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Staff Paper

Dairy Grazing Farms in Michigan, 1999

by

Sherrill B. Nott

Staff Paper 2000-33

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DAIRY GRAZING FARMS IN MICHIGAN, 1999

Michigan Data from Telfarm/MicroTel, and the Farm Credit System Staff Paper No. 2000-33, 13 pages

by

Sherrill B. Nott¹

The purposes of this report are: 1) to provide statistical information about the financial results of dairy farms that intensively grazed their milk cows during 1999 (the body of the paper); and 2) to provide production costs for comparative analysis and forward planning (Table 13, the last page of the paper).

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Data for 12 Panel Dairy Grazing Farms in Michigan
Livestock and Crop Production Summary
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Statement of Cash Flows
Financial Guidelines Measures
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Data Source

The type of farm in this report is dairy. Farm types were assigned using the 1992 Census of Agriculture's Standard Industrial Classification (SIC) definitions. Basically, any farm with 50 percent or more of value of farm sales from one item becomes a farm of that type. Dairy farms have 50 percent or more of value of combined sales from milk and cull dairy animals. They are also grazing farms because extension field staff told me the farms used rotational grazing with their producing herd during the summer of 1999.

This report is a summary of the financial and production records kept by Michigan dairy farmers who received outside help in keeping and reviewing those records. Farm records were included if a Finan² summary was completed on 1999 data including beginning and ending balance

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¹Professor and Extension Specialist in the Department of Agricultural Economics. Co-workers in the Telfarm/MicroTel project were R. Betz, L. Borton, G. Kole, T. Purdy, W. Schauer, D. Stein, and V. Varner with the assistance of MSU Extension Agents in Michigan. Steve Zimmerman of Farm Credit Services also assisted.

Finan = financial analysis, one of the parts of Finpack, a financial software package from the Center for Farm Financial Management at the University of Minnesota.

sheets that had both cost basis and market valuations, plus income and expenses. The summary was included if cash discrepancy was less than 10% of gross cash inflow, and if the debt discrepancy was less than \$1,000. The 12 farms that met these criteria were spread throughout Michigan.

Finansum is software that averages and sorts data produced by Finan. It is available from the University of Minnesota. It allows rapid analysis of group averages with alternatives for how the results are presented. I chose to show the average of the high or low 49 percent by net farm income to insure 6 or more farms were in the group. A farm was accepted in the average regardless of whether it was a proprietorship, partnership, limited liability company, or corporation.

Data Variability

The Finansum averages for 12 farms are reported in the following tables. Considerable variability exist in the data. The unweighted mean of the net farm income was \$65,974; the median was \$42,626 and the standard deviation was \$61,684. The average number of cows was 94; the median was 82 and the standard deviation was 55. The unweighted mean of the milk sold per cow was 15,272 pounds; the median was 15,570 and the standard deviation was 3,805.

The 12 grazing dairy farms are not a random sample. Most of them kept their financial records with Michigan State University Extension's Telfarm/MicroTel accounting project, or with Farm Credit Services. The averages may be representative of bigger and better managed rotational grazing farms.

This document may be found and downloaded from the following:

http://www.msu.edu/user/nott

Table 1 Livestock and Crop Production Summary, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
ACREAGE SUMMARY			
Total Acres Owned	403	313	493
Total Crop Acres	328	317	339
Crop Acres Owned	239	210	269
Crop Acres Cash Rented	89	107	70
AVERAGE YIELD PER ACRE			
Hay, Alfalfa (ton)	3.90	-	-
Corn (bu.)	126.83	-	-
Corn Silage (ton)	13.76	-	-
Hay, Native Grass (ton)	3.53	-	-
Hay, Mixed Alfalfa/Grass (ton)	5.60	-	-
Hay, Grass (ton)	2.13	-	-
Hay, Mixed (ton)	2.14	-	-
DAIRY			
Average number of Cows	94.40	56.80	132.00
Milk produced per Cow	16163.00	14914.00	16702.00
Percent of barn capacity	103.80	93.20	109.10
Average milk price per cwt.	15.16	15.13	15.17

Table 2 Farm Income Statement, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
CASH FARM INCOME			
Corn	292	_	584
Alfalfa Hay	3	5	-
Mixed Hay	4	8	_
Straw	207	299	115
Winter Wheat	87	-	173
Other crops	2250	4500	-
Miscellaneous crop income	11	-	21
Beef Calves	73	_	147
Milk	231338	128261	334414
Dairy Calves	1495	1598	1391
Dairy Steers	25	-	50
Cull breeding livestock	9450	5776	13123
Misc. livestock income	247	123	372
Transition payments	3609	7218	-
CRP payments	4313	8626	_
Other government payments	12535	1094	23977
Custom work income	270	_	539
Patronage dividends, cash	965	667	1262
Insurance income	1314	35	2594
Other farm income	5041	1404	8678
Gross Cash Farm Income	273528	159615	387441

Table 3

Farm Income Statement, 1999 (Continued) Dairy Grazing Farms in Michigan (Farms sorted by Net Farm Income) Average of

,	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
CASH FARM EXPENSE			
Seed	4763	3338	6188
Fertilizer	11802	13191	10412
Crop Chemicals	2182	1703	2661
Crop Insurance	15	20	10
Crop marketing	49	99	-
Crop miscellaneous	1789	2475	1104
Purchased feed	59771	31921	87621
Breeding fees	1861	1520	2202
Veterinary	3838	2567	5109
Livestock supplies	9024	4876	13172
Livestock leases	313	626	-
Livestock marketing	9702	7557	11847
Interest	13471	8261	18681
Fuel & Oil	5675	3289	8061
Repairs	20377	12471	28282
Custom hire	6052	1853	10250
Hired labor	30004	16089	43918
Land rent	4773	1659	7886
Machinery & bldg leases	2334	671	3998
Real estate taxes	5340	4224	6455
Personal property taxes	69	138	-
Farm insurance	4272	2914	5630
Utilities	5533	5014	6053
Dues & professional fees	2083	1563	2604
Miscellaneous	3773	583	6962
Total cash expense	208865	128623	289107
Net cash farm income	64663	30992	98334
INVENTORY CHANGES			
Crops and feed	5276	5141	5410
Market livestock	1918	-301	4136
Accounts receivable	-2212	-25	-4399
Prepaid expenses and supplies	2823	1650	3995
Accounts payable	4193	2897	5488
Total inventory change	11997	9363	14631
Net operating profit	76660	40355	112965
DEPRECIATION & OTHER CAPITAL ADJUSTMENTS			
Breeding livestock	10555	3650	17460
Machinery and equipment	-15373	-9527	-21220
Buildings and improvements	-5663	-7635	-3691
Other farm capital	-205	-201	-209
Total depr. and other capital adj	-10686	-13712	-7660
Net farm income	65974	26643	105306

Table 4 Inventory Changes, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
Net cash farm income	64663	30992	98334
CROPS AND FEED			
Ending inventory	40949	27781	54116
Beginning inventory	35673	22640	48706
Inventory change	5276	5141	5410
MARKET LIVESTOCK			
Ending inventory	5462	937	9988
Beginning inventory	3545	1237	5852
Inventory change	1918	-301	4136
ACCTS RECVABLE & OTHR CRRNT ASSETS			
Ending inventory	9869	1659	18080
Beginning inventory	12081	1683	22479
Inventory change	-2212	-25	-4399
PREPAID EXPENSES AND SUPPLIES			
Ending inventory	7369	2178	12560
Beginning inventory	4547	528	8565
Inventory change	2823	1650	3995
ACCOUNTS PAYABLE			
Beginning inventory	8519	6557	10482
Ending inventory	4327	3660	4994
Inventory change	4193	2897	5488
Total inventory change	11997	9363	14631
Net operating profit	76660	40355	112965

Table 5 Depreciation and Other Capital Adjustments, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
Net operating profit	76660	40355	112965
BREEDING LIVESTOCK			
Ending inventory	157325	93475	221174
Capital sales	7379	9794	4964
Beginning inventory	152963	97823	208103
Capital Purchases	1185	1796	575
Depreciation, capital adj.	10555	3650	17460
MACHINERY AND EQUIPMENT			
Ending inventory	33276	22335	44217
Capital sales	889	545	1233
Beginning inventory	31099	22679	39519
Capital purchases	18439	9728	27150
Depreciation, capital adj.	-15373	-9527	-21220
BUILDINGS AND IMPROVEMENTS			
Ending inventory	18315	25972	10658
Capital sales	-	-	-
Beginning inventory	21195	30274	12117
Capital purchases	2783	3333	2232
Depreciation, capital adj.	-5663	-7635	-3691
OTHER CAPITAL ASSETS			
Ending inventory	7345	4769	9920
Capital sales	777	252	1302
Beginning inventory	6425	3889	8961
Capital purchases	1902	1333	2471
Depreciation, capital adj.	-205	-201	-209
Total depreciation, capital adj.	-10686	-13712	-7660
Net farm income	65974	26643	105306

Table 6 Profitability and Liquidity Analysis, 1999 **Dairy Grazing Farms in Michigan** (Farms sorted by Net Farm Income) Avg. of Low 49% Avg. of High 49% Avg. of Avg. of

All Farms

:						
Number of Farms	12	6	6	12	6	6
PROFITABILITY		Cost		N	// Market	
Net Farm Income	65974	26643	105306	126564	106802	146325
Labor & mgmt earnings	53992	17457	90527	90660	80166	101153
Rate of return on assets	9.7 %	0.3 %	14.7 %	12.4 %	14.0 %	11.5 %
Rate of return on equity	13.2 %	-5.0 %	24.2 %	14.5 %	16.4 %	13.4 %
Operating profit margin	17.3 %	0.6 %	24.4 %	43.7 %	59.5 %	37.1 %
Asset turnover rate	55.8%	47.6 %	60.2 %	28.3 %	23.5 %	30.9 %
Interest on farm net worth	11982	9186	14778	35904	26635	45172
Farm interest expense	13590	8303	18877	13590	8303	18877
Value operator lbr & mgmt	39887	34145	45629	39887	34145	45629
Return on farm assets	39677	801	78553	100267	80960	119573
Average farm assets	410827	285922	535731	811103	579909	1042296
Return on farm equity	26087	-7502	59677	86677	72657	100696
Average farm equity	198122	149937	246306	598398	443925	752871
Value of farm production	229294	136160	322428	229294	136160	322428
		Average		Average of		erage of
		All Far	ms	Low 49%	Hiş	gh 49%
Number of Farms			12	ϵ	j	6
LIQUIDITY (Cash)						
Net cash farm income			64663	30992		98334
Net nonfarm income			6563	11305		1821
Family living and taxes			51486	32597		70376
Real estate principal payn	nents		5802	5609		5993
Cash available for interm.			13938	4090		23786
Average intermediate deb			75080	30934	ļ	119227
Years to turnover interm.	debt		5.4	7.6		5.0
Expense as a % of income			76 %	81 %		75 %
Interest as a % of income			5 %	5 %		5 %
LIQUIDITY (Accrual)			278510	164431		392589
Total accrual farm income			201850	124076		279624
Total accrual farm expens			76660	40355		112965
Net accrual operating inco	ome		6563	11305		1821
Net nonfarm income			51486	32597		70376
Family living and taxes			5802	5609		5993
Real estate principal payn			25936	13454		38417
Available for intermediate Average intermediate deb			75080	30934		119227
-			2.9	2.3	!	3.1
Years to turnover interm.			2.9 72 %	2.3 75 %		71 %
Expense as a % of income	2		5 %	73 % 5 %		5 %
Interest as a % of income			J /0	3 %		3 70

Avg. of

Low 49%

All Farms

Avg. of

High 49%

Table 7

Balance Sheet at Cost Values, 1999

Dairy Grazing Farms in Michigan

(Farms sorted by Net Farm Income)

Number of Farms

Average of Average of Average of All Farms Low 49% High 49%

Ending Beginning Ending Beginning Ending Beginning **ASSETS** Current Farm Assets Cash and checking balance Prepaid expenses & supplies Growing crops Accounts receivable Hedging accounts Crops held for sale or feed Crops under government loan Market livestock held for sale Other current assets Total current farm assets Intermediate farm assets Breeding livestock Machinery and equipment Other intermediate assets Total intermediate farm assets Long-Term Farm Assets Farm land Buildings and improvements Other long-term assets Total long-term farm assets Total Farm Assets **Total Nonfarm Assets Total Assets** LIABILITIES Current Farm Liabilities Accrued interest Accounts payable Current notes Government crop loans Principal due on term debt Total current farm liabilities Intermediate Farm Liabilities Long-term Farm Liabilities Total Farm Liabilities **Total Nonfarm Liabilities Total Liabilities** Net Worth (farm and nonfarm) New Worth Change RATIO ANALYSIS Curr Farm Liabilities/Assets 50 % 59 % 80 % 77 % 42 % 52 % Curr/Interm Farm Liab/Assets 47 % 42 % 37 % 31 % 32 % 39 % Long Term Farm Liab/Assets 74 % 72 % 68 % 65 % 78 % 76 % Total Liabilities / Assets 47 % 44 % 54 % 49 % 51 % 45 %

Table 8

Balance Sheet at Market Values, 1999 Dairy Grazing Farms in Michigan (Farms sorted by Net Farm Income)

	Average of	Average of	Average of
	All Farms	Low 49%	High 49%
Number of Farms	12	6	6

ASSETS _	Beginning	Ending	Beginning	Ending	Beginning	Ending
Current Farm Assets						
Cash and checking balance	6340	7334	2530	5869	10150	8800
Prepaid expenses & supplies	4547	7369	528	2178	8565	12560
Growing crops	4989	4826	326	2176	9979	9652
Accounts receivable	7092	5043	1683	1659	12500	8428
Hedging accounts	7092	5045	1003	1039	12300	0420
Crops held for sale or feed	35673	40949	22640	27781	48706	54116
Crops under government loan	-	40343	22040	27761	46700	34110
Market livestock held for sale	3545	5462	1237	937	5852	9988
Other current assets	3343	3402	1237	931	3632	9900
Total current farm assets	62185	70984	28619	38424	95751	103544
Intermediate farm assets	02163	70904	20019	30424	93731	103344
Breeding livestock	152555	157341	97823	93475	209287	221207
Machinery and equipment	153555 122717	137341	97823 91570	93473	153865	169695
Other intermediate assets						
Total intermediate farm assets	3425	4400	3889	5102	2961	3698
	279697	294005	193281	193411	366113	394600
Long-Term Farm Assets	27.6490	422420	252500	20.4222	400.470	540522
Farm land	376489	432428	253500	324333	499478	540523
Buildings and improvements	48291	50346	61916	63000	34667	37693
Other long-term assets	3833	3945	1667	1667	6000	6223
Total long-term farm assets	428614	486719	317083	389000	540145	584439
Total Farm Assets	770496	851709	538984	620835	1002009	1082583
Total Nonfarm Assets	60822	64416	70485	77697	51159	51135
Total Assets	831318	916125	609469	698532	1053168	1133718
LIABILITIES						
Current Farm Liabilities						
Accrued interest	1371	1490	383	425	2358	2554
Accounts payable	7149	2837	6174	3235	8123	2440
Current notes	8104	20119	2924	12891	13284	27347
Government crop loans	-	-			-	
Principal due on term debt	14729	17249	13388	13036	16070	21463
Total current farm liabilities	31353	41695	22869	29587	39836	53803
Intermediate Farm Liabilities	72990	57350	24386	22084	121594	92615
Long-term Farm Liabilities	110911	111111	89948	83095	131874	139128
Total Farm Liabilities	215254	210156	137204	134766	293304	285547
Total Nonfarm Liabilities	1792	1006	667	279	2917	1733
Total Deferred Liabilities	1792	1000	007	219	2917	1733
Total Liabilities	217045	211163	137870	135045	296220	287280
Net Worth (farm & nonfarm)	614273	704963	471599	563487	756947	846438
New Worth Change		90690		91889		89491
RATIO ANALYSIS						
Curr Farm Liabilities/Assets	50 %	59 %	80 %	77 %	42 %	52 %
Curr/Interm Farm Liab/Assets	31 %	27 %	21 %	22 %	35 %	29 %
Long Term Farm Liab/Assets	26 %	23 %	28 %	21 %	24 %	24 %
Total Liabilities / Assets	26 %	23 %	23 %	19 %	28 %	25 %

Table 9 Statement of Cash Flows, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Average of All Farms	Average of Low 49%	Average of High 49%
Number of Farms	12	6	6
(a) Beginning cash balance (farm & nonfarm)	6340	2530	10150
CASH FROM OPERATING ACTIVITIES			
Gross cash farm income	273528	159615	387441
Net nonfarm income (+		11305	1821
Total cash farm expense (-	208865	128623	289107
Apparant family living expense (-	50245	30115	70376
Income and social security tax (-	1241	2483	_
(b) Cash from operations (=	19740	9700	29780
CASH FROM INVESTING ACTIVITES			
Sale of breeding livestock	7379	9794	4964
Sale of machinery & equipment (+		545	1233
Sale of farm land (+		_	18750
Sale of farm buildings (+		_	_
Sale of other farm assets (+	777	252	1302
Sale of nonfarm assets (+	246	_	492
Purchase of breeding livestock (-		1796	575
Purchase of machinery & equipment (-	18439	9728	27150
Purchase of farm land (-		-	21992
Purchase of farm buildings (-		3333	2232
Purchase of other farm assets (-	1902	1333	2471
Purchase of nonfarm assets (-	-	_	_
(c) Cash from investing activites (=	-16639	-5599	-27678
CASH FROM FINANCING ACTIVITES			
Money borrowed	43635	16819	70451
Cash gifts and inheritances (+		-	-
Principal payments (-		16747	73903
Dividends paid (-		-	-
Gifts given (-	-	_	_
(d) Cash from financing activities (=		72	-3452
(e) Net change in cash balance (b+c+d	1411	4173	-1350
Ending cash balance (farm& nonfarm)	7751	6702	8800

Table 10 Financial Guidelines Measures, 1999
Dairy Grazing Farms in Michigan
(Farms sorted by Net Farm Income)

	Avera All F			age of 49%	Average High 49	
Number of Farms		12		6	3383	6
LIQUIDITY	Beginning	Ending	Beginning	Ending	Beginning	Ending
Current ratio	1.98 30833	1.70	1.25 5750	1.30	2.40 55916	1.92
Working capital	30833	29289	3/30	8837	55916	49741
SOLVENCY (Market)	Beginning	Ending	Beginning	Ending	Beginning	Ending
Farm debt to asset ratio	28 %	25 %	25 %	22 %	29 %	26 %
Farm equity to asset ratio	72 %	75 %	75 %	78 %	71 %	74 %
Farm debt to equity ratio	39 %	33 %	34 %	28 %	41 %	36 %
PROFITABILITY	Cost	Market	Cost	Market	Cost	Market
Rate of return on farm assets	9.7 %	12.4 %	0.3 %	14.0 %	14.7 %	11.5 %
Rate of return on farm equity	13.2 %	14.5 %	-5.0 %	16.4 %	24.2 %	13.4 %
Operating profit margin	17.3 %	43.7 %	0.6 %	59.5 %	24.4 %	37.1 %
Net farm income	65974	126564	26643	106802	105306	146325
REPAYMENT CAPACITY	Cash	Accrual	Cash	Accrual	Cash	Accrual
Term debt coverage ratio	118%	163 %	83 %	123 %	146 %	195 %
Capital replacement margin	4889	16886	-3931	5432	13710	28341
EFFICIENCY						
Asset turnover rate (market)			28.3 %	23.5	%	30.9 %
Operating expense ratio			67.6 %	70.4	. %	66.4 %
Depreciation expense ratio			3.8 %	8.3	%	2.0 %
Interest expense ratio			4.9 %	5.0	%	4.8 %
Net farm income ratio			23.7 %	16.2	%	26.8 %
]	LABOR AN	NALYSIS		
		Average	e of	Average of	Ave	rage of
		All Fari	ms	Low 49%	Hig	h 49%
Number of farms			12		6	6
Total unpaid labor hours			4254	39	014	4593
Total hired labor hours			2907		264	4550
Total labor hours per farm			7161	51	.78	9143
Value of farm production / hour			32.02		.30	35.27
Net farm income / unpaid hour			15.51	6	.81	22.93

Per Unit Income and Expense

Table 11 below gives the per cow cash income and cash expense items for 11 of the 12 panel dairy grazing farms in Michigan during 1999. One of the 12 did not report any crop acres, so the income and expense items per cow and per crop acre are based on the remaining 11 farms that averaged 358 acres of crops per farm. These included owned acres plus land either cash or share rented.

Consider Tables 1 and 2. Notice that at least some of the farms sold cash crops. Several grew corn and/or corn silage. These crops likely cause unit costs to be higher than they would be on farms where no corn was grown.

Table 11 Average Income and Expense Items, Michigan, 1999
Per Cow and Per Acre, 11 Dairy Grazing Farms

Number of Cows	91.80	Your
Total Crop Acres	358.00	<u>Farm</u>
Income Items per Cow:		
Milk sold	\$2,531	
Cull cows, bulls	103	
Dairy steers	0	
Dairy calves	18	
Government	198	
Other cash income	67	
Expense Items per Cow:		
Purchsed feed	\$657	
Breeding fees	21	
Veterinary	44	
Livestock supplies	81	
Livestock leases	4	
Livestock marketing	111	
Interest	150	-
Fuel and oil	56	
Repairs	211	
Custom hire	58	
Hired labor	352	
Leases	28	
Real estate taxes	59	- <u></u> -
Farm insurance	46	
Utilities	59	
Dues, prof. fees	23	
Miscellaneous	38	
Machinery depreciation	146	
Building depreciation	64	
Expense Items per Crop Acre:		
Seed	\$14.34	
Fertilizer	27.34	
Crop chemicals	6.65	
Crop insurance	0.04	
Crop marketing	0.15	
Crop miscellaneous	5.45	
Land rent	6.84	