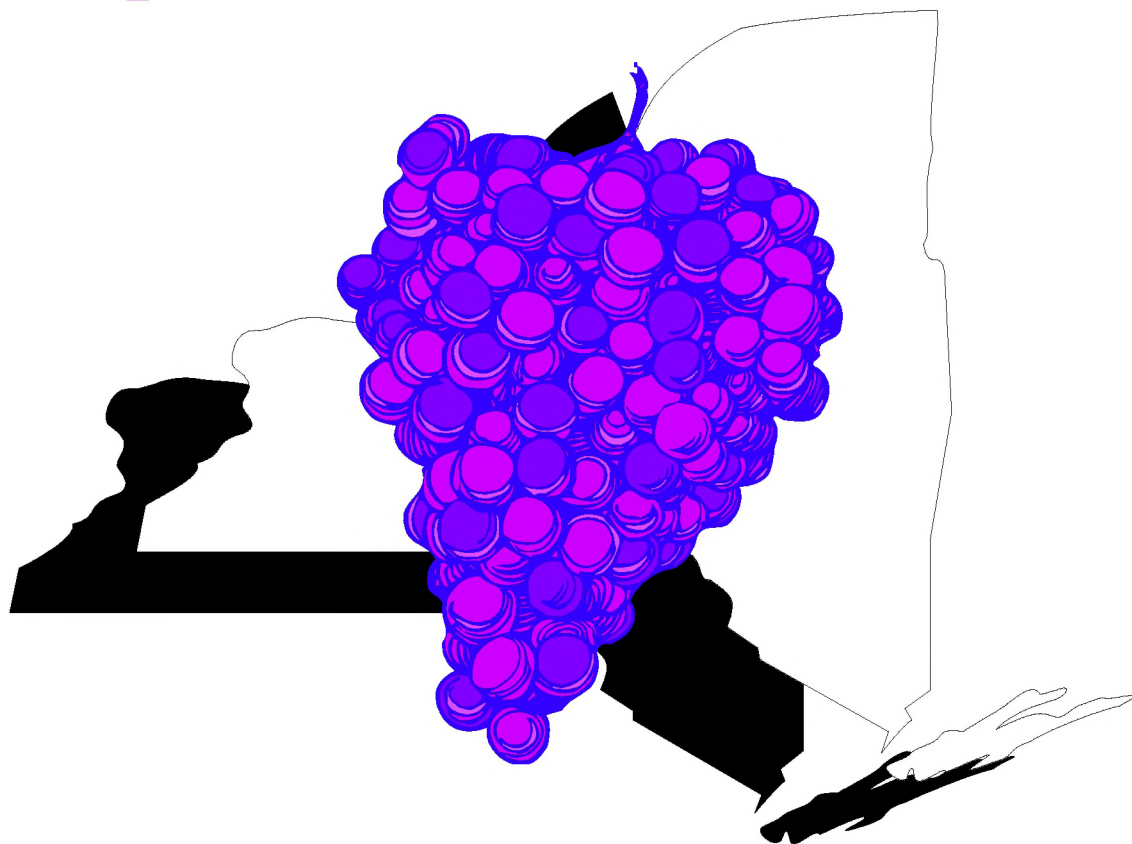


The Economics of Replanting Generic Wine Grape Varieties in New York



by:

Gerald B. White

Barry Shaffer

Robert M. Pool

Alejandro Lalor

Department of Agricultural, Resource, and Managerial Economics
College of Agriculture and Life Sciences
Cornell University, Ithaca, New York 14853-7801

It is the Policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

ABSTRACT

There has been an interest in replanting generic wine grape varieties; however, the prices of these grapes have been in the range of \$200-250 per ton in recent years, low by historical standards. There is a need to identify varieties which are useful and profitable to the winery, consistent in production, and which can be efficiently produced in New York vineyards so that the value of the grapes to the winery better matches the cost of grape production. Elvira may be one variety which meets these criteria.

This research was undertaken to (1) evaluate the yields, costs, and practices associated with replanting and growing Elvira grapes using the soil and managerial resources of New York growers; and (2) to evaluate the profitability and financial feasibility for these growers to convert their existing vineyards to the Elvira variety.

Mail questionnaires were sent to 50 of Elvira growers to assess the size of operation, land use, Elvira acreage and yields, training system, pruning practices, cash expenses and farm debt.

Removal and replanting costs for site preparation, year of planting, and second and third year of development were estimated at \$4,606 per acre. This results in an annual cost of capital recovery of \$488 per year for the 22 years remaining life of the vineyard. Average debt per acre of grapes for the 23 farms who responded on the survey was \$848 per acre.

Five year average yields (1991-1995) for the respondents was 7.5 tons per acre for the Elvira acreage. At an average price of \$202 per ton, returns to management were -\$143 per acre. At an average yield of 7.5 tons per acre, a price of \$221 per ton would be necessary to break even. Conversely, at an average price of \$202 per ton, the break even yield was 8.4 tons per acre.

Growers should consider the risk that is involved in replanting a vineyard. For example, prices may decline over time, or yields may not average those projected at the time of planting. Also, Elvira has limited marketing alternatives. Other varieties (e.g. Aurore, Cayuga White, or Melody) are also adaptable to high yielding, labor efficient technology, but have more potential alternative markets than Elvira.

TABLE OF CONTENTS

INTRODUCTION

Background	1
Table 1: Average Price by Varieties for Generic Wine Varieties, 1991-1995	2
Problem Statement	3

METHODS	3
---------------	---

RESULTS

Capital Costs for a New Planting	4
Table 2: Summary of Vineyard Removal Costs, Lake Erie 1995 and Catawba Grapes, Dresden, NY	5
Table 3: Trellis Construction Costs, Lake Erie Region 1995	5
Table 4: Establishment and Development Costs, 605 Vines, Lake Erie Region, 1995	6
Table 5: Growing Costs Years 4 thru 25, 605 Vines, HRU Training Lake Erie Region, 1995	8
Table 6: Summary of Establishment and Development, Lake Erie Region, 1996	9
Survey Results	9
Table 7: Survey Results of Land Use for Grape Farms, 23 Farms, 1996	9
Table 8: Acres Harvested, Total Harvest and Yield in Ton Per Acre Elvira Acreage, 23 Farms, 1991-1995	10
Table 9: Acreage in Various Training Systems, Elvira Variety, 23 Farms, 1996	10
Table 10: Pruning Practices, Elvira Variety, 23 Farms, 1996	11
Table 11: Farm Debt, Farms Specializing in Grapes, 1995	11
Annual Cost of Growing Elvira Grapes	12
Table 12: Projected Receipts and Expenses for New Plantings of Elvira Grapes Conventional Practices, 1996	13
Table 13: Average Expense Per Acre by Expense Category, 1995	14

DISCUSSION	15
------------------	----

REFERENCES	16
------------------	----

APPENDIX 1

Questions for Economic Component of CWC Survey	17
--	----

THE ECONOMICS OF REPLANTING GENERIC WINE GRAPE VARIETIES IN NEW YORK

By

Gerald B. White, Barry Shaffer, Robert M. Pool and Alejandro Lalor*

INTRODUCTION

Background

In the 1960s and 1970s, wine made from native grape varieties such as Concord, Catawba, Niagara, Delaware and Dutchess provided the backbone for the New York wine industry. Taylor Wine Company of Hammondsport, NY was the flagship of the state's industry, but several other sizable wineries were thriving, at least in the early years of that era. Wines with labels such as the Taylor's Lake Country Wines and Widmer's Lake Niagara were distributed and consumed throughout the United States. During those years, growers supplied these varieties to large wineries for prices ranging generally from \$300 to \$400 per ton. At these prices growers were able to make a profit in most years even at the very modest yield levels of 3 to 4 tons per acre that were being attained on average.

Today, to say that the situation is different is a gross understatement. Many changes have occurred since the decades of the 60s and 70s. Probably the most important change is the revolution that occurred in consumers' preferences for wines. The market for inexpensive table wines, usually bottled in gallon containers and called jug wines, has been declining in market share since the early 1980s. Many American consumers are now consuming more expensive wines such as varietals from U.S. producers or from other countries or appellation wines from the countries of the European Union. These wines are generally made from vinifera varieties or hybrids which have been developed for premium wine production. The typical product of the New York industry of the 1970s is no longer demanded by a majority of wine consumers.

In the face of falling demand for its traditional products, the large wineries were no longer profitable, and a revolution in the structure of the state's industry occurred. Beginning in the 1970s, and especially after the passage of New York's Small Winery Act in 1976, some growers developed small farm wineries to attempt to add value to their grapes. Through a series of mergers and sales of wineries, a substantial amount of the New York wine-making capacity was owned first by Coca Cola, later by Seagrams, then by Vintners International. Finally in 1993, Canandaigua Wine Company purchased most of Vintners International's properties, making it the second largest wine company in the United States behind Gallo. In the process of this consolidation, New York properties were joined with California wineries such as Guild, Paul Masson, and Inglenook under the ownership of one New York based company. Thus the New York industry evolved into a dichotomous structure with one of the world's largest wineries which processed

* Professor, Department of Agricultural, Resource, and Managerial Economics Cornell University; Area Specialist, Lake Erie Grape Program; Professor, Department of Horticultural Sciences, Agricultural Experiment Station, Geneva, NY; and Graduate Assistant, Department of Agricultural, Resource, and Managerial Economics, Cornell University. The authors express appreciation to Rick Dunst, Research Support Specialist at the Fredonia Vineyard Laboratory; and Wayne Knoblauch, Professor, Department of Agricultural, Resource, and Managerial Economics for their helpful reviews of this publication.

over 80 percent of its wine grapes and a growing number of small wineries selling mostly directly to consumers.

This consolidation of large wineries was also forced by an overproduction of wine and grapes during the period of 1983 through 1985. At that time imports, especially from the European Community, captured over 25 percent of the U.S. market. This resulted from the appreciation of the U.S. Dollar that occurred during this period, reaching a peak early in 1985 (White and Blandford). The first indications of American consumers' changing wine preferences were coincidentally becoming evident. That is, consumers were drinking less wine in total, but more expensive varietals or appellation wines. The convergence of these trends caused a collapse in New York grape prices in 1985 such that many tons of American varieties were sold for \$125 to \$150 per ton if they could be sold. Thousands of tons were left without a market (McDowell, White, and Anderson).

During the last half of the 1980s decade, prices for generic or bulk wine varieties recovered somewhat, fueled by the growth in the wine cooler category. Prices for Concord and Niagara grapes used for wine generally followed the same pattern as the prices of juice grape varieties. That is, prices ranged from \$200 to \$275 per ton. Other varieties such as Catawba and Delaware, which formerly brought a premium over the price of juice varieties, now sold for similar prices.

In the early 1990s, a surplus situation again developed for American and certain hybrid wine varieties, with the results as shown below in Table 1.

Table 1.

**Average Price by Varieties for Generic Wine Varieties
1991 - 1995, Dollars Per Ton**

Variety	Price per ton, dollars
Concord	230
Niagara	224
Catawba	206
Delaware	203
Dutchess	193
Elvira	202
Aurore	205
de Chaunac	232
Rougeon	236

Source: New York State Agricultural Statistics, Fruit series, various issues.

The demise of the wine cooler category was a leading factor in the poor results for some of these varieties. In general, the change in the preferences of consumers, who were on a continuing trend of drinking less wine in total, but more expensive wine, contributed to the generally low prices for American and certain hybrid wine varieties. Only Gallo and Canandaigua Wine

Company were able to operate with a strong presence in the market for non-premium wines in a generally declining market segment.

Problem Statement

Wineries desire a reliable supply of grapes to produce wines at a competitive cost and quality. Growers need to receive a price for their grapes that allows them to recover their annual growing and harvesting costs and to get a reasonable return on the investment in their vineyards. The present balance of wine grape varieties satisfies neither buyers nor growers. Cost of production for most of these traditional varieties exceeds their value in wines made for this lower-priced segment of the market.

Thus, there is a need to identify grape varieties which are useful and profitable to the winery, consistent in production, and which can be efficiently produced in New York vineyards so that the value of the grapes to the winery better matches the cost of production. There is a special need for a white variety.

Elvira has been suggested as a strong candidate. There are several reasons for considering Elvira. First, in a five year study of growing grapes organically, Elvira yielded a higher average tons per acre than did Concord (White). Furthermore, Elvira tolerated the less precise, organic management better than Concord. There was a significantly lower yield compared to conventionally managed vineyards for grapes grown organically for the Concord variety, but no significant difference for Elvira. In a study that included vineyards of Concord, Elvira, and Seyval varieties, the most favorable economic results for the organic system were obtained for Elvira. Secondly, even on the abused, highly eroded soils found in some of the older production areas in the Finger Lakes, yields of Elvira in the 6 to 7 ton range are achieved, in contrast to state average yields of about 5 tons per acre. Thirdly, Elvira grapes are excellent for blending with other varieties that are used in the current product lines of Canandaigua Wine Company, which is by far the largest buyer of grapes used for wine in New York state.

The objectives of this research are as follows:

1. To evaluate the yields, costs, and practices associated with replanting and growing Elvira grapes using the resources, both managerial and soil, of Finger Lakes, New York grape growers;
2. To evaluate the profitability and financial feasibility for these growers to convert their existing vineyards to the Elvira variety.

While the emphasis of this study is focused on the Elvira variety, the economic potential for other generic wine varieties, such as Catawba, Dutchess, Delaware, and Aurore can be ascertained since the cost of growing these varieties is similar to that of Elvira.

METHODS

Vineyard disposal costs were developed in consultation with Bill Dunn, vineyard manager of Taylor Wine Company. Four disposal scenarios were developed: (1) to bulldoze the entire

vineyard; (2) to salvage posts mechanically and bulldoze vines; (3) to remove wire by hand and bulldoze vines; and (4) to remove by hand.

The capital costs of a new vineyard was based on methods developed in White and Kamas for the Lake Erie Region. Establishment and development costs for the first three years of a planting were updated for 1995 input costs. Labor charges of \$5.00 per hour for unskilled and \$8.00 per hour for skilled labor were assessed. These establishment and development costs were amortized for 22 years, based on the 3 year development period and a total "useful life" of 25 years. An interest rate of 9 percent was used to derive the annual capital charge for replanting a vineyard. The interest rate was based on the current rate charged by agricultural lenders on long-term loans for medium sized commercial growers.

After three years, a vineyard typically reaches maturity so that average annual yields vary only due to the weather conditions in a particular year. The growing costs, yields, and pruning practices for the mature vineyard were based on a survey of growers conducted in the summer of 1996. A questionnaire was developed and sent to growers known to have Elvira vineyards. A copy of the questionnaire is shown in Appendix Table 1. The survey asked questions about the following topics: size of operation and land use, Elvira acreage and yields for the past five years through 1995, training system used, nutritional problems, pruning practices, cash expenses for the farm, and farm debt. The latter item will affect the ability of growers to make the capital investment required to bring a new Elvira planting into bearing.

The cash expenses per acre on the farms which specialized in grape production were used to establish the cash expenses of a typical vineyard. These costs were incorporated into a the budget for a typical mature vineyard using the format developed in White and Kamas. Average yields from the growers survey was used along with the average price of \$202 per ton for Elvira grapes from Table 1. Breakeven yield when grape price was \$202 and breakeven price for the average yields of Elvira in 1990 through 1995, as determined from the survey, were computed. Returns to management is the residual measure of profitability used in this study.

Surveys were mailed to 50 growers in New York and Pennsylvania. Twenty-four surveys were returned. One survey was unusable due to incompleteness. Thus results were based on a total of 23 surveys.

RESULTS

Capital Costs for a New Planting

Vineyard removal costs are displayed for four scenarios in Table 2. For the base analysis, a total cost of \$270 was used for the cost of vineyard removal, or scenario 1. This assumes that most vineyards are old enough that posts and wire are not worthy of salvaging. These costs may be adjusted by individual growers to fit their own situations.

Table 2.

**Summary of Vineyard Removal Costs
Lake Erie 1995 and Catawba Grapes, Dresden, NY**

Scenario	Hours Labor	Cost Labor	Equipment Cost	Salvage Value	Total Cost
1. Lake Erie, No Salvage, Bulldoze entire vineyard	7		\$270	\$0	\$270
2. Lake Erie, Salvage posts mechanically, bulldoze vines	40	\$430	\$33	(\$460)	\$3
3. Lake Erie, Remove wire by hand, bulldoze vines	22	\$344	\$33	(\$460)	(\$83)
4. Taylor Wine Co., All hand work	30	\$192		(\$460)	(\$268)

The capital cost for a new vineyard is shown in Table 3 and 4. Trellis construction costs (Table 3) were budgeted at \$1,250 per acre. The totals for site preparation, the first year (or year of planting), and the second and third year are shown in Table 4. The total growing cost for operating a mature vineyard in years 4 through 25 is shown in Table 5. Annual growing costs were estimated to be \$605 per acre.

Table 3.

**Trellis Construction Costs,
Lake Erie Region, 1995**

Item	Quantity	Price	Total
Posts(3"-4", treated)	208	\$4.50	936.00
Anchors	16	5.2	83.20
High tensile wire(#10), lbs.	9.2	0.76	6.99
Nicopress fasteners	32	0.2	6.40
Staples, lbs.	7	0.47	3.29
Non-crimped wire (#9), lbs.	188	0.48	90.24
Crimped wire (#11), lbs.	188	0.66	124.08
			1,250.20

The costs for removing the old vineyard, site preparation, and the establishment and development costs for the first three years of the vineyard are summarized in Table 6. Credit is given for the revenue from a partial crop of 3 tons per acre in the third year.

Total establishment and development costs of \$4,606 per acre were estimated. Amortized over the remaining 22 years of the projected useful life and at the interest rate of 9 percent, the annual charge for depreciation and interest, or capital recovery, of \$488 per acre was estimated. This amount was used in the next section to develop the annual costs of the mature vineyard. Over the remaining 22 years useful life, this amount has to be recovered as an annual charge in order for the vineyard to pay off the original capital invested plus returning 9 percent return to the owner's equity or to return the interest for borrowed capital.

Table 5.

**Growing Costs Years 4 thru 25, 605 Vines, HRU Training
Lake Erie Region, 1995**

Operation	Piece Work	Labor Hours	Labor Rate	Labor Costs	Equipment Hours	Equipment Costs	Materials Costs	Total
Fall fertilization		0.30	8.00	2.40	0.2	0.92	16.31	13.63
Pruning & brush removal	605		0.26	157.30				157.30
Trellis maintenance		1.00	8.00	8.00	0.5	1.87	21.00	30.87
Tying & renewal	605		0.06	36.30				36.30
Spring fertilizer		0.70	8.00	5.60	0.5	2.31	31.50	39.41
Layering		2.00	8.00	16.00				16.00
Vineyard floor management		2.50	8.00	20.00	2.0	9.66	44.06	73.72
Suckering	605		0.06	36.30				36.30
Diseased & dead trunk		1.00	8.00	8.00				8.00
Spraying (5x)		3.10	8.00	24.80	2.5	12.01	78.70	115.51
Mowing		0.70	8.00	5.60	0.5	2.01		7.61
Lime		custom					4.25	4.25
Miscellaneous				0.00			33.00	33.00
Pick-up truck				<u>0.00</u>		<u>30.00</u>	—	<u>30.00</u>
Total				320.30		58.78	225.82	604.90

Table 6.

**Summary of Establishment and Development
Lake Erie Region, 1995**

Item	Year of Establishment and Development		
	Year 1	Year 2	Year 3
Yield per acre (tons)	0	0	3
Market price (\$)	\$ 202	\$ 202	\$ 202
Total revenue (\$)	\$ 0	\$ 0	\$ 606
Costs			
Site preparation (\$)¹	\$ 354	\$ 0	\$ 0
Annual variable costs (\$)			
Preharvest	2,404	297	434
Harvest	<u>0</u>	<u>0</u>	<u>150</u>
Total	\$ 2,758	\$ 297	\$ 584
Annual fixed costs	182	182	182
Interest on cumulative costs (9%)	265	332	430
Total costs (\$)	\$ 3,205	\$ 811	\$ 1,196
Net returns (\$)	\$ -3,205	\$ -811	\$ -590
Total cumulative costs (\$)	\$ 3,205	\$ 4,016	\$ 4,606
Amortization of vineyard: (.1059)			488

¹Includes bulldozing of old vineyard, no salvage for posts and wire.

Survey Results

The survey results for land use are shown in Table 7. The average for 23 farms is 197.8 acres farmed. Of that, 95.4 acres were grapes, including bearing and non-bearing acres, owned as well as rented.

Table 7.

Survey Results of Land Use for Grape Farms, 23 Farms, 1996

	Average Per Farm	Range		Overall Average
		Maximum	Minimum	
Acres of grapes (bearing)	86.5	272.0	5.0	86.5
Acres of grapes (bearing) Rented	22.4	55.0	0.0	7.8
Acres of grapes (non-bearing)	4.4	10.0	0.0	1.2
Acres of tree fruit or small fruit	10.7	20.0	3.0	1.4
Acres of Vegetables	0.0	0.0	0.0	0.0
Acres of other crops	89.7	248.0	0.0	27.3
Acres of other crops (rented)	30.0	30.0	0.0	1.3
Other land (pasture, woods, bldgs. etc.)	87.2	417.0	5.0	72.0
Other land (pasture, bldgs., etc.) Rented	8.0	8.0	0.0	0.3
Total acres farmed	338.9	957.0	5.0	197.8
Total Grape acres	113.3	272.0	5.0	95.4

Perhaps the most important objective of this study was to determine the average yield that growers had experienced for Elvira grapes. The results are displayed in Table 8. The average yield for 23 farms for the entire previous 5 year period was 7.5 tons per acre. The average yield for all Elvira acreage was remarkably stable during the 5 years, varying from 7.3 tons per acre in 3 of the seasons, to a high of 8.1 tons per acre in 1994. Annual Elvira acreage for all farms reporting totaled 163.7 in 1991 and 174.2 in 1995.

Table 8.

**Acres Harvested, Total Harvest and Yield in Tons Per Acre
Elvira Acreage, 23 Farms, 1991-1995**

Crop Year	Acres Harvested	Production	Average Yield (T/Ac)	Maximum Yield	Minimum Yield
1995	174.2	1,268.4	7.3	10.7	0.8
1994	173.2	1,407.5	8.1	10.9	4.4
1993	173.2	1,258.3	7.3	11.1	2.7
1992	165.7	1,206.5	7.3	11.3	1.7
1991	163.7	1,254.2	7.7	12.7	4.7
Total	850.0	6,394.9	7.5 (overall average)		

The type of training system used by growers with their Elvira acreage is shown in Table 9. Most growers reported “other” training systems.

Table 9.

**Acreage in Various Training Systems
Elvira Variety, 23 Farms, 1996**

Type of training system	Total Acres	Number of Farms
Umbrella Kniffen	44.8	11
Hudson River Umbrella	16.5	3
Geneva Double Curtain	10.0	1
Other systems	92.9	9
Total	164.2	24*

*One farm was using two training systems with Elvira.

Pruning practices on the Elvira grapes are summarized in Table 10. About three-fourths of the Elvira acreage was machine pruned with hand follow up.

Table 10.

**Pruning Practices
Elvira Variety, 23 Farms, 1996**

Pruning practice	Total Acres	Number of Farms
Hand pruning only	54.1	10
Machine prune, hand follow-up	125.1	16
Machine prune or hedging only	0.0	0
Total		26*

*Three farms used two different pruning systems.

The debt situation for the respondents is shown in Table 11. A group of farms clearly specializing in growing grapes was selected. Three of these selected farms had no debt. Average debt for the farms having some debt was \$1,315 per acre. For some of these farms, replacing existing acreage is problematic since cash flow will be limited for the year of removal of the old vineyard plus at least two or three years until the new plantings are providing positive cash flow.

Average debt over the whole sample of 23 farms was \$848 per grape acre owned.

Table 11.

**Farm Debt, Farms Specializing in Grapes
1995**

	Selected Farms (Total)	Selected Farms (w/debt only)	All Farms
Total farm debt (\$)	\$1,304,359.00	\$1,304,359.00	\$1,686,255.92
Average farm debt	\$100,335.31	\$186,337.00	\$80,297.90
Total acres of grapes grown	1,424.60	992.00	1,989.10
Average acres of grapes grown	109.60	141.70	94.70
Total farm debt per acre of grapes (owned) (\$ per Acre)	915.60	1,314.88	847.75

Annual Cost of Growing Elvira Grapes

We used the results obtained from the survey of growers to analyze the annual costs per acre and per ton of Elvira grapes. The results are shown in Table 12.

Projected receipts and expenses for the mature vineyard are shown in Table 12. Average yield is 7.5 tons per acre, the average of the sample of 23 farms. The price of \$202 is the average price of Elvira for the last 5 years as reported by the New York Agricultural Statistics. Thus projected total receipts are \$1,515 per acre.

Growing costs are \$605 per acre from Table 5. Total variable costs were projected to be \$1,008 per acre.

The major fixed costs is capitalization of the new planting, \$488, as developed in Table 6. This is the annual amount required for capital recovery of depreciation and interest for 22 years at a 9 percent interest rate. Property taxes, insurance, and utilities are taken from the selected farms in the sample that specialized in growing grapes.

Total annual costs were projected at \$1,658 per acre, resulting in a negative return to management of -\$143 per acre.

At yields of 7.5 tons per acre, a price of \$221 would be required to break even. Conversely, at a price of \$202 per ton, a yield of 8.4 tons per acre would be required to break even.

To put these figures in perspective, at a price of \$221 per ton, growers would received a return for any labor of their own equal to \$8 per hour and a return to their equity capital of 9 percent. For borrowed capital, they could repay a loan for a new planting at 9 percent interest. However, it should be kept in mind that lenders will probably not be willing to stretch a repayment schedule for a new planting to 22 years, as assumed in the amortization table used for the analysis. Assuming that all labor including operator labor is a cash cost, and ignoring finance charges, it would require 9 years for the planting to "pay back" the cash investment. More likely, lenders would require repayment in five to seven years, implying that cash flow problems could occur, especially for those growers with substantial debt.

Total cash costs (variable costs including all labor, property taxes, insurance and utilities), amounted to \$1,115 per acre. This figure can be compared to the results of cash expenses as determined from the grower survey.

Table 12.

**Projected Receipts and Expenses for New Plantings of Elvira Grapes
Conventional Practices, 1996**

Item	Per Acre
Receipts:	
Yield, ton per acre	7.5
Price, \$ per ton	<u>202</u>
Total receipts	\$ 1,515
Costs:	
Variable	
Growing (1)	605
Interest on operating capital (9.25% for 6 months)	28
Harvesting and hauling (@ \$50 per ton)	<u>375</u>
Total variable costs	\$ 1,008
Fixed	
Interest on machinery & equipment (9% x market value) (2)	45
Interest on buildings (9% x market value) (2)	10
Interest and depreciation on vineyard (1)	488
Property taxes (3)	43
Insurance (3)	55
Utilities (3)	<u>9</u>
Total fixed costs	\$ 650
Total costs	\$ 1,658
Returns to management	(\$143)
Breakeven price	\$ 221
Breakeven yield (tons/acre)	8.4
Total cash costs	\$ 1,115

(1) Updated labor and material costs using White and Kamas, 1989.

(2) White and Kamas. Value of building and equipment assessed at 50% of new cost per acre of vineyard.

(3) From selected farms, 14 survey respondents. (See Table 13, "Selected Farms".)

Results of the survey of total farm expenses from the growers who responded is shown in Table 13. The 14 farms who were clearly specialized in grape growing are shown in the column heading "Selected Farms". Their expense per acre of grapes of \$1,044.70 was not greatly different from the average of all farms which was \$1,063.23.

Using the figure from the selected farms of \$1,044.70, we can compare with the results for cash costs from our previous analysis in Table 12, where cash costs were \$1,111 per acre. First we must subtract depreciation from the expenses per acre of selected farms, since that is a non-cash expense. The resulting cash expense per acre is $\$1,044.70 - \$56.98 = \$987.72$. Compared with the analysis in Table 12, the main difference is that the labor of owners is computed at a cash cost of \$8 per hour in Table 12. The difference could be explained as the number of hours per acre that the average owner spent working in his own vineyard, or $\$123 \div \8 per hour, or 15 hours. In actuality, there are probably many reasons why the two figures for cash costs are different, but calculating owner's labor as a cash cost in Table 12 compared to Table 13, which includes only labor for which a cash wage was paid, is a reasonable explanation that could account for much of the difference.

We concluded that the original estimates of grape expenses in Table 12 were a reasonable representation of the situation on the 23 farms which responded to the survey.

Table 13.

**Average Expense Per Acre by Expense Category
1995**

Expense Category	Selected Farms	All Farms
Car and truck expense	\$20.43	\$15.60
Chemicals	90.95	93.09
Custom hire (machine)	34.64	33.98
Depreciation	56.98	60.33
Employee benefit programs	9.81	7.33
Fertilizer & lime	47.97	55.02
Freight & trucking	19.25	15.24
Gasoline, fuel & oil	29.46	41.86
Insurance (other than health)	54.99	58.81
Interest (paid to banks)	71.40	68.97
Other interest	15.70	11.73
Hired labor	274.43	262.78
Rent or lease (vehicles, machinery & equipment)	7.85	5.98
Rent or lease of vineyard	11.41	14.25
Repairs & maintenance	66.62	81.75
Supplies purchased	33.64	30.59
Property taxes	42.62	61.56
Utilities	8.86	18.72
Other grape expense	<u>48.54</u>	<u>51.53</u>
Total farm expense	<u>\$1,044.70</u>	<u>\$1,063.23</u>

DISCUSSION

The base analysis, with yields of 7.5 tons per acre and a price of \$202 per ton (the average price for Elvira in 1991-1995), resulted in a -\$143 returns to management. It should be kept in mind that this analysis was based on a 25 year time horizon, a 9 percent charge on capital investment, and an \$8.00 per hour charge on owner's labor. Growers will have to use efficient management practices and aim for higher yields. Average yields of at least 8.4 tons are required to break even if the price received is \$202 per ton.

Average yields over the five years surveyed were 7.5 tons per acre. The Elvira variety, however, is high yielding and tolerates less precise management practices. Progressive growers on good sites should be able to achieve at least 8 tons per acre long-term average yields.

To put the results in perspective, with yield of at least 8 tons per acre and a price of at least \$200 per ton, growing Elvira is approximately a break even investment. With revenues of \$1,600 per acre, growers will receive a return of \$8.00 per acre for their own labor and a return on capital of 9 percent.

Another factor to consider is that, while the base analysis indicates that growing Elvira is approximately a break even proposition, it yields higher returns to fixed resources than many of the traditional varieties such as Catawba, Delaware, and Dutchess. These varieties are lower-yielding on average and do not have as good a future market outlook as does Elvira.

With yields of approximately 8 tons per acre and the price of grapes at \$200 per ton, there is no margin for risk. Growers should consider that demand for the variety, and hence prices, could change in the next 25 years in such a way that the replanting is not profitable. If growers believe that the price will be \$220 per ton, as was the price paid by large wineries for Elvira in 1996, then the economic outlook for replanting will appear more favorable than the base analysis presented in this publication.

One risk that is likely to weight on the minds of growers who are contemplating investment in Elvira plantings is that there are somewhat limited alternative markets for that variety. Growers may want to consider planting other varieties (e.g. Aurore, Cayuga White or Melody) which are also adaptable to high yields and labor efficient technology, but have more potential alternative markets than does Elvira.

REFERENCES

- McDowell, S.K., G.B. White, and B.L. Anderson, The Feasibility of a Grape Producer Cooperative in the Finger Lakes, A.E. Res. 86-8, Department of Agricultural, Resource, and Managerial Economics, Cornell University, March 1986, 105 pp.
- National Agricultural Statistics Service (USDA), Agricultural Prices, July 29, 1994.
- New York Agricultural Statistics Service, Fruit, No. 975-1, Various years (1994-1996).
- White, G.B., The Economics of Converting Conventionally Managed Eastern Vineyards to Organic Management Practices, R.B. 95-02, Department of Agricultural, Resource, and Managerial Economics, Cornell University, August 1995, 29 pp.
- White, G.B. and J.S. Hamas, The Economics of Concord and Niagara Grape Production in the Great Lakes Region of New York, A.E. Ext. 90-3, Department of Agricultural, Resource, and Managerial Economics, Cornell University, February 1990, 15 pp.
- White, G.B. and D. Blanchford, The Competitive Position of the United States Grape and Wine Industry, A.E. Res. 88-12, Department of Agricultural, Resource, and Managerial Economics, Cornell University, September 1988, 65pp.

Appendix Table 1.

Questions for Economic Component of CWC Survey

Submitted by

Jerry White and Barry Shaffer

1. Please answer the following questions regarding your farming operation and land use:

	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
a. Acres of grapes (bearing)	_____	_____	_____
b. Acres of grapes (non-bear)	_____	_____	_____
c. Acres of tree fruit or small fruit	_____	_____	_____
d. Acres of vegetables	_____	_____	_____
e. Acres of other crops	_____	_____	_____
f. Other land (pasture, woods, bldgs., etc.)	_____	_____	_____
g. Total acres farmed	_____	_____	_____

2. From the total bearing acres of grapes (owned + rented) identified in 1a. above, how many acres of the Elvira acreage were harvested, and what was total production for the last five years?

	<u>Elvira Acre harvested</u>	<u>Elvira Total tons harvested</u>
a. 1995	_____	_____
b. 1994	_____	_____
c. 1993	_____	_____
d. 1992	_____	_____
e. 1991	_____	_____

3) For the Elvira acreage identified in the response to question 2a. above, what is the training system?

No. of
Acres

_____ Umbrella Kniffen

_____ Hudson River Umbrella

_____ Geneva Double Curtain

_____ Other? Describe _____

4) Note any special nutrition problems or improvements in your Elvira blocks.

Please attach a copy of the last soil and petiole analysis for your Elvira blocks.

5) For the Elvira acreage identified in 2a. above, which statement best describes your pruning practices?

No. of
Acres
 _____ Hand pruning only
 _____ Machine prune, hand follow-up
 _____ Machine pruning or hedging only

6) What were your total farm cash expenses for the following items in 1995? (you may take this from Schedule F of your 1994 tax return or from your farm account book).

	<u>\$ in 1995</u>
Car & truck expense	_____
Chemicals	_____
Custom hire (machine work)	_____
Depreciation	_____
Employee benefit programs	_____
Fertilizer and lime	_____
Freight & Trucking	_____
Gasoline, fuel & oil	_____
Insurance (other than health)	_____
Interest:	
Mortgage (paid to banks, etc.)	_____
Other	_____
Labor hired	_____
Rent or lease:	
Vehicles, machinery & equipment	_____
Vineyard	_____
Repairs & Maintenance	_____
Supplies purchased	_____
Property Taxes	_____
Utilities	_____
Other grape expense(specify)	
_____	_____
_____	_____

7) What is the total farm debt per acre of grapes?

(Compute by taking total farm debt as of January 1, 1996 and divide by the total acres of bearing grapes owned in item 1a. above.)

Total Farm debt (Jan. 1, 1996) \$ _____

Acres of grapes(bearing) _____ Ac.

Total Farm debt per bearing acres of grapes owned \$ _____

OTHER A.R.M.E. RESEARCH BULLETINS

- No. 96-17 Distribution of Community Water Systems Across the United States with Emphasis on Size, Water Production, Ownership, and Treatment Richard N. Boisvert
Todd M. Schmit
- No. 96-18 Rural Utility Service's Water and Waste Disposal Loan and Grant Program and its Contribution to Small Public Water System Improvements in New York State Todd M. Schmit
Richard N. Boisvert
- No. 96-19 A Theory of Nonprice Export Promotion with Application to USDA's Subsidy Programs Henry W. Kinnucan
Hui Xiao
- No. 96-20 Assessing the Effectiveness of MPP Meat Advertising and Promotion in the Japanese Market Allison Comeau
Ron C. Mittelhammer
Thomas I. Wahl
- No. 97-01 The Implications of Trade Liberalization for Federal Milk Marketing Orders Phillip M. Bishop
Andrew M. Novakovic
- No. 97-02 Information Needs of Agricultural Exporters: Results from a Focus Group Series Deborah Streeter
Nelson Bills
Jane Maestro-Scherer
Rob Neenan
- No. 97-03 An Analysis of Processing and Distribution Productivity and Costs in 35 Fluid Milk Plants Eric M. Erba
Richard D. Aplin
Mark W. Stephenson
- No. 97-04 Cornell Commodity Promotion Research Program: Summary of Recent Research Projects Harry M. Kaiser
Jennifer L. Ferrero