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The Feasibility of a Mid-Hudson Valley Wholesale Fresh Product Facility

A Buyer Assessment



Craig Robert Kreider
Edward W. McLaughlin

Food Industry Management Program
Department of Agricultural, Resource, and Managerial Economics
College of Agriculture and Life Sciences
Cornell University, Ithaca, New York 14853

in cooperation with the
United States Department of Agriculture
Agricultural Marketing Service
Wholesale & Alternative Markets Program
and the
New York State Department of Agriculture and Markets

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**The Feasibility of A Mid-Hudson Valley
Wholesale Fresh Produce Facility:
A Buyer Assessment**

by

Craig Robert Kreider

Edward W. McLaughlin

*Food Industry Management
Department of Agricultural, Resource, and Managerial Economics
Cornell University
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Executive Summary

The fresh fruit and vegetable industry has been one of the most vibrant components of the U. S. food system over the past few decades. Consumer demand has escalated and both buyers and sellers have responded with impressive new programs, products and technologies. Although the overall result has been an unequivocal improvement in system performance, the newly evolved system has developed a new set of standard operating practices and a changed structure for its product distribution: production sourcing is now increasingly global, retailing is more concentrated and the roles of the varied marketing firms and agents have been altered in many, but largely undocumented ways. Better information is required on the changed role of one of the oldest and most traditional of marketing channels: the produce wholesale market.

The confluence of the above forces provides the backdrop to the genesis of this report. Aware of these new forces as early as the 1980s, various local produce industry participants in New York State's Mid-Hudson Valley along with state officials called for investigation of the possibility of some type of new market to better serve regional growers and their wholesale/retail customers. Several earlier studies, in large measure with a grower orientation, proved inconclusive. Thus the objective of the current study is to explore the feasibility of a fresh produce wholesale facility to be located in the Mid-Hudson Valley Region of New York State from the perspective of the produce buyer.

Comparative advantage, apparently both in production and marketing, has continued to shift away from the Northeastern fruit and vegetable industry over the past three decades. Both New York State and the Mid-Hudson Valley Region have become less important in the production of fresh fruits and vegetables since the 1970s: while U.S. fresh fruit and vegetable production increased by 48 percent from 1970 to 1992, New York State production of fresh fruits and vegetables increased only 1.3 percent over the same time period. Additionally, the New York State portion of the overall value of fresh fruit and vegetables slipped from 3.8 percent of the U.S. total in 1969 to 2.4 percent in 1992.

Whereas such supply factors were better known, the demand forces and the buying processes were less well understood. Accordingly, in this study, fifty-seven Northeastern fresh produce buyers were interviewed regarding their firms' operations, buying preferences and their potential interest in a new fresh produce wholesale facility in the Mid-Hudson Valley. The sample of buyers included buyers at most wholesale/retail levels and generally indicated an increasing tendency to purchase directly from shipping point,

often from far away markets. New York State growers contributed less than 16 percent to the buyers' purchases; less than 6 percent originated specifically from the Mid-Hudson Valley Region.

Buyers dealt with an average of 157 suppliers on a regular basis, 30 of whom were located in New York State and 6 of whom were located in the Mid-Hudson Valley. "Quality" and "poor packing practices" were the most often mentioned barriers to buyer purchase of Mid-Hudson Valley produce, while "poor packing" and "limited growing season/availability" were the barriers most often mentioned with respect to buyer purchase of New York State fresh produce in general. When asked about new trends and the future, buyers clearly indicated that "value-added" items had dominated the growth in their businesses over the past three years and, further, expected these same items to lead growth over the next three years.

Although buyers had a considerable number of suggestions for improvements in currently operating secondary wholesale markets--e.g., expanded space, more modern cooling technology--they were generally quite satisfied with the performance of current wholesale firms, both on-market and off-market. Over three quarters of the buyers participating in the study indicated they "might" purchase fresh produce from a new Mid-Hudson Valley Region wholesale facility although only two indicated they would consider locating to a new facility.

This study produced a crude estimate of the current sales of Mid-Hudson Valley fresh fruit and vegetables to Northeast regional buyers at approximately \$150 million. It should be stressed that this estimate is tentative and primarily directional. However, national and regional production and consumption trends, when integrated with the results of this study, point to a likely decline in this volume of sales by perhaps 5 to 10 percent by the year 2005. Consequently, since buyer assessment with current market options must be evaluated as satisfactory, we conclude cautiously that an entirely new fresh produce facility is unlikely to be a wise investment decision at this time.

While an entirely new market appears unneeded, a number of more modest alternatives are elaborated in this report that have the potential to better serve both growers and buyers. These include: investments that will result in improved product quality; various organizational types to facilitate collective action for growers; and development of a "value-added" processing or consolidation facility, particularly at an already established location.

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Chapter 1

Introduction

This report examines the feasibility of a new fresh fruit and vegetable wholesale market facility in the Mid-Hudson Valley of New York State. The study is positioned primarily from a demand perspective, that is, from the perspective of the fresh produce buyer. The chapter below describes the background of the problem, the market areas investigated and summarizes the overall purpose(s) of this study. Subsequent chapters provide information regarding:

- the changing production and market position(s) of the fruit and vegetable industry in New York State
- methodologies employed for market feasibility analyses including the one used in this study
- the analysis of the primary data collected from the wholesale/retail buyer sample of this study

The study concludes by suggesting that a new market may not be a wise investment at this time, however, there are other production and marketing alternatives that should be explored.

1.1 Fresh Fruit and Vegetable Consumption and Sales

Fresh fruit and vegetables have become an increasingly important part of American consumers' diets. Per capita consumption of fresh fruit has increased from 79.4 pounds in 1970 to 92.2 pounds in 1992, an increase of 16.1 percent (Fresh Trends 1993). Per capita consumption of fresh vegetables increased from 110.4 pounds to 136.2 pounds over the same time period for an increase of 23.4 percent (Fresh Trends 1993).

Individual consumer spending for fresh fruits and vegetables 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 9.1 percent (\$22.0 billion) of store sales in 1983 to 10.2 percent (\$37.8 billion) in 1993 (Supermarket Business 1994).

These trends have paralleled the increased management emphasis on the produce department and partly explain why many retailers now utilize 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).

1.2 U.S Fruit and Vegetable Production

Between 1970 and 1992 (the most recent year for which comprehensive data are available) the market value of the total U.S. principal fresh vegetable crops increased from \$1.2 billion to \$6.2 billion (Table 1.1), an increase of 416.7 percent (USDA 1984, 1993 (a)). Over the same time period, the volume of fresh vegetable production increased from 22.7 billion pounds to 37.0 billion pounds, an increase of 63.0 percent.

Table 1.1
U.S. Fruit and Vegetable Production and Value, 1970-92

	Vegetables				Fruit		Total	
	Fresh Market		Total		Total		Fruit and Vegetable	
	Million - lbs -	- \$1000 -	Million - lbs -	- \$1000 -	Million - lbs -	- \$1000 -	Million - lbs -	- \$1000 -
1970	22,716	1,233,222	41,310	1,643,411	42,972	1,788,455	84,282	3,431,866
1975	23,987	2,159,168	51,054	3,195,803	54,490	3,068,111	105,544	6,263,914
1980	26,496	3,182,975	48,110	4,047,426	63,976	5,685,678	112,086	9,733,104
1985	21,719	2,926,791	45,303	3,950,724	49,432	5,911,221	94,735	9,861,945
1990	25,285	3,685,410	56,193	5,018,376	53,034	7,776,405	109,227	12,794,781
1992	37,032	6,151,006	65,529	7,279,249	59,136	8,428,874	124,665	15,708,123

Source: USDA Agricultural Statistics 1973,78,83,87,93; Fruit and Tree Nuts Situation and Outlook Yearbook 1984, 94.

The overall (fresh and processed) production of principal vegetable crops increased 58.6 percent over the same time period, while the overall value increased by 356.3 percent (USDA 1983, 1993 (a)). Total production of fruit in the U.S. increased 37.6 percent between 1970 and 1992, from 42.9 billion pounds to 59.1 billion pounds. Production value increased 388 percent over the same time period, totaling \$8.4 billion in 1992. Production of all fruits and vegetables totaled 124.7 billion pounds in 1992, an increase in production of 47.9 percent from the 84.3 billion pounds produced in 1970. In 1992, the \$15.7 billion fruit and vegetable production value represented 9.7 percent of the \$162.6 billion of U.S. agriculture products sold (USDA 1992 (a) U.S. Dept. of Commerce 1992 (a)).

Table 1.2 illustrates the relative production of fresh market vegetables for the top six states in the U.S. for 1970-72, 1980-82 and 1990-92. California was the leader in vegetable production for each of the time periods, climbing from 42.3 percent in 1970-72 to nearly half of the total US value of production of fresh vegetables in 1990-2. Florida was a distant second, contributing an average of 19 percent of the U.S. value of production in 1990-92. The total

value of production from the top six states increased from 80.5 percent in 1970-72 to 84 percent in 1980-82 before falling back to 81 percent in 1990-92.

Table 1.2
U.S. Commercial Fresh Vegetables, Value of Production,
Top Six States, Selected Years

	1970-72		1980-82		1990-92	
	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	2,219	49.0
Florida	237	17.3	409	16.5	900	19.1
Arizona	79	5.8	138	5.5	205	4.5
Texas	118	8.7	157	6.3	152	3.2
New York	48	3.5	105	4.3	136	3.0
Michigan	39	2.8	70	2.8	102	2.3
Totals	1,097	80.5	2,078	84.0	3,714	81.0

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

While the dollar value of New York State fresh vegetable production increased by 183 percent from 1970-72 to 1990-92, New York's contribution to the U.S. total fresh vegetable value actually fell from 3.5 percent in 1970-72 to only 3.0 percent in 1990-92.

Similarly, 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 43 percent in 1969 to 48.5 percent of the value in 1992 (Table 1.3).

Florida's share of the value of U.S. fruit production decreased from 23.7 percent in 1969 to 19.9 percent in 1992. New York contributed 4.0 percent to the total value of U.S. fruit production in 1969, however its contribution fell to 2.1 percent in 1992. Similarly, although New York State accounted for 6.1 percent of the value of all non-citrus fruit in the U.S. in 1969, this share had fallen by more than half, to only 3.0 percent in 1992. The top six states' share of the value of U.S. fruit production increased to 88 percent in 1992 from 1969's 82 percent share.

Table 1.3
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. *
1969							
California	608,412	51.5	1,78,375	27.5	786,787	43.0	
Florida	9,248	.8	424,041	65.4	433,289	23.7	
Washington	86,862	7.4	--	--	86,862	4.7	81.9
New York	72,312	6.1	--	--	72,312	4.0	
Michigan	68,292	5.8	--	--	68,292	3.7	
Oregon	50,981	4.3	--	--	50,981	2.8	
1979							
California	1,968,266	54.0	314,554	23.4	2,282,820	44.1	
Florida	38,455	1.1	1,262,649	71.3	1,301,104	24.0	
Washington	477,596	13.1	--	--	477,596	8.8	84.4
New York	166,250	4.6	--	--	166,250	2.6	
Michigan	166,647	4.4	--	--	166,647	2.5	
Oregon	128,485	3.5	--	--	128,485	2.4	
1989							
California	3,114,800	60.4	705,990	27.0	3,820,790	52.4	
Florida	103,310	2.0	1,797,390	68.8	1,900,700	21.7	
Washington	703,750	13.6	--	--	703,750	8.0	85.5
New York	161,840	3.1	--	--	161,840	1.8	
Oregon	134,078	2.6	--	--	134,078	1.7	
Michigan	143,630	2.8	--	--	143,630	1.6	
1992							
California	3,359,841	55.9	721,365	30.0	4,081,206	48.5	
Florida	102,702	1.7	1,564,427	65.1	1,667,129	19.9	
Washington	1,027,788	17.1	--	--	1,027,788	12.3	88.0
Oregon	235,855	3.9	--	--	235,855	2.8	
Michigan	198,839	3.3	--	--	198,839	2.4	
New York	179,957	3.0	--	--	179,957	2.1	

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

Source: Fruit and Tree Nuts Situation and Outlook Report Yearbook, USDA, ERS, Selected Years

1.3 New York State Situation

New York State, too, has experienced important changes in fruit and vegetable sales over the past twenty-five years. Farm receipts from agricultural production in New York State totaled \$3 billion from 38,000 farms in 1992. Out of this total, \$366.7 million or 12.2 percent, was from sales of fruits and vegetables (Table 1.4) (New York State Department of Agriculture and Markets 1992-93). Between 1969 and 1992, the number of fruit and vegetable farms in New York State declined from 8,656 to 5,696 (a decrease of 34.2 percent), while receipts for principal fruit and vegetable crops increased from \$129.9 million to \$366.7 million (NYSDAM 1992-93, USDA 1992 (a)), an increase of 182.3 percent.

Production of the major fruits and vegetables in New York State decreased slightly between 1970 and 1990, to a low of about 2.8 billion pounds in 1990, however the total rebounded slightly to 3.3 billion pounds in 1992. While receipts from the major fruits and vegetables represented a slightly larger percentage of total farm receipts in New York State than in the rest of the U.S. in 1992, 12.2 percent compared to 9.7 percent, the 182.3 percent increase in the value of New York State fruits and vegetables from 1970 to 1992 was only slightly more than half of the 361.8 percent U.S. increase in fresh fruit and vegetable receipts for the same time period.

Table 1.4
New York State Fruit and Vegetable Production, 1970-1992

	Fruit		Vegetables		Total	
	Utilized Production Million Lbs	Value \$1,000	Utilized Production Million Lbs	Value \$1,000	Utilized Production Million Lbs	Value \$1,000
1970	1,335	69,217	1,940	60,674	3,275	129,891
1975	1,416	99,623	1,901	127,579	3,316	227,202
1980	1,543	158,245	1,281	140,670	2,823	298,915
1985	1,436	114,510	1,359	131,728	2,794	246,238
1990	1,336	179,735	1,447	143,971	2,783	323,706
1992	1,582	167,811	1,737	198,868	3,319	366,679

Source: NYSDAM Agricultural Statistics, USDA Agricultural Statistics, Selected Years

1.4 Mid-Hudson Valley Region

Very limited statistics are available describing fruit and vegetable production for the specific region of this investigation, the Mid-Hudson Valley Region of New York State.¹ (Figure 1.1) In 1992, the Mid-Hudson Valley Region included 750 farms with 37,014 acres of fresh fruits and vegetables representing 14.6 percent of the 252,746 acres New York State total (U.S. Dept. of Comm. 1992 (a)). This is a notable decrease from the 19.8 percent of the New York State total fruit and vegetable acreage accounted for by acreage in the region in 1969. The number of fruit and vegetable farms in the Mid-Hudson Valley and the acreage of fruits and vegetables harvested both declined between 1969 and 1992, by 41.3 percent and 35.4 percent respectively. The Mid-Hudson Valley portion of New York State harvested vegetable acreage averaged 14.6 percent over all vegetables in 1992, while Mid-Hudson Valley growers accounted for 18.4 of the New York State harvested fruit acreage in 1992. Onion production acreage in the Mid-Hudson Valley region accounted for 43.7 percent of the New York State production acreage, the largest share of New York State acreage accounted for by an individual vegetable item from the Mid-Hudson Valley Region. Among individual fruit items, Mid-Hudson Valley pear production accounted for the largest portion of New York State production, as Mid-Hudson Valley growers accounted for 41.9 percent of the New York State volume.

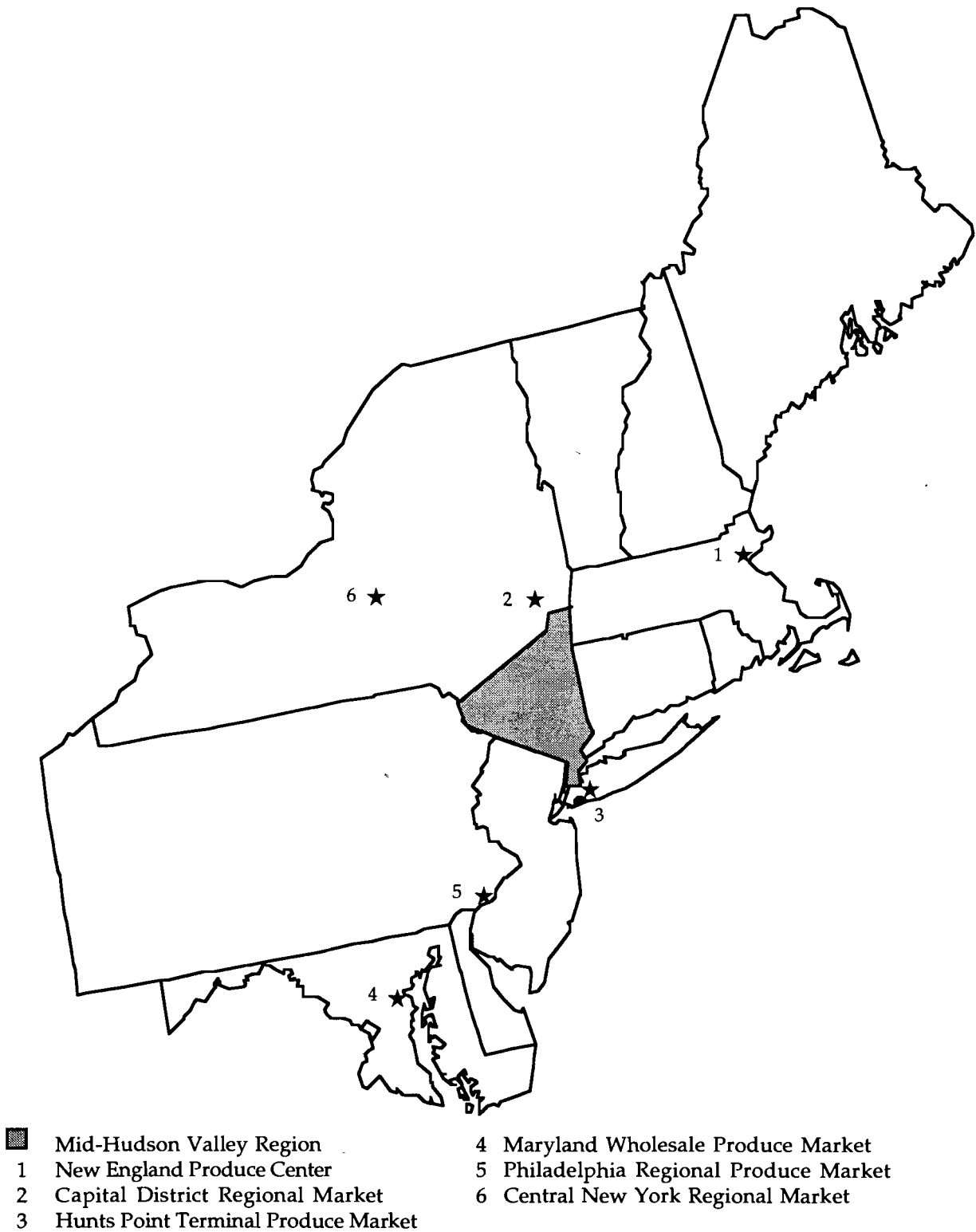
1.5 U.S. Fresh Fruit and Vegetable Marketing

The marketing channels through which fresh fruits and vegetables flow from farm to market are complex yet critical for system performance. Moreover, this marketing system has undergone significant changes in recent years. These various marketing channels added about \$50 billion of value to the \$65 billion total consumer expenditure for fresh produce in 1989 (How 1993). The remaining \$15 billion represents the production value contributed by farmers and input supply companies.

The adoption of new and non-traditional services and practices by firms at different levels of the system has clouded the distinction between types of firms in the produce industry. For example, "terminal market" wholesalers, (wholesalers historically located on markets at the railway terminus) who traditionally handled trailer lots of produce with very limited services, now often provide services not previously offered -- like fresh processing and merchandising training -- as well as selling more to independent grocers and food service outlets (Packer 1994).

¹ For the purpose of this study, the Mid-Hudson Valley Region consists of Columbia, Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester Counties.

Figure 1.1
The Mid-Hudson Valley Region of New York State



Similarly, both Kraft Food Service and Sysco, the two largest broadline food service distributors in the U.S., have recently increased the focus on fresh produce items and direct purchases from shippers in their businesses (Packer 1994). Further, in 1973, one-third of all supermarket produce was sourced through terminal markets, however McLaughlin and Perosio (1994) found only 20 percent of the produce for a national sample of supermarket chain buyers sourced through terminal markets in 1993, with still smaller levels for larger chain retailers. Additionally, many brokers have begun to assume larger responsibility in the system, from simply arranging transportation and mixing loads, to warehousing and even labeling product with their own brand names (Duff, Packer 1993).

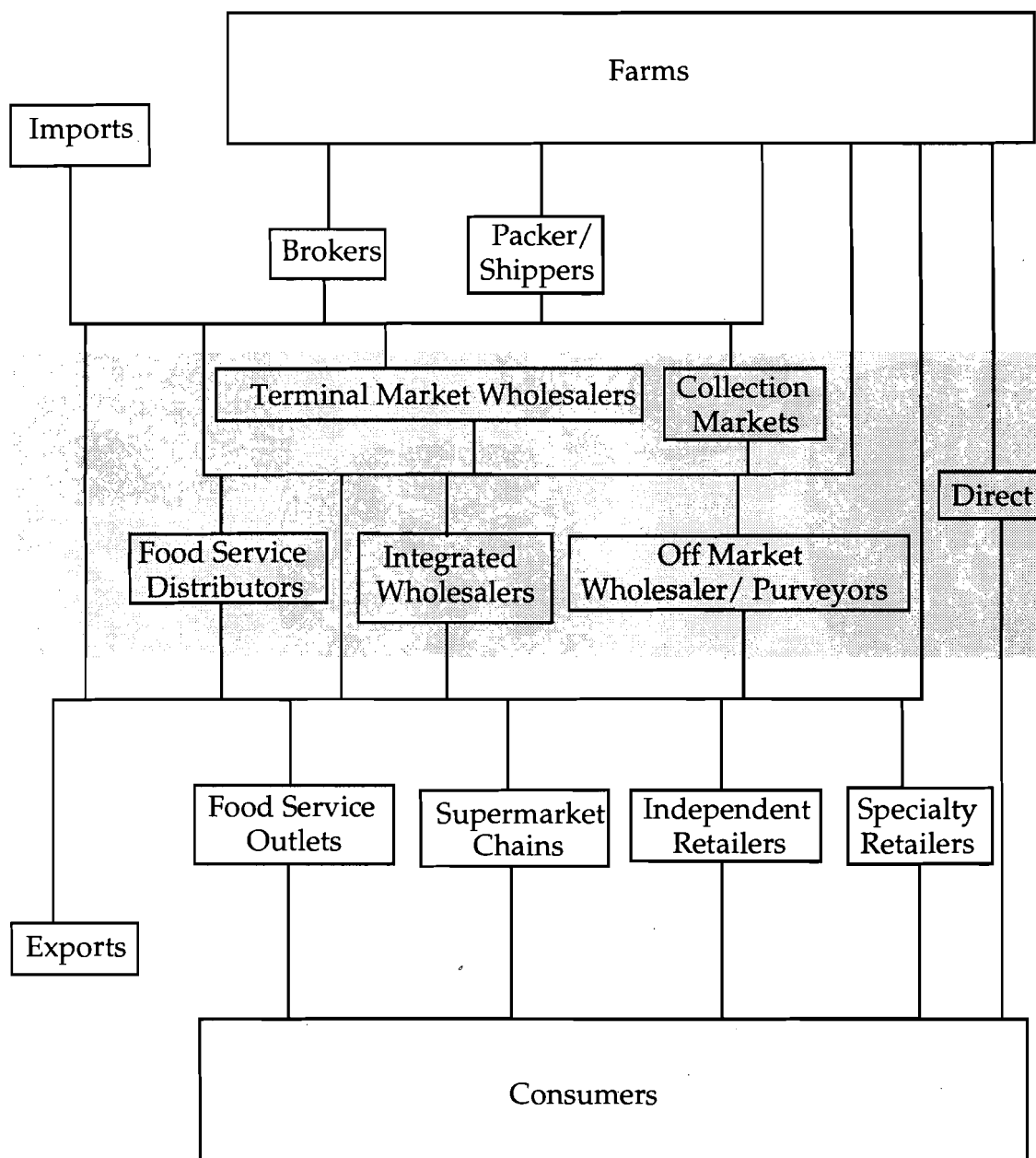
With such changes in the market structure, fresh produce now often bypasses a level (or several levels) of the system instead of being transferred through several wholesale stages. Today, it is common to have "direct" shipments, i.e. from shipper directly to retailer or farmer to consumer.

Figure 1.2 shows the many avenues available for fresh produce to flow through the system from farm to consumer. This study focuses on the shaded portion of the figure, exploring how a new wholesale facility in the Mid-Hudson Valley Region of New York State might affect the transfer of fresh produce from farmer/shippers to the retail firms.

The wholesaling segment of this system was traditionally organized on structured exchanges or "terminal markets." Many of these traditional terminal markets still exist at various railway terminus locations, indeed, several appear vibrant. A number of these traditional exchanges still existed in areas of New York State in 1995. Substantial wholesale or combined wholesale/retail markets existed, for example, in Rochester, Buffalo, Syracuse, Albany, Utica and New York City. While both the Hunt's Point and Bronx markets in New York City focus exclusively on wholesale produce business, the rest of the New York State markets included both a wholesaling component and a retail trade component, i.e. a "farmers market" format.

Although Figure 1.2 outlines a model of the fresh produce marketing system, there are many different functions and possible transactions that are not indicated on this simplified channel diagram. For example, while brokers in the figure are only listed as playing an explicit role between farms and wholesalers, it is not uncommon for brokers to intervene at many places in the system, facilitating buying and selling between various wholesalers, or between shippers, wholesalers and retailers.

Figure 1.2
The Fresh Produce Marketing System



As Manchester (USDA) indicated in 1964, most of the changes in the produce channels revolve around the relative importance of the various types of firms in the channels. As transportation alternatives evolved and direct buying by retail organizations became more prominent, wholesalers, brokers and distributors were forced to adjust their businesses. Manchester found that the main service-oriented change for wholesalers between the second world war and 1960 was more frequent delivery. Thirty years later, in 1994,

progressive wholesalers are still "stepping up deliveries and offering new items" (Packer 1994). As this system naturally evolved, producers, wholesalers, brokers and retailers have adjusted to the new challenges in today's business climate.

Indeed, several studies have been conducted exploring how the fresh produce system operates and how new institutions serve to coordinate its business transactions. These studies have generally not focused simply on regional wholesale fresh produce facilities, but often have incorporated much broader conceptualizations of markets for many farm foods, to include, *inter alia* retail farmers' markets, sit-down restaurants and other retailing formats, along with the fresh produce wholesaling function.

1.6 Need for the Study

A study conducted in the Mid-Hudson Valley of New York State in 1989: "Feasibility Analysis for the Mid-Hudson Regional Farmers Market" (Nutter Associates and Cambridge Systematics, Inc. 1989) attempted to answer questions regarding the need for marketing facilities in the region. This study found significant farmer interest in a potential regional market to be located somewhere in the Mid-Hudson Valley. It concluded: 1) "a regional wholesale or wholesale/retail market facility would generate significant sales for farmers and wholesale distributors by facilitating greater access to the sizable Mid-Hudson Valley population" and that 2) "the facility would be economically feasible considering the expected use by area farmers, wholesale buyers and other food wholesalers." Appendix A contains the executive summary for this study.

While this 1989 study indicated significant farmer interest in a potential regional market, it failed to identify or elaborate on: 1) potential produce buyer interest in the facility, 2) potential desire or willingness of currently operating wholesale firms to locate, relocate or develop some type of satellite operation on the proposed new market, as well as 3) the specific characteristics or services desired by both farmers and buyers in a potential facility. Partly to redress these shortcomings and to gauge the relative interest of demand side participants in a Mid-Hudson Valley wholesale produce facility, the current study was undertaken.

In the summer of 1993, an ad hoc task force was convened to explore the Mid-Hudson Valley Regional Market concept with representatives of Mid-Hudson Valley counties, the New York State Department of Agriculture and Markets, Cornell Cooperative Extension, Hudson Valley Regional planning and development organizations, and area farmers and wholesalers interested in a new market possibility. This task force expressed renewed interest in investigating the opportunity to create some type of wholesale facility in the region, both to benefit farmer/growers by facilitating trade and also to draw potential business into the area to spur economic development. The group

stressed the importance of further exploration of the aforementioned issues not completely covered in the 1989 study.

Hence, in July 1994, a cooperative research agreement was developed between Cornell University and the United States Department of Agriculture, facilitated by the New York State Department of Agriculture and Markets, to further investigate demand side potential, specifically produce buyer interest, in a Mid-Hudson Valley regional wholesale facility.

The overall purpose of this study is to determine the extent to which the creation of a wholesale market facility for fruits and vegetables and floral/greenhouse products in the Mid-Hudson Valley region is of significant value to producers, marketers and consumers. Initial objectives of the study included:

- Identification of the types and quantities of fruits, vegetables, floral and greenhouse products currently produced in the study area. Both major and minor crops are to be considered.
- Determination of current wholesale and retail produce buying practices in and around the major markets of New York State. Retail, on and off-market wholesale buyers and food service buyers will be included.
- Evaluation of selected value-added marketing activities which may enhance the probable use of a regional marketing facility, including *inter alia* assembling, grading, packing, storing and processing.
- Identification of potential tenants and customer/buyers for the proposed market facility and, if needed, estimation of demand for regional products.

This report is organized as follows: in Chapter Two, production level data for fresh fruits and vegetables are presented for the Mid-Hudson Valley, New York State, and the United States. Changes in U.S., New York State and Mid-Hudson Valley production and Mid-Hudson Valley and New York State production ranks are described as well as New York State fresh produce arrivals at major northeast markets. In Chapter Three, key studies of the fresh produce industry, including previous feasibility studies, are presented to provide the appropriate background and context from which to view this study. Chapter Four outlines the methods used for completing the buyer procurement and judgment analyses which are discussed in detail in Chapter Five. Chapter Six presents the conclusions and recommendations from the study.

Chapter 2

Fruit and Vegetable Production: A Summary

In order to establish the overall industry structure as well as to present the important factors that influence produce industry production trends, a summary of fruit and vegetable production information is presented in the chapter below. A more complete presentation of U.S., New York State and Mid-Hudson Valley Region Fruit and vegetable production is located in Appendix B at the end of this document. This chapter describes the shift of production and marketing expertise from smaller, relatively fragmented traditional agricultural areas (e.g., the Northeastern U. S. and the Hudson Valley) to a limited number of states in the southern and western parts of the U.S. where production has been centralized in fewer and fewer hands over the past 15 years. Although data sets over the past 25 years are not entirely complete (see below), this supply-side production assessment does nonetheless help with evaluating the extent to which the Mid-Hudson Valley growers may be willing and able to develop the product supplies in the volumes, qualities and consistencies required for today's market exigencies.

First, several statistical qualifications: finding and reporting production data 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 20 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 these data are not reported by the public data collection agencies.
- **Data collection/reporting changes:** Over time, the United States Department of Agriculture adjusts the format, number and types of items included as U.S. production shifts. This often causes statistics from different time periods to include different quantity/quality of data.
- **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 by state; some commodities separate fresh production from processed production whereas others aggregate fresh and processed production. 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., New York State and Hudson Valley fresh fruit and vegetable production attempt to coordinate and summarize the data available from various USDA and New York State Department of Agriculture and Markets publications and provide an overview of the relevant production levels and changes over approximately the last twenty years.

2.1 U.S. Fruit and Vegetable Production

Total fruit and vegetable production in the United States increased 47.9 percent between 1970 and 1993 (USDA 1994 (a,b)). The U.S. production of major fruits and vegetables² totaled 124.7 billion pounds in 1993 at a market value of \$15.7 billion, compared to 84.3 billion pounds valued at \$3.4 billion in 1970 (USDA 1994 (a,b)).

U.S. growers produced 37.0 billion pounds of fresh market vegetables worth \$6.2 billion in 1992 (Table 2.1), representing a 63.0 percent increase over the 22.7 billion pounds produced in 1970. U.S. vegetable production totaled 65.5 billion pounds in 1992, a 58.6 percent increase over the 41.3 billion pounds produced in 1970. Over this same time period, the total number of vegetable acres harvested 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 (a)), indicating a substantial increase in productivity per acre.

Fresh market production accounted for approximately 55 percent of U.S. vegetable production in 1970 and 1992, although it had dropped to a low of 45 percent of total production in 1990. Fresh imports contributed another 3.1 billion pounds in 1993, the same volume as fresh exports from the U.S. market, however the imports were valued at \$919.5 million while the exports totaled \$803.4 million (USDA 1993 (c)). Over the same time period, the number of 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 (a)).

²Major vegetables include: Asparagus, Broccoli, Carrots, Cauliflower, Celery, Sweet Corn, Lettuce, Onions, Tomatoes, Cabbage, Spinach, Cucumbers, Artichokes, Snap Beans, Brussels Sprouts, Eggplant, Escarole/Endive, Garlic, Bell Peppers, Leaf/Romaine, Watermelon, Cantaloupe and Honeydews. Major Fruits include: Oranges/Tangerines, Tangerines/Tangelos, Lemons, Limes, Grapefruit, Apples, Apricots, Avocados, Bananas, Cherries, Cranberries, Grapes, Kiwifruit, Peaches, Nectarines, Pears, Pineapples, Papayas, Plums, Prunes, Strawberries.

Table 2.1
U.S. Fresh Vegetable Production, Value, Imports, Exports

	Fresh Market		Total		Imports		Exports	
	Million	- \$1000 -	Million	- \$1000 -	Million	- \$1000 -	Million	- \$1000 -
	- lbs -		- lbs -		- lbs -		- lbs -	
1970	22,716	1,233,222	41,310	1,643,411	1,232	--	778	--
1975	23,987	2,159,168	51,054	3,195,803	1,157	--	1,151	--
1980	26,496	3,182,975	48,110	4,047,426	1,750	--	1,901	--
1985	21,719	2,926,791	45,303	3,950,724	2,255	--	1,994	--
1990	25,285	3,685,410	56,193	5,018,376	2,592	855,646	2,583	593,013
1992	37,032	6,151,006	65,529	7,279,249	2,242	648,086	3,037	743,410

Source: USDA Agricultural Statistics, Vegetable and Specialties Situation and Outlook Report, various Years.

U.S. farmers produced 6.6 billion pounds of fresh market head lettuce in 1992 to lead U.S. production of individual fresh market vegetables. Although production of the major fresh vegetables grew by 63.0 percent between 1970 and 1992, the production of individual vegetable commodities increased by varying amounts. Broccoli experienced the largest relative increase in production among the major vegetables going from 109.2 million pounds in 1970 to 1,053.7 million pounds in 1992, an increase of 865 percent.

U. S. fruit production totaled 59.1 billion pounds in 1992 valued at \$8.4 billion (Table 2.2). This represented an increase of 22.9 percent from the 42.9 billion pounds produced in 1970. The U.S. imported 10.4 billion pounds of fresh market fruit while exporting 4.9 billion pounds in 1992 (USDA 1994 (b)).

The number of acres in orchards in the U.S. increased from 4.2 million in 1969 to 4.8 million in 1993, an increase of 14.3 percent. Over the same time period, the number of fruit farms declined from 133,311 to 116,207, a decrease of 12.8 percent, somewhat less than the decline in the number of vegetable farms. However, the average acres of fruit per farm in the U.S. increased from 31.8 acres to 41.1 acres, an increase of 29.2 percent (U.S. Dept. of Comm. 1992 (a)), less than the increase in vegetable acreage per farm over the same time period.

Apples were the leading commodity among the major U.S. non-citrus fruits when measuring fruit production in 1992, producing 5.8 billion pounds valued at \$1.1 billion. The major items showing the most growth in fruit production during this 1970 to 1992 period were strawberries with a 210

percent increase in production and pears with a 125 percent increase in production.

Table 2.2
U.S. Fruit Production, Value, Imports, and Exports, 1970-92

	U.S. Production		Imports	Exports
	- \$1000 -	Million lbs	Million lbs	Million lbs
1970	1,788,455	42,972	--	--
1975	3,068,111	54,490	--	--
1980	5,685,678	63,976	--	--
1985	5,911,221	49,432	--	--
1990	7,776,405	53,034	9,292	4,311
1992	8,428,874	59,136	10,386	4,822

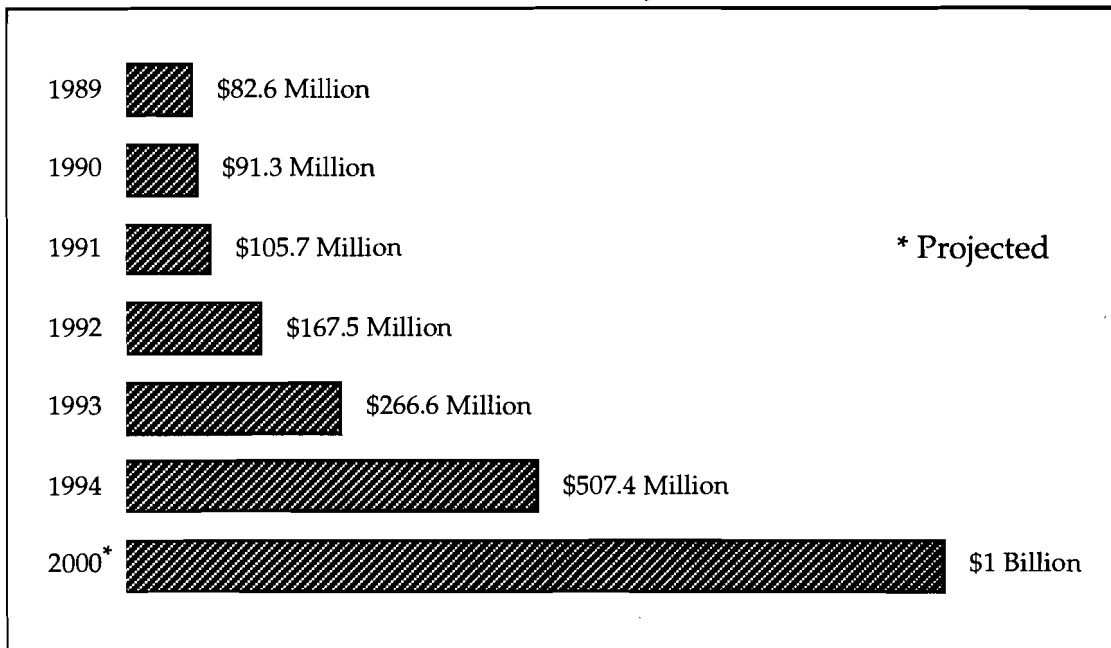
Source: USDA Fruit and Tree Nuts Situation and Outlook Report Various Years

2.2 U.S. Fresh-Cut Produce Growth

One of the major forces in fresh fruit and vegetable production in the past five years has been the growth of fresh-cut or value-added fruit and vegetable items. Supermarket sales of fresh cut salads have increased by over 500 percent from 1989 to 1994, with an increase of over 90 percent from 1993 to 1994 alone (Figure 2.1). According to the National Association of Fresh Produce Processors, adding mini-carrots, broccoli florets and other vegetable items to the \$266.6 million salad sales for 1993, total pre-cut sales totaled \$1.6 billion (Supermarket Business 1994). Fresh cut produce captured an increasing percentage of the overall sales in the produce department in recent years, reaching 8.9 percent of produce sales in 1994 (Find/SVP 1995) (Figure 2.2). Expectations of some industry observers are that fresh cut sales increases may increase produce sales by between 4 and 25 percent and could account for up to 25% of produce sales by the year 2000.

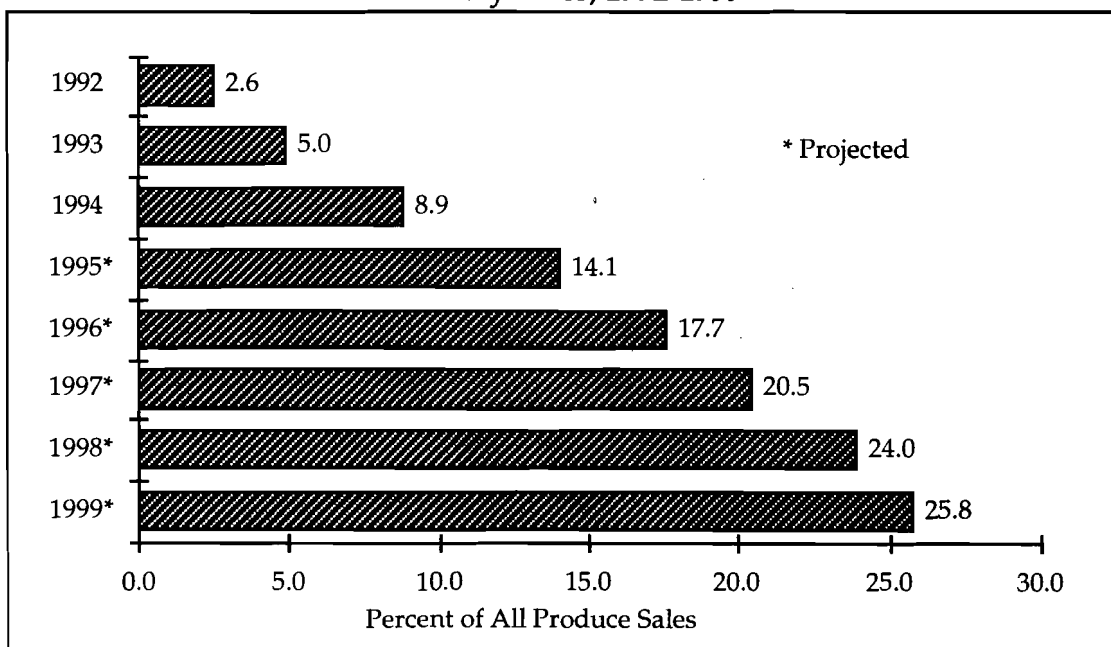
Among the major fresh produce processors, Fresh Express has been the leader of the fresh-cut category in the U.S., accounting for between 39 and 47 percent of the various fresh-cut salad categories (Table 2.3). Dole, Ready Pac and Salad Time trail Fresh Express in the various categories. All of the industry leaders have experienced phenomenal yearly sales growth, evidenced in the 60 to 500 percent increases for individual companies from year to year.

Figure 2.1
Fresh Cut Salad Sales, 1989-2000



Source: Information Resources, Inc. in The Packer

Figure 2.2
Fresh Cut Produce Percentage of Total Fresh Produce Grocery Sales, 1992-1999



Source: Find/SVP in The Packer

Table 2.3
Fresh Cut Salad Industry Leaders and Growth, 1995

	Volume \$ Million	% Change vs. Year-Ago	\$ Share	\$ % Promo
Prepackaged Salads	680.7	79.8	100.0	25
Fresh Express	269.5	93.5	39.6	23
Dole	169.2	79.8	24.9	27
Ready Pac	87.6	103.1	12.9	21
Salad Time	54.9	103.1	8.1	31
River Ranch	23.7	179.0	3.5	30
Other	75.9	--	11.1	--
Salad Mix	324.4	71.8	100.0	32
Fresh Express	129.3	60.8	39.9	30
Dole	87.3	69.7	26.9	33
Salad Time	46.9	108.3	14.4	33
Ready Pac	24.5	159.3	7.5	30
River Ranch	14.9	175.6	4.6	35
Other	21.7	--	6.7	--
Specialty Salads	167.5	119.9	100.0	17
Fresh Express	79.0	186.4	47.2	15
Ready Pac	55.7	78.3	33.3	19
Dole	24.3	103.1	14.5	18
Salad Time	1.9	100.3	1.1	15
Other	6.6	--	3.9	--
Kit Salads	94.6	129.2	100.0	19
Fresh Express	45.1	121.8	47.7	17
Dole	43.2	137.1	45.7	21
Salad Time	2.7	110.6	2.8	15
River Ranch	1.1	513.9	1.2	21
Other	2.5	--	2.7	--

Source: A.C. Nielsen data provided by Fresh Express.

2.3 New York State Fruit and Vegetable Production

New York State ranked fifth in overall vegetable production in the U.S. in 1992 while ranking sixth in overall fruit production (U.S. Dept. of Comm. 1992 (a)). This is down from the U.S. ranking of fourth for value of fruit production in 1969 and equal to the fifth ranking for value of vegetable production in 1970-72, however the New York State share of the value of U.S. vegetable production declined from 3.5 to 3.0 percent from 1970-72 to

1990-92 (Tables 1.2, 1.3). New York State fell from third in the U.S. in value of non-citrus fruit production in 1969 to fifth in 1992, accounting for 6.1 percent of the U.S. total in 1969 compared to only 3.0 percent in 1992. For nursery and greenhouse crops New York State ranked ninth in the U.S. in 1992 with \$218.2 million of production. The number of fruit and vegetable farms in New York State decreased by 34.2 percent between 1969 and 1992, from 8,656 to 5,696 farms, while the total number of acres of fruit and vegetables harvested in New York State only decreased by 12.6 percent, from 289,159 to 252,746 acres (U.S. Dept. of Comm. 1992), resulting in higher average acreages per farm in 1992.

New York State ranked second in the U.S. in fresh market apple and sweet corn farm receipts in 1992 (Table 2.4). The state ranked third in tart cherry and grape receipts, fourth in pear and fresh cauliflower receipts and fifth in fresh market celery and onion receipts. Additionally, New York State ranked sixth in fresh lettuce receipts, eighth in fresh strawberry receipts, tenth in fresh carrot and fifteenth in fresh tomato farm (NYSDAM 1992).

Fresh vegetable production in New York State totaled 1,093.8 million pounds in 1992 worth \$168.6 million (Table 2.5). This was a decrease of 8.3 percent from 1970's 1,170.3 million pounds (USDA 1993 (a)). Between 1969 and 1992 the number of vegetable farms in New York State decreased 31.3 percent from 4,017 farms in 1969 to 2,758 farms in 1992 (Figure 2.3).

Table 2.4
New York State Vegetable and Fruit Production
Farm Receipts Rankings, 1992

	-- State Rankings --				
	First	Second	Third	Fourth	Fifth
<u>Fresh Vegetables</u>					
Cauliflower	California	Arizona	Oregon	New York	Michigan
Celery	California	Florida	Michigan	Texas	New York
Onions	California	Oregon	Colorado	Idaho	New York
Sweet Corn	Florida	New York	Pennsylvania	California	Michigan
<u>Fruit</u>					
Apples	Washington	New York	Michigan	California	Penna.
Tart Cherries	Michigan	Utah	New York	Oregon	Wisconsin
Pears	Washington	California	Oregon	New York	Penna.
Grapes	California	Washington	New York	Pennsylvania	Michigan

Source: NYSDAM Agriculture Statistics

Over the same time period, the number of acres of vegetables harvested in New York State decreased 5.6 percent from 148,084 acres to 139,841 acres (Figure 2.3). Consequently, again, the size of the average vegetable farm has increased considerably from 36.9 to 58.7 acres per farm (U.S. Dept. of Comm. 1992 (a)).

Overall, the production of New York State fresh vegetables declined by 8.3 percent between 1970 and 1992. Fresh onion production in New York State was larger than any of the other major vegetables, totaling 362.8 million pounds in 1992. Fresh sweet corn ranked second, with 165.1 million pounds, in fact, sweet corn was the only major vegetable whose production in New York State grew between 1970 and 1992, with a 39.0 percent increase over the 118.8 million pounds produced in 1970.

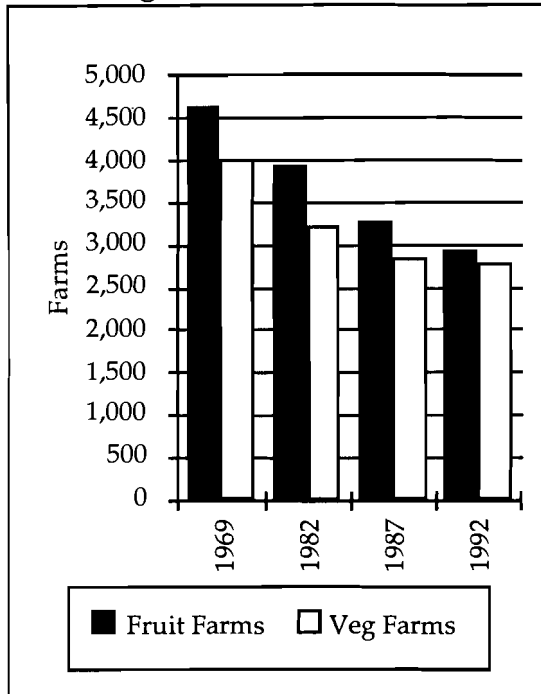
Table 2.5
New York State Fresh Vegetables, 1970-1992

	Utilized Production Million Lbs	Value \$1,000
1970	1,170.3	43,824
1975	1,042.1	92,095
1980	826.8	113,258
1985	824.8	96,449
1990	858.2	111,986
1992	1,093.8	168,555

Source: USDA Agricultural Statistics

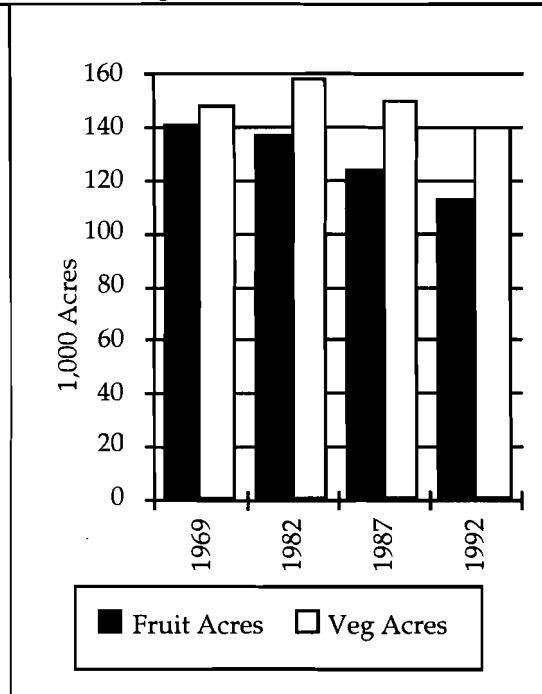
Fruit production in New York State totaled 1.6 billion pounds in 1992 with a farm value of \$167.8 billion (Table 2.6). This represented a 23.1 percent increase from the 1.3 billion pounds of fruit produced in 1970. The number of fruit farms in New York State declined 36.7 percent between 1969 and 1992, from 4,639 to 2,938 farms (Figure 2.4). The land in orchards in New York State declined from 141,075 acres in 1969 to 112,905 acres in 1992, a 17.8 percent change (Figure 2.5). Thus the average fruit farm size in New York in 1992 was 38.4 acres, 26.3 percent larger than the 30.4 acres of the average farm in 1969 (U.S. Dept. of Comm. 1969, 1992 (a)). Strawberries led production growth among individual fruit commodities between 1969 and 1992, experiencing a 63.6 percent increase in production from 6.6 million pounds to 10.8 million pounds with a corresponding value of \$11.6 million in 1992.

Figure 2.3
New York State Fruit and
Vegetable Farms, 1969-92



Source: U.S. Census of Agriculture 1992

Figure 2.4
New York State Fruit and
Vegetable Acres, 1969-92



Source: U.S. Census of Agriculture 1992

2.4 Mid-Hudson Valley Fruit and Vegetable Production

Statistics are not available on specific production levels of vegetables in the Mid-Hudson Valley Region of New York State - - the primary area of study in this research - - however limited data on fruit production and fruit and vegetable acres planted and number of farms in production are available. The number of fruit and vegetable farms in the Mid-Hudson Valley declined 41.3 percent from 1969 to 1992, and the number of acres of fruits and vegetables in the Mid-Hudson Valley also decreased, by 35.4 percent over the same time period (Table 2.7). In contrast to the 24.4 percent increase reported for the size of the average fruit and/or vegetable farm in New York State between 1969 and 1992, the size of the average Hudson Valley fruit and vegetable farm increased by only 10.0 percent, from 44.9 to 49.4 acres. This led to a smaller difference in average acreage per farm between the Hudson Valley and the state average.

Table 2.6
New York State Fruit Production
and Value, 1970-92

	Utilized Production Million Lbs	Value \$1,000
1970	1335.3	69,217
1975	1415.6	99,623
1980	1542.6	158,245
1985	1435.5	114,510
1990	1335.6	179,735
1992	1581.6	167,811

Source: NYSDAM Agricultural Statistics

In 1969 Hudson Valley fruit and vegetable farms averaged 44.9 acres to 35.7 acres for the state, a difference of 9.2 acres. In 1992, Hudson Valley fruit and vegetable farms averaged 49.4 acres per farm to 44.4 for the state average, a difference of only 5 acres. The total number of acres in fruit and vegetable production in the Hudson Valley declined by 35.4 percent from 57,311 acres in 1969 to 37,014 acres in 1992. This decline was considerably larger than the 12.6 percent decrease in acres of fruit and vegetables in New York State. Thus, the Mid-Hudson Valley accounted for only 14.6 percent of the New York State harvested acreage of fruits and vegetables in 1992 compared to 19.8 percent in 1969.

The total acreage devoted to production of vegetables in the Mid-Hudson Valley decreased from 27,408 acres in 1969 to 16,253 acres in 1992, a decrease of 40.7 percent (Table 2.7). This was notably larger than the New York State decrease of 5.6 percent in acres of vegetables harvested: the Mid-Hudson Valley's percentage of total vegetable acres harvested in the state decreased from 18.5 percent in 1982 to 11.6 percent in 1992. Thus, measured as a portion of acres in New York State vegetable production, the Mid-Hudson Valley Region is a less important vegetable production area in New York State in 1992 than it was a decade earlier.

The Mid-Hudson Valley portion of harvested acreage of individual vegetables ranged from a low of 0.4 percent to a high of 43.7 percent of the total acres harvested in New York State in 1992. Onion production in the Mid-Hudson Valley accounted for the largest share of the total acres in New

York State devoted to that specific vegetable, at 43.7 percent of the state's total onion acreage.

The total amount of land dedicated to orchards in the Mid-Hudson Valley declined from 29,903 acres in 1969 to 20,761 in 1992, a decrease of 30.6 percent, notably larger than the 20.0 percent decrease in land in orchards across New York State (Table 2.7). In contrast, while the average size of New York State fruit farms has increased from 34.5 acres in 1969 to 38.4 acres in 1992, an increase of 11.3 percent, the average number of acres per farm in the Mid-Hudson Valley increased from 52.8 acres to 59.8 acres, or 13.3 percent. Thus, the Hudson Valley fruit farm acreages averaged 55.7 percent larger than the New York State average. Mid-Hudson Valley fruit farms accounted for 18.4 percent of the total New York State land in orchards in 1992, down from 21.5 percent in 1982 and 21.2 percent in 1969. Thus, measured in acres, the Mid-Hudson Valley followed the same pattern in fruit as it did in vegetables: it was a less important part of the state total in 1992 than it was a decade earlier.

Table 2.7
Mid-Hudson Valley Fruit and Vegetable Farms
and Acres, 1969, 82, 92

	Farms			Acres		
	1969	1982	1992	1969	1982	1992
Vegetables						
New York State	4,017	3,228	2,758	148,084	158,014	139,841
Hudson Valley	711	497	403	27,408	20,454	16,253
Percent	17.7	15.4	14.6	18.5	12.9	11.6
Fruit						
New York State	4,084	3,955	2,938	141,075	137,356	112,905
Hudson Valley	566	488	347	29,903	29,524	20,761
Percent	13.9	12.3	11.8	21.2	21.5	18.4
Total						
New York State	8,101	7,183	5,696	289,159	295,370	252,746
Hudson Valley	1,277	985	750	57,311	49,978	37,014
Percent	15.8	13.7	13.2	19.8	16.9	14.6
Acres/Farm						
New York State	35.7	41.1	44.4			
Hudson Valley	44.9	50.7	49.4			

Source: U.S. Census of Agriculture 1969, 1992.

The Mid-Hudson Valley portion of the total New York State land in orchards varied by commodity and ranged from 1.4 to 39.0 percent of the state total in 1992. Thirty-nine percent of New York State land in pear production was in the Mid-Hudson Valley, while 42.1 percent of the New York State volume of pear production originated in the Mid-Hudson Valley.

2.5 Fresh Fruit and Vegetable Arrivals to the New York Metropolitan Area

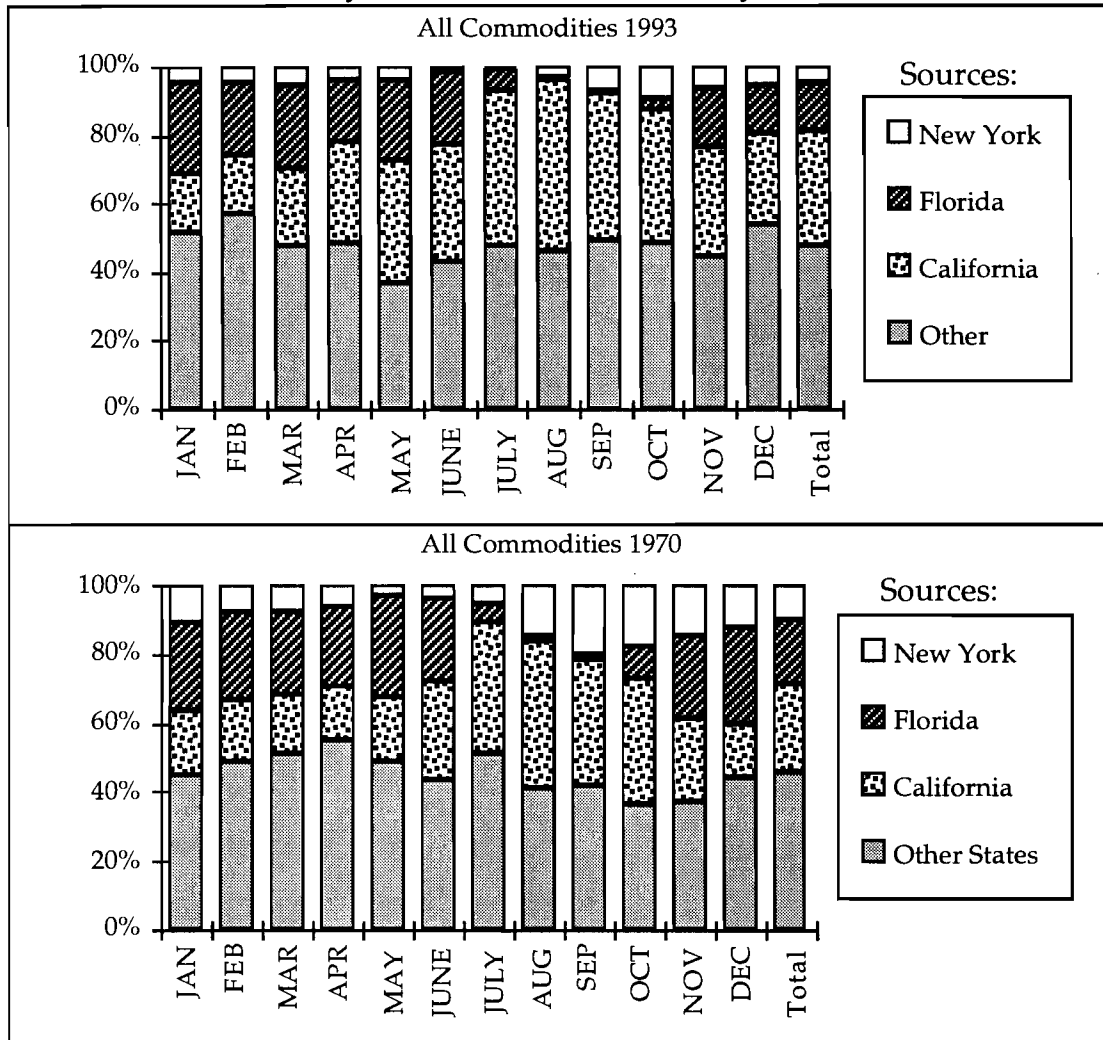
Another index of the change in New York State fruit and vegetable production from 1970 to 1993 is the fruit and vegetable arrival data collected by the USDA for various wholesale markets, including the New York City metropolitan area. These reports attempt to track arrivals of fresh fruit and vegetables at both terminal market facilities and integrated wholesale facilities serving the New York - Newark, NJ metropolitan area. New York State fruit and vegetable presence in this nearby market provides one measure of the competitiveness of New York State produce.

In 1993, New York State producers contributed 4 percent of the fresh produce arrivals for the New York City Metropolitan area (Figure 2.5). This was a 60 percent decrease from the 10 percent of fresh produce arrivals New York State contributed in 1970. September and October were the months during which New York State contributed its largest proportion, accounting for 7 and 9 percent respectively of total arrivals. California supplied the largest share of fresh fruit and vegetable arrivals in 1993, contributing 32 percent, an increase of 18.8 percent from its 26 percent share in 1970. Florida was second with 14 percent of the New York City arrivals.

2.6 Summary

U.S. fruit and vegetable production increased 46.5 percent between 1970 and 1992, from 65.6 billion pounds to 96.1 billion pounds. Vegetable production was responsible for the majority of this change, increasing 62 percent over this time period, while fruit production increased 22.9 percent. New York State experienced a much smaller increase in fruit and vegetable production over this time period, only 8 percent. This increase was driven by the 23 percent increase in New York State fruit production, while vegetable production decreased by 8.3 percent.

Figure 2.5
All Commodity Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

The size of the average New York State fruit and vegetable farm has increased from 35.7 acres in 1969 to 44.4 in 1992, an increase of 24.4 percent. Over the same time period, the acreage of fruits and vegetables harvested decreased from almost 280 thousand acres to 250 thousand acres. The average acreage of fruit and the average acreage of vegetables per farm in New York State both increased between 1969 and 1992, however the average acreage of fruit increased by 26.3 percent and the average vegetable acreage increased by 59.1 percent.

Over the same time period, the Mid-Hudson Valley Region of New York State experienced a considerably larger decline in fruit and vegetable acreage

harvested, from 1,277 acres to 750 acres, a decrease of 35.4 percent. This resulted in a slightly larger acreage of fruits and vegetables per farm in the Mid-Hudson Valley, 49.4 acres per farm compared to 44.4 acres per farm for all of New York State. Thus, in 1992, the average acreage per fruit and vegetable farm in the Hudson Valley was 11.3 percent larger than the average acreage per farm for all of New York State, while Mid-Hudson Valley farms were 25.8 percent larger than the New York State average in 1969. The Hudson Valley contributed 14.6 percent of the harvested fruit and vegetable acreage in New York State in 1993, down from 19.8 percent in 1969.

New York State producers contributed 4 percent of the fresh produce arrivals for the New York City Metropolitan area in 1992. This was a 60 percent decrease from the 10 percent of arrivals New York State contributed in 1970. This decline compared to an 8.3 percent reduction in overall New York State production of fresh vegetables and a 23.1 percent increase in production of fresh fruit in New York State. When measured in production value, New York's share of U.S. fresh vegetable receipts decreased from 3.5 percent in 1969 to 3.0 percent in 1992 and its share of the value of fresh fruit declined from 6.1 percent to 3.0 percent over the same time period.

Chapter 3

Fresh Produce Wholesaling

Over the past several decades, there have been a variety of research efforts undertaken in the produce marketing arena. The majority of these projects fall into one of two categories:

- **General System Research** Projects in this area generally focus on topics ranging from industry overviews to individual firm practices or activities in different sectors.
- **Specific Feasibility Projects** Highly specific projects exploring alternative physical facilities and attributes or various organizational structures for facilitating marketing activities, or supporting groups with certain perceived competitive marketing disadvantages.

This chapter includes references to both categories of previously completed research efforts in order to explore the need for and reaction to a potential Mid-Hudson Valley produce wholesaling facility. The chapter begins with reviews of several general produce marketing system research studies, focusing on their implications for produce wholesaling and the potential facility in question in this study. Following this is a summary of the findings of several of the more important specific wholesale produce facility studies and their implications for this project. The final section of this chapter introduces some non-traditional produce wholesaling operations/facilities which exhibit implications for a potential Mid-Hudson Valley facility.

3.1 General Industry Research

Produce wholesaling in general refers to the myriad of functions and system participants involved in the distribution of fresh produce from shipping points to retail establishments ultimately supplying consumers. This system is somewhat unique in that the extremely perishable produce items often travel long distances to market areas from a variety of firms, areas and production methods (How 1988). There are four basic stages of this marketing process: shipping point operations, long distance transportation, wholesale operations at terminal or destination markets and retailing or food service to consumers. Shifts in this marketing system, specialized markets, consumer packaging, direct buying and an emphasis on "merchandising" versus "trading" for example, have affected the organization and structure of the system (Manchester 1964).

The traditional firm definitions included grower/shippers, sales agents, trucking companies, buying or selling brokers, various independent wholesalers, integrated wholesalers and food service purveyors. Until recently, most firms in the fresh produce industry, excluding retailers, were relatively small and operated in only one stage in the marketing system. However, during the same time period over which the retail segment has increased their direct buying practices, other firms in the industry have begun to become involved in several stages of the market system, either through extension of operations, ownership of firms in several stages or strategic partnerships within and between stages (How 1988).

3.1.1 Market Structure

One study which attempted to quantify these various business formats, their size, operating practices and procedures, was the USDA's 1964 study *The Structure of Wholesale Produce Markets*, led by Alden Manchester. This study involved perhaps the most extensive survey of wholesale produce markets ever conducted in the United States, identifying firm types, structures, operations and activities.

Manchester reported that 20 percent of total produce receipts in the country were accounted for by direct purchases by retail chains. This compared to only 12 percent of the total which was accounted for by chains in 1936. In 1964, direct purchases made up 50 percent of retail chain purchase volume compared to 31 percent from local and distant wholesalers (receivers, jobbers, prepackagers), 13 percent from local brokers or sales agents and 6 percent from local farmers. Direct purchases from shipping point by all firms in 1964 accounted for 69 percent of the total produce purchases in the market areas, 13 percent was imported, 10 percent originated from local growers and the rest flowed through wholesalers in other markets.

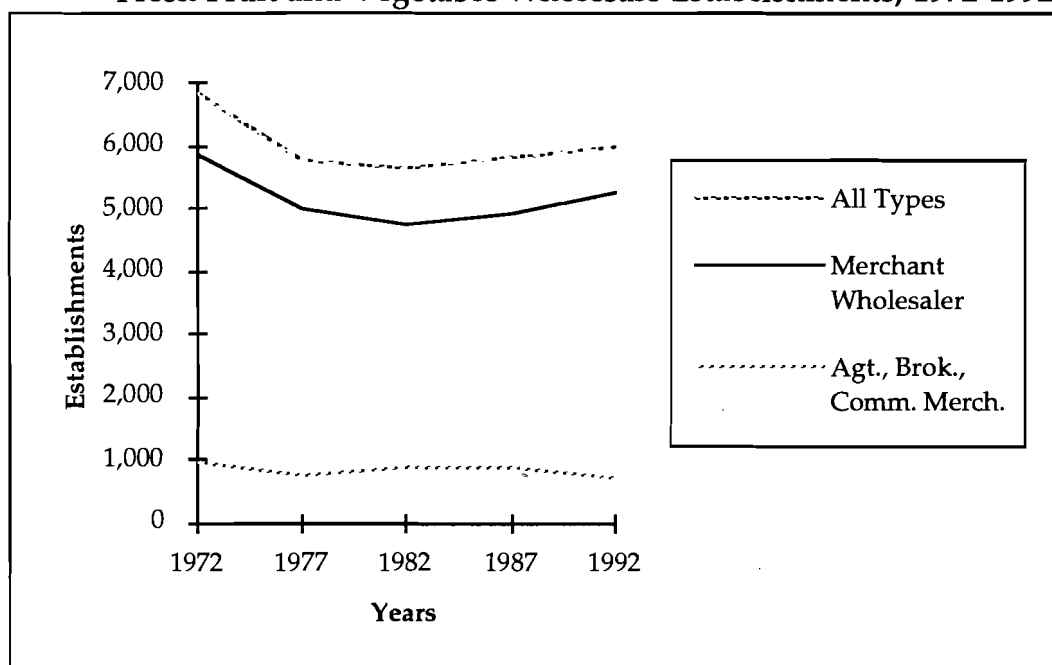
Wholesale handlers received 42 percent of their produce purchases from shipping point, 52 percent from local and out of town wholesalers, and 6 percent from local growers. On average, the wholesalers' sales in 1958 consisted of 48 percent to independent retailers or peddlers, 34 percent to retail food chains, 14 percent to food service establishments and 4 percent to other outlets. Seventy-seven percent of these wholesale handlers delivered at least part of the produce they sold, and nine percent of the net supply of produce was prepackaged or repackaged at the wholesale level (including chain repacking). Discussing the increase in direct buying by large chains and the decreased emphasis on the terminal market in the decade of the 1950s, Manchester comments "If adequate supplies of produce are available at competitive prices on the terminal markets, the incentive for smaller groups to buy direct will be much less."

McLaughlin, in 1983, explored many of the developments in the produce marketing system since Manchester's work. He examined *inter alia* several

facets of the U.S. fresh produce market structure, including size of firms in the industry, corporate structure, number of employees, and concentration ratios. This section extends several of the themes examined by McLaughlin to the early 1990s.

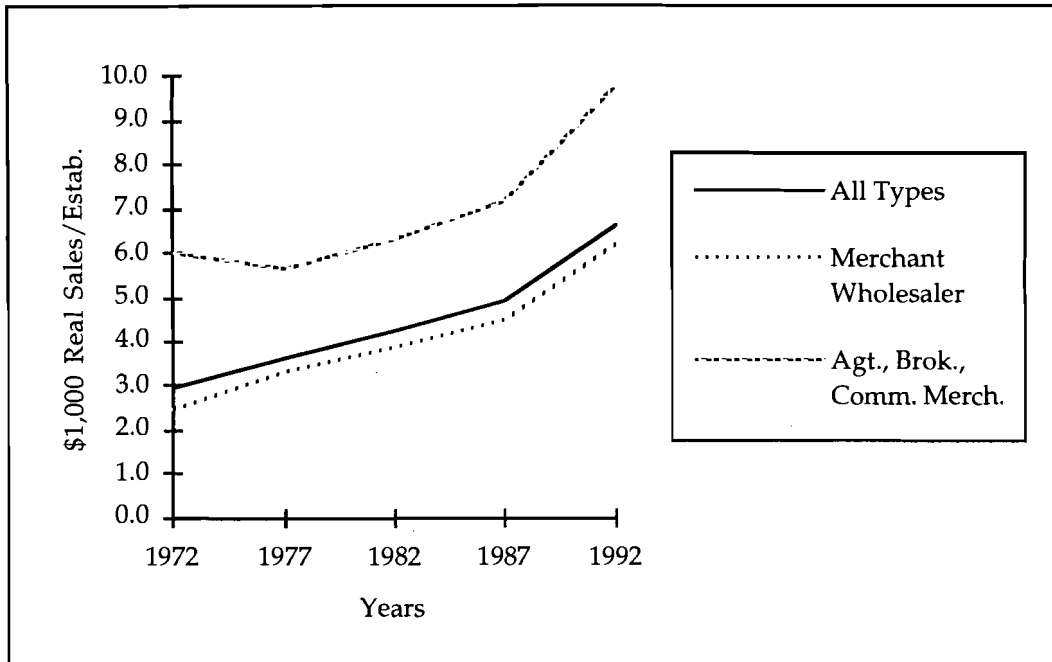
In general, on a national basis, the long term decline in the number of fresh produce wholesale firms seems to have abated somewhat in recent census years. While merchant wholesalers and agents, brokers and commission merchants all experienced declining numbers at the beginning of the last twenty years, merchant wholesalers have experienced a modest increase in the number of establishments since 1982 (Figure 3.1). In real sales per establishment, both groups have experienced significant increases in the past few years; agents, brokers and commission merchants from \$6 million annual sale per establishment in 1972 to \$9.8 million in 1992, and merchant wholesalers from \$2.5 million to \$6.2 million per establishment (Figure 3.2, Table 3.1).

Figure 3.1
Fresh Fruit and Vegetable Wholesale Establishments, 1972-1992



Source: Bureau of the Census, U.S. Census of Business, Wholesale Trade, 1972-92

Figure 3.2
Real Sales Per Establishment, Fresh Fruit and Vegetable Wholesalers, 1972-1992



Source: Bureau of the Census, U.S. Census of Business, Wholesale Trade, 1972-92

An indication of the increasing importance of larger firms in the industry can be seen by examining the differences in performance of firms by firm size, that is, number of employees and number of establishments per firm. Both of these measurements point to the increasing role of larger firms. The percentage of establishments employing 50 or more individuals and the share of total fresh produce wholesale sales for which these companies were responsible both increased over the last two decades (Table 3.2). Establishments with 4 or fewer employees have decreased as a percentage of total establishments over the past twenty years, however, maintaining an 11 to 12 percent share of total sales.

Over the two most recent census years, smaller firms (1 to 2 units) have experienced modest growth in numbers compared to generally declining numbers of larger firms over the entire two most recent decades, however the sales per firm of multi-unit firms increased considerably more than that of the smaller, 1 to 2 unit firms (Table 3.3). Moreover, larger firms have retained a remarkably constant portion of total fresh produce wholesale sales, about 85 percent, even with declining numbers.

Table 3.1
Fresh Fruit and Vegetable Wholesale Establishments and Real* Sales in 1982 Dollars, 1972-1992

Types of Business	Establishments					Real Sales (\$1,000,000)					Real Sales Per Establishment (\$1,000,000)				
	1972	1977	1982	1987	1992	1972	1977	1982	1987	1992	1972	1977	1982	1987	1992
All Types	6,861	5,776	5,664	5,838	6,003	20,412.1	20,987.2	24,153.7	28,511.0	39,744.4	3.0	3.6	4.3	4.9	6.6
Merchant Wholesaler**	5,877	5,033	4,769	4,945	5,293	14,520.1	16,801.7	18,486.6	22,105.0	32,801.4	2.5	3.3	3.9	4.5	6.2
Agents, Brokers, Commission Merchants***	984	743	895	893	710	5,892.0	4,185.5	5,667.2	6,406.0	6,942.9	6.0	5.6	6.3	7.2	9.8

* Real sales determined using the wholesale fresh produce price index from *Producer Price Indexes*, U.S Department of Labor, Bureau of Labor Statistics. (Formerly *Wholesale Price Indexes*)

** Merchant wholesalers refers to a Bureau of Census definition of establishments primarily engaged in buying and selling merchandise on their own account including wholesale merchants or jobbers, importers and exporters.

*** Establishments primarily engaged in buying and selling for others, including auction companies, commission merchants, merchandise brokers and selling agents.

Source: Compiled from Bureau of the Census, U.S. Census of Business, Wholesale Trade, 1972-1992

Table 3.2
Fresh Fruit and Vegetable Wholesale Employee
and Sales Distribution, 1972-1992

Years	Establishments with 50 or more employees as a percentage of total establishments	Sales of establishments with 50 or more employees as a percentage of total sales	Establishments with 4 or fewer employees as a percentage of total establishments	Sales of establishments with 4 or fewer employees as a percentage of total sales
-- percent --				
1992	7.9	28.8	32.7	12.7
1987	7.8	30.0	33.5	11.4
1982	6.3	22.9	36.2	10.6
1977	6.1	20.0	35.4	11.2
1972	5.9	22.2	37.7*	10.5*

* In 1972 data were not reported separately for establishments with four employees. Consequently, these two cells only represent establishments with three or fewer employees.

Source: Compiled from Bureau of Census, U.S. Census of Business, Wholesale Trade, 1972-1992

The past two decades witnessed a clear move toward corporate organizational types among fresh produce wholesalers, as the corporation percentage of all establishments and total sales has steadily increased over the past twenty years (Table 3.4). Conversely, the percentages of all other organizational types - proprietor, partnerships, cooperatives and others - have generally experienced declines in both the number of establishments and portion of total sales.

Although the number of fresh fruit and vegetable wholesale organizations and their portions of sales now generally favor a smaller number of larger firms, on a national scale, the concentration of the produce wholesale business is still not a serious issue (Table 3.5). The concentration ratios -- that is the share of total sales held by the largest firms -- for the top four, eight, twenty and fifty firms, although increasing slightly, do not approach levels of business control generally considered unacceptable by economists.

Table 3.3
Fresh Produce Wholesaler Multi-Unit Firms, Numbers
and Real Sales Per Firm, 1972-1992

Year	Firms		Total Units for Firms with		Real Sales/Firm (\$1,000,000) (1982 Dollars)		Firm Sales as a Percent of Total Sales	
	1 - 2 units	Greater than 2 units	1 - 2 units	Greater than 2 units	1 - 2 units	Greater than 2 units	1 - 2 units	Greater than 2 units
1992	5,490	64	5617	386	6.0	102.8	83.5	16.5
1987	5,333	66	5462	376	4.4	47.3*	88.4	11.6*
1982	5,125	65	5269	395	3.8	62.1	82.9	17.1
1977	5,143	81	5312	464	3.3	44.6	82.6	17.4
1972	6,138	90	6334	527	2.8	33.7	84.8	15.2

* data for firms with greater than 10 units withheld to avoid disclosure for individual firms

Source: Compiled from Bureau of Census, U.S. Census of Business, Wholesale Trade, 1972-1992

Table 3.4
Legal Forms of Fresh Fruit and Vegetable Wholesaler Organizations as
Percentages of Total Fresh Fruit and Vegetable Establishments and Sales, 1972-
1992

Year	Corporations		Propriet.		Partnerships		Cooperatives		Other		Total	
	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales
-- percent --												
1992	78.9	89.8	15.1	3.9	4.3	3.6	1.7	2.7	0.0	0.0	100.0	100.0
1987	76.7	88.7	15.4	3.7	5.7	4.1	2.1	0.0	0.1	0.0	100.0	100.0
1982	73.4	87.2	17.6	4.8	6.5	4.2	2.2	3.6	0.2	0.1	100.0	100.0
1977	64.4	76.8	22.1	6.7	8.6	*	4.8	10.3	0.1	0.0	100.0	100.0
1972	55.3	74.6	18.5	6.1	11.1	8.0	**	**	15.0	11.4	100.0	100.0

* Withheld to avoid disclosure

** Not reported for 1972; unusually large "other" seems to account for the omission

Source: Compiled from Bureau of Census, U.S. Census of Business, Wholesale Trade, 1972-1992

Table 3.5
Concentration Ratios for Fresh Produce Wholesalers,
1972-92

	4-Firm	8-Firm	20-Firm	50-Firm
1992	7.2	11.3	15.7	23.0
1987	8.4	10.5	14.8	21.6
1982	5.8	9.8	14.2	20.9
1977	5.8	9.4	14.1	20.9
1972	6.5	9.6	14.3	20.5

Source: Bureau of the Census, U.S. Census of Business, Wholesale Trade, 1972-92

3.1.2 Marketing Changes

How (1988) discusses the changes in wholesale firm activity in reaction to the increased direct buying by retail firms. Traditionally terminal market and large market wholesalers specialized in the services they offered, either product line, delivery or repacking. This specialization, and the coincidental firm interdependence encouraged the consolidation of wholesalers into the traditional centralized market areas. How summarized and compared findings from reports in several time periods for fresh fruit and vegetable wholesaling. For example, researchers found 85 percent of the produce entering New York City entered through the Washington Street Wholesale Market (precursor to the Hunts Point Market) in 1925 while wholesalers on the market accounted for 55 percent of wholesaler sales in New York City in 1958.

A 1965 study by the National Commission on Food Marketing examined wholesale produce distribution in several major U.S. terminal markets and secondary markets. The integrated wholesaling-retailing segment (consisting of national, regional or local food chains operating integrated warehouse and distribution systems) mostly bought fresh produce directly from shippers who often performed what were once traditional wholesaler functions of shipping mixed carlots and arranging pool shipments. These integrated buying systems generally only sourced "fill-in" or specialty items from the terminal market wholesalers. This limited use of terminal market wholesalers led to a decline in the competitiveness of the specialized terminal market wholesaler and to an increase in comparative advantage for the full-service wholesaler providing receiving, jobbing and distribution functions in serving the growing institutional market and the declining number of independent food retailers.

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	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales	Estab.	Sales
-- percent --												
1992	78.9	89.8	15.1	3.9	4.3	3.6	1.7	2.7	0.0	0.0	100.0	100.0
1987	76.7	88.7	15.4	3.7	5.7	4.1	2.1	0.0	0.1	0.0	100.0	100.0
1982	73.4	87.2	17.6	4.8	6.5	4.2	2.2	3.6	0.2	0.1	100.0	100.0
1977	64.4	76.8	22.1	6.7	8.6	*	4.8	10.3	0.1	0.0	100.0	100.0
1972	55.3	74.6	18.5	6.1	11.1	8.0	**	**	15.0	11.4	100.0	100.0

* Withheld to avoid disclosure

** Not reported for 1972; unusually large "other" seems to account for the omission

Source: Compiled from Bureau of Census, U.S. Census of Business, Wholesale Trade, 1972-1992

Table 3.5
Concentration Ratios for Fresh Produce Wholesalers,
1972-92

	4-Firm	8-Firm	20-Firm	50-Firm
1992	7.2	11.3	15.7	23.0
1987	8.4	10.5	14.8	21.6
1982	5.8	9.8	14.2	20.9
1977	5.8	9.4	14.1	20.9
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Some of the general observations How put forth for the state of change of the fresh produce distribution system in 1988 included:

- Decreased independent and terminal market wholesaler opportunities due to changes like the increase in consumer packaging at shipping point, decreased need for specialized tomato handling and ripening and the change from bananas arriving on 100 pound stalks to arriving in boxes.
- New opportunities for independent and terminal market wholesalers included the growing food service sector and the interest in international trade of new exotic products.

3.1.3 Fresh Produce Wholesaling in the United Kingdom

A 1994 study of the United Kingdom fresh produce distribution system by Shaw, Gibbs and Gray provides some interesting comparisons and useful insights for the U.S. fresh produce wholesaling system. This study included surveys of 241 fresh produce wholesalers and 287 growers in the United Kingdom, along with an analysis of the structure of the industry, future changes in the market structure and how firms might adjust to these changes. The study predicts modest increases in produce consumption over the next ten years, especially in fresh fruit. The largest increase in this consumption is expected in the catering (food service) sector. The growth of market share of chain retailers is expected to continue to increase -- as in the U.S. -- along with the concurrent continued increase in direct purchasing of produce from shipping point. The study also predicts an increase in direct buying by food service companies and their buying organizations. The study predicts demand for wholesale fresh produce will decrease by 25 percent by 2005, although small, independent retailers will continue to use wholesalers.

Seventy percent of the wholesalers surveyed had total sales greater than \$8 million per year. The largest wholesalers had sales greater than \$16 million. Thirty-seven wholesale fresh produce markets exist in the United Kingdom. Most British on-market wholesalers sell to both retail and food service sectors and about half provide delivery services. The large wholesalers were less reliant on sales to independent retailers than smaller wholesalers. The majority of the wholesalers either had a "full-range" of produce, or were currently extending the range of products they handled.

In the future, U.K. wholesalers expected to experience more "remote ordering" (Phone/fax), more delivery service and expanded sales to the food service sector. Survey respondents reported mostly increasing sales, however they also reported increased competition. Most of the wholesalers indicated their current physical market facilities were "acceptable," although with some

variation between markets, and did not want the facilities to be relocated or combined with other currently operating markets.

The growers surveyed in the U.K. study indicated that wholesalers were no longer the primary outlet for their fresh produce, and further, that wholesale markets were frequently used as outlets for their surplus produce or produce not meeting more stringent chain retailer specifications. In general, smaller growers indicated they were more dependent on wholesalers than larger growers, and all growers indicated they received higher margins in general on produce they sold to chain retailers.

The U.K. study concludes by encouraging improved coordination between shippers and wholesalers to match production/shipping to market needs and to improve volume control. Improved quality levels, consistent products and cold storage throughout the distribution channel were all cited as important in delivering the fresh produce U.K. consumers expect. Authors called for the packaging and presentation of both branded and non-branded produce to be improved, with attention to retail customer, food service and wholesaler requirements to maximize product appearance and shelf life for consumers. Many of the findings in the U.K. study appear relevant in the analysis of U.S. produce wholesaling changes.

3.1.4 U.S. Retail Buying Practices

A growing challenge cited by McLaughlin and Perosio (1994) for fresh produce handlers trying to deal with ever larger wholesale and retail customers was the contraction of the actual number of buying organizations, resulting in fewer fresh produce buyers and thus, a premium on seller contacts. The trend in supermarket consolidation leads to fewer retail produce buyers, which in turn results in less buyer time for each produce seller. This condition is most challenging for small, regional shippers with a limited line of produce, who don't have the assortment of products or supply window to warrant the buyers' time year round. Furthermore, this study documented the continuing decline in retailers' use of the traditional terminal market as a source of fresh produce. While the average sized supermarket firm received only 20 percent of their fresh produce from terminal market wholesalers in 1993, larger firms, with sales greater than \$1.5 billion, received only 7 percent of their fresh produce from terminal market wholesalers.

Asked to quantify the most important product attributes in determining their fresh produce purchasing decisions, "best quality available" was rated the most important. The four leading attributes required of a fresh produce supplier included "adequate supply," "consistent quality," "reputation" and "price protection." Buyers also required advanced price quotes to plan weekly ads, providing an advantage for suppliers able to provide longer term price stability. The buyers in this study expected produce sales to reach 12 percent of

the total grocery sales in supermarkets by the year 2000, up from about 10 percent in 1995.

3.2 Feasibility Studies

Over the past thirty years, numerous studies have been conducted to estimate the effects new facilities or organizational structures might have on overall produce distribution. These studies generally focus on specific regional areas, and a distinct subset of the distribution system, i.e. growers, shippers, wholesalers or retailers. Several of the key studies are summarized below, either for the feasibility methodology employed or for the relevance of their particular conclusions.

3.2.1 South Jersey Food Center

Objectives of this study (Arthur D. Little 1989) included determining the requirements of the food industry in South Jersey, the type of facility required and the physical elements necessary to entice companies to relocate to a food distribution facility. Additionally, the report investigated the development and operational costs of a potential facility and the related cash flow requirements. The third section of the report explored alternate locations for the facility and their respective feasibilities, focusing not only on fresh produce wholesalers but on a variety of fresh food distributors. The study determined that South Jersey fresh produce wholesalers' customers consisted of: "Ma and Pa" grocery stores, 25 percent; food service, 25 percent; other wholesalers, 9 percent; retail chains and independent retailers, 5 percent each; food processors, 4 percent; other, 28 percent. For the wholesalers on the Philadelphia market, 9 percent of total sales consisted of chain retailers, 21 percent "Ma and Pa" stores, 27 percent food service, 7 percent food processors and the rest to other buyers. A unique aspect of the South Jersey wholesale food system is the Vineland produce auction, one of the few produce auctions remaining in the U.S. Section 3.3.2 explains the Vineland auction in greater detail.

3.2.2 Southwestern Michigan Facilities

In 1990 a study (Stachwick et al) was conducted for the Southwestern Michigan region regarding the feasibility and need for new wholesale fresh produce marketing facilities. This study was undertaken in response to a shrinking Michigan share of the U.S. fresh produce market despite growth in overall demand. The authors surveyed the opinions of a number of fresh fruit and vegetable industry participants on the state of Southwestern Michigan fruit and vegetable supplies. Of particular interest were shipper views of perceived problems with Southwestern Michigan produce.

The problems shippers identified included:

- quality and consistency of pack
- lack of suitable fresh varieties
- ineffective marketing firms
- excessive supplies - low price
- cost/availability of labor
- outdated packaging
- too many sellers of fresh produce

The grower/shipper segment of the study indicated that 20 to 30 percent of fresh produce marketed from the region did not meet average market quality of fresh produce. Further, growers and shippers generally agreed on the need for a modern regional consolidation facility (44 and 42 percent respectively), and recommended it be equipped with the following:

<u>Attribute</u>	<u>Percent Recommending</u>
Refrigeration	57%
Short term storage	49%
Hydrocooling	47%
Consolidation/Assembly	45%
Packaging	35%
Sales and service	5%

Given the development of some type of wholesale fresh produce facility, 29 percent of the growers indicated they would use the facility, 37 percent indicated they might use the facility, and 23 percent indicated they would not market through a facility. Thus, from the supply side, up to 66 percent of Southwest Michigan producers indicated possible use of the proposed market.

3.2.3 Virginia Farmers' Market System

The impetus for this study (Virginia Department of Agriculture & Consumer Services) stems from the fact that 85 percent of the fruit and vegetable consumption in Virginia in 1985 was produced outside the state. The marketing facility envisioned in this study was a market combining both the wholesale and retail facets of produce sales, as well as some repackaging of produce. The study detailed the three major channels produce could take to reach Virginia consumers:

- **Farmers' Markets.** Thirty-five of these operated in Virginia, with increased interest in their operation.
- **Produce Packing Houses.** Many fruit and vegetable items entering wholesale channels need some preparation, i.e. grading, washing or hydro/vacuum cooling. The majority of producers don't own the

facilities, and 68.4 percent of wholesalers surveyed would buy more Virginia produce if it was prepared properly.

- **Independent Wholesalers/Chain Stores.** No terminal market wholesale facilities existed in Virginia, although 42 produce wholesalers operated in various metropolitan areas, moving 500,900 tons of produce annually, of which 18.2 percent was locally grown.

Among the wholesalers interviewed, 16 percent of their produce purchases originated in Virginia, and 7 of the 42 wholesalers indicated they would consider relocating to a market. Sixty-nine percent of the respondents indicated they would be willing to purchase from a potential market.

3.2.4 Worcester Market

This study (Cambridge Systematics 1988) also detailed a combination wholesale/retail fresh produce market. The core of the market concept consisted of a retail farmers' market, however, the wholesale segment of the facility called for consistent quality produce and potential use of the market by larger growers who would not be able to sell their entire crop through the retail farmers' market. The authors estimated the wholesale segment of the business might reach \$2 million in annual sales if the market could supply 8 percent of the Worcester County demand for fresh produce. Several local wholesaler/retailers indicated interest in participating on the market, however not on a large scale.

3.2.5 Mid-Hudson Valley Market

The original investigation (Nutter Associates 1989) of the potential for some type of Mid-Hudson Valley fresh fruit and vegetable facility included not only fresh produce wholesaling and retail farmers' market elements, but also a sit-down restaurant and various related food elements. The original study estimated the demand for wholesale fresh produce sales in the area using the census of wholesale trade and county business patterns. The authors' analysis indicated there was less wholesale fresh produce trade per capita in the Mid-Hudson Valley than in the rest of New York State, \$116 per capita for New York State compared to \$68 per capita in the Mid-Hudson Valley region. This \$48 per capita difference represented \$100 million in wholesale sales, which the authors estimated would allow the potential capture of an additional \$55 million of fresh produce wholesale trade by a new wholesale facility located in the Mid-Hudson Valley Region. This increased business could be met by regional farm supplies and wholesalers in the region importing produce from other areas. The report recommended that some combination of a public-private partnership operate the market and that a wholesale element be prominent in the market. Additionally, a survey of the region's farmers indicated the willingness of 255 farmers to supply at least some produce to the market.

3.3 Variations of Produce Wholesaling

Several non-traditional produce wholesaling operations are examined in this section for their implications for a potential Mid-Hudson Valley wholesale produce center. These facilities and organizations each provide a slightly unique mechanism enabling farmers to gain access to the wholesaling system for their fresh produce.

3.3.1 Regional Consolidation Facilities

Two distribution centers exist in the Southeastern U.S. which have specifically been constructed for use as fresh produce consolidation facilities. One market, in White Pine, Tennessee, included a dock where 39 growers consolidate produce into tractor trailer size loads, with three retail chains involved as customers in 1995. In addition to its operations during the Tennessee growing season, the market brokers produce from other areas year round, keeping contact with retail and wholesale buyers and providing year round service for its customers.

A second center, in Melfa, Virginia, which opened in September 1993, was also conceived for the fresh produce consolidation function, and has facilities for light grading, cooling and hydro-cooling. The market only had two tenants in 1995, a grower/shipper and grower/shipper/broker and had room for two more tenants.

3.3.2 Vineland Auction

An interesting aspect of the South Jersey fresh produce wholesaling business is the Vineland Co-op Auction with fifty food brokers. In 1988 this auction conducted \$46 million of business and handled approximately 25 percent of the New Jersey fruit and vegetable harvest. This facility is one of the few actual fruit and vegetable auctions left in operation in the U.S. and provides an opportunity for small producers to sell their produce. Precise performance measures for this facility, however, were unavailable.

3.3.3 Eden Valley Growers, Inc.

A third, interesting variation of wholesale fresh produce consolidation exists in the form of Eden Valley Growers, Inc. in Eden, New York. This operation is somewhat unique, in that it is a farmers' cooperative set up to distribute 40 to 50 fresh vegetable items for 10 to 15 growers in Western New York State. The cooperative acts as a distribution and quality control agent for the growers in transferring produce to wholesale customers.

The Eden Valley Growers sold 200,000 packages of fresh vegetables between May and October in 1993, with approximately 50 percent of the cooperative's sales going to local chain retailers, i.e. Tops or Wegmans. Another 20 percent of sales went through brokers, 10 percent to a local fresh produce salad and pre-cut processor (J.C. Brachs in Buffalo, New York) and the remainder to independent retailers or other wholesaler/distributors. In contrast to the

other consolidation facilities, no packing is currently performed at the Eden Valley Growers facility and the cooperative carries no fresh-cut produce. The cooperative acts as a source of cartons and some growing supplies for its members, and cooperates with local retailers in setting ad prices, or packing (at the growers' own facilities) in special containers for large customers.

A general manager works for the cooperative, organizing customer interactions, member packing schedules and delivery schedules. The general manager and several assistants carry out all quality control inspection, inspecting growers' produce as it is packed and delivered to customers. Produce not meeting the cooperative's quality standards is either sold separately from the pool-priced produce or not sold at all through the cooperative.

Chapter 4

Methodology

In order to document buyer operating practices and to assess their attitudes toward a new wholesale produce facility, a primary data gathering effort was necessary with a large and representative sample of wholesale and retail buyers in the broad geographic market relevant to this study area in order to supplement the available secondary such as preceded this chapter. This chapter elaborates on the specific methodology followed for this research initiative.

First, secondary data of several types were collected. Farm level fruit, vegetable, floral and greenhouse production data and marketing system information were collected from various state and national government agencies. To the extent possible, these data were collected for individual commodities, by region and over time. Moreover, academic research and trade literature was searched for previous studies relating to produce wholesaling, market window analyses, "value-added" produce marketing and other feasibility studies pertaining to relevant produce commodities.

Next, primary data were gathered in a set of intensive, structured interviews with a cross-section of produce industry buyers. These representatives were selected from the following categories:

- Retail Supermarket Buyers: Responsible for buying fresh produce for the stores belonging to the chain. Most retail chains have their own produce warehousing facilities and local transportation fleets.
- "On-Market" Produce Wholesalers: Produce wholesalers whose main facilities are located at one of the major terminal market facilities in the Northeast, i.e. Hunts Point or Philadelphia. These firms traditionally focus on large volume accounts, generally delivering in truckload quantities.
- "Off-Market" Produce Wholesalers: Produce wholesalers whose main facility is not located on an organized wholesale/terminal market. These firms generally fall in the distributor/purveyor/jobber category, with services focusing on warehousing, delivery and filling orders of less-than-truckload and even less-than-case lots.
- Food Service Distributors: Firms which cater to food service outlets, i.e. restaurants, hospitals, schools, prisons, etc. Full line food

service distributors deliver staple items, paper products, as well as frozen and perishable items.

- Farm Stand Operators: Individuals operating a retail produce business in the Mid-Hudson Valley whose sales are directly to consumers. These operators often have a roadside market for locally grown produce as well as a limited amount of additional produce from distant areas. Many seasonal operation only operate from May to October.
- Restaurant Chef/buyers: Individual responsible for buying fresh produce for a restaurant located in the Mid-Hudson Valley.

These interview data were collected between September 1994 and April 1995 from firms operating within the study area or which serviced firms operating in the study area. Personal interviews were conducted to determine specific details on how food wholesaling firms currently operated and how they viewed the potential use of an alternative wholesale produce facility in the Mid-Hudson Valley Region. The interviews were generally conducted with the head produce buyer/vice-president for produce, or company owner/head manager. They typically lasted from one to two hours each.

The Blue Book (1994) and *Red Book Credit Services* (1994), the two most commonly used produce trade (credit) directories in the fresh produce industry were used, along with input from various industry representatives, to identify potential participants in the buyer sample. In total, 57 produce buyers were interviewed. The breakdown of respondents by category was as follows:

NYS supermarket buyers	8
On-market wholesalers	20
Off-market wholesalers	7
Food service distributors	6
Farm stand operators	6
Restaurant chef/buyers	6
<u>School food service directors</u>	<u>4</u>
Total	57

Since the firms in the study constitute a non-probability sample, caution should be exercised in generalizing results, especially to other regions, given the limited number of interviews relative to the large national population of produce wholesalers. The participants do, however, represent a very large majority of the produce wholesaling trade in the study area and, thus, provide useful insight into the general operation of the produce wholesaling industry in the Northeast region of the United States.

Each interview was guided by a set of open-ended questions and issues previously identified by the project "advisory committee." This committee consisted of representatives from Cornell, New York State Department of Agriculture and Markets, the United States Department of Agriculture and Mid-Hudson Valley growers and extension agents. The questions were developed using previous studies, including McLaughlin Perosio (1994), Strathclyde (1994), *The Southwestern Michigan Fruit and Vegetable Industry* (1990), *Virginia Wholesale Farmers' Market Feasibility Study* (1988) and *Feasibility Analysis for the Worcester Farmers' Market* (1988). Questions were included to determine standard operating procedures of the companies, as well as to solicit the individual's views of the likely future needs of the produce wholesaling industry and the potential for a new wholesale facility. The major themes of the questionnaire, the results for which are presented next in Chapter Five, are outlined below:

- **Buyer profiles.** A discussion of the general characteristics of the buying firms interviewed.
- **Sources of fresh produce.** This section identifies areas from which produce originates, types of suppliers and fresh produce purchased by the firms interviewed.
- **Operating procedures.** A description of the business operations and services typically available from the wholesaling firms.
- **Views from terminal market operators.** This section discusses buyer perceptions of their respective terminal market and its physical facilities.
- **Potential for a Mid-Hudson Valley wholesale produce facility.** Buyer indication of their potential use of a Mid-Hudson Valley wholesale produce facility, as well as the facilities and type(s) of management structure which should be included.
- **Farm Stand Operators/Restaurant Chefs/Buyers.** A discussion of the responses from these individuals to the relevant questions on where they get their fresh produce and what they buy.

Chapter 5

Results and Analysis

This chapter begins with a discussion of the results from the initial 45 fresh produce buyer interviews. These wholesale buyers may be considered the major volume buyers. This discussion covers buying firm profiles, sources of fresh produce, current operating procedures, issues from terminal markets, and buyer reaction to a potential Mid-Hudson Valley wholesale produce facility. Following this is a discussion of the results from interviews with farm stand operators and restaurant chef/buyers.

Using the interview themes outlined in Chapter 4, 45 fresh produce buyers (retailers, "on-market" wholesalers, "off-market" wholesalers, and food service firms) were initially interviewed to determine their current operating procedures and to assess their opinions of a potential new wholesale fresh produce facility in the Mid-Hudson Valley region. These buyers were each asked to respond to a core set of structured questions (See Appendix C), adjusted slightly depending on their type of business. Several issues were added during the interviewing process and only addressed by a limited number of buyers. In a second round, an additional 12 interviews were conducted with 6 farm stand operators and 6 restaurant produce buyers using a similar set of questions.

5.1 Profile of Firms

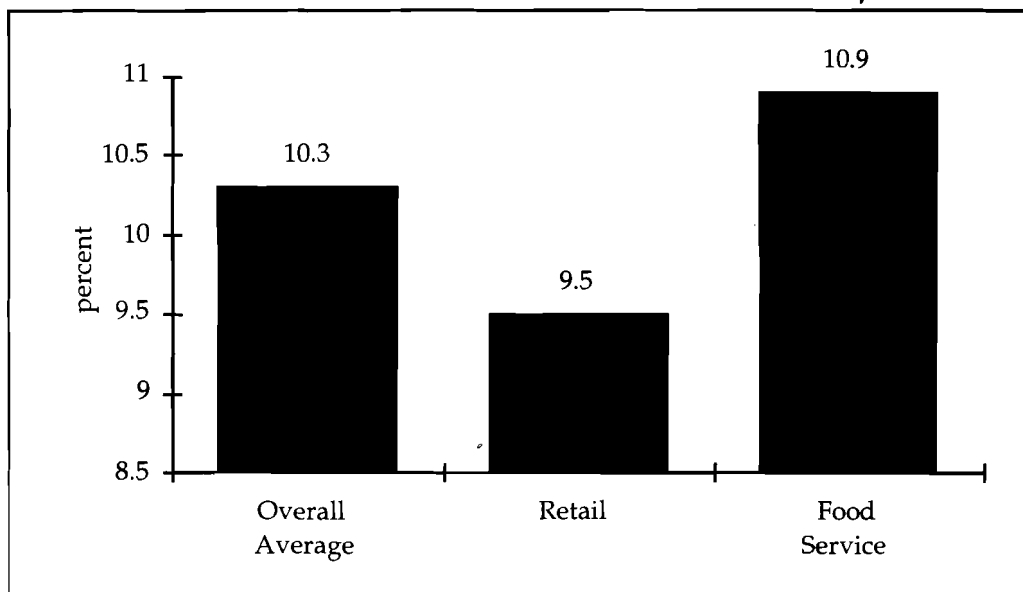
The majority of firms, 64.4 percent, indicated annual fresh produce sales of more than \$10 million in 1993 (Table 5.1). The eight retail supermarket chains interviewed had the largest volume of fresh produce sales per firm, as each indicated annual sales greater than \$100 million. Much more variation was reported with the sales of the strictly wholesale companies. The majority, 70 percent, of the on-market produce wholesalers had total firm sales of \$10 to \$50 million. The four school district food service directors indicated yearly produce purchases of less than \$1 million in 1993. Off-market produce wholesalers indicated total fresh produce sales between \$1 million and \$100 million. Fresh produce revenues averaged 9.5 percent of total grocery sales for the supermarket retailers, compared to 10.9 percent for food service purveyors (Figure 5.1). Thus, together these two "retail" level firm types had an average of 10% of their total sales accounted for by fresh produce.

Table 5.1
Fresh Produce Sales, Responding Firms, 1995

	< \$1 Mill	≥ \$1 Mill - < \$5 Mill	≥ \$5 Mill - < \$10 Mill	≥ \$10 Mill - < \$50 Mill	≥ \$50 Mill - < \$100 Mill	≥ \$100 Mill	Total
Retail	0	0	0	0	0	8	8
Food Service*	4	2	0	4	0	0	10
On-Market	0	3	2	14	1	0	20
Off-Market	<u>0</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>7</u>
Total	4	8	4	19	2	8	45

* includes schools

Figure 5.1
Fresh Produce Sales as a Percent of Total Firm Sales, 1995



When asked about sales growth, the large majority of fresh produce buyers indicated either constant or increasing sales of fresh produce over the past three years (91.3 percent of buyers so indicated). Fifty-six percent reported fresh produce sales increases of more than 10 percent over the past three years (Table 5.2). All eight of the retailers experienced growth in fresh produce sales over the last three years, with seven of the eight experiencing an increase greater than 10 percent. Similarly, nine out of the ten food service buyers

indicated a 10 percent or greater increase in fresh produce sales/use, while the remaining individual indicated relatively constant sales/use.

Table 5.2
Change in Fresh Produce Sales Over the Past Three Years, 1995

	Increased ≥ 10%	Increased < 10 %	Remained relatively constant	Decreased < 10 %	Decreased ≥ 10%
Retail	7	1	0	0	0
Food Service*	9	0	1	0	0
On-Market	6	4	7	1	1
Off-Market	3	3	0	1	0
Total	25	8	8	2	1

* includes schools

5.2 Sources of Fresh Produce

The majority of produce purchased by the entire sample of produce buyers was grown domestically, as 83.6 percent of participants' produce purchases originated in the U.S., while 16.4 percent was imported (Table 5.3). This ratio was relatively similar for all sub-categories of produce buyers, however, retail buyers purchased only 77.6 percent of their produce domestically while off-market wholesalers handled 92.0 percent domestic produce. The larger portion of retailers' purchases from imports can probably be explained by banana sales. Bananas, all of which are imported into the U.S., account for approximately 10 percent of supermarket produce sales and yet most general line produce wholesalers interviewed did not carry bananas.

In purchasing produce, 57.0 percent of the participants' produce was sourced directly from shipping point in the production area, 25.7 percent of purchases were facilitated through brokers and the remaining 17.3 percent was supplied by other on- or off-market wholesaler/distributors (Table 5.3). These averages varied considerably by firm type, however. Retailers purchased a notably higher percentage of fresh produce directly, sourcing 74.8 percent directly from shippers. Retailers also purchased the lowest proportion among buyer sub-categories from on- or off-market wholesaler/distributors. These results agree with the findings of McLaughlin and Perosio (1994) in their study of supermarket produce buying, where they found that for a national sample of supermarket produce buyers, large retailers (greater than \$1.5 billion in annual grocery sales) sourced only 7 percent of their produce from terminal market wholesalers and over 60 percent directly from shipping point. All of the retailers interviewed had their own fresh produce warehousing capabilities. Off-market produce wholesalers purchased the second highest

proportion of produce directly, receiving 68.0 percent directly from shippers. Food service purveyors received the lowest proportion of produce directly among buyer sub-categories, receiving only 47.5 percent directly from shippers, while sourcing the largest relative proportion from on- or off-market wholesaler/distributors, 27.5 percent.

Table 5.3
Produce Origination by Buyer Type, 1995

	All- All Buyers	Wholesale*	Retail	Food- Service**	On-Market	Off-Market
Number	43	37	8	6	20	7
	-- percent --					
Domestic	83.6	84.6	77.6	85.0	82.0	92.0
Imported	16.4	15.4	22.4	15.0	18.0	8.0
	100.0	100.0	100.0	100.0	100.0	100.0
Direct	57.0	58.9	74.8	47.5	55.6	68.0
Via Broker	25.7	30.0	18.5	25.0	34.2	18.4
Wholesaler	17.3	11.1	6.7	27.5	10.2	13.6
	100.0	100.0	100.0	100.0	100.0	100.0
Hudson Valley Growers	5.8	5.9	2.5	6.8	5.0	8.6
Other New York State Producers	9.7	8.8	16.1	6.8	8.5	9.6
All Other Production	84.5	85.3	81.4	86.4	86.5	81.8
	100.0	100.0	100.0	100.0	100.0	100.0

* includes food service distributors and school buyers

** without schools

Well over 80 percent of all produce sourced by the buyer sample originated outside of New York State. Mid-Hudson Valley growers supplied a relatively modest amount of the total fresh produce purchased by the buyer sample, averaging only 5.8 percent of total fresh produce purchases by the entire buyer sample (Table 5.3). Only 2.5 percent of the produce in local New York State supermarkets comes from the Mid-Hudson Valley region. The rest of New York State contributed another 9.7 percent to total produce purchases and the balance, 84.5 percent, originated in other states or outside of the U.S.

When asked what specific items were purchased from the Mid-Hudson Valley Region, the most common buyer responses were apples, onions, potatoes, sweet corn, and cucumbers (Table 5.4); a complete list of items cited is included in Appendix D. Apples were mentioned considerably more often than any other fresh items with 14 buyers listing them. Onions were a distant second most frequently mentioned, with 5 buyers mentioning them as a key item they typically purchase from the Mid-Hudson Valley. Apples also led items sourced from other regions of New York State with 12 mentions, tied with the number of individuals who mentioned cabbage. Onions followed, with 10 buyers indicating they purchased onions from New York State, followed by potatoes, mentioned by 9 individuals, and sweet corn mentioned by 6 individuals.

Table 5.4
Produce Items Purchased from the Mid-Hudson Valley
or New York State, 1995

Hudson Valley Items		New York State Items*	
Apples	14	Apples	12
Onions	5	Cabbage	12
Potatoes	3	Onions	10
Sweet Corn	3	Potatoes	9
Cucumbers	2	Sweet Corn	6

* Includes all other regions of New York State

Buyers were asked to identify specific barriers associated with Hudson Valley or New York State produce which limit the buyers' ability or desire to utilize New York State produce. The lack of adequate "quality" was mentioned by 9 buyers as a barrier to utilizing Hudson Valley produce, the most often of any issue (Table 5.5). "Poor packing" followed closely with 7 buyers, "inadequate cooling" and a "limited growing season" or "availability" were each mentioned by 4 buyers and "poor weather or growing conditions" was mentioned by 3 individuals. "Packing" and "growing season" or "availability" were mentioned most often as barriers to utilization of New York State produce, with each mentioned by 3 buyers. "Shorter shelf life," "grading" and "reliability" were each mentioned by 2 buyers as barriers to utilizing New York State fresh produce. The complete list of barriers identified by the buyers is included in Appendix E.

Table 5.5
Major Barriers to Buyer Purchase of Mid-Hudson Valley
and New York State Produce, 1995

Hudson Valley Barriers	# listing barrier	New York State Barriers	# listing barrier
Quality	9	Packing	3
Packing	7	Growing season/ Availability	3
Cooling	4	Shelf Life	2
Growing season/ Availability	4	Grading	2
Weather/Growing Conditions	3	Reliability	2

Produce buyers were asked to indicate the number of produce suppliers with whom they regularly conduct business. Retailers, by far, reported the largest number of regular suppliers, each dealing with an average of 377.4 suppliers (Table 5.6). On-market wholesalers dealt with the second largest number of total suppliers on a regular basis with 147.6. Food service distributors reported the lowest number of regularly used suppliers with an average of 40.5, most likely attributable to having a large portion of their needs contributed by one or several wholesalers.

Table 5.6
Number of Suppliers Dealt with on a Regular Basis, by Buyer Type, 1995

	All	Retail	Food Service*	On- Market	Off- Market
Hudson Valley Growers	5.8	11.4	3.3	6.5	1.5
New York State Growers	22.9	93.5	3.5	10.6	2.0
Out Of State Growers	122.6	271.2	19.2	126.7	94.3
Other Suppliers	5.8	1.3	14.5	3.8	12.3
Total	157.1	377.4	40.5	147.6	110.1

* without schools

All buyers estimated conducting business with approximately 1.5 Hudson Valley growers/shippers on a regular basis, with retailers using the most, 11.4 different grower/shippers and off-market wholesalers using the least, 1.5. Buyers dealt with an average of 22.9 non-Hudson Valley New York State growers and 122.6 out of state growers. This large number of growers from whom buyers, especially retail buyers, purchased directly illustrates the increased emphasis on direct purchasing of fresh produce. Over 78 percent of the grower/shippers with whom the sample of produce buyers dealt on a regular basis were from outside New York State; conversely, only 3.7 percent were Mid-Hudson Valley grower/shippers.

Produce buyers were asked to name the top three items in their business for which sales had increased the most over the last three years and those items whose sales they expected to increase the most over the next three years. Value-added items dominated the responses of virtually all buyers for both questions. In fact, 21 of the 45 buyers mentioned at least one specific value-added item as a major growth item in the last three years, and 14 buyers mentioned at least one specific value-added item as a leader of expected growth over the next three years (Table 5.7). Together, 25 of the buyers, or 55.6 percent, mentioned at least one value-added item or value-added products in general as a past or future growth leader.

When the categories "prepackaged salads" and approximately half of the category "new specialties" are included in the value-added definition, fully two-thirds of all buyers agreed that some type of added value products contributed the most growth. Specialty lettuce or leafy vegetables were mentioned most often as a top growth item over the past three years, with 10 buyers mentioning them.

Five individuals expected overall fruit and vegetable item growth, both in terms of numbers of new products and increased sales of current items, to lead fresh fruit and vegetable growth over the next three years rather than individual items, while 4 buyers expected pre-cut fruit, 3 expected new or specialty items and 2 expected broccoli or cauliflower florets to lead growth over the next three years. The complete list of growth items is included in Appendix F.

For production areas characterized by many relatively small producers, like the Mid-Hudson Valley Region, producers sometimes do not have the volume necessary to service larger buyer accounts. One way this problem can be addressed is for privately owned wholesaler/distributors to consolidate several smaller producer lots into larger shipments for end buyers. However, only a few of the wholesaler/distributors in this study performed this specific consolidation function on a regular basis. Three fresh produce wholesalers performed certain consolidation functions on a daily basis, 2 on a weekly basis, 10 on a seasonal basis and the balance of wholesalers did not perform

this function at all (Table 5.8). Only one of the retailers bought local produce, consolidated by a wholesaler, on a daily basis, 3 bought seasonally and 3 indicated never buying consolidated local produce.

Table 5.7
Top Five Growth Items Mentioned, 1995

Past Three Years	# Citing	Next Three Years	# Citing
Value-Added Vegetables	21	Value-Added Vegetables	14
Specialty Lettuce/Leafy Greens	10	Overall Fruit and Vegetable Growth	5
Broccoli/Cauliflower (florets)	9	Pre-cut Fruit	4
New/Specialty Items	7	New/Specialty Items	3
Salads (prepackaged)	5	Broccoli (florets)	2

Table 5.8
Buyer Consolidation of Local Produce for Resale, 1995

	All Results	Retail*	Food Service	On/Off- Market	On- Market	Off- Market
Daily	4	1	0	3	2	1
Weekly	2	0	0	2	1	1
Seasonally	13	3	0	10	8	2
Never	21	3	6	12	9	3
Total	40	7	6	27	20	7

* Firms purchasing consolidated local produce

Local fresh produce shippers need to understand the importance of the various factors affecting a buyer's decision to choose out-of-state produce over locally grown produce. Ten of the produce buyers in our sample were asked to rate the importance of several factors (on a 1 to 5 scale) in their decision to choose out-of-state produce over locally grown produce. A response of "1" meant the factor was very unimportant and "5" meant the factor was very important (Figure 5.2).

"Quality" was the highest rated element with an overall rating of 4.7, and a perfect 5.0 rating among food service buyers. "Packaging" followed with an overall rating of 4.3, whereas "sorting and grading" received a 4.1 rating. "Price" had the second highest rating behind "quality" among wholesalers, with a 4.3 rating to quality's 4.5 rating. "Promotion" was by far the lowest rated element with an average rating of 1.5 and a 1.0 rating from wholesalers.

5.3 Business Operations

Increasing demand for value-added services has in recent years been one of the major driving forces in the U.S. food system. In fresh produce wholesaling, this has led to increased focus on a variety of customer services and product innovations. Consequently, produce buyers were questioned regarding the likely change in strategic direction they foresaw for their respective businesses over the next five years. A rating of "1" indicated respondents were very unlikely to shift their business in the respective direction over the next five years, while a rating of "5" meant a shift was very likely.

The ratings given for "delivery service", "extended product range" and "more value-added products" exhibit a move toward more services and product offerings, as buyers rated these three as likely shifts in their business in the next five years, each averaging a rating of 4.2 (Table 5.9). Indeed, supermarket retailers were unanimous in citing "value-added items" as their major shift in emphasis and nearly as strong in their intention to extend the range of products (rated 4.7).

The directions least likely to be pursued by produce buyers in the future were "more terminal market business" and "reduced product range," with ratings of 1.6 and 1.4 respectively. In other words, greater declines can be expected in retail business conducted through terminal markets in the future.

An important issue for the produce industry is how produce wholesalers fit in to the evolving fresh produce distribution system, especially as fresh-cut produce increases in importance. While retailers, especially large firms, have reduced the amount of fresh produce sourced through conventional wholesalers, the function of supplying retailers remains an important component of fresh produce wholesaling. The amount of produce retailers purchase from wholesalers, while a small share of retail sales, is still a large volume of produce, and usually makes up one-quarter to one-half of wholesalers' business.

Figure 5.2
Importance of Specific Factors of the Fresh Produce Buying Decision, 1995

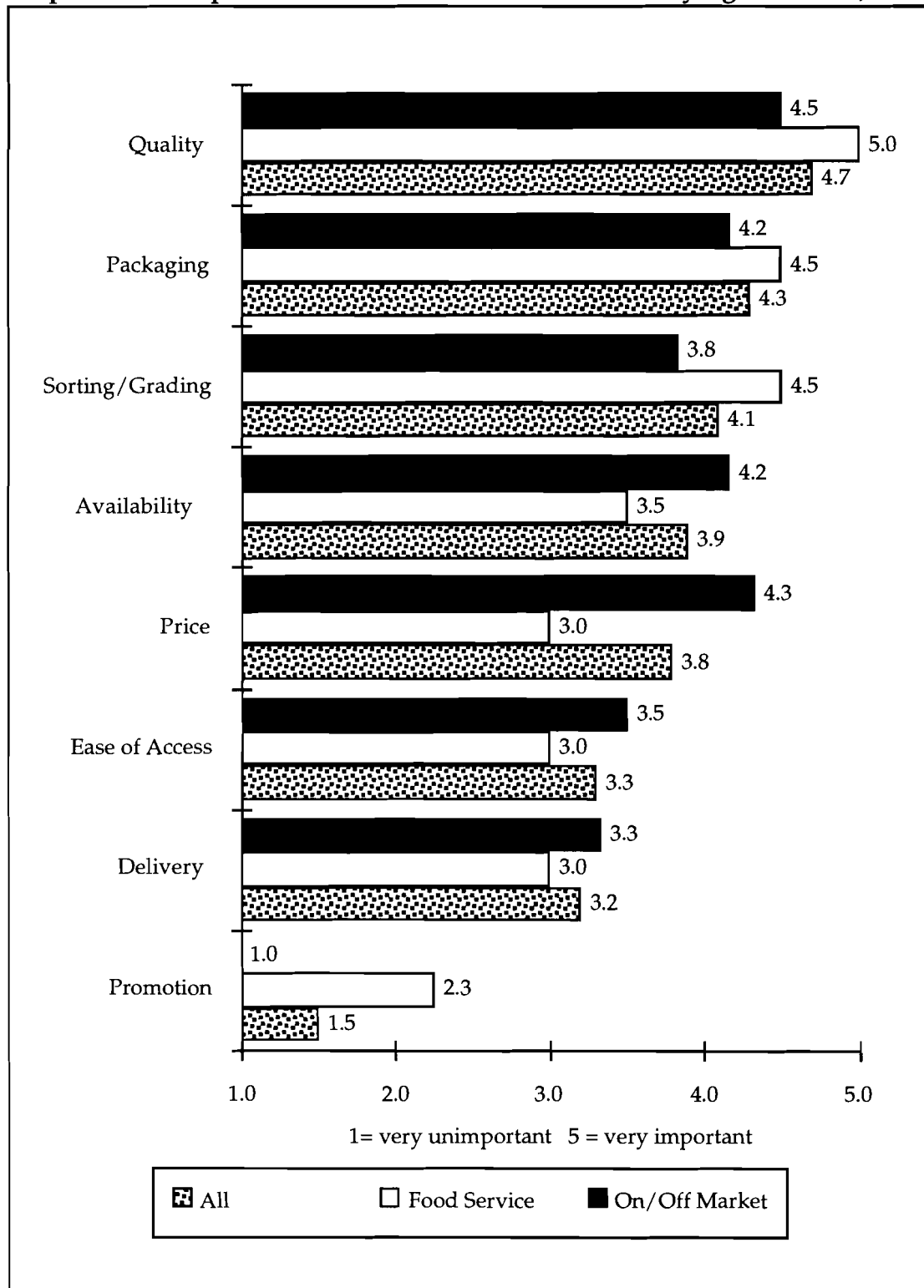


Table 5.9
Plans to Shift Business Toward the Following Directions
in the Next Five Years, 1995

	All	Retail	Food Service*	On-Market Wholesaler	Off-Market Wholesaler
	1 = very unlikely			5 = very likely	
More Value-Added Products	4.2	5.0	4.8	3.9	4.3
Extended Product Range	4.2	4.7	5.0	3.6	4.4
More Delivery Service	4.2	NA	4.3	3.9	4.7
More Food Service Business	3.6	NA	NA	3.5	3.9
More Hudson Valley Produce	3.5	4.2	4.2	2.5	3.0
More Telephone Sales	3.5	NA	2.7	3.7	4.0
More Promotion	3.3	4.0	3.7	2.6	4.0
More Terminal Market Business	1.6	1.1	2.5	1.7	3.0
Reduced Product Range	1.4	1.1	1.0	1.7	1.3

* without schools

Among on- and off- market wholesalers, total produce sales were almost evenly split among chain retailers (25.8 percent), independent retailers (26.7 percent) food service outlets/distributors (24.7 percent) and other outlets (22.8 percent) (Table 5.10). In examining the proportion of total fresh produce sales sold from wholesalers to other produce handlers, food service distributors have been removed since by definition all of their produce sales are to food service outlets. On-market wholesalers sold a distinctly lower percentage of their fresh produce to chain retailers than did off-market wholesalers, 21.0 percent compared to 39.6 percent. This difference is probably explained by several factors. On-market wholesalers as a group did more gross business (see Table 5.1), so although retailers may be getting similar amounts of produce from both, the smaller amounts of other business for the off-market wholesalers causes retail accounts to be a larger proportion of their business.

Table 5.10
Percentage of Wholesale Sales to Other Wholesale/Retail Outlets, 1995

Buyer Type	On and Off-Market	On-Market Only	Off-Market Only
Chain Retailers	25.8	21.0	39.6
Independent Retailers	26.7	31.1	14.1
Food Service	24.7	22.2	32.0
Terminal Market	1.7	2.1	0.7
Purveyor/Distributor	17.5	19.0	12.9
Processor	0.0	0.0	0.0
Farm Stand	3.6	4.6	0.7
Total	100.0	100.0	100.0

Additionally, the on-market wholesalers involved in this study were generally located in terminal markets near large metropolitan areas, while off-market wholesalers are normally located in smaller markets. In the larger metropolitan areas there are more food service establishments and independent retailers buying produce at the wholesale level making the chain retailer buying a smaller proportion of total wholesaler business. The terminal market wholesalers also did more business than their off-market counterparts with other terminal market wholesalers, purveyor/ distributors, and farm stand operators.

Various services, listed in Figure 5.3, were offered by a large proportion of the wholesaler/distributors. All of the wholesaler/distributors indicated they delivered produce to their customers, although some required full truckload orders. Telephone (and/or the facsimile machine) ordering was offered by 100 percent of off-market wholesalers and food service distributors, while 90 percent of on-market wholesalers offered telephone ordering. Eighty-six percent of off-market produce wholesalers indicated they provided market price information for customers, while 50 percent of on-market wholesalers and 16.7 percent of food service distributors indicated they provided market price information to their customers.

Handling value-added products was a "service" 83.3 percent of food service distributors provided, however, only 71.4 percent of off-market wholesalers and 60.0 percent of on-market wholesalers indicated they handle value-added fresh produce. Promotional materials, while generally not created by the

wholesaler/ distributor, were provided by 57.1 percent of off-market wholesalers, 45.0 percent of on-market wholesalers, and 33.3 percent of food service distributors. Training customers in produce handling, preparation and utilization was the service offered least often by wholesaler/distributors. Forty-three percent of off-market wholesalers and 33.3 percent of food service distributors provided training, while only 15.0 percent of off-market wholesalers provided customer training.

These results are not surprising, although more off-market than on-market wholesalers providing value-added services may require some interpretation. These extra services help off-market wholesalers compensate for the advantages terminal market wholesalers possess in terms of location, proximity of related businesses, buyers' ability to physically inspect produce before delivery and flexibility in fill-in purchases. The percentage of food service distributors handling fresh-cut/value-added produce also makes sense with the growing demand for the convenience of fresh cut produce by food service outlets.

5.4 Terminal Market Issues

Buyers were asked to identify the primary fresh produce terminal market with which they most frequently conducted business (or on which they were located) and to evaluate the market's attributes. Twenty-three of the buyers in the sample primarily used (or were themselves located on) the Hunt's Point Terminal Market, five of the buyers were located on or primarily used the Capital District Regional Market located in Albany, New York, and four buyers were located on or primarily used the Philadelphia Terminal Market (Table 5.11). Three respondents, all school food service buyers, indicated they did not deal directly with any terminal market wholesalers.

When asked about the problems with their most frequently used operating conventional terminal market, the problem most often mentioned was the small "physical size", with 11 individuals mentioning size, followed closely by the "quality of the fresh produce offered" mentioned by 10 individuals (Table 5.12). It should be noted, however, that the individuals rating "physical size" as a problem all were referring to the Hunts Point Market, while only four of the individuals who mentioned "quality" referred to Hunts Point. Perhaps this should not be surprising considering Hunts Point was initially developed in the 1960's when trucks were significantly smaller and shorter, and trains were more important (and viewed at the time as the future of produce transport) for fresh produce transportation. Thus, even though Hunt's Point is a large facility by most measures, the physical layout is not conducive to the vast volume of business done on the market daily.

Figure 5.3
Services Provided by Wholesaler/Distributors, 1995

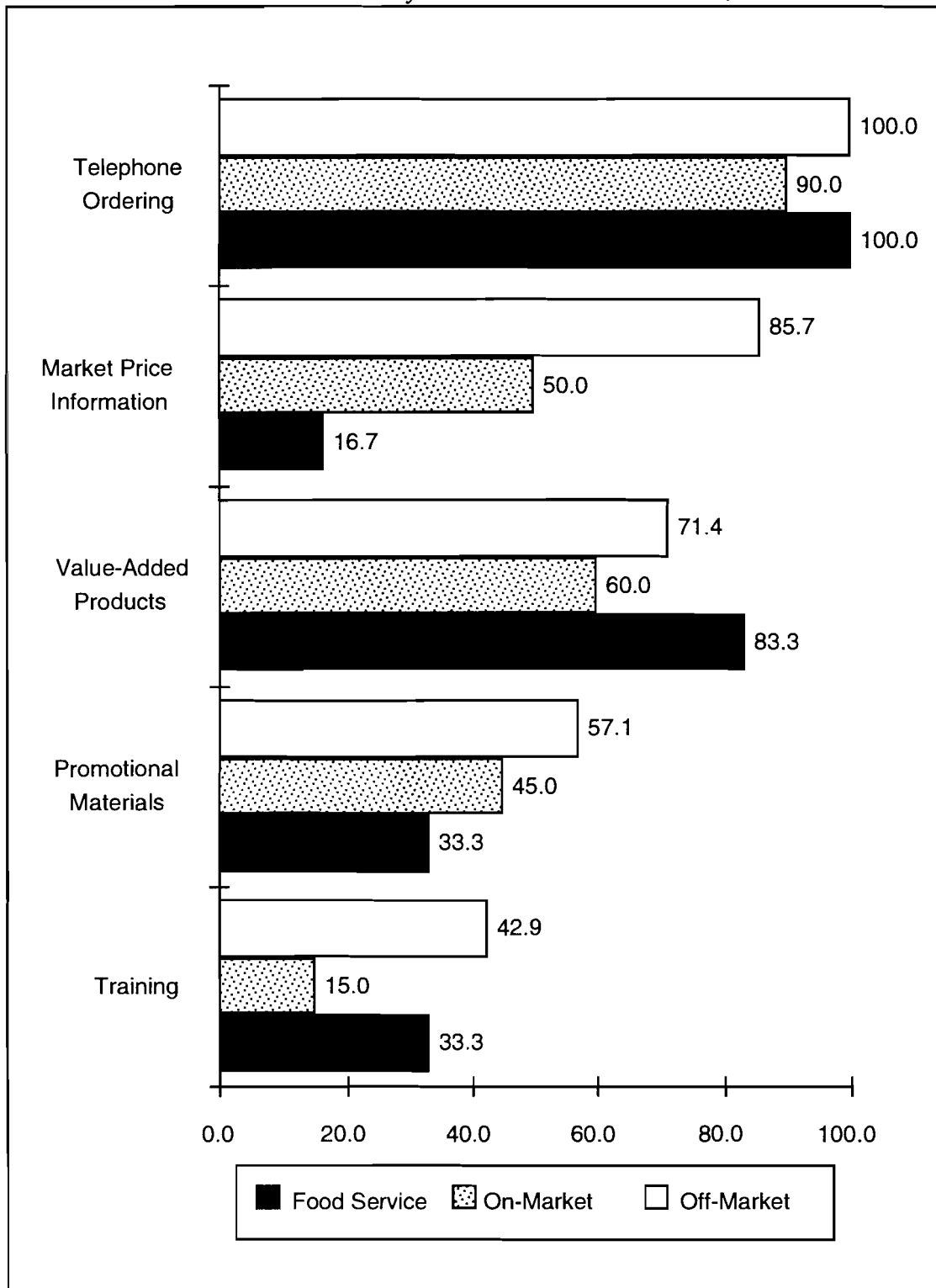


Table 5.11
Primary Wholesale Markets Used by Buyers, 1995

Market	# Citing	Market	# Citing
Maryland	2	Hunt's Point	23
New England	2	Capital District	5
Brooklyn	2	Philadelphia	4
Bronx	0	Rochester	1
Buffalo	1	Scranton	1
Cleveland	1	Syracuse	0
Connecticut	0	Other	0

Other problems of wholesale markets mentioned included "Poor physical facilities" (4 of the 8 referring to Hunt's Point), "overhead/labor costs" (6 of 7 Hunt's Point), "accessibility" (6 of 7 for Hunt's Point) and "environment/surroundings" (6 of 6 for Hunt's Point).

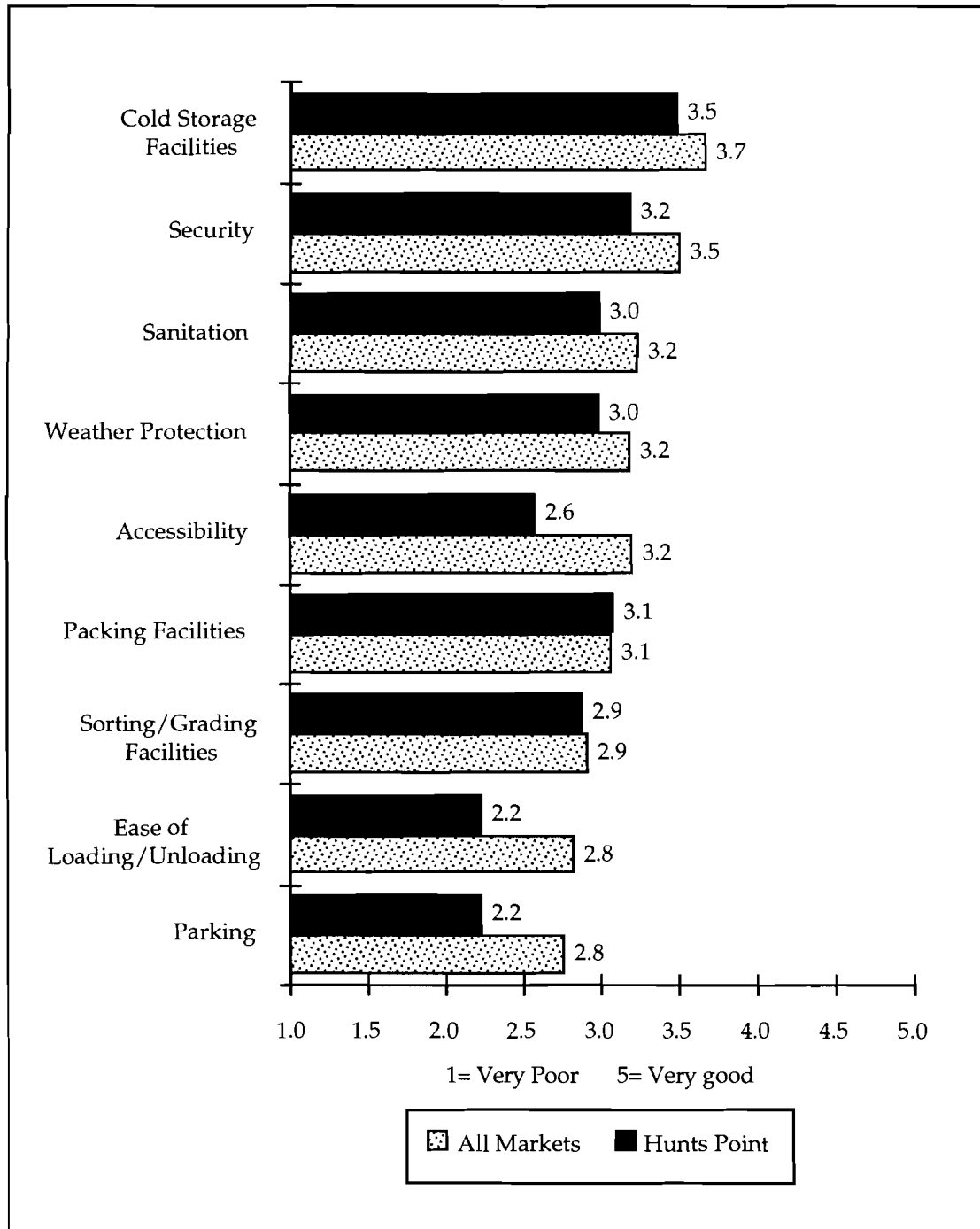
The key positive characteristics mentioned for wholesale markets included: "location," mentioned by 23 of 40 individuals; "variety of products", mentioned by 14 individuals and "number of merchants" mentioned by 9 individuals. "Quick fill-in" was mentioned by 6 individuals while "availability" and "accessibility" were both mentioned by 5 individuals.

On a five point scale, buyer evaluations of the individual physical attributes of terminal markets ranged from a low of 2.2 to a high of 3.7 where 1 is very poor and 5 is very good (Figure 5.4). "Cold storage" was rated highest among the physical aspects of terminal markets with a rating of 3.7 for all markets and 3.5 for Hunts Point. Consistent with the previously discussed problems with the physical layout of the Hunt's Point market, "ease of loading and unloading" and "parking" were rated lowest among attributes, each rated 2.8, or "poor" to "satisfactory" for all markets and 2.2 for Hunts Point. "Packing facilities," "weather protection," and "sanitation" were all rated as "satisfactory" or better for all markets. "Sorting and grading facilities" was rated as slightly less than "satisfactory" for all markets as well as for Hunts Point, while "accessibility" was rated "satisfactory" for all markets but slightly less than "satisfactory" for Hunts Point. Thus, it is evident that overall buyers are moderately dissatisfied with the condition of the terminal markets on which they conduct business: not one attribute scored as high as a 4 (good) or 5 (very good).

Table 5.12
Perceived Problems and Advantages of Current
Terminal Markets, 1995

Problem	All Markets	Hunts Point	A d v a n t a g e	All Markets	Hunts Point
Physical size - too small	11	11	Location	23	13
Quality	10	4	Variety of Products	14	10
Poor physical facilities	8	4	Number of Merchants	9	5
Overhead/ Labor Costs	7	6	Quick fill ins	6	3
Access	7	6	Availability	5	1
Environment/Surrounding Area	6	6	Accessibility	5	3
Availability	5	2	Good Merchants/ Management	3	2
Pricing	4	1	Pricing	3	1
Business shifting away from terminal markets	3	1	Quality	2	0
Parking	3	3	Established	2	0
Integrity	3	2	Parking	1	0
Management	3	0	Service Level	1	0
Credit Extension problems	2	1			
Sanitation	2	1			
Market doesn't "Market"	2	1			
Need to Educate Public	2	1			
Diversity - Serving too many different needs	2	1			
Low Volume - Specialties	1	0			
Consistency	1	0			
Need to have large volumes to sell to market	1	1			
Competition	1	1			
Hours	1	0			
Distance	1	0			
Owned by farmers coop	1	0			

Figure 5.4
Terminal Market Attribute Ratings for all Markets and Hunts
Point, 1995



Retailer buyers in our sample did not rate terminal market physical facilities as most indicated they were not familiar enough with the market facilities. Moreover, they reported that the physical facilities of wholesale produce markets were largely irrelevant to retailers since they received delivery from the terminal market wholesalers with whom they dealt. Ratings of the individual physical attributes of terminal markets for on-market wholesalers and other wholesaler/distributors ranged from a low of 2.2 to a high of 4.5 on a scale of "1" to "5" where "1" represented "very poor" and "5" represented "very good" (Figure 5.5). On-market wholesalers actually rated most of the physical attributes at least "satisfactory", with "sanitation" rated 4.2, slightly above "good", while both "security" and "cold storage facilities" averaged ratings of 4.1.

"Sorting/grading facilities" and "packing facilities" were the only physical attributes on-market wholesalers rated less than "satisfactory," with ratings of only 2.6 for each. "Parking," "sanitation" and "ease of loading/unloading" received the lowest rating from off-market wholesalers and food service distributors. "Security" and "cold storage" were the attributes off-market wholesalers and food service distributors rated as most satisfactory.

5.5 Mid-Hudson Valley Wholesale Fresh Produce Consolidation Facility

Buyers were asked to assess the extent of their potential use of some type of Mid-Hudson Valley consolidation facility. They were asked to select from several options: buying and/or selling through the facility, relocating to the facility, locating a satellite of the company at the facility, or not using the facility at all (Table 5.13). Seventy-one percent of the participants (32 buyers) indicated they might buy or sell produce through the facility. Only two buyers indicated their organizations might actually locate on the market³. This translates to 75.6 percent of the respondents potentially participating in a new facility in the Mid-Hudson Valley Region.

Ten of the buyers were asked to rate their interest level on a 1 to 5 scale (1 = very uninterested, 5 = very interested) in a potential new wholesale consolidation facility in the Mid-Hudson Valley. The responses were varied, with a mean response of 2.9 out of 5 (5 = very interested), i.e. slightly uninterested (Figure 5.6.)

³ One organization willing to relocate was a broker who would need office space only, the other was a terminal market operator considering opening a second, satellite stall on the market.

Figure 5.5
Terminal Market Attribute Ratings Given by Buyers' Firm Type, 1995

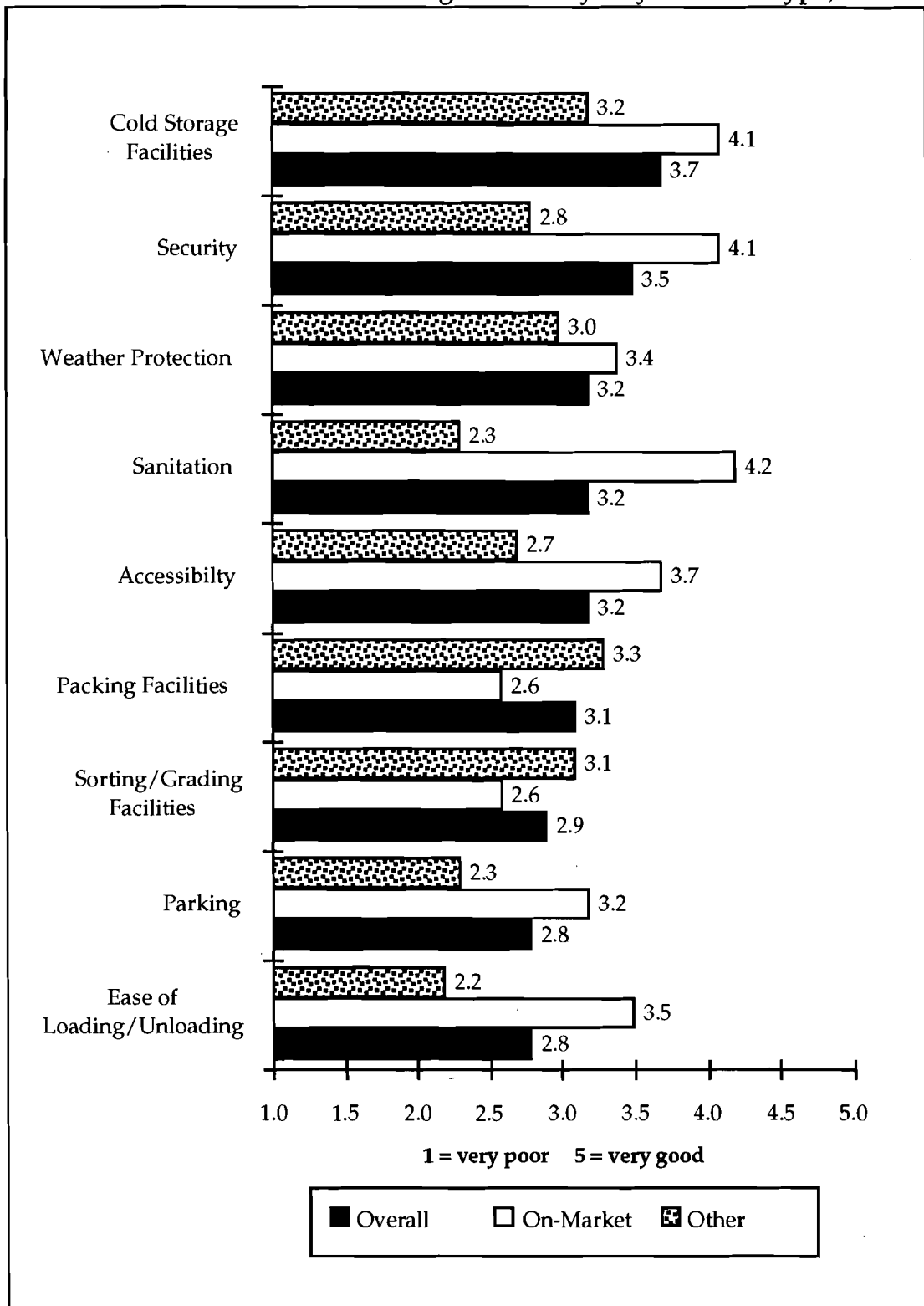
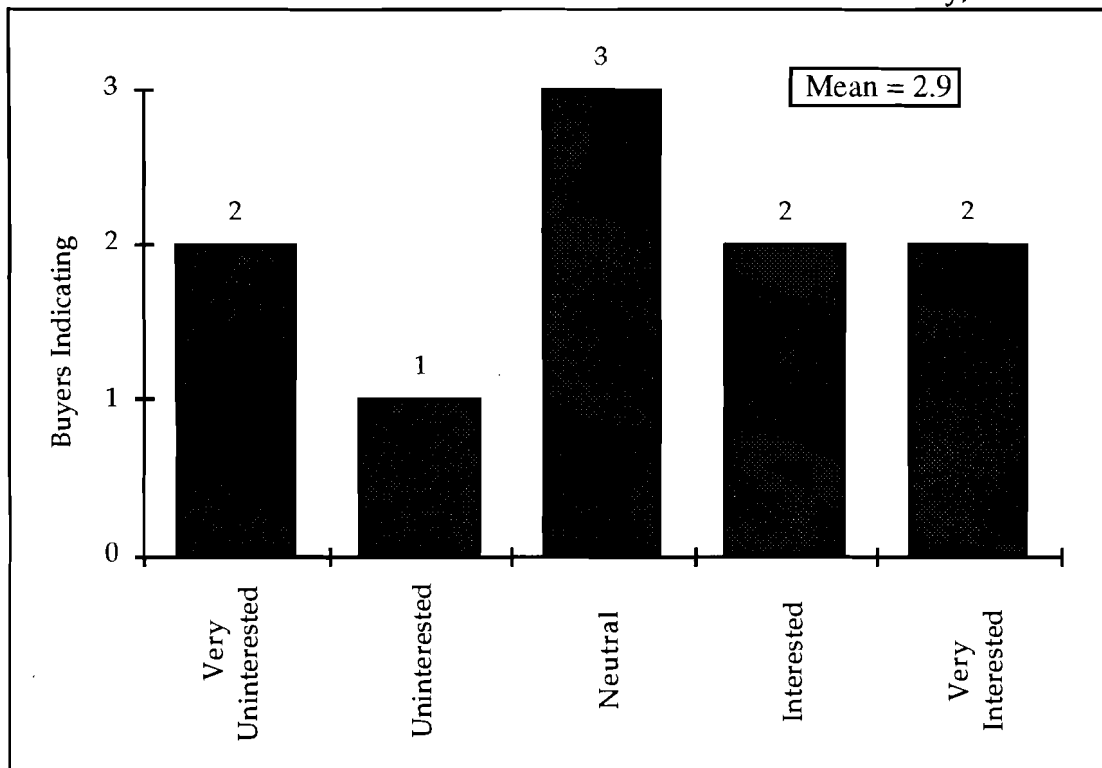


Table 5.13
Potential Buyer Use of a Consolidation Facility, 1995

	All Results	Retail	Food Service*	On- Market	Off- Market
Not Use	11	2	1	6	2
Buying/Selling on market	32	6	9	13	4
Relocate to market	1	0	0	0	1
Locate a satellite	1	0	0	1	0
Total	45	8	10	20	7

* includes schools

Figure 5.6
Interest in a Potential Fresh Produce Consolidation Facility, 1995



One issue shaping the viability and buyer evaluation of a new Mid-Hudson Valley Region produce consolidation facility involves the attributes and services which would be included in the facility. To determine the importance of various facility attributes, buyers were asked to rate the attributes they viewed as important on a scale of "1" to "5", where "1"

represented "very unimportant" and "5" represented "very important". The attribute which had the highest rating among all buyers was "consolidation facilities" with a rating of 3.5 followed by "cold storage" with a rating of 3.4 (Table 5.14). The ability to reach "more food service business" was rated lowest overall with a rating of 2.3 followed by "repacking facilities" with a 2.5 rating.

"Hydro/vacuum cooling" received the highest rating from retailers with a 5.0 followed by "Cold storage" with a 4.9 rating. On-market wholesalers as a group rated all the attributes as less important to potential use than any of the other sub-categories of buyers. In fact, all of the attributes were rated between neutral and unimportant by on-market wholesalers.

Table 5.14
Buyer Ratings of the Importance of Potential Wholesale Facility Attributes, by Buyer Firm Type, 1995

	All Firms	Retail	Food Service*	On-Market	Off-Market
	1 = Very unimportant		5 = Very important		
Consolidation Facilities	3.5	4.8	3.9	2.9	3.1
Cold Storage	3.4	4.9	3.2	2.8	3.9
Access to NYS Produce	3.3	3.0	3.9	2.9	3.4
Hydro/Vacuum Cooling	3.2	5.0	2.9	2.6	3.4
Sorting/Grading Facilities	3.1	4.6	3.3	2.4	3.0
Transportation Access	3.1	3.2	3.4	2.8	3.3
USDA Inspection	3.1	3.8	3.3	2.4	3.9
Repacking Facilities	2.5	3.5	2.5	2.4	2.3
More Food Service Business	2.3	NA	2.3	2.1	2.7

* without schools

Buyer evaluations of a new wholesale produce facility's potential attributes change considerably when responses are divided between buyers indicating they would be likely to use the facility and those indicating they would not use the facility (Table 5.15). Ratings were substantially more positive from individuals indicating they might use the facility than by those indicating they would not use the facility. The latter group, perhaps not surprisingly, were more indifferent to a market's attributes since they had already indicated they would not use it. However, "consolidation facilities" received the highest rating from potential users, 3.8, a higher rating, however, the same ranking as the all firm response. "Access to New York State fresh produce" and "cold storage facilities" followed with ratings of 3.7. "Repacking facilities"

remained the lowest rated attribute, receiving a rating of 2.8, the same rating "more food service business" received.

Table 5.15
Buyer Ratings of Potential Wholesale Facility Attributes,
by Potential Use, 1995

A t t r i b u t e	Likely to Use 1 = very unimportant		Not Likely to Use 5 = very important	
	Rating	# Responding	Rating	# Responding
Consolidation Facilities	3.8	31	2.4	10
Access to NYS Produce	3.7	31	1.5	8
Cold Storage	3.7	33	2.6	10
Hydro/Vacuum Cooling	3.5	33	2.2	10
USDA Inspection	3.5	33	1.8	9
Sorting/Grading Facilities	3.4	33	1.8	8
Transportation Access	3.4	32	1.8	8
Repacking Facilities	2.8	27	1.8	8
More Food Service Business	2.8	20	1.0	7

Buyers felt strongly that growers should be involved in the management of a Mid-Hudson Valley wholesale fresh produce facility, as 38.1 percent indicated some type of growers' cooperative should manage the facility and another 35.7 percent indicated a joint grower/buyer venture should manage a proposed facility (Table 5.16). However, 22.3 percent indicated an independent manager would be necessary to successfully manage the facility.

Table 5.16
Management Structure for a Wholesale
Fresh Produce Facility, 1995

	#	Percent
Growers' Co-op	16	38.1
Buyers' Co-op	1	2.4
Joint Grower/Buyer venture	15	35.7
Private Entity	7	16.7
Other	3	7.1
Total	42	100.0

5.6 Roadside Stand Operators and Restaurant Chef/Buyers

An additional group of 6 roadside stand operators and 6 restaurant chef/head buyers was interviewed from the Mid-Hudson Valley. Their operations differ considerably in scale and mission from the produce buyers in the main sample and as such their responses are tabulated separately below. These individuals were interviewed using a similar set of questions to explore their current operating procedures and potential use of a mid-Hudson Valley wholesale fresh produce consolidation or value-added facility. These businesses were identified using the *New York State Guide to Farm Fresh Food* and by "random" selection of a variety of businesses in the region.

The majority of the roadside stand operators were open for business from mid-May or June to late October or November with fresh produce representing an average of 88.2 percent of total sales (Table 5.17). These operators generally handled the full range of vegetables grown in the Mid-Hudson Valley, and several also handled Mid-Hudson Valley fruits and bedding plants. The restaurant buyers interviewed made regular use of a wide variety of Mid-Hudson Valley fresh produce items, including salad greens, potatoes, peppers, onions, corn, broccoli, cauliflower, cabbage, apples and various other items. The restaurants averaged around \$1,200 of produce purchases per week, ranging from \$400 per week to \$1,500 per week.

Roadside stands generally sold 100 percent domestically grown produce, in fact only one of the stands sold less than 100 percent, selling 70 percent domestically grown produce. Restaurants, on the other hand, averaged purchase of 90 percent domestic produce and 10 percent imported produce.

The growers' own produce generally served as the primary source for the roadside stands' sales, as 82.0 percent of the average stand's sales originated from the operator's own acreage. Another 9.6 percent was contributed by other local growers, 6.7 percent by off-market wholesalers and 1.7 percent by on-market wholesalers. Restaurant buyers sourced an average of only 3.0 percent of their produce directly from local growers, 51.3 percent from off-market fresh produce wholesalers, and 45.7 percent from food service purveyors. The fast-food restaurant managers interviewed indicated that their corporate headquarters negotiate a fresh-produce delivery contract with a particular vendor (predominately, but not exclusively, a full-line food service purveyor) to supply fresh produce to all of the franchises in a geographic region on a quarterly basis.

Roadside stand operators dealt with an average of 2.5 local growers to source the extra produce for their stands. They also purchased fresh produce from fewer than 1 on-market wholesaler on average and 1.2 off-market wholesalers. Restaurant chef/buyers purchased fresh produce from an

average of 1.3 off-market produce wholesalers and fewer than one each of local growers and food-service distributors on a regular basis.

Five of the six Mid-Hudson Valley restaurant chef/buyers interviewed indicated they would potentially purchase from a new Mid-Hudson Valley wholesale produce consolidation facility, however only three of the six roadside stand operators indicated they would sell to or buy from a new facility (Table 5.18) . The roadside stand operators unanimously indicated they would most likely not sell to some type of fresh cut facility, while three of the six restaurant operators indicated they would purchase from a new Mid-Hudson Valley fresh-cut produce facility.

Table 5.17
Origins and Sources of Produce, Mid-Hudson Valley Roadside
Stand Operators and Restaurant Chef/Buyers, 1995

	Roadside Stand Operators	Restaurant Chef/Buyers
<u>Origin of Fresh Produce</u>		
Domestic	95.0	90.5
Imported	5.0	9.5
Total	100.0	100.0
<u>Sources of Fresh Produce</u>		
Self Grown	82.0	0.0
Other (local) Growers	9.6	3.0
On-Market Wholesaler	1.7	0.0
Off-Market Wholesaler	6.7	51.3
Food Service Distributor	0.0	45.7
Total	100.0	100.0
<u>Number of Suppliers</u>		
Other Growers	2.5	0.2
On-Market Wholesaler	0.2	0.0
Off-Market Wholesaler	1.2	1.3
Food Service Distributor	0.0	0.5
Total	3.9	2.0

Table 5.18
Roadside Stand Operator and Restaurant Chef/Buyer Use
of A Mid-Hudson Valley Wholesale Produce Consolidation
or Fresh-Cut Facility, 1995

	Roadside Stand Operators	Restaurant Chef/Buyers	Total
Buy from/sell to a consolidation facility			
Yes:	3	5	8
No:	3	1	4
Buy from/sell to a fresh-cut facility			
Yes:	0	3	3
No:	6	3	9

Interest in a potential new Mid-Hudson Valley wholesale produce consolidation facility among roadside stand operators and restaurant chef/buyers averaged a 3.7 on a 1 to 5 scale, where 1 represented "very uninterested" and 5 represented "very interested" (Table 5.19). Three of the six roadside stand operators indicated they were "interested" or "very interested" in a new Mid-Hudson Valley wholesale produce consolidation facility while four of the six restaurant chef/buyers responded similarly. In all of these cases, the interest was in buying from, not selling to the facility. Only one of the six roadside stand operators indicated likelihood of planting extra acres of produce to sell through a consolidation facility.

Interest in a potential fresh-cut facility in the Mid-Hudson Valley region was decidedly less positive. The mean response for the two groups was only 1.9 (on a scale of 1 to 5, where "1" represented "very uninterested" and "5" represented "very interested"), with all six roadside stand operators indicating "very uninterested" and five of the six restaurant chef/buyers indicating "neutral" to "very uninterested."

Table 5.19
Roadside Stand Operator and Restaurant Chef/Buyer Interest in A
Mid-Hudson Valley Wholesale Produce Facility, 1995

	Consolidation Facility			Fresh-Cut Facility		
	Roadside Stand Operator	Restaurant Chef/Buyer	Total	Roadside Stand Operator	Restaurant Chef/Buyer	Total
Very Interested	2	2	4	0	0	0
Interested	1	2	3	0	1	1
Neutral	1	2	3	0	3	3
Uninterested	1	0	1	0	1	1
Very Uninterested	<u>1</u>	<u>0</u>	<u>1</u>	<u>6</u>	<u>1</u>	<u>7</u>
Total	6	6	12	6	6	12
Mean	3.3	4.0	3.7	5.0	2.7	1.8

Chapter 6

Conclusions and Recommendations

This chapter summarizes the results of the buyer interviews and buyer attitudes toward a potential Mid-Hudson Valley wholesale fresh produce facility. Section 6.2 follows with an approximation of the potential total produce demand from the Mid-Hudson Valley based on the information collected in this research. A number of simplifying assumptions are made in order to produce this estimate. Furthermore, directions for the future demand for each of the major channels of produce trade are also made. Finally, based on the analysis contained in this study, recommendations are made regarding the most appropriate strategic alternatives to improve the sales and marketability of Mid-Hudson Valley fruits and vegetables.

6.1 Summary of Produce Buyer Judgments

Sections 6.1.1 through 6.1.5 summarize the major findings from the fresh produce buyer interviews, exploring buyer business profiles, sources of fresh produce, business operations, issues with terminal markets and specific attitudes toward a potential wholesale facility.

6.1.1 Profile of Firms

The firms interviewed for this study conducted a vast amount of fresh produce business, as over 60 percent of the firms interviewed had \$10 million or more in annual produce sales. A few of the major supermarket companies had annual produce sales in excess of \$100 million. Additionally, for these supermarket retailers, fresh produce sales averaged 9.5 percent of their total firm sales, for food service purveyors, fresh produce sales averaged 10.9 percent of total sales. Buyers estimates of their recent sales indicated a generally favorable business climate for fresh produce, as ninety-one percent of fresh produce buyers indicated constant or growing sales of fresh produce over the past three years and, indeed, 56 percent indicated fresh produce sales growth of more than 10 percent over the last three years.

6.1.2 Sources of Fresh Produce

Domestic produce dominated the purchases of buyers in this study, as 84 percent of the fresh produce purchased by buyers in this study originated in the U.S.; the remainder, 16 percent, was imported. Direct buying was an important part of fresh produce purchasing, as 57 percent of all buyers' fresh produce was purchased directly from shipping point. Supermarket retailers had the highest proportion of direct purchases, receiving 74.8 percent of their fresh produce directly from shipping point. Terminal market and off-market produce wholesalers provided only a small percentage of fresh produce supply; only 17 percent of all buyers' produce purchases were sourced through on or off-market wholesalers. Once again, supermarket retailers utilized

wholesalers for less of their fresh produce than the rest of the buyers, receiving less than 7 percent of their produce needs from wholesalers.

Together, grower/shippers from the Mid-Hudson Valley and the rest of New York State provided less than 16 percent of fresh produce purchases by buyers in this study: Mid-Hudson Valley growers supplied less than 6 percent of the total fresh produce purchased by the buyer sample while grower shippers in the remaining regions of New York State supplied an additional 9.7 percent of the total fresh produce purchases of the buyer sample.

Apples were by far the most often mentioned commodity regularly purchased from the Mid-Hudson Valley, mentioned by 14 individuals, while apples and cabbage were mentioned most often as commodities regularly purchased from New York State as a whole. "Quality" and "poor packing practices" were the most often mentioned barriers cited by buyers that inhibit their utilization of Mid-Hudson Valley produce. "Poor packing" and "limited growing season/ availability" were mentioned most often as barriers to the purchase of non-Mid-Hudson Valley produced New York State produce.

Overall, the produce buyers in this study dealt with an average of 157 suppliers on a regular basis, while supermarket retailers regularly dealt with an even larger number of suppliers, averaging 377 suppliers. Out of this total, fewer than 30 of the suppliers were from New York State: an average of 6 Hudson Valley growers and an additional 23 growers from other regions of New York State.

Value-added items, such as pre-cut vegetables and salads, dominated the list of items buyers mentioned as growth items in their businesses. Twenty-one of 45 buyers mentioned at least one value-added item as an item experiencing the greatest growth in their business over the last three years, while 14 buyers mentioned at least one value-added item as an item they expected to grow the most in the next three years.

Only 15 of the buyers consolidated local produce for resale (wholesaler/distributors) or purchased produce already consolidated on a local basis (supermarket retailers). "Quality" and "packaging" had the highest ratings in explaining buyers' decisions to buy out-of-state produce, while "promotion" received the lowest rating.

6.1.3 Business Operations

Buyers were asked to indicate the directions in which they expected their business to evolve in the next five years. "More delivery service," "more value added products" and an "extended product range" received the highest ratings as directions toward which the buyers expected their business to shift in the next five years. By contrast, "reduced product range" and "more

terminal market business" received the lowest rating as directions toward which the buyers' businesses might move in the next five years.

The wholesalers interviewed indicated approximately one quarter of their business occurred with each of the following account types: chain retailers, independent retailers and food service distributors. The majority of the remaining quarter of their sales typically was accounted for by purveyor distributors (18 percent), terminal market wholesalers and farm stand operators received the remainder (7 percent).

Varying levels of delivery service were offered by all of the wholesaler/distributors interviewed. Telephone or fax ordering and value added products were offered by a large majority of on-market wholesalers, off-market wholesalers and food service distributors. Training was the service offered by the smallest number of firms.

6.1.4 Terminal Market Issues

When asked to indicate the largest problems and biggest advantages associated with the terminal market on which the individual buyers participated, "inadequate physical size" was the problem most often indicated, mentioned by 11 individuals, followed closely by "poor quality of produce" which was mentioned by 10 individuals. In contrast, "good location" was identified as the biggest advantage associated with the buyers' terminal markets, mentioned by 23 individuals, while "variety of products" and "number of merchants" were mentioned 14 and 9 times respectively. "Cold Storage" and "security" were the terminal market physical attributes rated most positively by all buyers, while "sorting and grading facilities," "ease of loading and unloading" and "parking" received the lowest ratings from all buyers.

Hunt's Point Market, the largest wholesale market in the greater New York region, was rated similarly to all other markets for all of the physical attributes, however, it was rated lower most noticeably for "accessibility," "ease of loading and unloading" and "parking." Terminal market wholesalers are more sanguine about their own conditions than are outside buyers. On-market wholesalers rated all of the physical attributes of terminal markets, except for "packing facilities" and "sorting/grading facilities," more positively than the other buyer types.

6.1.5 A Mid-Hudson Valley Wholesale Fresh Produce Facility

"Access to New York State Produce" and "cold storage" were the attributes of a potential facility rated most important to buyers' potential use of a new facility. The ability to reach "more food service business" received the lowest rating for potential use. Buyer ratings of individual attributes' importance to their potential use of a new wholesale facility increase considerably when only the individuals interested in using a potential facility are considered.

Over three-quarters of the buyers from this study indicated they "might" buy or sell produce through a new facility although there was little to suggest that this level of conjecture might actually materialize. Only two buyers indicated they "might" be willing to open a satellite operation on the market, but, once more, it is difficult to determine the buyers' actual commitment to such a venture.

If such a facility were to be developed, buyers strongly indicated that growers should be involved in the facility's management. Thirty-eight percent of buyers indicated a growers' co-op should manage the facility and another thirty-five percent believed a joint grower/buyer venture should manage the facility.

6.2 Estimated Mid-Hudson Valley Wholesale Demand: 1995

An estimate of the potential business for a new fresh produce facility in the Mid-Hudson Valley begins with an estimate of the current level of fresh produce wholesale activity in the region. Table 6.1 provides such an estimate. It should be emphasized, however, that although each of the numbers contained within Table 6.1 was based on information gathered in the course of this study, the numbers were arrived at by averaging widely varying responses and thus can be misleading. They are, at best, crude approximations, intended to serve as representative of relative magnitude and as directional only. They should not be interpreted as precise estimates of any market or firm level business activity.

Explanation of the table's construction and assumptions follows below. First, the retailer demand estimate consists of 8 major retailers serving New York State, all with fresh produce sales over \$100 million according to the responses of buyers in this study. In addition, these buyers estimated Mid-Hudson Valley produce accounted for 2.5 percent of their fresh produce purchases. Thus, a very conservative estimate of the amount of produce sold from New York State area supermarkets that originated in the Mid-Hudson Valley would be approximately \$20 million ($\$100,000,000 \times 8 \times .025$), or, adjusted for retailers' average mark-up, approximately \$15 million in wholesale value.

Second, food service buyers estimated total fresh produce sales of \$12.7 million, with 6.8 percent contributed by the Mid-Hudson Valley. Approximately 10 full service food service purveyors serve the region. Again, similar mark up procedures are removed to arrive at approximately \$6.5 million in fresh produce sales for fresh produce from the Mid-Hudson Valley region.

Table 6.1
Estimated Wholesale Value for Mid-Hudson Valley Fresh Fruit and
Vegetables Procured by Northeast Regional Buyers, 1995

	Total Fresh Produce Sales/Firm	Number of Firms	Mid-Hudson Valley Fresh Produce %	Gross Margin %	Mid-Hudson Valley Fresh Produce Sales
	\$ Thousand				\$ Million
Retailers*	100,000	8	2.5%	25%	15.0
Food Service**	12,700	10	6.8%	25%	6.5
Wholesalers***	23,900	120	5.9%	25%	126.9
Restaurants	52	1,759	3.0%	25%	2.1
Roadside Stands****	13	145	18.0%	25%	0.3

Current Wholesale Demand for Mid-Hudson Valley Produce \$150.7

- * Eight retailers do majority of retail business in New York State, have at least \$100 million in produce sales, of which 2.5 percent originated in the Mid-Hudson Valley according to respondent estimates
- ** Ten major food service purveyors cover area, averaging 6.8 percent of produce sales from the Mid-Hudson Valley
- *** Includes approx. thirty wholesalers from Mid-Hudson Valley, 70 from Hunts Point market and 20 from Menands market
- **** Roadside stand operators averaged \$13,000 in yearly fresh produce sales, 18 percent of which they purchase from other growers/wholesalers, 145 growers from the region

Third, wholesalers from both on- and off-market indicated total average fresh produce sales of \$23.9 million, 5.9 percent accounted for by Mid-Hudson Valley growers. According to the 1992 *County Business Patterns*,

there were 32 fresh produce wholesalers in the area. The Hunts Point terminal market and the Capital District market (in Albany) add an additional 70 and 18 wholesalers respectively. Again, using similar mark-up procedures, approximately \$126.9 million of fresh produce sales to wholesalers in the Northeast region is accounted for by Mid-Hudson Valley growers.

Fourth, the 1992 Census of Retail Trade indicated 1,759 restaurants existed in the Mid-Hudson Valley. Study respondents indicated that restaurants sold approximately \$1,000 worth of fresh fruits and vegetables per week, with 3 percent purchased from the local area. This 3 percent does not include any produce which may have originated in the Hudson Valley but was purchased from a wholesaler or food service purveyor to avoid double counting of

earlier totals. Again, using average mark up procedures provides an estimate of approximately \$2.1 million of fresh fruits and vegetables from Mid-Hudson Valley grower/shippers.

Finally, roadside stand operators indicated purchasing an average of 18 percent of their produce from other local growers or wholesalers, i.e. not grown on their own farm. The 1987 New York State Department of Agriculture and Markets study of direct marketing indicated average sales of \$13,368 for fresh produce operators for approximately 145 operators in the Mid-Hudson Valley Region (According to the 1994 New York State Guide to Farm Fresh Food - Metro Region). This leads to an estimate of approximately \$0.3 million of additional sale of Mid-Hudson Valley fresh produce.

These estimates lead to a total wholesale value for Mid-Hudson Valley fresh produce of roughly \$150 million currently procured by northeast regional produce buyers. This represents approximately 89 percent of the total Mid-Hudson Valley fresh fruit and vegetable sales⁴. Even if a new facility captured a quarter of the already established northeast regional business transactions involving Mid-Hudson Valley Produce, the facility would only capture \$37.7 million of produce business, assuming utilization of Mid-Hudson Valley produce remained constant.





The next issue is to estimate how this level of sales is likely to change over the next five to ten years, as well as the impacts of some type of wholesale consolidation or value-added facility.

6.3 Estimated Mid-Hudson Valley Wholesale Demand: 2005

The approximate calculation of total market demand arrived at in Table 6.1 takes into account the procurement patterns and practices reported to the researchers by the buyer sample in this study. However, these buying levels are by definition based on historical relationships whereas future relationships and business terms of trade are likely to follow quite a different set of rules. Table 6.2 illustrates the potential directional changes in the purchase of Mid-Hudson Valley fresh produce by each of the major wholesale segments of Northeast regional buyers over the next five to ten years.

⁴Estimated total wholesale value of Mid-Hudson Valley Region fruit and vegetable production of \$169.3 million.

Table 6.2
Most Likely Directional Changes in Mid-Hudson Valley Fresh Fruit and Vegetable Procurement for Northeast Regional Buyers

Outlet	Most Likely Change	Reasoning
Retail		<ul style="list-style-type: none"> • Fresh produce per capita consumption flat • Population growth in the Northeast flat • Erosion of Mid-Hudson Valley share of fresh produce production
Food Service		<ul style="list-style-type: none"> • Increased focus on fresh produce • Use of value added products
Wholesalers		<ul style="list-style-type: none"> • Number of wholesalers declining • Continued shift to direct buying by retail segment • Shrink of Mid-Hudson Valley share of fresh produce
Restaurants		<ul style="list-style-type: none"> • Increased focus on fresh produce
Roadside Stands	<div style="border: 1px solid black; padding: 2px;">Stable</div>	<ul style="list-style-type: none"> • Little growth has occurred in a decade, none projected

Several industry trends and survey findings are relevant. The long term trend in fresh produce per capita consumption has dropped substantially from the 1.6 percent annual increase during the 1980s to only approximately one percent in the mid-1990s. Additionally, the USDA predicts a further decline in fresh produce per capita consumption in 1996 (The Packer, November 23, 1995). Also, population growth has been flat in the Northeast for over a decade, leaving retailers with limited opportunities for market growth other than at the expense of their competitors. Further, one must

consider the continued erosion of New York State and the Mid-Hudson Valley shares of national fresh produce production and sales (Section 2.5), combined with the Mid-Hudson Valley fresh produce purchases by Northeast regional retail supermarket buyers. The confluence of these forces does not create an optimistic outlook for increasing Mid-Hudson Valley fresh produce sales. Indeed, we believe a cautious projection is more likely to call for a gradual reduction in the total value of fresh fruit and vegetable procurement by the supermarket channel from the Mid-Hudson Valley over the next decade.

On the other hand, a parallel channel, Northeast regional food service buyers, may well increase their purchases of Mid-Hudson Valley fresh produce over the next five to ten years, as channel members increasingly shift their focus to fresh produce for their increasingly demanding and sophisticated patrons and to the use of value added products continues to gain importance and expand the number of items food service operators can utilize.

Third, it appears that Northeast wholesalers are likely to reduce the share of their total produce purchases that originates in the Mid-Hudson Valley for three reasons: (1) the general decline in the number of wholesalers in the U.S., (2) the continued shift toward direct buying by both retail supermarket buyers and food service organizations, and (3) the reduction of New York State and Mid-Hudson Valley fresh fruit and vegetable production relative to national production.

Fourth, the increased emphasis on fresh foods, and specifically fresh fruits and vegetables, in the restaurant trade should help increase these buyers' purchases of Mid-Hudson Valley fresh produce over the next decade. Restaurant goers often express a preference for locally produced foods as a result of a perception that these foods are likely to taste better and be more nutritious. Finally, the roadside stand purchases of fresh produce from the Mid-Hudson Valley region is likely to remain stable, as this segment is constrained largely by climate and geography to limited seasonal status and thus, is likely to neither grow nor contract.

Despite the contradictory nature of these projections in each buyer segment for fresh fruits and vegetables over the next decade, the net effect on total wholesale purchases of Mid-Hudson Valley fresh produce will most likely be a gradual reduction in purchases. In a real sense, such a projection simply extrapolates the three decade-long trend of the major (and far away) produce shipping areas continuing to erode the share of Northeast markets previously held by Northeast growers. Such erosion appears to result from the apparent increased dominance by these major shipping markets in comparative advantage both in production and marketing.

Moreover, with the two largest segments of Hudson Valley produce purchases in potential decline - - i.e. supermarkets and wholesalers-- and the increases in the other segments quite modest at best, the net change in wholesale/retail requirements for Mid-Hudson Valley produce may be a decrease in the 5 to 10 percent range. Such a tentative projection converts to a modest decline in the total demand for wholesale fresh produce from the Mid-Hudson Valley of approximately \$15 million, to between \$135 and \$143 million over the next decade.

6.4 Study Conclusions: Alternatives for Mid-Hudson Valley Fruit and Vegetable Growers

Early in the primary data gathering process for this study, it became apparent that the currently functioning fresh produce wholesale markets in the New York State and the greater New York City metro area were viable, healthy business entities, even if not always experiencing the type of growth and innovation typical of certain more vibrant sectors of the U.S. food system.

However, although basically satisfied with the current status of their business relationships with historical wholesale terminal market sellers, the buyer interviews did indicate the possibility of an additional marketing facility, not to replace the current markets but to supplement or complement them in one of two ways: (1) as a destination where small Mid-Hudson Valley growers might be able to consolidate their typically small sized loads with other small growers to attract the major supermarket and other major wholesale buyers or (2) as a new state-of-the-art fresh produce "processing facility" where value added produce could be prepared. Of course, in order to spread the fixed costs of the substantial investment in such a facility, year-around operations and continuous product supply would be essential. The raw materials for this latter facility could be sourced from the Mid-Hudson Valley and other Northeast growers when quality and season permitted (say, from Mid-August to end of October) but otherwise the facility could be supplied by far-away (e.g.; California) production areas for the remaining portion of the year.

While it is true that some type of consolidation or collection facility could potentially create some new business, the majority of the business from such a facility is likely to consist of a simple transfer from currently operating produce businesses, either wholesalers or grower-shippers. That is, any produce delivered by Mid-Hudson growers to consolidate with loads from other similarly minded local growers is simply produce that is not being marketed through the hitherto conventional channels. The overall market for fresh produce will not have expanded for the reasons described above; the volumes will simply have shifted. Moreover, the buyers in this study rarely even mentioned "inadequate quantities" as a constraint preventing them from buying more local produce, thereby throwing into question the whole suggestion that greater consolidation is even needed. After all, the largest constraints to buying more Mid-Hudson Valley produce as reported by buyers

in this study were "poor quality," "seasonally" and "inferior packing." A consolidation facility does little to remedy these problems.

For these reasons, other options need to be explored which are likely to require lower capital investment and which may avoid potential harm by not displacing some currently operating businesses. Several such alternatives for Mid-Hudson Valley agriculture are put forth below:

- **Upgrade quality:** The single most consistently voiced complaint about Mid-Hudson Valley produce among buyers in the research concerned the quality of fresh produce. A new facility will do nothing to change this paramount constraint. Growers need to invest in equipment, technology, and cultural practices that result in improvement in packaging, harvesting, cleaning, sorting, grading and cooling.
- **Informal grower organization:** In some production areas, a situation exists whereby one "dominant" grower organizes farmers in a small region, owns the packing, cooling, and grading equipment and takes responsibility for quality and delivery standards. Such an arrangement could address many of the same issues as a consolidation facility. This strategy could provide the organization, functions and informal coordination necessary for growers to compete for larger buyer accounts without the formal contractual agreement and formidable capital investment of a new facility. Further, with the correct management, quality standards could be controlled rigorously and thus improved. At the same time, this strategy would require grower acceptance of one local grower organizing the business and of taking control of sales, shipping, quality control and the prospect of rejection of out-of-grade produce. Such an approach has not been warmly embraced by many agricultural producers in the past, not across America, not in the Mid-Hudson Valley.
- **Joint sales desk:** Another alternative involves a joint sales desk, where growers formally commit certain portions of their crops to be sold from a joint operation. However each individual would still perform packing, grading, cooling and other shipping activities as part of his/her own enterprise. A joint sales desk provides the advantage over a consolidation facility of pooled produce sales without the physical facility requirements. Yet, it does require commitment: monetary, crop, and delivery of consistent quality product from growers. Development of a sales desk may be an initial step: it could demonstrate the need for, farmer commitment to, and likely success necessary for the creation of a regional consolidation facility.

- **Consolidation facility:** A regional consolidation or collection facility would provide the necessary physical installation of equipment allowing growers to deliver small amounts of produce for cooling, grading, sorting and packing activities as well as pooled levels for sale to buyers requiring large, homogeneous shipments. A physical facility requires at least the level of commitment as the above two options, as well as requiring a large initial capital investment and coverage of annual operating expenses.
- **Satellite fresh-cut facility:** An option which limits the risk to Mid-Hudson Valley growers as well as to potential funding sources is the development of a satellite value-added facility perhaps developed in concert with one of the major national fresh produce processors who may wish to locate in the Northeast. While this facility might not have quite the same focus on local produce as the other options, it still may provide an additional outlet for Mid-Hudson Valley produce, at least during certain parts of the year, given that their produce meets the processor's (rigorous) quality standards. This joint venture option also takes advantage of the technological and marketing expertise of the large (fresh) processors as well as their built-in distribution access.
- **Satellite terminal market:** Combining the concept of a consolidation facility with the ongoing operations of an already functioning terminal market facility could help defray the up-front expenses associated with building a new consolidation facility. A potential opportunity for this type of facility involves developing a consolidation function at the Capital District terminal market in Albany. Although not centrally located in the Mid-Hudson Valley, wholesalers at the Capital District market already conduct a substantial amount of business with the Mid-Hudson Valley producers, possess ample space for expansion, and could adapt a consolidation operation into the existing framework of their market. It is possible that some type of further value added processing could be envisaged as well.

Given the changes in the fresh produce marketing system in the U.S. over the past two decades, and the potential changes in the next few years, investment in a new fresh produce wholesale facility cannot be judged at this juncture to be a wise decision. However, a considerable number of improvements in Mid-Hudson Valley fresh produce sales and marketing could still be achieved through the one or a combination of the alternatives outlined above.

Appendix A

MID-HUDSON REGIONAL FARMERS' MARKET FEASIBILITY ANALYSIS

September 1989

Executive Summary

The nine-county Mid-Hudson Region of New York State is a major agricultural contributor to the northeastern United States. The counties of Columbia, Green, Ulster, Dutchess, Putnam, Sullivan, Orange, Westchester and Rockland contain over three thousand farms and create produce worth more than \$267,000,000 per year. The region is a rapidly expanding suburban concentration of activity with a current population of more than two million people.

The purpose of the Mid-Hudson Regional Farmers' Market Feasibility Analysis is to give preliminary exploration to the concept of establishing a regional farmers' market to serve farmers, food distributors and consumers within this growing area.

While the feasibility analysis does not purport to present a specific design or site for a regional market, it explores the general characteristics of successful markets and relates these characteristics to the demographic, agricultural production and transportation characteristics of the region.

Phase I of the study evaluates supply and demand potential for a Mid-Hudson market and concludes that:

- There is a potential in the region for \$2.7 million in retail demand for agricultural produce sold through a regional market. The demand includes sales to residents, employees based in the region and visitors.
- There is greater demand for wholesale sales through a regional market, including sales to institutions, food retailers, and commercial establishments. Approximately \$55 million in demand is estimated for the potential wholesale selling elements of a Mid-Hudson Regional Farmers' Market. Portions of this demand could be met by Mid-Hudson farmers supplying produce for wholesale sale. Other portions would be met by wholesale food companies distributing foods imported from outside of the region.

The Phase I evaluation also identifies the following directions as necessary in order for a regional market project to be feasible for the Mid-Hudson area:

- The market would need to be viewed as a public-private partnership, endeavor, combining public sponsorship with private sector investment in improvements and operations;
- The project would need to allow for a mixture of wholesale and retail elements, including farmers' stalls, related uses such as a garden center, restaurant and office space of agricultural agencies and areas for major wholesale development; and
- Subject to the completion of the federal environmental impact statement (FEIS) now being prepared for the Stewart Airport Properties in Orange County, future consideration should be given to possible siting for a market at or near this location.

In addition, a survey of Mid-Hudson growers indicates significant interest among the agricultural community in a regional farmers' market. It appears that there is a reasonable potential for approximately 255 Mid-Hudson farmers to provide produce to the market.

A review of comparable markets throughout the United States and a pro forma financial evaluation of the uses which typically are found at regional markets leads to the conclusions that:

- A location in the vicinity of the Stewart Airport properties and the intersection, generally, of I-84 and I-87, would enable a regional market to effectively serve the nine-county region.
- The inclusion of food distribution wholesale companies in the marketplace is important in terms of regional food distribution and economic benefits and the financial viability of the market itself.
- The feasibility of a regional market project depends on the State taking a strong supporting role in the development and operation of the project, a role best taken by establishing an appropriate public benefit corporation under State control.
- As a result of analyzing three alternative development scenarios for the project, general findings have been made regarding cost, revenue and siting criteria and constraints. More detailed site consideration must await the completion of the federal environmental impact assessment statement (FEIS) now in progress for the Stewart Airport Properties.

The study recommends that a task force of appropriate public and private representatives of regional interests be convened to consider the findings of the report and make recommendations for further action.

Appendix B

U.S., New York State and Mid-Hudson Valley Fruit and Vegetable Production

Given the limitations indicated in the introduction to Chapter 2, the following sections on U.S., New York State and Hudson Valley fresh fruit and vegetable production attempt to coordinate and summarize the data available from various USDA and New York State Department of Agriculture and Markets publications and provide an overview of the relevant production levels and changes over approximately the last twenty years.

B.1 U.S. Fruit and Vegetable Production

Total fruit and vegetable production in the United States increased 47.9 percent between 1970 and 1993 (USDA 1994 (a,b)). The U.S. production of major fruits and vegetables⁵ totaled 124.7 billion pounds in 1993 at a market value of \$15.7 billion, compared to 84.3 billion pounds valued at \$3.4 billion in 1970 (USDA 1994 (a,b)).

B.1.1 U.S. Vegetable Production

U.S. growers produced 37.0 billion pounds of fresh market vegetables worth \$6.2 billion in 1992 (Table B.1), representing a 63.0 percent increase over the 22.7 billion pounds produced in 1970. U.S. vegetable production totaled 65.5 billion pounds in 1992, a 58.6 percent increase over the 41.3 billion pounds produced in 1970. Over this same time period, the total number of vegetable acres harvested 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 (a)), indicating a substantial increase in productivity per acre.

Fresh market production accounted for approximately 55 percent of U.S. vegetable production in 1970 and 1992, although it had dropped to a low of 45 percent of total production in 1990. Fresh imports contributed another 3.1 billion pounds in 1993, the same volume as fresh exports from the U.S. market, however the imports were valued at \$919.5 million while the exports totaled \$803.4 million (USDA 1993 (c)).

⁵Major vegetables include: Asparagus, Broccoli, Carrots, Cauliflower, Celery, Sweet Corn, Lettuce, Onions, Tomatoes, Cabbage, Spinach, Cucumbers, Artichokes, Snap Beans, Brussels Sprouts, Eggplant, Escarole/Endive, Garlic, Bell Peppers, Leaf/Romaine, Watermelon, Cantaloupe and Honeydews. Major Fruits include: Oranges/Temples, Tangerines/Tangelos, Lemons, Limes, Grapefruit, Apples, Apricots, Avocados, Bananas, Cherries, Cranberries, Grapes, Kiwifruit, Peaches, Nectarines, Pears, Pineapples, Papayas, Plums, Prunes, Strawberries.

Table B.1
U.S. Fresh Vegetable Production, Value, Imports, Exports

	Fresh Market		Total		Imports		Exports	
	Million	- \$1000 -	Million	- \$1000 -	Million	- \$1000 -	Million	- \$1000 -
	- lbs -		- lbs -		- lbs -		- lbs -	
1970	22,716	1,233,222	41,310	1,643,411	1,232	--	778	--
1975	23,987	2,159,168	51,054	3,195,803	1,157	--	1,151	--
1980	26,496	3,182,975	48,110	4,047,426	1,750	--	1,901	--
1985	21,719	2,926,791	45,303	3,950,724	2,255	--	1,994	--
1990	25,285	3,685,410	56,193	5,018,376	2,592	855,646	2,583	593,013
1992	37,032	6,151,006	65,529	7,279,249	2,242	648,086	3,037	743,410

Source: USDA Agricultural Statistics, Vegetable and Specialties Situation and Outlook Report Various Years.

Over the same time period, the number of 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 (a)).

U.S. farmers produced 6.6 billion pounds of fresh market head lettuce in 1992 (see Table B.2) to lead U.S. production of individual fresh market vegetables. Onions were the second leading fresh market vegetable produced in 1992 with 4.7 billion pounds and tomatoes were a close third with 3.6 billion pounds produced (USDA 1993 (c)). Tomatoes led the major vegetables in value of production in 1992 with a fresh market value of \$1.3 billion, head lettuce was second largest with \$822.5 million, followed by onions with \$613.6 million (USDA 1993 (c)). Carrots ranked fourth in both production volume and value with 2.1 billion pounds of production valued at \$301.5 million.

Although production of the major fresh vegetables grew by 63.0 percent between 1970 and 1992, the production of individual vegetable commodities increased by varying amounts. Broccoli experienced the largest relative increase in production among the major vegetables going from 109.2 million pounds in 1970 to 1,053.7 million pounds in 1992, an increase of 865 percent (Figure B.1). Cauliflower, which increased from 151.9 to 656.2 million pounds and honeydew melons, which increased from 193.1 to 414.8 million pounds, experienced increases of 332 percent and 115 percent respectively (USDA 1993 (c)). Production of celery increased the least among the major vegetables, increasing only 20 percent from 1,581.1 million pounds in 1970 to 1,890.9 million pounds in 1992 (USDA 1993 (c)).

Table B.2
U.S. Fresh Vegetable Production, Volume and Value,
Selected Major Vegetables, 1970-92

Year	Broccoli		Carrots		Cauliflower	
	Production	Value	Production	Value	Production	Value
	Million lbs.	\$1,000	Million lbs.	\$1,000	Million lbs.	\$1,000
1970	109.2	13,072	1,218.2	55783	151.9	16,776
1975	213.9	35,376	1,423.9	1,16516	197.9	34,816
1980	381.9	89,327	1,393.2	1,54853	284.6	79,043
1985	715.4	173,053	1,534.5	1,82265	490.5	145,955
1990	989.3	220,437	2,040.5	2,43930	662.0	166,504
1992	1,053.7	247,291	2,105.3	3,01458	656.2	190,983

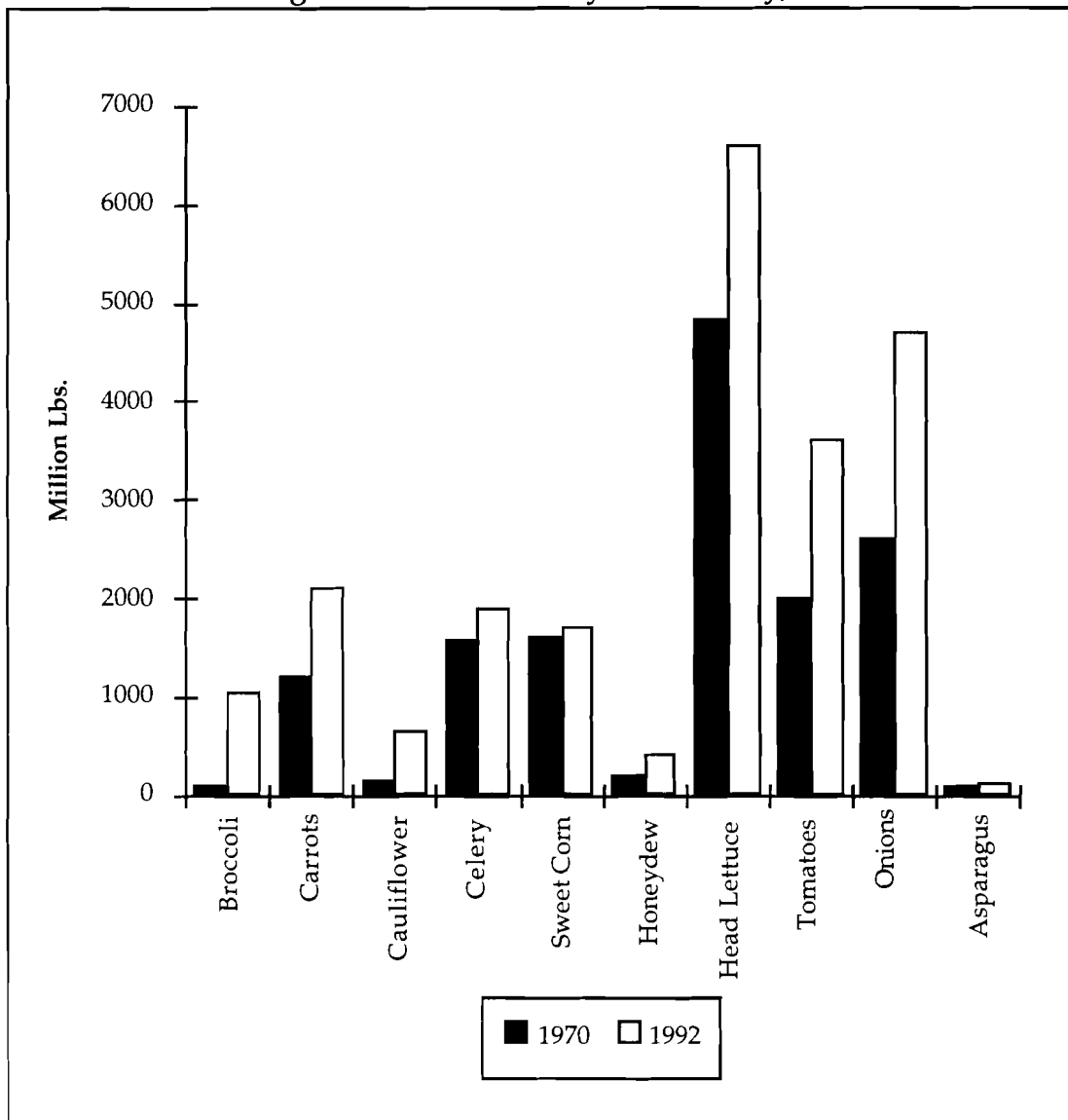
Year	Celery		Sweet Corn		Honeydew	
	Production	Value	Production	Value	Production	Value
	Million lbs.	\$1,000	Million lbs.	\$1,000	Million lbs.	\$1,000
1970	1,581.1	83,642	1,594.2	69,029	193.1	10,936
1975	1,615.4	118,122	1,678.5	121,117	239.5	22,286
1980	1,904.2	169,896	1,524.5	152,890	318.0	42,864
1985	1,872.9	189,527	1,574.6	200,602	475.8	58,055
1990	1,981.6	214,708	1,695.5	253,640	450.3	81,218
1992	1,890.9	228,908	1,719.6	252,263	414.8	61,776

Year	Head Lettuce		Tomatoes		Onions	
	Production	Value	Production	Value	Production	Value
	Million lbs.	\$1,000	Million lbs.	\$1,000	Million lbs.	\$1,000
1970	4,836.5	221,150	1,993.4	204,609	2,602.3	98,752
1975	5,410.8	360,313	2,226.4	393,866	2,544.4	266,230
1980	6,336.3	564,064	2,556.7	524,919	2,902.1	347,054
1985	6,133.4	660,855	2,974.0	718,264	3,802.9	347,328
1990	7,320.1	844,142	3,370.9	1,190,968	4,397.3	488,786
1992	6,604.1	822,473	3,612.8	1,309,997	4,689.3	613,620

Year	Asparagus	
	Production	Value
	Million lbs.	\$1,000
1970	97.4	21,019
1975	91.5	29,695
1980	78.9	45,535
1985	115.2	91,343
1990	143.5	98,419
1992	135.3	116,375

Source: Vegetables and Specialties Situation and Outlook 1993.

Figure B.1
U.S. Fresh Vegetable Production by Commodity, 1970 and 1992.



Source: Vegetable and Specialties Situation and Outlook 1993

B.1.2 U.S. Fruit Production

U. S. fruit production totaled 59.1 billion pounds in 1992 valued at \$8.4 billion (Table B.3). This represented an increase of 22.9 percent from the 42.9 billion pounds produced in 1970. The U.S. imported 10.4 billion pounds of fresh market fruit while exporting 4.9 billion pounds in 1992 (USDA 1994 (b)). The number of acres in orchards in the U.S. increased from 4.2 million in 1969 to 4.8 million in 1993, an increase of 14.3 percent.

Table B.3
U.S. Fruit Production, Value, Imports, and Exports, 1970-92

	U.S. Production		Imports	Exports
	- \$1000 -	Million lbs	Million lbs	Million lbs
1970	1,788,455	42,972	--	--
1975	3,068,111	54,490	--	--
1980	5,685,678	63,976	--	--
1985	5,911,221	49,432	--	--
1990	7,776,405	53,034	9,292	4,311
1992	8,428,874	59,136	10,386	4,822

Source: USDA Fruit and Tree Nuts Situation and Outlook Report Various Years

Over the same time period, the number of fruit farms declined from 133,311 to 116,207, a decrease of 12.8 percent, somewhat less than the decline in the number of vegetable farms. However, the average acres of fruit per farm in the U.S. increased from 31.8 acres to 41.1 acres, an increase of 29.2 percent (U.S. Dept. of Comm. 1992 (a)), less than the increase in vegetable acreage per farm over the same time period.

Apples were the leading commodity among the major U.S. non-citrus fruits when measuring fruit production in 1992, producing 5.8 billion pounds valued at \$1.1 billion (Table B.4). Table grapes were second in fruit production, totaling 1.5 billion pounds, followed closely by peaches at 1.1 billion pounds. Table grapes were valued at \$327.5 million while fresh market peaches were valued at \$234.8 million in 1992 (USDA 1994 (b)).

The major items showing the most growth in fruit production during this 1970 to 1992 period were strawberries with a 210 percent increase in production and pears with a 125 percent increase in production (Figure B.2). Peaches and tart cherries experienced production decreases; peaches down 6.7 percent from 1970 to 1992 and tart cherries down 12.0 percent (USDA 1994 (b)).

B.2 New York State Fruit and Vegetable Production

New York State ranked fifth in overall vegetable production in the U.S. in 1992 while ranking sixth in overall fruit production (U.S. Dept. of Comm. 1992 (a)). This is down from the U.S. ranking of fourth for value of fruit production in 1969 and equal to the fifth ranking for value of vegetable production in 1970-72, however the New York State share of the value of

U.S. vegetable production declined from 3.5 to 3.0 percent from 1970-72 to 1990-92 (Tables 1.2, 1.3).

Table B.4
U.S. Non-Citrus Fresh Fruit Production, Volume and Value,
Major Items, 1970-92

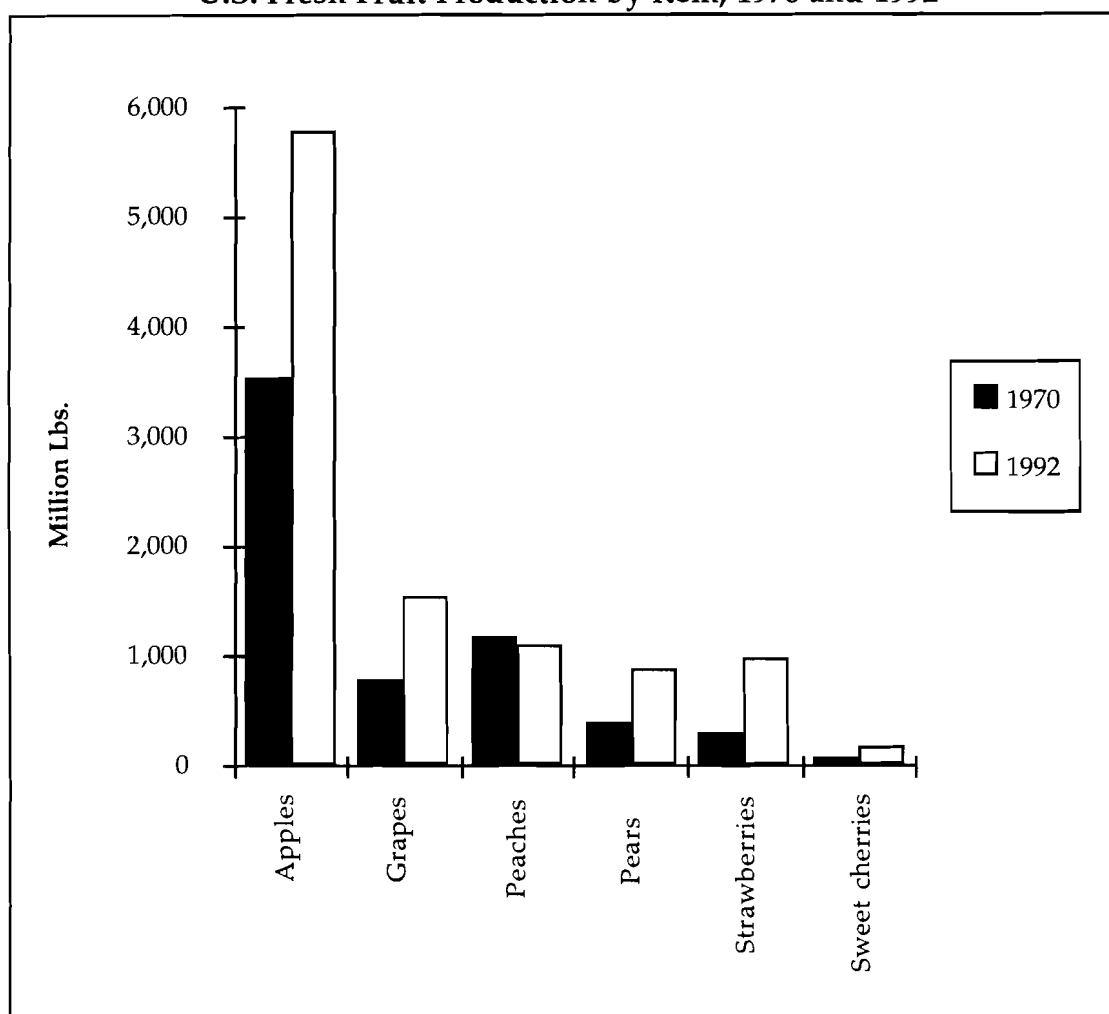
	Apples		Grapes		Peaches	
	U.S. Production		U.S. Production		U.S. Production	
	Million lbs.	-- \$1000 --	Million lbs.	-- \$1000 --	Million lbs.	-- \$1000 --
1970	3,531.5	229,547.5	780.0	70,590.0	1,181.5	95,701.5
1975	4,357.0	466,199.0	996.4	167,893.4	1,099.6	161,641.2
1980	4,934.1	597,026.1	1138.2	318,696.0	1,324.1	219,800.6
1985	4,221.7	730,354.1	1562.8	228,168.8	925.6	190,673.6
1990	5,551.0	1,160,159.0	1698.0	457,611.0	933.7	246,496.8
1992	5,781.0	1,127,295.0	1537.9	327,572.7	1,102.3	234,789.9

	Pears		Strawberries		Sweet cherries	
	U.S. Production		U.S. Production		U.S. Production	
	Million lbs	-- \$1000 --	Million lbs	-- \$1000 --	Million lbs	-- \$1000 --
1970	395.8	28,695.5	316.4	78,533	96.6	22,990.8
1975	653.6	52,614.8	377.4	133,917	154.6	41,742.0
1980	690.2	84,204.4	482.1	231,115	172.9	62,503.4
1985	694.2	121,485.0	754.1	396,894	106.1	63,129.5
1990	933.9	168,102.0	864.2	478,057	141.0	92,355.0
1992	890.0	168,210.0	980.3	603,165	190.8	114,480.0

Tart cherries		
U.S. Production		
	Million lbs	-- \$1000 --
1970	10.0	1,160.0
1975	7.2	1,281.6
1980	6.3	1,858.5
1985	7.6	2,538.4
1990	5.1	1,953.3
1992	8.8	3,423.2

Source: Fruit and Tree Nuts Situation and Outlook Yearbook 1990, 94.

Figure B.2
U.S. Fresh Fruit Production by Item, 1970 and 1992



Source: Fruit and Tree Nuts Situation and Outlook Yearbook 1990, 1994

New York State fell from third in the U.S. in value of non-citrus fruit production in 1969 to fifth in 1992, accounting for 6.1 percent of the U.S. total in 1969 compared to only 3.0 percent in 1992. For nursery and greenhouse crops New York State ranked ninth in the U.S. in 1992 with \$218.2 million of production. The number of fruit and vegetable farms in New York State decreased by 34.2 percent between 1969 and 1992, from 8,656 to 5,696 farms, while the total number of acres of fruit and vegetables harvested in New York State only decreased by 12.6 percent, from 289,159 to 252,746 acres (U.S. Dept. of Comm. 1992), resulting in higher average acreages per farm in 1992.

New York State ranked second in the U.S. in fresh market apple and sweet corn farm receipts in 1992 (Table B.5). The state ranked third in tart cherry and grape receipts, fourth in pear and fresh cauliflower receipts and fifth in fresh market celery and onion receipts. Additionally, New York State ranked

sixth in fresh lettuce receipts, eighth in fresh strawberry receipts, tenth in fresh carrot and fifteenth in fresh tomato farm (NYSDAM 1992).

Table B.5
New York State Vegetable and Fruit Production
Farm Receipts Rankings, 1992

- - State Rankings - -					
First	Second	Third	Fourth	Fifth	
<u>Fresh Vegetables</u>					
Cauliflower	California	Arizona	Oregon	New York	Michigan
Celery	California	Florida	Michigan	Texas	New York
Onions	California	Oregon	Colorado	Idaho	New York
Sweet Corn	Florida	New York	Pennsylvania	California	Michigan
<u>Fruit</u>					
Apples	Washington	New York	Michigan	California	Penna.
Tart Cherries	Michigan	Utah	New York	Oregon	Wisconsin
Pears	Washington	California	Oregon	New York	Penna
Grapes	California	Washington	New York	Pennsylvania	Michigan

Source: NYSDAM Agriculture Statistics

B.2.1 New York State Vegetable Production

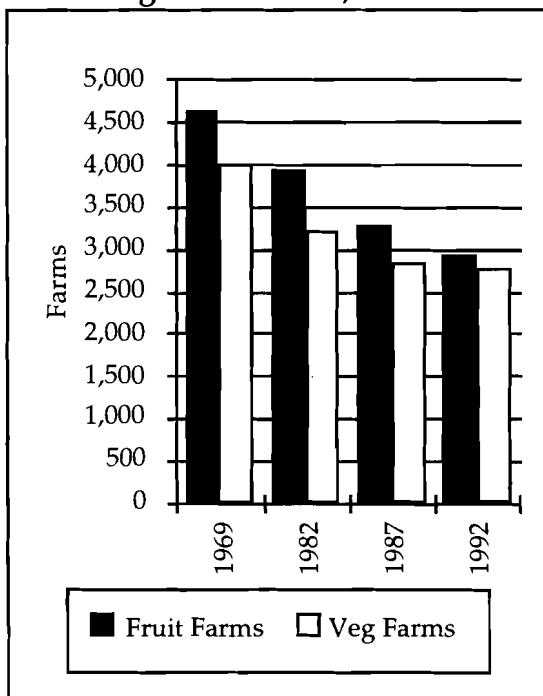
Fresh vegetable production in New York State totaled 1,093.8 million pounds in 1992 worth \$168.6 million (Table B.6). This was a decrease of 8.3 percent from 1970's 1,170.3 million pounds (USDA 1993 (a)). Between 1969 and 1992 the number of vegetable farms in New York State decreased 31.3 percent from 4,017 farms in 1969 to 2,758 farms in 1992 (Figure B.3). Over the same time period, the number of acres of vegetables harvested in New York State decreased 5.6 percent from 148,084 acres to 139,841 acres (Figure B.4). Consequently, again, the size of the average vegetable farm has increased considerably from 36.9 to 58.7 acres per farm (U.S. Dept. of Comm. 1992 (a)).

Table B.6
New York State Fresh Vegetables, 1970-1992

	Utilized Production Million Lbs	Value \$1,000
1970	1,170.3	43,824
1975	1,042.1	92,095
1980	826.8	113,258
1985	824.8	96,449
1990	858.2	111,986
1992	1,093.8	168,555

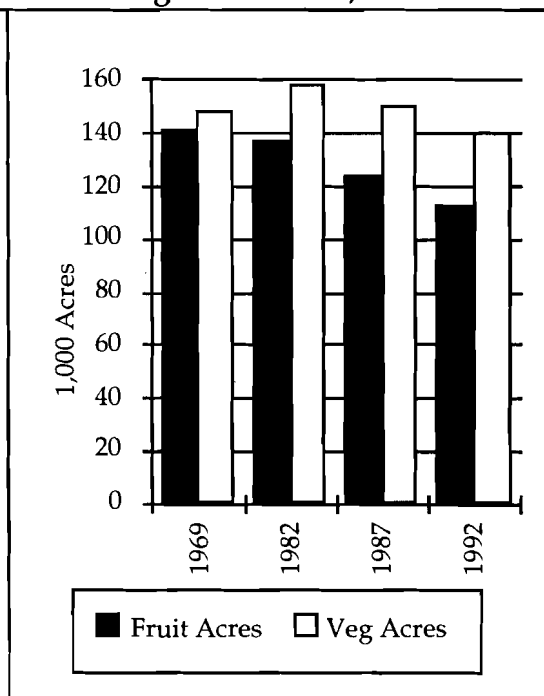
Source: USDA Agricultural Statistics

Figure B.3
New York State Fruit and
Vegetable Farms, 1969-92



Source: U.S. Census of Agriculture 1992

Figure B.4
New York State Fruit and
Vegetable Acres, 1969-92



Source: U.S. Census of Agriculture 1992

Overall, the production of New York State fresh vegetables declined by 8.3 percent between 1970 and 1992. Fresh onion production in New York State was larger than any of the other major vegetables, totaling 362.8 million pounds in 1992 (Table B.7).

Table B.7
New York State Vegetable Production and Value by Item, 1970-92

year	Carrots*		Cauliflower*		Celery*	
	New York State Production		New York State Production		New York State Production	
	Million Lbs.	\$1,000	Million Lbs.	\$1,000	Million Lbs.	\$1,000
1970	61.2	1,859	28.2	3,131	53.3	2,955
1975	46.8	2,203	31.5	4,832	26.1	2,186
1980	36.5	3,123	32.6	6,476	30.2	2,814
1985	53.9	5,247	44.8	9,369	24.7	2,841
1990	43.8	3,745	31.2	8,408	10.8	1,523
1992	50.7	7,807	28.5	10,256	13.5	5,441

year	Lettuce		Sweet Corn		Tomatoes	
	New York State Production		New York State Production		New York State Production	
	Million Lbs.	\$1,000	Million Lbs.	\$1,000	Million Lbs.	\$1,000
1970	77.7	5,066	118.8	4,407	44.2	3,651
1975	61.6	5,214	144.3	10,779	34.6	6,364
1980	79.8	10,853	176.3	16,766	41.6	11,898
1985	75.9	9,412	190.3	19,601	39.2	10,662
1990	52.0	8,112	212.0	24,380	44.8	16,397
1992	30.4	7,782	165.1	19,647	17.6	6,846

year	Onions	
	New York State Production	
	Million Lbs.	\$1,000
1970	370.0	10,561
1975	299.5	36,495
1980	413.3	62,612
1985	346.9	39,201
1990	356.5	49,421
1992	362.8	61,990

* Includes some processing production.

Source: NYSDAM Agriculture Statistics 1976, 84, 92-93.

Fresh sweet corn ranked second, with 165.1 million pounds, in fact, sweet corn was the only major vegetable whose production in New York State grew between 1970 and 1992, with a 39.0 percent increase over the 118.8 million pounds produced in 1970. Carrots followed with 50.7 million pounds of production. Although cauliflower production was approximately stable between 1970 and 1992, production of every other major vegetable for the fresh market declined over the same time period in New York State. Celery had the largest decline, from 53.3 million pounds in 1970 to 13.5 million pounds in 1992, a reduction of 74.7 percent. Fresh lettuce had the largest absolute reduction in production, from 77.7 million pounds in 1970 to 30.4 million pounds in 1992, a decrease of 60.9 percent. Carrots and tomatoes followed with similar decreases of 60.4 and 60.2 percent respectively. Carrot production fell from 61.2 million pounds in 1970 to 50.7 million in 1992, while fresh tomato production declined from 44.2 million pounds in 1970 to 17.6 million in 1992 (Figure B.5).

B.2.2 New York State Fruit Production

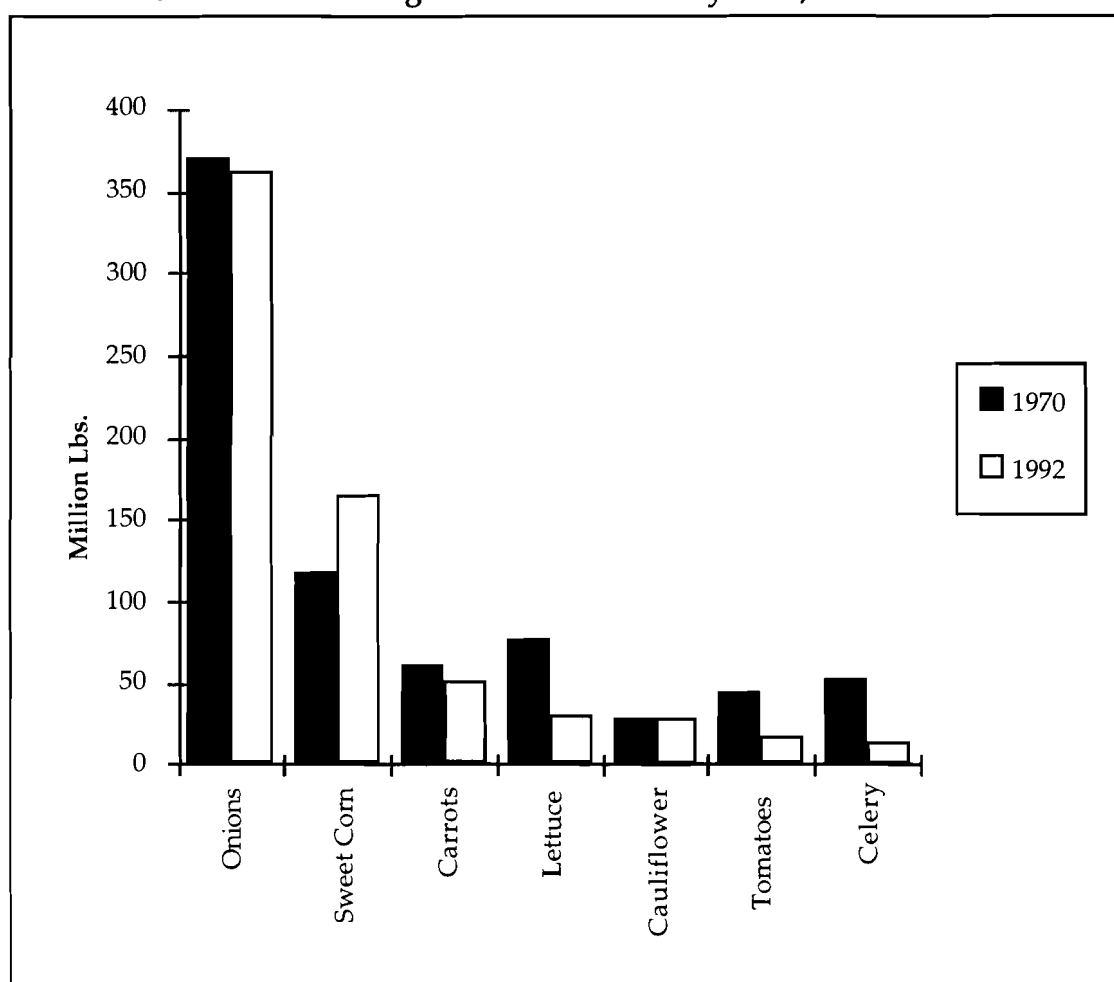
Fruit production in New York State totaled 1.6 billion pounds in 1992 with a farm value of \$167.8 billion (Table B.8). This represented a 23.1 percent increase from the 1.3 billion pounds of fruit produced in 1970. The number of fruit farms in New York State declined 36.7 percent between 1969 and 1992, from 4,639 to 2,938 farms (Figure B.3). The land in orchards in New York State declined from 141,075 acres in 1969 to 112,905 acres in 1992, a 17.8 percent change (Figure B.4). Thus the average fruit farm size in New York in 1992 was 38.4 acres, 26.3 percent larger than the 30.4 acres of the average farm in 1969 (U.S. Dept. of Comm. 1969, 1992 (a)).

Strawberries led production growth among individual fruit commodities between 1969 and 1992, experiencing a 63.6 percent increase in production from 6.6 million pounds to 10.8 million pounds with a corresponding value of \$11.6 million in 1992 (Table B.9). Production of pears also increased from 27.0 million pounds to 34.8 million pounds, an increase of 28.9 percent. However, sweet cherry production in New York State decreased by 84.1 percent, apple production declined 45.0 percent and tart cherry production declined 39.3 percent from 1970 to 1992 (Figure B.6).

B.3 Mid-Hudson Valley Fruit and Vegetable Production

Statistics are not available on specific production levels of vegetables in the Mid-Hudson Valley Region of New York State - - the primary area of study in this research - - however limited data on fruit production and fruit and vegetable acres planted and number of farms in production are available. The number of fruit and vegetable farms in the Mid-Hudson Valley declined 41.3 percent from 1969 to 1992, and the number of acres of fruits and vegetables in the Mid-Hudson Valley also decreased, by 35.4 percent over the same time period (Table B.10).

Figure B.5
New York State Vegetable Production by Item, 1970 and 1992



Source: NYSDAM Agriculture Statistics

Table B.8
New York State Fruit Production
and Value, 1970-92

	Utilized Production Million Lbs	Value \$1,000
1970	1335.3	69,217
1975	1415.6	99,623
1980	1542.6	158,245
1985	1435.5	114,510
1990	1335.6	179,735
1992	1581.6	167,811

Source: NYSDAM Agricultural Statistics

Table B.9
New York State Fresh Fruit Production
and Value by Item, 1970-92

	Peaches*		Pears*		Sweet Cherries*	
	New York State Production		New York State Production		New York State Production	
	million lbs	\$1,000	million lbs	\$1,000	million lbs	\$1,000
1970	16.5	1,528	27.0	1,782	6.4	922
1975	16.0	2,592	35.0	2,538	13.6	1,870
1980	13.0	3,055	40.0	4,440	9.2	2,070
1985	14.0	3,252	29.0	3,488	3.0	1,005
1990	13.7	3,781	29.2	3,687	1.4	520
1992	13.7	3,595	34.8	5,357	1.0	498

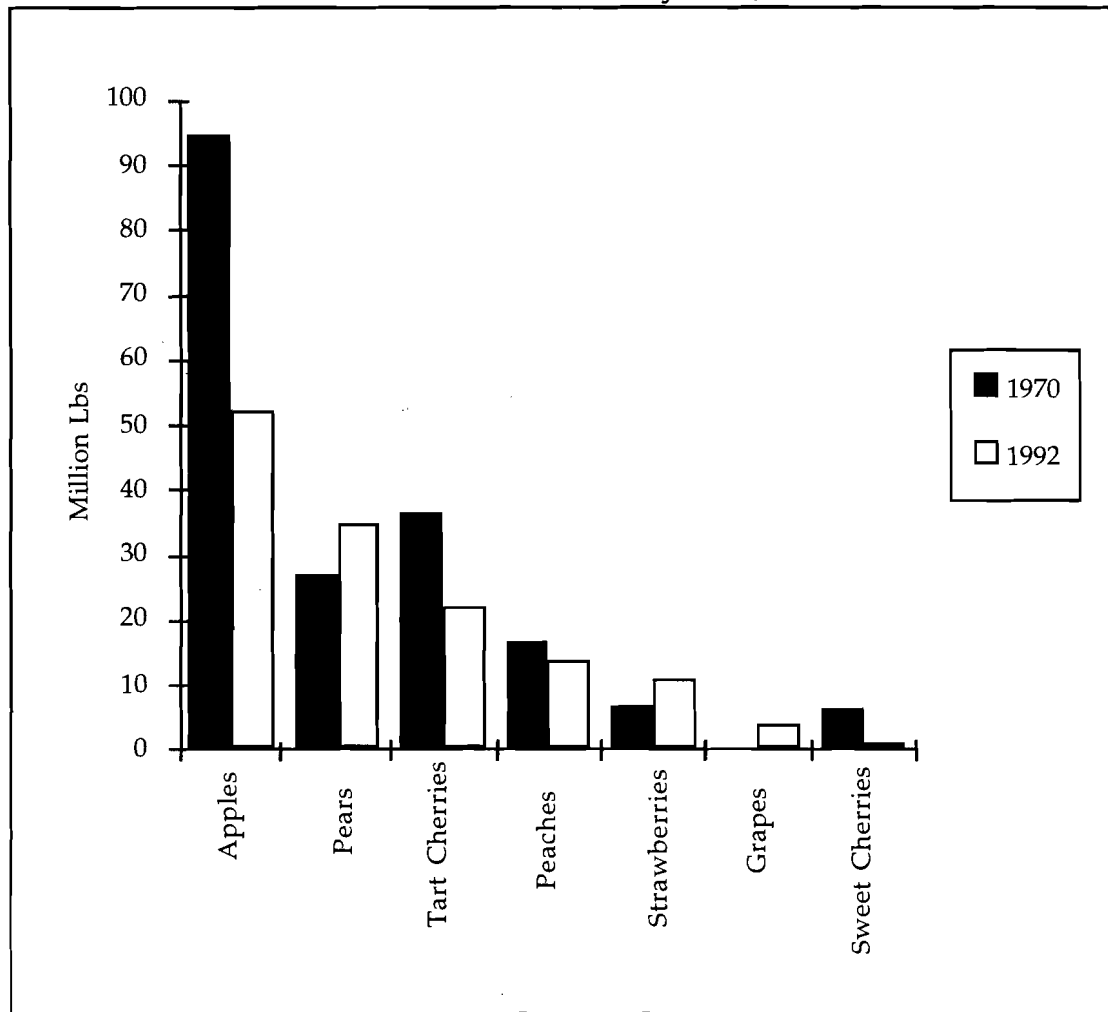
	Tart Cherries*		Grapes		Strawberries*	
	New York State Production		New York State Production		New York State Production	
	Million lbs	\$1,000	million lbs.	\$1,000	Million lbs	\$1,000
1970	36.4	2,894	NA	NA	6.6	2,009
1975	25.0	2,625	4.2	672	7.4	3,028
1980	30.4	5,806	8.0	1,784	14.3	5,921
1985	22.5	5,764	8.0	1,696	16.8	7,493
1990	13.3	2,765	6.0	1,410	17.0	14,110
1992	22.1	4,015	4.0	960	10.8	11,556

Apples		
New York State Production		
	Million lbs.	\$1,000
1970	945	36,099
1975	405	47,790
1980	410	73,800
1985	379	43,585
1990	520	92,560
1992	520	73,840

* Includes some processing production

Source: NYSDAM Agriculture Statistics 1976, 84, 92-93.

Figure B.6
New York State Fruit Production by Item, 1970 and 1992.



Source: NYSDAM Agriculture Statistics 1976, 84, 92-93.

In contrast to the 24.4 percent increase reported for the size of the average fruit and/or vegetable farm in New York State between 1969 and 1992, the size of the average Hudson Valley fruit and vegetable farm increased by only 10.0 percent, from 44.9 to 49.4 acres. This led to a smaller difference in average acreage per farm between the Hudson Valley and the state average. In 1969 Hudson Valley fruit and vegetable farms averaged 44.9 acres to 35.7 acres for the state, a difference of 9.2 acres. In 1992, Hudson Valley fruit and vegetable farms averaged 49.4 acres per farm to 44.4 for the state average, a difference of only 5 acres.

Table B.10
Mid-Hudson Valley Fruit and Vegetable Farms
and Acres, 1969, 82, 92

	Farms			Acres		
	1969	1982	1992	1969	1982	1992
Vegetables						
New York State	4,017	3,228	2,758	148,084	158,014	139,841
Hudson Valley	711	497	403	27,408	20,454	16,253
Percent	17.7	15.4	14.6	18.5	12.9	11.6
Fruit						
New York State	4,084	3,955	2,938	141,075	137,356	112,905
Hudson Valley	566	488	347	29,903	29,524	20,761
Percent	13.9	12.3	11.8	21.2	21.5	18.4
Total						
New York State	8,101	7,183	5,696	289,159	295,370	252,746
Hudson Valley	1,277	985	750	57,311	49,978	37,014
Percent	15.8	13.7	13.2	19.8	16.9	14.6
Acres/Farm						
New York State	35.7	41.1	44.4			
Hudson Valley	44.9	50.7	49.4			

Source: U.S. Census of Agriculture 1969, 1992.

The total number of acres in fruit and vegetable production in the Hudson Valley declined by 35.4 percent from 57,311 acres in 1969 to 37,014 acres in 1992. This decline was considerably larger than the 12.6 percent decrease in acres of fruit and vegetables in New York State. Thus, the Mid-Hudson Valley accounted for only 14.6 percent of the New York State harvested acreage of fruits and vegetables in 1992 compared to 19.8 percent in 1969.

B.3.1 Mid-Hudson Valley Vegetable Production

The total acreage devoted to production of vegetables in the Mid-Hudson Valley decreased from 27,408 acres in 1969 to 16,253 acres in 1992, a decrease of 40.7 percent (Table B.10). This was notably larger than the New York State decrease of 5.6 percent in acres of vegetables harvested: the Mid-Hudson Valley's percentage of total vegetable acres harvested in the state decreased from 18.5 percent in 1982 to 11.6 percent in 1992. Thus, measured as a portion of acres in New York State vegetable production, the Mid-Hudson Valley Region is a less important vegetable production area in New York State in 1992 than it was a decade earlier.

The Mid-Hudson Valley portion of harvested acreage of individual vegetables ranged from a low of 0.4 percent to a high of 43.7 percent of the total acres harvested in New York State in 1992 (Table B.11).

Onion production in the Mid-Hudson Valley accounted for the largest share of the total acres in New York State devoted to that specific vegetable, at 43.7 percent of the state's total onion acreage. The Mid-Hudson Valley acreage devoted to lettuce/romaine ranked second, accounting for 38.7 percent of total New York State harvested acreage of that crop, and green onions were third, at 37.5 percent of the New York State total green onion acreage.

The Hudson Valley harvested its lowest percentage of total state acreage in carrots with 0.4 percent and cauliflower with 0.7 percent of the New York State total. Sweet corn accounted for the greatest number of acres in the Mid-Hudson Valley with 6,125 acres, 37.7 percent of the total Hudson Valley vegetable acres. Dry onions were second covering 5,275 acres or 32.5 percent of the total vegetable acres. Thus, together, sweet corn and onions accounted for over 70 percent of all Mid-Hudson Valley vegetable acreage.

Comparing individual vegetable item acreage changes from 1969 to 1992 is particularly tricky since in 1969 the total vegetable, sweet corn, and tomato acreage statistics are only available for farms with sales of greater than \$2,500, and the remaining items are available for some but not all of the individual counties. Given these limitations, sweet corn, green onions, tomatoes and asparagus were the only major vegetables with increases in acreage planted in the Hudson Valley between 1969 and 1992.

Asparagus experienced the largest increase in acreage planted, 950 percent, however, Mid-Hudson Valley growers still only planted 21 acres in 1992, making asparagus quite a minor crop in terms of acreage, accounting for 0.1 percent of the Mid-Hudson Valley vegetable acreage. Green onions experienced over a 300 percent increase in acreage between 1969 and 1992, although the 332 acres harvested in 1992 was a decrease from the 657 harvested in 1982 and contributed 37.5 percent of the New York State green onion harvested acreage. While tomato acreage increased between 1969 and 1992, by 19.2 percent, it experienced a decline during the latter parts of the period, between 1982 and 1992, 373 acres to 360 acres. Sweet corn acreage followed the same pattern, increasing 5.2 percent between 1969 and 1992, however declining from 6,889 acres in 1982 to 6,125 acres in 1992.

Carrots, dry onions, cauliflower and lettuce/romaine experienced decreases in harvested acreage from 1969 to 1992. Carrots and lettuce/romaine had the largest declines in acreage, 69.2 and 63.7 percent respectively.

Table B.11
New York State, Leading Counties and Mid-Hudson Valley Vegetable Farms
and Acres, 1969, 82, 92

C a r r o t s							
	Farms				Acres		
	1969	1982	1992		1969	1982	1992
New York State	116	136	164	New York State	1,709	942	1,089
Hudson Valley**	3	9	14	Hudson Valley**	13	25	4
Suffolk	11	16	18	Wayne	328	38	93
Washington	NA	4	10	Onondaga	NA	14	13
Saratoga	NA	3	9	Suffolk	9	8	11
S w e e t C o r n							
	Farms				Acres		
	1969	1982	1992		1969	1982	1992
New York State	1,421	1,862	1,669	New York State	30,157	48,760	52,187
Hudson Valley*	137	195	189	Hudson Valley	5,825	6,889	6,125
Niagara	79	138	101	Genesee	4,259	5,347	6,690
Erie	95	112	78	Cayuga	98	1,386	5,049
Suffolk	77	93	70	Ontario	1,953	4,302	4,816
G r e e n O n i o n s							
	Farms				Acres		
	1969	1982	1992		1969	1982	1992
New York State	63	82	86	New York State	179	904	885
Hudson Valley**	7	15	12	Hudson Valley	80	657	332
Suffolk	13	12	10	Suffolk	24	27	17
St. Lawrence	NA	0	7	Onondaga	13	15	6
Niagara	4	5	7	Niagara	3	2	4
D r y O n i o n s							
	Farms				Acres		
	1969	1982	1992		1969	1982	1992
New York State	480	404	292	New York State	12,269	13,468	12,066
Hudson Valley**	229	184	107	Hudson Valley**	7,256	7,085	5,275
Oswego	54	26	24	Orleans	1,235	2,160	2,273
Wayne	40	22	20	Oswego	988	919	1,823
Orleans	26	28	18	Madison	423	968	736

Table B.11 (Continued)

T o m a t o e s						
	Farms				Acres	
	1969*	1982	1992		1969*	1982 1992
New York State	1,008	1,143	942	New York State	7,442	4,738 3,110
Hudson Valley*	163	149	155	Hudson Valley	302	373 360
Suffolk	80	99	89	Chautauqua	1,215	640 488
Niagara	99	128	71	Suffolk	262	448 284
Erie	87	82	45	Genesee	4,259	0 272

A s p a r a g u s						
	Farms				Acres	
	1969	1982	1992		1969	1982 1992
New York State	80	125	150	New York State	141	197 355
Hudson Valley***	3	0	10	Hudson Valley	2	0 21
Niagara	6	18	13	Oswego	NA	2 21
Erie	6	11	9	Suffolk	8	11 20
Suffolk	5	8	8	Ontario	23	0 14

C a u l i f l o w e r						
	Farms				Acres	
	1969	1982	1992		1969	1982 1992
New York State	240	478	228	New York State	2,062	2251 1046
Hudson Valley***	6	11	8	Hudson Valley	15	26 7
Suffolk	112	152	59	Suffolk	863	1301 394
Erie	39	49	23	Monroe	152	68 99
Niagara	11	38	18	Erie	321	264 89

L e t t u c e / R o m a i n e						
	Farms				Acres	
	1969	1982	1992		1969	1982 1992
New York State	317	171	172	New York State	4,629	3639 1537
Hudson Valley***	76	31	33	Hudson Valley	1,640	1509 595
Suffolk	42	35	31	Oswego	2,035	1562 600
Onondaga	11	5	10	Suffolk	188	195 130
Saratoga	3	0	8	Onondaga	20	8 55

* Includes only farms with annual sales >\$2,500

** Orange County production only

*** Asparagus includes Dutchess County production; Cauliflower includes Dutchess and Orange County production; Lettuce includes Orange, Ulster, and Westchester County production

Source: U.S. Census of Agriculture 1992

B.3.2 Mid-Hudson Valley Fruit Production

The total amount of land dedicated to orchards in the Mid-Hudson Valley declined from 29,903 acres in 1969 to 20,761 in 1992, a decrease of 30.6 percent, notably larger than the 20.0 percent decrease in land in orchards across New York State (Table B.10). In contrast, while the average size of New York State fruit farms has increased from 34.5 acres in 1969 to 38.4 acres in 1992, an increase of 11.3 percent, the average number of acres per farm in the Mid-Hudson Valley increased from 52.8 acres to 59.8 acres, or 13.3 percent. Thus, the Hudson Valley fruit farm acreages averaged 55.7 percent larger than the New York State average.

Mid-Hudson Valley fruit farms accounted for 18.4 percent of the total New York State land in orchards in 1992, down from 21.5 percent in 1982 and 21.2 percent in 1969. Thus, measured in acres, the Mid-Hudson Valley followed the same pattern in fruit as it did in vegetables: it was a less important part of the state total in 1992 than it was a decade earlier.

The Mid-Hudson Valley portion of the total New York State land in orchards varied by commodity and ranged from 1.4 to 39.0 percent of the state total in 1992. For example, thirty-nine percent of New York State land in pear production was in the Mid-Hudson Valley, while 42.1 percent of the New York State volume of pear production originated in the Mid-Hudson Valley (Table B.12). The Mid-Hudson Valley accounted for 27.2 percent of the apple producing acres in New York State in 1992, however only 1.4 percent of the 1992 cherry production and 1.1 percent of the 1992 New York State grape production originated in the Mid-Hudson Valley.

Apples led production of the major fruits in the Mid-Hudson Valley with 269 million pounds grown on 18,297 acres in 1992. Pears followed with 11.7 million pounds harvested from 1,123 acres and grapes with 3.68 million pounds from 557 acres. The primary growth among the major fruit items in the Mid-Hudson Valley was from apples and pears which experienced 15.1 percent and 13.6 percent production increases respectively from 1969 to 1992. Cherries, peaches and grapes experienced production declines from 1969 to 1992, with decreases of 81.3, 35.7 and 14.0 percent, respectively.

Table B.12
New York State, Leading Counties and Mid-Hudson Valley
Fruit Farms, Acres and Pounds of Production, 1969, 82, 92

	A p p l e s								
	Farms			Acres			Million Lbs		
	1969*	1982	1992	1969*	1982	1992	1969*	1982	1992
New York State	1,633	2,055	1,578	79,104	78,115	67,313	781.8	1,011.4	1,078.9
Hudson Valley**	390	414	292	61,314	25,969	18,297	233.5	265.0	2,68.8
Wayne	386	371	287	23,872	22,491	21,585	226.6	355.6	370.9
Niagara	209	190	119	7,233	6,552	5,510	78.6	90.4	93.3
Orleans	180	132	96	8,350	6,985	6,703	79.0	107.6	136.1

	C h e r r i e s								
	Farms			Acres			Million Lbs		
	1969*	1982	1992	1969*	1982	1992	1969*	1982	1992
New York State	838	809	482	9,745	NA	1,410	38.3	26.8	24.8
Hudson Valley**	111	84	51	612	NA	131	1.6	0.6	0.3
Wayne	315	220	143	4,920	NA	289	18.0	12.6	13.9
Niagara	156	134	71	1,510	396	463	7.1	4.9	5.1
Orleans	90	66	38	1,553	152	213	7.0	5.5	3.4

	G r a p e s								
	Farms			Acres			Million Pounds		
	1969*	1982	1992	1969*	1982	1992	1969*	1982	1992
New York State	1,512	2,207	1,510	33,322	42,832	34,250	204.3	310.8	339.3
Hudson Valley**	104	130	88	941	1,146	557	4.3	3.5	3.7
Chautauqua	669	913	677	15,647	19,166	17,446	91.6	149.3	190.7
Yates	219	279	189	5,188	7,777	5,493	32.6	61.7	60.6
Steuben	72	84	51	2,773	3,659	2,398	19.8	23.9	21.8

Table B.12 (Continued)

	P e a c h e s								
	Farms			Acres			Million Lbs		
	1969*	1982	1992	1969*	1982	1992	1969*	1982	1992
New York State	538	685	372	3,498	3,038	2,266	16.1	14.5	14.7
Hudson Valley**	109	127	75	766	465	398	4.2	1.9	2.7
Wayne	101	106	77	427	558	415	1.9	1.8	2.8
Niagara	127	120	58	1,008	753	440	4.1	4.3	2.7
Suffolk	10	41	25	357	399	413	2.3	2.9	2.7

	P e a r s								
	Farms			Acres			Million Lbs		
	1969*	1982	1992	1969*	1982	1992	1969*	1982	1992
New York State	814	618	354	5,951	3,568	2,882	27.6	31.2	27.9
Hudson Valley**	219	154	100	1,837	1,238	1,123	10.3	10.7	11.7
Wayne	190	108	69	1,317	751	590	4.9	8.1	5.3
Niagara	159	103	54	1,260	775	695	6.6	7.6	6.8
Orleans	66	29	13	475	233	158	1.9	1.7	1.8

* 1969 data only includes farms with >\$2,500 of agricultural sales

** Includes: Columbia, Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester Counties.

Source: U.S. Census of Agriculture 1992.

B.4 Fresh Fruit and Vegetable Arrivals to the New York Metropolitan Area

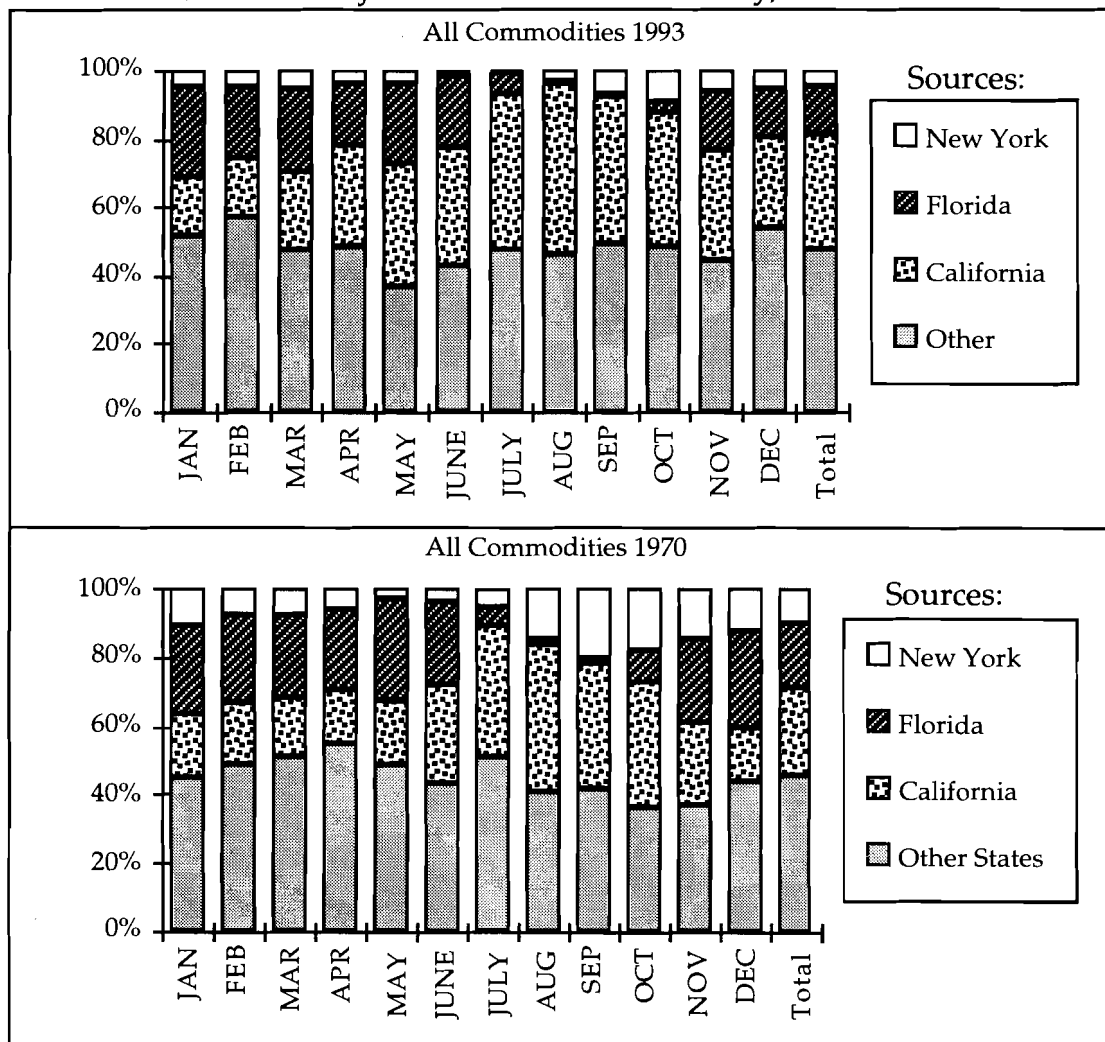
Another index of the change in New York State fruit and vegetable production from 1970 to 1993 is the fruit and vegetable arrival data collected by the USDA for various wholesale markets, including the New York City metropolitan area. These reports attempt to track arrivals of fresh fruit and vegetables at both terminal market facilities and integrated wholesale facilities serving the New York - Newark, NJ metropolitan area. New York State fruit and vegetable presence in this nearby market provides one measure of the competitiveness of New York State produce.

In 1993, New York State producers contributed 4 percent of the fresh produce arrivals for the New York City Metropolitan area (Figure B.7). This was a 60

percent decrease from the 10 percent of fresh produce arrivals New York State contributed in 1970. September and October were the months during which New York State contributed its largest proportion, accounting for 7 and 9 percent respectively of total arrivals.

California supplied the largest share of fresh fruit and vegetable arrivals in 1993, contributing 32 percent, an increase of 18.8 percent from its 26 percent share in 1970. Florida was second with 14 percent of the New York City arrivals.

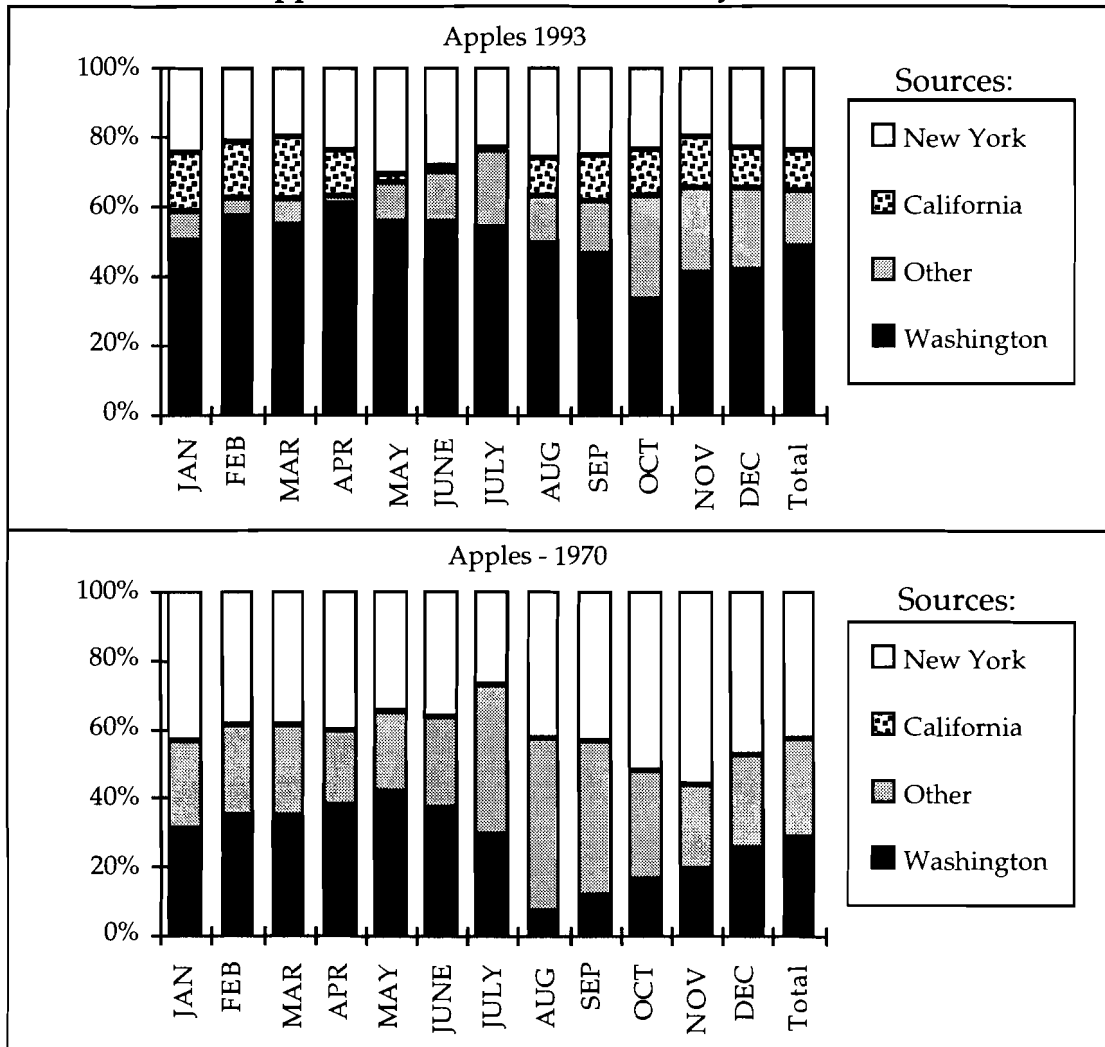
Figure B.7
All Commodity Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

In 1993, New York State supplied 24 percent of the total apple arrivals to New York City, down 44.2 percent from the 43 percent of all apple arrivals New York State accounted for in 1970 (Figure B.8). Washington State supplied the largest portion of the apple arrivals to New York City in 1993, providing 49 percent, up from a 29 percent contribution in 1970. New York State monthly arrivals of apples remained relatively level over the course of most recent years, ranging from a low of approximately 20 percent of arrivals in March to a high of about 30 percent in May.

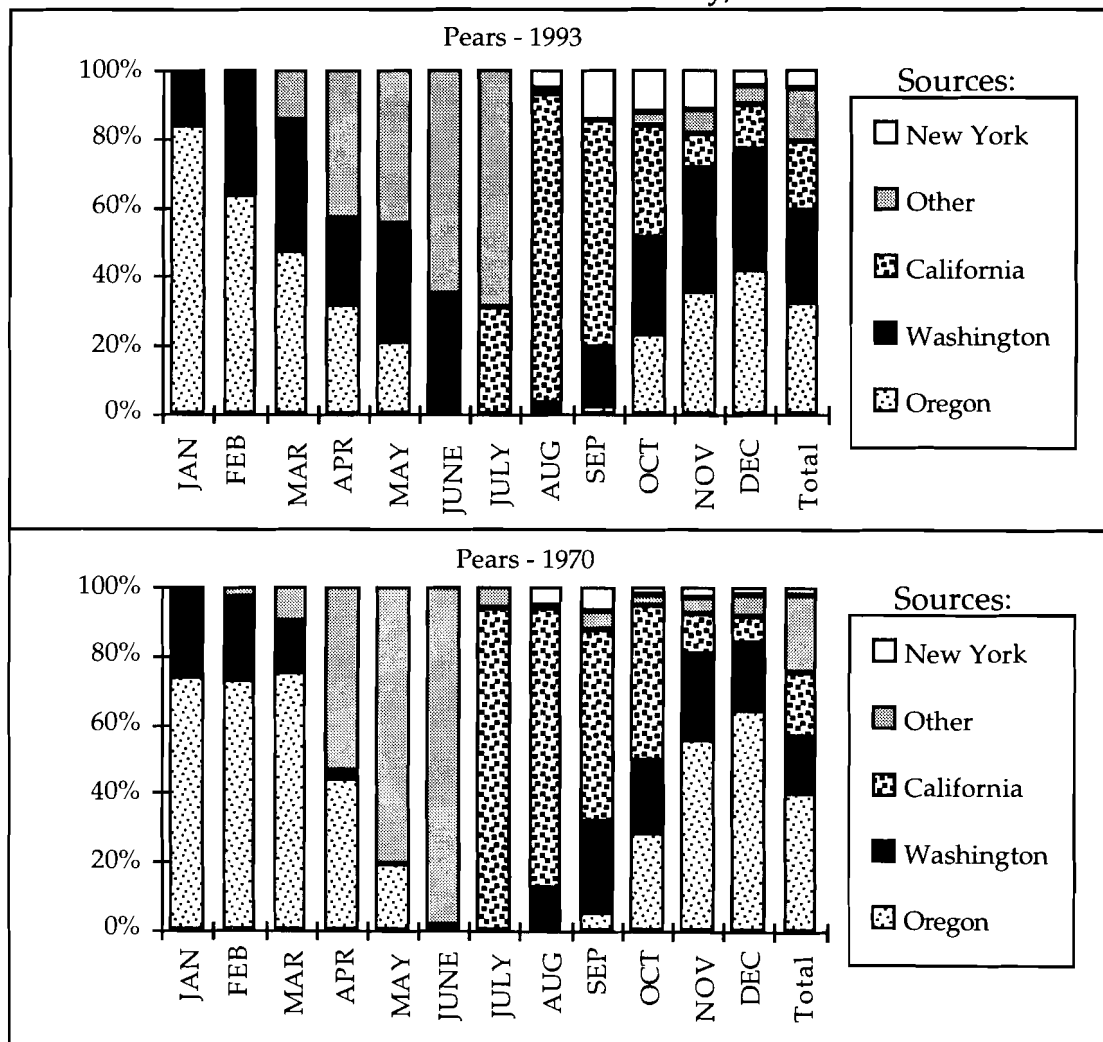
Figure B.8
Fresh Apple Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

Although the New York State share of pear arrivals in New York City increased 60 percent from 1970 to 1993, this increase only represented an increase from 2 percent in 1970 to 5 percent of total arrivals in 1993 (Figure B.9). New York growers performed considerably better in the certain individual months, however, providing a high of 15 percent of pear arrivals in the month of September, compared to 7 percent in September, 1970. Oregon remained the dominant state in pear arrivals to the market, although the percentage of arrivals from Oregon declined almost 20 percent, from 41 percent of arrivals in 1970 to 33 percent in 1993.

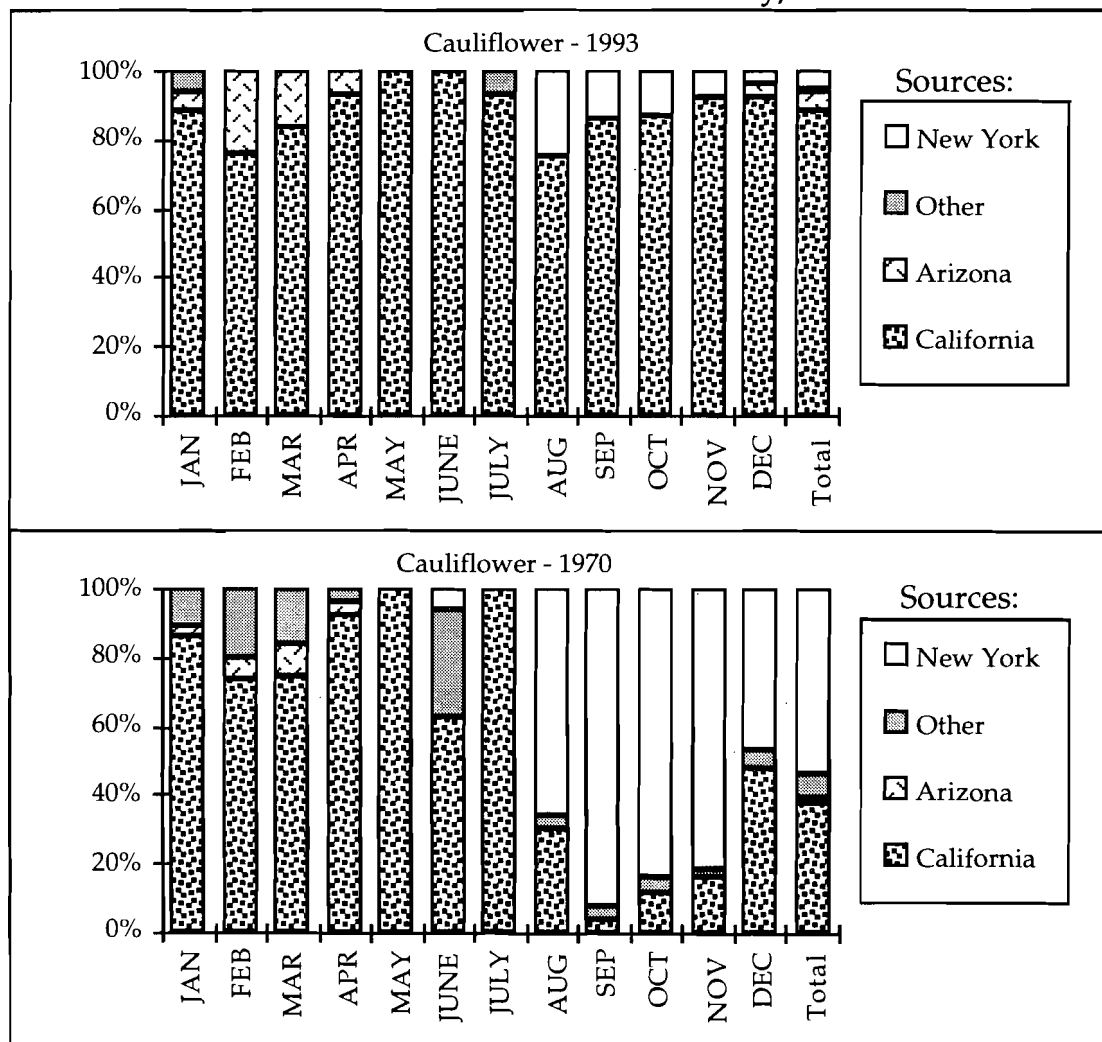
Figure B.9
Fresh Pear Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

New York State contributed only 5 percent of the total fresh cauliflower arrivals to New York City in 1993, down 90.7 percent from the 54 percent of all fresh cauliflower arrivals New York State growers contributed in 1970 (Figure B.10). While in 1970 New York State growers contributed over 60 percent of the total New York City cauliflower arrivals in each month from August to November, in 1993 the New York percentage of total arrivals was greatest in August and represented only 25 percent of arrivals for that month. Cauliflower originating in California replaced the New York State grower dominance of the New York City market, as California growers' share of cauliflower arrivals increased from 38 percent in 1970 to 88 percent in 1993.

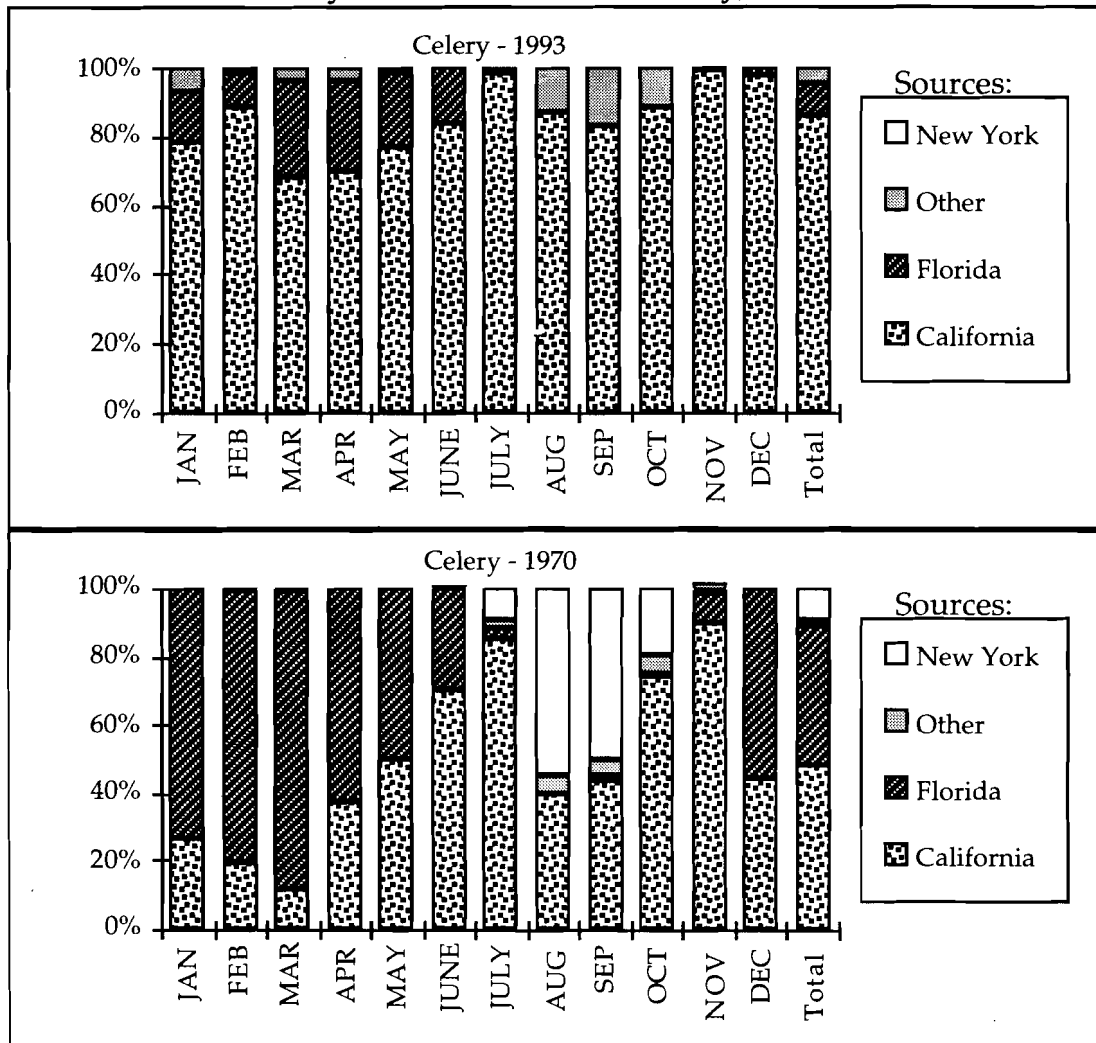
Figure B.10
Fresh Cauliflower Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

The New York State portion of fresh celery arrivals slipped from 9 percent in 1970 to less than 1 percent in 1993 (Figure B.11). California growers dominated the market in 1993, providing 86 percent of the fresh celery arrivals to New York City, compared to 48 percent of the arrivals accounted for in 1970. New York State growers contributed 26 percent of the sweet corn arrivals to the New York City market in both 1970 and 1993 (Figure B.12). Forty-five percent of the fresh sweet corn arrivals to the New York City market originated in Florida in 1993, down from the 50 percent of arrivals Florida accounted for in 1970.

Figure B.11
Fresh Celery Arrivals to New York City, 1970 and 1993.

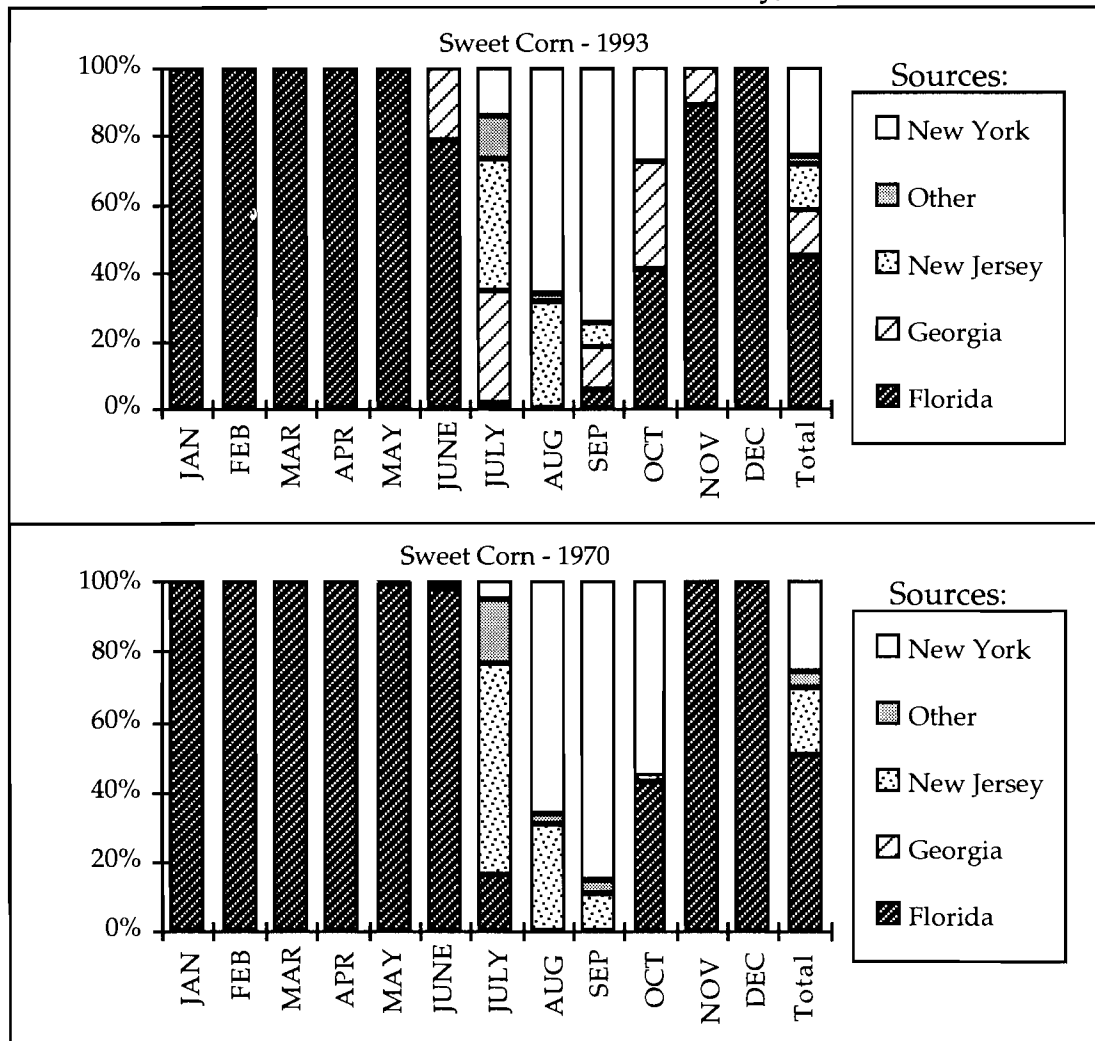


Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

New York State growers accounted for 23 percent of the dry onion arrivals to New York City in 1993, the highest portion accounted for by any state (Figure

B.14). Even this, however, was a 37.8 percent decrease from the 37 percent of onion arrivals New York State growers accounted for in 1970. Both Idaho and California, responsible for the second and third largest portions of arrivals respectively, approximately doubled their portion of

Figure B.12
Fresh Sweet Corn Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

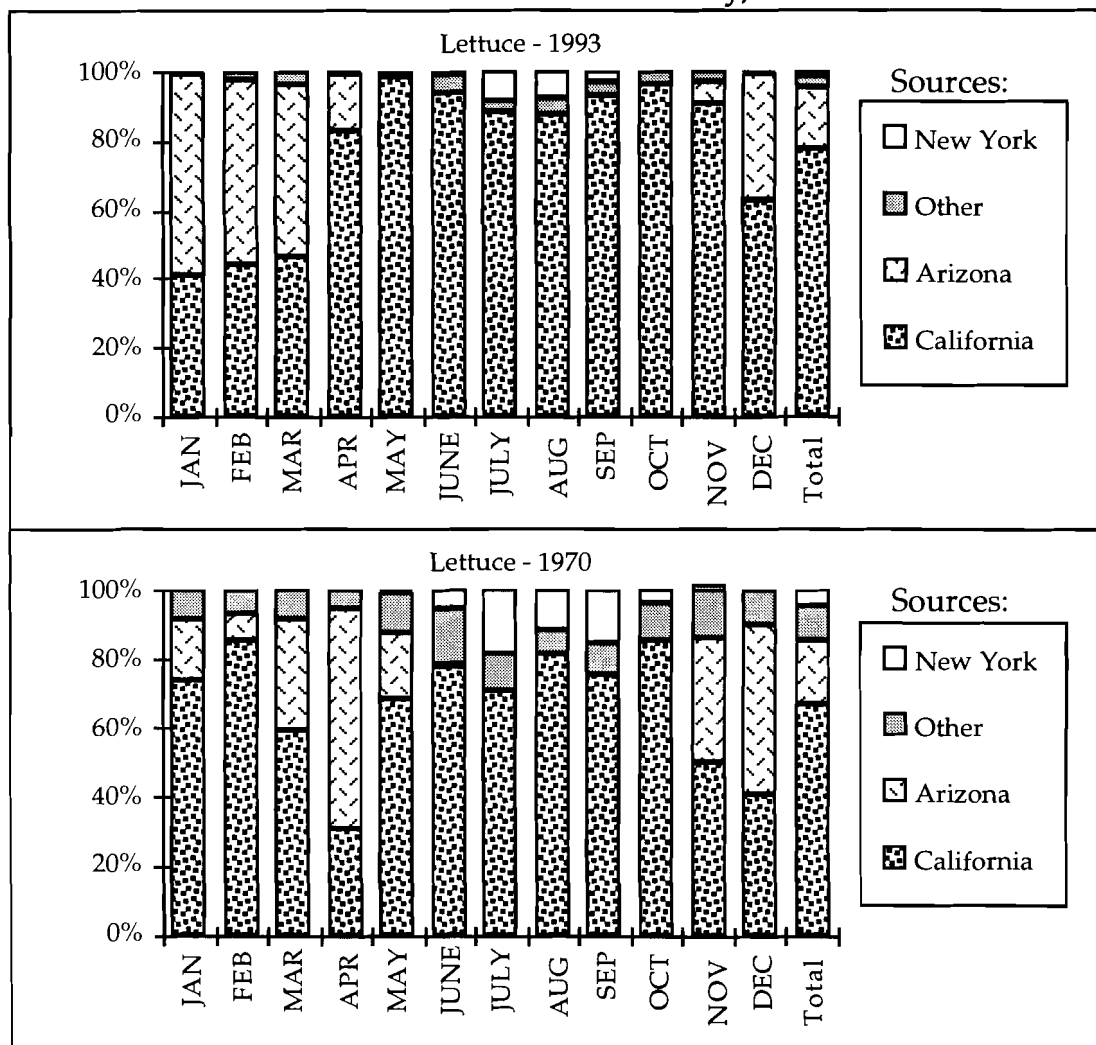
New York State growers accounted for only 2 percent of the fresh lettuce arrivals to the New York City market in 1993, 60 percent less than the 5 percent of arrivals accounted for by New York State in 1970 (Figure B.13).

The number of months New York State contributed a significant portion of the arrivals also decreased, as New York State growers shipped at least one percent of the arrivals from May to October in 1970, however only from July

to September in 1993. California, the major contributor of lettuce to the New York City market in 1993, contributed 78 percent of the 1993 fresh lettuce arrivals compared to 67 percent in 1970. New York State growers accounted for only 2 percent of the fresh lettuce arrivals to the New York City market in 1993, 60 percent less than the 5 percent of arrivals accounted for by New York State in 1970 (Figure B.13).

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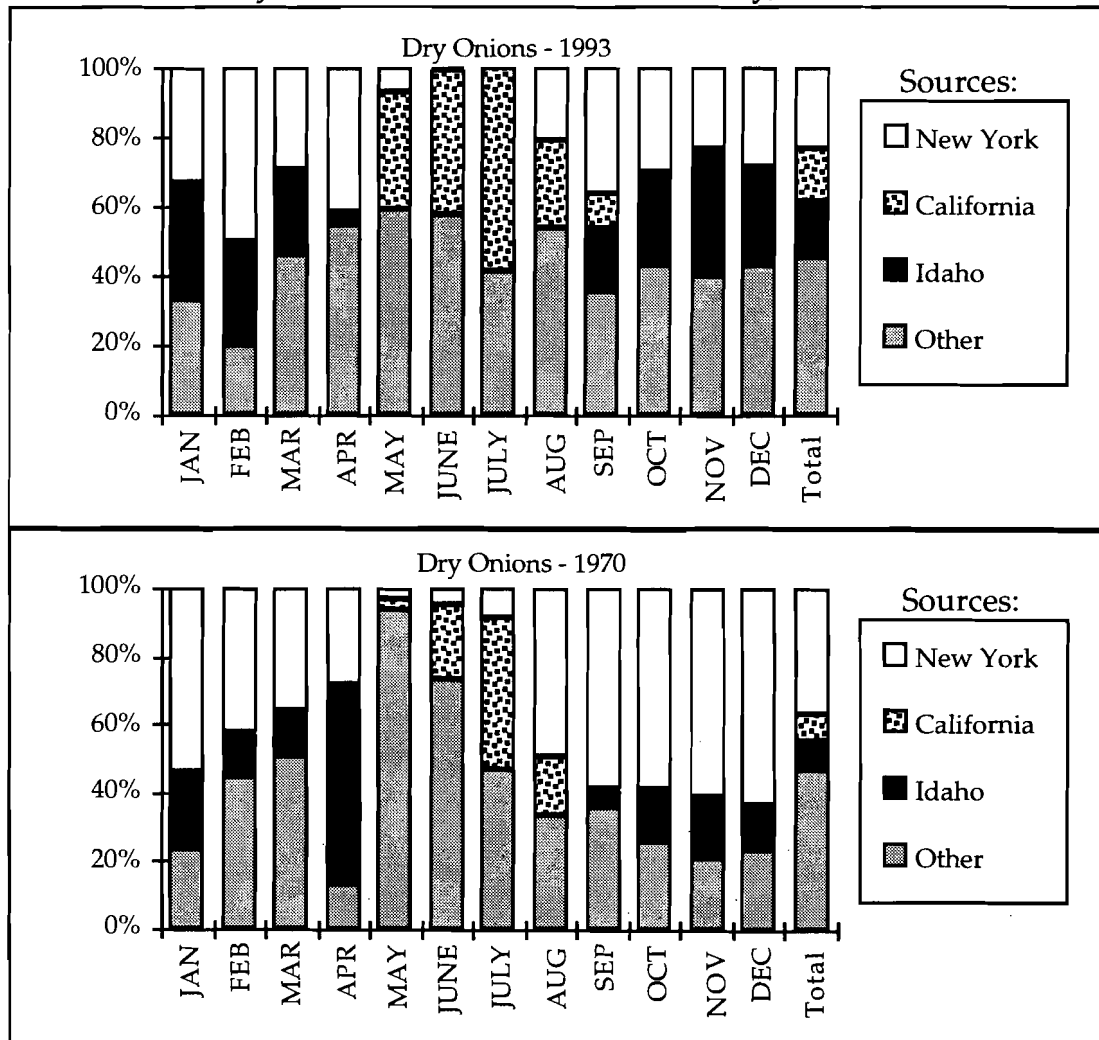
Figure B.13
Fresh Lettuce Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

New York State growers accounted for 23 percent of the dry onion arrivals to New York City in 1993, the highest portions accounted for by any state (Figure B.14). Even this, however, was a 37.8 percent decrease from the 37 percent of onion arrivals New York State growers accounted for in 1970. Both Idaho and California, responsible for the second and third largest portions of arrivals respectively, approximately doubled their portion of arrivals, from 8 percent each, to 16 and 15 percent respectively during this same time period.

Figure B.14
Fresh Dry Onion Arrivals to New York City, 1970 and 1993.



Source: Fresh Fruit and Vegetable Arrivals in Eastern Cities by Commodities, States, and Months, 1971, 1992.

B.5 Summary

U.S. fruit and vegetable production increased 46.5 percent between 1970 and 1992, from 65.6 billion pounds to 96.1 billion pounds. Vegetable production was responsible for the majority of this change, increasing 62 percent over this time period, while fruit production increased 22.9 percent. New York State experienced a much smaller increase in fruit and vegetable production over this time period, only 8 percent. This increase was driven by the 23 percent increase in New York State fruit production, while vegetable production decreased by 8.3 percent.

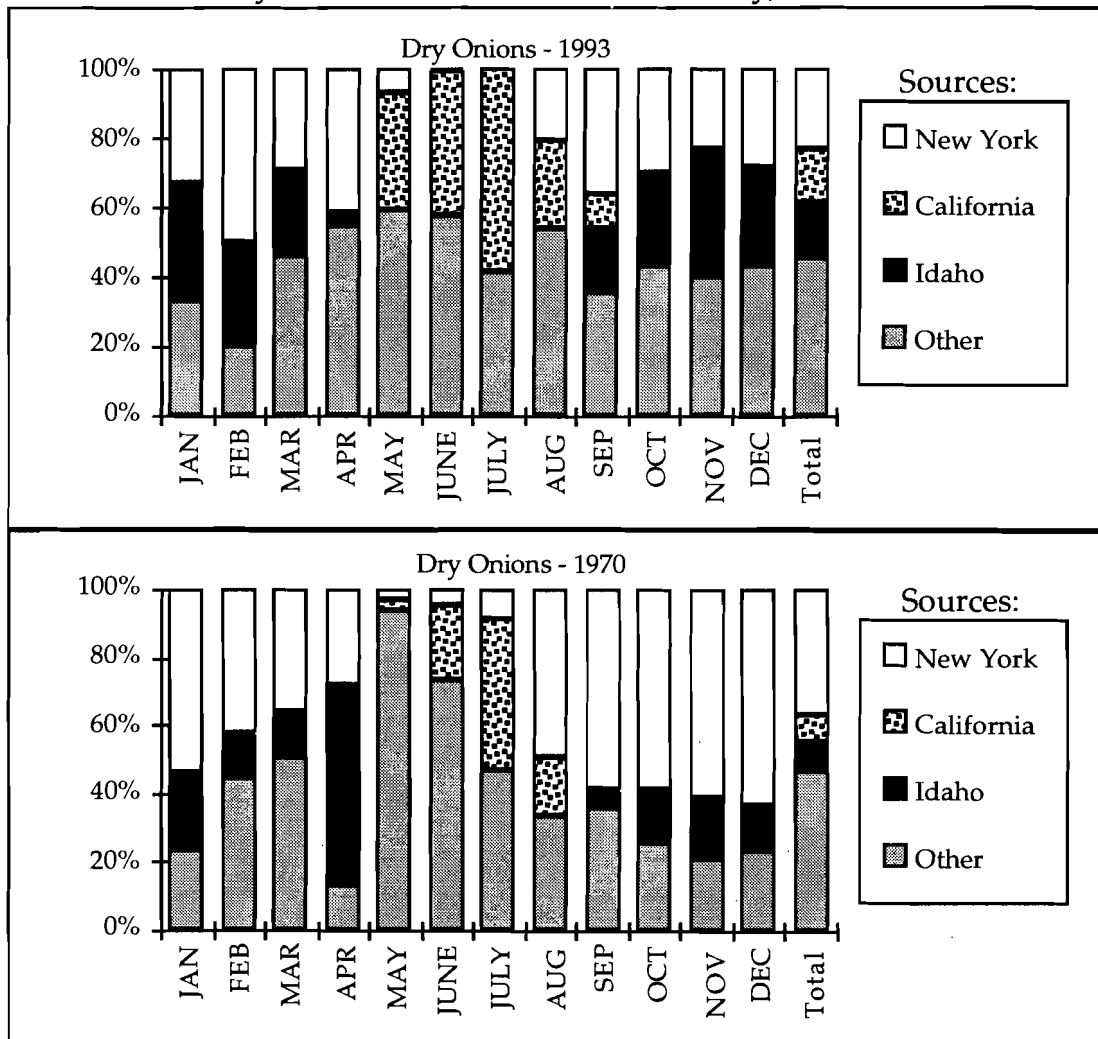
The size of the average New York State fruit and vegetable farm has increased from 35.7 acres in 1969 to 44.4 in 1992, an increase of 24.4 percent. Over the same time period, the acreage of fruits and vegetables harvested decreased from almost 280 thousand acres to 250 thousand acres. The average acreage of fruit and the average acreage of vegetables per farm in New York State both increased between 1969 and 1992, however the average acreage of fruit increased by 26.3 percent and the average vegetable acreage increased by 59.1 percent.

Over the same time period, the Mid-Hudson Valley Region of New York State experienced a considerably larger decline in fruit and vegetable acreage harvested, from 1,277 acres to 750 acres, a decrease of 35.4 percent. This resulted in a slightly larger acreage of fruits and vegetables per farm in the Mid-Hudson Valley, 49.4 acres per farm compared to 44.4 acres per farm for all of New York State. Thus, in 1992, the average acreage per fruit and vegetable farm in the Hudson Valley was 11.3 percent larger than the average acreage per farm for all of New York State, while Mid-Hudson Valley farms were 25.8 percent larger than the New York State average in 1969. The Hudson Valley contributed 14.6 percent of the harvested fruit and vegetable acreage in New York State in 1993, down from 19.8 percent in 1969.

New York State producers contributed 4 percent of the fresh produce arrivals for the New York City Metropolitan area in 1992. This was a 60 percent decrease from the 10 percent of arrivals New York State contributed in 1970. This decline compared to an 8.3 percent reduction in overall New York State production of fresh vegetables and a 23.1 percent increase in production of fresh fruit in New York State. When measured in production value, New York's share of U.S. fresh vegetable receipts decreased from 3.5 percent in 1969 to 3.0 percent in 1992 and its share of the value of fresh fruit declined from 6.1 percent to 3.0 percent over the same time period.

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Appendix C

Wholesaler Questionnaire

Your Business

1. How would you classify your firm's principal activity?

- ☐ Packer-shipper
- ☐ Broker (buying/selling broker)
- ☐ Grocery/Full line wholesaler
- ☐ Terminal Market Produce Wholesaler
- ☐ Off-Market Produce Wholesaler
- ☐ Sales agent
- ☐ Other _____

2. Approximately what percentage of your total fresh produce business is sold through the following outlets?

- ☐ Retail Chains
- ☐ Independent Retailers
- ☐ Restaurant/Food Service
- ☐ Terminal Market Wholesaler
- ☐ Wholesaler Distributors (grocery/produce)
- ☐ Processors
- ☐ Farm Stand
- ☐ Other _____

100% Total

3. What percentage of your produce is purchased from the following sources? (Please give approximate percentage for each category)

Domestic	-----
Import	-----
	100%

Direct from shippers	-----
Via Broker	-----
Via terminal mkt wholesaler	-----
	100%

	items	barriers
Hudson Valley growers	_____	_____
	_____	_____
Other New York growers	_____	_____
	_____	_____
Out of State growers	-----	
	100%	

3. What elements influence your decision to choose products other than New York State grown produce? (Explain)

	very important					very unimportant					very important					very unimportant				
	unimportant																			
price	1	2	3	4	5	ease of access	1	2	3	4	5									
quality	1	2	3	4	5	delivery	1	2	3	4	5									
promotion	1	2	3	4	5	packaging	1	2	3	4	5									
availability	1	2	3	4	5	other	1	2	3	4	5									
sorting/grading	1	2	3	4	5															

4. Approximately how many suppliers do you deal with on a regular basis?

Hudson Valley growers -----
 Other New York growers -----
 Out of State growers -----
 Brokers -----
 Importers -----

5. How often does your company perform consolidation of local produce to sell to larger buyers?

Daily ____ Weekly ____ Monthly ____ Seasonally ____ Never ____

6. Please indicate the services which you offer customers:

Promotional Materials -----
 (e.g. POP materials, cash allowance)
 Delivery -----
 Market price information -----
 Telephone ordering -----
 Training -----
 Value-added products -----
 Other -----

8. Over the past three years, have your fresh produce sales:

____ increased by 10 percent or more
 ____ increased by less than 10 percent
 ____ remained constant
 ____ decreased by less than 10 percent
 ____ decreased by 10 percent or more

9. What was your firm's approximate sales of fresh fruits, vegetables, and floral/nursery in 1993?

☐ <\$500,000
☐ \$500,000 to \$999,999
☐ \$1 million to \$4,999,999
☐ \$5 million to \$9,999,999
☐ >\$10 million

10. What percentage of your firm's total sales did fresh fruits, vegetables and floral/nursery sales represent in 1993?
 _____ %

Your Views and Outlook

10. Please list the three New York State grown commodities in your business whose sales: a) have grown the most rapidly the last three years, and b) you expect to grow most rapidly in the next three years.

(a) Now

(b) Future

11. Please indicate the percentage of your business which is transacted through the following terminal markets:

_____ Buffalo

_____ Bronx

_____ Cleveland

_____ Connecticut

_____ Hunt's Point

_____ Menands (Albany)

_____ Philadelphia

_____ Rochester

_____ Syracuse

_____ Other _____

12. In general, what is your opinion of the physical facilities on the specific wholesale market in which you currently operate.

	very good	good	satisfactory	poor	very poor	don't know
ease of access	1	2	3	4	5	_____
ease of loading/unloading	1	2	3	4	5	_____
sanitation	1	2	3	4	5	_____
cold storage/cooling facilities	1	2	3	4	5	_____
parking	1	2	3	4	5	_____
weather protection	1	2	3	4	5	_____
security	1	2	3	4	5	_____
packing/packaging facilities	1	2	3	4	5	_____
sorting/grading facilities	1	2	3	4	5	_____
Other (please specify) _____	1	2	3	4	5	_____

13. In your opinion, what are the three largest problems with the terminal market in which you operate.

14. In your opinion, what are the three greatest assets of the terminal market in which you operate?

15. Do you plan to shift your business toward any of the following over the next five years?

	very likely				very unlikel y
	1	2	3	4	5
more telephone sales	-----	-----	-----	-----	-----
more delivery service	-----	-----	-----	-----	-----
more food service business	-----	-----	-----	-----	-----
more value added products	-----	-----	-----	-----	-----
reduced product range	-----	-----	-----	-----	-----
extended product range	-----	-----	-----	-----	-----
more product promotion	-----	-----	-----	-----	-----
More local (NYS) produce	-----	-----	-----	-----	-----
More terminal market buying	-----	-----	-----	-----	-----

How/Where? _____

16. Interest exists in the possibility of developing some type of wholesale produce facility in the Mid-Hudson Valley Region of New York State to complement existing markets. Two possible setups exist:

- a.) a consolidation/buying-selling facility for small and large growers in the Mid Hudson Valley Region.
- b.) a state of the art facility containing value-added equipment, processing both local and out-of-state produce.

If these facilities existed, would you consider:

- (a.) (b.)
- — buying from the market
- — relocating to the market
- — locating a satellite/subdivision of your company on the market
- — not using the market

How interested are you in buying from a potential wholesale consolidation facility?

very interested

very uninterested

--- --- --- --- ---

17. Please indicate the extent to which each of the following might make a significant difference to you in determining whether or not you would be interested in participating in such a new facility.

	very important 1	2	neutral 3	4	very unimport 5
Hydro/vacuum Cooling	----	----	----	----	----
Cool Storage	----	----	----	----	----
more food service business	----	----	----	----	----
USDA Official Inspection	----	----	----	----	----
Grading/Packing	----	----	----	----	----
Consolidation Facilities	----	----	----	----	----
Repacking	----	----	----	----	----
Accessibility to NYS Produce/ Floral-Greenhouse Products	----	----	----	----	----
Easy and Modern Transportation access (rail, air, truck)	----	----	----	----	----

18. What level of "leasing fee" would you consider in order to locate on the market?

\$_____ Office space per sq. foot per month
 \$_____ Cooling space
 \$_____ Cool storage space
 \$_____ Packing/repacking/sorting/grading

space

19. Should a potential Mid-Hudson Valley wholesale produce market be managed by:

- _____ the state/federal government
- _____ a growers cooperative
- _____ a buyers cooperative
- _____ a joint venture between growers and buyers.
- _____ an existing cooperative
- _____ a private entity
- _____ other _____

20. If a Mid-Hudson Valley wholesale produce market were to be constructed, where would you prefer it be located?

21. What other factors might you consider relevant regarding a new wholesale market?

Thank You!

Appendix D

Key Items Buyers Purchase Most Often from the Mid-Hudson Valley or New York State, 1995

Hudson Valley Items		New York State Items	
Apples	14	Apples	12
Onions	5	Cabbage	12
Potatoes	3	Onions	10
Corn	3	Potatoes	9
Cucumbers	2	Sweet Corn	6
All Vegetables	2	Peppers	5
Herbs	2	Cucumbers	4
Cauliflower	2	Greens	4
Cabbage	2	Squash	4
Berries	1	Tomatoes	4
Peppers	1	All Vegetables	3
Broccoli	1	Beans	2
Peaches	1	Pumpkins	2
Greens	1	Eggplant	2
Pears	1	Cauliflower	1
Mushrooms	1	Mushrooms	<u>1</u>
Spinach	<u>1</u>	Total	81
Total	43		

Appendix E

Barriers to Buyer Use of Mid-Hudson Valley and New York State Fresh Produce, 1995

Hudson Valley Barriers	New York State Barriers
Growing season/Availability	Washington State apples cheaper
Quality	Washington State apples look better
Don't know what's available from the Hudson Valley	Washington State has better marketing
Logistics/ Distance	Can't/don't trim lettuce
What is grown	Taste's poorer
Weather/Growing conditions	Grading
Cooling	Tastes Poorer
Packing	Shelf life shorter
Sell directly to customers already	Varieties grown
Shelf life	Precooling
Mentality	Customers don't want
Handling	Have deals elsewhere
Availability	New Jersey closer
Cooperation	Packing
Don't wrap (lettuce) like California	Reliability
Reputation	Availability/Growing season
Consistency	Not up to date
Washing	
California cheaper	
Taste	

Appendix F

Complete List of Items For Which Buyers Have Experienced or Project Increased Sales, 1995

Past Three Years	# of Buyers Indicating	Next Three Years	# of Buyers Indicating
Value-Added Vegetables	21	Value-Added Vegetables	14
Broccoli/Cauliflower (florets)	9	Consumption/Overall Growth	5
New/Specialty Items	7	Pre-cut Fruit	4
Specialty Lettuce	6	New/Specialty Items	3
Salads	5	Broccoli/Cauliflower (florets)	2
Apples	4	Carrots	2
Tomatoes	4	Apples	1
Mushrooms	4	Tomatoes	1
Baby Items	3	Mushrooms	1
Imports	3	Imports	1
Herbs	3	Organic	1
Corn	3	French Beans	1
Peppers	3	Spinach	1
Lettuce	3	Fruit	1
Carrots	2	Tree/vine ripe	1
Organic	2	Pears	1
Berries	2	Leafy Vegetables	1
Chilean Produce	2	Kiwi	1
Potatoes	2	Total	39
French Beans	2		
Onions	2		
Spinach	2		
Strawberries	2		
Oranges	2		
Fruit	1		
Bananas	1		
Store-cut	1		
Pineapples	1		
Tree/vine ripe	1		
Pears	1		
Scallions	1		
Celery	1		
Leafy Vegetables	1		
Total	101		

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