IOWA STATE UNIVERSITY
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Organic Dairy Profits in NC, VA and WV, 2014

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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 7 dairy farms in North Carolina, Virginia and West Virginia. The results were broken down into three 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 three sections include 1) Average of all seven farms 2) "Higher Profit" group consisting of the four more profitable farms, and 3) "Lower Profit" group consisting of the three lower profit 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, however, this impacts the analysis in that the cash expenses do not include interest expense. This affects cash related calculations and ratios.

The Average of All Seven Farms*

The average farm employed 104 cows and operated 2.16 acres of productive land per cow. Assets totaled $12,802 per cow. Total cash incomes per cow were $4,056 with total cash expenses of $2,495 giving a net cash income per cow of $1,561. Subtracting an $8 inventory loss per cow gives a **net farm income of $1,553 per cow** or $162,006 per farm. After subtracting $56,294 for an equity charge, the **return to unpaid labor averaged $1,014 per cow** or $105,712 per farm. This gives a **labor earnings of $29.81 per unpaid labor hour.**

The average milk price received was $35.02 per cwt. equivalent. Total expenses, including both equity and unpaid labor, were $33.32 for a net income per cwt. equivalent of $1.70. The **rate of return on assets was 10.28%** with an operating profit margin of 22.44% and an asset turnover ratio of 35.76%. Thus, these organic dairies showed "Good" profitability for 2014.

On average, these farms handled 51 cows per FTE (Full Time Equivalent of labor or 3,000 hours/yr.) selling 5,033 cwt. equivalents of milk per FTE and 10,044 pounds of milk per cow.

It is important to note that the profitability of the farms in this data set was extremely variable, especially in comparing the two most profitable farms versus the lowest profit farm with differences in production costs (>100%), return on assets (>25%) and returns to unpaid labor hours (>$100/hour). Even within both the higher and lower profit groups, there was a wide range of profitability.

The Average of the Higher Profit Farms

These Higher Profit organic farms averaged 121 cows per farm and had 2.21 acres of productive land owned or rented per cow. Assets totaled $9,370 per cow. A milk price of $35.14 per cwt. equivalent was earned in 2014.

The Higher Profit organic farms in this study compete quite well with the best dairy systems in terms of profit relative to return on assets at 15.87% and earnings of $52.67 per hour of unpaid labor. Return on assets ranged from 5.65% to 29.12% in this group and total cost of production ranged from $23.30 to $32.28 per cwt. equivalent.

Total cash income of $4,394 per cow was achieved with cash expenses (excluding interest) of $2,502 per cow to achieve a net cash income of $1,892 per cow. Adding in a positive inventory change of $6 per cow gives a **net farm income of $1,898 per cow or $228,686 per farm**. Subtracting a $416 equity charge gives a **return to labor of $1,481 per cow** or $178,498 per farm on average for the owner-operator(s). With 3,900 hours of unpaid labor, this equates to a **return of $52.67 per hour**—a very respectable labor return.

Labor efficiency is often highly correlated with overall profit with the style of milking parlor often having a major impact. However, all farms in this study had milking parlors with potential to have decent milking efficiency, but efficiency differed more due to parlor management than parlor type. Still, these farms profited on labor efficiency items that are clearly identified as a major strength and profit advantage.

Moreover, these Higher Profit farms had average total production costs of $28.23 per cwt. equivalent, including labor and equity, for a profit level of $6.91 per cwt. equivalent--a good margin of profit! Again, this total production cost includes the opportunity cost of both equity and unpaid labor.

Again, these Higher 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 organically, as long as the market holds, of course.

The Average of the Lower Profit Farms

The three Lower Profit farms averaged 83 cows with 2.05 acres of productive land per cow. Assets totaled $19,474 per cow, more than double the Higher Profit farms. This plays heavily into returns to assets as Higher Profit farms leased a higher percentage of land operated. But, in contrast, a farm was analyzed as to whether it was more cost effective to rent the land at current rental values versus own the land at current market values. Renting the land actually increased the costs of production when the 4% equity charge of owned land was used.

The average of the Lower Profit organic dairy farms had total costs of producing milk higher than the milk price they were receiving with an average price of $34.86 and an average cost of $40.12 for a net income per cwt. equivalent of -$5.26. However, only one of the three farms had costs of production lower than the milk price received. This means that the other two of the farms covered all costs, including unpaid labor and equity and so would still be defined as profitable. In a small data set such as this, one farm can skew results dramatically.

Total cash incomes were $3,400 per cow with total cash expenses of $2,481 which gives a net cash income of $919 per cow. This is more than 30% lower than the Higher Profit farms. Inventory losses of $35 per cow gave a **net farm income of $884 per cow** or $73,098 per farm. Subtracting $64,435 for equity, the **return to labor averaged $105 per cow** or $8,663 per farm or -**$0.66 per hour of unpaid labor earnings**. The rate of return on assets was 2.83% with an operating profit margin of 9.13% and an asset turnover ratio of 21.71%.

Bottom Line

Organic dairying can be as or more profitable than conventional grazing and confinement systems as depicted by returns to unpaid labor, costs of production and return to assets. However, this data set shows profitability can be highly variable and even negative in some cases. Milk production per cow is often thought of as an important profit indicator. Although milk production per cow is higher for the higher profit versus the lower profit group on average, it is highly variable relative to profit within this and other organic data sets in Iowa and Wisconsin.

It is the opinion of this author that there are two major issues that stand out as having a significant difference between the higher and lower profit groups. The main issues are labor efficiency and capital efficiency.

Labor efficiency is no doubt a great strength of the Higher Profit versus Lower Profit farms with significantly more cows per FTE (61 vs. 37); more cwts. sold per FTE (6,350 vs 3,277); less labor cost per cow ($633 vs. $884); less labor cost per cwt. eq. ($5.76 vs. $10.05) and less labor as a percent of total costs (18.12% vs. 23.17%).

In regards to capital efficiency, please note that there is an intensity of resource use and efficiency that shows. The Higher Profit farms purchased 56% less feed per cow ($680 vs. $1,066) than the lower profit farms while they only employed 7.8% more acres per cow than the Lower Profit farms (2.21 vs. 2.05). Thus, land, labor and cow productivity all contributed to a more efficient use of resources and capital efficiency.

Higher Profit farms, as expected, excelled in the profit equation where Profit = (Price – Cost) x Volume. Consider "Profit" in the equation as the Rate of Return on Assets (ROA). Consider the "Price – Cost" portion as the Operating Profit Margin (OPM) shows what percent of each dollar taken in is kept by the producer. Consider the "Volume" as the Asset Turnover Ratio (ATO). This number depicts how many years it takes to gross enough income to pay for all the assets on the farm. The higher profit farms excelled in both operating profit margin and asset turnover ratio as depicted in the following table.

Group	ROA	=	OPM	x	ATO
Average	10.28%	=	22.44%	x	35.76%
Higher Profit	15.78%	=	32.43%	x	46.29%
Lower Profit	2.83%	=	9.13%	x	21.71%

The following two pages exhibit the detailed data of the seven organic farms analyzed. Remember, cash expense data does not include interest expense. Also, realize that this study represents seven hand-selected farms so it may not be representative of all organic dairy farms in NC, VA and WV.

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 profits. 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 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 SE USA	Average of All 7 Farms	/Cow		Average of Higher Profit Farms(4)	/Cow		Average of Lower Profit Farms (3)	/Cow	
Productive Crop Acres Operated	225	2.16		267	2.21		170	2.05	
Average Number of Cows	104			121			83		
Total Assets on Farm	**$1,335,095**	**$12,802**		**$1,129,059**	**$9,370**		**$1,609,811**	**$19,474**	
Milk Price	**$35.02**			**$35.14**			**$34.86**		
Milk Hundred weight Equiv.	11,443	110		13,853	115		8,229	100	
Milk Hundredweights	7,944	76		8,521	71		7,174	87	
Milk Sales	**$378,613**	**$3,631**		**$473,453**	**$3,929**		**$252,160**	**$3,050**	
Cull Cow Sales	$17,525	$168		$19,423	$161		$14,994	$181	
Calf Sales	$7,588	$73		$9,136	$76		$5,524	$67	
Crop Sales	$2,020	$19		$3,535	$29		$0	$0	
Other Income	$17,231	$165		$23,883	$198		$8,363	$101	
Total Cash Income	**$422,978**	**$4,056**	/Cwt.Eq.	**$529,430**	**$4,394**	/Cwt.Eq.	**$281,042**	**$3,400**	/Cwt.Eq.
Veterinary, Medicine	$2,045	$20	$0.18	$2,664	$22	$0.19	$1,220	$15	$0.15
Dairy Supplies	$17,255	$165	$1.51	$19,279	$160	$1.39	$14,558	$176	$1.77
Breeding Fees	$1,897	$18	$0.17	$2,745	$23	$0.20	$767	$9	$0.09
Feed Purchased	$84,566	$811	$7.39	$81,911	$680	$5.91	$88,107	$1,066	$10.71
Repairs	$17,606	$169	$1.54	$25,926	$215	$1.87	$6,513	$79	$0.79
Seed, Chem, Fert	$27,841	$267	$2.43	$30,977	$257	$2.24	$23,661	$286	$2.88
Fuel, Gas, and Oil	$11,661	$112	$1.02	$15,334	$127	$1.11	$6,763	$82	$0.82
Utilities	$7,377	$71	$0.64	$9,204	$76	$0.66	$4,942	$60	$0.60
Interest Paid -- not included	$0			$0		$0.00	$0		$0.00
Labor Hired	$30,259	$290	$2.64	$29,651	$246	$2.14	$31,070	$376	$3.78
Rent, Lease and Hire	$33,988	$326	$2.97	$54,060	$449	$3.90	$7,226	$87	$0.88
Property Taxes	$1,740	$17	$0.15	$1,531	$13	$0.11	$2,020	$24	$0.25
Farm Insurance	$2,464	$24	$0.22	$2,867	$24	$0.21	$1,927	$23	$0.23
Other Cash Expense	$21,470	$206	$1.88	$25,346	$210	$1.83	$16,301	$197	$1.98
Total Cash Expense	$260,171	$2,495	$22.74	$301,494	$2,502	$21.76	$205,074	$2,481	$24.92
Net Cash Income	$162,807	$1,561	$14.23	$227,936	$1,892	$16.45	$75,968	$919	$9.23
Inventory Change	-$801	-$8	-$0.07	$750	$6	$0.05	-$2,870	-$35	-$0.35
Net Farm Income	$162,006	$1,553	$14.16	$228,686	$1,898	$16.51	$73,098	$884	$8.88
Equity@	$53,172	$510	$4.65	$44,724	$371	$3.23	$64,435	$779	$7.83
Return to Labor	$108,834	$1,044	$9.51	$183,962	$1,527	$13.28	$8,663	$105	$1.05
Inventory Adjustments--Feed	$4,535	$43	$0.40	$3,425	$28	$0.25	$6,017	$73	$0.73
Supplies and Other	$1,517	$15	$0.13	$2,654	$22	$0.19	$0	$0	$0.00
Breeding Livestock	$13,907	$133	$1.22	$22,838	$190	$1.65	$2,000	$24	$0.24
Income Change	$11,868	$114	$1.04	$12,132	$101	$0.88	$11,517	$139	$1.40
Prepaid Expenses	$5,611	$54	$0.49	$9,519	$79	$0.69	$400	$5	$0.05
Accounts Payable	$2,286	$22	$0.20	$4,000	$33	$0.29	$0	$0	$0.00
Machinery & Equipment	$10,168	$98	$0.89	$26,244	$218	$1.89	-$11,267	-$136	-$1.37
Land and Buildings	-$3,680	-$35	-$0.32	-$6,440	-$53	-$0.46	$0	$0	$0.00
Other Adjustments	$1,142	$11	$0.10	$1,439	$12	$0.10	$747	$9	$0.09
Expense Change	-$10,955	-$105	-$0.96	-$26,762	-$222	-$1.93	$10,120	$122	$1.23
Capital Purchases Minus Sales Adj.	$26,344	$253	$2.30	$45,528	$378	$3.29	$767	$9	$0.09
Depreciation COST	$30,262	$290	$2.64	$38,286	$318	$2.76	$19,562	$237	$2.38
Depreciation FM Value	$19,058	$183	$1.67	$24,977	$207	$1.80	$11,167	$135	$1.36
Unpaid Labor Cost	$42,857	$411	$3.75	$42,500	$353	$3.07	$43,333	$524	$5.27
Unpaid Labor Hours	3,943	38		3,900	32		4,000	48	
Labor Full Time Equivalents	2.12			2.00			2.28		
Labor Earnings Per Hour	$30.68			$54.18			-$0.66		
Gross Income per Cwt. Eq.	$35.02			$35.14			$34.86		
Gross Expense per Cwt. Eq.	$33.12			$27.88			$40.12		
Net Income per cwt.	$1.90			$7.26			-$5.26		

Organic Dairy Farms 2014 SE USA		/Cow		/Cow		/Cow
Cash Income--	$422,978	$4,056	$529,430	$4,394	$281,042	$3,400
Adjusted Income	$14,588	$140	$19,516	$162	$8,017	$97
Total Income	$437,565	$4,196	$548,946	$4,556	$289,058	$3,497
Cash Costs	$260,171	$2,495	$301,494	$2,502	$205,074	$2,481
Adjusted Costs	$15,389	$148	$18,766	$156	$10,887	$132
Overhead Costs	$96,029	$921	$87,224	$724	$107,768	$1,304
Total Costs	$371,589	$3,563	$407,484	$3,382	$323,728	$3,916
RETURN OVER COSTS	$65,977	$633	$141,462	$1,174	-$34,670	-$419
Adj. Gross Return per FTE Labor	$206,961		$262,269		$133,217	
Return to All Labor per FTE Labor	$65,534		$99,617		$20,091	
Number of Cows per FTE Labor	**51**		**61**		**37**	
Cwts. of Milk Sold per FTE Labor	5,033		6,350		3,277	
Pounds of Milk Sold per Cow	10,044		10,985		8,791	
Productive Crop Acres per Cow	2.0		1.98		1.94	
Capital Cost per Cow	$812		$761		$880	
All Labor Costs per Cow	$741		$633		$884	
Fixed Cost per Cow (DIRTI)	$982		$970		$998	
Capital Invested per Cow	$15,151		$12,763		$18,335	
Net Farm Income per Crop Acre	$911		$1,078		$689	
Lbs. Milk Produced per Crop Acre	6,053		6160		5911	
Adj. Gross Cash Income/Crop Acre	$2,443		$2,444		$2,441	
Machinery Investment/Crop Acre	$1,060		$906		$1,265	
Fuel, Gas and Oil Cost/Crop Acre	$61		$57		$66	
Repair Cost per Crop Acre	$73		$96		$41	
Fert/Chem/Seed Cost/Crop Acre	**$200**		**$175**		**$233**	
Livestock over Total Investment %	22%		26.78%		15.45%	
Cash Exp./Cash Inc.w/o Labor&Int	55%		50.66%		60.62%	
All Labor as Percent of Total Costs	20%		18.38%		23.17%	
Fixed Cost as Percent of Total Cost	26%		26.00%		25.97%	
**Net Farm Income From Operations	$162,006		$228,686		$73,098	
****Rate of Return on Assets**	**10.28%**		**15.87%**		**2.83%**	
**Rate of Return on Equity	15.53%		25.06%		2.83%	
****Operating Profit Margin**	**22.44%**		**32.43%**		**9.13%**	
****Asset Turnover Ratio**	**35.76%**		**46.29%**		**21.71%**	
**Operating Expense Ratio	60.22%		51.31%		72.10%	
**Depreciation Expense Ratio	4.44%		5.09%		3.57%	
**Net Farm Income Ratio	35.29%		43.50%		24.33%	
Dairy TRANS Profit Status is	**Good**		**Superb/Great/Good**		**Average/Fair/ Poor**	
Dairy TRANS Peformance Rating	**72.43%**		**101.50%**		**33.67%**	

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For more information visit the ISU Dairy Team at:
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