Organic Dairy Performance in 2015

By Dr. Larry Tranel, Dairy Specialist
Iowa State University Extension and Outreach, NE/SE Iowa

Organic dairying in 2015 proves to be a pretty profitable method to produce milk that is very competitive with the best of dairy systems. Iowa State University Extension and Outreach teamed up with CROPP Cooperative/Organic Valley to analyze the 2015 profits on 44 organic dairy farms. Table 2 (page 4) shows a breakdown of the farms from a "states" perspective as it is broken into four groups representing:

1) Eastern Iowa
2) SW Wisconsin, NW Illinois
3) Pennsylvania / New York
4) Ohio

Each group has a publication detailing the financial data and analyzing the results. Those publications can be accessed at: www.extension.iastate.edu/dairyteam

Profitability was determined based on a combination of the following measures:

1) Rate of Return on Assets
2) Cost of milk production per cwt. equivalent
3) Return to Unpaid Labor per hour

Eastern Iowa Profit Highlights (11 farms)

The biggest highlight from the Iowa 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. This is for the most part due to the fact that three "no grain" dairies with only 8,398 pounds of milk production per cow on average made their way into the higher profit group. There was also an inverse relationship with labor productivity as measured by cwts. of milk sold per FTE laborer, for the same reason.

Bottom line was the average dairy earned $23.55 per hour of unpaid labor; had a milk price of $36.80; had a $32.13 cost per cwt. equivalent; and earned a 7.34% return on assets.

SW Wisconsin / NW Illinois Profit Highlights (12 farms)

The Higher Profit and Lower Profit groups in this data set had similar feed purchase expenses per cow but the Lower Profit group had operated an extra acre per cow hinting that crop production efficiency (quality and/or quantity) was up to 20% lower due to lower quality land or less intense land resource or crop input management. Milk production per cow was similar between the two groups. The Higher Profit group in this data set stands out in the labor efficiency categories. In comparison to the Lower Profit group, the Higher Profit group had 37 cows per FTE (versus 29); 5,409 cwts. of milk sold per FTE (versus 4,287); and $1,022 labor costs per cow (versus $1,153).

Bottom line in SW Wisconsin and NW Illinois was that the average dairy farm earned $29.88 per hour of unpaid labor; had a milk price of $34.56; had a $29.29 cost per cwt. equivalent; and earned a 9.67% return on assets.

Pennsylvania and NY Profit Highlights (11 farms)

The Higher Profit and Lower Profit groups in this data set had similar crop acres per cow but the Lower Profit group had $905 higher feed purchases per cow pointing that crop production efficiency (quality and/or quantity) was considerably lower due to lower quality land or less intense land resource or crop input management. The labor efficiency differences were somewhat significant between the Higher Profit and the Lower Profit groups in this data set as well.

It is the suspicion of this author that the combination of feed costs per cwt. equivalent of milk and labor efficiency account for the major profit difference. Bottom line is the High Profit group had almost double the returns per labor hour ($34.93 vs. $17.71) and almost triple the returns to assets (16.31% versus 6.44%). On top of that, the Higher Profit farms milk 57.5% more cows (63 vs. 40) leading to the belief there was a substantial economy of scale impact on profits as well.

Ohio Profit Highlights (10 farms)

In many data sets, labor efficiency is a main driver of profits and it plays out in this data set as very significant. The combination of labor efficiency and per cow milk production efficiencies seem to lead the way for driving the higher profits per cow in this data set.

The Higher Profit groups commonly milk in a low cost, efficient milking parlor similar to the TRANS Iowa Low Cost Parlor Design. In comparison to the Lower Profit group, the Higher Profit group had 38 cows per FTE (versus 34); 6,239 cwts of milk sold per FTE (versus 4,029); and $1,190 labor costs per cow (versus $1,249).

In addition, there are some significant economies of scale with the Higher Profit farms milking almost twice the number of cows as the Lower Profit farms (98 vs. 50). Bottom line was the average dairy earned $21.85 per hour of unpaid labor; had a milk price of $36.74; had a $33.42 cost per cwt. equivalent; and earned a 6.7% return on assets.

A Compilation of All the Farms in 2015

Forty-four farms were analyzed in 2015 and deemed good models for organic dairy producers. These 44 producers were analyzed in four ways with data detailed in Table 1:

1) The Average of 41 not selling to "Grass" Market
2) The Average of 20 "Higher Profit" Farms
3) The Average of 21 "Lower Profit" Farms
4) The Average of 3 "Grass Milk® Market" Farms

The Average Organic Farm (41)

The organic farms in the study, less the three farms that produced for a Grass Milk® market, averaged 69 cows and 246 productive acres. They received an average milk price of $36.16; had a total production cost of $31.46 for a net income per cwt. equivalent of $4.71. The average organic dairy earned $25.09 per hour of unpaid labor with a return on assets of 8.7%. Average milk production was 14,598 per cow annually, very similar in both the "Higher Profit" and "Lower Profit groups.

The Average of the Higher Profit Farms (20)

The Higher Profit farms milked 78 cows and operated 258 acres on average. They received an average milk price of $36.30 with a total production cost of $29.29 for a net income per cwt. equivalent of $7.01. This group averaged $32.45 per hour of unpaid labor with a return on assets of 11.5%. Though they produced very similar milk yields per cow, they sold 15% more milk per labor unit (FTE) than the Lower Profit group. Net farm income per crop acre was 40% higher for the Higher Profit group with similar purchased feed costs per cow and even less productive crop acres per cow hinting this group had better crop production and/or management (better yields and quality and/or less feed wastage).

The Higher Profit group tended to milk in a TRANS Iowa Low Cost Parlor or very similar type with 8% less labor costs per cow. This author estimates a 15%-20% increase in total labor efficiency on farms with a well-designed Trans Iowa Low Cost Parlor relative to stall barns and outdated parlors. A 100% increase simply in milking labor efficiency can often be attained relative to many common milking systems. The Higher Profit farms also benefited by better capital efficiency with 17% less capital invested per cow and 8% less fixed costs per cow.

The Average of 3 Iowa Grass Milk® Market Farms

Even though it may not be the most profitable method to milk cows, a few producers are proving it can be done, and pretty profitably. Three Grass Milk® Market farms receiving a $5 per cwt. milk price premium were analyzed and compared with the other groups. They received an average milk price in 2015 of $41.11 with total production costs of $32.85 for a net income per cwt. equivalent of $8.25. Unpaid labor earnings were $29.40 per hour with returns to assets of 9.02%. All three of these farms made the Higher Profit group in the Iowa organic dairy study and would have also earned that ranking in the study of the 44 farms analyzed nationally.

The average Grass Milk® Market farms milked the same number of cows on 13 fewer acres producing 57% of the milk per cow as the Higher Profit group. They milked 37% more cows per FTE with 69% of the labor costs per cow. Capital cost per cow was 20% less compared to the Higher Profit group and fixed costs were 25% lower. Net farm income per crop acre was 30% lower ($1,110 vs. $782). Milk produced per acre was 36% lower for the Grass Milk® Market farms.

All three Grass Milk® Market farms were located in Iowa with average to good quality soils on lower priced land for the state. These producers milked a pretty even mix of Jerseys, Holsteins and Crossbreds. There were several other "grass milk®" farms that were not feeding any grain and were not getting any special milk price premium for doing so. These farms ranked in the Lower Profit group.

But, around the country, including a small number of producers in this data set, there are organic dairy producers experimenting with lower levels of grain feeding (2-8 pounds per cow per day) with mixed but somewhat promising results. In areas with high grain prices, simple laws of marginal returns would dictate lower levels of grain feeding dependent on the milk price versus grain price relationship. There are also producers experimenting with once-a-day milking with Jerseys and no grain feeding with mixed and questionable results in a system that needs more study. It is a lifestyle decision more than a profit desire.

Summary

Overall, organic dairying can be as profitable as more conventional grazing and confinement systems as even the Lower Profit group shows pretty decent profits in 2015. The following two pages exhibit the detailed data of the organic farms analyzed. Remember, cash expense data does not include interest expense which also impacts cash related ratios and calculations.

The small numbers of farms represented in each of the "states" data sets might not give fair results comparatively both within the state and relative to the other states. Also, this study may or may not be representative of organic dairy farms across the U.S. as these farms were selected as being "good" producers. However, when the Grass Milk® Market farms were separated into their own group, both the Higher Profit and the Lower Profit farms seemed to have somewhat similar production, efficiencies and profit characteristics that it gives confidence that this study represents the "above average" organic producers. It is hoped this study will assist current and aspiring organic dairy producers to benchmark their dairy operations to better plan for future profits.

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. 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 Organic Valley Cooperative for their review and assistance in soliciting farmer participation and funding costs of collecting and analyzing data. Note, not all of the organic farms were Organic Valley producers.* For more information visit the ISU Dairy Team at: www.extension.iastate.edu/dairyteam

Table 1. Financial and Production Comparison of 41 Organic Dairy Farms in IA, WI, IL, PA, NY, OH and 3 "No Grain" Farms												
Organic Dairy Farms IA, WI, IL, PA, NY, OH 2015	**Average Organic Farm (41)**	**/Cow**		**Average Higher Profit Farms(20)**	**/Cow**		**Average Lower Profit Farms (21)**	**/Cow**		**Average of "No Grain" Farms (3)**	**/Cow**	
Productive Crop Acres Operated	246	3.55		258	3.31		234	3.86		245	3.54	
Average Number of Cows	69			78			61			78		
Total Assets on Farm	**$1,439,092**	**$20,783**		**$1,554,669**	**$19,887**		**$1,329,019**	**$21,881**		**$1,420,195**	**$20,510**	
Milk Price	**$36.16**			**$36.30**			**$36.04**			**$41.11**		
Milk Hundred weight Equiv.	11,758	170		13,159	168		10,424	172		7,435	107	
Milk Hundredweights	9,615	139		10,409	133		8,858	146		6,374	92	
Milk Sales	**$362,246**	**$5,231**		**$412,447**	**$5,276**		**$314,436**	**$5,177**		**$257,067**	**$3,712**	
Cull Cow Sales	$13,861	$200		$14,955	$191		$12,819	$211		$13,302	$192	
Calf Sales	$10,612	$153		$11,977	$153		$9,312	$153		$13,060	$189	
Crop Sales	$12,951	$187		$9,939	$127		$15,819	$260		$0	$0	
Other Income	$22,229	$321		$19,085	$244		$25,224	$415		$15,486	$224	
Total Cash Income	**$421,899**	**$6,093**	**/Cwt.Eq.**	**$468,403**	**$5,992**	**/Cwt.Eq.**	**$377,609**	**$6,217**	**/Cwt.Eq.**	**$298,916**	**$4,317**	**/Cwt.Eq.**
Veterinary, Medicine	$4,211	$61	$0.36	$3,971	$51	$0.30	$4,440	$73	$0.43	$877	$13	$0.07
Dairy Supplies	$15,625	$226	$1.33	$15,239	$195	$1.16	$15,993	$263	$1.53	$12,286	$177	$1.04
Breeding Fees	$2,260	$33	$0.19	$2,906	$37	$0.22	$1,645	$27	$0.16	$1,091	$16	$0.09
Feed Purchased	$65,971	$953	$5.61	$73,038	$934	$5.55	$59,241	$975	$5.68	$35,002	$505	$2.98
Repairs	$21,589	$312	$1.84	$22,953	$294	$1.74	$20,289	$334	$1.95	$15,342	$222	$1.30
Seed, Chem, Fert	$29,403	$425	$2.50	$29,624	$379	$2.25	$29,193	$481	$2.80	$13,430	$194	$1.14
Fuel, Gas, and Oil	$12,030	$174	$1.02	$12,543	$160	$0.95	$11,542	$190	$1.11	$11,068	$160	$0.94
Utilities	$6,382	$92	$0.54	$6,839	$87	$0.52	$5,946	$98	$0.57	$5,367	$78	$0.46
Interest Paid -- not included	$0			$0		$0.00	$0		$0.00	$0		
Labor Hired	$21,344	$308	$1.82	$27,253	$349	$2.07	$15,716	$259	$1.51	$9,892	$143	$0.84
Rent, Lease and Hire	$37,777	$546	$3.21	$38,630	$494	$2.94	$36,966	$609	$3.55	$1,947	$28	$0.17
Property Taxes	$5,052	$73	$0.43	$5,368	$69	$0.41	$4,752	$78	$0.46	$6,272	$91	$0.53
Farm Insurance	$4,914	$71	$0.42	$5,774	$74	$0.44	$4,095	$67	$0.39	$6,281	$91	$0.53
Other Cash Expense	$16,161	$233	$1.37	$17,301	$221	$1.31	$15,075	$248	$1.45	$13,446	$194	$1.14
Total Cash Expense	$242,720	$3,505	$20.64	$261,438	$3,344	$19.87	$224,893	$3,703	$21.57	$132,301	$1,911	$11.25
Net Cash Income	**$179,179**	**$2,588**	**$15.24**	**$206,965**	**$2,647**	**$15.73**	**$152,716**	**$2,514**	**$14.65**	**$166,616**	**$2,406**	**$14.17**
Inventory Change	-$9,705	-$140	-$0.83	$524	$7	$0.04	-$19,448	-$320	-$1.87	-$6,101	-$88	-$0.52
Net Farm Income	**$169,474**	**$2,447**	**$14.41**	**$207,489**	**$2,654**	**$15.77**	**$133,268**	**$2,194**	**$12.78**	**$160,515**	**$2,318**	**$13.65**
Equity@	$57,139	$825	$4.86	$61,580	$788	$4.68	$52,909	$871	$5.08	$56,265	$813	$4.79
Return to Labor	**$112,335**	**$1,622**	**$9.55**	**$145,909**	**$1,866**	**$11.09**	**$80,360**	**$1,323**	**$7.71**	**$104,250**	**$1,506**	**$8.87**
Labor Earnings Per Hour	**$25.09**			**$32.45**			**$18.09**			**$29.40**		
Gross Income per Cwt. Eq.	$36.16			$36.30			$36.04			$41.11		
Gross Expense per Cwt. Eq.	$31.46			$29.29			$33.52			$32.85		
Net Income per cwt.	**$4.71**			**$7.01**			**$2.51**			**$8.25**		
Return to All Labor per FTE Labor	$64,935			$78,998			$51,543			$72,898		
Number of Cows per FTE Labor	33			35			31			48		
Cwts. of Milk Sold per FTE Labor	4,811			5,147			4,490			3,941		
Pounds of Milk Sold per Cow	14,598			14,739			14,464			8,398		
Productive Crop Acres per Cow	3.4			3.22			3.54			2.9		
Capital Cost per Cow	$1,016			$977			$1,053			$777		
All Labor Costs per Cow	$1,223			$1,170			$1,273			$806		
Fixed Cost per Cow (DIRTI)	$1,434			$1,375			$1,491			$1,120		
Capital Invested per Cow	$19,144			$17,322			$20,880			$16,483		
Net Farm Income per Crop Acre	$948			$1,110			$794			$782		
Lbs. Milk Produced per Crop Acre	5,197			5,636			4,778			3,042		
Fert/Chem/Seed Cost/Crop Acre	$127			$129			$126			$60		
All Labor as Percent of Total Costs	23%			22.89%			22.58%			25%		
Fixed Cost as Percent of Total Cost	27%			27.31%			26.51%			35%		
****Net Farm Income From Operations**	**$169,474**			**$207,489**			**$133,268**			**$160,515**		
****Rate of Return on Assets**	**8.70%**			**11.50%**			**6.04%**			**9.02%**		
****Operating Profit Margin**	**26.26%**			**31.35%**			**21.41%**			**37.45%**		
****Asset Turnover Ratio**	**36.04%**			**39.19%**			**33.05%**			**24.56%**		
Dairy TRANS Peformance Rating	**73.17%**			**86.00%**			**60.95%**			**75.33%**		
by Larry Tranel, Dairy Field Specialist, Iowa State University Extension												

Table 2. Financial and Production Comparison of 44 Organic Dairy Farms by State												
Organic Dairy Farms 2015 IA, WI/IL, OH, PA/NY	**Average IOWA Organic Farms (11)**	**/Cow**		**Average WI / IL Organic Farms (12)**	**/Cow**		**Average PA / NY Organic Farms (11)**	**/Cow**		**Average OHIO Organic Farms (10)**	**/Cow**	
Productive Crop Acres Operated	289	3.61		308	4.09		139	2.77		242	3.28	
Average Number of Cows	80			75			50			74		
Total Assets on Farm	**$1,420,181**	**$17,752**		**$1,594,612**	**$21,167**		**$876,309**	**$17,479**		**$1,886,662**	**$25,547**	
Milk Price	**$36.80**			**$34.56**			**$38.10**			**$36.74**		
Milk Hundred weight Equiv.	10,845	136		13,712	182		8,684	173		12,504	169	
Milk Hundredweights	9,218	115		11,318	150		7,705	154		9,136	124	
Milk Sales	**$332,633**	**$4,158**		**$391,189**	**$5,193**		**$294,350**	**$5,871**		**$403,221**	**$5,460**	
Cull Cow Sales	$16,200	$203		$13,777	$183		$9,130	$182		$16,425	$222	
Calf Sales	$14,023	$175		$11,189	$149		$5,712	$114		$12,292	$166	
Crop Sales	$20,623	$258		$18,939	$251		$5,365	$107		$1,785	$24	
Other Income	$30,848	$386		$26,742	$355		$4,657	$93		$24,639	$334	
Total Cash Income	**$414,328**	**$5,179**	**/Cwt.Eq.**	**$461,835**	**$6,131**	**/Cwt.Eq.**	**$319,215**	**$6,367**	**/Cwt.Eq.**	**$458,361**	**$6,207**	**/Cwt.Eq.**
Veterinary, Medicine	$5,174	$65	$0.48	$4,670	$62	$0.34	$2,126	$42	$0.24	$3,895	$53	$0.31
Dairy Supplies	$14,846	$186	$1.37	$19,424	$258	$1.42	$11,366	$227	$1.31	$15,607	$211	$1.25
Breeding Fees	$1,091	$14	$0.10	$3,451	$46	$0.25	$1,737	$35	$0.20	$2,343	$32	$0.19
Feed Purchased	$42,094	$526	$3.88	$57,248	$760	$4.17	$82,526	$1,646	$9.50	$75,203	$1,018	$6.01
Repairs	$25,927	$324	$2.39	$23,983	$318	$1.75	$13,064	$261	$1.50	$21,446	$290	$1.72
Seed, Chem, Fert	$29,740	$372	$2.74	$31,414	$417	$2.29	$15,233	$304	$1.75	$37,414	$507	$2.99
Fuel, Gas, and Oil	$13,026	$163	$1.20	$13,648	$181	$1.00	$5,821	$116	$0.67	$15,535	$210	$1.24
Utilities	$7,639	$95	$0.70	$6,867	$91	$0.50	$3,220	$64	$0.37	$7,589	$103	$0.61
Interest Paid -- not included	$0			$0			$0			$0		
Labor Hired	$19,996	$250	$1.84	$27,551	$366	$2.01	$3,603	$72	$0.41	$31,459	$426	$2.52
Rent, Lease and Hire	$38,187	$477	$3.52	$55,682	$739	$4.06	$14,811	$295	$1.71	$30,355	$411	$2.43
Property Taxes	$5,237	$65	$0.48	$4,336	$58	$0.32	$3,308	$66	$0.38	$7,994	$108	$0.64
Farm Insurance	$6,390	$80	$0.59	$7,529	$100	$0.55	$105	$2	$0.01	$5,852	$79	$0.47
Other Cash Expense	$19,408	$243	$1.79	$20,277	$269	$1.48	$9,393	$187	$1.08	$14,279	$193	$1.14
Total Cash Expense	$228,754	$2,859	$21.09	$276,080	$3,665	$20.13	$166,315	$3,317	$19.15	$268,971	$3,642	$21.51
Net Cash Income	**$185,574**	**$2,320**	**$17.11**	**$185,755**	**$2,466**	**$13.55**	**$152,900**	**$3,050**	**$17.61**	**$189,391**	**$2,565**	**$15.15**
Inventory Change	-$35,059	-$438	-$3.23	-$955	-$13	-$0.07	$6,388	$127	$0.74	-$8,938	-$121	-$0.71
Net Farm Income	**$150,514**	**$1,881**	**$13.88**	**$184,800**	**$2,453**	**$13.48**	**$159,288**	**$3,177**	**$18.34**	**$180,453**	**$2,444**	**$14.43**
Equity@	$56,663	$708	$5.23	$63,092	$838	$4.60	$34,762	$693	$4.00	$74,870	$1,014	$5.99
Return to Labor	**$93,852**	**$1,173**	**$8.65**	**$121,708**	**$1,616**	**$8.88**	**$124,526**	**$2,484**	**$14.34**	**$105,583**	**$1,430**	**$8.44**
Labor Earnings Per Hour	**$23.55**			**$29.88**			**$25.54**			**$21.85**		
Gross Income per Cwt. Eq.	$36.80			$34.56			$38.10			$36.74		
Gross Expense per Cwt. Eq.	$32.13			$29.29			$31.74			$33.42		
Net Income per cwt.*	**$4.67**			**$5.27**			**$6.36**			**$3.32**		
Return to All Labor per FTE Labor	$62,557			$66,118			$71,925			$60,834		
Number of Cows per FTE Labor	39			33			29			36		
Cwts. of Milk Sold per FTE Labor	4,461			4,942			4,486			5,134		
Pounds of Milk Sold per Cow	11,611			15,145			15,721			14,132		
Productive Crop Acres per Cow	3.6			3.8			2.6			3.3		
Capital Cost per Cow	$950			$1,089			$834			$1,129		
All Labor Costs per Cow	$1,124			$1,077			$1,369			$1,220		
Fixed Cost per Cow (DIRTI)	$1,376			$1,553			$1,139			$1,587		
Capital Invested per Cow	$19,133			$20,148			$16,042			$20,566		
Net Farm Income per Crop Acre	$671			$774			$1,551			$750		
Lbs. Milk Produced per Crop Acre	3,434			4,450			7,797			4,526		
Fert/Chem/Seed Cost/Crop Acre	$91			$129			$132			$140		
Livestock over Total Investment %	16%			18%			16%			15%		
Cash Exp./Cash Inc.w/o Labor&Int	48%			53%			51%			54%		
All Labor as Percent of Total Costs	24%			21%			25%			22%		
Fixed Cost as Percent of Total Cost	31%			29%			21%			29%		
****Net Farm Income From Operation**	**$150,514**			**$184,800**			**$159,288**			**$180,453**		
****Rate of Return on Assets**	**7.34%**			**9.67%**			**10.93%**			**6.70%**		
****Operating Profit Margin**	**27.51%**			**29.01%**			**27.44%**			**23.64%**		
****Asset Turnover Ratio**	**31.55%**			**37.25%**			**39.57%**			**32.21%**		
Dairy TRANS Peformance Rating	**67.55%**			**77.67%**			**82.64%**			**64.20%**		

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