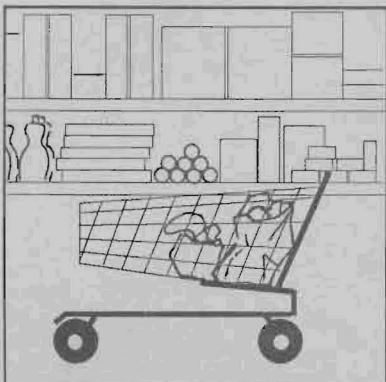
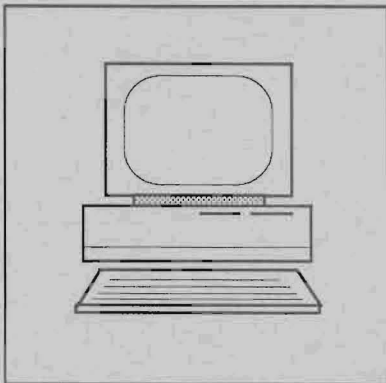
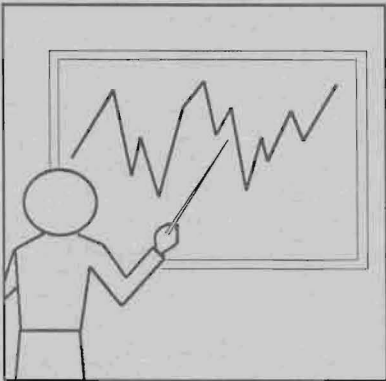
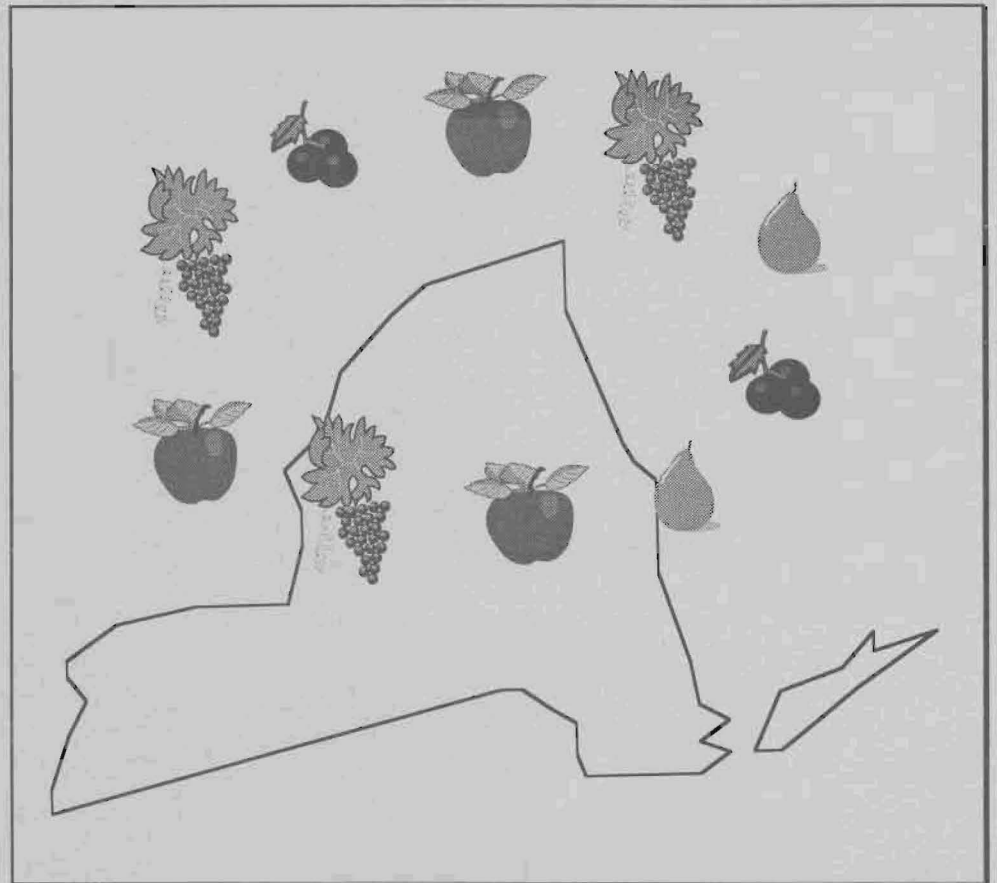


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Changing Patterns of Fruit and Vegetable Production in New York State, 1970-94



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Abstract

Changing Patterns of Fruit and Vegetable Production in New York State, 1970-94

Kristen Park, Edward W. McLaughlin, and Craig Kreider¹

The objectives of this report are to coordinate and summarize available data and provide an overview of relevant fruit and vegetable production levels and changes over approximately the last twenty-four years. The report reviews 1) the current and historic U.S. fruit and vegetable production levels, 2) the current and historic New York State fruit and vegetable production levels, and 3) the patterns of fruit and vegetable production within specific regions of New York State.

The information compiled in this report clearly shows that over the past twenty-four years, the fruit and vegetable industry in New York is losing ground to its competitors in other states. New York has witnessed a decline in its number of fruit and vegetable farms, acreage, production and, importantly, its share of U.S. production and value of that production over the past twenty-four years.

Reasons for these shifting comparative advantages enhancing production in the top five states are not entirely clear and require considerable further research. Some of the factors often cited to explain these shifting advantages include:

- ◆ favorable growing conditions in western and southern states,
- ◆ new technologies/hybrids more suitable to western and southern climates,
- ◆ marketing orientation of larger grower/shippers,
- ◆ water availability and relatively cheap cost in western U.S.,
- ◆ easier access to Pacific Rim export and import markets from western states,
- ◆ lack of urban development pressures in certain western and southern production regions,
- ◆ developments in transportation and refrigeration, and
- ◆ economies of scale in packing, shipping, selling.

In order to compete with other leading producers of fruits and vegetables, New York must understand the forces that are driving these production and marketing changes both in New York and its competitors. Some initial evidence suggests that competing states have been able to better meet changing buying requirements and therefore have flourished at the expense of New York State under this new environment.

¹ The authors would like to thank Gerald White for his comments and suggestions. His advice is greatly appreciated.

Table of Contents

I	Overview	1
II	U.S. Fruit and Vegetable Production	3
	Vegetables	3
	Fruits	9
III	New York Situation	14
	New York Vegetable Production	16
	New York Vegetable Farmland.....	18
	Individual New York Vegetable Crop Production-1995	21
	Individual New York Vegetable Crop Farmland.....	21
	New York Individual Crop Arrivals at Major Eastern Markets.....	26
	New York Fruit Production.....	28
	New York Orchards	29
	Individual New York Fruit Crop Production-1994.....	31
	Individual New York Fruit Crop Farmland	33
IV	Summary	37
	References.....	39

List of Tables

Table

1	Consumer Price Indexes of Selected Food Groups	2
2	Production and Value of Major U.S. Vegetables	4
3	Value of U.S. Commercial Fresh Vegetables	5
4	U.S. Fresh Vegetable Production, Value, Imports, Exports	6
5	U.S. Production of Individual Fresh Vegetable Crops	8
6	U.S. Fruit Production and Value	9
7	U.S. Commercial Fruit, Value of Production, Top Six States	11
8	Utilized U.S. Individual Fruit Production and Values	13
9	New York Fruit and Vegetable Farms and Acreage	14
10	Fresh Fruit and Vegetable Eastern Arrivals-Major Cities	15
11	U.S. Fresh Produce Arrivals	16
12	New York State Production and Value of Major Vegetable Crops	17
13	New York Share of U.S. Value of Production	18
14	New York Vegetable Farms	19
15	New York Vegetable Harvested Acres	19
16	New York Production and U.S. Share of Individual Fresh Vegetable Crops	22
17	New York Individual Vegetable Crop Farms and Acres	24
18	Percent of Fresh Fruit and Vegetable Arrivals in Major Eastern Cities from New York Producers	27
19	New York Production and U.S. Share of Fruit and Grape Production and Value	28
20	New York Orchards and Acres	31
21	New York Production and U.S. Share of Individual Fruit Crops	32
22	New York Individual Fruit Crop Orchards and Acres	35
23	Changes in New York Fruit and Vegetable Situation	37

List of Figures

Figure

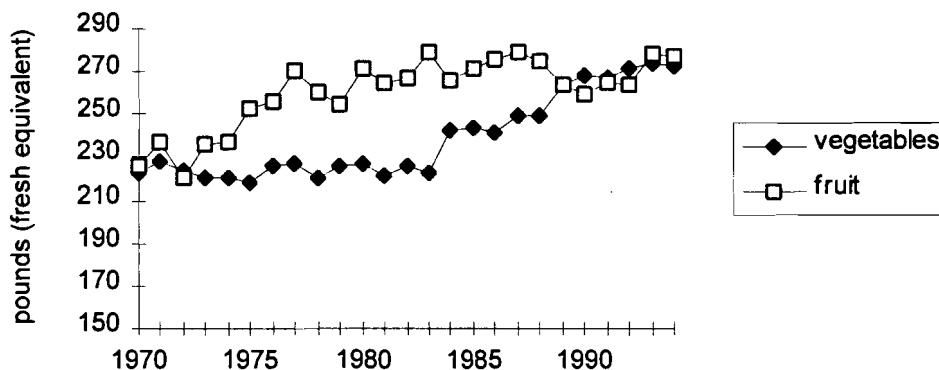
1	U.S. Per Capita Consumption of Fruits and Vegetables	1
2	U.S. Per Capita Consumption of Fresh and Processed Vegetables	3
3	Fresh Versus Processed Vegetable Production and Value.....	4
4	Value of U.S. Commercial Fresh Vegetables, Top Six States	6
5	U.S. Production and Value of Fresh Vegetables.....	7
6	U.S. Fruit Production and Value	9
7	U.S. Per Capita Consumption of Fresh and Processed Fruits.....	10
8	Utilized Production of Non-citrus Fruits	10
9	U.S. Value of Fruit Production, Top Six States	12
10	Top Six State's Share of U.S. Fruit Production Value	12
11	U.S. Fruit Production of Individual Crops	14
12	New York Fruit and Vegetable Farms and Acreage	15
13	New York Production and Value of Major Vegetable Crops	17
14	New York Share of U.S. Value and Production-Major Vegetables.....	18
15	New York Fruit and Vegetable Production Regions.....	20
16	Production Changes of Individual Vegetable Crops, New York Versus U.S.....	23
17	Changes in Farms and Harvested Acres of Individual Vegetable Crops.....	26
18	Percent of Arrivals in Major Eastern Cities from New York Producers	27
19	New York Production and Value of Fruits and Grapes	29
20	Fresh and Processed New York Fruit Production	30
21	New York Shares of U.S. Fruit Production.....	33
22	New York Fruit Farms and Acres	36

Changing Patterns of Fruit and Vegetable Production in New York State, 1970-1994

I Overview

Fruits and vegetables have become an increasingly important part of American consumers' diets. Nutritional and medical communities are touting them as being essential for a healthy diet using the 5-A Day Program to inform consumers about the benefits of eating produce. At the same time processors and retailers are making great strides in developing produce into more convenient forms and thus meeting consumers ever present demand for convenience. Since 1970 per capita consumption has increased overall (Figure 1). U.S. per capita fruit and vegetable consumption in 1970 was 225.6 and 222.3 pounds respectively. In 1994 these figures had increased to 277.1 and 276.0 pounds.

Figure 1
U.S. Per Capita Consumption of Fruits and Vegetables



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Yearbook, 1995* and *Vegetable and Specialties Situation and Outlook Yearbook, 1996*.

Fresh produce in particular has experienced increasing demand. Fresh fruit increased 26.7 percent from 79.4 pounds in 1970 to 100.6 pounds in 1994 (USDA 1995(a)). At the same time, per capita consumption of fresh vegetables increased 30.8 percent during the same period from 107.0 pounds in 1970 to 140.0 pounds in 1994 (USDA 1995(b)). As demand has increased, individual consumer spending for fresh fruits and vegetables also increased from \$194 per capita per year in 1986 to \$254 in 1992, a 30.9 percent rise (Fresh Trends 1994). In grocery stores, fresh produce sales have increased from \$20.7 billion in 1980 to \$39.6 billion in 1995 (*Supermarket Business* 1981, 1996).

Consumers have also increased their spending for produce relative to other foods. With a base of 100 in 1970, the Consumer Price Index in 1994 for vegetables grew to 437.3 and for fruits grew to 565.2 (Table 1). This compares to an overall CPI growth during the same period from 100 to 320.9 percent. Only cereals & bakery products showed similar growth in consumer prices with an increase of 439.4 in the Consumer Price Index in 1994. Other 1994 food CPI's were: meat at 312.6, poultry at 266.0 and dairy at 294.6.

Table 1
Consumer Price Indexes of Selected Food Groups
(base year=1970)

	Vegetables	Fruits	Meat	Poultry	Dairy	Cereal & Bakery	CPI-Total
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1994	437.3	565.2	312.6	266.0	294.6	439.4	320.9

Source: U.S. Department of Labor, Division of Labor Statistics, datafile, 1996.

These consumer trends have paralleled the increased emphasis retail management has placed on the produce department and partly explain why many retailers now use the produce department to entice customers into the store. In fact, the Food Marketing Institute found 99 percent of consumers surveyed indicated "quality produce" was "very" or "somewhat important" in choosing a grocery store in 1995 (Food Marketing Institute 1995).

Objectives of this report are to review:

- current and historic U.S. fruit and vegetable production levels
- current and historic New York State fruit and vegetable production levels
- the patterns of fruit and vegetable production within specific regions of New York State

First, one qualification is offered: identifying and reporting production statistics on fruit and vegetable production in the U.S., especially in specific counties or regions, is a challenging research task. The ability to report these statistics, particularly over a 10 to 25 year time period, is affected by several limitations:

- **Confidentiality:** With increasing production consolidation, some regions now involve such a limited number of producers that reporting production and acreage data would inherently infringe on their privacy and accordingly such data are not reported by the public data collection agencies.
- **Data collection/reporting changes:** Over time the U.S. Department of Agriculture (USDA) adjusts the format, number, and types of items reported as U.S. production shifts. This often causes statistics from different time periods to include changes in the quantity and quality of data. For example, in the 1970's all arrivals of fresh fruit and vegetables at major national terminal markets were reported as "unloads at 41 major markets". By the mid-1990's the report had been changed to fresh fruit and vegetable "arrivals" and the number of markets was reduced from 41 to 22.
- **Comparability:** The various USDA data sets contain different levels of specificity. For example, some statistics are available at county level, whereas others are only reported at the state level; some commodities such as vegetables separate fresh production from processed production whereas others such as fruit aggregate fresh and processed production at the national level. Finally, in general, federal budget reductions have resulted in less data collected on fewer commodities.

Given these inherent limitations, the following sections on U.S. and New York State fresh fruit and vegetable production attempt to coordinate and summarize the data available and provide an overview of the relevant production levels and changes over approximately the last twenty years.

II U.S. Fruit and Vegetable Production

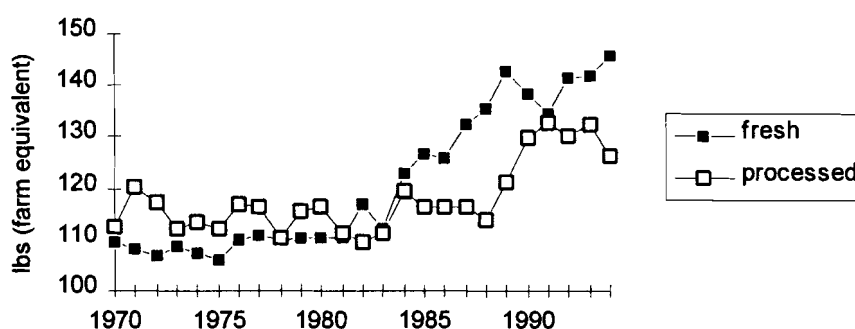
Production of all fruits and vegetables totaled 136.8 billion pounds in 1994, an increase of 60.9 percent, from 85.0 billion pounds in 1970. Value of farm production increased 375 percent during the same period, from \$3.4 billion to \$16.0 billion. In 1994 the three largest U.S. vegetable crops in terms of production were head lettuce, onions and watermelons, which accounted for 45 percent of the total fresh vegetable production. Tomatoes, head lettuce and onions were the three most valuable crops and accounted for 41 percent of the total fresh value. Oranges, grapes and apples were the largest fruit crops by weight, and they accounted for 68.8 percent of total U.S. fruit production.

Vegetables

Vegetable production can vary considerably from year to year due to weather, pests, planting and harvest conditions, etc. To help assess real changes in production trends that may be occurring in the last 25 years, production for the three years 1970 through 1972 was averaged and compared to the average production of the period 1992 through 1994. Between the periods 1970-72 and 1992-94 (the most recent year for which comprehensive data are available) production of the major vegetable crops, both fresh and processed, increased from 41.3 billion pounds to 68.6 billion pounds, an increase of 66.2 percent, while the product value increased from almost \$1.8 billion to \$7.7 billion or 326 percent (Table 2).

As presented earlier (see Figure 1) per capita consumption of total vegetables has also increased indicating that production has increased at a greater rate than the demands imposed by population growth. Maybe more interestingly, although both processed and fresh per capita consumption have increased since 1970, per capita consumption of fresh vegetables, especially since 1984, appears to be increasing at a greater rate than consumption of processed vegetables (Figure 2). Since 1984 per capita consumption of fresh vegetables has actually been greater than processed vegetables, a change from historical events.

Figure 2
U.S. Per Capita Consumption of Fresh and Processed Vegetables



Source: USDA, *Vegetables and Specialties Situation and Outlook Yearbook, 1996*.

The growth in the production of the major vegetables for the same period of time appears to be similarly divided between fresh and processed production. During 1970-72 and 1992-94 major fresh crops increased from 21.6 billion pounds to 37.7 billion pounds, an increase of 74.1 percent, while processed vegetables increased from 19.6 billion to 30.9 billion pounds, an increase of 57.5 percent (Table 2). It

remains to be seen whether the greater growth rate from 1970-72 to 1992-94 for fresh vegetables reflects an actual, sustained trend.

What is very evident is that the value for fresh vegetables has rapidly outpaced that for processed vegetables. In the same period market value for major fresh vegetables increased from \$1.4 billion in 1970 to \$6.4 billion in 1994, an increase of 373 percent (Table 2), while market value for processed vegetables only increased from \$0.4 billion to \$ 1.2 billion, 182 percent. Figure 3 illustrates the relationships between fresh versus processed volume and fresh versus processed value. In the later case, it is clear that over the past 24 years, the value of fresh production has grown relative to the value of processed products.

Table 2
Production and Value of Major U.S. Vegetables
1970-94

	Production			Value		
	fresh¹	processed²	total	fresh¹	processed²	total
	<i>--million lbs--</i>			<i>--\$million--</i>		
1970 - 72 avg. ³	21,631	19,644	41,276	1,356.8	441.6	1,798.5
1975	22,887	27,067	49,953	2,078.5	1,045.5	3,123.9
1980	25,431	21,613	47,044	3,063.8	874.1	3,938.0
1985	20,355	23,584	43,939	2,767.2	1,023.9	3,791.2
1990	24,052	30,890	54,942	3,549.4	1,331.5	4,880.9
1992 - 94 avg. ³	37,670	30,933	68,602	6,413.0	1,244.0	7,657.0

¹Major fresh vegetables include asparagus, broccoli, carrots, cauliflower, celery, sweet corn, head lettuce, onions, tomatoes, cabbage, spinach, cucumbers, artichokes, snap beans, brussel sprouts, eggplant, escarole, endive, garlic, bell peppers, leaf/romaine lettuce, watermelon, cantaloupe, honeydew.

²Major processed vegetables include snap beans, sweet corn, green peas, cucumbers, tomatoes, lima beans, spinach, beets, cabbage.

³Three year production average.

Source: USDA, *Vegetable and Specialties Situation and Outlook Yearbook, 1996*.

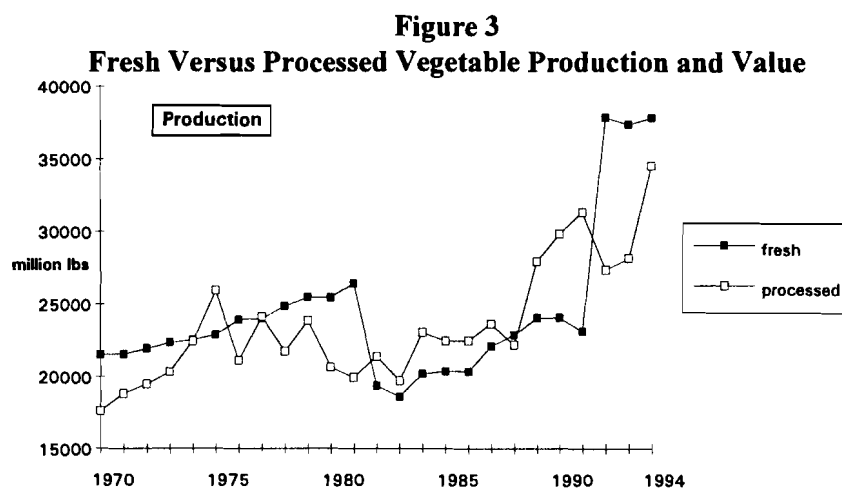
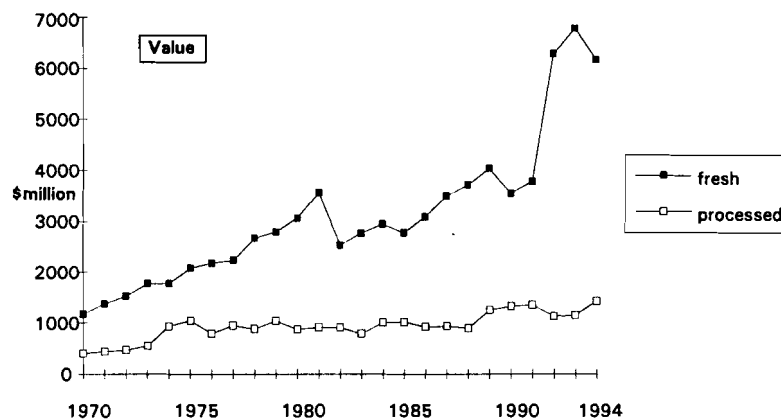


Figure 3, cont.



Note: data not available for fresh cabbage, spinach, cucumbers, artichokes, snap beans, brussel sprouts, eggplant, escarole/endive, garlic, bell peppers, leaf/romaine, watermelon, cantaloupe 1982-1991. Data not available for asparagus, 1982-1983.
Source: USDA, *Vegetable and Specialties Situation and Outlook Yearbook, 1996*.

Table 3 illustrates the relative value of fresh market vegetables from the top six states in the U.S. for the periods of 1970-72, 1980-82 and 1992-94. The total value of production from the top six states has been fairly stable exhibiting a slight increase from 80.5 percent in 1970-72 to 84 percent in 1980-82 before falling back slightly to 81 percent in 1992-94.

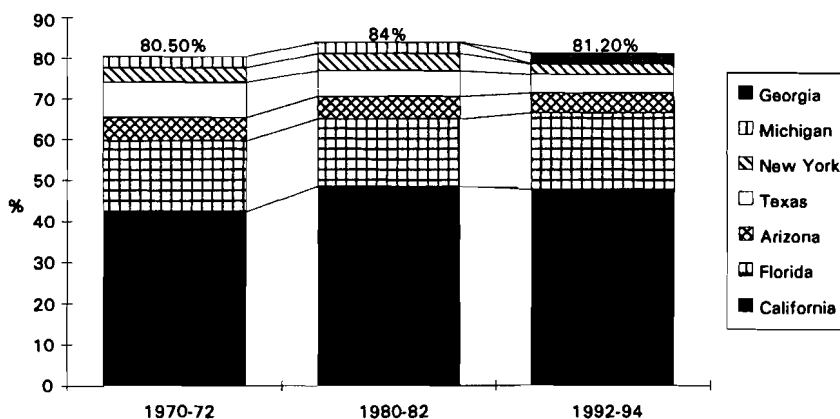
California continued to be the leading fresh market state in 1994, accounting for approximately 39 percent of the area harvested, 44 percent of the production, and 49 percent of the value (USDA 1995(b)). Value of commercial fresh vegetables in California accounted for 42.3 percent in the period 1970-72 and climbed to nearly half (47.8%) of the total U.S. value of production of fresh vegetables in 1992-94 (Table 3, Figure 4). Florida has been a distant second, contributing almost 19 percent of the U.S. value of production in 1992-94. While the dollar value of New York State fresh vegetable production increased by 254 percent from 1970-72 to 1992-94, New York's contribution to the U.S. total fresh vegetable value actually fell from 3.5 percent in 1970-72 to only 2.6 percent in 1990-94.

Table 3
Value of U.S. Commercial Fresh Vegetables
Top Six States

	1970-72		1980-82		1992-94	
	3 Year Avg.		3 Year Avg.		3 Year Avg.	
	Value (\$ Mil.)	Percent of Fresh	Value (\$ Mil.)	Percent of Fresh	Value (\$ Mil.)	Percent of Fresh
California	576	42.3	1,200	48.5	3,130	47.8
Florida	237	17.3	409	16.5	1,226	18.7
Arizona	79	5.8	138	5.5	320	4.9
Texas	118	8.7	157	6.3	291	4.5
New York	48	3.5	105	4.3	170	2.6
Michigan	39	2.8	70	2.8	-	-
Georgia	-	-	-	-	176	2.7
Totals	1,097	80.5	2,078	84.0	5,314	81.2

Source: Compiled from USDA, *Agricultural Statistics* and National Agricultural Statistics Service, selected Years.

Figure 4
Value of U.S. Commercial Fresh Vegetables, Top Six States
Selected Years



Source: Compiled from USDA, *Agricultural Statistics* and National Agricultural Statistics Service, selected Years.

The total production of fresh vegetables increased approximately 74 percent between 1970-72 and 1992-94, but over this same time period, the total number of vegetable acres planted in the U.S. increased by only 11.8 percent from 3.4 million in 1969 to 3.8 million in 1992 (U.S. Dept. of Comm. 1992), indicating a substantial increase in productivity per acre.

From 1969 to 1992, two agricultural census years, the number of U.S. vegetable farms decreased by 39.1 percent from 101,760 to 61,969 leading to an increase in average farm size from 32.9 acres per farm to 61.0 acres per farm, an 85.4 percent increase in the average acres per farm (U.S. Dept. of Comm. 1992).

Fresh imports contributed an additional 3.9 billion pounds to the total U.S. supply of fresh vegetables in 1994, slightly lower than the volume of fresh exports from the U.S. market. In addition, imports were valued at \$1,001.6 million while exports totaled \$886.2 million (Table 4). Since 1970 volume of exports has lagged somewhat behind imports. In 1970 export volume was only 63 percent of import volume, however by 1980 this had risen to 96.4 percent of imports. In 1994 export volume was 93.7 percent of imports.

Table 4
U.S. Fresh Vegetable Production, Value, Imports, Exports

	U.S. Production		Imports		Exports	
	<i>million lbs</i>	<i>\$million</i>	<i>million lbs</i> ¹	<i>\$million</i> ²	<i>million lbs</i>	<i>\$million</i>
1970	21,503	1,172	1,380	--	875	--
1975	22,887	2,078	1,311	--	1,214	--
1980	25,431	3,064	1,992	--	1,920	--
1985	20,355	2,767	2,710	--	1,998	--
1990	24,052	3,549	3,308	856	2,619	593
1994	37,820	6,166	3,934	1,002	3,686	886

¹Includes asparagus, broccoli, carrots, cauliflower, celery, sweet corn, all lettuce, cucumbers, eggplant, garlic, onions, green peas, peppers (bell), squash, tomatoes, radishes, garlic, cantaloupe, watermelon, other melons.

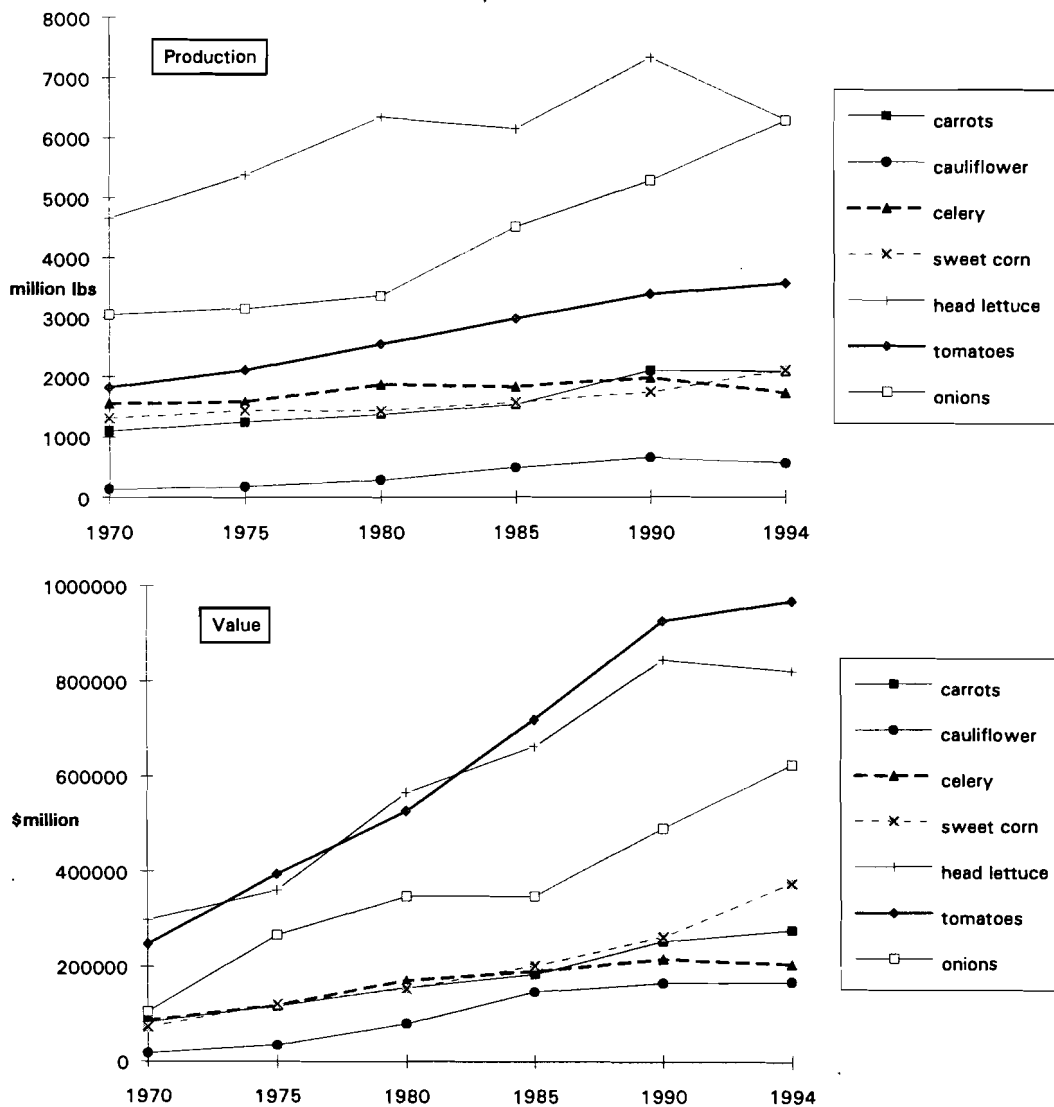
²Includes asparagus, broccoli, cabbage, carrots, cauliflower, celery, sweet corn, cucumbers, eggplant, garlic, lettuce, onions, okra, green peas, peppers (bell), peppers (chili), squash, tomatoes.

Source: USDA, *Vegetable and Specialties Situation and Outlook Report 1996*.

Although U.S. production of the major fresh vegetables grew by approximately 74 percent from 1970-72 to 1992-94, the production of individual fresh vegetable crops increased by varying amounts. In 1994 the leading individual crops were head lettuce, 6.29 billion pounds, and onions, 6.27 billion pounds (Figure 5, Table 5). Major vegetables which are also produced in significant quantities in New York State were selected for an indepth look. Cauliflower production increased at the greatest rate compared to the other selected vegetables, increasing 314.3 percent from 1970-72 to 1992-94 (Table 5). Other crops which increased production at a rate greater than the average of 74 percent were carrots (82.8%), onions (96.8%), and tomatoes (96.7%).

The crop with the greatest growth in value of the selected crops since 1970-72 was again cauliflower (794%) (Table 5). Onions performed well with a value increase of 455 percent. Sweet corn, whose production increased only 49.6 percent, increased in value by 333 percent.

Figure 5
U.S. Production and Value of Fresh Vegetable Crops
1970-94



Source: USDA, *Vegetables and Specialties Situation and Outlook Yearbook*, 1996.

Table 5
U.S. Production of Individual Fresh Vegetable Crops
1970-94

Year	Carrots		Cauliflower	
	Production	Value	Production	Value
	<i>Million lbs.</i>	<i>\$1,000</i>	<i>Million lbs.</i>	<i>\$1,000</i>
1970-72 ¹	1,173.1	76,729	141.3	19,575
1975	1,242.3	116,516	174.4	34,816
1980	1,370.4	154,853	280.1	79,043
1985	1,534.5	182,265	490.4	145,955
1990	2,110.6	251,879	654.0	164,255
1992-94 ¹	2,144.4	283,277	585.4	174,950
% change	82.8%	269%	314.3%	794%

	Celery		Sweet Corn	
	Production	Value	Production	Value
	<i>Million lbs.</i>	<i>\$1,000</i>	<i>Million lbs.</i>	<i>\$1,000</i>
1970-72 ¹	1,582.0	91,115	1,301.3	75,377
1975	1,582.6	118,122	1,439.8	121,117
1980	1,865.5	169,896	1,428.1	152,890
1985	1,834.9	189,527	1,575.4	200,602
1990	1,981.6	214,708	1,745.5	261,258
1992-94 ¹	1,865.2	241,054	1,947.2	326,486
% change	17.9%	165%	49.6%	333%

	Head Lettuce		Tomatoes	
	Production	Value	Production	Value
	<i>Million lbs.</i>	<i>\$1,000</i>	<i>Million lbs.</i>	<i>\$1,000</i>
1970-72 ¹	4,754.2	266,431	1,866.2	249,234
1975	5,365.8	360,313	2,111.4	393,866
1980	6,329.7	564,064	2,539.3	524,919
1985	6,133.4	660,855	2,974.0	718,264
1990	7,320.1	844,142	3,380.0	925,047
1992-94 ¹	6,761.3	929,496	3,670.3	1,163,231
% change	35.1%	249%	95.1%	367%

	Onions	
	Production	Value
	<i>Million lbs.</i>	<i>\$1,000</i>
1970-72 ¹	2,955.0	123,932
1975	3,141.8	266,230
1980	3,352.6	347,054
1985	4,505.9	347,328
1990	5,278.1	488,786
1992-94 ¹	5,815.8	688,219
% change	96.8%	455%

¹Three year production average

Source: USDA, *Vegetables and Specialties Situation and Outlook Yearbook, 1996*.

Fruits

Fruit production has exhibited increases similar to vegetable production since 1970. From 1970 to 1994, production of the major fruits in the U.S. grew from 44.9 to 63.5 billion pounds, an increase of 41.4 percent. At the same time fruit value increased from \$1.8 billion to \$8.4 billion, an increase of almost 370 percent (Table 6, Figure 6).

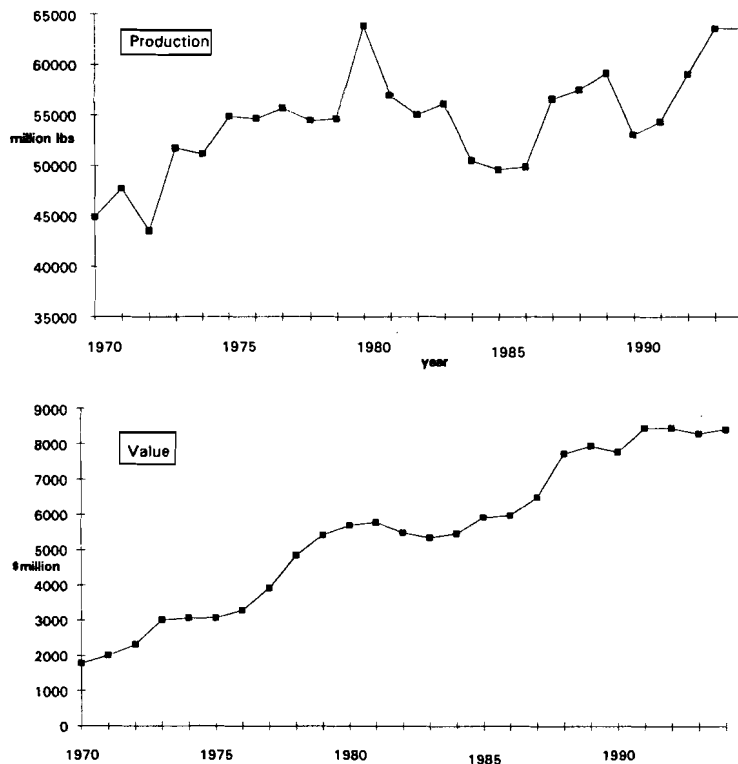
Table 6
U.S Fruit Production and Value¹

	Production	Value
	<i>million lbs</i>	<i>\$million</i>
1970	44,914.0	1,788.5
1975	54,848.5	3,068.1
1980	63,780.1	5,685.7
1985	49,536.2	5,911.2
1990	52,967.2	7,768.1
1994	63,492.0	8,404.8

¹Major fruits include apples, apricots, avocados, bananas, cherries, cranberries, grapes, kiwifruit, peaches, nectarines, pears, pineapples, papayas, plums, prunes, strawberries, oranges/temple, tangerines/tangelos, lemons, limes, grapefruit.

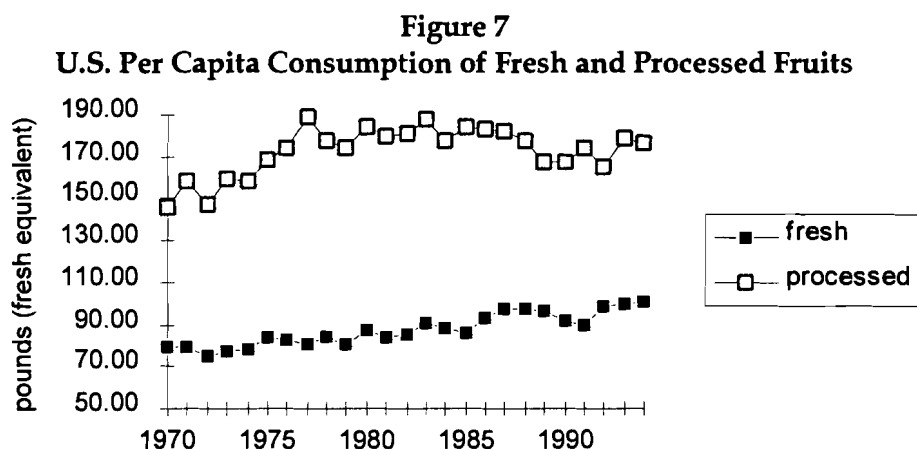
Source: USDA, *Fruit and Tree Nuts Situation and Outlook Yearbook*, selected issues.

Figure 6
U.S. Fruit Production and Value



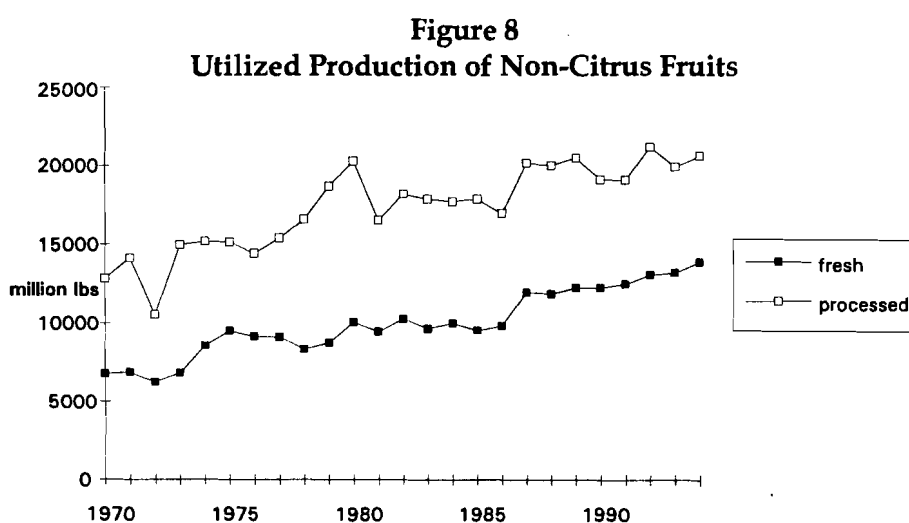
Source: USDA, *Fruit and Tree Nuts Situation and Outlook Yearbook*, selected issues.

Per capita consumption of both fresh and processed fruits has also increased (Figure 7). While consumption of processed fruits far outweighs consumption of fresh fruits, fresh fruit consumption may be increasing at a faster rate than processed fruit consumption. Since 1985 the trend for per capita consumption of processed fruits appears to have decreased compared to the 15 years earlier, whereas the consumption of fresh fruits continued to increase overall since 1970.



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Yearbook*, selected issues.

Although data are not available for fresh versus processed production and value for citrus fruits, an examination of data for non-citrus fruits indicates that more utilized production of non-citrus fruits is used for processed products than for fresh consumption (Figure 8). Since the period 1970-72 production of both processed and fresh non-citrus fruits has increased at a steady rate. By the period 1992-94 the production of fresh non-citrus had increased by 102 percent while processed non-citrus had increased by 64.8 percent (USDA 1995(a)). Processed non-citrus fruits includes canned, dried, juice, frozen, wine, and other.



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report*, 1995, 1990.

Like vegetable production, U.S. fruit production has also been dominated by California over the last several decades. California's portion of the value of U.S. fruit production increased from 42.0 percent in 1970-72 to 50.8 percent of the value in 1992-94 (Table 7). The second ranking state, Florida, witnessed a decline in its share of U.S. fruit production value from 24.3 percent in 1970-72 to 18.6 percent in 1992-94. Overall, the leading six states in 1992-94 accounted for and controlled 88.9 percent of all fresh fruits, up from the 82.9 percent controlled in 1970-72.

New York contributed 3.6 percent to the total value of U.S. fruit production value in 1970-72, however its contribution fell to a low of 2.0 percent in 1992-94. When looking strictly at non-citrus value of production, New York's share fell from 5.6 percent in the U.S. in 1970-72 to only 3.0 percent in 1992-94. Washington State was the only state in the top six other than California to increase its share of production value. In 1970-72 the state contributed only 7.1 percent of U.S. value, but this increased substantially to 12.5 percent by 1992-94. The top six states' share of the value of U.S. fruit production has risen fairly steadily to 88.9 percent in 1992-94 from 1970-72's 82.9 percent share (Figures 9 and 10).

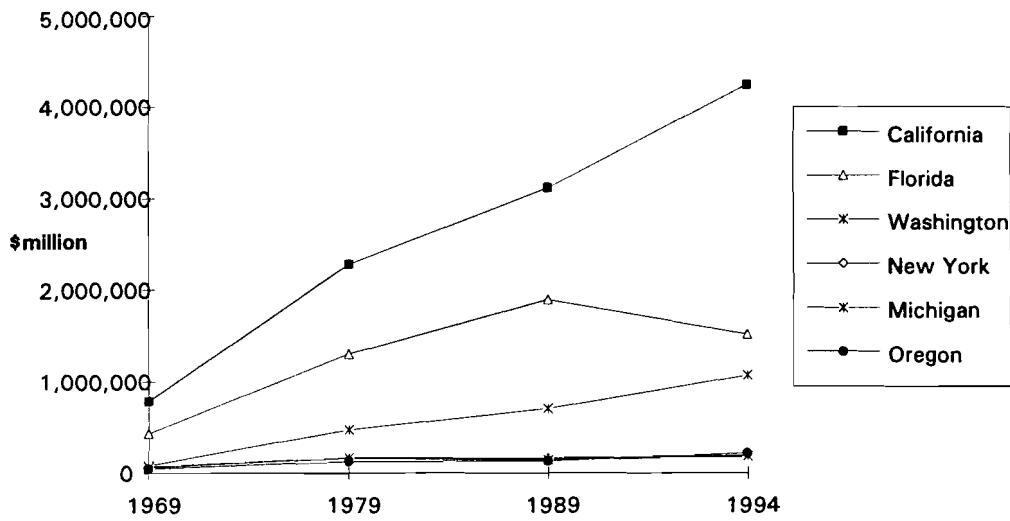
Table 7
U.S. Commercial Fruit Value of Production, Top Six States
Selected Years

Year and States	Non Citrus		Citrus		All Fruit		
	Value (\$1,000)	% of U.S.	Value (\$1,000)	% of U.S.	Value (\$1,000)	% of U.S.	% of U.S. ¹
1970-72							
California	657,359	50.6	197,617	27.0	854,976	42.0	
Florida	11,005	0.9	489,746	65.3	500,751	24.3	
Washington	145,893	11.2	--	--	145,893	7.1	82.9
New York	71,430	5.6	--	--	71,430	3.6	
Michigan	68,938	5.3	--	--	68,938	3.4	
Oregon	51,109	4.0	--	--	51,109	2.5	
1980-82							
California	2,077,339	55.7	448,849	25.0	2,526,188	45.6	
Florida	48,290	1.3	1,250,256	68.8	1,298,546	23.4	
Washington	416,635	11.2	--	--	416,635	7.6	83.9
New York	158,370	4.3	--	--	158,370	2.7	
Michigan	150,181	4.0	--	--	150,181	2.6	
Oregon	109,220	3.0	--	--	109,220	2.0	
1992-94							
California	3,473,757	57.4	747,537	32.8	4,221,294	50.8	
Florida	109,782	1.8	1,441,091	62.9	1,550,873	18.6	
Washington	1,041,556	17.5	--	--	1,041,556	12.5	88.9
Oregon	209,712	3.5	--	--	209,712	2.5	
New York	179,867	3.0	--	--	179,867	2.2	
Michigan	193,257	3.2	--	--	193,257	2.3	

¹ Top six states' percentage of U.S. value of production

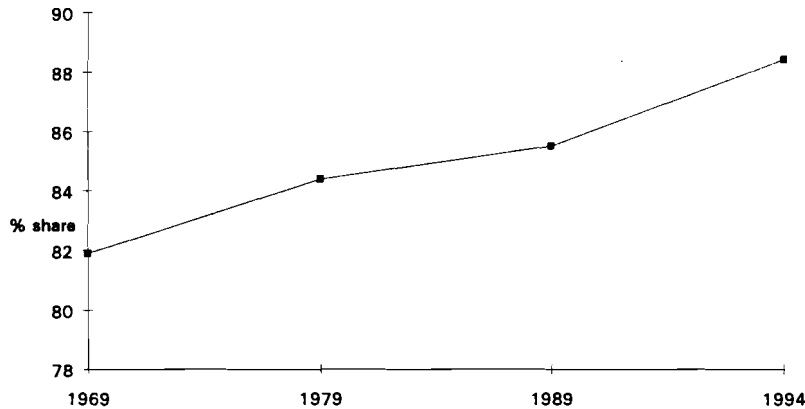
Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report Yearbook*, selected issues

Figure 9
U.S. Value of Fruit Production, Top Six States



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report*, Selected Years.

Figure 10
Top Six States' Share of U.S. Fruit Value



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report*, Selected Years.

The utilized production value of most major fruit crops in the U.S. has increased since 1970 (Table 8, Figure 11). The largest and most valuable fresh fruit crop in the U.S., grapes, increased in value by almost 421 percent from the period 1970-72 to 1992-94 due to increases in both production and grower prices. Apples experienced the second largest growth in value, 342.3 percent, between 1970-72 and 1992-94.

Although production and consumption of total fresh produce in general has been increasing, the production of total peaches has decreased since 1970. Both fresh peach and fresh tart cherry production decreased, however, increases in production for tart cherry processing outweighed the declines in tart cherry fresh production, and total production of tart cherries saw a modest increase of 13.1 percent. Increases in overall production of grapes and pears were largely due to increases in fresh production. Grapes and pears increased their total production by 89.0 and 94.1 percent respectively from 1970-94. Sweet cherries also experienced a 58.6 percent increase in utilized production.

Table 8
Utilized U.S. Individual Fruit Production and Value
1970-94

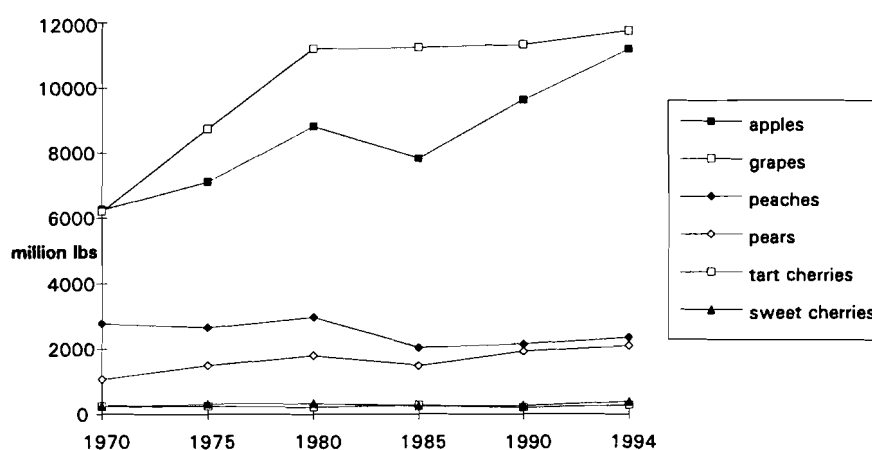
	Apples		Grapes	
	Production	Value	Production	Value
	<i>million lbs</i>	<i>\$million</i>	<i>million lbs</i>	<i>\$million</i>
1970-72	6,069.5	320.2	6,450.9	367.1
1975	7,102.6	461.7	8,730.2	619.8
1980	8,800.4	765.6	11,189.8	1,342.8
1985	7,826.8	915.7	11,232.2	966.0
1990	9,618.2	1,452.3	11,319.6	1,669.6
1992-94	10,789.5	1,416.3	11,944.3	1,911.0
% change	77.8	342.3	85.2	420.6

	Peaches		Pears	
	Production	Value	Production	Value
	<i>million lbs</i>	<i>\$million</i>	<i>million lbs</i>	<i>\$million</i>
1970-72	2,592.7	162.3	1,236.5	74.4
1975	2,645.6	275.1	1,483.6	106.1
1980	2,954.1	366.3	1,792.8	175.7
1985	2,047.2	294.8	1,488.8	200.2
1990	2,148.6	373.9	1,924.0	268.4
1992-94	2,448.5	363.9	1,942.6	245.6
% change	-5.6	122.8	57.1	230.3

	Tart Cherries		Sweet Cherries	
	Production	Value	Production	Value
	<i>million lbs</i>	<i>\$million</i>	<i>million lbs</i>	<i>\$million</i>
1970	260.1	22.3	238.3	41.3
1975	246.1	25.1	311.4	63.4
1980	216.2	43.7	336.6	93.2
1985	280.2	62.8	253.0	101.1
1990	202.9	36.7	264.7	118.3
1994	294.3	45.5	363.4	789.0
% change	18.1	103.7	52.5	357.8

Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report Yearbook*, selected issues.

Figure 11
U.S. Fruit Production of Individual Crops



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report*, Selected Years.

III New York Situation

New York State has experienced important changes in fruit and vegetable sales over the past twenty-five years. Cash receipts from New York farm products in 1994 totaled almost \$3 billion generated from 36,000 farms. Out of this total, \$425.4 million, or 14.9 percent, was from sales of fruits and vegetables, not including potatoes (New York Crop Reporting Service, 1995-1996).

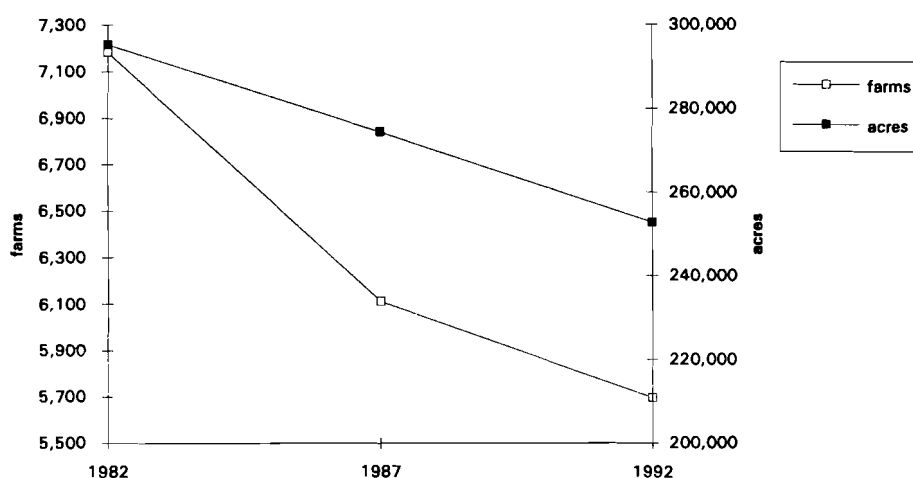
Between 1982 and 1992 the number of fruit and vegetable farms in New York State declined from 7,183 to 5,696, a decrease of 20.7 percent (Table 9, Figure 12), while cash receipts for principal fruit and vegetable crops rose 11.2 percent from \$382.4 million in 1982 to \$393.8 million in 1992 (New York Crop Reporting Service, selected issues). Both fruit and vegetable acreage also declined. Total fruit and vegetable farm acreage decreased from 295,370 to 252,746 acres or a decrease of 14.4 percent.

Table 9
New York Fruit and Vegetable Farms and Acreage
1982, 1987, 1992

	Farms			Acres		
	1982	1987	1992	1982	1987	1992
Fruit	3,955	3,290	2,938	137,356	124,432	112,905
Vegetable	3,228	2,822	2,758	158,014	150,054	139,841
Total	7,183	6,112	5,696	295,370	274,486	252,746

Source: U.S. Department of Commerce, *Census of Agriculture*, selected issues.

Figure 12
New York Fruit and Vegetable Farms and Acreage



Source: U.S. Department of Commerce, *Census of Agriculture*, selected issues.

Market Arrivals - One important indicator of change in the status of the New York State fruit and vegetable industry from 1970 to 1995 is arrival data collected by the USDA for various wholesale markets. These reports track arrivals of fresh fruits and vegetables at both terminal market facilities and selected integrated wholesale facilities serving 22 major U.S. markets. The presence of New York State production in these markets provides one measure of the competitiveness of New York State produce.

Since 1970 Eastern arrivals have all declined as terminal markets in the East have lost market share and volume to off-site wholesalers and direct shipper-to-retailer sales (Table 10). Each of five of the major Eastern cities observed a drop in the volume of arrivals of total fresh produce volume between 1970 and 1995: from a 42.5 percent drop for Boston to a 77.4 percent decline for New York/Newark. Furthermore, arrivals in Eastern markets from New York State shippers have decreased even faster, resulting in a loss of presence of New York State produce in the largest New York State wholesale market.

Table 10
Fresh Fruit and Vegetable Eastern Arrivals-Major Cities
1970, 1995

Major Eastern Cities	1970	1995	decline
	<i>1,000 cwt</i>		<i>%</i>
Baltimore	33,315	12,614	-62.1
Boston	35,371	20,335	-42.5
New York/Newark	123,664	27,952	-77.4
Philadelphia	43,907	12,801	-70.8
Pittsburgh	24,285	8,307	-65.8
Total	260,542	82,009	-68.5

Source: USDA, *Fresh Fruits and Vegetable Unloads, 1970 and Fresh Fruits and Vegetable Arrivals, 1995*. Agriculture Marketing Service.

As a source of fresh produce in major U.S. markets, New York ranked tenth in 1970 and also in 1995 as an arrival source, however in 1970 New York contributed 4 percent of all arrivals in the U.S. and in 1995 it contributed only 1.9 percent (Table 11). California actually increased its share of arrivals from 35.9 percent in 1970 to 43.2 percent in 1995, however even California lost volume between 1970 and 1995, down 66.1 percent or down to 87 million hundredweight in 1995.

Table 11
U.S. Fresh Produce Arrivals
1970, 1995

	1970 ¹	% of total Arrivals	1995 ²	% of total Arrivals
	<i>1,000 cwt</i>		<i>1,000 cwt</i>	
California	257,530	35.9	87,341	43.2
Florida	100,626	14.0	21,917	10.8
Washington	35,181	4.9	17,276	8.5
Idaho	20,186	2.8	15,525	7.7
Texas	46,097	6.4	6,463	3.2
Oregon	16,489	2.3	6,423	3.2
Arizona	23,421	3.3	6,251	3.1
Colorado	14,214	2.0	5,692	2.8
Georgia	9,082	1.3	4,218	2.1
New York	29,061	4.1	3,870	1.9
Total		76.9		86.5

¹Unloads reported from 41 U.S. cities.

²Arrivals reported from 21 U.S. cities.

Source: USDA, *Fresh Fruits and Vegetable Unloads, 1970 and Fresh Fruits and Vegetable Arrivals, 1995*. Agriculture Marketing Service.

New York Vegetable Production

In 1994 New York's three major vegetable crops were cabbage for fresh market, onions for fresh market and sweet corn. In 1994 New York produced 562.5 million pounds of cabbage, 384.4 million pounds of onions and 244.0 million pounds of sweet corn (New York Agricultural Statistics, 1995-96). In the same year onions beat out cabbages for the most valuable crop and yielded \$44.5 million in value of the total crop. Cabbages were valued at \$42.9 million and sweet corn at \$31.0 million.

Total vegetable production in New York State has increased since 1970, but at a slower pace than in leading vegetable producing states such as California and Florida (see Table 3). Both fresh and processed NYS vegetable production have increased (Table 12, Figure 13) although increases in fresh production appear to be outpacing increases in processed production. Fresh production increased 29.9 percent between the period 1970-72 and 1992-94 while processed production grew only 14.9 percent. The value of fresh production in New York increased 239 percent between the period 1970-72 and 1992-94, while the value of processed production increased 137 percent.

Table 12
New York State Production and Value of Major Vegetable Crops
1970-94

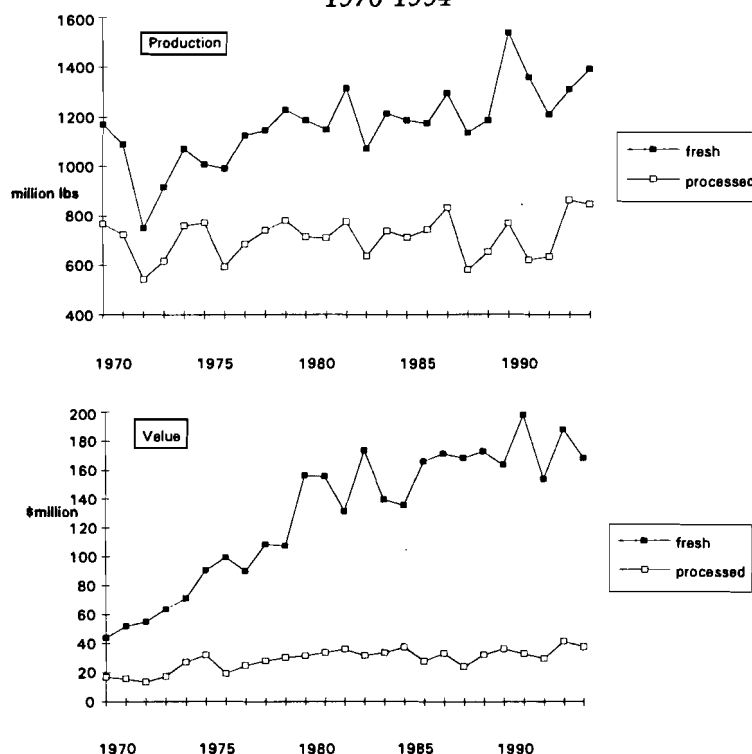
	Production			Value		
	fresh ¹	processed ²	total	fresh ¹	processed ²	total
	--million lbs--			--\$ million--		
1970-72	1,003.4	679.5	1,682.9	50.2	15.3	65.5
1975	1,006.7	771.0	1,777.7	90.8	32.1	122.9
1980	1,185.9	716.2	1,902.1	156.5	31.6	188.1
1985	1,185.9	711.8	1,897.7	135.7	37.6	173.3
1990	1,540.5	770.4	2,310.9	163.9	36.4	200.3
1992-94	1,303.7	780.5	2,084.2	170.1	36.3	206.5

¹Major crops are carrots, cauliflower, cucumbers, lettuce, snap beans, sweet corn, tomatoes, cabbage, onions.

²Major crops are beets, cabbage, green peas, snap beans, sweet corn, carrots, tomatoes.

Source: New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

Figure 13
New York Production and Value of Major Vegetable Crops
1970-1994



Source: New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

In spite of production increases, New York's share of the value of vegetable production in the U.S. has slipped from 3.6 percent in 1970-72 to only 2.7 percent in 1992-94 (Table 13, Figure 14). The drop in share of value is due to declines in both NY's share of fresh as well as processed production value.

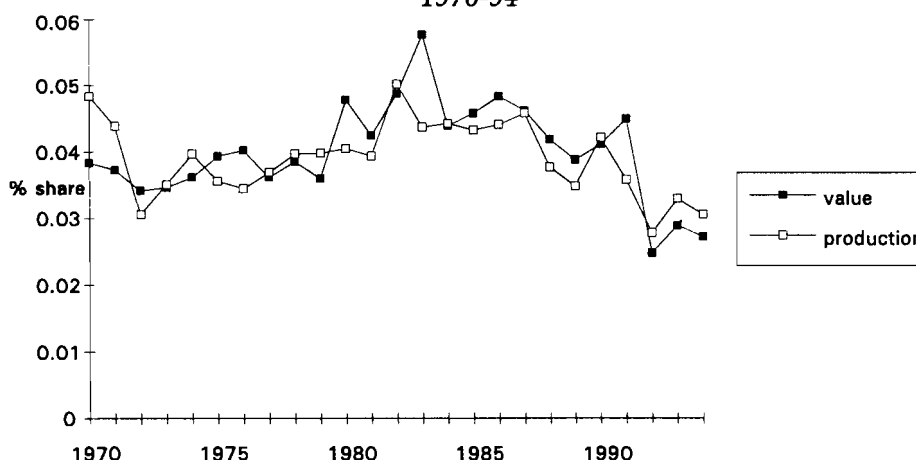
Table 13
New York Share of U.S. Value of Vegetable Production
1970-94

	New York	U.S. total	U.S. Share
	--\$ million--		%
1970-72 ²	65.5	1,798.5	3.6
1975	122.9	3,123.9	3.9
1980	188.1	3,938.0	4.8
1985	173.3	3,791.2	4.6
1990	200.3	4,880.9	4.1
1992-94 ²	206.5	7,657.0	2.7

²three year average

Source: USDA, *Vegetable and Specialities Situation and Outlook Yearbook*, 1996, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected years.

Figure 114
New York Share of U.S. Production and Value-Major Vegetables
1970-94



Source: USDA, *Vegetable and Specialities Situation and Outlook Yearbook*, 1996, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected years.

New York Vegetable Farmland

Increases in vegetable production have not been enough to maintain the same number of vegetable farms. Between 1969 and 1992 the number of vegetable farms in New York State decreased 31.3 percent from 4,017 to 2,758 farms (Table 14). Total acreage also decreased, although not as drastically, from 148,084 acres to 139,841 acres or 5.6 percent (Table 15). In addition, New York State slipped slightly from accounting for 4.4 percent of the vegetable acreage in the U.S. in 1969 to 3.7 percent of the acreage in 1992 (U.S. Department of Commerce, selected issues).

Dwindling numbers of farms in New York State have been partially offset by the increased size of the remaining farms. The size of the average New York State vegetable farm has increased considerably from 36.9 to 50.7 acres per farm between 1969 and 1992 (U.S. Department of Commerce, selected issues). However, even this increase in acreage per farm has not kept up

with the national increase in farm size which was 61.0 acres per vegetable farm in 1992 (U.S. Department of Commerce, selected issues).

Table 14
New York Vegetable Farms
1969, 1982, 1992

	Farms			% change
	1969	1982	1992	1969-1992
United States	101,760	69,109	61,969	-39.1
New York State	4,017	3,228	2,758	-31.3
Western	1,887	1,333	1,099	-41.8
Central	599	468	456	-23.9
Northern	389	301	317	-18.5
Capital District	337	310	292	-13.4
Hudson Valley	522	511	414	-20.7
Long Island	280	304	180	-35.7

Source: U.S. Department of Commerce, *Census of Agriculture*, selected issues.

Table 15
New York Vegetable Farmland
1969, 1982, 1992

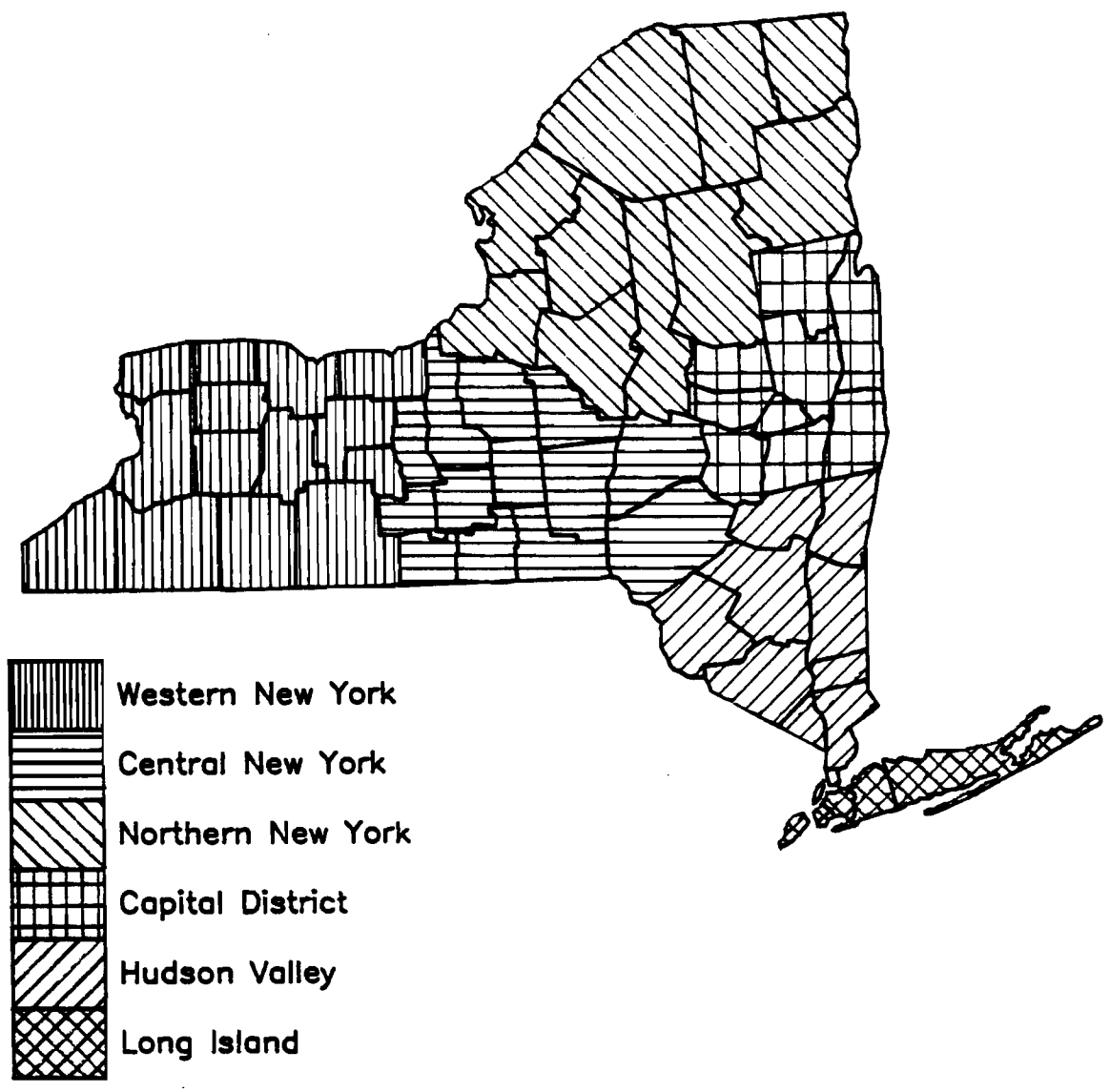
	Acres			% change
	1969	1982	1992	1969-1992
United States	3,352,382	3,330,637	3,782,358	-12.8
New York State	148,084	158,014	139,841	-5.6
Western	92,884	98,487	86,181	-7.2
Central	11,352	11,981	14,916	31.4
Northern	12,071	11,272	8,994	-25.5
Capital District	5,667	5,651	4,659	-17.8
Hudson Valley	18,512	19,316	16,376	-11.5
Long Island	7,565	7,773	6,372	-15.8

Source: U.S. Department of Commerce, *Census of Agriculture*, selected issues.

In order to identify shifts in regional production, New York State was divided into 6 regions: Western, Central, Northern, Capital District, Hudson Valley, and Long Island (Figure 15).

The region containing the most vegetable farms both in 1969 and 1992 was Western New York with 39.8 percent of the farms and 61.6 percent of vegetable acreage in 1992 (Table 14, Table 15). Between 1969 and 1992 all regions lost farms with Western New York losing the most farms (788) and the most acres (6,703). Central New York, although losing farms between 1969 and 1992, actually increased its vegetable acreage in the same period by 31.4 percent. The Hudson Valley had 16,376 acres of vegetable farmland in 1992 which was a decrease of 11.5 percent from 1969. The Capital District, Long Island, and Northern New York all lost vegetable farmland as well as farms in the same period.

Figure 15
New York Fruit and Vegetable Production Regions



Individual New York Vegetable Crop Production-1995

In the period of 1993-95, New York's two major vegetable crops were fresh cabbage and fresh onions which averaged 561.0 and 386.5 million pounds in harvested production respectively (Table 16). On average, New York State produced 22.5 percent of the U.S. cabbage crop, while New York State onion production accounted for 6.3 percent of the U.S. crop. Between the periods 1970-72 and 1993-95 fresh cabbage production grew by 96.3 percent (Figure 16). Onions, although the second largest vegetable crop in New York, grew by only 6.3 percent in the same period.

Fresh sweet corn also ranked high in both production volume and share of U.S. production in the period of 1993-95, with 214.5 million pounds produced and 10.3 percent of U.S. production. In fact, other than cabbage and onions, sweet corn was the only major fresh vegetable whose production in New York State actually grew between the periods 1970-72 and 1993-95, with an 89.4 percent increase over the average 113.3 million pounds produced in 1970-72. The value of sweet corn production increased by 487.0 percent during this period.

Production of head lettuce and carrots in New York declined drastically by 65.3 and 58.3 percent respectively between the periods 1970-72 and 1993-95 contrary to national trends. And cauliflower production, with the highest growth rate of any vegetable in the U.S., declined by 36.3 percent in New York State. So although total vegetable production increased in New York between 1970-72 and 1993-95, almost all of the increase came from only two crops.

Sweet corn for processing and snap beans for processing are also important New York crops. Production of sweet corn for processing actually exceeds production of sweet corn for the fresh market although the value of the processing crop is roughly half of fresh sweet corn.

Individual New York Vegetable Crop Farmland

Most of the major crops, both fresh and processed production, in New York reported a loss in farm acreage between agricultural census years 1982 and 1992 with the exception of sweet corn which actually experienced an increase in acreage. Numbers of farms growing sweet corn actually declined, however (Table 17, Figure 17). In general, for each major crop, the primary production regions within New York State in 1982 still remained the primary production areas in 1992.

In 1982 and in 1992 Western New York supported the greatest number of farms producing fresh cabbage and acreage with Long Island being a very distant secondary producer of cabbage. Central New York, the Hudson Valley, Long Island and Northern New York all lost cabbage acreage between 1982 and 1992. However Western New York, although it lost some cabbage farms, increased cabbage production by almost 1,000 acres or about 7.8 percent. The Capital District also experienced a slight increase in farm acreage devoted to fresh cabbage production.

The number of farms producing cauliflower decreased significantly between 1982 and 1992 in all regions but the Capital District, and New York State acreage decreased over 53 percent.

The number of farms producing sweet corn decreased overall, but in Central and Northern New York they actually increased. The acreage in these regions also increased. Central New

York alone experienced an increase of over 4,000 acres or 113 percent and drove the increase in New York's total acreage. Northern New York also increased acreage by almost 48 percent.

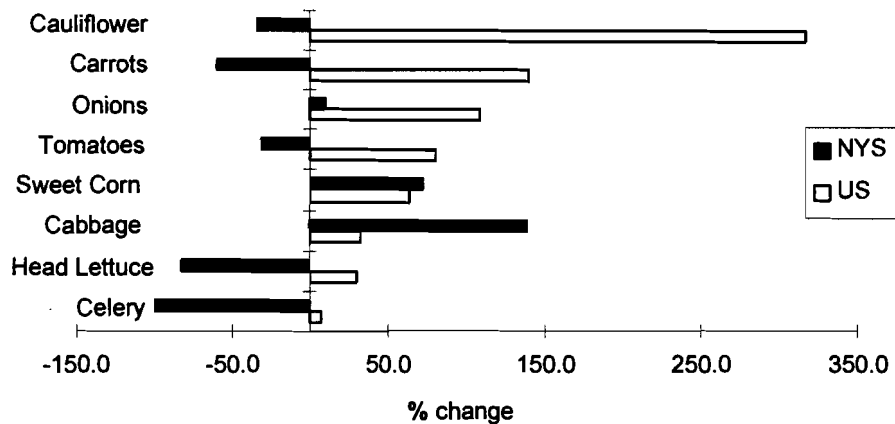
Table 16
New York Production and U.S. Share of Individual Fresh Vegetable Crops
1970-95

Year	Cabbage				Carrots			
	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %
1970-72 ¹	215.7	11.5	7.3	9.2	59.1	5.1	2.1	2.2
1975	283.5	14.0	14.3	13.4	46.8	3.8	2.2	1.9
1980	271.3	14.4	25.0	16.6	36.5	2.7	3.1	2.0
1985	287.8	--	19.7	--	53.9	3.5	5.2	2.9
1990	623.0	--	41.2	--	43.8	2.1	3.7	1.5
1993-95 ¹	561.0	22.5	45.1	17.1	24.8	1.0	3.8	1.2
% change	160.0	96.3	517.4	85.3	-58.3	-80.0	80.7	-44.0
Year	Cauliflower				Celery			
	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %
1970-72 ¹	26.8	19.2	3.4	17.4	47.3	3.0	2.7	3.0
1975	31.5	18.0	4.8	13.9	26.1	1.7	2.2	1.9
1980	32.6	11.6	6.5	8.2	30.2	1.6	2.8	1.7
1985	44.8	9.1	9.4	6.4	24.7	1.4	2.8	1.5
1990	21.6	3.3	5.8	3.5	10.8	0.55	1.5	0.7
1993-95 ¹	17.1	2.9	6.5	3.6	-	-	-	-
% change	-36.3	-84.8	93.4	-79.6	-	-	-	-
Year	Sweet Corn				Head Lettuce			
	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %
1970-72 ¹	113.3	8.7	5.3	5.8	60.8	1.3	4.0	1.4
1975	144.3	10.0	10.8	8.9	61.6	1.2	5.2	1.5
1980	176.3	12.4	16.8	11.0	79.8	1.3	10.9	1.9
1985	190.3	12.1	19.6	9.8	75.9	1.2	9.4	1.4
1990	212.0	12.2	24.4	9.3	52.0	0.7	8.1	1.0
1993-95 ¹	214.5	10.3	30.9	8.3	21.1	0.3	3.3	0.3
% change	89.4	18.4	487.0	44.4	-65.3	-75.1	-17.7	-76.5
Year	Tomatoes				Onions			
	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %	Production <i>million lbs</i>	U.S. Share %	Value \$million	U.S. Share %
1970-72 ¹	39.9	2.2	3.7	1.2	372.8	12.5	14.7	8.6
1975	34.6	1.6	6.3	1.6	344.3	9.5	36.5	13.7
1980	41.6	1.6	11.9	2.3	443.3	12.3	62.6	18.0
1985	39.2	1.3	10.7	1.5	346.9	7.7	39.2	11.3
1990	44.8	1.3	16.4	1.8	463.6	6.8	49.4	10.1
1993-95 ¹	32.5	0.9	10.7	1.0	386.5	6.3	53.0	7.9
% change	-18.5	-57.2	189.7	-21.9	3.7	-50.0	260.6	-8.2

¹three year average

Source: USDA, *Vegetables and Specialties Situation and Outlook Yearbook, 1996*, and New York Crop Reporting Service, *New York Agricultural Statistics, 1995-1996*.

Figure 16
Production Changes of Individual Vegetable Crops, New York Versus U.S.
 1970-95



Source: USDA, *Vegetable and Specialties Situation and Outlook Yearbook*, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

The number of farms producing lettuce and romaine in New York remained the same between 1982 and 1992 but acreage dropped significantly, almost 58 percent, from 3,639 to 1,537 acres. The major production regions were in the Hudson Valley and in Northern New York, although both regions lost 61.2 percent of their acreage between 1982 and 1992.

Dry onions, New York's most valuable crop in 1992, lost farms and acreage between 1982 and 1992 with acreage declining by 53.5 percent. In 1982 and in 1992 the Hudson Valley was the largest producer of onions with the most farms and acreage; 107 farms and 5,275 harvested acres in 1992. Despite this fact, the region still lost onion producing farms and acreage during the decade. Farm numbers dropped almost 42 percent and acreage dropped 25.5 percent. Most of the Hudson Valley's onion production is from Orange County muckland, and the region is experiencing serious urban growth pressures.

Western New York also has a large number of farms which produce onions and in 1992 produced onions on almost 3,500 acres of farmland. This was only a modest decrease of 12.2 percent in acreage since 1982. In 1992, Northern New York, led by Oswego County, increased acreage by 98 percent to over 1,800 acres making it the third leading regional producer of dry onions.

New York State production of tomatoes dropped along with the number of farms producing tomatoes and acreage. Farms dropped 17.6 percent from 1,143 to 942 and acres decreased 34.3 percent from 4,738 to 3,110 acres. Western New York, led by Chautauqua County, was the largest producer of tomatoes in the State in 1992.

Table 17
New York Individual Vegetable Crop Farms and Acres¹
1982, 1987, 1992

Cabbage	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	38	26	39	100	76	134
Central	61	41	48	559	377	256
Hudson Valley	33	39	38	130	153	112
Long Island	100	77	70	1,096	874	1,038
Northern	32	31	48	175	293	123
Western	360	316	277	10,886	12,972	11,740
New York State	683	579	537	13,178	15,004	13,842

Cauliflower	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	7	3	17	2	0	32
Central	35	21	19	132	46	36
Hudson Valley	11	7	8	26	23	7
Long Island	152	97	59	1,301	749	394
Northern	6	5	6	27	4	2
Western	155	111	82	429	353	294
New York State	478	321	228	2,251	1,551	1,046

Sweet Corn	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	222	175	174	2,654	2,095	2,629
Central	297	255	305	3,778	4,904	8,053
Hudson Valley	208	167	195	7,099	5,884	6,292
Long Island	93	81	70	1,393	1,296	1,446
Northern	197	201	221	1,198	1,661	1,769
Western	833	746	700	32,452	34,469	31,847
New York State	1,862	1,632	1,669	48,760	50,440	52,187

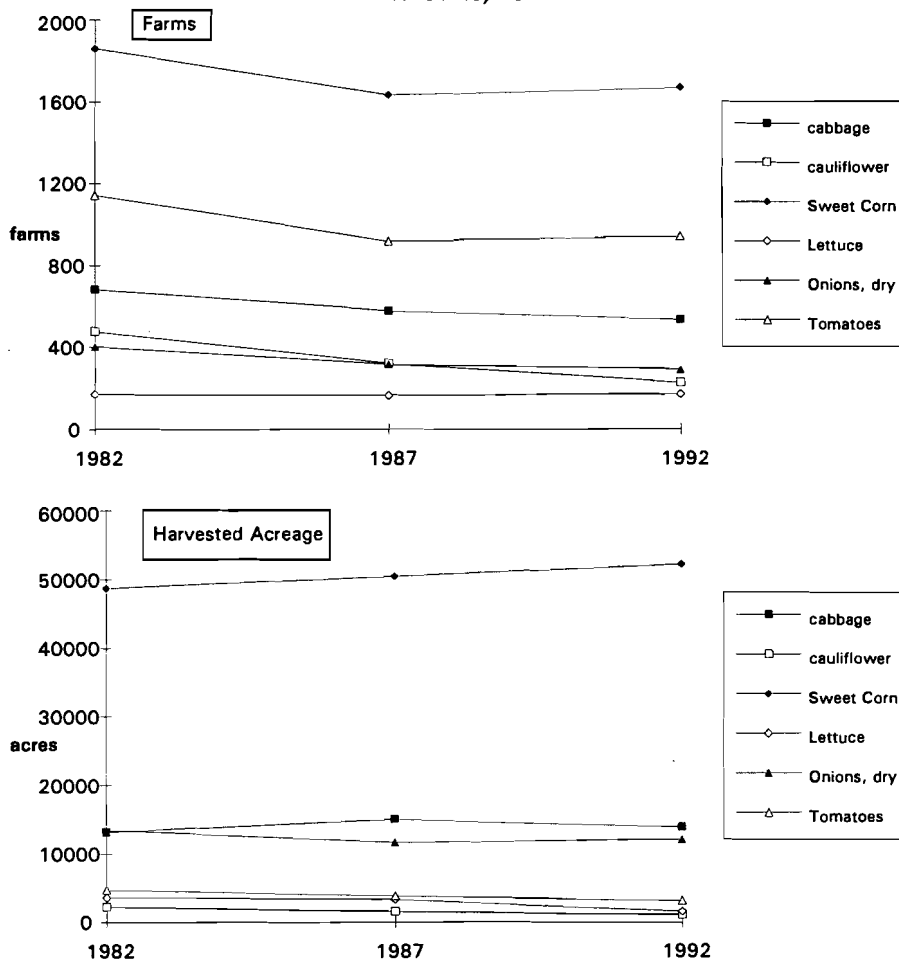
Table 17, Cont.

Lettuce and Romaine	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	0	0	15	0	0	6
Central	8	9	16	8	11	58
Hudson Valley	31	31	33	1,509	1,299	595
Long Island	38	37	34	201	135	138
Northern	26	19	22	1,563	1,475	606
Western	19	18	23	72	26	27
New York State	171	165	172	3,639	3,347	1,537
Onions, Dry	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	3	3	15	1	1	5
Central	33	16	23	1,211	756	739
Hudson Valley	184	154	107	7,085	5,816	5,275
Long Island	14	13	14	91	72	57
Northern	36	26	36	921	1,336	1,824
Western	91	70	72	3,967	3,417	3,481
New York State	404	317	292	13,468	11,635	12,066
Tomatoes	Farms			Harvested Acres		
	1982	1987	1992	1982	1987	1992
Capital District	166	123	137	298	230	239
Central	166	117	136	315	294	265
Hudson Valley	158	127	162	419	297	375
Long Island	109	98	92	481	301	289
Northern	89	77	97	119	95	125
Western	447	364	318	2,983	2,349	1,616
New York State	1,143	916	942	4,738	3,824	3,110

¹Regional farm and acre numbers may not add to New York State total due to census disclosure rules-information from individual farms in some counties withheld to avoid disclosure.

Source: U.S. Department of Commerce, *1992 Census of Agriculture*.

Figure 17
Changes in Farms and Harvested Acreage of Individual Vegetable Crops
New York State, 1982-1992



Source: U.S. Department of Commerce, 1992 Census of Agriculture.

New York Individual Crop Arrivals at Major Eastern Markets

In 1970 New York crops such as cauliflower, onions, and apples contributed substantially to arrivals in major cities in the East. By 1995, however, the portion of most of the crop arrivals from New York State had dwindled. Forty-four percent of cauliflower arrivals in the Eastern markets in 1970 came from New York State (Table 18, Figure 18). By 1995 Eastern cauliflower arrivals from New York State had shrunk to less than one percent of total Eastern cauliflower arrivals.

New York onions, apples and cabbages all fared somewhat better. New York onions represented 35.4 percent of Eastern arrivals in 1970 and in 1995 had decreased to 20.7 percent. New York apples dropped from 31.9 percent of Eastern arrivals to 12.9 percent.

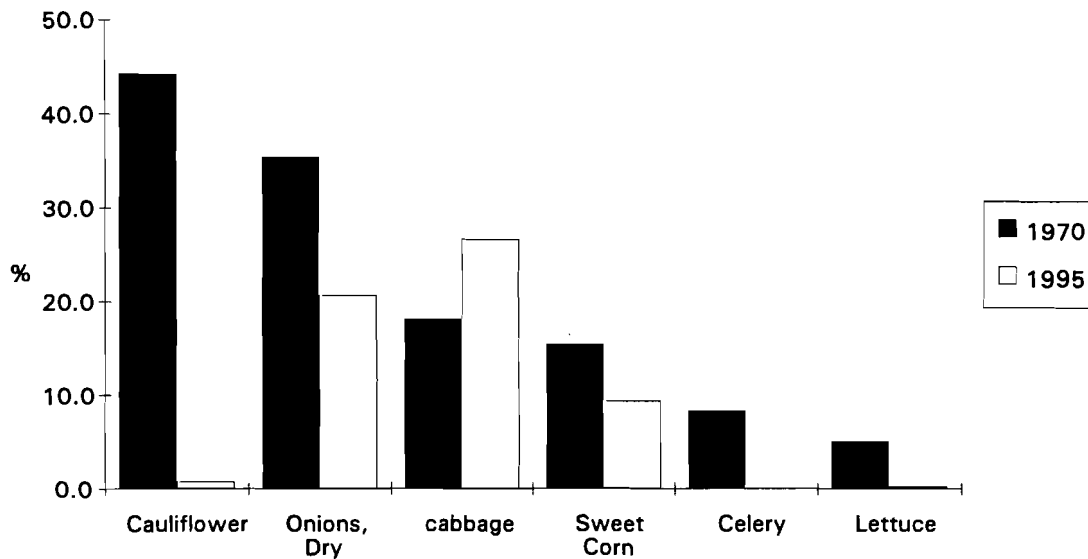
New York cabbage actually increased its share of the Eastern arrivals, the only major New York crop to do so, during this time period and in 1995 contributed 26.7 percent of Eastern cabbage arrivals, an increase from 18.1 percent in 1970.

Table 18
Percent of Fresh Fruit and Vegetable Arrivals in Major Eastern
Cities from New York Producers
1970 and 1995

Selected Vegetables	% of Eastern Arrivals		% change 1970-1995
	1970	1995	
	%	%	
Cauliflower	44.3	0.8	-98.2
Onions, Dry	35.4	20.7	-41.5
Cabbage	18.1	26.7	47.5
Sweet Corn	15.4	9.4	-39.0
Celery	8.3	0.0	-100.0
Lettuce	5.0	0.2	-96.0

Source: USDA, *Fresh Fruits and Vegetable Unloads, 1970 and Fresh Fruits and Vegetable Arrivals, 1995*. Agriculture Marketing Service.

Figure 18
Percent of Arrivals in Major Eastern Cities
from New York Producers
1970 and 1995



Source: USDA, *Fresh Fruits and Vegetable Unloads, 1970 and Fresh Fruits and Vegetable Arrivals, 1995*. Agriculture Marketing Service.

New York Fruit Production

The three year average fruit production in 1992-94 of New York State's fresh and processed tree fruit and grape industry was valued at \$176.1 million (Table 19, Figure 19). Apples were New York's largest and most valuable crop and in 1994 production was valued at \$129.7 million making New York the third largest apple producing state in the U.S. after Washington and Michigan. In 1994 grapes provided \$39.8 million in receipts making it the State's second largest fruit crop and making New York the third largest grape grower in the U.S. after California and Washington.

Fruit and grape production in New York is about the same size as the vegetable industry in New York State contributing \$176.1 million in value of production in 1992-94 (Table 19) compared to \$206.5 million from vegetables in 1994. New York's fruit production has grown a modest 12.5 percent between the period of 1970-72 and 1992-94, while value of production has increased by 144.3 percent during the same period. Despite these increases, New York's share of U.S. fruit production value has declined since 1970-72 similar to vegetable production. In 1992-94 New York contributed 2.1 percent of U.S.'s total citrus and non-citrus fruit production value, down from 3.6 percent two and a half decades ago in 1970-72. So, although New York production has increased modestly, it has increased at a slower rate than U.S. production resulting in lost share of the U.S. fruit and grape market.

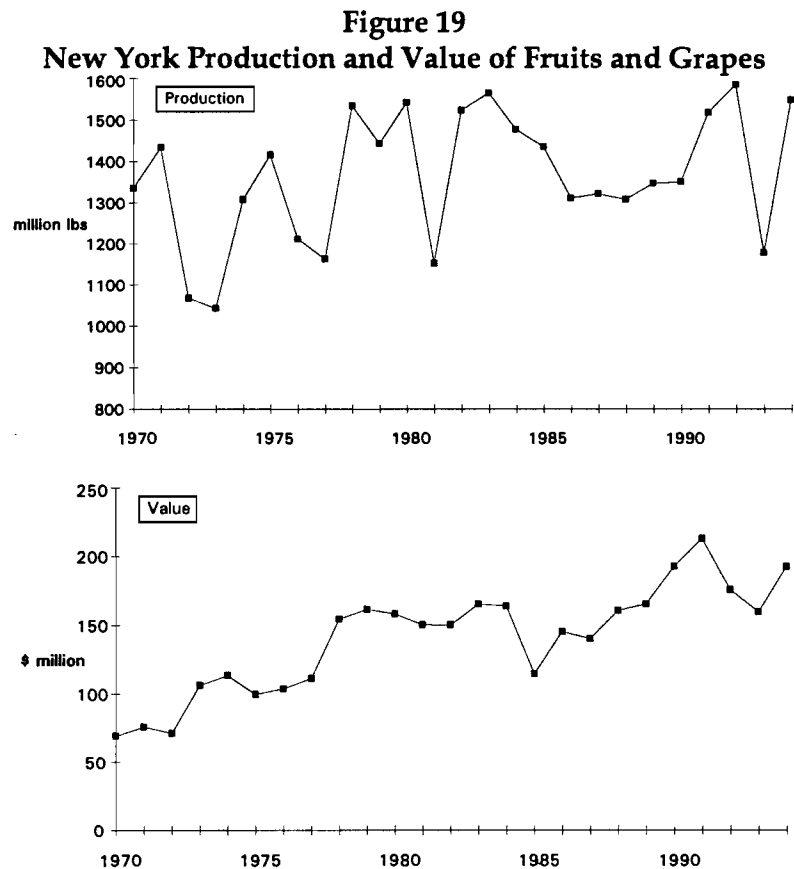
Table 19
New York Production and U.S. Share of Fruit and Grape Production and Value¹

	Utilized Production			Value		
	NYS	U.S.	Share of U.S.	NYS	U.S.	Share of U.S.
	<i>million lbs</i>	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>\$million</i>	<i>%</i>
1970-72 ²	1,279.2	45,382.0	2.8	72.1	2,032.5	3.6
1975	1,415.6	54,848.5	2.6	99.6	3,068.1	3.2
1980	1,542.6	63,780.1	2.4	158.2	5,685.7	2.8
1985	1,435.5	49,536.2	2.9	114.5	5,911.2	1.9
1990	1,351.4	52,967.2	2.6	192.8	7,768.1	2.5
1992-94 ²	1,438.5	61,975.8	2.3	176.1	8,375.8	2.1
% change	12.5	36.6	-17.1	144.3	312.1	-41.3

¹U.S. crops include value of citrus and non-citrus production. NYS crops include apple, grape, peach, pear, tart cherries and sweet cherries, strawberry, blueberry, red raspberry production.

²three year average

Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report, 1995*, and New York Crop Reporting Service, *New York Agricultural Statistics, 1995-1996*.



Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report, 1995*, and New York Crop Reporting Service, *New York Agricultural Statistics, 1995-1996*.

Fruit processing is a major industry in New York. The two largest fruit crops in the State, grapes and apples, both have significant production for processing which accounts for more of their utilization than fresh forms (Figure 20). Processed apple production averaged 55.4 percent of total apple production in the State in 1993-94. This decreased from two and a half decades ago when processed apple production averaged 62.1 percent for 1970-72. Fresh production has historically been slightly less than processed, however, since 1970-72 fresh production has been increasing at a greater rate than processed production and by 1992-94 had increased 40.9 percent.

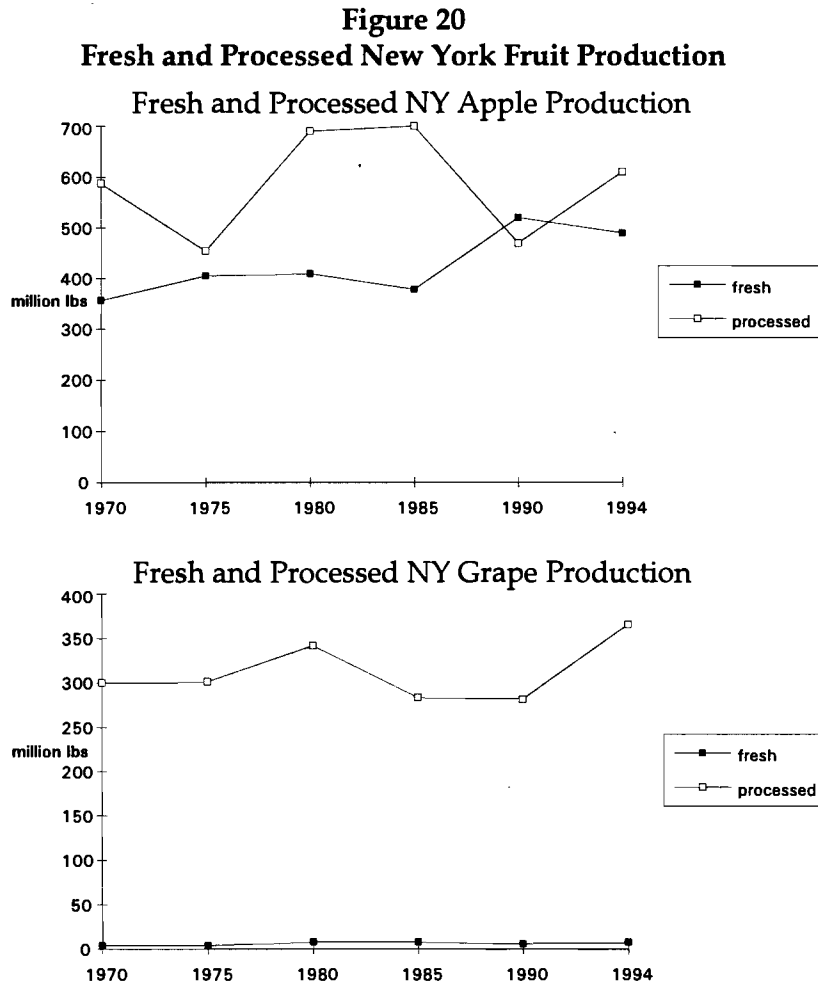
Most grapes in New York are produced for processing (98.7% average in 1992-94) and are used for either grape juice or wine. Between the periods 1970-72 and 1992-94 production for processing grew by 3.8 percent while the small amount of fresh grape production grew by 52.5 percent.

New York Orchards

New York fruit orchards have decreased in numbers between census years 1969 and 1992 by 48.6 percent (Table 20). This decline was almost twice the overall U.S. orchard reduction of only 26.5 percent from 1969 to 1992. The decline in New York orchards has been experienced primarily by the Hudson Valley, Long Island and Western regions. The Hudson Valley, the

second largest fruit producing region with over 21,000 reported acres in 1992, lost 11.7 percent of its farms and 31.9 percent of its acreage between 1969 and 1992. On Long Island the number of orchard farms grew slightly between 1982 and 1992 but farms were still fewer than 1969 levels. Acreage on Long Island increased, however, by 99 percent. Western New York, the largest fruit producer, lost the most farms and the most acreage during this same period, 291 farms and 21,578 reported acres. Northern New York lost 1 orchard farm but gained 2,007 reported acres, an increase of 64.2 percent.

Census figures show that decreases in farm numbers came from all sizes of farms from 0.1-4.9 acre farms to farms with 500 acres or more.



Source: U.S. Department of Commerce, *1992 Census of Agriculture*, selected issues.

Table 20
New York Orchards and Acres,^{1,2} 1969, 1982, 1992

	Farms			Acres		
	1969	1982	1992	1969	1982	1992
United States	158,151	123,663	116,207	4,372,532	4,750,667	4,770,778
New York State	5,718	3,955	2,938	143,695	137,356	112,905
Capital District	133	144	128	3,426	2,827	2,443
Central	319	393	317	7,418	7,462	6,027
Hudson Valley	426	516	376	30,822	29,831	21,003
Long Island	82	62	77	865	1,009	1,721
Northern	111	114	110	3,126	4,249	5,133
Western	2,218	2,716	1,927	98,038	91,954	76,460

¹Regional farm and acre numbers may not add to New York State total due to census disclosure rules-information from individual farms in some counties withheld to avoid disclosure.

²Includes vineyards and berry farms and acres.

Source: U.S. Department of Commerce, *1992 Census of Agriculture*, selected issues.

Individual New York Fruit Crop Production-1994

All fruit crops in New York State have shared equally in the decline in share of U.S. production. Apples, grapes, peaches, pears, and sweet and tart cherries all lost share as a percentage of the average U.S. production from the periods 1970-72 to 1992-94 (Table 21). The lost shares ranged from a low of -33.0 percent for apples to a high of -90.2 percent for sweet cherries. The lost shares have occurred even though the absolute value of production has increased for almost all New York fruit and grape crops, however the increases in value of production have been unable to keep up with the increases in value of production at the national level.

Apples are New York's largest fruit crop, and average production increased from the period 1970-72 to 1992-94 production increased 18.9 percent. However, apple production as a share of U.S. production dropped in this same period by 33.0 percent (Figure 21). Moreover, although the value of New York apple production also increased since 1970-72 by 204.5 percent, it was not enough to maintain the New York share of U.S. production value which declined from an average of 11.9 percent in the period 1970-72 to an average of only 8.1 percent in 1992-94.

Grapes are the second largest fruit crop in New York, and the State is the third largest producer of grapes in the U.S. Again both production and value in New York grew between 1970 and 1994, however they did not keep up with increases in U.S. production and value. Therefore New York shares dropped by 42.7 and 75.3 percent for production and value respectively.

Production of peaches, tart cherries and sweet cherries actually declined in New York during the same period in spite of increases in production of these fruits in the total U.S.

Table 21
New York Production and U.S. Share of Individual Fruit Crops
1970-94

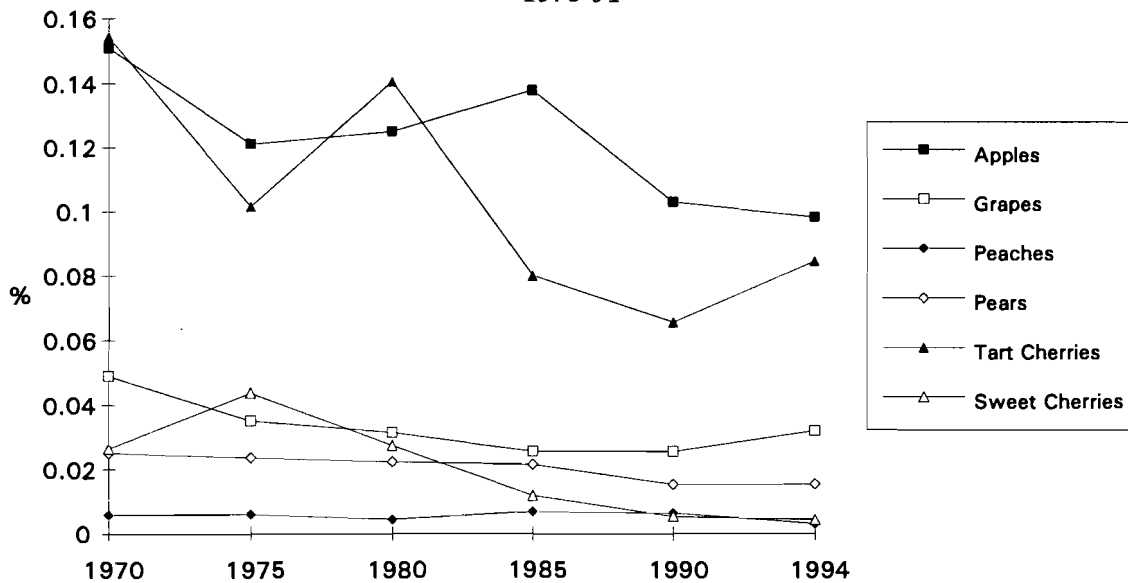
	Apples				Grapes			
	Production	U.S. Share	Value	U.S. Share	Production	U.S. Share	Value	U.S. Share
	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>
1970-72	880.0	14.5	38.0	11.9	303.0	4.6	26.1	7.4
1975	860.0	12.1	58.5	12.7	306.0	3.5	31.5	5.1
1980	1100.0	12.5	103.4	13.5	350.0	3.1	39.4	2.9
1985	1079.0	13.8	75.1	8.2	288.0	2.6	21.2	2.1
1990	990.0	10.3	127.8	8.8	288.0	2.5	40.5	2.4
1992-94	1047.0	9.7	115.6	8.1	317.0	2.7	34.5	1.8
% change	18.9	-33.0	204.5	-31.4	4.4	-42.7	32.1	-75.3

	Peaches				Pears			
	Production	U.S. S	Value	U.S. Share	Production	U.S. Share	Value	U.S. Share
	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>
1970-72	17.5	0.7	1.7	1.0	33.3	2.7	2.0	2.7
1975	16.0	0.6	2.6	1.6	35.0	2.4	2.5	2.4
1980	13.0	1.4	3.1	1.4	40.0	2.2	4.4	2.5
1985	14.0	0.7	3.3	1.7	32.0	2.1	3.9	1.9
1990	13.7	0.6	3.8	1.5	29.2	1.5	3.7	1.4
1992-94	9.9	0.4	2.7	0.7	30.7	1.6	4.5	1.8
% change	-43.4	-40.8	57.4	-30.6	-8.0	-41.4	120.7	-33.3

	Tart Cherries				Sweet Cherries			
	Production	U.S. S	Value	U.S. Share	Production	U.S. Share	Value	U.S. Share
	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>	<i>million lbs</i>	<i>%</i>	<i>\$million</i>	<i>%</i>
1970-72	35.5	13.7	3.1	14.1	9.5	4.0	1.1	2.7
1975	25	10.2	2.6	10.5	13.6	4.4	1.9	3.0
1980	30.4	14.1	5.8	13.3	9.2	2.7	2.1	2.2
1985	22.5	8.0	5.8	9.2	3.0	1.2	1.0	1.0
1990	13.3	6.6	2.8	7.5	1.4	0.5	0.5	0.4
1992-94	20.3	6.9	2.8	6.0	1.4	0.4	0.6	0.3
% change	-42.8	-49.9	-9.3	-57.2	-85.1	-90.2	-47.8	-88.6

Source: USDA, *Fruit and Tree Nuts Situation and Outlook Report, 1996*, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

Figure 21
New York Shares of U.S. Fruit Production
 1970-94



Source: USDA, *Vegetable and Specialties Outlook and Situation Yearbook*, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

Individual New York Fruit Crop Farmland

New York apple production increased slightly between 1982 and 1992 despite losses in the number of farms and acres in the same period. The top two fruit producing regions, Western New York and the Hudson Valley, each lost farms and acreage—Western New York by 26.4 percent and 7.3 percent respectively and the Hudson Valley by 28.6 and 13.5 percent respectively (Table 22, Figure 22).

In 1992 Western New York and the Hudson Valley still contained 56.2 percent and 27.4 percent of New York State's apple orchard acreage. With the exception of Long Island, which maintained the same number of apple producing farms, all other regions also lost farms during the period between 1982 and 1992. However, three regions did gain apple orchard acreage, Northern, Capital District, and Long Island. The Capital District and Long Island increased their apple acres modestly, by 15.8 percent and 11.0 percent respectively. Northern New York grew by 570 acres or 11.2 percent of its previous acreage.

Grape production in New York also increased (14.6%) between 1982 and 1992 in spite of decreases in the number of vineyards and acres devoted to grape production. Every region lost grape farms with the exception of Long Island which actually increased the number of farms from 27 to 43 (59.3 %) and increased acres from 341 to 987 (189 %) (Table 21). Central New York was the only region other than Long Island to increase its acreage which it did so by 5.9 percent. Western New York, the largest grape producer, with 91.9 percent of New York's grape acreage in 1992, lost 31.9 percent of its farms and 22.0 percent of its reported acres.

New York State production of peaches and pears decreased between 1982 and 1992 and peach and pear producing farms and acreage also declined during this period. Western New York had the greatest number of peach farms and pear farms, 55.9 percent of peach and pear farms in

New York in 1992. It also contained the most acreage, 76.2 percent of the State's peach and pear acreage. The Capital District appeared to be the only region in New York to gain peach and pear farms and acreage. However, due to the very few number of farms and acres reported in both 1982 and 1992 and due to Census disclosure rules, these gains may be misleading. In any case the absolute number of farms and acres is small enough compared to total State figures that increases observed in the Capital District may be insignificant.

All other regions in the State with the exception of Long Island lost peach and pear farms and acres. Long Island added 14 acres to peach production in 1992 compared to 1982.

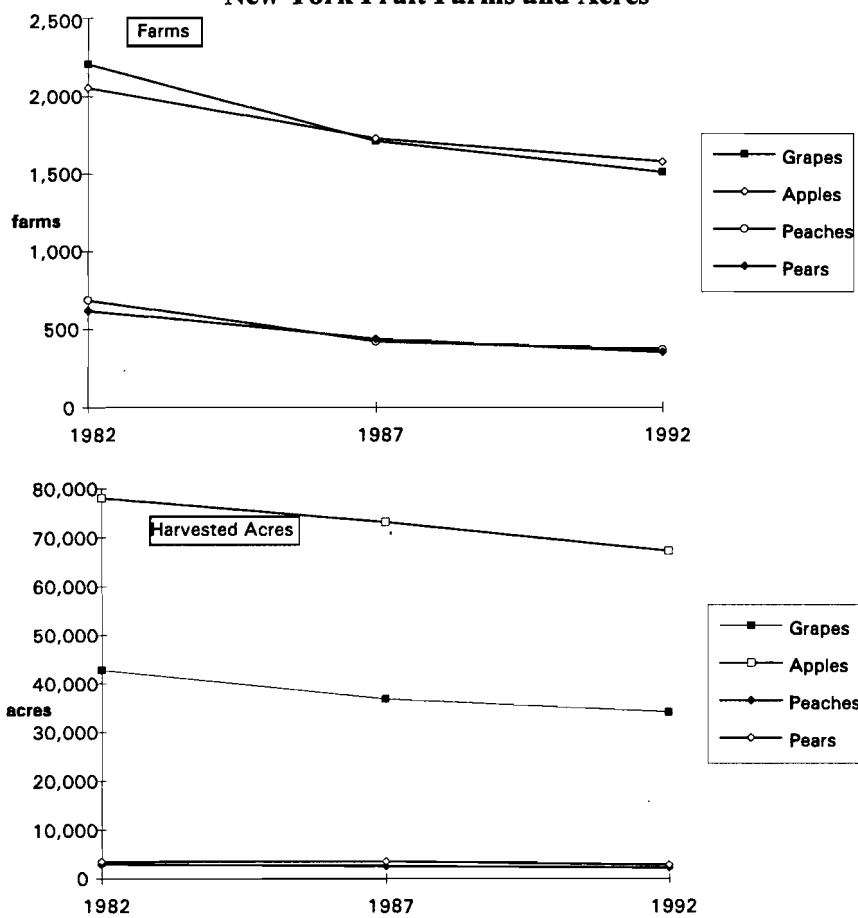
Table 22
New York Individual Fruit Crop Orchards and Acres¹
1982, 1987, 1992

Grapes	Farms			Acres		
	1982	1987	1992	1982	1987	1992
Capital District	23	6	20	13	4	11
Central	87	50	65	913	990	967
Hudson Valley	130	113	88	1,146	888	557
Long Island	27	50	43	341	1,245	987
Northern	22	16	17	11	12	6
Western	1,857	1,441	1,265	40,354	33,418	31,478
New York State	2,207	1,710	1,510	42,832	36,916	34,250
Apples						
	Farms			Acres		
	1982	1987	1992	1982	1987	1992
Capital District	134	126	117	2,065	1,951	2,260
Central	237	188	192	2,818	2,597	2,444
Hudson Valley	430	332	307	26,143	21,346	18,469
Long Island	38	26	38	190	227	252
Northern	146	141	142	5,089	4,953	5,659
Western	1,055	904	776	41,043	41,339	38,051
New York State	2,055	1,726	1,578	78,115	73,195	67,313
Peaches						
	Farms			Acres		
	1982	1987	1992	1982	1987	1992
Capital District	0	0	3	0	0	7
Central	30	9	16	38	13	29
Hudson Valley	127	68	75	465	416	398
Long Island	41	25	25	399	286	413
Northern	8	4	6	2	3	1
Western	390	282	224	2,014	1,751	1,377
New York State	685	421	372	3,038	2,596	2,266
Pears						
	Farms			Acres		
	1982	1987	1992	1982	1987	1992
Capital District	7	7	9	0	16	5
Central	21	5	14	50	0	24
Hudson Valley	154	118	100	1,238	1,189	1,123
Long Island	15	7	7	63	0	0
Northern	21	12	15	126	135	97
Western	315	243	182	1,917	2,106	1,468
New York State	618	438	354	3,568	3,634	2,882

¹Regional farm and acre numbers may not add to to New York State total due to census disclosure rules-information from individual farms in some counties withheld to avoid disclosure.

Source: U.S. Department of Commerce, *1992 Census of Agriculture*.

Figure 22
New York Fruit Farms and Acres



Source: U.S. Department of Commerce, 1992 Census of Agriculture.

IV Summary

The information compiled in this report clearly shows that over the past 24 years, the fruit and vegetable industry in New York is losing ground to its competitors in other states. New York has witnessed a decline in its number of fruit and vegetable farms, acreage, production and, importantly, its share of U.S. production and value of that production over the past 24 years (Table 23).

Of the three major U.S. crops in terms of size of production, lettuce, onions, and tomatoes, New York only produces onions on a competitive basis still accounting for 6.3 percent of U.S. production in 1994. Increases in onion production from leading states such as Oregon, Colorado, Washington and Idaho have most likely caused the erosion in New York's share of U.S. onion production, however. Head lettuce and tomatoes are no longer produced in appreciable amounts in New York State compared to the leading production areas and their production continues to decrease.

One of the few bright spots is the cabbage industry. New York continues to be the leader in cabbage for the fresh market. Implementation of leading edge refrigeration in New York in the late 1960's allowed 12 month shipping and allowed New York to take advantage of surges in cabbage consumption in the 1970's and 1980's due to increases in fastfood cole slaws and Chinese cuisine. However, Wisconsin and Canada have installed second generation refrigeration technologies and have become major competitors in the cabbage industry, such that cabbage production in New York in the past 5 years has plateaued or declined.

Table 23
Changes in New York Fruit and Vegetable Situation

	Farms	Acreage	Production ¹	Value ¹	U.S. Share of Value ¹
	% change 1982-92	% change 1982-92	% change 1970-94/95	% change 1970-94/95	% change 1970-94/95
Fruit					
Apples	-23.2	-13.8	18.9	204.5	-31.4
Grapes	-22.5	-20.0	4.4	32.1	-75.3
Peaches	-45.7	-25.4	-43.4	57.4	-30.6
Pears	-42.7	-19.2	-8.0	120.7	-33.3
Vegetables					
Cabbage	-21.4	5.0	160.0	517.4	85.3
Carrots	--	--	-58.3	80.7	-44.0
Cauliflower	-52.3	-53.5	-36.3	93.4	-79.6
Celery	--	--	--	--	--
Sweet Corn	-12.4	7.0	89.4	487.0	44.4
Head Lettuce	0.6	-57.8	-65.3	-17.7	-76.5
Tomatoes	-17.6	-34.4	-18.5	189.7	-21.9
Onions, dry	-27.7	-10.4	3.7	260.6	-8.2

¹Percent change for fruits for periods 1970-72 to 1992-94. Percent change for vegetables for periods 1970-72 to 1993-95.

Source: U.S. Department of Commerce, 1992 *Census of Agriculture*, and New York Crop Reporting Service, *New York Agricultural Statistics*, selected issues.

Sweet corn production continues to rise both nationally and in New York State. New York is ranked as the fourth leading state in sweet corn production, and production continues to increase along with substantial increases in acreage. Proximity to the major East coast markets, more aggressive marketing by shippers and the popularity of farmers' markets may have contributed to the increase in sweet corn production. However, competition is likely to become stronger from other growing regions as new strains are developed which maintain sweetness and allow for shipping over greater distances.

Apples and grapes are the two leading fruit crops in the U.S. and are also the leading fruit crops in New York. However, New York's share of U.S. apple and grape production is eroding and production in other states, particularly Washington and California, is expanding.

The data and production trends documented in this report suggest that the comparative advantages of producing and marketing fruits and vegetables in the U.S. appear to have gradually shifted to California, Florida, Washington, Arizona, and Texas. These advantages apparently outweigh the advantages that Northeastern producing states may have such that these states, New York the largest fruit and vegetable producer among them, no longer have a local advantage in marketing to the sizable East coast metropolitan markets.

Reasons for these shifting comparative advantages enhancing production in the top five states are not entirely clear and require considerable further research. Some of the factors often cited to explain these shifting advantages include:

- ◆ favorable growing conditions in western and southern states,
- ◆ new technologies/hybrids more suitable to western and southern climates,
- ◆ marketing orientation of larger grower/shippers,
- ◆ water availability and relatively cheap cost in western U.S.,
- ◆ easier access to Pacific Rim export and import markets from western states,
- ◆ lack of urban development pressures in certain western and southern production regions,
- ◆ developments in transportation and refrigeration, and
- ◆ economies of scale in packing, shipping, selling.

California continues to dominate fruit and vegetable production and has actually increased its share as the leading U.S. producer over the past 24 years. However, a few other states such as Washington, Oregon and Idaho appear to have capitalized on certain advantages and have grown steadily as leading producers of crops such as apples, grapes, and onions.

In order to compete with other leading producers of fruits and vegetables, New York must understand the forces that are driving these production and marketing changes both in New York and its competitors. Understanding the market forces in the wholesaling and retailing industries are critical. Wholesale and retail buyers are undergoing changes in their own buying environment and practices. Some initial evidence suggests that competing states have been able to better meet changing buying requirements and therefore have flourished at the expense of New York State under this new environment. New research to examine produce buying and distribution at all levels should be undertaken to suggest methods by which New York State could more effectively compete and develop a vibrant produce industry.

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