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**FACTORS AFFECTING THE SIZE  
OF THE NORTH CAROLINA GRAPE INDUSTRY**

**Michael K. Wohlgenant  
Professor**

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DEPARTMENT OF ECONOMICS AND BUSINESS  
NORTH CAROLINA STATE UNIVERSITY  
RALEIGH, NORTH CAROLINA

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by

Michael K. Wohlgenant  
Professor

Economics Information Report No. 82  
Department of Economics and Business  
North Carolina State University  
Raleigh, NC 27695  
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# FACTORS AFFECTING THE SIZE OF THE NORTH CAROLINA GRAPE INDUSTRY

## INTRODUCTION

The North Carolina Grape industry has undergone dramatic changes in the past two decades. Production and acreage expanded rapidly in the late 1960s and early 1970s in reaction to favorable prices from a boom in the wine market. However, producers experienced severe adjustment problems in the late 1970s and early 1980s as the wine boom turned to a bust and as grape prices plummeted. In recent years, both production and real (inflation-adjusted) prices have been low by historical standards. Questions facing the industry are: What are the future prospects for North Carolina grape producers? Have current adjustment problems been worked out? Does a potential exist for future expansion of the industry?

The intent of the present study is to isolate and to quantify economic factors affecting the equilibrium size of the North Carolina grape industry in order to provide a basis for assessing future prospects for North Carolina producers. The specific objectives are:

- a. to determine and quantify the factors affecting demand for North Carolina grapes;
- b. to develop conditional forecasts of future demand for North Carolina grapes, given estimates of break-even prices for grapes and projections of income and prices for substitute grapes.

The report is organized as follows. The next section presents background information on the industry and patterns of change in prices and quantities. In the third section, factors affecting demand for North Carolina grapes are identified and quantified. The fourth section utilizes the demand estimates

together with projections on income and prices for substitute grapes to develop conditional projections of the size of the North Carolina grape industry for different break-even prices for North Carolina grapes. Finally, conclusions are presented in the last section.

### INDUSTRY STRUCTURE

The main type of grape produced in North Carolina is Muscadine, accounting for over 91% of total acreage and some 98% of commercial production in 1981. There were approximately 182 vineyards in 1981 and the average vineyard size was about 9.37 acres. Most of the vineyards are found in the coastal plain. Approximately 70% of the total acreage was in this region of the state in 1981 (Brainich, Chapter 1).

North Carolina grape production has followed a cyclical pattern since the middle 1950s. Total utilized production grew from 1200 tons in 1956 to 5500 tons in 1980 (Figure 1). Since 1980, production has fallen, and in 1988 it stood at 2200 tons. Bearing acreage has followed the same pattern, rising from 226 acres in 1956 to 1947 acres in 1977 and then declining to 734 acres in 1988 (Figure 2).

North Carolina grape prices, as measured by average returns to growers for all acres, have followed a pattern similar to that of production. Nominal prices rose sharply until about 1973, and since then have more or less leveled off (Figure 3). Real prices (nominal prices relative to the consumer price index, 1967=100) increased until about 1973 but have since fallen sharply (Figure 4).

The main use of Muscadine grapes has been for wine production. In 1984, about 70% of the total tonnage was utilized for crushing, with the remainder going for fresh market sales (Brainich, Chapter 1). The state's wine-making

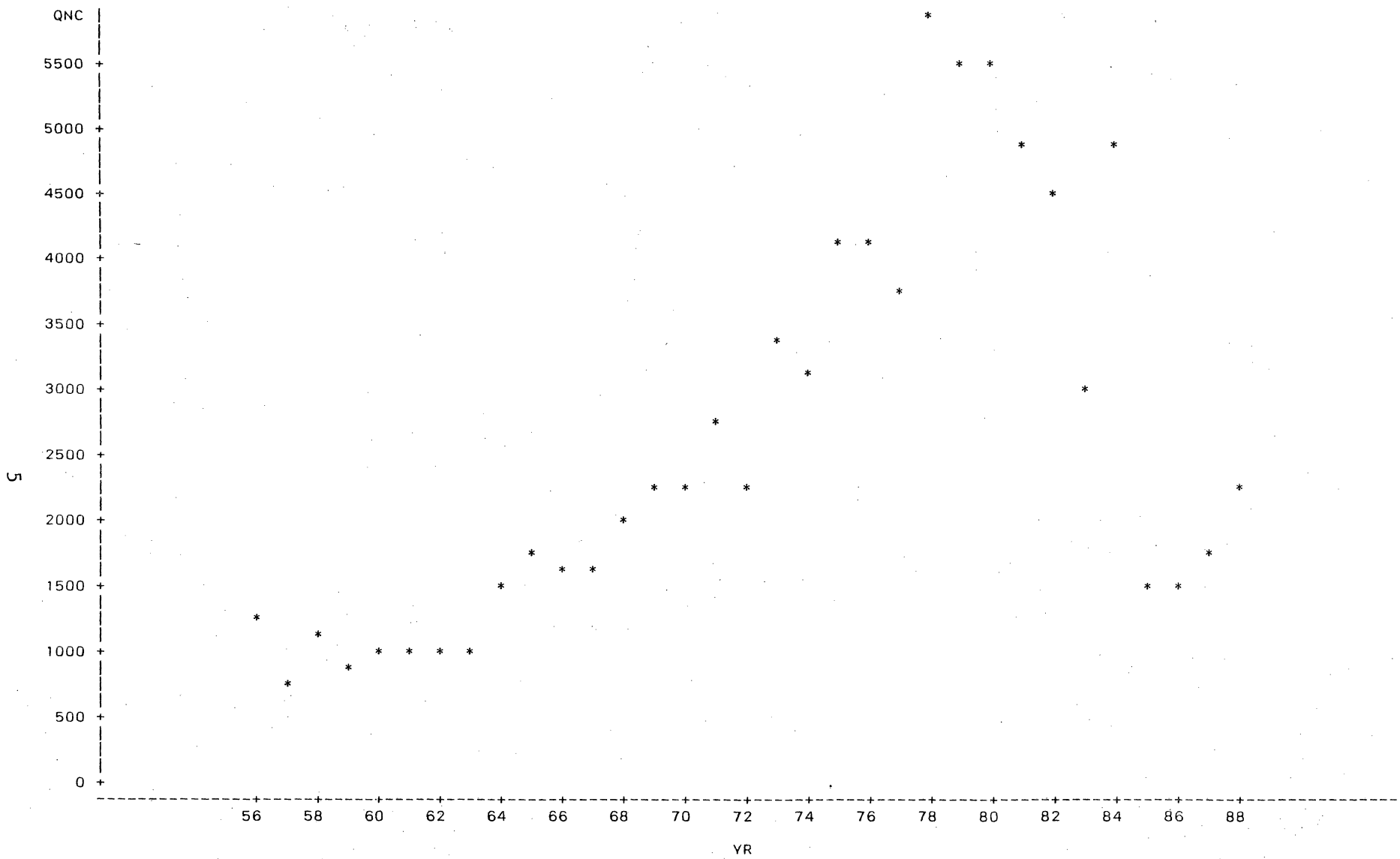


Figure 1. Utilized tonnage of North Carolina grapes (QNC).



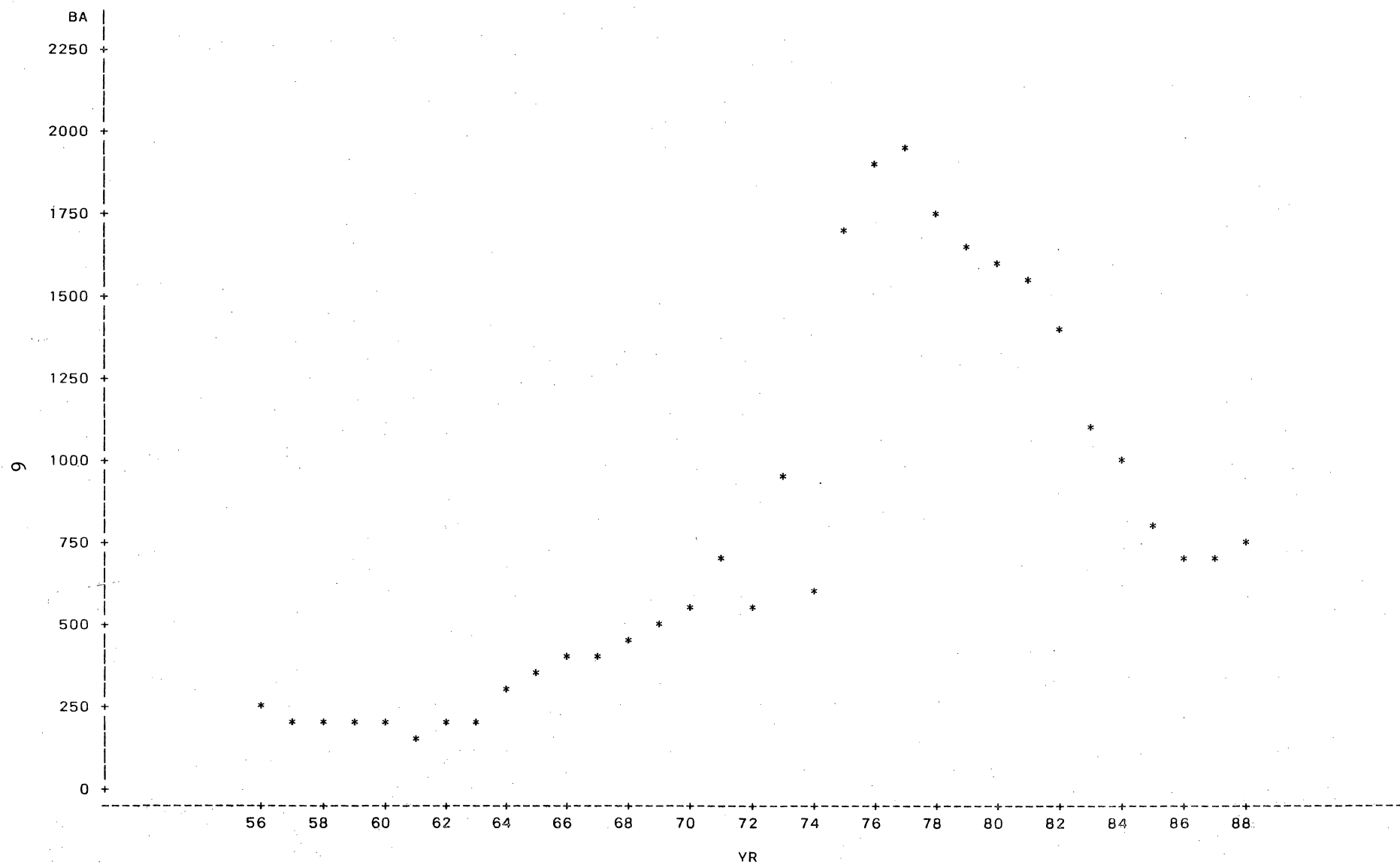


Figure 2. Bearing acreage of North Carolina grapes (BA).

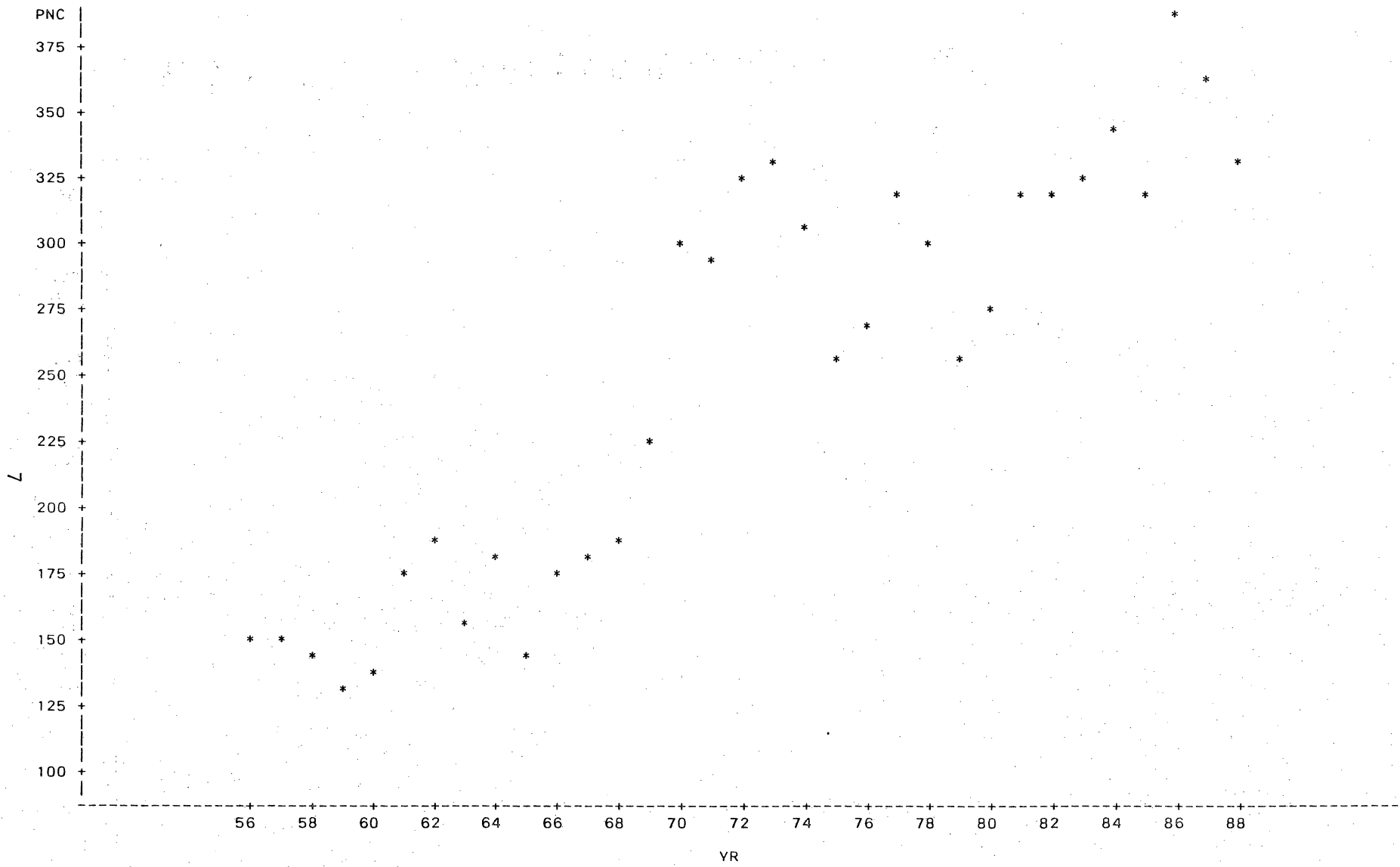


Figure 3. Nominal price (\$/ton) of North Carolina grapes (PNC).

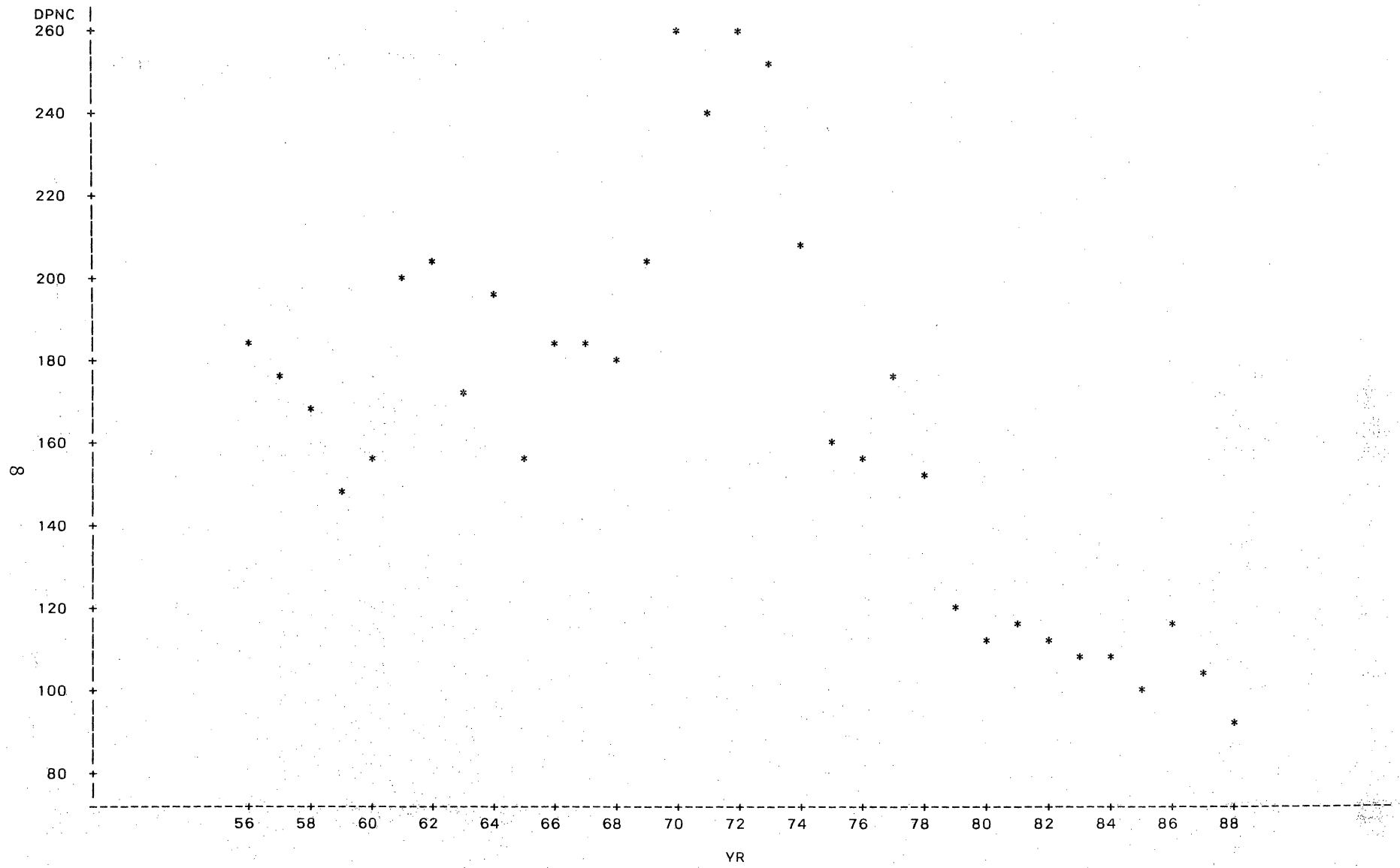


Figure 4. Real price (1967 dollars) of North Carolina grapes (DPNC).

capacity has grown over time, although North Carolina wines are still frequently blended with juices brought in from other states (both Muscadine and non-Muscadine varieties). Also, some of the grapes produced in North Carolina are sold to out-of-state buyers such as Specialty Foods, Inc. of Mississippi (Brainich, Chapter 1).

#### FACTORS AFFECTING DEMAND

Demand for grapes is a derived demand from the sum of the various end-uses of grapes. North Carolina grapes are both sold on the fresh market and used to produce wine and grape juices. Thus, factors affecting demand for these various end-products will influence demand for North Carolina grapes. These factors include population and income of the consuming population as well as prices of other grape varieties sold fresh and used in wine and juice processing. The significant competing grape varieties to consider are New York (mainly Concord) grapes and California (mainly Thompson Seedless) grapes. These grapes (particularly Thompson Seedless) also compete directly in wine processing as non-Muscadine varieties frequently are used for blending. In sum, the main factors hypothesized to influence demand for North Carolina grapes include:

- a. average prices received by North Carolina producers,
- b. prices of New York grapes,
- c. prices of California grapes,
- d. population, and
- e. income.

Annual time series data over the period 1956-1986 were used to estimate a demand equation for North Carolina grapes. Data used in estimation are

presented in Appendix Table A.1. The estimated demand equation for North Carolina grapes is (values in parentheses are t-values):

$$\begin{aligned}
 (1) \quad LPQNC = & -23.912 - 0.554 \cdot LDPNC - 0.536 \cdot LDPNC1 - 0.518 \cdot LDPNC2 \\
 & (-10.273) \quad (-2.081) \quad \quad (-3.881) \quad \quad \quad (-1.832) \\
 & + 0.265 \cdot LDPCA + 0.163 \cdot LDPCA1 + 0.061 \cdot LDPCA2 \\
 & (1.363) \quad \quad (1.988) \quad \quad \quad (0.316) \\
 & + 0.418 \cdot LDPNY + 0.770 \cdot LDPNY1 + 1.122 \cdot LDPNY2 \\
 & (1.326) \quad \quad (5.038) \quad \quad \quad (4.187) \\
 & + 5.286 \cdot LDPY - 3.072 \cdot LDPY1, \quad R^2 = 0.91, \\
 & (2.916) \quad \quad (-1.749)
 \end{aligned}$$

where LPQNC is the natural logarithm of per capita volume of North Carolina grapes utilized, LDPNC = the natural logarithm of real (deflated) price of North Carolina grapes, LDPNC1 = LDPNC lagged 1 year, LDPNC2 = LDPNC lagged 2 years, LDPCA = the natural logarithm of deflated price of California grapes, LDPCA1 = LDPCA lagged 1 year, LDPCA2 = LDPCA lagged 2 years, LDPNY = the natural logarithm of deflated price of New York grapes, LDPNY1 = LDPNY lagged 1 year, LDPNY2 = LDPNY lagged 2 years, LDPY = the natural logarithm of deflated per capita southeast income (North Carolina, South Carolina, Georgia), and LDPY1 = LDPY lagged 1 year.

Because the model was estimated with logarithmic transformations of the quantity, price, and income variables, the coefficient estimates can be interpreted as elasticities. That is, the coefficient values show the effect of a 1% change in the explanatory variable on per capita consumption. For example, the coefficient estimate of -0.554 on the variable LDPNC can be interpreted as follows: A 1% change in the price of North Carolina grapes

(holding all other prices and income constant) leads to a -0.554% change in quantity demanded of North Carolina grapes.

It is also important to make a distinction between the short- and long-run impacts of a given change in price or income. The short-run effects in the current year are simply the coefficients of the contemporaneous variables LDPNC, LDPCA, LDPNY, and LDPY. These coefficients indicate short-run elasticities of -0.554, 0.265, 0.418, and 5.286. The long-run effects of a permanent change in price can be calculated by summing the coefficients of each variable for the current and past years. Thus, the long-run elasticity with respect to North Carolina grape prices is -1.608 (-0.554 - 0.536 - 0.514). Similarly, the long-run elasticities with respect to California and New York grape prices are 0.489 and 2.31. The long-run elasticity with respect to income is 2.214 (5.286 - 3.072).

The important point to be gleaned from the demand specification in equation (1) is that demand for North Carolina grapes is strongly influenced by its own price, the prices of substitute grapes, and income. This means that given a particular price for North Carolina grapes, the level of demand (and therefore production to meet that demand) will depend on the general state of the economy (as represented by the level of consumer income) and the state of the national market for grapes (as represented by the prices of California and New York grapes).



## DEMAND PROJECTIONS

The demand equation (1) was used with different break-even prices for N. C. grapes and projections of income, population, and prices for substitute grapes to project future utilization of N. C. grape production. The assumptions underlying the demand projections are delineated in the following subsection. The two remaining subsections present projections for utilized production and bearing acreage, respectively. All demand projections are made 10 years beyond the sample period to the year 1996.

### Projection Assumptions

Break-even prices for processed Muscadines were generated from updated crop enterprise budgets provided by Dr. Charles Safley and Dr. E. B. Poling (personal communication). These break-even prices cover average annual operating and machinery costs of production plus a 10% return on costs to management for a 10-acre farm producing grapes in the coastal region of the state. Break-even prices of \$301, \$223, and \$182 per ton were generated for yields equal to 4.50, 6.50, and 8.50 tons per acre, respectively.

The demand model (1) requires estimates of average prices for N. C. grapes instead of processed prices. Using annual time series data for the period 1979-1987, the relationship between these two prices was estimated to be

$$(2) \quad \text{LDPNC} = 3.555 + 0.272 \cdot \text{LDPPNC},$$

(10.87)    (3.522)

$$R^2 = 0.64,$$

where LDPNC = natural logarithm of the deflated average price of N. C. grapes and LDPPNC = natural logarithm of the deflated processed price of N. C. grapes. Equation (2) was used to predict state-wide average deflated prices (in 1967

dollars) for given break-even deflated prices for processed grapes of \$85 (\$301/3.542), \$63 (\$223/3.542), and \$51 (\$182/3.542). (The factor 3.542 is the increase in the Consumer Price Index from 1967 to 1988.)

Population growth in the southeastern states (North Carolina, South Carolina, Georgia) was estimated by regressing the natural logarithm of population (LPOP) on a linear time trend (T):

$$(3) \quad LPOP = 9.224 + 0.014 \cdot T, \quad R^2 = 0.98, \\ (1346) \quad (36.90)$$

where  $T = 1$  for 1956, 2 for 1957, etc. Equation (3) implies that from the base year 1986 until 1996, population will increase approximately 15% ( $(0.014 \cdot 10) - 1) \cdot 100$ ).

Forecasts of grape prices for California and New York and income were generated using a vector autoregressive model (VAR).<sup>1</sup> Based on previous research of the California grape industry by Wohlgenant, the real price of California grapes in the current year was hypothesized to be related to real prices of California grapes in previous years, quantities of California grapes crushed in previous years, total U. S. income in previous years and quantities of wine imports in previous years. Given annual time series data on these variables from 1947 to 1987, a fourth-order VAR process (consisting of deflated price of California raisin-type grapes for crushing, quantity of raisin-type grapes crushed, deflated total personal consumption expenditures, and volume of foreign wine entering the United States) was estimated and used to develop forecasts from 1987 to 1996. (In the VAR estimation, the econometric estimates

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<sup>1</sup>For a discussion of this time series modeling approach, see Kmenta (pp. 721-723).

were restricted so that there were no feedback effects from prices, quantities, and imports on income.)

Forecasts generated using the VAR model predict that the real price of California grapes will decline slightly, to \$112 per ton in 1996 from \$123 per ton in 1987. However, the standard error of the forecast is quite large, indicating that real prices (in 1987 dollars) could range between \$57 and \$220 per ton in 1996 (approximately a 67% confidence interval).

Based on the VAR model forecasts, national income (as measured by personal consumption expenditures) is predicted to increase between 26% and 48% (with an average increase of 36%) between 1987 and 1996. Although income in the three southeastern states of North Carolina, South Carolina, and Georgia has been increasing at a higher rate than national income, southeast income is assumed to increase at the same rate as national income in the future.

California accounts for about 90% of total U. S. grape production. As such, other states' prices would be expected to be influenced by changes in California grape prices. Therefore, the price of New York grapes is assumed to change in accordance with the price of California grapes. Using annual time series data over the period 1956-1986, the relationship between these two price series was estimated to be:

$$(4) \quad \text{DLDPNY} = -0.013 + 0.289 \cdot \text{DLDPCA}, \quad R^2 = 0.18 \\ \quad \quad \quad (-0.485) \quad (2.467)$$

where DLDPNY = first-difference of the natural logarithm of deflated price of New York grapes and DLDPCA = first-difference of the natural logarithm of deflated price of California grapes.

Forecasts generated using equation (4), given forecasts of the real price of California grapes, indicate that the real price of New York grapes will

decline slightly to \$184 per ton in 1996 from \$198 per ton in 1986. The real price in (1987 dollars) is expected to range between \$152 and \$224 in 1996.

Additional assumptions underlying the projections include (a) no significant change in the proportion of processed to total grape production, and (b) no significant change in the demand structure for N. C. grapes in the future. These assumptions imply that essentially the same market outlets for N. C. grapes will continue to exist in the future. To the extent that these markets change (either through changes in numbers, types, and/or locations of buyers) a significantly different demand structure could result, which would cause the conditional forecasts to be different from those developed in this study.

#### Projections of Utilized Production

Projections of utilized production of N. C. grapes were generated for combinations of three different yields and three different demand levels. Break-even prices for the three yield levels (low, medium, high) are \$301, \$223, and \$182 per ton for processed Muscadines. The three demand levels (low, medium, high) are expected utilized production with different growth rates in income (26%, 36%, 48%) and different prices for California grapes (\$57, \$112, \$220) and New York grapes (\$152, \$184, \$224). Appendix B contains the basic information used to generate these forecasts.

Projections of utilized production of N. C. grapes to 1996 sufficient to generate (break-even) equilibrium prices are shown in Table 1. For the mean forecast combinations of medium yield and medium demand levels, utilized production of 3680 tons is about 67% higher than the 1988 production of 2200 tons. Also, 3680 tons is in the range of production levels achieved in the early 1970s. However, depending upon whether yields are low or high and

# TABLE 1

## UTILIZED PRODUCTION TO GENERATE EQUILIBRIUM PRICES

(BREAK-EVEN + 10% RETURN TO MANAGEMENT)

		D E M A N D		
		LOW	MEDIUM	HIGH
Y I E L D	LOW	1270	3220	8190
	MEDIUM	1450	3680	9340
	HIGH	1580	4020	10220

whether demand is low or high, utilized production could be considerably smaller or considerably larger. Utilized production could range between 1270 tons and 10220 tons in 1996 depending on the particular combination of yield and demand that occurs.

#### Projections of Bearing Acreage

Table 2 presents projections for expected levels of bearing acreage sufficient to generate equilibrium grape prices. These estimated state-wide acreage levels were derived by dividing the projections presented in Table 1 by estimates of state-wide average yields.

State-wide average yields (YIELD) have been declining over time as evidenced by the estimated relationship

$$\text{YIELD} = 5.456 - 0.093 \cdot T, R^2 = 0.55 \\ (18.86)(-5.900)$$

where  $T = 1$  for 1956, 2 for 1957, etc. Mean yield is assumed to remain constant at its estimated value for 1986 of 2.57. The standard error of yield is estimated to be 0.77, implying yield can be expected to range between 1.8 tons per acre to 3.34 tons per acre.

Projected mean utilized production of 3680 tons (Table 1) implies a projected mean size of the N. C. grape industry of 1432 bearing acres. This is nearly double the current size of the industry but in the range of the size of the industry that existed in the early 1980s.

However, the projected size of the industry is quite sensitive to the expected level of demand for N. C. grapes. For example, for a medium yield of 2.57 tons per acre, equilibrium size of the industry could range between 564 acres and 3634 acres, or more than 100% of the mean acreage of 1432 acres. It



## TABLE 2

### BEARING ACREAGE TO GENERATE EQUILIBRIUM PRICES

(BREAK-EVEN + 10% RETURN TO MANAGEMENT)

		D E M A N D		
		LOW	MEDIUM	HIGH
Y I E L D	LOW	706	1789	4550
	MEDIUM	564	1432	3634
	HIGH	473	1203	3060

is also the case that the projected size of the industry is much more sensitive to the level of demand than to yield, as can be determined by comparing the variation along any given column with the variation along any given row in Table 2.

The main factor causing the projected size of the N. C. industry to be so sensitive to the level of demand is the variability in the forecast of the California grape price. Recall that this price is projected to range between \$57 and \$220 with a mean forecast of \$112. Since the New York grape price is also expected to be affected by the California grape price, this variability in the forecasted California grape price accounts for a sizable proportion of the total variability in projected N. C. acreage. Projected size is expected to be less sensitive to variability in income because of the substantially smaller variability anticipated in future income.

## CONCLUSIONS

The purpose of the study was to isolate and to quantify the economic factors affecting the equilibrium size of the North Carolina grape industry. The significant factors affecting demand for N. C. grapes were found to be (a) prices of N. C. grapes, (b) prices of N. Y. grapes, (c) prices of California grapes, (d) southeast population, and (e) southeast personal income. The demand estimates were combined with information on break-even prices for N. C. grapes and projections of income, prices for substitute grapes, and population to develop conditional forecasts of the potential size of the N. C. grape industry. All projections were made 10 years beyond the sample period to the year 1996.

The projections indicate that a potential exists for modest expansion of the N. C. grape industry in the future. Assuming the same market outlets for N. C. grapes exist in the future, and assuming recent growth rates in income and price patterns in the national market for grapes continue into the future, the N. C. grape industry could support approximately 1400 bearing acres of grapes.

Although the results indicate a potential exists for modest expansion in the current size of the N. C. grape industry, any expansion should proceed cautiously because of the extreme sensitivity of the results to conditions in the general economy (as represented by growth in southeast personal income) and to the national market for grapes (as represented by future prices of California and New York grapes). A general recession in the U. S. economy and/or significant declines in prices of New York and California grapes could have a strong adverse effect on the demand for N. C. grapes. Thus, given a particular desired price for N. C. grapes, the acreage required to meet

expected demand could be substantially smaller than the mean projected size of 1400 acres.

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## APPENDIX A

The data used in estimation of demand for N. C. grapes are presented in Appendix Table A.1. Variable definitions and data sources for the main variables are as follows:

1. QNC (Utilized North Carolina grape production): North Carolina Department of Agriculture. North Carolina Orchard and Vineyard Survey. Raleigh, annual, various issues.
2. PNC (Price per ton of North Carolina grapes): U.S. Department of Agriculture. Non-Citrus Fruits and Nuts, Washington, D.C., annual, various issues.
3. PCA (Price per ton of California grapes -- raisin-type grapes crushed): California Crop and Livestock Reporting Service. California Grapes, Raisins, and Wine. Sacramento, annual, various issues.
4. PNY (Price per ton of New York grapes): U.S. Department of Agriculture. Non-Citrus Fruits and Nuts. Washington, D.C., annual, various issues.
5. PY (Average per capita personal income for North Carolina, South Carolina, and Georgia): U.S. Department of Commerce. Statistical Abstract of the U.S. Washington, D.C., annual, various issues.
6. POP (Population in North Carolina, South Carolina, and Georgia, thousands): U.S. Department of Commerce. Statistical Abstract of the U.S. Washington, D.C., annual, various issues.
7. CPI (Consumer Price Index, 1967=100): U.S. Government. Economic Report of the President. Washington, D.C., annual, selected issues.



Appendix Table A.1. Data used in estimation of demand for N. C. grapes.

OBS	YR	QNC	PNC	PCA	PNY	PY	POP	CPI	LPQNC	LDPNC	LDPCA	LDPNY	LDPY
1	56	1200	150	39	82.5	1301.5	10435	81.4	-2.1628	5.21643	3.86936	4.61859	7.37704
2	57	800	150	52	94.5	1340.1	10603	84.3	-2.5843	5.18142	4.12203	4.71939	7.37126
3	58	1100	145	52	113.0	1384.8	10657	86.6	-2.2709	5.12060	4.09511	4.87126	7.37718
4	59	900	130	42	121.0	1483.9	10772	87.3	-2.4823	5.00335	3.87349	4.93161	7.43827
5	60	950	140	36	107.0	1538.9	10904	88.7	-2.4404	5.06155	3.70343	4.79274	7.45872
6	61	950	178	38	103.0	1594.5	11008	89.6	-2.4499	5.29160	3.74740	4.74454	7.48412
7	62	950	185	44	113.0	1701.3	11294	90.6	-2.4756	5.31907	3.88291	4.82610	7.53784
8	63	1000	156	34	130.0	1782.8	11490	91.7	-2.4415	5.13650	3.61301	4.95418	7.57257
9	64	1500	183	41	136.0	1902.5	11535	92.9	-2.0399	5.28313	3.78722	4.98630	7.62459
10	65	1800	146	30	112.0	2080.8	11689	94.5	-1.8709	5.04018	3.45777	4.77507	7.69707
11	66	1600	177	28	117.0	2266.8	11795	97.2	-1.9977	5.20455	3.36060	4.79057	7.75452
12	67	1600	184	40	116.0	2420.1	11893	100.0	-2.0059	5.21494	3.68888	4.75359	7.79157
13	68	2000	186	40	135.0	2642.0	12045	104.2	-1.7955	5.18460	3.64774	4.86413	7.83816
14	69	2200	225	47	179.0	2987.2	12152	109.8	-1.7090	5.32261	3.75666	5.09390	7.90859
15	70	2200	302	54	169.0	3239.5	12302	116.3	-1.7213	5.55942	3.83798	4.97890	7.93217
16	71	2800	293	54	157.0	3430.0	12474	121.3	-1.4940	5.48708	3.79589	4.86315	7.94721
17	72	2200	325	78	186.0	3709.8	12642	125.3	-1.7486	5.55828	4.13117	5.00021	7.99318
18	73	3400	333	79	221.0	4210.8	12044	133.1	-1.2648	5.52221	4.08352	5.11223	8.05947
19	74	3100	306	76	219.0	4555.5	13052	147.7	-1.4375	5.33357	3.94072	4.99906	8.03408
20	75	4170	255	59	201.0	4914.6	13188	161.2	-1.1514	5.06379	3.60006	4.82583	8.02248
21	76	4080	266	84	164.0	5409.2	13290	170.5	-1.1809	5.04993	3.89725	4.56630	8.06229
22	77	3700	320	100	239.0	5898.7	13513	181.5	-1.2953	5.17224	4.00908	4.88038	8.08640
23	78	5900	300	153	245.0	6559.2	14099	195.4	-0.8712	5.03390	4.36056	4.83138	8.11875
24	79	5500	258	151	230.0	7123.9	14314	217.4	-0.9565	4.77639	4.24071	4.66151	8.09464
25	80	5500	276	144	225.0	7791.7	14467	246.8	-0.9671	4.71699	4.06641	4.51269	8.05741
26	81	4900	318	199	254.0	8665.8	14712	272.4	-1.0994	4.75995	4.29120	4.53523	8.06504
27	82	4500	321	127	234.0	9221.3	14893	289.1	-1.1968	4.70984	3.78258	4.39372	8.06767
28	83	3000	324	104	191.0	9926.6	15068	298.4	-1.6140	4.68748	3.55113	4.15901	8.10970
29	84	4900	341	85	180.0	10957.8	15310	311.1	-1.1393	4.69694	3.30771	4.05801	8.16686
30	85	1500	316	75	147.0	11750.7	15578	322.2	-2.3404	4.58574	3.14749	3.82043	8.20167
31	86	1500	385	100	198.0	12583.8	15814	328.4	-2.3554	4.76418	3.41611	4.09920	8.25111

Note: QNC, PNC, PCA, PNY, PY, POP, CPI are raw data defined in text. LPQNC, LDPNC, LDPCA, LDPNY, and LDPY are data for the variables used in estimating demand equation (1).

**APPENDIX B**

The specific equations used to generate projections of N. C. utilized grape production include:

$$(B.1) \quad LQNC = LPOP - 23.912 + 5.286 \cdot LDPY - 3.072 \cdot LDPY1 - 1.608 \cdot LDPNC \\ + 0.265 \cdot LDPCA + 0.163 \cdot LDPCA1 + 0.061 \cdot LDPCA2 \\ + 0.418 \cdot LDPNY + 0.770 \cdot LDPNY1 + 1.122 \cdot LDPNY2 \\ - 0.16394,$$

$$(B.2) \quad QNC = \text{EXP}(LQNC),$$

$$(B.3) \quad BANC = QNC/YIELD,$$

where all variables are defined in the text, except  $LQNC$  = natural logarithm of total N. C. utilized grape production,  $QNC$  = total N. C. utilized grape production, and  $BANC$  = bearing acreage of North Carolina grapes.

Projections for the population ( $LPOP$ ), income ( $LDPY$ ), California prices ( $LDPCA$ ), and New York prices ( $LDPNY$ ) were obtained as described in the text. Values of these variables for 1994-1996 used to generate projections for values of  $LDPNC$  equal to 4.76357, 4.68183, and 4.62597 corresponding to yields of 1.8, 2.57, and 3.34 tons per acre are as follows:

1. Low Demand

<u>YR</u>	<u>LPOP</u>	<u>LDPY</u>	<u>LDPCA</u>	<u>LDPNY</u>
94	9.76465	18.2014	2.90375	3.84713
95	9.77665	18.2282	2.86035	3.82159
96	9.78865	18.2675	2.81915	3.79669

2. Medium Demand

<u>YR</u>	<u>LPOP</u>	<u>LDPY</u>	<u>LDPCA</u>	<u>LDPNY</u>
94	9.76465	18.2728	3.50356	4.02048
95	9.77665	18.3049	3.49881	4.00611
96	9.78865	18.3489	3.49400	3.99172

3. High Demand

<u>YR</u>	<u>LPOP</u>	<u>LDPY</u>	<u>LDPCA</u>	<u>LDPNY</u>
94	9.76465	18.3442	4.01337	4.19382
95	9.77665	18.3815	4.13727	4.19062
96	9.78865	18.4304	4.16885	4.18675

Agricultural Research Service

North Carolina State University  
Raleigh, North Carolina

Ronald J. Kuhr  
Director of Research