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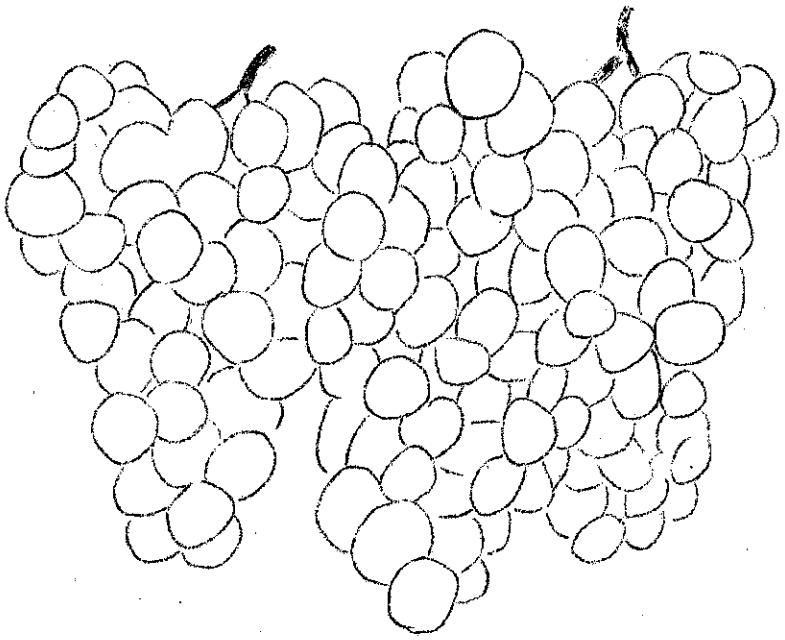
THE GRAPE INDUSTRY

IN

CHAUTAUQUA COUNTY, NEW YORK



Cost of Production Study, 1945-1947

Some Factors Affecting Costs and Returns
Trends in Production, Prices, and Utilization

M. J. Pickler and L. E. Slater

Department of Agricultural Economics and Farm Management
New York State College of Agriculture, Ithaca, New York

A. E. 669

April 1948

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Cost of Production Study

Grape growers in Chautauqua County developed an interest in obtaining factual information on practices and costs of producing grapes in that area in 1944. The cooperation of the Extension Staff at the State College of Agriculture at Ithaca was obtained through the efforts of assistant county agricultural agent, C. V. Flagg. Enterprise account books were prepared at the College and placed with grape growers by the county agent. Analysis of these records for 30 Chautauqua County farms in 1945 was made by T. E. Doak and reported in A. E. 548, Department of Agricultural Economics, New York State College of Agriculture, Ithaca, New York. Since the yield of grapes in 1945 was far below normal, it seemed desirable to continue to analyze such records for 3 years in order to obtain more reliable and typical information.

W. A. Chase, a graduate student in the Department of Agricultural Economics, summarized the 16 records that were kept in 1946 and used the information in a thesis for the Master of Science degree. His thesis also included information on trends and observations of the grape industry in Chautauqua County.

The authors have summarized the 13 records that were completed for 1947, and this publication presents the principal findings of the three-year study. The entire study was conducted under the general supervision of Professor M. C. Bond.

Farmers Who Cooperated in the Study:

Records Kept for One Year	Records Kept for Two Years	Records Kept for Three Years
Frank Aldrich	Cleon Barkman	Vincent Aldrich
Elwin Allen	Ferdinand Centner	Harold D. Deakin
Jim Blodgett	E. M. Dalrymple	L. M. Downer
Harry Centner	Stewart Dudley	John E. Hopkins and Son
Roger J. Corell	Arthur Flagg and Son	George Little
Charles R. Cunningham	Kirby Hayward, Jr.	Jay W. Persons
Charles Czeizinger	Leon H. Meeder	
Dewey Edler	Raymond E. Salhoff	
Richard Favro	W. L. Tanner	
John J. Hardenburg	Leonard J. Trump	
Francis Harroun	John N. Wolf	
A. A. Mattson		
Merritt Fruit Farms		
George Plank		
Karl T. Rosel		
George A. Skinner		
William Slatz		
Fred. C. Swartz		
Merle L. Wilkinson		

THE GRAPE INDUSTRY IN CHAUTAUQUA COUNTY, NEW YORK

By M. J. Pickler and L. E. Slater

Chautauqua County is located in the southwestern corner of New York State bordered on the south and west by Pennsylvania and on the north by Lake Erie. Most of the grapes in New York State are grown on slopes near large bodies of water where good air drainage and climatic protection are provided. In Chautauqua County the commercial grape area forms a narrow belt adjacent to Lake Erie. This is the most important grape-producing area in New York and accounts for more than one-third of the total grape production in the state. The principal grape varieties are Concord and Fredonia, and in recent years more than 95 per cent of the total crop has been used in the manufacture of grape juice.

COST OF PRODUCTION STUDY, 1945-1947

The information used in this study was obtained from enterprise account books kept by farmers. They recorded all cash receipts and expenses connected with the grape enterprise as they occurred during the season, as well as all labor used. Then at the end of each year the books were checked and completed by a representative from the College of Agriculture. In a few cases where all information had not been recorded, the records were completed by the survey method.

The year 1945 was one of abnormally low yields, and the costs in that year were not representative. It became apparent early in the season that there would be a crop failure, and farmers curtailed their operations accordingly. However, yields were up again in 1946 and 1947, and the records showed an average yield of about 2.3 tons per acre in each of these years, compared with .7 tons in 1945.

Summary of Costs

Costs per acre increased during the three-year period (table 1). From the low cost in 1945 of about $105 per acre, costs climbed to more than $160 in 1946 and $166 in 1947. The main increase was in the cost of man labor. Cost per ton was extremely high in 1945 because of the low yield even though the cost per acre was low. The 1947 cost per ton was higher than in 1946 because of an increased cost per acre as well as slightly lower average yields on the farms studied.

Spraying costs increased markedly during this period. As computed in this study, spraying costs include only the cost of the materials on farms where spraying was done by the farm labor force. The costs of labor and equipment on these farms were included under the labor and equipment headings. On the farms where spraying was hired, spraying costs include the complete cost of the operation. An increased use of hired spraying equipment during the latter part of the period tended to make spray costs, as computed here, higher. However, there was also a large increase in the amount of spraying done on the farms studied. Only 30 per cent of the farms studied in 1945 sprayed their vineyards, compared with 56 per cent in 1946 and 100 per cent in 1947.

Table 1. COST OF GROWING AND HARVESTING GRAPES
Selected Farms in Chautauqua County, New York, 1945-1947

	1945	1946	1947
Number of Farms	30	16	13
	Growing and Harvesting Costs		
Man Labor	$47.75	$67.82	$78.80
Power and Equipment	13.68	23.81	16.82
Spray	1.16	4.65	13.11
Land	22.07	27.25	25.37
Fertilizer, Manure, Cover Crop and Lime	11.02	16.94	15.21
Miscellaneous	9.83	20.13	16.97
Total Cost per Acre	$105.51	$160.60	$166.28
Yield per Acre	0.7 tons	2.4 tons	2.3 tons
Cost per Ton	$144.53	$66.92	$72.30

Use of land was charged at 5 per cent of the value as estimated by the grower except where land was rented, in which case the actual rent paid was used. Other land charges were taxes paid and depreciation on vines and trellis. Some farmers did not figure any depreciation, since they expected the vineyards to last indefinitely with proper replacements of vines and trellis.

Miscellaneous costs include items purchased for the enterprise, such as posts, wire and replacement vines. Also included under this heading is a charge for interest on the money invested in growing costs.

Man Labor

Labor was the largest single item of expense in the production of grapes, amounting to 47 per cent of the total cost in 1947 and slightly less in the previous two years. The total hours per acre were about the same for 1946 and 1947, 97 and 98 hours respectively (table 2). In 1945 only 74 hours of labor were used per acre, primarily because the short crop cut picking time down substantially. Slightly more time was spent on pruning, brush disposal, trellis work and tying in 1947 than in the other two years, but for the most part, the amount of labor used on the various growing jobs did not vary much from year to year. Picking labor was, of course, proportional to the size of crop.

Table 2. MAN LABOR USED IN PRODUCING GRAPES
Selected Farms in Chautauqua County, New York, 1945-1947

	1945	1946	1947
Number of Farms	30	16	13
Operation Performed	Hours per Acre		
Growing:			
Pruning	11.9	11.8	13.8
Brush Disposal	7.0	6.4	8.1
Trellis Work	4.3	5.8	7.1
Tying	8.2	8.1	9.6
Tilling	14.7	16.3	14.6
Fertilizing and Manuring	2.9	3.4	2.5
Miscellaneous	3.6	9.1	3.3
Total Growing Labor	52.6	60.9	59.0
Harvesting:			
Picking	17.7	33.0	31.9
Other Harvest Labor	3.3	3.1	7.2
Total Harvesting	21.0	36.1	39.1
Total Labor	73.6	97.0	98.1

Power and Equipment Costs

Power and equipment costs varied considerably over the three-year period, with the cost in 1946 much higher than in either of the other two years (table 3). The farmers who cooperated in the study recorded the number of hours (or miles) that horses, tractors, trucks and autos were used on the grape enterprise. The cost of these items was computed by using average costs per hour (or per mile) on New York cost account farms (see appendix). The wide variation in truck and auto costs is primarily due to the differences in the number of miles recorded in the account books.

Other equipment costs were computed for each item of equipment used on grapes. These costs include repairs, depreciation, insurance, housing charges and interest. The total cost of using each piece of equipment was computed and prorated to the grape enterprise and the other uses on the farm.

The cost per hour of horse work has been steadily increasing because farmers in general are using horses less with the result that almost the same total expense in keeping them is spread over fewer

hours of use. In 1945 the rate used was 32 cents per hour; in 1946, 44 cents; and in 1947, 57 cents. The hours of horse use per acre declined enough during the period of the study to offset most of the increased cost per hour, and the cost of horse labor per acre increased very little. On the other hand, tractor costs per hour increased very little during the three-year period, but an increase in hours of use on the grape enterprise caused an increase in tractor costs per acre. Fifty-four per cent of the farmers in 1947 used horse labor, whereas 85 per cent of the farmers used tractors. Power costs were higher on the farms where both tractors and horses were used than on farms where tractors furnished the only power. Mechanization in grapes, as in other farm enterprises, is profitable where the size of business warrants the necessary investment.

Table 3. POWER AND EQUIPMENT COSTS
Selected Chautauqua County Grape Enterprises, New York
1945-1947

	1945	1946	1947
Number of Farms	30	16	13
		Cost per Acre	
Horse Labor	$4.50	$8.62	$5.78
Tractor Costs	4.05	5.50	6.61
Truck Costs	.27	1.37	.33
Auto Costs	.43	3.00	.05
Machinery Costs	4.43	5.32	4.05
Total	$13.68	$23.81	$16.82

Soil Improvement Practices

The expense involved in soil improvement practices showed very little change from year to year except in 1945 when farmers applied less commercial fertilizer after they realized that the crop would be short (table 4). For the years 1946 and 1947, costs for soil improvements were about $16 per acre.

Table 4. COST PER ACRE OF SOIL IMPROVEMENT PRACTICES
Selected Chautauqua County Grape Enterprises, New York
1945-1947

	1945	1946	1947
Number of Farms	30	16	13
		Cost per Acre	
Fertilizer*	$4.53	$7.67	$6.56
Lime	--	--	.55
Manure	5.84	7.81	7.33
Cover Crop	.65	1.46	.77
Total	$11.02	$16.94	$15.21

* Includes lime in 1945 and 1946

Methods of Selling and Pricing Grapes

In recent years a large part of the Chautauqua County grape crop has been handled by cooperative grape juice plants. The grape growers have formed four cooperative associations, one of which is reported to have handled 75 to 90 per cent of the grapes produced in the area. There are also several private companies in the area that manufacture grape juice, jelly and other products, and some grapes for fresh market are purchased by truckers and local buyers.

In the years of this study, only a few grapes were sold for a definite cash price at harvest. The cooperative associations followed the practice of making a down-payment when grapes were delivered and additional payments during the grape juice marketing season. Some of the private companies also had "profit-sharing" agreements with producers under which the growers received additional payments as the juice was sold.

For the year 1946, the last year in which the final prices were available in this study, there was extreme variation in prices received among growers. Prices ranged from a high of $195 per ton to a low of $135 per ton. The highest prices in 1946 were received by growers who sold their grapes to cooperative grape juice plants. The prices paid by some of the cooperatives were not paid entirely in cash, however. Part of the cash was retained by the associations to provide necessary capital and certificates of indebtedness were issued to the growers.

Since the number of records in this study was very small and showed such extreme variation in prices received by growers, it was thought that the average price received by producers included in the study would not be representative of the area. For this reason, in computing profits and returns, the price used was the New York State average price as reported by the U. S. Department of Agriculture, Bureau of Agricultural Economics.

Returns for Labor on Grapes

Prices for the three years studied were very high, the highest since 1921 (figure 6). With the good yields obtained in 1946 and 1947, profits were high, $230 per acre in 1946 and $105 per acre in 1947 (table 5). In 1945, however, the average yield per acre was too low to show any profit on the enterprise in spite of a favorable price. The loss was not great, even in this year, amounting to a little more than $5 per acre. Returns per hour of labor were highest in 1946 when the highest price was combined with the highest yield. In this year growers received returns of $3.08 for each hour of labor on grapes, compared with 58 cents in 1945 and $1.87 in 1947.

Table 5. PROFIT PER ACRE AND RETURN PER HOUR OF LABOR ON GRAPES Calculated on Basis of Average Prices in New York State and Production Costs on Selected Farms in Chautauqua County, New York, 1945-1947

	1945	1946	1947
Average Price per Ton 1/	$143.00	$163.00	$118.00
Average Yield per Acre on Farms Studied (tons)	0.7	2.4	2.3
Average Receipts per Acre (on basis of N. Y. average price)	$100.10	$391.20	$271.40
Average Total Cost per Acre 2/	105.51	160.60	166.28
Profit per Acre	$ -5.41	$230.60	$105.12
Cost of Labor per Acre 2/	47.75	67.82	78.80
Labor Returns per Acre	$ 42.34	$298.42	$183.92
Hours of Labor per Acre 3/	73.6	97.0	98.1
Returns per Hour of Labor	$ .58	$3.08	$1.87

1/ Average price of grapes in New York State as reported by the Bureau of Agricultural Economics, USDA.
2/ See Table No. 1
3/ See Table No. 2

FACTORS AFFECTING COSTS AND RETURNS

Yield per Acre

High yields are of primary importance in getting a high income from the grape enterprise. The farms studied in 1946 and 1947, two years in which yields were about normal, show the importance of this factor. On farms where yields were above average, receipts per acre were $354, figured at the 1947 State average price of $118 per ton. On the farms where yields were below average, receipts per acre were only $212 (table 6). With this much spread between the two yield groups, farmers with low yields could afford to spend extra money on production to increase yields and take advantage of this $142 per acre difference in income.

At the 1946 State average price of $163 per ton, the difference in receipts per acre between the high-yielding and low-yielding vineyards is increased to $196.

Years of high prices such as 1946 and 1947 emphasize the importance of high yields. Yet, even at the 1930-39 average price of only $30.90 per ton, the difference in income between high-yielding and low-yielding vineyards amounts to $37 per acre.

Table 6. RELATION OF GRAPE YIELDS TO RECEIPTS PER ACRE
Selected Chautauqua County Grape Enterprises, New York
1946 and 1947

Yield per Acre	No. of Farms	Average Yield per Acre (tons)	Average Receipts per Acre at 1947 Price of $118 per Ton *	Average Receipts per Acre at 1946 Price of $163 per Ton *	Average Receipts per Acre at 1930-'39 Average Price of $30.90 per Ton *
Less than 2.3 tons	15	1.8	$212	$293	$56
2.3 tons or more	14	3.0	354	489	93
All farms	29	2.3	271	375	71

* Average prices in New York State as reported by the Bureau of Agricultural Economics, USDA.

Growing Labor per Acre

Yields varied in relation to the amount of growing labor per acre on the 13 farms studied in 1947 (table 7). The farms were

divided into two groups according to the amount of labor used per acre in growing operations. On the farms where less than the average amount of labor per acre was used, growing labor averaged about 47 hours per acre and the average yield per acre was 1.9 tons. Where more than the average amount of labor per acre was used, growing labor averaged 69 hours per acre and the average yield was 2.8 tons. The group of farmers that used more labor and obtained higher yields spent more time on every operation except spraying, and this can be accounted for by the fact that on a number of these farms spraying was hired.

The most important differences were in pruning, brush removal, and tying, indicating that time spent in proper care of the vines was important in getting higher-than-average yields. During this period, labor was the most expensive cost item, and economical use of labor was important. It was also essential, however, that the vineyards be properly cared for to obtain highest yields. With the high prices that prevailed in these years, the additional labor used on the farms where yields were highest received a high return. In years when prices are low, this additional labor would receive a much lower return.

Table 7. RELATION OF HOURS OF GROWING LABOR PER ACRE TO GRAPE YIELDS
13 Chautauqua County Grape Enterprises, New York, 1947

	Less than 55 Hours per Acre	More than 55 Hours per Acre
Number of Farms	6	7
Operation Performed	Hours per Acre	
Pruning	12.1	15.4
Brush Removal	5.3	10.5
Trellis Work	5.5	8.4
Tying	6.7	12.2
Tilling	13.2	15.9
Fertilizing	.5	1.6
Manuring	1.3	1.6
Spraying	1.1	.9
Other Growing Labor	1.8	2.7
Total Growing Labor	47.5 hours	69.2 hours
Average Yield	1.9 tons	2.8 tons

Other Factors Affecting Costs and Returns

The small number of records obtained in this study was not sufficient to permit an accurate analysis of the factors which affect

costs and returns in the grape enterprise. Previous studies, however, have shown that size of enterprise and soil type are also important factors which influence profit.

Size of business--In a study of Chautauqua County grape enterprises made by Professor G. P. Scoville in 1928 1/, tillage costs per acre of grapes were found to be lowest on the farms with the largest acreage in grapes (table 8). The reduced cost on large farms resulted from more efficient use of labor, horses and equipment. Tillage costs per acre were 40 per cent less on the largest farms than on the smallest ones. With an increased use of specialized equipment, the importance of size of business becomes more pronounced. The grape growers with small acreages are able to obtain some of the advantages of large size by hiring machines such as sprayers rather than owning them.

Table 8. RELATION BETWEEN SIZE OF FARM AND TILLAGE COSTS PER ACRE 211 Vineyards, Chautauqua County, New York and Erie County, Pennsylvania, 1928 2/

Crop Acreage		Vineyards	Acreage in Vineyard	Tillage Cost Per Acre of Vineyard
Range	Average			
- acres -		- number -	- acres -	- dollars -
Less than 25	15	51	10	23
25 to 49	36	81	18	18
50 to 74	62	46	29	16
75 and more	111	33	45	14

Vineyard soil--Soil types on which grapes are grown in the Chautauqua Belt are varied, ranging from coarse gravel soils to clays. In the same study by Professor Scoville, it was found that the highest-yielding vineyards were on Dunkirk gravelly loam, and vineyards on Dunkirk silty clay loam and Volusia silt loam produced about one-third less grapes per acre (table 9). The poorest-yielding vineyards were on Dunkirk and Volusia clays. The difference in yield was largely accounted for by differences in drainage, since in the heavier, more compact soils, water drains off too slowly to produce a maximum crop.

1/ Scoville, G. P., An Economic Study of Grape Farms in Eastern United States, Part I Production, Cornell University, Agr. Exp. Sta., Bulletin No. 605, 1934

2/ Ibid. Pg. 29

Table 9. RELATION OF SOIL TO PRODUCTION, 1928-1932
84 Chautauqua County Farms 3/

Year	Dunkirk Gravelly Loam	Dunkirk Silty Clay Loam and Volusia Silt Loam	Volusia Clay Dunkirk Clay Dunkirk Gravel
		Yield per Acre (tons)	
1928	2.03	1.55	1.39
1929	2.14	1.56	1.33
1930	1.96	1.38	1.13
1931	3.07	2.43	1.97
1932	1.89	1.57	1.23
Average	2.22	1.70	1.41

TRENDS IN PRODUCTION, PRICES AND UTILIZATION

In choosing varieties and controlling insects and diseases, a grape grower controls the quality of his product, but supply and demand factors are largely beyond his control. An understanding of the price-making forces does, however, provide a basis for many decisions regarding production.

In addition to quality factors, grape prices are affected by changes in (1) the general price level, (2) the amount of grapes produced, and (3) the use that is made of grapes (or the demand for grapes relative to other products).

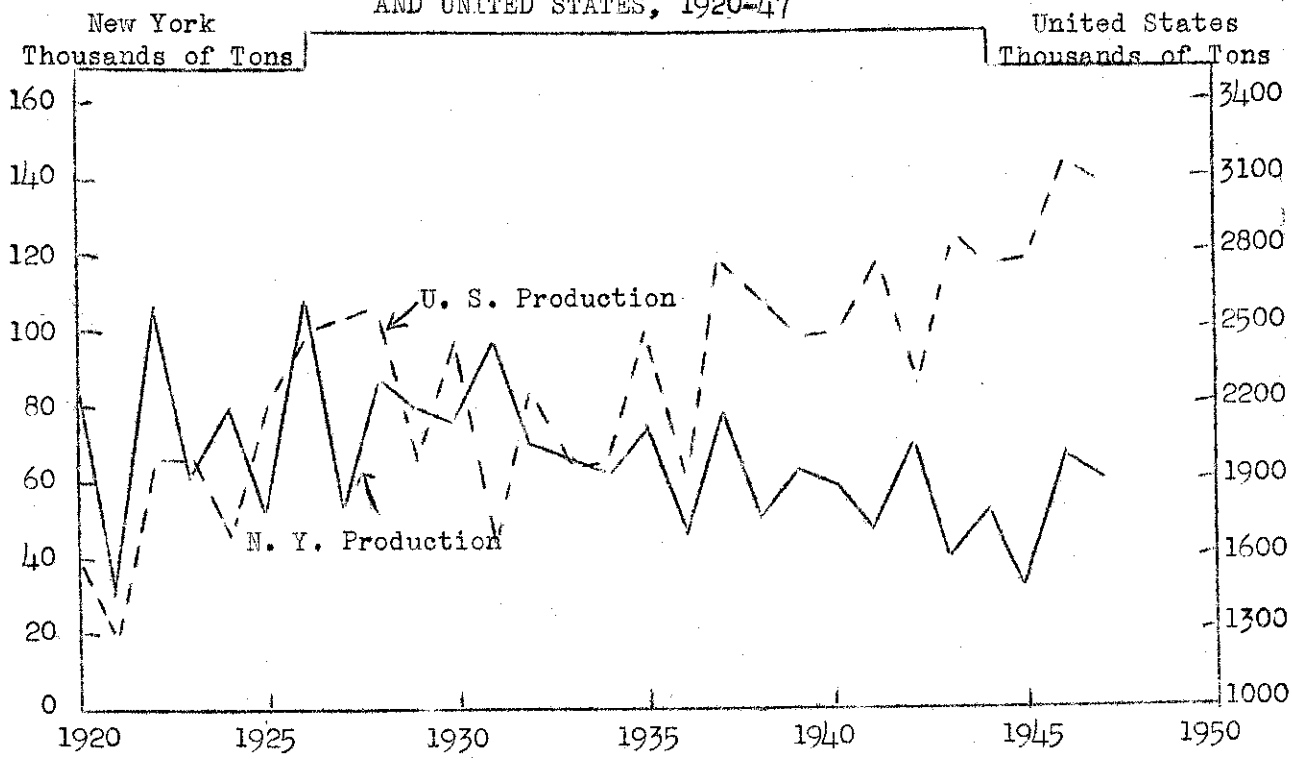
A complete analysis of these factors is not possible here. However, an attempt has been made to bring together basic statistics of production, utilization and prices and to describe some of the major trends that affect the Chautauqua County grape industry.

Production Trends

Total grape production in the United States has fluctuated rather violently from year to year but has tended upward in the period since 1920 when annual statistics of production were first available. The increase has been especially pronounced since 1930. In contrast, grape production in New York State remained fairly constant from 1920 until about 1930 and has since declined markedly (figure 1). New York State accounted for more than 4 per cent of the total United States grape production in the five-year period, 1920-1924 but only 1.7 per cent in the five-year period, 1943-1947.

3/ Ibid., pg. 14

Figure 1. GRAPE PRODUCTION, NEW YORK AND UNITED STATES, 1920-47



Source: See figures and references in Table 13.

California accounts for more than 90 per cent of the total United States grape production. Production in that state has been increasing but for the most part the grapes produced in California do not compete directly with those produced in Chautauqua County. More direct competition with Chautauqua County grapes is provided by the states of Washington, Pennsylvania, Michigan, Ohio and Arkansas. Among these states, production has been declining in Pennsylvania, Michigan and Ohio, about constant in Arkansas and increasing very rapidly in Washington (figure 2). There are probably a number of reasons for these trends. It is important to note, however, that grape prices, which have apparently been low enough to discourage production in New York State, have encouraged production in some other areas.

Within New York State grape production has declined more rapidly in Chautauqua County than in the other parts of the state (table 10). Chautauqua County accounted for more than 50 per cent of the total grape production in New York State in 1899 and 1909, but accounted for less than 40 per cent of the total state production in 1939 and 1944. Total grape production in Chautauqua County in 1939 and 1944 was only about one-third as large as in 1899 and 1909.

Figure 2. GRAPE PRODUCTION IN PRINCIPAL COMPETING STATES
1934-1947

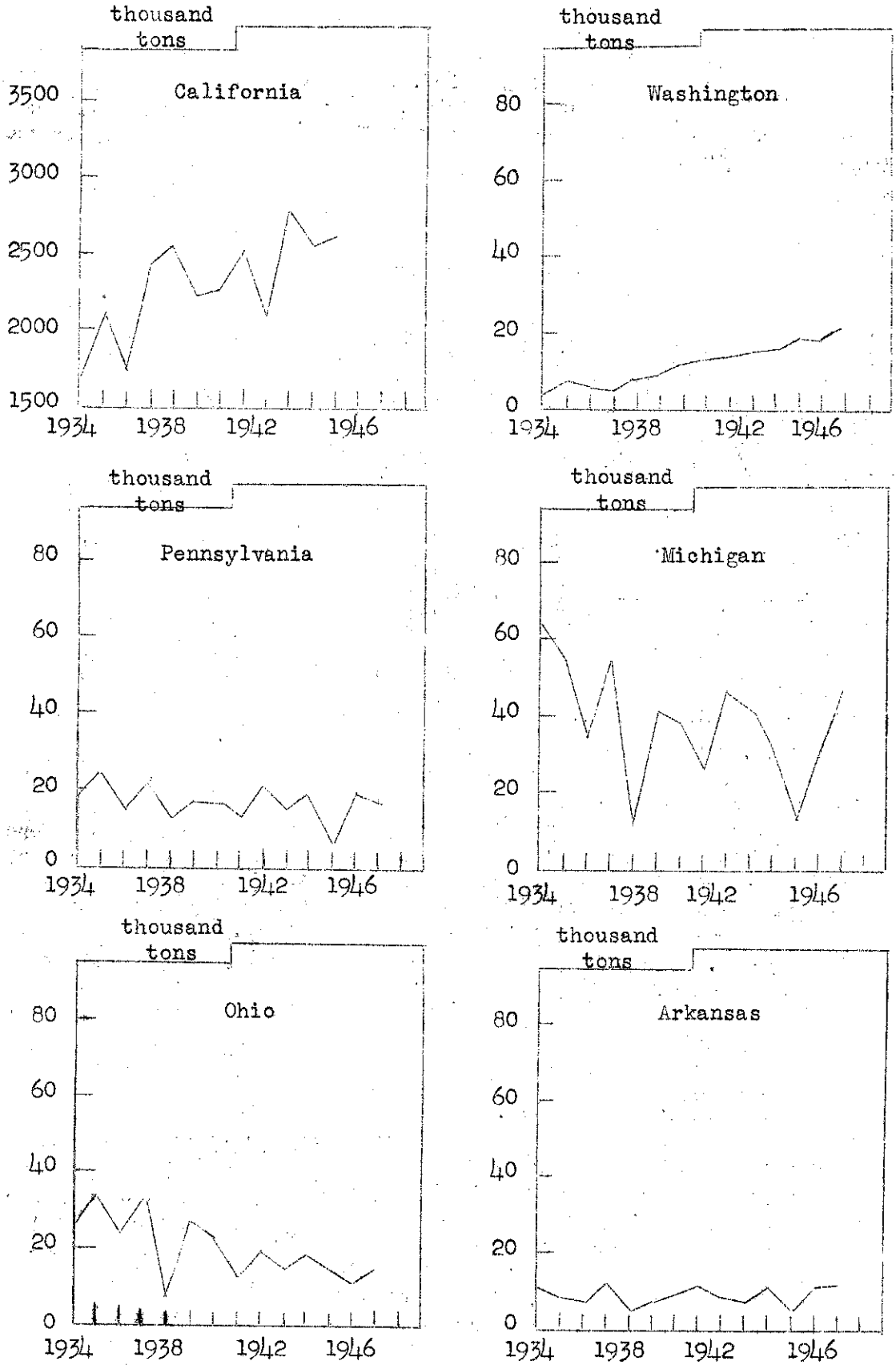


Table 10. PRODUCTION OF GRAPES, NEW YORK STATE AND CHAUTAUQUA COUNTY, Census Years, 1899-1944

Year	New York State	Chautauqua County	
	tons	tons	% of N. Y. Production
1899	123,849.03	63,920.95	51.6
1909	126,503.18	66,014.97	52.2
1919	76,241.35	34,747.17	45.6
1929	77,167.40	35,589.08	46.1
1939	56,840.14	21,217.59	37.3
1944	48,867.11	18,383.20	37.6

Source: U. S. Census

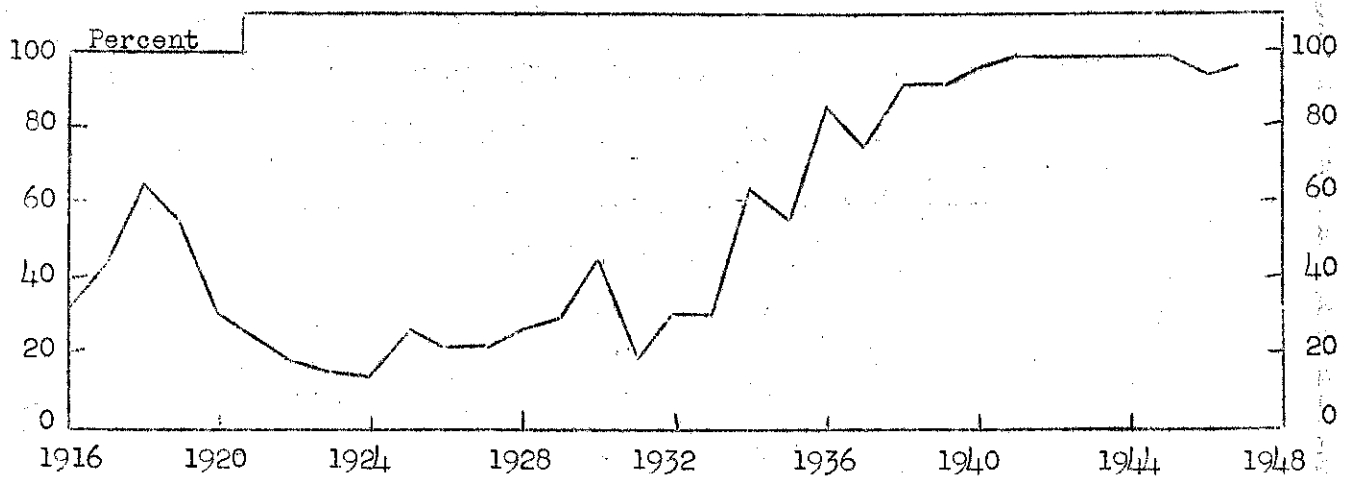
Utilization of Grapes in Chautauqua-Erie Belt

In the period from 1924 to 1941 the proportion of grapes in the Chautauqua-Erie Belt used for making juice increased from less than 20 per cent to almost 100 per cent (figure 3). Most of this increase occurred in the 6-year period from 1933 to 1938. In each year from 1938 to 1947, more than 90 per cent of the grapes grown in this area were used for juice.

In spite of the recent increase in the importance of grape juice in the Chautauqua-Erie Grape Belt, this is not a new use for grapes in this area. During the first World War period, there were two years in which more than half of the grapes produced in this area were used for juice. The proportion declined after the war, however, and reached a low point in 1923 and 1924, when only 16 per cent of the area's grape production was used for juice.

Source of information for Figure 2:
1934-38--Grapes: Utilization of Production, U. S. Total and Selected States, (mimeographed), USDA, BAE, Crop Reporting Board, March, 1944.
1939-45--Fruits (13 noncitrus), Production and Utilization, 1934-46, USDA, BAE, Crop Reporting Board, July, 1947.
1946-47--Production, Farm Disposition and Value, Principal Fruits and Tree Nuts, 1946-47, USDA, BAE, Crop Reporting Board, Feb., 1948.

Figure 3. PER CENT OF GRAPES USED BY JUICE PLANTS
Chautauqua-Erie Grape Belt, 1916-47



Source: Adapted from information collected and published by "The Grape Belt and Chautauqua Farmer", (newspaper), Dunkirk, N. Y., issue of February 24, 1948.

Utilization of Grapes in New York State

Figures showing the utilization of grapes in New York State are available for the years from 1934 to 1946 (table 11).

Table 11. GRAPES: UTILIZATION OF PRODUCTION, NEW YORK, 1934-1946

Season	Total Production	Total Amount Sold	Fresh Sales	Crushed for Juice, Lake Erie Area	Crushed for Juice, Wine, Etc., Other Areas
			- tons -		
1934	60,800	58,460	33,609	15,408	9,443
1935	77,500	75,380	44,899	19,494	10,987
1936	44,400	42,510	17,526	17,179	7,805
1937	78,900	71,140	33,793	22,800	14,547
1938	50,000	48,340	18,228	18,182	11,930
1939	61,100	59,520	16,089	24,115	19,316
1940	59,800	55,870	8,377	23,174	24,319
1941	47,600	46,120	6,700	22,094	17,326
1942	69,600	68,000	9,594	29,067	29,339
1943	39,200	37,670	4,350	15,880	17,440
1944	51,600	49,960	6,430	20,760	22,770
1945	31,300	29,680	2,860	11,700	15,120
1946	64,500	62,880	6,880	29,600	26,400

Source: 1934-38--Grapes: Utilization of Production, U. S. Total and Selected States, USDA, BAE, Crop Reporting Board, March, 1944.
1939-46--Fruits (13 noncitrus), Production and Utilization, 1934-46, USDA, BAE, Crop Reporting Board, July, 1947.

In the 13-year period from 1934 to 1946, the utilization of New York grapes has changed very markedly. In 1934, 57 per cent of the grapes sold in the state were marketed fresh for table purposes compared with only 11 per cent in 1946. In the Lake Erie area of the state, the quantity of grapes crushed for juice almost doubled in this period. In other parts of the state, the crushing of grapes for juice, wine and other purposes increased even more rapidly than in the Lake Erie area. Except for 1943 and 1945 when grape yields were low, from 40,000 to 60,000 tons of grapes have been crushed in New York State each year from 1939 to 1946.

Grape Juice Pack and Sales

The total grape juice pack in the United States has varied from a low of 1 million cases to a high of 3.3 million cases in the years from 1934 to 1946 (table 12).

Table 12. GRAPE JUICE PACK, U. S. AND CHAUTAUQUA COUNTY Crop Years, 1934-1946

Crop Year	Pack		Chautauqua County Pack as % of Total U. S. Pack
	United States	Chautauqua County	
	- millions of cases - (basis 24 #2 cans)		%
1934	1.0	0.7	70
1935	1.2	0.9	75
1936	1.4	0.8	57
1937	1.8	1.1	61
1938	2.5	0.8	32
1939	2.5	1.1	44
1940	2.5	1.1	44
1941	2.3	1.0	43
1942	2.9	1.4	48
1943	1.6	0.7	44
1944	2.0	1.0	50
1945	1.5	0.6	40
1946	3.3	1.4	42

Source: U. S. Pack--"Fruit and Vegetable Canning Industries, 1934-45, Production and Wholesale Distribution, Industrial Series No. 15", U. S. Dept. of Commerce, Bureau of Foreign and Domestic Commerce, 1945, pg. 79 also "Industry Report, Canned Fruits and Vegetables", U. S. Dept. of Commerce, Office of Domestic Commerce, bimonthly, May, 1947.
Chautauqua County Pack--calculated by converting tons of grapes crushed for juice in Lake Erie area of New York State (see Table 11) to equivalent cases of grape juice. This calculation was based on 180 gallons or 46.7 cases of 24 #2 cans of juice per ton of grapes.

The 1946 grape juice pack of 3.3 million cases was the largest during the years for which figures are available, 400,000 cases larger than the previous record in 1942. Figures on grape juice production are not available prior to 1934 and were discontinued, at least temporarily, in 1947. Production increased at a rapid rate from 1934 to 1942. The 1943 and 1945 crops of grapes were short in New York State and the demand for grapes for fresh market and for wine was large. During these years, juice production was low but with the large crop in 1946, a record quantity of juice was packed.

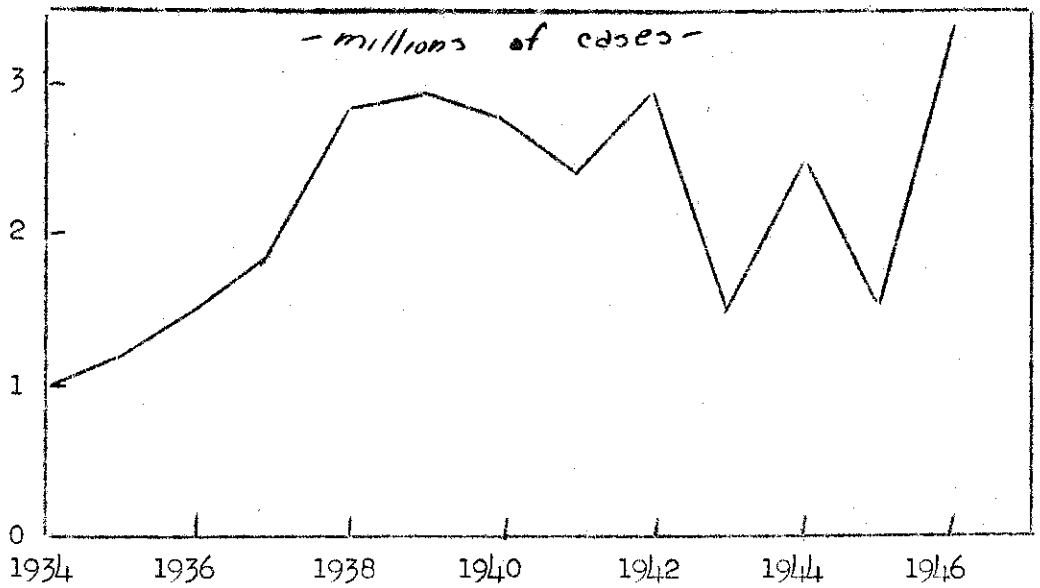
Figures showing the actual pack of grape juice in Chautauqua County are not available but the amount of grapes crushed for juice gives a good indication of the cases of juice that were packed. From such information it is apparent that Chautauqua County has accounted for a large proportion of the total grape juice pack in the United States. During the 13 years from 1934 to 1946, the proportion of the total United States pack of grape juice that was packed in Chautauqua County varied from a high of 70 per cent in 1934 to a low of 32 per cent in 1938. Much of the variation in the importance of Chautauqua County has resulted from changes in the yield of grapes in different areas.

Since Chautauqua County accounts for such a large proportion of the total United States pack of grape juice, changes in the demand for grape juice are of considerable importance to this area. Consumer incomes and purchasing power have been unusually high during the war and post-war years, and sales of grape juice have also been high. A decline in consumer purchasing power would probably curtail consumer purchases of grape juice somewhat and would have an important effect on the grape industry of Chautauqua County.

Sales of grape juice to retail distributors increased from 1 million cases in 1934 to 2.9 million cases in 1939 (figure 4). This increase occurred prior to the war years but in a period when economic conditions were improving and consumer incomes were relatively good. The reduction in sales of grape juice to retail distributors in 1943 and 1945 resulted from a shortage of juice and did not indicate any change in consumer demand. It has previously been pointed out that the crops of juice grapes were small in these years. Increased production of grape juice in 1946 resulted in record sales to retail distributors and indicated that a large demand for grape juice still existed at that time.

While records of sales of grape juice to retailers are not available prior to 1934, it is obvious from figures showing the proportion of grapes used for juice (figure 3) that sales to retailers declined after World War I. Grape juice is more expensive than most other fruit juices and should probably be considered as a luxury product. Consumers obviously desire this product and have been willing to buy it at premium prices when their incomes were high. However, following World War I, when consumer purchasing power declined, staple food products, such as cereals, potatoes and meat, recieved first priority on the consumer's food dollar, and sales of grape juice declined.

Figure 4. SALES OF GRAPE JUICE TO RETAIL DISTRIBUTORS, U. S. Crop Years, 1934-1946



Source: same as information for U. S. pack in Table 12.

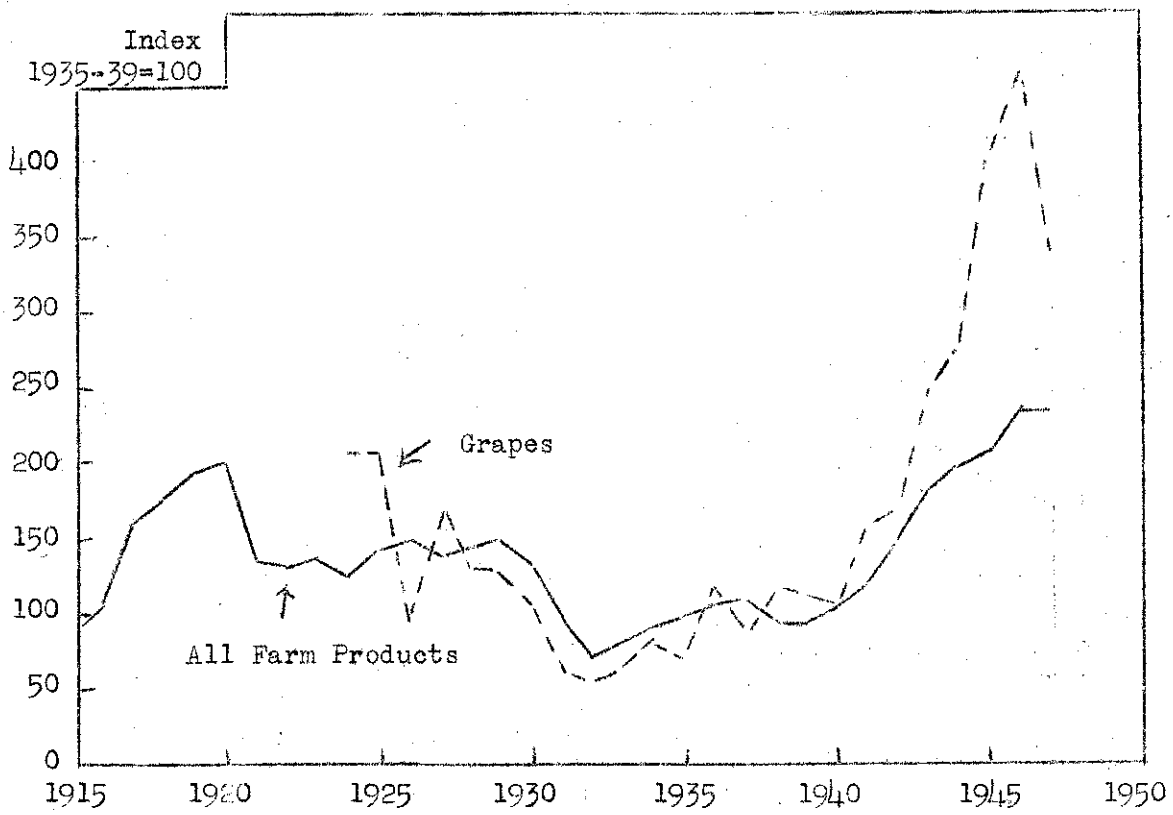
Trends in Grape Prices

From 1925 until the beginning of World War II, grape prices in New York State were never far out of line with the average price of all New York farm products (figure 5). Variations in grape production caused grape prices to fluctuate more than the average price of all farm products, but when the prices of other farm products were increasing or decreasing, grape prices tended to move in the same direction.

In the period from 1943 to 1947, however, grape prices were much higher than the average of all farm products. This was partially the result of short grape crops in 1943 and 1945, but grape prices were also high relative to most other farm products even in 1946 and 1947, when grape production was large. In 1947 grape prices were considerably lower than in 1946 but were still well above the average of other farm products.

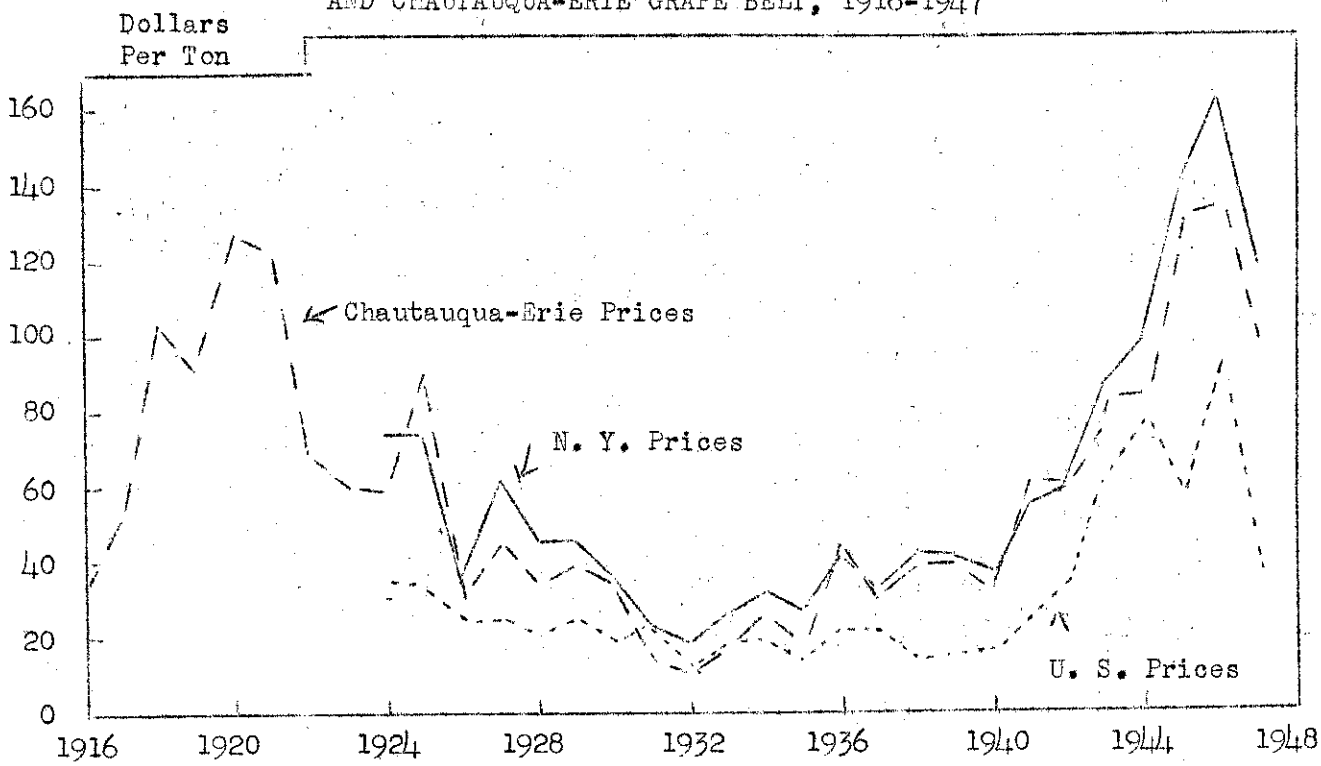
Grape prices in Chautauqua County have averaged about the same as for New York State as a whole and are available for a longer period. In the World War I period, grape prices in the Chautauqua-Erie Grape Belt increased rapidly, and in 1920 the average price for the area was $128 per ton compared with only $34 in 1916. After the war grape prices declined almost as rapidly as they had increased during the war, falling from a high of $128 in 1920 to $60 in 1923, and a low of $12 per ton in 1932 (figure 6).

Figure 5. NEW YORK FARM PRICES OF GRAPES AND OF ALL FARM PRODUCTS, 1915-47



Source: see following page.

Figure 6. PRICE PER TON OF GRAPES, U. S., N. Y. AND CHAUTAUQUA-ERIE GRAPE BELT, 1916-1947



Source: see following page.

In recent years grape prices in New York and the Chautauqua-Erie Grape Belt have also been high relative to average United States grape prices.

For the 5-year period, 1930 to 1934, grape prices in New York averaged $26.20 per ton, and the average price for the United States was $18.66, or 71 per cent as much as the New York price. From 1940 to 1944 grape prices in the United States were only 65 per cent as high as in New York, and the ratio declined to 57 per cent in 1946 and 33 per cent in 1947. In 1947 the average price per ton of grapes was $39.50 for the United States and $118 for New York (table 13).

The United States grape price is heavily weighted with grapes grown for raisins and for table use, and in 1946 and 1947 the price of grapes used for these purposes was relatively low.

SUMMARY

1. In spite of very low yields, Chautauqua County grape growers about broke even in 1945. In 1946 and 1947 when yields were normal, net incomes from grapes were high. On the farms included in this study, the return for labor on grapes averaged 3.08 per hour in 1946 and 1.87 in 1947.

2. From this and other studies of grape production, it is apparent that yield per acre has been one of the most important factors affecting the cost of producing grapes. Quality of vineyard soil and care given the vineyard are important factors affecting grape yields.

3. Efficiency in the use of labor and equipment and size of business have also been important factors affecting the cost of producing grapes. Large amounts of man labor have been used in grape production and with the high cost of labor in 1947, this one item accounted for 47 per cent of the total cost of producing and harvesting grapes.

4. In the period from 1934 to 1947, total grape production in the United States increased, while production in New York and Chautauqua County declined. In the states that compete most directly with Chautauqua County, production declined in Pennsylvania, Michigan and Ohio, remained about constant in Arkansas and increased rapidly in Washington.

Source of information, Figure 5:

Average price of N. Y. Farm Products:
"Farm Economics", Department of Agricultural Economics, New York State College of Agriculture, Cornell University, Ithaca, New York, monthly issues.

Grape prices:
See sources listed under Table 13.

Source of information, Figure 6:

U. S. and N. Y. Grape Prices:
See source listed under Table 13.

Chautauqua-Erie Grape Belt Prices:
Adapted from information collected and published by "The Grape Belt and Chautauqua Farmer", (newspaper), Dunkirk, New York, issue of February 24, 1948.

Table 13. GRAPES: PRODUCTION AND PRICES, NEW YORK AND U. S. 1920-1947

Year	Production		Price per Ton to Growers	
	New York	United States	New York	United States
	- thousands of tons -		$	$
1920	83.0	1,521.0		
1921	31.0	1,220.0		
1922	106.0	2,085.0		
1923	62.0	2,250.0		
1924	80.0	1,775.0	74.00	37.90
1925	51.8	2,200.0	75.00	33.10
1926	106.7	2,444.0	35.00	26.40
1927	51.5	2,592.0	61.00	27.00
1928	85.5	2,654.0	46.00	20.10
1929	79.5	2,085.0	46.00	27.30
1930	75.6	2,456.0	36.00	19.50
1931	97.4	1,646.0	22.00	22.60
1932	68.0	2,231.0	19.00	13.40
1933	64.8	1,939.0	24.00	18.00
1934	60.8	1,958.0	30.00	19.80
1935	77.5	2,477.4	25.00	14.90
1936	44.4	1,897.4	41.00	21.40
1937	78.9	2,726.2	31.00	20.40
1938	50.0	2,671.2	41.00	14.50
1939	61.1	2,449.0	40.00	15.90
1940	59.8	2,466.4	36.00	17.20
1941	47.6	2,724.9	55.00	24.10
1942	69.6	2,395.5	60.00	35.60
1943	39.2	2,965.2	89.00	62.20
1944	51.6	2,712.1	98.00	78.80
1945	31.3	2,781.4	143.00	59.30
1946	64.5	3,119.5	163.00	93.50
1947	60.0*	3,093.8*	118.00*	39.50*
1948				
1949				
1950				

Source: * Preliminary

Production:

1920-33--"Crop Production", USDA, BAE, Crop Reporting Board, annual summaries.

1934-38--"Grapes: Utilization of Production, U. S. Total and Selected States", USDA, BAE, Crop Reporting Board, (mimeographed), March, 1944.

1939-46--"Fruits (13 noncitrus), Production and Utilization, 1934-46", USDA, BAE, Crop Reporting Board, July, 1947.

1947--"Production, Farm Disposition and Value, Principal Fruits and Tree Nuts, 1946 and 1947 Seasons", USDA, BAE, Crop Reporting Board, February, 1948.

Prices:

1924-45--"Prices Received by Growers for Fruit and Nut Crops by Type of Sale and Utilization Group", USDA, BAE, January, 1945.

1946-47--"Production, Farm Disposition and Value, Principal Fruits and Tree Nuts, 1946 and 1947 Seasons", USDA, BAE, Crop Reporting Board, February, 1948.

5. The use of New York grapes for table purposes has declined rapidly in recent years, and more than 90 per cent of the grapes grown in the Chautauqua-Erie Belt were used for juice in each year from 1938 to 1947. During World War I, the use of grapes for juice also increased rapidly in this area, but declined after the war.

6. Chautauqua County accounted for 40 to 50 per cent of the total United States pack of grape juice in the years from 1939 to 1946.

7. Grape juice production increased rapidly from 1934 to 1942 and a record pack of 3.3 million cases was reached in 1946.

8. Grape prices have fluctuated more than the average price of all farm products, especially in war periods. Following World War I grape prices in the Chautauqua-Erie Grape Belt declined from a high of $128 per ton in 1920 to $60 in 1923 and a low of $12 per ton in 1932. During World War II grape prices advanced much more rapidly than the average of all farm products.

9. In 1947 grape prices per ton averaged only one-third as much for the United States as for New York. In most other periods, United States prices have averaged at least two-thirds as much as the New York price.

10. Grape prices in Chautauqua County have tended to be high when the proportion of grapes used for juice was high and low when the proportion of grapes used for juice was low.

APPENDIX

Methods of Computing Grape Production Costs

Labor

Hired labor was charged at the rate paid where that figure was available. Otherwise, the average rate for all labor on the farm was used.

Operator's labor was charged according to his estimate of what his annual salary as a manager and laborer should be.

Horses

Horses were charged according to the latest available New York Cost Account figures.

1945 - 32 cents per hour
1946 - 44 cents per hour
1947 - 57 cents per hour

Trucks

Pickup Trucks	Other Trucks
1945 - 6.6 cents per mile	1945 - 8.7 cents per mile
1946 - 7 cents per mile	1946 - 7 cents per mile
1947 - 7 cents per mile	1947 - 9 cents per mile

Autos

1945 - 4 cents per mile
1946 and 1947 - 5 cents per mile

Tractors

Rates were based on the latest available New York Cost Account averages and varied according to hours of use for the year and size of the tractor in some cases.

1945

Tractors used less than 350 hours a year - 62 cents per hour.
Tractors used 350 - 650 hours a year - 49 cents per hour.
Tractors used more than 650 hours a year - 46 cents per hour.

1946

All tractors charged at 55 cents per hour.

1947

1 and 2 plow tractors:
- Used less than 500 hours - 60 cents per hour.
- Used 500 - 800 hours - 50 cents per hour.
- Used more than 800 hours - 45 cents per hour.

3 plow tractors:
- Used less than 500 hours - 68 cents per hour.
- Used 500 - 800 hours - 58 cents per hour.
- Used more than 800 hours - 53 cents per hour.

Depreciation

Depreciation was figured by dividing the cost of vines and trellis by the estimated life of the vineyard.