GRAPE FARM BUSINESS SUMMARY

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GREAT LAKES REGION 1979

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GREAT LAKES REGION GRAPE FARM BUSINESS

SUMMARY AND ANALYSIS, 1979

This is a summary and analysis of the 1979 farm business records from 12 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; 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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The 1979 Crop Year

Grape production in New York State was 159 thousand tons in 1979, 13 percent below 1978, but well above the disastrous crop yields in 1977. The four counties which comprise the Great Lakes Grape Region (Chautauqua, Cattaraugus, Erie, and Niagara) had a 9 percent decrease in total production. Prices were also down from 1978. The average price paid to New York growers decreased from $241 to $232 per ton for all varieties, and from $217 to $210 for Concords.

	1976	1977	1978	1979
Tons of grapes produced, all varieties				
Great Lakes Region	113,495	62,086	114,350	104,036
State of New York	164,492	97,209	181,911	158,966
Tons of Concord grapes produced				
Great Lakes Region	100,089	53,417	98,657	94,959
State of New York	123,277	67,407	125,243	119,875
Average price paid by wineries and processors				
Concords, New York State ($/ton)	163	224	217	210
All varieties, New York State ($/ton)	178	240	241	232

Source: New York Crop Reporting Service, Fruit, selected reports from 1977, 1978, 1979 and 1980.

A comparison of selected measures from the grape farm business summaries is shown below. Labor and management income per year was $413, compared with $28,262 in 1978 when growers realized a combination of high yields and good prices. Investment per acre and cash expense per acre continue to increase due to inflation.

COMPARISONS OF SELECTED MEASURES, 1976-1979

	1976	1977	1978	1979
No. of farms	16	14	13	12
Acres of bearing grapes	80.0	87.2	87.2	85.8
Man equivalents	3.6	3.8	3.9	3.5
Total farm investment	246,421	268,811	278,396	290,728
Investment per bearing acre ($)	3,080	3,083	3,193	3,388
Tons of grapes harvested/man	130	75	121	120
Grape yield/bearing acre (tons)	5.8	3.2	5.5	4.9
Grape receipts/bearing acre ($)	923	712	1,323	1,138
Average price/ton of grapes ($)	158	219	245	232
Cash expense/grape acre ($)	708	623	856	881
Labor & mgt. income/farm ($)	7,738	-8,188	28,262	413
Rate of return on equity capital (%)	5.9	3.0	16.7	6.4

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
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average	Range
Labor:			
Number of operators	_____	1.0	1.0 - 1.0
Months of:			
Operator's	_____	9.2	1.0 - 12.0
Family paid	_____	1.1	0.0 - 6.0
Family unpaid	_____	1.7	0.0 - 5.0
Regular hired	_____	18.0	0.0 - 100.0
Seasonal hired	_____	9.6	0.0 - 33.0
Other	_____	2.5	0.0 - 29.3
Total	_____	42.0	11.0 - 116.0
Man equivalent (total months + 12)	_____	3.5	0.9 - 9.7
Land and Crops (acres)			
Bearing grapes:			
Harvested	_____	85.5	20.0 - 230.0
Not harvested	_____	0.3	0.0 - 4.0
Nonbearing grapes	_____	0.4	0.0 - 5.0
Total Acres in Grapes	_____	86.2	20.0 - 230.0
Total Crop Acres	_____	143.1	45.5 - 330.0
Crop Acres Rented	_____	13.7	0.0 - 80.0
Total Acres Owned	_____	129.5	45.5 - 323.0

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
12 Great Lakes Region Grape Farms

Item	My Farm 1/79	My Farm 1/80	Average per Farm 1/79	Average per Farm 1/80
Land & buildings	$_____	$_____	$234,661	$240,993
Livestock	_____	_____	125	516
Machinery & equipment	_____	_____	39,284	45,442
Supplies & crops	_____	_____	3,717	3,777
TOTAL FARM INVENTORIES	$_____	$_____	$277,787	$290,728

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
12 Great Lakes Region Grape Farms, January 1979

Item	My Farm	Average per Farm
Total investment/man equivalent	$_____	$83,055
Total investment/crop acre	$_____	$ 2,031
Total investment/acre of bearing grapes	$_____	$ 3,388
Machinery investment/crop acre	$_____	$ 318
Land & buildings/total acres owned	$_____	$ 1,862
Capital Turnover*	_____ yrs.	2.6 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
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm	Percent of Total
Grapes:			
Primary market	$_____	$ 78,731	71.4
Distress market	_____	672	0.6
Total 1979 Payments Received	$_____	$ 79,403	72.0
Previous year's payments, certificates	_____	24,189	21.9
Machine work and trucking	_____	172	0.2
Other crop receipts	_____	2,341	2.1
Work off farm	_____	520	0.5
Livestock and livestock product sales	_____	1,358	1.2
Rent	_____	717	0.7
Other	_____	1,588	1.4
Total Cash Receipts	$_____	$110,288	100
Total Cash Receipts	$_____	$110,288	
Less previous year's payments	- _____	- 24,189	
Plus anticipated 1979 payments	+ _____	+ 18,194	
Increase in crop and supply inventory	_____	60	
Total Farm Receipts	$_____	$104,353	

Grape income accounted for 94 percent of cash receipts. An average of 420 tons of grapes per farm were harvested and sold. Cash grape receipts for the 1979 crop totaled $189 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
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm	Expense per acre of grapes (total)
Hired labor	$_____	$ 34,391	$ 399
Machine hire	_____	4,805	56
Machine repair & farm share of auto expense	_____	4,154	48
Gasoline & oil	_____	2,594	30
Spray	_____	2,801	33
Fertilizer receipts	_____	3,235	38
Seeds & grape roots (replacements)	_____	105	1
Posts and wire	_____	557	7
Other crop expense	_____	2,961	34
Real estate upkeep	_____	1,135	13
Taxes	_____	4,176	48
Insurance	_____	3,296	38
Rent	_____	1,138	13
Utilities	_____	941	11
Interest paid	_____	6,951	81
Miscellaneous	_____	2,732	32
TOTAL CASH & OPERATING EXPENSES	$_____	$ 75,971	$ 881
Machinery depreciation	_____	3,593	42
Building depreciation	_____	0	0
Decrease in supply inventory	_____	0	0
Unpaid family labor	_____	750	9
Interest on equity capital @ 9%	_____	23,626	274
TOTAL FARM EXPENSES	$_____	$103,940	$1,205

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 ending 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. The net income is called real estate appreciation.

MACHINERY DEPRECIATION AND REAL ESTATE BALANCE
12 Great Lakes Region Grape Farms, 1979

Item	Machinery		Real Estate	
	My Farm	Average	My Farm	Average
Beginning inventory	$_____	$39,284	$_____	$234,661
Purchases	_____	9,792	_____	2,140
Total (A)	$_____	$49,076	$_____	$236,801
End inventory	$_____	$45,442	$_____	$240,993
Sales	_____	42	_____	0
Total (B)	$_____	$45,483	$_____	$240,993
DEPRECIATION (A minus B)	$_____	$ 3,593		
APPRECIATION (B minus A)			$_____	$ 4,191

The average machinery depreciation of $3,593 is 7 percent of the beginning inventory plus machinery purchased. This low depreciation reflects growers' estimates that considerable inflation occurred in used machinery prices.

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.

NET CASH FARM INCOME
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm
Total Cash Receipts	$_____	$110,288
Total Cash Operating Expenses	_____	75,971
NET CASH FARM INCOME	$_____	$ 34,317
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 9 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 1979 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 current crop.

LABOR AND MANAGEMENT INCOME
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Total Farm Receipts	$_____	$104,353	$110,349
Total Farm Expenses	_____	103,940	103,940
LABOR & MANAGEMENT INCOME PER FARM	$_____	$ 413	$ 6,409

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; therefore labor and management income per farm was $413 and $6,409 for Method 1 and Method 2 respectively.

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 $262,516 per farm.

LABOR, MANAGEMENT AND OWNERSHIP INCOME
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Labor & Management Income Per Farm	$_____	$ 413	$ 6,409
Add: Real Estate Appreciation	_____	4,191	4,191
Add: Interest on Equity Capital @ 9%	_____	23,626	23,626
LABOR, MANAGEMENT & OWNERSHIP INCOME PER FARM	$_____	$28,231	$34,227
PER OPERATOR	$_____	$28,231	$34,227

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
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm [Method 1]	Average per Farm [Method 2]
Labor & Management & Ownership Income	$_____	$28,231	$34,227
Less: Value of Operator's Labor & Management*	_____	11,474	11,474
Return on Equity Capital	_____	$16,757	$22,753
Rate of Return on Equity Capital (equity capital = $262,516)	_____ %	6.4%	8.7%

* Values estimated at $650 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 is provided below.

FARM FAMILY FINANCIAL SITUATION
12 Great Lakes Region Grape Farms, 1979

Item	My Farm	Average per Farm
Assets		
Total farm inventory	$_____	$290,728
Accounts receivable	_____	13,228
Co-op investment	_____	13,293
Cash and checking account	_____	28,624
TOTAL FARM ASSETS	$_____	$345,872
Liabilities		
Real estate mortgage	$_____	$ 64,176
Liens and secured loans	_____	2,224
Installment contracts	_____	833
Accounts payable	_____	3,633
Other farm debt	_____	12,490
TOTAL FARM LIABILITIES	$_____	$ 83,357
FARM NET WORTH (Farm assets less liabilities)	$_____	$262,516
Percent Equity (Farm net worth + total farm assets)	_____%	75.9%
Farm Debt Per Man Equivalent	$_____	$ 23,813
Farm Debt per Bearing Acre of Grapes	$_____	$ 971

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 net cash flow, excluding interest paid, of $41,268. This amount was available for family living expenses, and to make debt payments and cash investments during the year.

Analysis of the Farm Business

Some of the 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 of your farm with the averages of these factors for these farms can provide valuable clues to the strong and weak points of an individual grape farm business.

SELECTED FARM BUSINESS MEASURES
12 Great Lakes Region Grape Farms, 1979

Item	Average per Farm	My Farm
Measures of Size		
1. Acres in bearing grapes	85.8	_____
2. Acres of grapes harvested	85.5	_____
3. Acres in nonbearing grapes	0.4	_____
4. Man equivalent	3.5	_____
5. Tons of grapes harvested	419.8	_____
6. Tons of grapes grown	420.1	_____
Labor Efficiency		
1. Acres in grapes harvested per man	24.4	_____
2. Tons of grapes harvested per man	119.9	_____
Production Factors		
1. Grape yield per acre (tons) of bearing grapes	4.9	_____
2. Grape receipts* per acre of bearing grapes	$1,138	$_____
Price		
1. Average price per ton of grapes sold**	$ 232	$_____

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

**Grape receipts ÷ tons of grapes harvested.

Cost Control

Power and machinery costs were major expenses on these grape farms. Net operating and investment costs averaged $19,689.

POWER AND MACHINERY COSTS
12 Great Lakes Region Grape Farms, 1979

Item	Average per Farm		My Farm	
Beginning inventory	$39,284		$_____	
New machinery bought	9,792		_____	
Total	$49,076		$_____	
Ending inventory	$45,442		$_____	
Machinery sold	42		_____	
Total	$45,483			
Depreciation		$ 3,593		$_____
Interest at 9% ave. inventory		3,813		_____
Gas and oil		2,594		_____
Auto		296		_____
Truck, tractor & equip. repair		3,859		_____
Machine hire		4,805		_____
Utilities		941		_____
Total Machinery Costs		$19,899		$_____
Income from machine work	-	172		_____
Gasoline tax refund	-	37		_____
NET MACHINERY COSTS		$19,689		$_____
Net Machinery Costs:				
Per acre of bearing grapes		$ 229		$_____
Per man equivalent		$ 5,625		$_____
Per ton of grapes harvested		$ 47		$_____

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 $229.

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
12 Great Lakes Region Grape Farms, 1979

Item	Average per Farm	My Farm
Value of operator's labor*	$ 5,960	$_____
Hired labor	34,391	_____
Unpaid family labor	750	_____
TOTAL LABOR COSTS	$41,101	$_____
Total net machinery cost	19,689	_____
TOTAL LABOR AND MACHINERY COSTS	$60,790	$_____
Labor cost:		
Per man equivalent	$11,742	$_____
Per acre of bearing grapes	$ 479	$_____
Per ton of grapes harvested	$ 98	$_____
Labor and machinery cost:		
Per man equivalent	$17,366	$_____
Per acre of bearing grapes	$ 708	$_____
Per ton of grapes harvested	$ 145	$_____

* Valued at $650 per month for operator's labor (value of management and owned capital excluded).

MISCELLANEOUS COST MEASURES
12 Great Lakes Region Grape Farms, 1979

Item	Average per Farm	My Farm
Crop expense per acre of bearing grapes**	$113	$_____
Spray expense per acre of bearing grapes	$ 33	$_____
Taxes per crop acre owned	$ 32	$_____
Taxes per $1,000 of end real estate inventory	$ 17	$_____
Taxes and insurance per $1,000 real estate inventory	$ 31	$_____

**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 $290,728. Eighty-three percent of this total is represented by vineyards and buildings.

CAPITAL INVESTMENT AND CAPITAL EFFICIENCY FACTORS
12 Great Lakes Region Grape Farms, 1979

Item	Average per Farm	Percent of Total	My Farm
Land and buildings	$240,993	82.9	$_____
Livestock	516	0.2	_____
Machinery and equipment	45,442	15.6	_____
Supplies	3,777	1.3	_____
Total Farm Inventories	$290,728	100.0	$_____
Man equivalent	3.5		$_____
Investment per man	$ 83,055		$_____
Acres of bearing grapes	85.8		$_____
Machinery and equipment investment per acre of bearing grapes	$ 530		$_____
Land and building investment per acre owned	$ 1,862		$_____
Total farm investment per acre of bearing grapes	$ 3,388		
Total farm investment per ton of grapes sold	$ 693		
Capital turnover (years for cash receipts to equal capital)	2.6		$_____

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 acre of bearing grapes ranged from $2,700 to $10,253.

1979 Production and Marketings

ACRES IN VINES AND MARKETINGS
12 Great Lakes Region Grape Farms, 1979

Item	Number of Growers Reporting	Average of All Growers
Bearing vines:		
Harvested, sold in primary market	12	84.8
Harvested, sold in distress market	4	0.7
Not harvested	1	0.3
Total Bearing	12	85.8
Nonbearing Vines	1	0.4
Total Acres in Vines		86.2

Total acres in vines averaged 86.2 acres per farm. Ninety-eight percent of this total acreage produced a crop which was harvested and sold in the growers' primary or usual markets. The growers reported about 1 percent of the acreage in vines was harvested and sold in the open market. Only 4 growers had sales in the open market.

GRAPES HARVESTED & SOLD IN PRIMARY OR USUAL MARKETS
12 Great Lakes Region Grape Farms, 1979

Variety	Acres	Tons	Average Yield/Acre
Concord	63.6	351.5	5.5 Tn.
All other varieties	21.1	65.7	3.1 Tn.
Total	84.8	417.3	4.9 Tn.

Concords were the most important variety on all farms. This variety accounted for 75 percent of the acreage harvested and 84 percent of the tonnage. The average yield of Concords was 5.5 tons per acre, compared with 3.1 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
12 Great Lakes Region Grape Farms, 1979

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
230	9.7	154	7.0	10,253	1,772	1,315
148	5.9	153	6.2	5,849	1,503	1,190
146	4.9	144	6.0	4,890	1,359	1,030
136	4.7	137	5.7	4,877	1,314	1,003
106	3.8	127	5.6	3,711	1,235	973
58	3.0	118	5.5	3,571	1,140	935
51	2.4	117	4.8	3,299	1,117	864
45	2.2	111	4.7	3,027	1,097	657
40	1.7	110	4.7	2,919	985	628
29	1.5	109	4.6	2,882	934	602
22	1.3	76	4.3	2,868	916	599
20	0.9	49	2.1	2,700	579	583

Custom Harvesting Enterprise

Five 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 preceding pages.

CUSTOM HARVESTING ENTERPRISE
5 Chautauqua County Grape Farms

		Average per Farm	Range
Receipts		$16,112	2,947 - 35,500
Expenses			
Hired labor	2,659		
Machine hire	501		
Machine repair & farm share of auto expense	1,099		
Gasoline and oil	595		
Real estate upkeep	0		
Insurance	30		
Utilities	18		
Interest paid	0		
Miscellaneous	574		
TOTAL CASH EXPENSES	5,474		
Machinery depreciation	201		
TOTAL EXPENSES		$ 5,676	
Net Income for Enterprise		$10,437	$ 436 - 19,552

The average net income was $10,437. These growers had investments in machinery of $23,025 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.