Staff Paper

2003 Michigan Tree Fruit Business Analysis Summary

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Executive Summary

This report summarizes the financial and production records of 9 Michigan tree fruit farms. To be included, the farms must have produced at least 50 percent of gross cash farm income from one or a combination of sales from cherries, apples, and other fruits. The records came from Michigan State University's TelFarm project. The values were pooled into averages for reporting purposes.

Farm records were included if a farm financial summary was completed for 2003 data including beginning and ending balance sheets, plus income and expenses. The data was checked to verify that cash and debt discrepancy were within an acceptable range, cash discrepancy must be less than 10% of gross cash inflow and debt discrepancy must be less than $1,000. While considerable variation in the data exists, average values are reported in the summary tables that follow.

Synopsis of Michigan's Tree Fruit

According to the United States Department of Agriculture (USDA) and National Agricultural Statistics Service (NASS) data, the Michigan fruit season of 2003 was persistently cool with March and June being exceptionally cool. Michigan's apples and peaches rebounded from the poor yields of 2002 with good yields, while cherry yields were damaged by spring frost. Summer conditions were good with timely rains for both apples and peaches, while sweet cherries yields were low or nonexistent for the second straight year. These climatic conditions helped reduce insect and disease stress, increasing quality and yields. Table 1 provides fruit bearing acres, yields per acre, the five-year average yields per acre and prices received for apples, cherries sweet and tart, and peaches for Michigan.

Table 1. Michigan Agricultural Statistical Service Summary of Tree Fruit (NASS)

Fruit	2003 Avg. Bearing Acres	2003 Avg. Yield (lbs/acre)	1999-2003 Avg. Yield (lbs/acre)	2003 Price ($/lb)	1999-2003 Avg. Price ($/lb)
Apples	40,000	21,000	18,560	0.119	0.104
Cherries, Sweet	8,100	3,200	4,328	0.449	0.326
Cherries, Tart	27,000	5,700	6,089	0.376	0.290
Peaches	5,000	9,400	7,134	0.181	0.257

Summary of Results

In 2003, the average tree fruit farm size in the business analysis was 220 acres owned and 126 acres cropped, (Table 2). The average apple price of $4.99, which was reported from farm records, was above the average price of $4.16 per bushel for 1999 – 2003 period, NASS.

Table 2. Average 2003 Michigan Tree Fruit Farm Characteristics

Total acres owned	220
Total crop acres	126
Average price/bushel apple (40#bu)	$4.99
Number of farms	9

Gross cash farm income, total of all farm income before expenses are deducted, averaged $300,788 in 2003. The largest revenues were apples sales and cherries (sweet and tart) sales, averaging $94,931 and $75,125 respectively. The third largest revenue source was other farm income (included other crops and resale of other fruit) averaged $47,097. Government payments averaged $25,779 per farm in 2003.

Net cash farm income, gross cash farm income ($300,788) less total cash farm expenses ($252,787) resulted in an average net cash farm income of $48,001. An improvement over 2002, with better yields these tree fruit farms were able to increase inventory value by an average of $38,025.

Net farm income is net cash income less depreciation and adjusted for capital changes. The net farm income value is the return to the operator's unpaid management, labor, equity capital invested and family labor (Table 3). Net farm income in 2003 averaged $74,064. The variation in net farm income for these farms was large. The net farm income median was $64,108 and the range was $17,201 to $149,945. The standard deviation was $44,243 for 2003.

Table 3. Average 2003 Tree Fruit Farm Income Statement

	Avg. of all Farms
Gross cash farm income	300,788
Total cash expense	252,787
Net cash farm income	48,001
Inventory change	38,025
Depreciation and capital adjustments	-11,961
Net farm income	74,064

Four key financial performance indicators are presented in Tables 4 and 5. The rate of return on assets (ROA) is calculated as if the farm has no debt. ROA indicates debt-free farm earnings, after subtracting an allowance for operator's unpaid labor, management, and family labor, as a percentage of invested assets. ROA provides a key summary performance indicator for a farm. By multiplying the operating profit margin (dollars of profit generated per dollar of revenue) by the asset turnover rate (measure of how efficiency assets are being used to generate revenue) the ROA is determined. The ROA data presented in Tables 4 and 5 indicates an improvement over levels obtained in 2002.

The rate of return on equity (ROE) represents the farm earnings after interest payments and it is expressed as a percentage of owner equity capital. Ideally the ROE should be higher than the ROA indicating that returns are being made on borrowed money. This was the case for the market value calculations, Table 5. The figure in this summary indicates that profitability on these farms was a challenge in 2000, 2001, and 2002 but was better in 2003, Table 4.

Table 4 compares profitability for 2000, 2001, 2002, and 2003 with assets valued at cost. Profitability indicators calculated using assets valued at cost is useful for comparing the same farm over time. The average ROA in 2003 for tree fruit farm was 8.9 percent, which was a real improvement from the average 2002 ROA of a negative 6.0 percent. Return on equity shows even greater recovery from a negative 14.1 percent in 2002 to a positive 15.1 percent in 2003. Operating profit margin tells a similar story. Asset turnover ratio in 2003 was 63.1 percent, a measure of efficiency of the assets to generate revenues, shows substantial improvement for 2003. This increase in the asset turnover ratio of 130 percent indicated that the farm assets were more efficient in 2003 mainly because of higher yields. The trends with respect to all profitability indicators, calculated at the cost value, that 2003 was more profitable year compared to the three prior years.

Table 4. Average Tree Fruit Farm Profitability Indicators, 2000-2003

	2000	2001	2002	2003
		(Percent)		
Rate of return on assets*	-5.6	3.6	-6.0	8.9
Rate of return on equity	-29.7	0.8	-14.1	15.1
Operating profit margin	-12.0	7.8	-21.8	14.1
Asset turnover rate*	46.7	45.9	27.4	63.1

*Assets valued at **cost** value (rather than market value).

Table 5 compares profitability measures across four years, 2000 – 2003, with assets valued at market. The market value approach includes the impact of value appreciation (inflation) of the asset base overtime. Land is the main source of appreciation and it reflects a form of income. Financial performance indicators like ROA can be looked upon in this comparison as the "opportunity cost of capital" of farming versus alternative investments. Market value for assets is more appropriate when comparing across different farms.

The average return on assets (ROA) for 2003 was 4.0 percent, which was 25 percent improvement over the 2002 average ROA of 3.2 percent. Return on equity (ROE) for 2003 was 4.0 percent, an increase of 37 percent over the 2002 level. Operating profit margin (OPM) measures the dollars of profit generated per dollar of revenue. In 2003 the OPM was 14.4 percent, a decrease from 2002. At the same time the asset turnover ratio improved. Asset turnover ratio measures the efficiency with which farm assets generate revenue. In 2003, the asset turnover ratio was 28.0. Again, the trend with respect to profitability on the market side is that 2003 was a good year when compared with 2002.

Table 5. Average Tree Fruit Farm Profitability Indicators, 2000-2003

	2000	2001	2002	2003
		(Percent)		
Rate of return on assets*	-0.7	8.6	3.2	4.0
Rate of return on equity	-3.9	9.6	2.9	4.1
Operating profit margin	-3.0	38.8	24.4	14.4
Asset turnover rate*	22.8	22.1	13.2	28.0

* Assets valued at **market** value (rather than cost value).

The following tables provide additional details for the figures discussed earlier.

Table 6 Crop Production and Marketing Summary
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Acreage Summary	
Total acres owned	220
Total crop acres	126
Crop acres owned	110
Crop acres cash rented	16
Crop acres share rented	-
Total pasture acres	-
Average Price Received (Cash Sales Bushel)	$4.99

Table 7 Farm Income Statement
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Cash Farm Income	
Apples	94,931
Asparagus	3,404
Celery	209
Cherries	75,125
Grapes	7,102
Peaches	24,561
Pears	259
Plums	2,573
Pumpkins	450
Raspberries	1,440
Beef, Finish Beef Calves	3,889
Other government payments	25,779
Custom work income	6,983
Patronage dividends, cash	473
Insurance income	6,515
Other farm income	47,097
Gross Cash Farm Income	300,788

Table 7,(continued) Farm Income Statement

Michigan Tree Fruit Farms, 2003

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Cash Farm Expense	
Seed	1,657
Fertilizer	3,294
Crop chemicals	38,904
Crop insurance	1,700
Packaging and supplies	52
Crop marketing	241
Crop miscellaneous	6,599
Purchased feed	117
Veterinary	56
Livestock marketing	3,111
Interest	11,952
Fuel & oil	7,339
Repairs	14,053
Custom hire	5,105
Hired labor	78,975
Land rent	2,578
Machinery & bldg leases	2,340
Real estate taxes	4,547
Farm insurance	5,168
Utilities	7,030
Dues & professional fees	3,235
Miscellaneous	54,734
Total cash expense	252,787
Net cash farm income	48,001
Inventory Changes	
Crops and feed	11,727
Market livestock	-269
Accounts receivable	24,878
Prepaid expenses and supplies	2,095
Accounts payable	-405
Total inventory change	38,025
Net operating profit	86,026
Depreciation and Other Capital Adjustments	
Breeding livestock	267
Machinery and equipment	-13,635
Buildings and improvements	-5,713
Other farm capital	7,120
Total depr. and other capital adj	-11,961
Net farm income	74,064

Table 8 Inventory Changes
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Net cash farm income	48,001
Crops and Feeds	
Ending inventory	62,416
Beginning inventory	50,689
Inventory change	11,727
Market Livestock	
Ending inventory	4,700
Beginning inventory	4,969
Inventory change	-269
Accts Receivable & Other Current Assets	
Ending inventory	49,208
Beginning inventory	24,331
Inventory change	24,878
Prepaid Expenses and Supplies	
Ending inventory	17,550
Beginning inventory	15,456
Inventory change	2,095
Accounts Payable & Accrued Expenses	
Beginning inventory	8,075
Ending inventory	8,480
Inventory change	-405
Total inventory change	38,025
Net operating profit	86,026

Table 9 Depreciation and Other Capital Adjustments
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Net operating profit	86,026
Breeding Livestock	
Ending inventory	1,200
Capital sales	-
Beginning inventory	933
Capital purchases	-
Depreciation, capital adjust.	267
Machinery and Equipment	
Ending inventory	52,772
Capital sales	1,500
Beginning inventory	41,490
Capital purchases	26,418
Depreciation, capital adjust.	-13,635
Buildings and Improvements	
Ending inventory	114,483
Capital sales	-
Beginning inventory	92,177
Capital purchases	28,019
Depreciation, capital adjust.	-5,713
Other Capital Assets	
Ending inventory	57,653
Capital sales	9,140
Beginning inventory	57,155
Capital purchases	2,519
Depreciation, capital adjust.	7,120
Total depreciation, capital adj.	-11,961
Net farm income	74,064

Table 10 Profitability Measures
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Profitability (assets valued at cost)	
Net farm income	74,064
Labor and management earnings	59,987
Rate of return on assets	8.9 %
Rate of return on equity	15.1 %
Operating profit margin	14.1 %
Asset turnover rate	63.1 %
Interest on farm net worth	14,078
Farm interest expense	12,239
Value of operator lbr and mgmt.	38,622
Return on farm assets	47,681
Average farm assets	534,400
Return on farm equity	35,442
Average farm equity	234,633
Value of farm production	337,273

	Avg. Of All Farms
Number of farms	9
Profitability (assets valued at market)	
Net farm income	74,925
Labor and management earnings	20,693
Rate of return on assets	4.0 %
Rate of return on equity	4.1 %
Operating profit margin	14.4 %
Asset turnover rate	28.0 %
Interest on farm net worth	54,232
Farm interest expense	12,239
Value of operator lbr and mgmt.	38,622
Return on farm assets	48,541
Average farm assets	1,203,631
Return on farm equity	36,302
Average farm equity	903,864
Value of farm production	337,273

Table 11 Liquidity Measures

Michigan Tree Fruit Farms, 2003

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Liquidity (cash)	
Net cash farm income	48,001
Net nonfarm income	9,251
Family living and taxes	45,862
Real estate principal payments	9,007
Cash available for interm. debt	2,383
Average intermediate debt	110,997
Years to turnover interm. debt	46.6
Expense as a % of income	84 %
Interest as a % of income	4 %
Liquidity (accrual)	
Total accrual farm income	337,123
Total accrual operating expense	251,097
Net accrual operating income	86,026
Net nonfarm income	9,251
Family living and taxes	45,862
Real estate principal payments	9,007
Available for intermediate debt	40,408
Average intermediate debt	110,997
Years to turnover interm. debt	2.7
Expense as a % of income	74 %
Interest as a % of income	4 %

Table 12 Balance Sheet at Cost Values

Michigan Tree Fruit Farms, 2003

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms	
Number of farms	9	
	Beginning	Ending
Assets		
Current Farm Assets		
Cash and checking balance	41,254	22,956
Prepaid expenses & supplies	15,456	17,550
Growing crops	0	0
Accounts receivable	19,115	41,431
Hedging accounts	0	0
Crops held for sale or feed	50,689	62,416
Crops under government loan	0	0
Market livestock held for sale	4,969	4,700
Other current assets	5,216	7,778
Total current farm assets	136,699	156,830
Intermediate Farm Assets		
Breeding livestock	933	1,200
Machinery and equipment	41,490	52,772
Titled vehicles	0	0
Other intermediate assets	40,803	41,302
Total intermediate farm assets	83,227	95,274
Long Term Farm Assets		
Farm land	178,704	178,704
Buildings and improvements	92,177	114,483
Other long-term assets	16,351	16,351
Total long-term farm assets	287,232	309,538
Total Farm Assets	507,158	561,643
Total Nonfarm Assets	93,137	102,583
Total Assets	600,295	664,225
Liabilities		
Current Farm Liabilities		
Accrued interest	7,292	7,579
Accounts payable	783	901
Current notes	5,125	13,222
Government crop loans	0	0
Principal due on term debt	16,768	27,124
Total current farm liabilities	29,968	48,826
Total intermediate farm liabs	107,983	89,360
Total long term farm liabilities	163,832	159,565
Total farm liabilities	301,784	297,752
Total nonfarm liabilities	1,111	1,556
Total liabilities	302,895	299,307
Net worth (farm and nonfarm)	297,400	364,918
Net worth change		67,518
Ratio Analysis		
Current farm liabilities / assets	22 %	31 %
Curr. & interm farm liab. / assets	63 %	55 %
Long term farm liab. / assets	57 %	52 %
Total debt to asset ratio	50 %	45 %

Table 13 Balance Sheet at Market Values

Michigan Tree Fruit Farms, 2003

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms	
Number of farms	9	
	Beginning	Ending
Assets		
Current Farm Assets		
Cash and checking balance	41,254	22,956
Prepaid expenses & supplies	15,456	17,550
Growing crops	0	0
Accounts receivable	19,115	41,431
Hedging accounts	0	0
Crops held for sale or feed	50,689	62,416
Crops under government loan	0	0
Market livestock held for sale	4,969	4,700
Other current assets	5,216	7,778
Total current farm assets	136,699	156,830
Intermediate Farm Assets		
Breeding livestock	933	1,200
Machinery and equipment	179,532	190,240
Titled vehicles	0	0
Other intermediate assets	47,803	64,801
Total intermediate farm assets	228,268	256,241
Long Term Farm Assets		
Farm land	660,215	668,198
Buildings and improvements	125,741	124,999
Other long-term assets	25,035	25,035
Total long-term farm assets	810,991	818,232
Total Farm Assets	1,175,959	1,231,303
Total Nonfarm Assets	282,862	366,752
Total Assets	1,469,932	1,598,056
Liabilities		
Current Farm Liabilities		
Accrued interest	7,292	7,579
Accounts payable	783	901
Current notes	5,125	13,222
Government crop loans	0	0
Principal due on term debt	16,768	27,124
Total current farm liabilities	29,968	48,826
Total intermediate farm liabs	107,983	89,360
Total long term farm liabilities	163,832	159,565
Total farm liabilities	301,784	297,752
Total nonfarm liabilities	1,111	1,556
Total liabs excluding deferreds	302,895	299,307
Total deferred liabilities	0	0
Total liabilities	302,895	299,307
Retained earnings	297,400	364,918
Market valuation equity	858,526	933,830
Net worth (farm and nonfarm)	1,155,926	1,298,749
Net worth excluding deferreds	1,155,926	1,298,749
Net worth change		142,822
Ratio Analysis		
Current farm liabilities / assets	22 %	31 %
Curr. & interm farm liab. / assets	38 %	33 %
Long term farm liab. / assets	20 %	20 %
Total debt to asset ratio	21 %	19 %
Debt to assets excl deferreds	21 %	19 %

Table 14 Statement Of Cash Flows
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Beginning cash (farm & nonfarm)	41,254
Cash From Operating Activities	
Gross cash farm income	300,788
Net nonfarm income	9,251
Total cash farm expense	-252,787
Apparent family living expense	-44,589
Income and social security tax	-1,272
Cash from operations	11,390
Cash From Investing Activities	
Sale of breeding livestock	-
Sale of machinery & equipment	1,500
Sale of titled vehicles	-
Sale of farm land	4,490
Sale of farm buildings	-
Sale of other farm assets	9,140
Sale of nonfarm assets	15,130
Purchase of breeding livestock	-
Purchase of machinery & equip.	-26,418
Purchase of titled vehicles	-
Purchase of farm land	-
Purchase of farm buildings	-28,019
Purchase of other farm assets	-2,519
Purchase of nonfarm assets	-25,006
Cash from investing activities	-51,701
Cash From Financing Activities	
Money borrowed	89,954
Cash gifts and inheritances	42,195
Principal payments	-94,379
Dividends paid	-
Gifts given	-15,758
Cash from financing activities	22,012
Net change in cash balance	-18,299
Ending cash (farm & nonfarm)	22,956

Table 15 Financial Standards Measures
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Liquidity	
Current ratio	3.21
Working capital	108,004
Solvency (market)	
Farm debt to asset ratio	24 %
Farm equity to asset ratio	76 %
Farm debt to equity ratio	32 %
Profitability (cost)	
Rate of return on farm assets	8.9 %
Rate of return on farm equity	15.1 %
Operating profit margin	14.1 %
Net farm income	74,064
Repayment Capacity	
Term debt coverage ratio	215 %
Capital replacement margin	30,788
Efficiency	
Asset turnover rate (cost)	63.1 %
Operating expense ratio	70.9 %
Depreciation expense ratio	3.5 %
Interest expense ratio	3.6 %
Net farm income ratio	22.0 %

Table 16 Operator and Labor Information
Michigan Tree Fruit Farms, 2003
(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Operator Information	
Average number of operators	1.0
Average age of operators	54.3
Average number of years farming	30.4
Results Per Operator	
Working capital	108,004
Total assets (market)	1,598,056
Total liabilities	299,307
Net worth (market)	1,298,749
Net worth excl deferred liabs	1,298,749
Gross farm income	337,123
Total farm expense	263,059
Net farm income	74,064
Net nonfarm income	9,251
Family living & tax withdrawals	45,862
Total acres owned	220.3
Total crop acres	125.8
Crop acres owned	109.8
Crop acres cash rented	16.0
Crop acres share rented	-
Total pasture acres	-
Labor Analysis	
Number of farms	8
Total unpaid labor hours	2,765
Total hired labor hours	7,942
Total labor hours per farm	10,707
Unpaid hours per operator	2,765
Value of farm production / hour	32.67
Net farm income / unpaid hour	25.19

Table 17 Financial Summary

Michigan Tree Fruit Farms, 2003

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	9
Income Statement	
Gross cash farm income	300,788
Total cash farm expense	252,787
Net cash farm income	48,001
Inventory change	38,025
Depreciation and capital adjust	-11,961
Net farm income	74,064
Profitability (cost)	
Labor and management earnings	59,987
Rate of return on assets	8.9 %
Rate of return on equity	15.1 %
Operating profit margin	14.1 %
Asset turnover rate	63.1 %
Profitability (market)	
Labor and management earnings	20,693
Rate of return on assets	4.0 %
Rate of return on equity	4.1 %
Operating profit margin	14.4 %
Asset turnover rate	28.0 %
Liquidity	
Ending current ratio	3.21
Ending working capital	108,004
End working capital to gross inc	35.9 %
Term debt coverage ratio	215.5 %
Expense as a percent of income	74.5 %
Interest as a percent of income	3.6 %
Solvency (cost)	
Number of farms	9
Ending farm assets	561,643
Ending farm liabilities	297,752
Ending total assets	664,225
Ending total liabilities	299,307
Ending net worth	364,918
Net worth change	67,518
Ending farm debt to asset ratio	53 %
Beg total debt to asset ratio	50 %
End total debt to asset ratio	45 %
Solvency (market)	
Number of farms	9
Ending farm assets	1,231,303
Ending farm liabilities	297,752
Ending total assets	1,598,056
Ending total liabilities	299,307
Ending net worth	1,298,749
Net worth change	142,822
Ending farm debt to asset ratio	24 %
Beg total debt to asset ratio	21 %
End total debt to asset ratio	19 %
Nonfarm Information	
Net nonfarm income	9,251
Crop Acres	
Total acres owned	220
Total crop acres	126
Total crop acres owned	110
Total crop acres cash rented	16
Total crop acres share rented	-