

Selected information from the
2011 Michigan Dairy Farm Business Analysis Summary

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by

Eric Wittenberg
and
Christopher Wolf

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Eric Wittenberg and Christopher Wolf¹

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¹ Co-workers in the TelFarm project were: R. Betz, A. Kantrovich, L. Borton, P. Taylor, C. Talley, W. Schauer, D. Stein, K. Lee, and V. Varner with the assistance of Michigan State University Extension Educators. Greenstone Farm Credit Services co-workers were Kelly Tobin, Steve Eshelman, Janice Raymond, Anne Gerke, Sonya Pentecost, and Lynette Wood. Farm Credit Services of Wisconsin co-worker was Steve Zimmerman.

Summary

This report summarizes the financial and production records of 101 dairy farms from throughout Michigan in 2011. To be included, the farms must have produced at least 50 percent of gross cash farm income from milk and dairy animal sales. The records came from Michigan State University's TelFarm project and the Farm Credit Service system in Michigan. The values were pooled into averages for reporting purposes. The average herd included here is larger than would be the average dairy herd in Michigan. Average values are reported in the summary tables and discussion that follows but one should be aware that considerable variation across herds exists in virtually every measure.

In 2011, the average dairy farm in the business analysis had 303 cows producing an average of 22,340 pounds of milk per cow (Table 1). Milk price, based on gross income, averaged \$20.65/cwt. Relative to 2010: average milk price increased \$3.87/cwt., milk production remained constant or decreased slightly 105 pounds per cow, and average herd size increased 36 cows.

Table 1. Average Michigan Dairy Farm Business Analysis Characteristics, 2007-2011

	2007	2008	2009	2010	2011
Average number of cows	217	230	243	267	303
Milk sold per cow (pounds)	21,415	20,849	21,503	22,445	22,340
Average price of milk sold (\$/cwt)	20.21	19.41	13.31	16.78	20.65
Total acres owned	486	486	454	508	452
Total crop acres	811	827	862	805	736
Number of farms	132	116	104	90	101

Net farm income is the return to operator unpaid management, labor and capital invested. Net farm income in 2011 averaged a \$285,626 which was a significant improvement over the 2009 and 2010 average.). Gross cash farm income for all farms averaged \$1,742,837 in 2011. The largest component of these revenues was milk sales, which averaged \$1,466,372. Sorted by rate of return on assets (market), the net farm income for the low 25% group averaged a \$101,165 while the high 25% group averaged \$421,026 a \$319,861 difference

Table 2. Average Michigan Dairy Farm Income Statement, 2007-2011

	2007	2008	2009	2010	2011
	(\$)	(\$)	(\$)	(\$)	
Gross cash farm income	1,175,551	1,198,273	1,046,327	1,302,891	1,742,837
- Total cash expense	<u>949,092</u>	<u>959,454</u>	<u>937,998</u>	<u>1,095,827</u>	<u>1,408,613</u>
= Net cash farm income	226,460	238,819	108,329	207,064	334,224
+ Inventory change*	94,623	2,498	-66,854	103,606	116,185
+ Depreciation + capital adjust*	<u>-103,834</u>	<u>-127,093</u>	<u>-103,868</u>	<u>-115,560</u>	<u>-164,823</u>
= Net farm income	217,248	114,224	-62,393	195,560	285,586

*Changes calculated as ending value minus beginning value.

To put the profit values in perspective, we calculate profitability ratios. Rate of return on assets (ROA) is the farm operating profit (equal to net farm income plus interest expense less value of operator labor and management) divided by average total farm asset value (valued at current market value). Rate of return on assets is a measure of how much profit the farm business assets generated. The average 2011 dairy farm ROA (market) was 11.2 percent. The average 2011 ROE (market) was a 13.7 percent, with ROE greater than ROA an indicator of profits on borrowed money. Operating profit margin is the operating profit divided by gross revenues. Operating profit margin measures the dollars of profit generated per dollar of revenue. In 2011, Michigan dairy farms generated 33.5 cents of profit per dollar of revenue. Asset turnover (ATO) is gross farm revenue divided by average asset value. Asset turnover measures the efficiency with which farm assets generate revenue. The average ATO value was 33.3 percent in 2011.

Table 3. Average Michigan Dairy Farm Profitability Indicators, 2007-2011

	2007	2008	2009	2010	2011
	(%)	(%)	(%)	(%)	(%)
Rate of return on assets*	11.3	7.0	0.4	7.0	11.2
Rate of return on equity	13.3	7.5	-1.6	7.7	13.7
Operating profit margin	33.1	23.1	1.8	23.9	33.5
Asset turnover rate*	34.1	30.5	22.5	29.2	33.3

* Assets valued at market value.

Tables 4 and 5 display average income and expenses per hundredweight (cwt) of milk and per cow. Income and expenses were adjusted to an accrual basis. Average, accrual adjusted income and expenses per cropped acre were also included. Government payments include all farm government payments as it was not possible to separate crop from dairy payments.

Table 4 contains the average income and expense items across all 101 dairy farms in the 2011 summary while Table 5 displays the average income and expense items for farms that reported that item. For example, all farms had milk income so that income is identical in both tables. In contrast, only some farms reported DHIA expense so that item is larger when averaged only across those farms with that expense. *These tables should not be interpreted as an estimate of the true cost of producing milk.* Only income related to the milking herd is reported in Tables 4 and 5. Unpaid factors, including labor, management and capital, are not accounted for in the expense items. In addition, the allocation of resources amongst farm enterprises is not accurately reflected leaving the milking herd as the residual claimant on all expenses (especially labor costs).

The bottom section of Tables 4 and 5 presents crop related expenses divided by the total cropped acres. Again, these values should not be interpreted as cost of crop production--to accurately calculate a crop cost of production requires labor and management (among other) expenses that could not be separated out in these financial records.

Table 4. Average income and expenses across all farms*, 2011

Income Items:	Per cwt.	Per Cow
Milk	\$20.65	\$4591.17
Cull Cows and Calves	\$1.18	\$262.28
Dairy Steers	\$1.09	\$227.43
Dairy Heifers	\$0.25	\$59.79
Government Payments	\$0.38	\$76.94
Patronage Dividends, cash	\$0.18	\$41.34
Crop Sales	\$4.27	\$829.04
Other Cash Income	\$0.69	\$149.60
Expense Items:	Per cwt.	Per Cow
Purchased Feeds	\$6.01	\$1359.76
Breeding Fees	\$0.20	\$45.80
Veterinary	\$0.52	\$117.63
Livestock Supplies	\$0.73	\$155.93
DHIA	\$0.10	\$21.88
Milk & Livestock Mkt. & Trucking	\$0.92	\$200.27
Interest	\$0.91	\$189.74
Fuel and Oil	\$1.29	\$270.36
Repairs	\$1.46	\$307.85
Custom Hire	\$0.72	\$161.07
Hired Labor	\$2.78	\$618.98
Leases	\$0.33	\$72.71
Real Estate Taxes	\$0.31	\$64.87
Farm Insurance	\$0.39	\$78.36
Utilities	\$0.66	\$137.48
Dues, Professional Fees	\$0.18	\$37.64
Miscellaneous	\$0.64	\$141.04
Machinery Depreciation	\$1.58	\$340.39
Building Depreciation	\$0.80	\$177.30
Family Living	\$1.78	\$367.81
Expense Items per Cropped Acre:	Per Acre	
Seed	\$57.58	
Fertilizer	\$75.78	
Crop Chemicals	\$23.26	
Crop Insurance	\$8.56	
Crop Miscellaneous	\$36.87	
Land Rent	\$46.94	

* All income and expense items averaged across all 101 farms whether or not they had that income or expense item. Other cash income includes custom work, insurance claims, and miscellaneous income.

Table 5. Average income and expenses across farms with that item*, 2011

Income Items:	Per cwt.	Per Cow
Milk	\$20.65	\$4591.17
Cull Cows and Calves	\$1.22	\$270.31
Dairy Steers	\$3.55	\$854.52
Dairy Heifers	\$0.52	\$123.24
Government Payments	\$0.41	\$82.67
Patronage Dividends, cash	\$0.23	\$52.19
Crop Sales	\$6.84	\$1329.09
Other Cash Income	\$0.77	\$167.88
Expense Items:	Per cwt.	Per Cow
Purchased Feeds	\$6.01	\$1359.76
Breeding Fees	\$0.23	\$53.79
Veterinary	\$0.52	\$117.63
Livestock Supplies	\$0.78	\$165.78
DHIA	\$0.18	\$40.18
Milk & Livestock Mkt. & Trucking	\$0.92	\$200.27
Interest	\$0.98	\$203.87
Fuel and Oil	\$1.29	\$270.36
Repairs	\$1.46	\$307.85
Custom Hire	\$0.80	\$178.77
Hired Labor	\$2.92	\$651.22
Leases	\$0.55	\$120.39
Real Estate Taxes	\$0.34	\$70.45
Farm Insurance	\$0.39	\$78.36
Utilities	\$0.66	\$137.48
Dues, Professional Fees	\$0.19	\$39.01
Miscellaneous	\$0.64	\$141.04
Machinery Depreciation	\$1.58	\$340.39
Building Depreciation	\$0.80	\$177.30
Family Living	\$1.78	\$367.81
Expense Items per Cropped Acre:	Per Acre	
Seed	\$59.34	
Fertilizer	\$84.11	
Crop Chemicals	\$27.01	
Crop Insurance	\$18.39	
Crop Miscellaneous	\$36.87	
Land Rent	\$50.98	

* Income and expense items averaged only across farms with that item.

Table 6 compares major production, income and expense items across all farms over a five year time frame. The average milk price reached a new high in 2011. Purchased feed expense also reached a new high in 2011

Table 6. Average of Major Production, Income and Expenses Items (across all farms)

	2007	2008	2009	2010	2011
Milk sold per cow (pounds)	21,415	20,849	21,503	22,445	22,340
Average price of milk sold (\$/cwt)	20.21	19.41	13.31	16.78	20.65
Purchased Feeds (\$/cwt)	5.32	5.56	4.56	4.83	6.01
Interest Paid (\$/cwt)	1.38	1.27	1.18	1.10	0.91
Hired Labor (\$/cwt)	2.67	2.84	2.59	2.36	2.78
Fuel and Oil (\$/cwt)	1.22	1.38	0.94	0.95	1.29
Total Depreciation (\$/cwt)	2.85	2.64	1.80	1.84	2.58

Results by Herd Size

To further facilitate financial comparisons and benchmarking, the financial summaries were divided into herd size categories. Beginning with the 2009 summary we have utilized four herd size categories: 40 to 99 cows (20 herds), 100 to 249 cows (45 herds), 250 to 449 cows (18 herds), and 450+ cows (19 herds). These size categories can facilitate benchmarking performance to similar sized farms.

Table 7 displays average characteristics by herd size category. As expected, average milk production per cow was correlated with herd size across the size categories. Milk price was similar across all herd sizes. The smallest herds operated 4.6 crop acres per cow; the medium herds about 4.0 crop acres per cow; and the medium-large herds about 3.0 crop acres per cow and the largest herds about 1.3 crop acres per cow.

Table 7. Average 2011 Michigan Dairy Farm Characteristics by Herd Size Category

	40-99 cows	100-249 cows	250-449 cows	450+ cows
Average number of cows	69	165	315	869
Milk sold per cow (pounds)	18,904	21,732	25,370	25,129
Average price of milk sold (\$/cwt)	20.79	20.62	20.56	20.63
Total acres owned	223	362	500	827
Total crop acres	317	663	957	1,128
Number of farms	20	45	18	19

Table 8 displays the average farm income statement by herd size. Net farm income represents the returns to unpaid factors (i.e., labor, management and equity capital). All herd sizes recorded a positive net income for 2011, 2011.

Table 8. Average 2011 Michigan Dairy Farm Income Statement by Herd Size

	40-99 cows	100-249 cows	250-449 cows	450+ cows
	(\$)	(\$)	(\$)	(\$)
Gross cash farm income	355,162	909,577	1,963,964	5,036,463
- Total cash expense	<u>277,661</u>	<u>723,307</u>	<u>1,548,008</u>	<u>4,139,222</u>
= Net cash farm income	77,501	186,269	415,956	897,241
+ Inventory change *	31,401	38,906	182,800	323,443
+ Depreciation and capital adjustments*	<u>-31,612</u>	<u>-78,470</u>	<u>-179,759</u>	<u>-506,362</u>
= Net farm income	77,290	146,798	418,996	712,322

*Changes calculated as ending value minus beginning value.

Table 9 compares profitability measures across herd size with assets valued at market value. All herd sizes realized positive values in 2011.

Table 9. Average 2011 Michigan Dairy Farm Profitability Indicators by Herd Size

	40-99 cows	100-249 cows	250-449 cows	450+ cows
	(%)	(%)	(%)	(%)
Rate of return on assets*	10.5	8.8	12.0	12.1
Rate of return on equity	11.8	10.6	15.0	15.1
Operating profit margin	44.8	28.5	34.1	34.2
Asset turnover rate	23.5	31.1	35.3	35.3

* Assets valued at market value.