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GREAT LAKES REGION
GRAPE FARM BUSINESS SUMMARY

1977

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GREAT LAKES REGION GRAPE FARM BUSINESS
SUMMARY AND ANALYSIS, 1977

This is a summary and analysis of the 1977 farm business records from fourteen commercial grape farms in the Great Lakes Region of New York. The summary was prepared by Gerald B. White, Department of Agricultural Economics, Cornell University; John Harker, Research Support Specialist; and Trenholm D. Jordan, Regional Extension Grape Specialist.

The main purpose of this study is to help the cooperators in this project and other grape growers to improve their skills as farm managers. The objective is to demonstrate the importance of good business records and to show how they can be used as a base for sound management decisions.

The summary and analysis presented in this publication should also be useful to agribusinessmen and agricultural teachers. However, caution should be exercised in using data from this book. These data were not obtained by using a random or representative sample of all grape farms in Western New York. This publication, therefore, should not be used as an exact representation of the entire Great Lakes Region grape farm industry.

This report has been prepared for use in a systematic study of individual farm business operations.

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Summary of the Farm Business

The first part of this publication summarizes the fruit business in a systematic, orderly manner. It provides an opportunity to study physical resources, capital investment, receipts, and expenses.

Physical Resources

Knowledge of what resources are employed and how they are combined is fundamental to sound business planning. This includes both the physical and financial resources of the business. Below are listed the physical resources for this group of grape farms.

FARM ORGANIZATION
14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average	Range
Labor:			
Number of operators	_____	1.1	1 - 2
Months of:			
Operator's	_____	9.9	1.0 - 12.3
Family paid	_____	1.5	0 - 7.5
Family unpaid	_____	1.2	0 - 5.
Regular hired	_____	15.6	0 - 48.
Seasonal hired	_____	16.9	.8 - 65.
Other	_____	.4	0 - 3.6
Total		45.5	10 - 130
Man equivalent (total months ÷ 12)	_____	3.8	.8 - 10.8
Land and Crops (acres)			
Bearing grapes:			
Harvested	_____	87.2	20 - 220
Not harvested	_____	0.0	---
Nonbearing grapes	_____	4.6	0 - 48
Total Acres in Grapes	_____	91.8	20 - 220
Total Crop Acres	_____	96.4	20 - 268
Crop Acres rented	_____	5.1	0 - 44
Total Acres owned	_____	91.3	20 - 268

Capital Investment

Management of the capital resources of a farm business is becoming increasingly important. To measure the complete financial progress of a farm, year to year changes in the capital structure must be considered. In this report, borrowed as well as owned capital is included, and the end-of-year farm inventory is used as the measure of capital investment.

FARM INVENTORY VALUES

14 Great Lakes Region Grape Farms

Item	My Farm 1/77	My Farm 1/78	Average per Farm 1/77	Average per Farm 1/78
Land & buildings	$_____	$_____	$217,787	$230,061
Machinery & equipment	_____	_____	35,193	35,870
Supplies & crops	_____	_____	2,743	2,880
TOTAL FARM INVENTORIES	$_____	$_____	$255,723	$268,811

The average end inventory was five percent higher than the average beginning inventory. Four of the 14 farms purchased land and/or planted substantial new acreage of vines during 1977. The value added to real estate by these investments and some related appreciation accounts for most of the increase in farm inventories.

In many farm businesses, poor capital efficiency is a major cause of low profits. The following measures of capital efficiency will help evaluate overall capital management.

INVESTMENT ANALYSIS

14 Great Lakes Region Grape Farms, January 1978

Item	My Farm	Average per Farm
Total investment/man equivalent	$_____	$70,740
Total investment/crop acre	$_____	$ 2,788
Total investment/acre of bearing grapes	$_____	$ 3,083
Machinery investment/crop acre	$_____	$ 372
Land & buildings/total acres owned	$_____	$ 2,519
Capital Turnover*	_____ yrs.	4.3 yrs.

* Calculated by dividing the total year-end investment by the total cash receipts for the year. Rapid capital turnover is more desirable than a slow rate of turnover when similar farm businesses are compared.

Sources of Income

A successful farm business requires a level of gross earnings great enough to pay all costs, both operating and overhead, and leave a margin for the operator's labor and management. Here we examine the sources of receipts for this group of grape farms.

FARM RECEIPTS

14 Great Lakes Region Grape Farms, 1977

Item		My Farm	Average per Farm	Percent of total
Grapes:				
Primary market		$_____	$43,195	69
Distress market		_____	0	0
Total 1977 Payments Received		$_____	$43,195	
Previous year's payments, certificates		_____	13,472	22
Machine work and trucking		_____	649	1
Other crop receipts		_____	823	1
Work off farm		_____	390	1
Livestock and livestock product sales		_____	1,052	3
Rent		_____	625	
Other		_____	2,252	4
Total Cash Receipts		$_____	$62,458	100
Total Cash Receipts		$_____	$62,458	
Less previous year's payments	-	_____	- 13,472	
Plus anticipated 1977 payments	+	_____	+ 18,799	
Increase in crop and supply inventory		_____	772	
Total Farm Receipts		$_____	$68,557	

Grape income accounted for 91 percent of the cash receipts on these farms in 1977. An average of 283 tons of grapes per farm were harvested and sold in 1977. Cash grape receipts for the 1977 crop totaled $219 per ton.

Where the Money Went

With the large amount of cash flowing through a farm business today, it is important that the farm operator study expenses closely.

FARM EXPENSES

14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average per farm	Expense per acre of grapes (total)
Hired labor	$_____	$27,217	$296
Machine hire	_____	1,854	20
Machine repair & farm share of auto expense	_____	2,677	29
Gasoline & oil	_____	2,064	22
Spray	_____	2,992	33
Fertlizer	_____	2,195	24
Seeds & grape roots (replacements)	_____	273	3
Posts and wire	_____	1,537	17
Other crop expense	_____	728	8
Real estate upkeep		1,008	11
Taxes	_____	3,450	37
Insurance	_____	2,366	25
Rent	_____	1,043	11
Utilities	_____	778	9
Interest paid	_____	5,323	58
Miscellaneous	_____	1,866	20
TOTAL CASH & OPERATING EXPENSES	$_____	$57,184*	$623
Machinery depreciation*	_____	949	
Building depreciation*	_____	342	
Decrease in supply inventory	_____	635	
Unpaid family labor	_____	462	
Interest on equity capital @ 7%	_____	17,173	
TOTAL FARM EXPENSES	$_____	$76,745	$836

* The individual expense items do not add up exactly to total cash and operating expenses because one farm did not indicate custom harvesting expense by category.

Depreciation Calculations

Capital outlays for machinery and buildings usually occur in large uneven amounts, but assets depreciate gradually over a period of time. Different accounting methods may be used to even out capital expenditures. Including the capital outlay as a farm expense and the increase in inventory as a farm receipt tends to inflate total farm expenses as well as total farm receipts.

In the following table the net change in inventory value is calculated using beginning and end of year market values as well as the actual cost of capital purchases and the amount received for capital sales. The beginning machinery inventory plus new purchases, will almost always be larger than the end inventory plus sales. The residue is machinery depreciation. However, the value of land and fruit trees may increase in value more than buildings depreciate during the year. This is called real estate appreciation.

MACHINERY DEPRECIATION AND REAL ESTATE BALANCE

14 Great Lakes Region Grape Farms, 1977

Item	Machinery		Real Estate	
	My Farm	Average	My Farm	Average
Beginning inventory	$_____	$35,193	$_____	$217,787
Purchases	_____	1,642	_____	5,810
Total (A)	$_____	$36,835	$_____	$223,597
End inventory	$_____	$35,870	$_____	$230,061
Sales	_____	16	_____	-0-
Total (B)	$_____	$35,886	$_____	$230,061
DEPRECIATION (A minus B) or	$_____	$ 949		
APPRECIATION (B minus A)			$_____	$ 6,805

* B minus A is adjusted for building depreciation (+$341).

The average machinery depreciation of $949 is 3 percent of the beginning inventory plus machinery purchased. This low depreciation reflects growers' estimates that considerable inflation occurred in used machinery prices.

Seven farms reported no change in the value of real estate from the beginning to the end of the year. Four farms showed net appreciation without capital improvements, one reported depreciation, and two farms increased the value of real estate and showed appreciation.

Financial Summary

The net returns for any business can be measured in several different ways. Each measure calculates the net return to a selected resource or group of resources such as labor or capital. Some of the common farm business measures are given below.

Net cash farm income reflects the cash available from the year's operation of the farm business for family living, payments on debt principal, and new purchases or investments. A family may have had additional cash available if members had nonfarm income. Due to disastrous crop yields in 1977, net cash farm income was only $5,274, which means that growers may have used savings or refinanced debts.

NET CASH FARM INCOME

14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average per Farm
Total Cash Receipts	$_____	$62,458
Total Cash Operating Expenses	_____	57,184
NET CASH FARM INCOME	$_____	$ 5,274
Family Living Expenses	_____	
CASH FOR INVESTMENT AND PRINCIPAL PAYMENTS ON DEBTS	$_____	

Labor and management income is the return to the farm operator for labor and management. It is the measure most commonly used when comparing the profitability of farm businesses. Labor and management income is the amount left after paying all cash operating expenses and deducting charges for depreciation, unpaid labor, interest on equity capital and losses in fruit and supply inventories. The business is charged a seven percent interest rate or opportunity cost for the use of equity capital, assuming an alternative investment would return as much.

Labor and management income; labor, management and ownership income; and return on equity capital are computed in the following three tables. The computations are done by two different methods. These methods are as follows:

Method (1) Total receipts is the sum of total cash receipts minus grape payments from previous years plus anticipated 1977 payments plus or minus the increase or decrease in the crop and supply inventory. This method is the one which has been used in the most recent years in Cornell grape farm business summaries.

Method (2) Total receipts is the sum of total cash receipts in the calendar year (including grape payments from previous years) plus or minus the increase or decrease in crop and supply inventory. Using this method, net income did not depend on growers estimates of future receipts for the 1977 crop.

LABOR AND MANAGEMENT INCOME 1977

14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Total Farm Receipts	$_____	$68,557	$63,230
Total Farm Expenses	_____	76,745	76,745
LABOR & MANAGEMENT INCOME PER FARM	$_____	-$ 8,188	-$13,515

It is common to compute labor and management return per operator as well as per farm because most studies include some farms with more than one operator. The average number of operators was 1.1; therefore labor and management income per farm was -$7,444 and -$12,286 for Method 1 and Method 2 respectively. One farm had two operators, and the other farms had one full or part-time operator.

In addition to labor and management income, the owner-operator of a farm business should receive income for his capital investment in the business. He receives this income in the form of interest on equity in the business and real estate appreciation. These two "ownership income" items are added to labor and management income to determine labor, management and ownership income. This indicates the total return the owner-operator receives for owning and operating the business.

The growers who participated in this summary submitted balance sheets and net worth or equity capital was easily computed. Average equity capital was estimated as $245,326 per farm.

LABOR, MANAGEMENT AND OWNERSHIP INCOME

14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Labor & Management Income Per Farm	$_____	-$ 8,188	-$13,515
Add: Real Estate Appreciation	_____	6,805	6,805
Add: Interest on Equity Capital @ 7%	_____	17,173	17,173
LABOR, MANAGEMENT & OWNERSHIP INCOME PER FARM	$_____	$15,790	$10,463
PER OPERATOR	$_____	$14,355	$ 9,512

Return on equity capital can be computed with or without real estate appreciation. To calculate return on equity capital (including real estate appreciation) the value of operator's labor and management is deducted from labor, management and ownership income. This return to equity capital is divided by the owner's equity investment in the business to compute the rate of return on equity capital. Owner's equity investment used here is total end of year farm inventories less total farm liabilities.

RETURN ON EQUITY CAPITAL

14 Great Lakes Region Grape Farms, 1977

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Labor & Management & Ownership Income	$_____	$15,790	$10,463
Less: Value of Operator's Labor & Management*	_____	8,517	8,517
Return on Equity Capital	$_____	7,273	1,946
Rate of Return on Equity Capital (equity capital = $245,326)	_____%	3.0%	.8%

* Values estimated at $500 per month for labor and 5 percent of cash receipts for management.

Farm Family Financial Situation

The financial situation is an important part of the grape farm business summary. It has a direct affect on current cash outflow and future capital investment decisions. A grower may have a good labor income, but a high debt load may seriously restrict his management flexibility.

The balance sheet of the financial situation on an average of 14 farms is provided below.

FARM FAMILY FINANCIAL SITUATION

14 Great Lakes Region Grape Farms, January 1, 1978

Item	My Farm	Average per Farm
Assets		
Total farm inventory	$_____	$268,811
Accounts receivable	_____	10,809
Co-op investment	_____	30,310
Cash and checking account	_____	11,599
TOTAL FARM ASSETS	$_____	$321,529
Liabilities		
Real estate mortgage	$_____	$ 39,553
Liens and secured loans	_____	23,418
Installment contracts	_____	1,398
Other farm debt	_____	11,834
TOTAL FARM LIABILITIES	$_____	$ 76,203
FARM NET WORTH (Farm assets less liabilities)	$_____	$245,326
Percent Equity (Farm net worth ÷ total farm assets)	_____%	76%
Farm Debt per Man Equivalent	$_____	$ 20,053
Farm Debt per Bearing Acre of Grapes	$_____	$ 874

Payment ability is the most important consideration in determining if and how proposed investments should be financed. The farm business must produce enough cash income to meet operating expenses, to cover family living expenses and to make debt payments. The average farm in this study had a 1977 net cash flow, excluding interest paid, of $10,597. This amount was available to live on, and to make debt payments and cash investments during the year.

Analysis of the Farm Business

An analysis of the records of the 14 farms shows that among the farm business factors which affect profits and which a farmer can control to some degree are: (1) size of enterprise, (2) labor efficiency, (3) yields, and (4) price.

A comparison with the averages of these factors for other farms provides valuable clues to the strong and weak points of an individual grape farm business.

SELECTED FARM BUSINESS MEASURES

14 Great Lakes Region Grape Farms, 1977

Item	Average per Farm	My Farm
Measures of Size		
1. Acres in bearing grapes	87.2	_____
2. Acres of grapes harvested	87.2	_____
3. Acres in nonbearing grapes	4.6	_____
4. Man equivalent	3.8	_____
5. Tons of grapes harvested	283	_____
6. Tons of grapes grown	283	_____
Labor Efficiency		
1. Acres in grapes harvested per man	23	_____
2. Tons of grapes harvested per man	75	_____
Production Factors		
1. Grape yield per acre (tons) of bearing grapes	3.2	
2. Grape receipts* per acre of bearing grapes	$712	$_____
Price		
1. Average price per ton of grapes sold	$219	$_____

* Cash receipts from sale of grapes plus anticipated payments from 1977 grape crop.

Cost Control

Power and machinery costs were major expenses on the 14 grape farms. Net operating and investment costs averaged over $10,000.

POWER AND MACHINERY COSTS

14 Great Lakes Region Grape Farms, 1977

Item	Average per Farm	My Farm
Beginning inventory	$35,193	$_____
New machinery bought	1,642	_____
Total	$36,835	$_____
Ending inventory	$35,870	$_____
Machinery sold	0	_____
Total	$35,886	
Depreciation	$ 949	$_____
Interest at 7% ave. inventory	2,496	_____
Gas and oil	2,064	_____
Auto	86	_____
Truck, tractor & equip. repair	2,592	_____
Machine hire	1,854	_____
Utilities	778	_____
Total Machinery Costs	$10,819	$_____
Income from machine work	- 235	_____
Gasoline tax refund	- 32	_____
NET MACHINERY COSTS	$10,552	$_____
Net Machinery Costs:		
Per acre of bearing grapes	$ 121	$_____
Per man equivalent	$ 2,777	$_____
Per ton of grapes harvested	$ 37	$_____

Since power and machinery costs represent a substantial portion of total costs, efficiency in use is an important factor affecting profitability of the business. Net machinery costs per acre of bearing grapes averaged $121.

Most farm operators justify major machinery purchases as a way to save labor and increase productivity. How well labor and machinery are combined has an important bearing on farm profits.

LABOR AND MACHINERY COSTS

14 Great Lakes Region Grape Farms, 1977

Item	Average	My Farm
Value of operator's labor*	$ 4,955	$_____
Hired labor	28,421	_____
Unpaid family labor	462	_____
TOTAL LABOR COSTS	$33,838	$_____
Total net machinery cost	10,552	_____
TOTAL LABOR AND MACHINERY COSTS	$44,390	$_____
Labor cost:		
Per man equivalent	$ 8,905	$_____
Per acre of bearing grapes	$ 388	$_____
Per ton of grapes harvested	$ 119	$_____
Labor and machinery cost:		
Per man equivalent	$11,682	$_____
Per acre of bearing grapes	$ 509	$_____
Per ton of grapes harvested	$ 157	$_____

* Valued at $6,000 per operator (value of management and owned capital excluded).

MISCELLANEOUS COST MEASURES

14 Great Lakes Region Grape Farms, 1977

Item	Average per Farm	My Farm
Crop expense per acre of bearing grapes*	$89	$_____
Spray expense per acre of bearing grapes	$34	$_____
Taxes per crop acre owned	$38	$_____
Taxes per $1,000 of end real estate inventory	$15	$_____
Taxes and insurance per $1,000 real estate inventory	$25	$_____

* Includes spray, fertilizer, replacement vines, posts and wire, and other crop expenses.

Capital and Capital Efficiency Factors

The average investment in the farm business was $268,811. Eighty-six percent of this total is represented by vineyards and buildings.

CAPITAL INVESTMENT AND CAPITAL EFFICIENCY FACTORS

14 Great Lakes Region Grape Farms, January 1978

Item	Average per Farm	Percent of Total	My Farm
Land and buildings	$230,061	86	$_____
Machinery and equipment	35,870	13	_____
Supplies	2,880	1	_____
Total Farm Inventories	$268,811	100	$_____
Man equivalent	3.8		_____
Investment per man	$ 70,740		$_____
Acres of bearing grapes	87		_____
Machinery and equipment investment per acre of bearing grapes	$ 412		$_____
Land and building investment per acre of owned cropland	$ 2,520		$_____
Total farm investment per acre of bearing grapes	$ 3,083	$__	$_____
Total farm investment per ton of grapes sold	$ 950		$_____
Capital turnover (years for cash receipts to equal capital)	4.3		_____

Investment costs such as depreciation and interest are part of the total cost of operating a farm business. Obtaining efficiency in the use of capital, as measured by investment relative to productive capacity and income, is an important part of managing a farm. The factors calculated in the table above, can help a farmer gauge the soundness of his capital investment. On these farms, investment per farm ranged from $88,845 to $602,000; investment per man ranged from $33,611 to $175,042; and investment per acre of bearing grapes ranged from $1,632 to $7,264.

1977 Production and Marketings

ACRES IN VINES AND 1977 MARKETINGS

14 Great Lakes Region Grape Farms

Item	Number of growers reporting	Average of all growers
Bearing Vines:		
Harvested, sold in primary market	14	86.0
Harvested, sold in distress market	2	1.2
Not harvested	0	0.0
Total Bearing	14	87.2
Nonbearing Vines	4	4.6
Total Acres in Vines	14	91.8

Total acres in vines averaged 87 acres per farm. Ninty-nine percent of this total acreage produced a crop which was harvested and sold in the growers' primary or usual markets in 1977. The growers reported about one percent of the acreage in vines was harvested and sold in the open market. Only two growers had sales in the open market for a total of 16.5 acres.

GRAPES HARVESTED & SOLD IN PRIMARY OR USUAL MARKETS

14 Great Lakes Region Grape Farms, 1977

Variety	Acres	Tons	Average Yield/Acre
Concord	67	225	3.36 Tn.
All other varieties	20	59	2.95 Tn.
Total	87	283	3.25 Tn.

Concords were the most important variety on all farms. This variety accounted for 77 percent of the acreage harvested and 80 percent of the tonnage. The average yield of Concords was 3.36 tons per acre, compared with 2.95 tons per acre for all other varieties.

Array of Business Factors

Vineyardists in the management program can determine how their business stands relative to the others in the summary by encircling the factor measurement for their farm in each column of the table below.

AN ARRAY OF SELECTED BUSINESS FACTORS
14 Great Lakes Region Grape Farms, 1977

Note: Each column is independent of the others. Do not read across.

Acres of Bearing Grapes	Man Equiv-alents	Tons of Grapes Harvested Per Man	Tons of Grapes Harv. Bearing Acre	Investment Per Acre of Bearing Grapes	Grape $ Per Acre Harvested	Total Cash Operating Exp./Acre Harvested
220	10.8	106	4.6	$7,264	$1,077	$868
196	8.1	102	4.5	5,431	1,045	727
133	5.3	100	4.0	5,085	890	725
131	5.0	94	3.7	4,554	775	713
106	4.7	93	3.5	4,038	7732	688
98	3.5	84	3.5	3,779	723	641
76	3.4	82	3.5	3,750	714	628
65	2.4	71	3.2	2,853	713	617
45	2.2	66	3.0	2,736	710	602
40	2.0	64	3.0	2,602	636	594
40	2.0	56	2.9	2,533	624	535
30	1.5	56	2.8	2,196	618	521
22	1.4	52	2.7	2,134	561	459
20	.8	32	2.0	1,632	417	406

Comparisons with Finger Lakes

Selected business factors from the 1977 Finger Lakes Grape farm business summary are compared with Great Lakes Region data in the following table.

COMPARISON OF SELECTED FARM BUSINESS DATA
Great Lakes Region and Finger Lakes Grape Farms, 1977

Item	Average of 14 Chautauqua Co. Farms	Average of 15 Finger Lakes Farms
Man equivalent	3.8	2.9
Acres of bearing grapes	87.2	56.8
Percent of bearing acreage harvested	100.0%	100.0%
Tons of grapes per bearing acre	3.2	2.6
Average price per ton sold	$219	$263
Grape receipts per bearing acre	$712	$644
Investment per acre of bearing grapes	$3,083	$3,236
Total cash operating expenses per acre harvested	$656	$638
Total costs per bearing acre	$880	824

Custom Harvesting Enterprise

Six of the farms in this summary had custom harvesting operations. The receipts, expenses, and machinery used were allocated to this enterprise, and are not included in the computations in the preceeding pages. The custom harvesting operations are summarized below:

CUSTOM HARVESTING ENTERPRISE

6 Chautauqua County Grape Farms

		Average per Farm	Range
Receipts		$11,914	1,919 - 34,286
Expenses			
Hired labor	3,068*		
Machine hire	964*		
Machine repair & farm share of auto expense	2,052*		
Gasoline and oil	417*		
Real estate upkeep	10*		
Insurance	370*		
Utilities	28*		
Interest paid	175*		
Miscellaneous	48*		
TOTAL CASH EXPENSES	6,380		
Machinery depreciation	642		
TOTAL EXPENSES		$ 7,022	
Net Income for Enterprise		$ 4,892	$ 854 - 18,262

* Average for five farms by category of expenses.

The average net income for the 6 operators was $4,892. These growers had investments in machinery of $20,164 allocated to custom harvesting. This is not the full value of all machinery used in custom harvesting, but rather it reflects these growers' estimation of what percentage of their machinery should be allocated to the enterprise. The same principle is used for the allocation of other expenses.