farm income of \$2,062 per cow**. Subtracting a \$688 equity charge per cow gives a **return to labor of \$1,374 per cow** or \$100,207 per farm on average for the owner-operator. With 3,892 hours of unpaid labor, this equates to a **return of \$26.21 per hour**—a very respectable labor return.

Labor efficiency is often highly correlated with overall profit. The style and/or efficiency of the milking parlor often has a major impact. However, the high profit group in this data set does NOT stand out in the labor efficiency categories. It is believed that the “no grain” farms altered this relationship in that, even though they do have more cows per FTE, their milk production per cow is significantly lower per cow, negating labor efficiency of milk production per FTE.

The Average of the Lower Profit Farms

Five farms made their way into the “Lower Profit” group for 2015. Most of these producers had milk production ranging between 14,000 to 16,000 pounds per cow. Milk prices received in this group ranged from \$33.48 to \$35.55 per cwt.

These Lower Profit organic farms averaged 89 cows per farm and had 358 acres of productive land owned or rented. Assets totaled \$18,176 per cow. Total cash income was higher than the other groups at \$6,221 per cow due in part to other non-dairy enterprises difficult to separate out. They also had the highest cash expenses (excluding interest) of \$3,720 per cow to achieve a net cash income of \$2,500 per cow. Subtracting a \$798 inventory change per cow gives a **net farm income of \$1,703 per cow**.

Subtracting a \$728 equity charge per cow gives a **return to labor of \$974 per cow** or \$86,224 per farm on average for the owner-operator(s). With 4,400 hours of unpaid labor this equates to **\$20.36 earnings per hour**. They had a milk price of \$34.77 with total production costs of \$32.50 per cwt. equivalent, including labor and equity costs for a profit level after all costs of \$2.27 per cwt. equivalent.

The **rate of return on assets was 5.84%** with an operating profit margin of 21.36% and an asset turnover ratio of 36.90%.

There was only one “no-grain” farm in the lower profit data set and no additional premiums were received for the “no-grain” practice for this producer. *Although it is the opinion of this author that “no grain” and “low grain” feeding are not the most profitable option, producer data is proving that it can be viable and admittedly, challenging this author’s opinion.* The following section depicts the profitability of the “no-grain” practice with milk price premiums to reward the practice.

The Average of the No Grain Farms

Four farms fed “no grain” to their cows in 2015. Three of those farms received a \$5/cwt. premium and earned their way into the Higher Profit group. These three “No Grain” organic dairy farms received an average of \$41.11 per cwt. equivalent and had total costs of producing milk of \$32.85 for a profit per cwt. eq. of \$8.25 per cwt. equivalent. These farms averaged 78 cows with 245 acres of productive land operated. Assets totaled \$17,752 per cow. The milk production level per cow of these herds was only 8,393 with the herds favoring Jersey, Holstein and crossbred dairy cows with herd sizes ranging from 40 to 140 cows.



Total cash incomes were \$3,736 per cow with total cash expenses of \$1,654 which gives a net cash income of \$2,083 per cow, significantly lower than the average, higher profit and lower profit farms previously described. Inventory loss of \$76 per cow gave a **net farm income of \$2,006 per cow** or \$160,515 per farm. Subtracting \$56,265 for an equity charge, the **return to labor averaged \$1,303 per cow** or \$104,250 per farm or **\$29.40 per hour of unpaid labor earnings**. The rate of return on assets was 9.02% with an operating profit margin of 37.45% and an asset turnover ratio of 24.56%.

Bottom Line

Organic dairying can be as profitable as conventional grazing and confinement systems. The biggest highlight from the 2015 data is that “No Grain” systems with their \$5 per cwt. equivalent milk price premium have earned profitability respect relative to other organic, grazing and conventional milk production practices. The other issue to denote is the inverse relationship in this data set with profitability and milk production per cow or labor productivity as measure by cwt. of milk sold per FTE laborer.

The following two pages exhibit the detailed data of the 11 organic farms analyzed. Remember, cash expense data does not include interest expense. Again, this study may or may not be representative of organic dairy farms in Iowa. It is hoped this study will assist current and aspiring producers to budget and benchmark their dairy operations to better plan for future 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.*

Table 1.

IA Organic Dairy Farms 2015	Average of All 11 Farms			Average of Higher Profit Farms(6)			Average of Lower Profit Farms (5)			Average of No Grain Farms (3)		
	/Cow			/Cow			/Cow			/Cow		
Productive Crop Acres Operated	289	3.61		231	3.17		358	4.05		245	3.06	
Average Number of Cows	80			73			89			78		
Total Assets on Farm	\$1,420,181	\$17,752		\$1,263,154	\$17,323		\$1,608,613	\$18,176		\$1,420,195	\$17,752	
Milk Price	\$36.80			\$38.50			\$34.77			\$41.11		
Milk Hundred weight Equiv.	10,845	136		7,894	108		14,385	163		7,435	93	
Milk Hundredweights	9,218	115		6,121	84		12,933	146		6,374	80	
Milk Sales	\$332,633	\$4,158		\$236,845	\$3,248		\$447,579	\$5,057		\$257,067	\$3,213	
Cull Cow Sales	\$16,200	\$203		\$13,026	\$179		\$20,009	\$226		\$13,302	\$166	
Calf Sales	\$14,023	\$175		\$11,838	\$162		\$16,646	\$188		\$13,060	\$163	
Crop Sales	\$20,623	\$258		\$18,091	\$248		\$23,661	\$267		\$0	\$0	
Other Income	\$30,848	\$386		\$21,012	\$288		\$42,652	\$482		\$15,486	\$194	
Total Cash Income	\$414,328	\$5,179	/Cwt. Eq.	\$300,812	\$4,125	/Cwt. Eq.	\$550,546	\$6,221	/Cwt. Eq.	\$298,916	\$3,736	/Cwt. Eq.
Veterinary, Medicine	\$5,174	\$65	\$0.48	\$975	\$13	\$0.12	\$10,212	\$115	\$0.71	\$877	\$11	\$0.08
Dairy Supplies	\$14,846	\$186	\$1.37	\$11,842	\$162	\$1.50	\$18,451	\$208	\$1.28	\$12,286	\$154	\$1.13
Breeding Fees	\$1,091	\$14	\$0.10	\$730	\$10	\$0.09	\$1,523	\$17	\$0.11	\$1,091	\$14	\$0.10
Feed Purchased	\$42,094	\$526	\$3.88	\$36,975	\$507	\$4.68	\$48,237	\$545	\$3.35	\$35,002	\$438	\$3.23
Repairs	\$25,927	\$324	\$2.39	\$17,145	\$235	\$2.17	\$36,466	\$412	\$2.53	\$15,342	\$192	\$1.41
Seed, Chem, Fert	\$29,740	\$372	\$2.74	\$13,782	\$189	\$1.75	\$48,889	\$552	\$3.40	\$13,430	\$168	\$1.24
Fuel, Gas, and Oil	\$13,026	\$163	\$1.20	\$8,790	\$121	\$1.11	\$18,108	\$205	\$1.26	\$11,068	\$138	\$1.02
Utilities	\$7,639	\$95	\$0.70	\$4,519	\$62	\$0.57	\$11,384	\$129	\$0.79	\$5,367	\$67	\$0.49
Interest Paid -- not included	\$0			\$0		\$0.00	\$0		\$0.00	\$0		
Labor Hired	\$19,996	\$250	\$1.84	\$10,116	\$139	\$1.28	\$31,851	\$360	\$2.21	\$9,892	\$124	\$0.91
Rent, Lease and Hire	\$38,187	\$477	\$3.52	\$15,923	\$218	\$2.02	\$64,904	\$733	\$4.51	\$1,947	\$24	\$0.18
Property Taxes	\$5,237	\$65	\$0.48	\$5,491	\$75	\$0.70	\$4,932	\$56	\$0.34	\$6,272	\$78	\$0.58
Farm Insurance	\$6,390	\$80	\$0.59	\$4,954	\$68	\$0.63	\$8,112	\$92	\$0.56	\$6,281	\$79	\$0.58
Other Cash Expense	\$19,408	\$243	\$1.79	\$13,757	\$189	\$1.74	\$26,188	\$296	\$1.82	\$13,446	\$168	\$1.24
Total Cash Expense	\$228,754	\$2,859	\$21.09	\$145,001	\$1,989	\$18.37	\$329,257	\$3,720	\$22.89	\$132,301	\$1,654	\$12.20
Net Cash Income	\$185,574	\$2,320	\$17.11	\$155,812	\$2,137	\$19.74	\$221,289	\$2,500	\$15.38	\$166,616	\$2,083	\$15.36
Inventory Change	-\$35,059	-\$438	-\$3.23	-\$5,447	-\$75	-\$0.69	-\$70,595	-\$798	-\$4.91	-\$6,101	-\$76	-\$0.56
Net Farm Income	\$150,514	\$1,881	\$13.88	\$150,365	\$2,062	\$19.05	\$150,694	\$1,703	\$10.48	\$160,515	\$2,006	\$14.80
Equity@	\$56,663	\$708	\$5.23	\$50,157	\$688	\$6.35	\$64,470	\$728	\$4.48	\$56,265	\$703	\$5.19
Return to Labor	\$93,852	\$1,173	\$8.65	\$100,207	\$1,374	\$12.69	\$86,224	\$974	\$5.99	\$104,250	\$1,303	\$9.61
Inventory Adjustments--Feed	-\$27,222	-\$340	-\$2.51	\$4,493	\$62	\$0.57	-\$65,279	-\$738	-\$4.54	-\$645	-\$8	-\$0.06
Supplies and Other	\$4,804	\$60	\$0.44	\$600	\$8	\$0.08	\$9,849	\$111	\$0.68	\$0	\$0	\$0.00
Breeding Livestock	-\$5	\$0	\$0.00	-\$2,425	-\$33	-\$0.31	\$2,900	\$33	\$0.20	\$1,650	\$21	\$0.15
Income Change	-\$22,422	-\$280	-\$2.07	\$2,668	\$37	\$0.34	-\$52,530	-\$594	-\$3.65	\$1,006	\$13	\$0.09
Prepaid Expenses	-\$59	-\$1	-\$0.01	\$59	\$1	\$0.01	-\$200	-\$2	-\$0.01	\$1,152	\$14	\$0.11
Accounts Payable	\$0	\$0	\$0.00	\$0	\$0	\$0.00	\$0	\$0	\$0.00	\$0	\$0	\$0.00
Machinery & Equipment	\$18,002	\$225	\$1.66	\$7,625	\$105	\$0.97	\$30,454	\$344	\$2.12	\$8,396	\$105	\$0.77
Land and Buildings	\$10,892	\$136	\$1.00	\$6,946	\$95	\$0.88	\$15,627	\$177	\$1.09	\$15,000	\$188	\$1.38
Other Adjustments	\$803	\$10	\$0.07	\$1,139	\$16	\$0.14	\$400	\$5	\$0.03	\$1,595	\$20	\$0.15
Expense Change	-\$29,638	-\$370	-\$2.73	-\$15,769	-\$216	-\$2.00	-\$46,281	-\$523	-\$3.22	-\$26,143	-\$327	-\$2.41
Capital Purchases Minus Sales Adj.	\$42,276	\$528	\$3.90	\$23,884	\$328	\$3.03	\$64,346	\$727	\$4.47	\$33,249	\$416	\$3.07
Depreciation COST	\$40,440	\$506	\$3.73	\$43,797	\$601	\$5.55	\$36,412	\$411	\$2.53	\$32,403	\$405	\$2.99
Depreciation FM Value	\$15,061	\$188	\$1.39	\$7,371	\$101	\$0.93	\$24,288	\$274	\$1.69	\$7,700	\$96	\$0.71
Unpaid Labor Cost	\$51,818	\$648	\$4.78	\$50,000	\$686	\$6.33	\$54,000	\$610	\$3.75	\$48,333	\$604	\$4.46
Unpaid Labor Hours	4,123	52		3,892	53		4,400	50		3,717	46	
Labor Full Time Equivalent	2.07			1.68			2.54			1.58		
Labor Earnings Per Hour	\$23.55			\$26.21			\$20.36			\$29.40		
Gross Income per Cwt. Eq.	\$36.80			\$38.50			\$34.77			\$41.11		
Gross Expense per Cwt. Eq.	\$32.13			\$31.82			\$32.50			\$32.85		
Net Income per cwt.*	\$4.67			\$6.68			\$2.27			\$8.25		



Table 2.

IA Organic Dairy Farms 2015	Average of All 11 Farms		Average of Higher Profit Farms(6)		Average of Lower Profit Farms (5)		Average of No Grain Farms (3)	
	/Cow		/Cow		/Cow		/Cow	
Cash Income--	\$414,328	\$5,179	\$300,812	\$4,125	\$550,546	\$6,221	\$298,916	\$3,736
Adjusted Income	-\$22,422	-\$280	\$2,668	\$37	-\$52,530	-\$594	\$1,006	\$13
Total Income	\$391,905	\$4,899	\$303,480	\$4,162	\$498,016	\$5,627	\$299,922	\$3,749
Cash Costs	\$228,754	\$2,859	\$145,001	\$1,989	\$329,257	\$3,720	\$132,301	\$1,654
Adjusted Costs	\$12,637	\$158	\$8,114	\$111	\$18,065	\$204	\$7,106	\$89
Overhead Costs	\$108,481	\$1,356	\$100,157	\$1,374	\$118,470	\$1,339	\$104,598	\$1,307
Total Costs	\$349,872	\$4,373	\$253,272	\$3,473	\$465,792	\$5,263	\$244,005	\$3,050
RETURN OVER COSTS	\$42,033	\$525	\$50,207	\$689	\$32,224	\$364	\$55,917	\$699
Adj. Gross Return per FTE Labor.....	\$194,207		\$179,935		\$211,334		\$186,777	
Return to All Labor per FTE Labor.....	\$62,557		\$65,675		\$58,814		\$72,898	
Number of Cows per FTE Labor.....	39		41		36		48	
Cwts. of Milk Sold per FTE Labor.....	4,461		3,641		5,446		3,941	
Pounds of Milk Sold per Cow.....	11,611		9,741		13,855		8,398	
Productive Crop Acres per Cow.....	3.6		3.51		3.80		2.9	
Capital Cost per Cow.....	\$950		\$845		\$1,075		\$777	
All Labor Costs per Cow.....	\$1,124		\$1,100		\$1,153		\$806	
Fixed Cost per Cow (DIRTI)	\$1,376		\$1,214		\$1,570		\$1,120	
Capital Invested per Cow.....	\$19,133		\$17,097		\$21,576		\$16,483	
Net Farm Income per Crop Acre.....	\$671		\$741		\$587		\$782	
Lbs. Milk Produced per Crop Acre.....	3,434		2960		4003		3,042	
Adj. Gross Cash Income/Crop Acre.....	\$1,543		\$1,475		\$1,626		\$1,444	
Machinery Investment/Crop Acre	\$721		\$694		\$753		\$809	
Fuel, Gas and Oil Cost/Crop Acre.....	\$51		\$43		\$61		\$50	
Repair Cost per Crop Acre.....	\$90		\$73		\$111		\$71	
Fert/Chem/Seed Cost/Crop Acre.....	\$91		\$75		\$111		\$60	
Livestock over Total Investment %	16%		14.13%		19.23%		15%	
Cash Exp./Cash Inc.w/o Labor&Int.....	48%		44.91%		51.22%		42%	
All Labor as Percent of Total Costs.....	24%		25.54%		21.71%		25%	
Fixed Cost as Percent of Total Cost.....	31%		31.25%		30.58%		35%	
**Net Farm Income From Operations	\$150,514		\$150,365		\$150,694		\$160,515	
**Rate of Return on Assets.....	7.34%		8.60%		5.84%		9.02%	
**Rate of Return on Equity.....	7.34%		8.60%		5.84%		9.02%	
**Operating Profit Margin.....	27.51%		32.64%		21.36%		37.45%	
**Asset Turnover Ratio.....	31.55%		27.10%		36.90%		24.56%	
**Operating Expense Ratio.....	52.01%		46.52%		58.59%		42.99%	
**Depreciation Expense Ratio.....	3.41%		2.29%		4.75%		2.34%	
**Net Farm Income Ratio.....	44.58%		51.19%		36.66%		54.67%	
Dairy TRANS Profit Status is.....	Average/Good		Good/Great/Superb		Average/Poor		Great Superb	
Dairy TRANS Performance Rating	67.55%		75.00%		58.60%		75.33%	



by Larry Tranel, Dairy Field Specialist, Iowa State University Extension

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For more information visit the ISU Dairy Team at: www.extension.iastate.edu/dairyteam
 Larry Tranel, Dubuque County ISU Extension, 14858 West Ridge Lane, Dubuque, IA 52003, tranel@iastate.edu

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