

CORNELL
AGRICULTURAL ECONOMICS
STAFF PAPER

Overview Of The New York State Vegetable Industry

by

Enrique E. Figueroa

November 1993

A.E. Staff Paper 93-21

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

OVERVIEW OF THE NEW YORK STATE VEGETABLE INDUSTRY*

Enrique E. Figueroa**

I. INTRODUCTION

Per capita consumption of vegetables by Americans has increased by 15.5% since 1976--5% for canned; 23.5% for frozen, and 22.9% for fresh vegetables. Conversely, the consumption of fresh potatoes has declined by 5.5% while processed potato consumption has increased by 13.5%. Figure 1 provides the actual pounds of consumption for the various vegetable sectors. A number of factors have contributed to increased consumption of vegetables. On the supply side, the primary factors were: a.) a greater availability of products on a year round basis; b.) a larger variety of vegetables available; c.) a more diverse set of vegetable product forms; and d.) an increased propensity by foodservice establishments to provide fresh vegetables as part of their menu. On the demand side, the primary factors were: a.) a change in lifestyles that associate eating fresh vegetables as more healthy; b.) a change in preferences towards foods with less fat and/or cholesterol; c.) a change in preferences towards more convenience (a number of vegetable containing foods lend themselves to less preparation time); and d.) the effect of advertising and promotion by both private and public entities. In short, the demand for vegetables will likely continue to increase because the factors contributing to increased demand will not abate in the near future.

Part of the increased demand for vegetables has been met by imports--primarily fresh and frozen vegetables from Mexico. Exports of fresh vegetables have also increased and in both 1991 and 1992, exports surpassed imports. Figure 2 illustrates the pattern of U.S. fresh market vegetable trade. Since 1976, fresh market vegetable imports grew by 62% while exports

* Paper presented at The Governor's Conference on Agricultural Science and Technology, Albany, New York, November 9-10, 1993.

** Associate Professor, Department of Agricultural, Resource and Managerial Economics, Cornell University, Ithaca, New York, November 1993.

increased by over 106%. Very dramatic increases have taken place in frozen vegetable imports--a whopping 3,857% since 1976, but imports still only represent 7% of U.S. frozen vegetable production. Canned vegetable imports have increased by 55%, ten-times the growth rate of per capita consumption. Frozen vegetable exports were less than half of imports in 1992 while canned exports were a little over one-tenth of imports.

For the New York State vegetable industry one key question is how the industry can capture a bigger share of expanding national and world markets. No doubt, many factors play a role in establishing competitiveness in an industry, but it is better to compete in an expanding market as compared to competing in a stagnant and/or shrinking market.

II. TRENDS IN NEW YORK STATE VEGETABLE PRODUCTION

Some New York vegetables have been more competitive than others, particularly fresh market vegetables. In farm gate value terms, New York is the fifth largest producer of fresh market vegetables while it ranks ninth in processed vegetable production. Overall, it ranks sixth in the country, but drops to ninth when potato figures are added. The principal vegetables for New York are: onions, potatoes, sweet corn, cabbage, and green beans. The farm gate value in 1992 was nearly \$250 million, while in 1991 the value nearly reached \$300 million. In real terms, fresh vegetable production value has not appreciably increased. Figure 3 illustrates the pattern of growth for NYS fresh market vegetables. Vegetables produced for processing have not been as competitive and processing capacity has declined. In both nominal and real terms, the farm gate value of NYS processed vegetables has declined since 1976. Figure 4 illustrates the decline. The decline mostly took place between 1980 and 1989 and the sector now appears to have leveled-off. Processing vegetables represent approximately one-tenth the value of fresh market vegetables.

Equal amounts of acres are planted to processing and fresh market vegetables. Since 1976, fresh market vegetable acreage has remained the same while processing acreage has declined 16%. Potato acreage has declined markedly, almost entirely in Long Island, and now represents less than half the acreage harvested in 1976. More revealing, perhaps, are the figures illustrated in figures 5 and 6. The graph depicts the per acre value of the three sectors in the

industry. In both real and nominal dollars, the fresh market sector has increased in value per acre since 1976 and now stands at \$2,600 per acre. The nominal per acre value for potato production has increased and reached \$1,900 per acre in 1992. Processing vegetables yield approximately \$475 per acre and the value per acre has been flat.

Table 1 provides the most detail with respect to the rates of growth of individual vegetables in NYS. The state is highly dependent on two commodities--the value of production of onions and potatoes represents nearly 50% of all the state's vegetable production value. However, the trend in production value since 1976 for the two commodities has been quite different--for onions a positive trend of \$1.297 million dollars per year whereas no trend is evident for potatoes (in real dollars, the potato trend is likely negative as are the trends for other vegetables with a "zero" figure on column five in table 1). Fresh market sweet corn had the second largest growth trend--\$1.08 million per year--followed by fresh market green beans and tomatoes. The only two vegetables listed in table 1 with a negative growth trend are processed green beans and beets. Processed sweet corn, cucumbers, carrots, and celery had their highest value year (within the last 17 years) in 1992 and therefore one may infer that these vegetables have relatively good prospects in the near future. In 1992, onion production value almost reached the peak value of 1980. For the entire group listed in table 1, the growth trend is \$5.459 million per year and 1991 represented the highest value year at nearly \$300 million dollars. This paper does not allow for expounding on the factors that have led certain vegetables to grow in value while others have declined. Suffice it to say that the factors are complicated and not generically applicable across vegetables.

Table 1 should be used with some caution because it only presents vegetables for which statistics are readily available. A number of vegetables such as bell peppers, herbs, leafy greens, melons, pumpkins, and squash may individually represent larger farm gate values than some listed in table 1. In fact, the author strongly believes that the value of beets is less than any of the six items just mentioned. Unfortunately, official statistics do not exist for, say, pumpkins and therefore we can only speculate about the actual value of NYS pumpkin production. Strawberries are listed in table 1 because the NYS Department of Agriculture and Markets includes them with

vegetable statistics. The author recognizes they are not vegetables. Conversely, the NYS Department of Agriculture reports dry beans under the "field crops" category and therefore the author does not include them in the table 1 even though many define dry beans as vegetables.

III. COMPETITIVE POSITION OF NYS VEGETABLES

The Northeast represents approximately 52 million consumers or 20% of the U.S. population. By 2010, the region is forecast to increase to 55.8 million or 17% of U.S. population. No doubt, a large food market exists within a relatively short distance from New York, but the market will grow at relatively lower rates than other parts of the U.S. Therefore, efforts to expand market share in areas other than the Northeast may yield relatively better returns than efforts to expand market share in the Northeast. In fact, some of the more successful marketers of vegetables and vegetable products sell relatively large percentages of their products outside the Northeast. The competitive position for the NYS vegetable industry is quite varied--both in present terms and in future potential. The following three examples serve to illustrate the varied situation.

New York fresh market sweet corn production is only surpassed by California and Florida, but in value terms Pennsylvania is ahead of New York. In fact, over the past three years, Pennsylvania fresh market sweet corn has sold for \$6.50 (on average) more per hundred-weight (cwt) than NYS corn. New York holds a 9.6% national market share in production, but only a 7.8% share in value. New York yields have not increased over the past ten years and are 7,300 lbs. per acre while the national average is 8,600 lbs. National per capita consumption of fresh market sweet corn has declined from 8 lbs. in 1976 to 6.4 lbs. in 1992--a 20% decline. Therefore, even though the per unit price of NYS fresh market sweet corn is relatively lower than competing states, the growth trend in production value is \$1.08 million per year in a **shrinking national market**. The increase in value is because of increased acreage, but New York is still well positioned to continue competing well in the fresh sweet corn market and it could do better if yields could match the national average.

National consumption of fresh market onions has increased from 11 lbs. in 1976 to 16.2 lbs. in 1992--a 47% increase. New York's share of national production is 8.1% (13.9% of fall storage onions), but 10.7% in value terms (19.0% of fall storage onions). New York producers have increased yields by 35% over the past ten years and now obtain 35,000 lbs. per acre while the national average for fall storage onions is 44,000 lbs. Over the past three years, NY onions have commanded about \$5.00 more per cwt than the average price for the other states producing fall storage onions. New York ranks third in production value and fifth in production even though acreage has declined by 10% over the past ten years. Therefore, in an expanding national market, NYS onion producers have been able to maintain a relatively stable market share in production, but have expanded their share in value. The 17-year growth trend for NY onions is \$1.297 million dollars per year. The NYS onion industry is also well positioned to compete in the future, but it is more dependent on an expanding national market than, say, fresh market sweet corn producers. Increasing yield to national average standards would enhance the state's competitive position.

Cucumbers are the third example. National per capita consumption has increased 58% since 1976--from 3.1 lbs. to 4.9 lbs. Within the vegetables category, this rate of growth is among the fastest. New York holds approximately equal national shares in both production and value--5.8% and 6.4%, respectively. The price New York cucumbers obtain in the market is slightly higher than national averages, about \$1.50 per cwt. However, the differential in yields is similar to both sweet corn and onions and is about 80% of national averages. New York cucumber producers obtain 14,000 lbs. per acre while the national average is 17,600 lbs. The growth trend in NYS production value is \$344,000 per year since 1976. The driving forces behind New York's competitiveness in the national cucumber market are both increased acreage--15%--and increased yields--25% over the past ten years. The opportunity presented by a fast growing national market was and most likely will continue to be met by NYS cucumber growers.

The above three serve to illustrate that there are no specific or generically applicable factors that lead NYS vegetables to be more or less competitive in national markets. Markets are sufficiently different that each vegetable needs to be analyzed within the context of its particular

market. Also, the three examples represent success stories--for many other vegetables produced in NYS have not been as competitive. Also, the national shares held by NYS vegetables are within the 10% range and therefore no NYS vegetable holds a dominant position. In addition, the reader should notice that no mention is made of how NYS competes in world markets nor how the state competes for basic production inputs such as capital, chemicals, labor, land, machinery, managerial capabilities, and water. These factors are all very relevant, but the parameters of this paper do not allow for adequate treatment of these issues.

IV. MARKET STRUCTURE OF VEGETABLE SALES AND DISTRIBUTION

New York has a diverse market structure for sales and distribution of fresh and processed vegetables. In addition, vegetable farms range from small specialized operations to large and diversified operations. Processing firms range from large publicly traded corporations to farmer cooperatives to small privately owned processors, particularly specialty product processors. The state is home to the largest produce terminal market in the country--Hunt's Point in NYC. Also, a number of supermarket chains have their headquarters and/or produce distribution warehouses in the state. There are a number of regional markets such as the Syracuse market as well as many farmers' and greens' markets scattered throughout the state. Finally, a large number of direct market operations retail significant quantities of NYS vegetables. Given this plethora of wholesale and retail outlets, no concise manner exists for adequately describing or analyzing the market structure. However, the following rudimentary comments can be made.

According to the 1987 Census of Agriculture there were 1,601 vegetable and melon farms in NYS with an average production value of just under \$100,000 per farm--an 11.2% increase from 1982. The 1987 NYS Direct Marketing Survey found 1,741 farms selling vegetables directly to consumers. Average sales for vegetable product direct marketers were \$14,037. Both of these sources are somewhat dated, but they are the only existing data sources. The number of vegetable farms has most likely increased since 1987, but most farms are still quite small. A relatively small number of farms produce the majority of commercial vegetable production. Direct marketers have increased in both size and number and now represent a significant outlet for

fresh vegetables, including organically produced product. Both of the sources cited above most likely under-count the number of farms/firms because many of the smaller operations are not included.

The NYS Department of Labor supplied the following information regarding employment in the vegetable sector. Figures are compiled by the Standard Industrial Classification (SIC) taxonomy and indicate "peak month" employment. In Irish potato, vegetable, and melon farms, 4,500 workers were hired during 1992. In the processing of canned fruits and vegetables (figures not available for vegetables alone) industry, employment was 5,000 while the frozen fruit and vegetable processing industry employed 1,150. The industry involved in wholesale distribution of fresh fruits and vegetables hired 5,700 while the fresh fruit and vegetable retail industry hired 3,400 persons. Therefore the sum of the various industry peak employment months is nearly 20,000 individuals. The author believes this is a very conservative estimate because many firms may not be included in the employment statistics.

V. RESEARCH AGENDA

Five areas of research inquiry related to the economics of the vegetable industry come to mind. Surely, others may be important as well, but the author's analysis indicates these five may measurably enhance the long term viability and vitality of the NYS vegetable industry. The five are identified through very short descriptions.

V.a. Data Collection and Dissemination

There exists a tremendous demand for precise, timely, and user friendly data specific to New York and/or the Northeast. Currently, no data exists concerning vegetable trade between New York and other parts of the U.S. or the world. Timely and user friendly data on market prices and volumes for a variety of vegetables does not exist. Much of the current data is not very precise nor is it available on a monthly (weekly) basis. Without a better data gathering mechanism(s), policy makers and firm managers will continue to make decisions based on imperfect information. Such decisions invariably lead to sub-optimal outcomes.

V.b. Identification of Emerging Markets

Market information on both a geographic as well as product form basis needs to be collected and disseminated. Currently, what little information is provided to the industry is either generated within the firm (large processing firms, for example) or individual firm managers hire outside consultants to provide such information. Providing this information to the public at large would free firms to compete on a production and/or manufacturing basis rather than on a market intelligence basis.

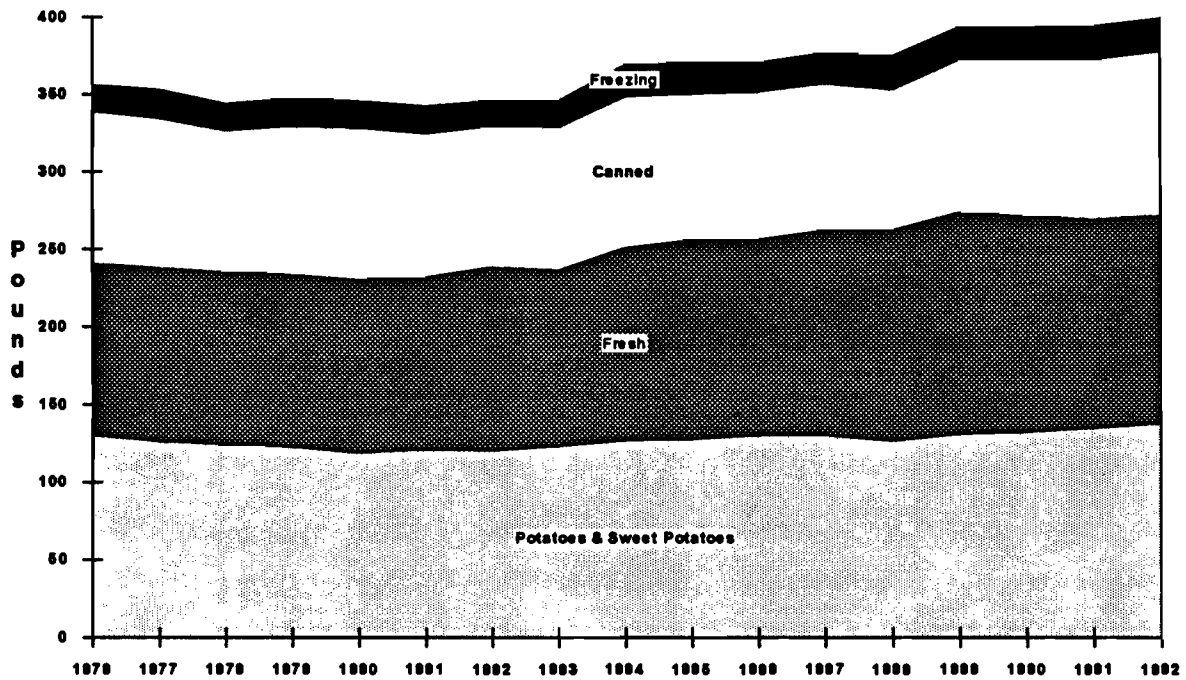
V.c. Extension Personnel

Historically, extension personnel have primarily provided assistance in the production of vegetables. Today, however, the largest marginal returns are in providing educational assistance for "post-farm-gate" problems. Information on packaging, distribution strategy, marketing, promotion, etc. will yield higher long term returns to the industry than the *status quo*. The research would involve identifying the optimal path(s) to achieving competence in this arena.

V.d. Northeastern Consumer Preferences

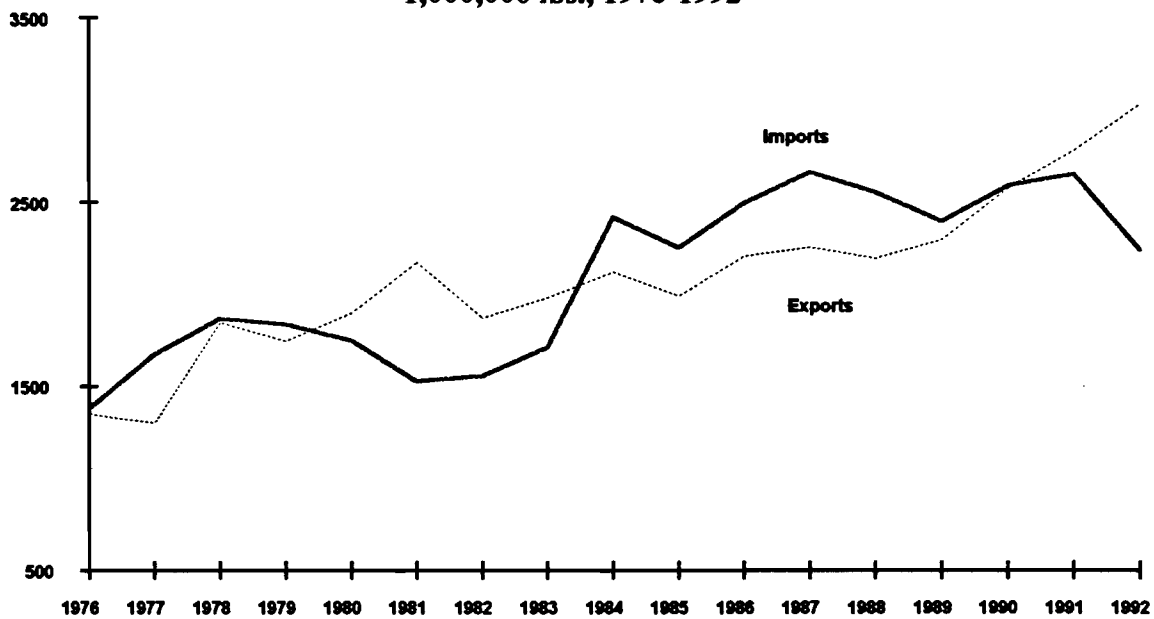
At the onset of this paper, the author argues for market expansion outside the Northeast as compared to within the Northeast. This proposition does not contradict that position, but rather states that there are still 55 million consumers in the Northeast for which we know relatively little about their preferences for vegetables. Bringing new products to market and/or extending the market for currently marketed products requires better information on specific market segments.

Figure 1
U.S. PER CAPITA USE OF SELECTED, COMMERCIALY PRODUCED, FRESH AND PROCESSING VEGETABLES



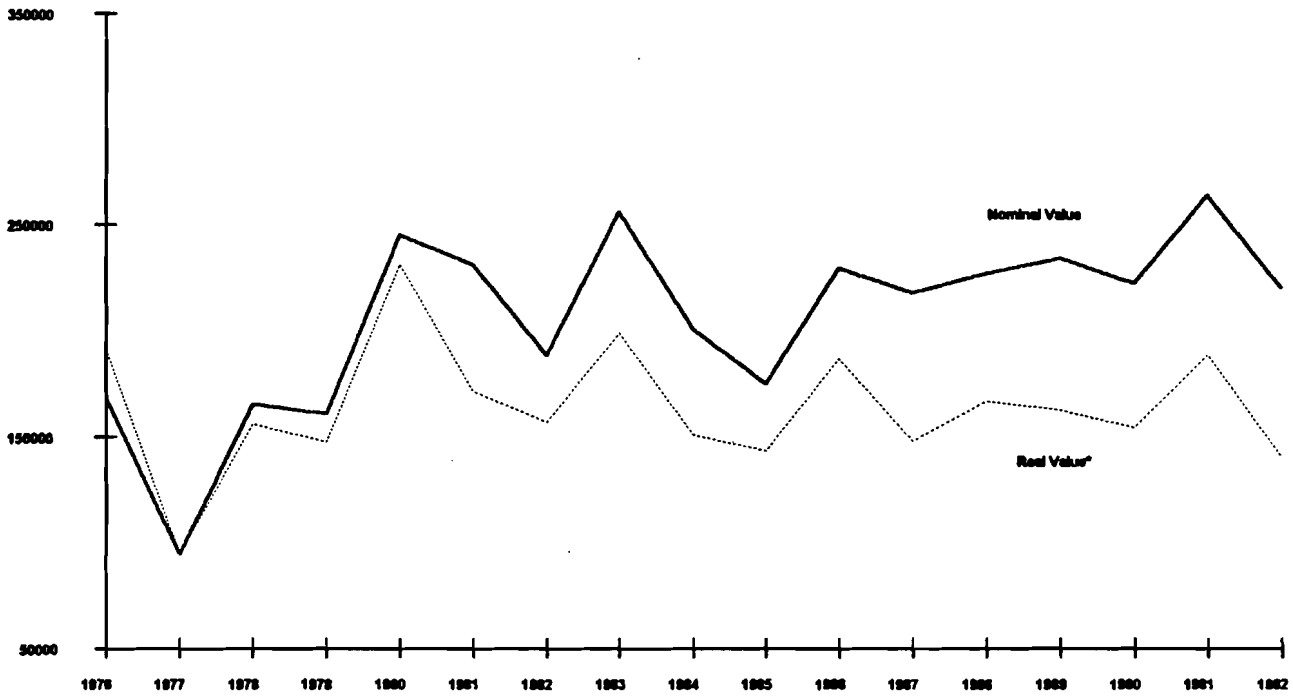
Source: Vegetables and Specialties Situation Outlook, ERS/USDA, TVS, 260, July 1993

Figure 2
U.S. TRADE OF FRESH MARKET VEGETABLES
 1,000,000 lbs., 1976-1992



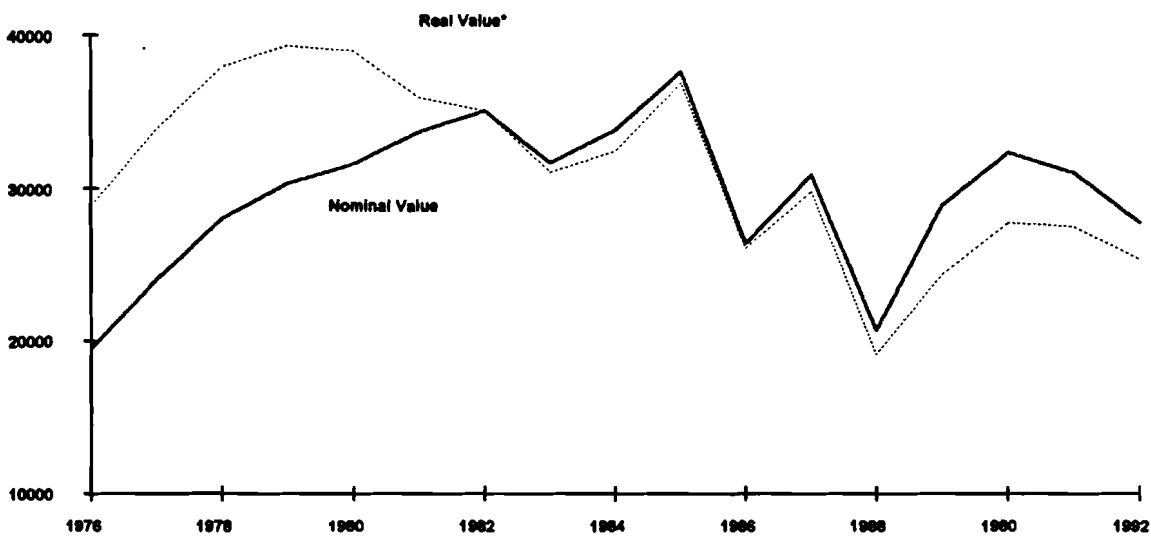
Source: Vegetable and Specialties, Situation and Outlook Yearbook, USDA, Economic Research Service, TVS-260, July 1993.

FIGURE 3
FARM GATE VALUE OF NYS FRESH MARKET VEGETABLES
1976-1992, \$1,000 OF DOLLARS



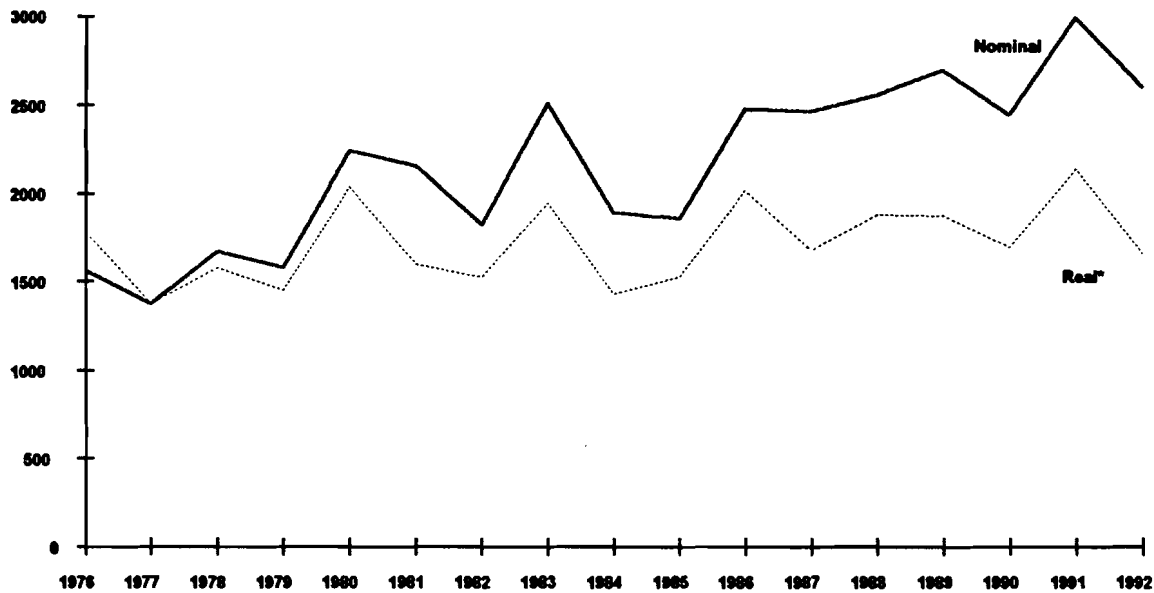
*-- Deflated by Fresh Market Vegetable Season-Average Grower Price Index, NASS/USDA.
 Source: New York Agricultural Statistics 1992-1993. New York Agricultural Markets, Division of Statistics, Various Issues.

FIGURE 4
FARM GATE VALUE OF NYS PROCESSED VEGETABLES
1976-1992, \$1,000 OF DOLLARS



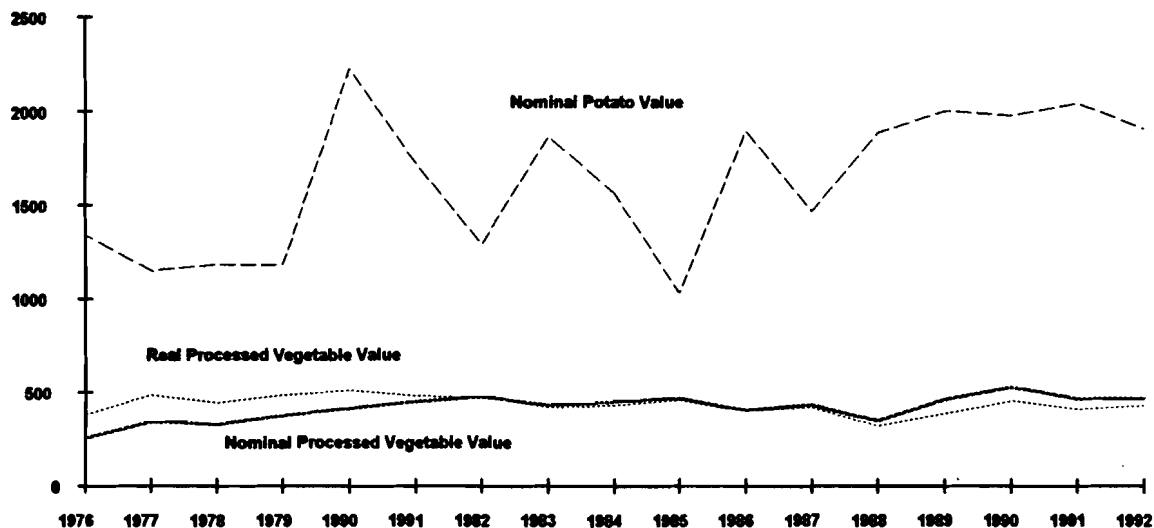
* -- Deflated by Processed Vegetables Retail Price Index, B.L.S./D.O.L.
 Source: New York Agricultural Statistics 1992-1993. New York Agricultural Markets, Division of Statistics, Various Issues.

FIGURE 5
FARM GATE VALUE PER ACRE FOR FRESH MARKET NYS
VEGETABLES
 1976-1992, DOLLARS



*-- Deflated by Fresh Market Vegetable Season-Average Grower Price Index, NASS/USDA.
 Source: New York Agricultural Statistics 1992-1993. New York Agricultural Markets, Division of Statistics, Various Issues.

FIGURE 6
FARM GATE VALUE PER ACRE FOR POTATOES AND
PROCESSED NYS VEGETABLES
 1976-1992, Dollars



* -- Deflated by Processed Vegetable Retail Price Index, B.L.S./D.O.L.
 Source: New York Agricultural Statistics 1992-1993. New York Agricultural Markets, Division of Statistics, Various Issues.

TABLE 1
COMMODITY RANKING OF VALUE OF NEW YORK STATE
VEGETABLE PRODUCTION IN 1992

Commodity	Value of 1992 Production	1976-1992 Avg. Value	Highest Value In Past 17 Yrs.	17 Year Value Trend Per Yr.	Value Share in 1992
	----- millions of dollars -----				%
Onions	61.990	44.227	(1980) 62.612	1.297	25.0
Potatoes	51.520	58.115	(1980) 97.628	zero	20.8
Cabbage	20.029	27.140	(1983) 48.828	zero	8.08
Sweet Corn (fresh)	19.647	19.389	(1989) 29.958	1.080	7.92
Strawberries	11.556	8.174	(1991) 14.421	0.570	4.66
Sweet Corn (processed)	11.045	7.264	(1992) 11.045	0.353	4.45
Cauliflower	10.256	8.336	(1984) 11.677	0.283	4.13
Cucumbers	9.948	5.262	(1992) 9.948	0.344	4.01
Carrots	7.807	4.183	(1992) 7.807	0.256	3.15
Lettuce	7.782	8.886	(1981) 13.412	zero	3.14
Green Beans (processed)	7.675	13.977	(1980) 19.134	-(0.327)	3.10
Green Beans (fresh)	7.385	8.677	(1989) 18.603	0.475	2.98
Tomatoes	6.846	10.766	(1988) 17.434	0.434	2.76
Green Peas (processed)	5.887	4.069	(1985) 8.564	0.233	2.37
Celery	5.441	3.261	(1992) 5.441	zero	2.19
Beets	1.785	1.972	(1979) 2.950	-(0.050)	0.72
Cabbage (Kraut)	1.365	2.347	(1981) 3.199	zero	0.55
TOTALS	247.964	236.044	(1991) 294.663	5.459	100.00

Source: New York Agricultural Statistics 1992-1993. New York Agricultural Markets, Division of Statistics. July 1993.

OTHER AGRICULTURAL ECONOMICS STAFF PAPERS

No. 93-11	Prior Information, General Information, and Specific Information in the Contingent Valuation of Environmental Risks: The Case of Nitrates in Groundwater	Gregory L. Poe Richard C. Bishop
No. 93-12	Characteristics of Small Business Succeeding in the Next Century	Robert A. Milligan
No. 93-13	Financial Management on Large Dairy Farms	Eddy L. LaDue
No. 93-14	Incorporating Price Regulation in Causality Tests for Dairy Markets	Paula A. Emerick Lois Schertz Willett Andrew M. Novakovic
No. 93-15	Dynamics of Price Changes: Implications for Agricultural Futures Markets	William G. Tomek
No. 93-16	The Effect of Selected Farm Characteristics on Dairy Farm Profitability: A Logistical Regression Analysis	Kevin E. Jack
No. 93-17	Analyzing the Impacts of the Proposed North American Free Trade Agreement on European-North American Dairy Trade Using a Joint-Input, Multi-Product Approach	P.M. Bishop J.E. Pratt A.M. Novakovic
No. 93-18	Photovoltaic Technology: Markets, Economics, Development	Jon D. Erickson Duane Chapman
No. 93-19	The Effect of Deferred Taxes on Market Value Balance Sheets	Eddy L. LaDue
No. 93-20	Solar Power and Climate Change Policy in Developing Countries	Thomas E. Drennen Jon D. Erickson Duane Chapman