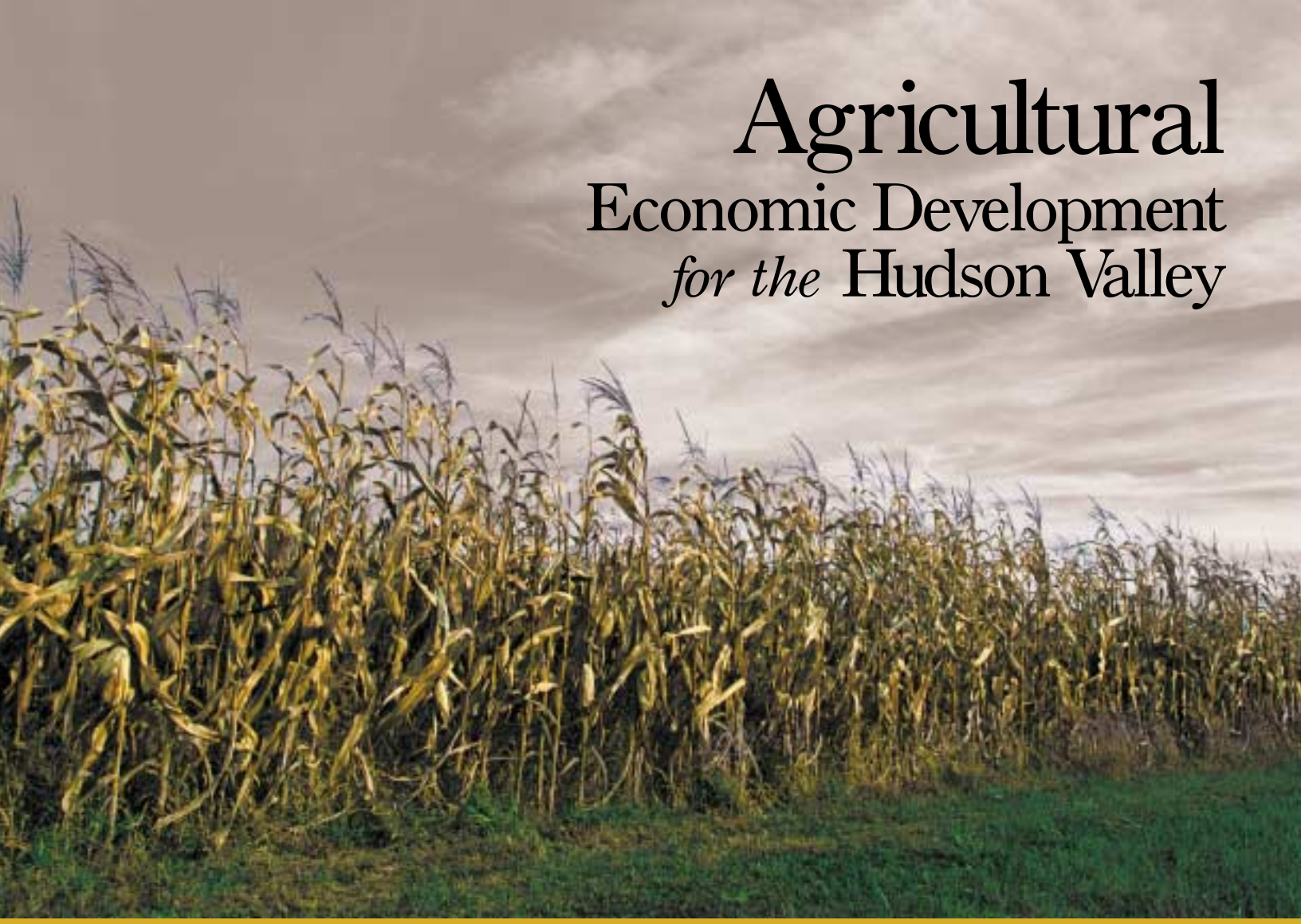
Agricultural Economic Development *for the* Hudson Valley



TECHNICAL REPORT AND RECOMMENDATIONS

Submitted to the Northeast Office of American Farmland Trust by ACDS, LLC

Agricultural Economic Development for the Hudson Valley

Technical Report and Recommendations

Submitted to:

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2004

American Farmland Trust

Dear Friends:

Agriculture is important to the economy, landscape and history of the Hudson River Valley. The "Mid-Hudson" region, as we defined it for this study, ranges all the way from the Taconic Hills of Columbia County to the Black Dirt region of Orange County, with over 400,000 acres of fertile farmland in between. Blessed with good soils, a long growing season and close proximity to markets in the New York metropolitan region, Hudson Valley farms generate over $230 million in direct sales and have an additional direct economic impact of $300 million. Hudson Valley farms also provide the scenic backdrop for many historic and tourist sites.

But it comes as no surprise to anyone that agriculture is threatened in the Hudson River Valley—much as it is in urban edge farming regions across the country. Many factors have contributed to a steady decline in agriculture in the region: low prices for farm products like milk and apples, the unpredictable weather of recent years and relentless development pressure. As a result, the Hudson Valley continues to lose farms and farmland at an alarming rate. Many people worry that we will see the complete demise of agriculture in this region in our lifetime. In fact, one of the most troubling statements we heard from a few of the participants in this study was, "Agriculture is dead, so why bother?"

While agriculture is seriously threatened, it is also changing in the face of trade globalization and the increasing dominance of transnational food suppliers. Basic survival strategies for agriculture include lowering the cost of production; garnering a larger share of the food dollar; and/or public policies that pay farmers for the environmental benefits of agriculture such as open space, wildlife habitat, clean air and clean water.

Examples of creative farm survival strategies abound in the Hudson Valley, including direct marketing efforts such as farm stands, farmers' markets, community supported agriculture (CSA) and direct delivery. Producers like Roxbury Farm CSA, Adams Farm Markets, Breezy Hill Orchards, Ronnybrook Farm Dairy and Gumaer Farm are among the many innovative Hudson Valley producers who are, literally, taking matters into their own hands. Hudson Valley niche market products—including natural beef, organic vegetables and value-added branded products like Chatham Sheepherding cheese, Coach Farm goat cheese and Agri-Mark's Cabot cheese—are increasingly available and command a premium at the retail market.

Still other producers are diversifying their agricultural enterprises to increase farm income. The Ooms Dairy Farm sells surplus feed to smaller neighboring dairy farms. Gallagher Stud in Ghent raises thoroughbreds and beef cattle. Stone House Farms in Livingston grows feed grains and grazes beef cattle on its permanent grass pastures. Samascott Farms has converted some of its apple orchards to vegetables and small fruits such as blueberries. The Kelder Family has switched from dairy farming to a direct market, pick-your-own and "agri-tainment" operation to capitalize on their location in Ulster County. In Westchester and Orange Counties,

horse boarding operations provide recreational opportunities for all ages as well as new markets for Hudson Valley hay producers. Sod production and horticultural products are some of the fastest growing sectors in the region, helping to meet the needs of new residents for landscaping, lawn and garden products.

Agriculture must adapt to changing conditions, and the good news is that many farm operators are already doing just that. We believe these recommendations will help.

We had the following points in mind while undertaking this study:

- Agriculture is more than food production. While food production continues to be a very important part of the regional agricultural economy, it is only a part of the mix of agricultural enterprises in the Hudson Valley.

- Farming is both a business and a land use. Farmers, farming and farmland are all an essential part of what it takes to have a truly working landscape.

- Agriculture is economic development. Agriculture contributes directly to the region's economy through the economic impact of the sale, processing and distribution of agricultural products and services. Agriculture also contributes indirectly because of its importance to the tourist industry and to the region's quality of life.

This study utilized a qualitative methodology, building on existing data to understand key trends in regional agriculture. The study also relied on individual interviews with key stakeholders to assess challenges and opportunities within the region. The study's key stakeholders have shaped the development of workable recommendations, with the primary objective of timely implementation following the distribution of this report. The report and recommendations resulted from over 100 individual interviews and dozens and dozens of meetings over the last 10 months.

We believe that the study will be measured by what results are achieved for agriculture as recommendations are implemented, one way or another. The fact remains that communities in this region, as well as the state and federal governments, will need to invest in agriculture, or it will disappear as we know it.

Sincerely,

Jerry Cosgrove
Northeast Regional Director
American Farmland Trust

ACKNOWLEDGEMENTS

American Farmland Trust, under a grant from the Dyson Foundation of Millbrook, New York, commissioned ACDS, LLC to assess economic conditions relative to the development of the agricultural industry in the Hudson River Valley. The results of this analysis are to be utilized by the Dyson Foundation, American Farmland Trust and others to deploy economic and business development strategies focused on improving industry and community conditions throughout the Hudson Valley. Those involved in the project include:

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The researchers and authors of the report owe a debt of gratitude to more than 100 individuals who participated in interviews and volunteered time for this project (see Appendix 8 for a list of interviewees).

In addition, an advisory committee provided input at meetings held in March and November of 2003. Attending one or both of the meetings were: Sherry Alpern, NY Farms!; Mick Bessire, Greene County Cornell Cooperative Extension; Nelson Bills, Cornell University Department of Applied Economics and Management; Jesse Bontecou, Rally Farms; Chris Campany, Orange County Agricultural and Farmland Protection Board; Dave Church, Orange County Planning; Ron Coan, Dutchess County Economic Development Corporation; Jayne Daly, Glynwood Center; Tom Daniels, University of Pennsylvania; Leonard DeBuck, DeBuck's Sod Farm; Michael DiTullo, Mid-Hudson Pattern for Progress; James Galvin, Columbia Hudson Partnership; Mark Grennan, Hudson-Mohawk RC&D; Les Hulcoop, Dutchess County Cooperative Extension; Seth McKee, Scenic Hudson; Tim Pezzolesi, New York State Department of Agriculture and Markets; Lee Reidy, Ulster County Cornell Cooperative Extension; Elizabeth Ryan, Breezy Hill Orchards; Holly Sullivan, Hudson River Valley Greenway; Dave Tetor, town of Stanford; Michael Turton, Hudson Valley Agricultural Partnership; Roland Vosburgh, Columbia County Planning; Laura Walls, Mid-Hudson Pattern for Progress; Charlie Wille, Landsmere Farm; Rick Zimmerman, New York State Department of Agriculture and Markets.

Cover photograph of Orange County onion field by James Bleecker (www.JamesBleecker.com)
Back cover photographs (top) by Jim Newton

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INTRODUCTION

PURPOSE

The Hudson River Valley represents an economic mix of industrial, commercial, recreational and residential uses. Agriculture is an important economic and cultural component within this patchwork of uses. During the last forty years however, agriculture has undergone a slow transition caused in part by development radiating from nearby metropolitan centers such as Albany and New York City. The result is a fundamentally different agricultural economy serving a very different community base. In recent years, the noticeable effect of this transition has caused many to question the future of agriculture in the valley.

American Farmland Trust commissioned ACDS to conduct an assessment of agricultural economic development conditions in the valley. The study aimed to understand how current local conditions impact agriculture, and how those forces may affect the future of agriculture. ACDS was further commissioned to translate the results of the assessment into a series of structural and programmatic recommendations that will improve agriculture's integration with the broader economy while supporting overall industry development.

METHODOLOGY

ACDS used a time proven, iterative process for conducting this Agricultural Economic Development Assessment. The process included the following steps:

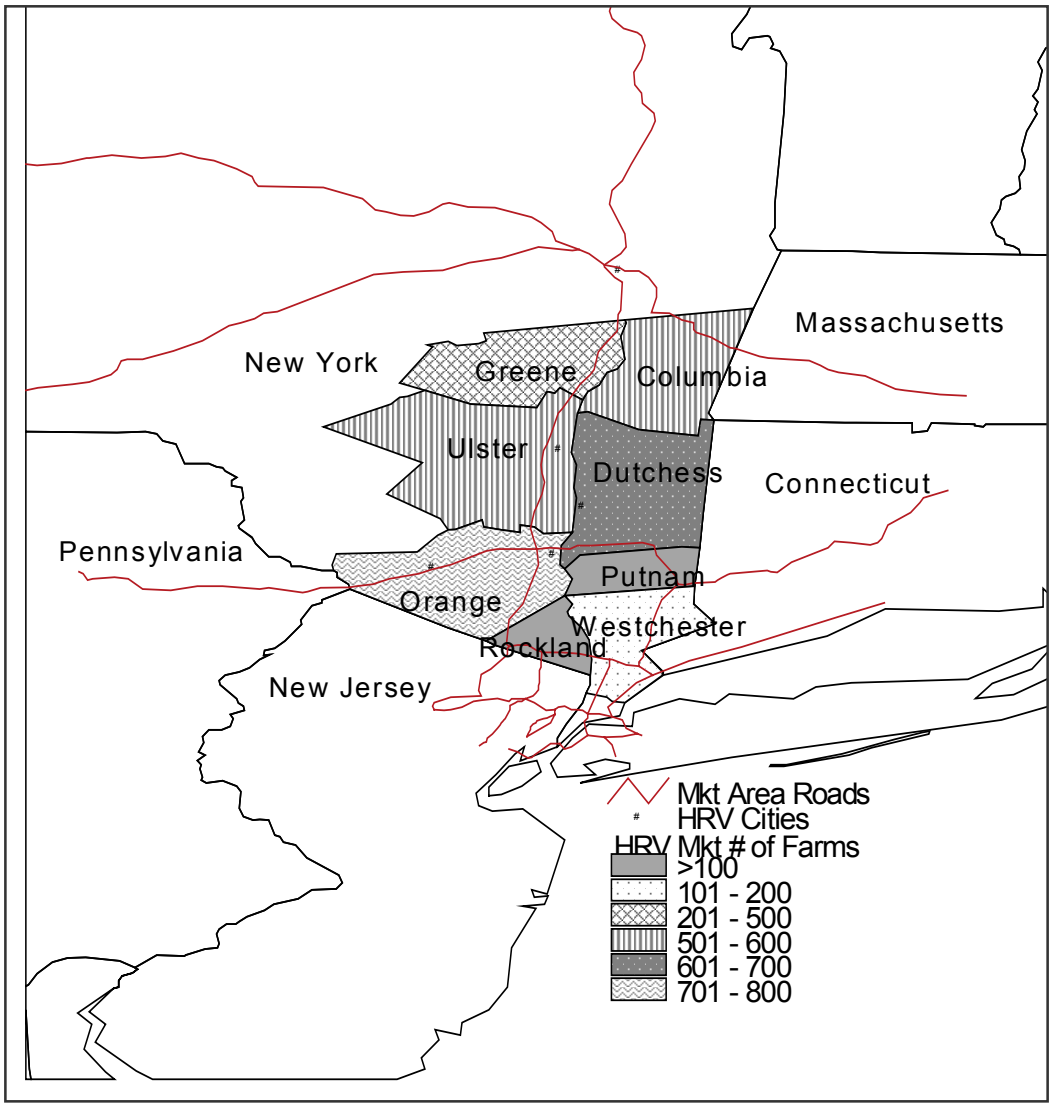
1. Development of a Regional Agricultural Economic Impact Statement using secondary data sources.
2. On-the-ground analysis of local industry and community conditions using primary research techniques such as personal interviews and focus groups. For this project, over 100 interviews were conducted with agribusiness owners, community leaders and other stakeholders.
3. Refined analysis of critical local issues utilizing subject area experts and targeted secondary data resources.

The outcome of this analysis was an in-depth understanding of both industry needs and community considerations. With this level of detailed analysis, the ACDS project team is able to create structural and programmatic responses to industry needs that fit within a community context—the essence of economic development.

MARKET AREA

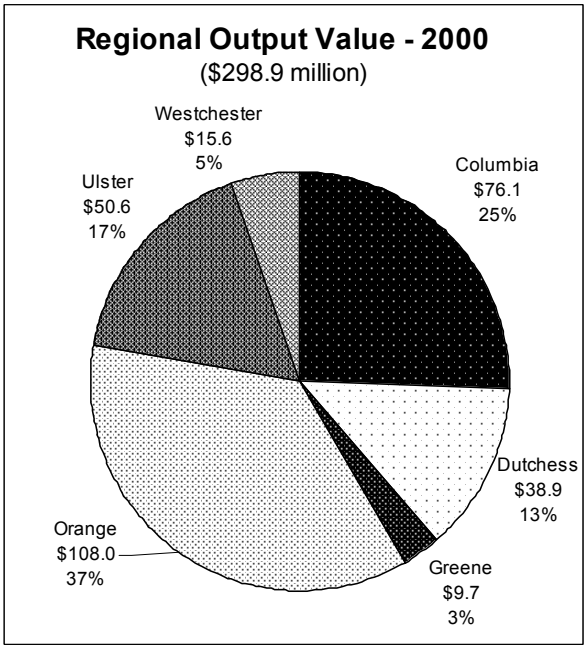
For the purposes of this study, the Hudson River Valley was defined as those counties bordering the Hudson River south of the city of Albany. To further refine the study area, the ACDS project team, in consultation with American Farmland Trust, decided to focus on counties with more than 5,000 acres of agricultural land and more than $5 million in agricultural sales.

As a result, the market area for this study included the counties of Columbia, Dutchess, Greene, Orange, Ulster and Westchester. Putnam County (approximately 3,000 acres of agricultural land and $2.9 million in sales) and Rockland County (approximately 500 acres of agricultural land and $2.3 million in sales) were not included in the study area.



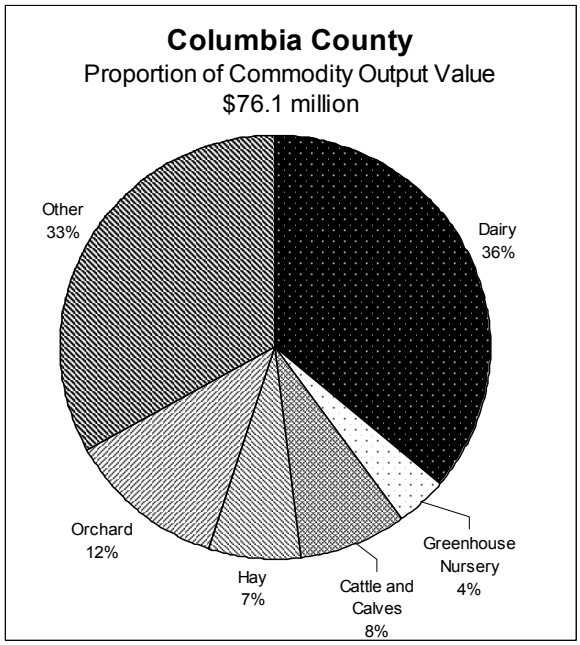
COUNTY SUMMARIES

This analysis examines agricultural economic trends and impacts in six counties of the region: Columbia, Greene, Dutchess, Orange, Ulster and Westchester. In general, four of the counties (all but Ulster and Westchester) have dominant dairy sectors—albeit declining. Most of these counties are experiencing some growth in the vegetable and nursery/greenhouse sectors to offset losses in dairy. Ulster County, on the other hand, is dominated by orchard crops, vegetables and nursery/greenhouse products. The agricultural industry in Westchester County, also strong in the nursery/greenhouse sector, is dominated by the value of its horse sector. In the year 2000, the six-county region produced $298.9 million in commodity value on roughly 441,000 acres with 2,477 farm enterprises (source: *Bureau of Economic Analysis, Regional Economic Information System*.)



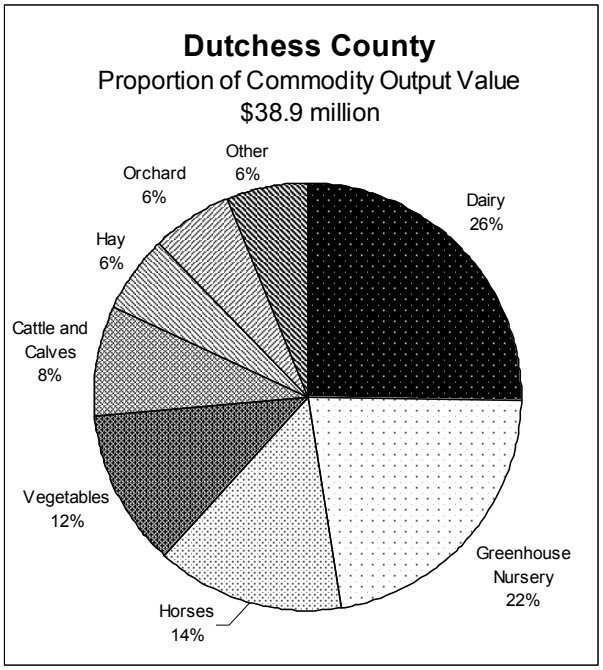
COLUMBIA COUNTY

Dominated by the dairy sector and its related sectors of feed and cattle, the county's farm economy produced $76.1 million in output value in 2000, the second highest in the region. Amidst a general decline in dairy production in recent years, the dairy farms that have stayed have tended to become larger and more profitable. Six percent of the farms (28) account for over two-thirds of the economic output of the agricultural industry. However, external factors affecting dairy farming in the east are expected to cause further adjustments to the industry. No single smaller agricultural sector, at current growth rates, seems poised to absorb any future losses in the dairy and feed sectors.



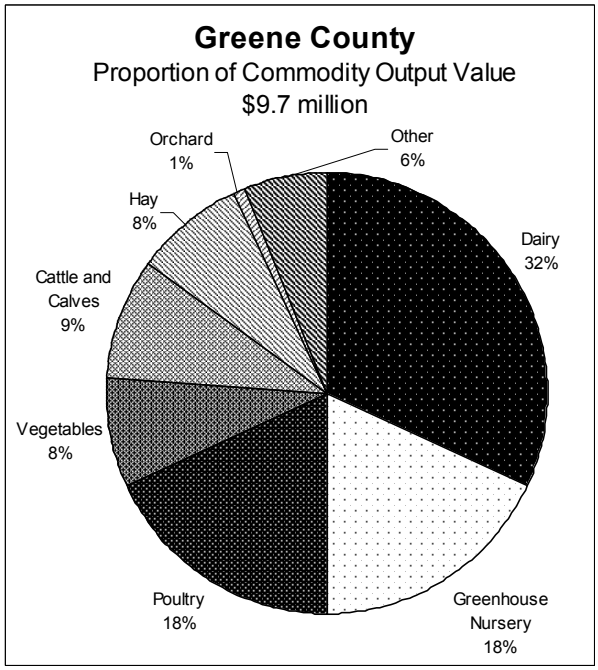
DUTCHESS COUNTY

Dutchess County has also been dominated, historically, by dairy farming. Dairy products remain its top revenue commodity, helping to generate $38.9 million in output value in 2000. In the last 15 years, however, growth in the county's vegetable and greenhouse/nursery sectors have helped to offset lost revenues in the dairy and feed sectors. Hay production has recovered in recent years with the growth of the horse sector. The rise of vegetables and greenhouse/nursery sectors, along with a sizable horse and orchard industry, suggest that the county's agricultural base is diversified.



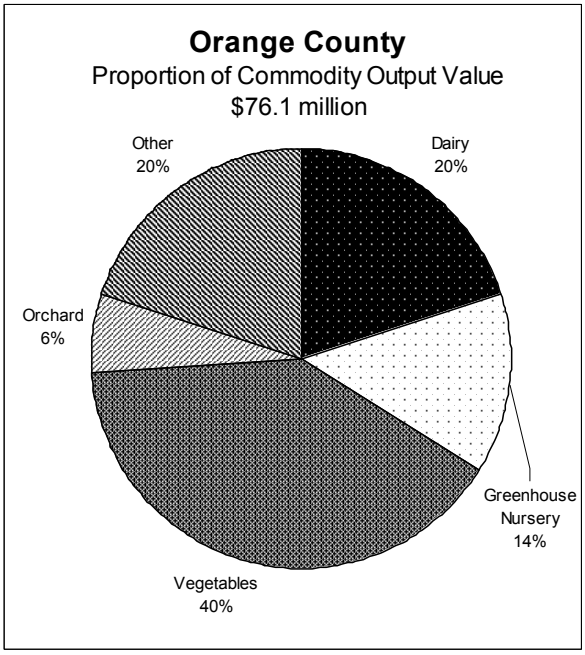
GREENE COUNTY

Another dairy farming county, Greene, has suffered losses to the industry due to regional and national trends. The county produced $9.7 million in output value in 2000, the lowest in the region. Vegetables and nursery/greenhouse sectors have shown solid growth to help offset some of the losses in dairy. The newer sectors use less land to create higher values. These new farms tend to be smaller in size than the dairy farms they replaced, leaving sizable losses in farmland in the county.



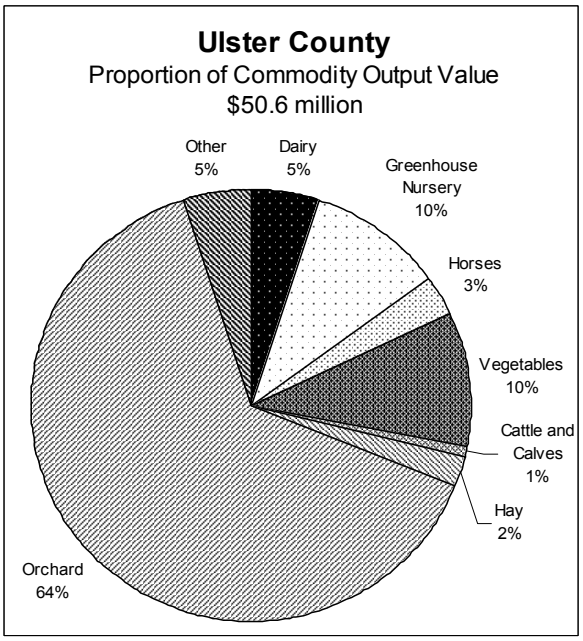
ORANGE COUNTY

With the highest output value in the region ($108 million in 2000), Orange County represents a local farm economy that has transformed from a dairy-commodity industry built on low-valued production to an industry that capitalizes on its urbanization by producing high valued agricultural products. In the last 15 years, growth in Orange County's vegetable and nursery/greenhouse sectors have more than offset the declines experienced in the dairy and feed sectors. The vegetable sector is now the largest segment of the farm economy and accounts for 40 percent of the agricultural output. However, some significant swings in the sector's output in the last decade suggest some instability.



ULSTER COUNTY

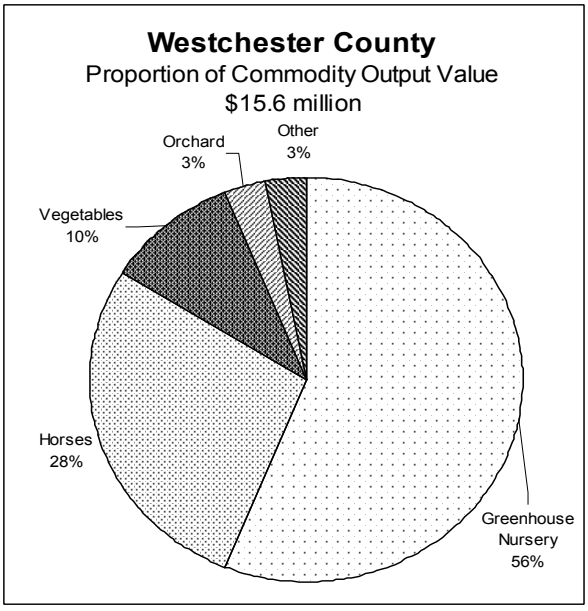
Despite a weakening trend in output value ($51.1 million in 2000 from $63.7 million in 1991), the slowdown masks important, positive changes happening in Ulster County. Over the last decade, there has been solid growth in output of orchard crops, vegetables and greenhouse/nursery crops. In 1987, these three crops accounted for 50 percent of the county's farm output. In 2000, they accounted for more than 85 percent.



However, there has been little or no corresponding increase in the county's wholesale trade and manufacturing sector related to these crops, which could limit future growth in the farm sector if not addressed.

WESTCHESTER COUNTY

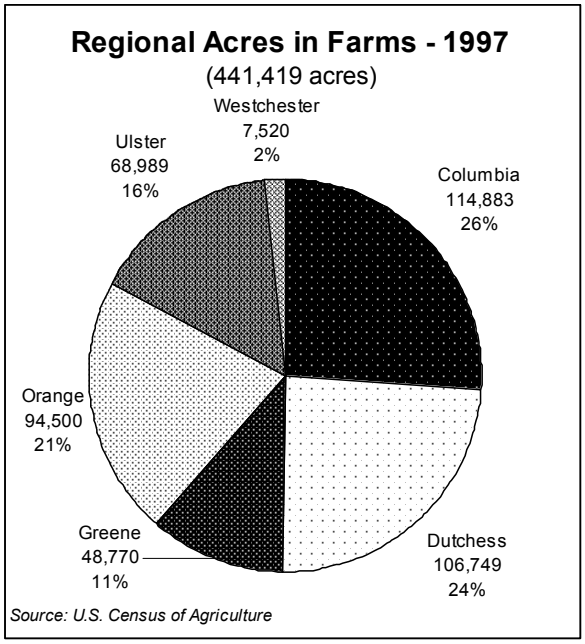
Westchester County's agricultural output was valued at $15.6 million in 2000. Farming there functions in a highly urbanized area where high land costs prevent the growth of low-value, traditional grain and livestock products. Not surprisingly, the greenhouse/nursery sector accounts for 56 percent of the county's agricultural output. This sector underwent a significant structural change from 1992 to 1997, as crops grown on open land transitioned to bedding and garden plants grown in greenhouses. Growth in vegetable production has been matched by an increase in vegetable wholesale trade and in the number of fruit and vegetable retail markets. The horse industry, the only economically significant component of the county's livestock sector, has expanded in recent years due to the sale of high-value horses.

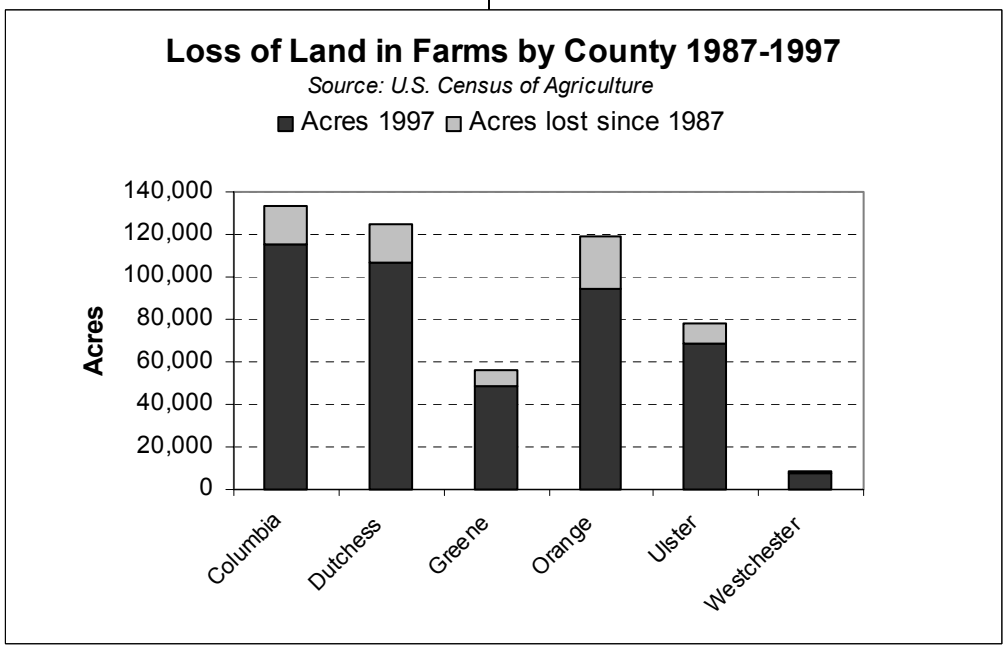


LAND IN FARMS

In 1997, the region had 441,419 acres of land in farms. All counties lost agricultural land between 1987 and 1997—ranging from 20 percent in Orange County to 12 percent in Ulster and Westchester counties. In total, 78,802 acres (18 percent of total land in farms) were lost to farming by conversion to other uses in that timeframe. This was accompanied by the loss of 522 farm enterprises (17 percent of total farms) in the region. The chart shows the relative amount of farmland in each county and their respective losses of acreage.

To varying degrees, each county throughout the region is experiencing a transition from relatively low-value commodities (dairy, feed, and hay), which require large acreages to be viable, to high-value but less land-intensive sectors. One result is that the amount of land in farms does not necessarily correspond directly to the amount of output value produced by a particular county.

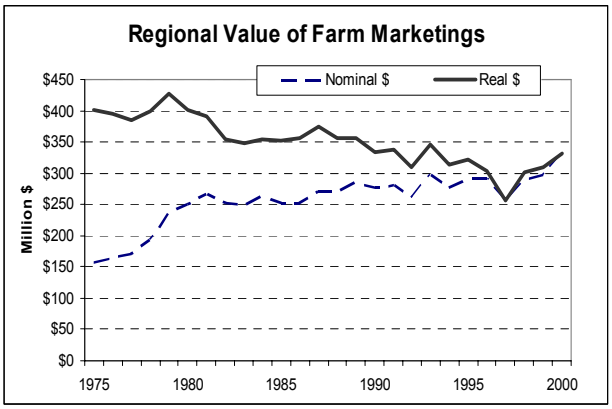


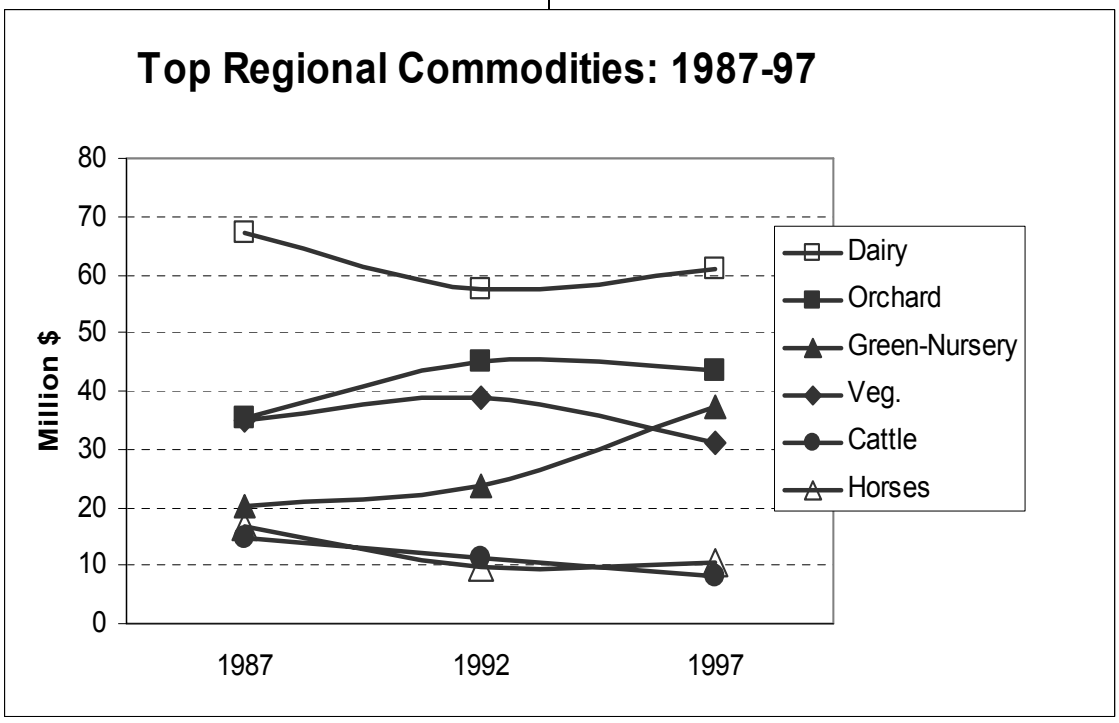


AGRICULTURAL COMMODITY OUTPUT

Since the mid 1970s, the region's agricultural output value has increased in value from $150 million to nearly $300 million in 2000, although in inflation-adjusted dollars (real dollars), the region's value fell slightly. Much of the growth in the nominal value of agricultural output occurred in the crop sector, especially vegetables and greenhouse/nursery crops that helped to offset declines in dairy production values.

In spite of declines in the dairy sector, in 1997 it remained the single dominant commodity in the region with $60.9 million dollars in output value, followed closely by orchard crops, greenhouse/nursery and vegetables production. The value of horses produced in the region now surpasses the value of cattle.



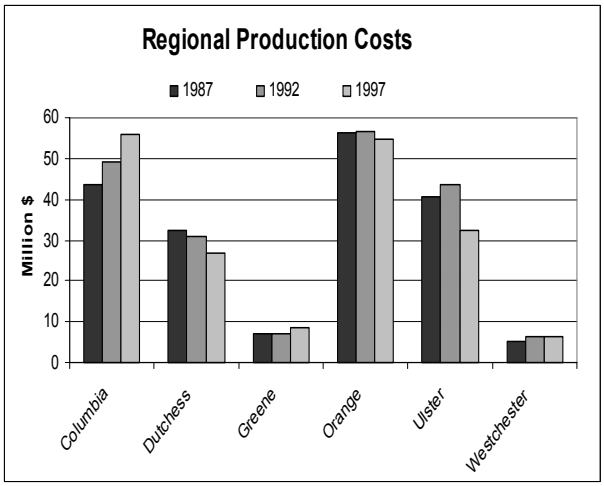


FARM COSTS AND RETURNS

Farm production expenses include agricultural chemicals, energy (electricity and petroleum), feed, fertilizer, labor, equipment maintenance, seeds, plants and trees, and property taxes. The overall total dollars spent for inputs in 1997 was $184.97 million. This was essentially the same amount spent in 1987. However, these expenses were incurred on 78,802 less acres and 522 fewer farms.

Although the regional numbers remained flat, individual counties saw increases and decreases and localized shifts in their agricultural sectors. As sectors expand and contract, so too do their differential production input needs. For example, in Columbia County, the increase in size of remaining dairy operations was accompanied by increased labor costs and energy costs. In Dutchess, Orange, Ulster, and Westchester counties, the largest increase in farm costs from 1987-1997 was for seeds, bulbs, plants and trees, reflecting the growth of the greenhouse/nursery sectors in those counties. In all counties except Greene, property taxes increased significantly from 23 percent in Orange County to 74 percent in Dutchess County during that time period.

Regional net farm returns (product sales minus production expenses) was $48.41 million in 1997, up 12 percent from 1987. However, the bottom-line profitability varied greatly across the region. Green County saw losses overall while Columbia and Westchester counties saw enormous increases in net returns.



In some cases, the improved profit situation may be attributable to better production practices of individual farms or to higher prices of select commodities, but it is also likely driven by the elimination of unprofitable farms over this time period. Still, only Columbia and Orange counties show more than half of their farms making a profit.

Regional Farm Profitability 1997

	Columbia	*Dutchess*	*Greene*	*Orange*	*Ulster*	*Westchester*
Total Farm Net Returns	$18.80 mil	$3.49 mil	$.20 mil	$12.8 mil	$8.93 mil	$4.19 mil
% change since 1987	65%	-22%	-119%	-17%	-4%	245%
Avg.Net-Returns per Farm	$40,264	$6,440	($819)	$20,346	$21,662	$46,095
% change since 1987	100%	-12%	-122%	4%	25%	355%
Farms with Net-Gains	59%	36%	37%	50%	42%	48%

Source: 1997 Census of Agriculture

ECONOMIC IMPACT OF THE REGION'S AGRICULTURAL SECTOR

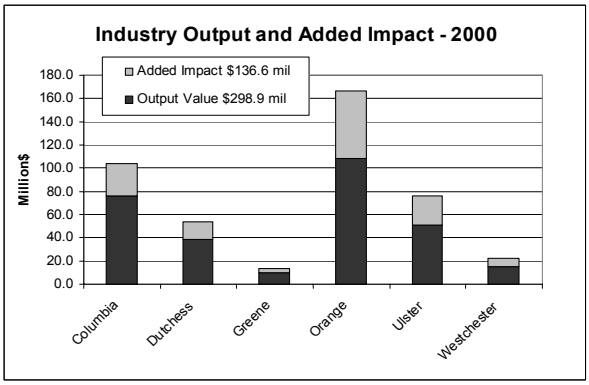
Quantifying the economic impact of the agricultural sector is important for allocating investment resources, whether from the public or private sectors. There are two common methods for measuring the impact of any sector of the economy. The first is a direct measure of the value of the output of the sector. In 2000, agriculture in all the counties in the region produced $298.3 million in product value.

However, economic value does not exist in a vacuum. There are upstream effects: the goods, services and labor from within the economy used to produce the output. And there are downstream effects: the transformation of the output by other sectors of the economy, thus stimulating more business activity. Therefore, an output *multiplier* is used to measure the total effect of agriculture on the economy. These multipliers vary by agricultural sector (i.e., dairy, greenhouse/nursery, vegetables, etc.) and by local economies.

The major commodities grown in the region—vegetables, greenhouse/nursery and orchard crops—contribute more to the local economy (higher multipliers than average) because they are relatively labor intensive, which stimulates economic activity in other sectors. Dairy, in contrast, has the lowest output multiplier, because its use of labor is less relative to other input costs such as equipment and feed, which may not be produced locally.

The chart on this page shows the direct output value of each county relative to one another, as well as the multiplier effect of their respective mix of agricultural sectors.

The average multiplier across the region for agriculture generally was 1.43 in 1997. This means that every dollar of total farm output led to an additional 43 cents in economic activity in other sectors of the local economy. So, for the region as a whole, the $298.3 million in agricultural production generated an additional $136.6 million of economic activity in other sectors. In total, the region generated $434.9 million in agricultural production and added impact (source: Minnesota Implan Group, 2000).



AGRICULTURAL SERVICE, WHOLESALE AND RETAIL SECTORS

The economic impact of agriculture translates into important connections between the farm sector and other sectors of the local economies. The Hudson Valley region is experiencing shifts as some farm sectors decline and others grow. This has important implications for input suppliers and agricultural service firms, as well as the wholesale and retail trade.

Service related firms consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies. Regionwide, the number of firms providing these services dropped 9 percent. However farm supplies saw a precipitous decline of 58 percent. The slight increase in veterinary services may be a function of non-farm pet services with population increases rather than service to the farm sector where livestock numbers have declined.

Food manufacturing activity in the region reflects the shifts seen in the agricultural sectors. The number of dairy product manufacturing firms dropped by half, from eight to four. Fruit and vegetable manufacturing firms declined as well but there have been some internal shifts. For example, in keeping with the growth of its vegetable sector, Orange County added three such manufacturing firms to its existing five for the most in the region by far.

Similar trends hold true for wholesale trade: the number of firms dealing in dairy products and farm product raw materials have declined significantly between 1993 and 2000 while the number of flower and nursery stock and fresh fruit and vegetable wholesalers has increased.

In the retail trade, the already numerous nursery/garden centers and landscapers saw modest declines in that time period and direct fruit and markets grew steadily. Such marketplaces may provide better access to local producers than grocery chains.

Number of Firms in Related Ag Sectors in Region

Sector	1993	2000	%Change
SERVICES			
Agricultural Support	89	75	-16%
Veterinary	150	172	15%
Farm Supplies	59	25	-58%
MANUFACTURING			
Fruit and Vegetable	18	15	-17%
Livestock Production	1	1	0%
Dairy Products	8	4	-50%
WHOLESALE			
Dairy Products	14	9	-36%
Flower/Nursery Stock	27	30	11%
Fresh Fruit & Vegetables	32	48	50%
Farm Product Raw Material	21	13	-38%
RETAIL			
Nursery/Garden Centers	102	87	-15%
Landscaping	859	802	-7%
Fruit/Vegetable Markets	29	48	66%

Source: County Business Patterns

COMPETITIVE ASSESSMENT

This Hudson Valley agricultural economic development competitive assessment is largely motivated by the primary data gathering efforts of the project. To the best ability of the study team, the following analysis integrates the views and comments of the more than 100 individuals who were interviewed as part of this process.

Where practical, the data gathered through the interview process was verified against independent sources. Conclusions presented in this section of the report should be considered a regional "self-analysis" of current economic and community conditions.

The competitive assessment briefly describes key conditions/elements affecting the ultimate success of the agricultural industry in the region. These conditions are then assessed as strengths, weaknesses or mixed factors in terms of their current and potential contribution to the economic health of the industry as follows:

- *Strengths* are those factors that contribute to growth and stability of the agricultural economy, as measured by profit making opportunity at the farm level and public benefit such as tax base enhancement, job creation and quality of life improvement at the community level.

- *Mixed* results are those factors that have significant offsetting positive and negative qualities or are factors that may be indeterminate in their potential impact due to their current transitional nature.

- *Weaknesses* are those factors that present challenges to the development of the agricultural industry or act as impediments to expanding the public benefits related to agriculture.

A summary of these findings can be found below:

Strengths

+ Industry Health
+ Market Access
+ Innovation and Entrepreneurship
+ Market Demographics
+ Regional Recreation and Tourism Economy

Mixed

≅ Environmental Assets
≅ Financial Capital
≅ Land Tenure
≅ Labor Force
≅ Stakeholder and Public Support

Weaknesses

– Development Patterns
– Service and Supply Networks
– Cost of Doing Business
– Regional Cooperation
– Investment in the Future

When reviewing this document, one should keep in mind that these conditions represent only a snapshot in time. Because markets and economies are highly dynamic, specific conditions may change.

INDUSTRY HEALTH

What is it?

The strength of an agricultural industry sector is usually measured by evidence of sustained growth in sector sales, acreage or output. Identifying such sectors in an area with so much potential for conversion to non-agricultural uses presents a challenge. For the purposes of this study, those sectors currently able to maintain or increase sales base or production—despite the rapidly declining base of agricultural land—qualify as relatively strong industry sectors.

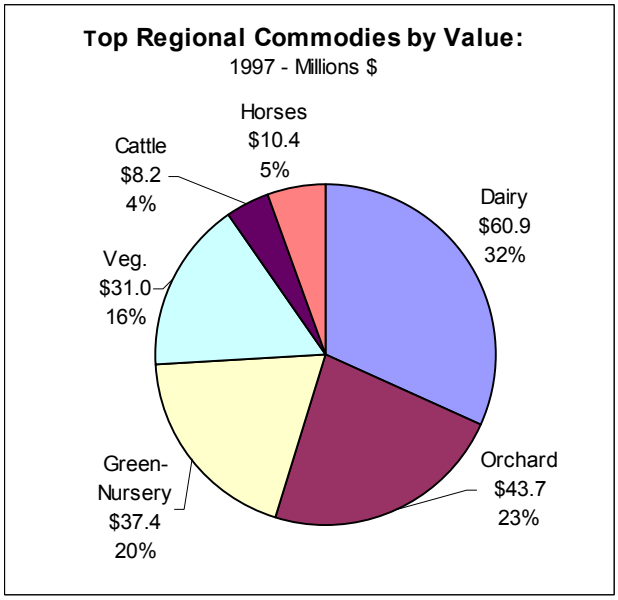
Why is it Important?

Having a diversified agricultural base, especially one that contains one or more sectors that are stable or growing, supports a region's ability to weather market cycles and provides production opportunities for new, expanding and transitioning farmers. It is also a likely indicator that some base level of agricultural infrastructure will remain in the region.

Regional Considerations

Despite the fact that agriculture is generally considered in decline in the Hudson Valley region, there are many positive signs of industry health, beginning with the diversity of the regional agricultural economy. The Hudson River Valley boasts a diverse agricultural industry, which helps buffer it from extreme shocks in any given sector.

By value of output, the region's top commodity sectors include dairy (1), orchard crops (2), greenhouse/nursery (3) and vegetables (4). Other regionally significant sectors include livestock and equine industries. (Note: A more complete analysis of each sector by county can be found in the appendices.) Each industry has its own unique characteristics, often varying by county, as is described in the next column.



Dairy: Despite declines in the number of dairies operating in the region, the industry remains a major force in agriculture and accounts for a large portion of the agricultural land base. The land base devoted to support operations for dairies anchors corn and small grain production as well as much of the region's hay production. In addition, the presence of regional dairies is a primary reason for the remaining feed and livestock marketing infrastructure. Based on the project team's interviews, many regional dairies are challenged by low milk prices but find themselves operating at better efficiencies and in many cases are operating profitably. The industry is rapidly bifurcating as small operations (less than 100 head) and larger operations (over 400 head) seem to be stabilizing. Pushing greater market innovation seems to be a hallmark of the remaining producers as new programs are being launched, such as school vending machines and direct market bottling and delivery.

Orchard Crops: Several years of poor weather combined with depressed markets and the extended storage life of fruit have severely impacted the local orchard industry. Because of

this, the industry is in transition as the traditionally wholesale, fresh market oriented growers seek new opportunities. Bright spots are evident in the industry in several areas including value-added processing, direct market sales, agricultural entertainment and the expansion of sales alliances that extend local grower market participation beyond the Hudson Valley apple deal. In some areas of the region, investment in growing stock is evident. Like dairy, the region's orchards are a fixture of the landscape and a tourist attraction in the fall season.

Greenhouse and Nursery: Greenhouse and nursery production is increasing almost across the board. It is one of the few agricultural sectors that consistently demonstrate compatibility with urban/suburban uses and benefit from direct access to large metropolitan markets. The latter is in large part due to the perishable nature of the products and the attendant transportation challenges associated with many horticultural products. Despite challenges from other areas such as Canada, this sector is one of the few where the project team found active relocation of producers into the Hudson River Valley region.

Vegetable Production: The "Black Dirt" region of Orange County is the anchor for the region's wholesale produce business and remains a nationally prominent player in the onion business. In addition, there are other clusters of upland vegetable production in the region including prominent sweet corn production in Ulster County and market vegetable production in Dutchess and Columbia counties. While activity in this sector is small relative to dairy output, it is vibrant. In the case of small-scale consumer oriented production—including Community Supported Agriculture (CSA), market gardening and farm based retailing—vegetable production for direct market sales seems to be increasing.

Equine: Because the equine industry straddles the boundaries of agriculture, recreation, sport and hobby, it is not well understood and its economic impact is poorly reported throughout the Hudson River Valley. Nonetheless, this is a critical agricultural sector from investment, output, land-use and infrastructure perspectives. Horse operations have a direct and immediate impact on tourism, create scenic view sheds and support critical infrastructure such as large animal veterinary services, farm supply and feed dealers. Horse operations also anchor support production of hay and help to stabilize some of the production base idled by the declining number of dairy operations.

Livestock: Livestock producers constitute a very small sector in the Hudson River Valley, but are likely to rise in importance with the influx of new farmers and new market opportunities. Such changes are already evident in the rise of small rumen flocks in many parts of the region as small producers attempt to enter niche markets such as Kosher and H'Allal.

Summary

The project team finds that agriculture in the Hudson River Valley has consistently demonstrated its health through the resiliency and adaptive behavior of its entrepreneurs in the face of real challenges. While agriculture is likely to continue in the region, changes in demographics and development patterns will alter its distribution across the above sectors and will likely introduce new sectors to the region over time. The entrepreneurs who work within these sectors will continue to dictate the fate of agriculture.

MARKET ACCESS

What is it?

Market access refers to the ability to reach the real or potential marketplace for farm or agribusiness products. It assumes a fit between what is produced and what consumers want to buy, but it is essentially the system of connections from farmer to consumer. An area with good market access has a mixture of market outlets from retail to wholesale and the means to supply them.

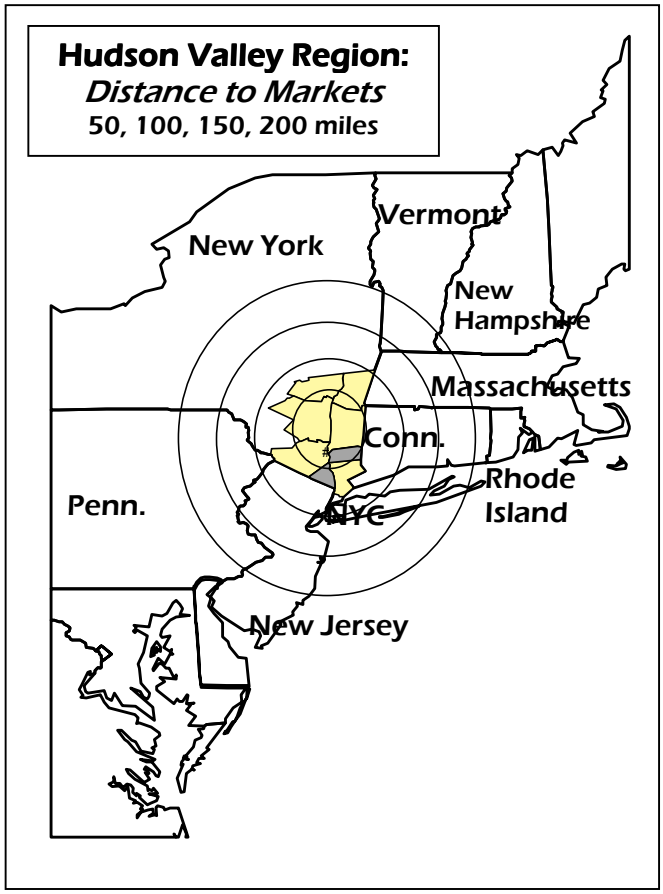
Why is this Important?

A large production area does not necessarily have good market access if there is no efficient system to get farm products to the consumers. The more effective (for both cost and timeliness) the connection is, the more competitive the products can be. A farm operator, like any business owner, benefits from easy access to markets, but the perishable nature of most agricultural products presents an added challenge.

Regional Considerations

The region is fortunate to be both geographically close to large population centers (with favorable demographic conditions) and to have in place a solid marketing infrastructure. In the Hudson Valley, there exists a large network of wholesale and retail outlets for agricultural products focused on delivering food, fiber, entertainment and horticultural products to the nearly 31 million residents who live within a 200 mile radius of the geographic center of the region. This market area represents one of the most concentrated markets within the United States. The crown jewel of this market is the New York City metropolitan area, one of the richest and most diverse in the world.

Due to the size and variety of New York's market, there are a myriad of marketing systems within which local farmers may choose to operate. In the traditional market sense, the Hunt's Point Market in the Bronx provides the nation's largest single market outlet for fruits, vegetables and meats in the United States. Purveyors of this market are still served by many regional farmers, and they often serve the role of wholesalers of commodity crops to other wholesalers, institutions and large accounts. Due to the size of these operations, farmers must often meet stringent volume, delivery and quality standards, meaning that Hunt's Point and many similar market outlets are not suited to many regional farms.



Opportunities for direct marketing in the region also abound especially on the wholesale side. Just as there are many large accounts to be served in

Traditional Wholesale Firms	NYC/CMSA	HV Region
Manufacturing		
Food manufacturing	950	247
Dairy Product Manufacturing	99	30
Meat/Poultry Packing Plants	19	6
Vegetable Processing	44	22
Wholesaling		
Groceries	977	130
Packaged Frozen Foods	104	22
Meats and Meat Products	374	62
Fresh Fruit and Vegetables	386	65
Other Food Wholesalers	2,010	397

Direct Market Wholesale Opportunities	NYC/CMSA	HV Region
Fruit/Vegetable		
Restaurants *(Ethnic, Independent, Health)*	3507	745
Fruit/Vegetable Markets	680	146
Health Food & Gourmet Retailers	760	218
Grocery Stores *(Independents, Co-ops, Small Chains)*	4958	854
Meat Markets	818	135
Nursery, Greenhouse, Horticulture		
Landscapers *(Installers & Designer)*	1355	1588
Garden Centers *(Primarily Independent)*	125	152
Florists	1307	448

Source: Dun & Bradstreet, I-Market - 2002
Note: NYC, CMSA represents the New York City Consolidated

the region, there are even more small accounts such as specialty food purveyors, restaurants, gourmet food stores, Greenmarkets and natural food stores.

Because these accounts often require a great deal of special attention, including more frequent or smaller deliveries and specialized products, they are often better served by smaller farms. Also important in the direct marketing mix are the region's many roadside stands, Community Supported Agriculture (CSA) operations and farmers' markets.

The New York Metropolitan Market is one of the largest and most prized of all food markets in the United States. As such, the regional sales of agricultural products, especially commodity type products that transport well, are highly competitive. The challenge for local farmers is to stay one step ahead of competitors outside of the region by focusing on desirable niche markets, highly perishable products and balancing market demand (e.g., filling the gap in sweet corn or bean supplies while production is shifting from the Mid-Atlantic to Wisconsin).

INNOVATION AND ENTREPRENEURSHIP

What is it?

Innovation is the source of new ideas for (and improvements to) products, services and processes. Entrepreneurs are the risk-takers who build enterprises around such innovations.

Why is it important?

Farming in today's marketplace, especially in such a highly urbanized market as the Hudson River Valley, requires strong entrepreneurial skills and a constant source of process, product and service innovation to remain competitive. These elements are crucial to the success of farming in this environment. Given the relatively high cost of production in the Hudson Valley, growers rely on innovation and strong entrepreneurial skills to maintain market position.

Regional Considerations

Producers in markets like the New York metropolitan area often find themselves on the cutting edge of innovation. The southern portion of the Hudson Valley region (including Westchester County) has a history of agricultural innovation ranging from Henry A. Wallace, a pioneer in plant genetics, to Cabbage Hill Farm, a leader in small scale integrated agricultural systems. The current crop of agricultural innovators seem driven to develop new marketing tools and to design sustainable, high-intensity production systems that achieve higher production per square foot over a longer growing season than previously possible.

Communities with a strong history of converting innovation to economic return also support entrepreneurs as part of their culture. Entrepreneurs, not the innovations themselves, build businesses and create employment and wealth generation opportunities. However, entrepreneurs are not born. They are trained and supported by their communities. There is encouraging evidence of such support in the Hudson Valley region.

Numerous organizations are increasing the agricultural industry's access to innovation and entrepreneurial culture. Agencies such as the Columbia-Hudson Partnership offer technical assistance and funding to agricultural entrepreneurs, most recently to two food processors. In Orange County, local professional service providers have been actively engaged with new and expanding businesses to improve the competitive positioning of the area relative to business attraction. Outside of agriculture, the regional network of service professionals in finance, accounting, and legal professions to support entrepreneurial companies is equal to any place in the United States.

Sample of Product, Process, and Marketing Innovations in the Region

Cattle Embryo Transfer
Integrated Farm to Restaurant System
Low Cost Recirculating Aquaculture Systems
Sod Processing/Washing Equipment
Fruit Brandy Processing
Variable Speed Dairy Pumps
Milk Vending Machines
Hard Fruit Ciders
Mini Dairy - Product Development
Chinese Medical Herb Products
Aseptically Packaged Single Serve Fruit Products
Large Scale Sheep Dairy - Cheese Making
Marketing to NYC Greenmarkets

Case Study: West Virginia Value-Added Agriculture Program

To increase the state's production of value-added agricultural products and to enhance rural entrepreneurship, West Virginia created a program that has been very successful in linking producers to markets, services providers and related businesses.

Initially administered through the state Department of Agriculture and regional Resource Conservation and Development Councils, the program began with two part-time professionals who delivered one-on-one counseling services to value-added producers. The program's employees, hired for their industry experience and qualifications, assisted producers with a range of services from locating processing/production facilities to marketing and distribution. As the program took hold and the number of participating agricultural businesses increased (from approximately 20 at inception to now over 300), the state transitioned the program from a government-supported initiative to an industry-based association called the West Virginia Specialty Foods Association.

The West Virginia Specialty Foods Association was created to be a nonprofit cooperative entity— made up of various organizations and vendors in West Virginia, including the West Virginia Department of Agriculture, the Mountain Aquaculture and Producers Association, the Center for Sustainable Resources, Inc. and others—to promote the marketing of West Virginia's specialty foods, crops and related products. The program focuses on the following nineteen product categories: aquaculture fish; aquaculture plants; arts and crafts; eggs and produce; farmers' markets; honey and syrup; herbs and spices; jams and jellies; lotions and scents; mushrooms and ramps; nuts and berries; organic foods; plants and trees; resources; salsa and mixes; seed and rootstock; specialty meats and poultry; water and wine, and wood products.

The West Virginia Specialty Foods Association focuses much of its business support programming on market access and marketing support to specialty processors. The association works to place local products in the market through organizations such as the state-owned Tamarack, a 59,000 square ft. retail outlet and gallery with products from over 2000 juried artists, craftsman, and processors. Tamarack dedicates floor space to displaying and selling locally produced furniture, cabinetry and other wood products as well as West Virginia specialty foods. The West Virginia Specialty Foods Association, the Department of Agriculture and Tamarack officials work with juried vendors to hone marketing messages, refine packaging and reach wholesale level buyers.

The association also produces one of the most comprehensive listings of West Virginia products—enabling producers, wholesalers and retailers to locate hard-to-find mountain-grown or crafted products instantly. In addition, the association's extensive collaboration with the Center for Sustainable Resources allows it to conduct various regional workshops and develop community networks that keep producers updated on market opportunities and allow them to access technical assistance.

Contact: West Virginia Department of Agriculture; 1900 Kanawha Boulevard; East Charleston, West Virginia 25305; (304) 558-3200.

MARKET DEMOGRAPHICS

What is it?

Market demographics refer to the characteristics of the real and potential consumers in a market area. Census data and other sources describe groups of people by their numbers, geographic distribution, ages, income levels, family size, ethnicity, places of employments, mobility, buying habits, etc.

Why is it important?

Demographic considerations are critical factors in marketing any product because distinct population groups have different consumption patterns. Even for a commodity as basic as food, ethnicity and income levels figure prominently in making a fit between consumer preferences and what products are grown and how they are processed. For instance, many naturalized Asian ethnic groups are known to have strong preferences for convenience foods, while Hispanic populations show a distinct preference for raw foods.

Regional Considerations

The counties outlined for inclusion in this study represent a total population base of 1,834,014 or .65 percent of the U.S. population. Approximately 44 percent of this population falls between the ages of 25 and 54 and includes many first and second generation immigrants. While the market area is large, it is dwarfed by the New York metropolitan market's population of 21,199,865.

The counties in the region contain a wide range of demographic characteristics, especially related to income levels. For example, the median household income in 1999 was $63,582 in Westchester County and $36,493 in Greene County. While individual counties historically have had fairly distinct demographic identities, regional growth trends are changing the make-up of the area. The overall trend is toward homogenization of the in-region market into a middle class, commuting workforce. Those in the northern market area are increasingly traveling to the Albany area for employment. Those in the south are going to the New York metropolitan area for work.

Median Family Income: 1999

Columbia	$41,915
Dutchess	$53,086
Greene	$36,493
Orange	$52,058
Ulster	$42,551
Westchester	$63,582

Source: 2000 US Population Census

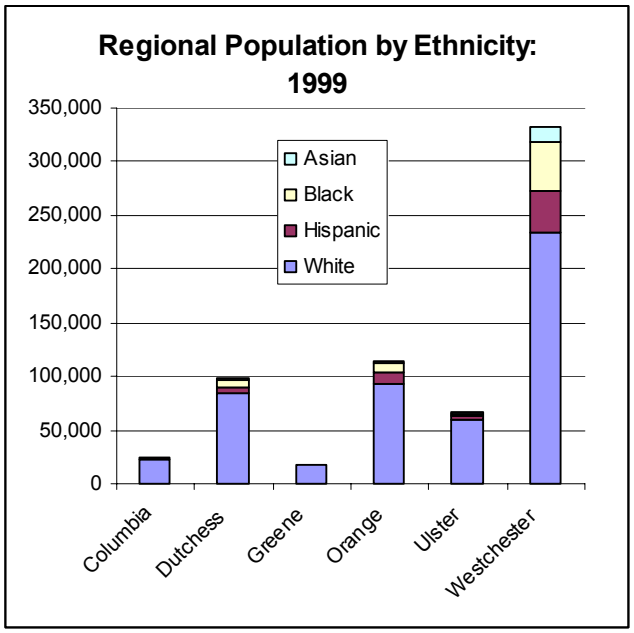
Looking beyond the actual borders of the region as defined for this study, the New York Consolidated Metropolitan Statistical Area (CMSA) presents one of the world's largest and wealthiest markets. Eight percent of the United States population lives within the New York, North Jersey and Connecticut consolidated metropolitan area, making it the largest metropolitan market in the United States. Seven counties in the New York Metropolitan Statistical Area rank among the top 20 jurisdictions nationally for per capita income: New York City (1), Fairfield, Connecticut (6), Somerset, New Jersey (7), Westchester, New York (10), Morris, New Jersey (11), Hunterdon, New Jersey (13), and Bergen County, New Jersey (15).

Median Income by Ethnicity: 1999

	Pop HV & NYC MSA	NYC MSA	New York State	United States
All Groups	8,401,402	$50,795	$43,393	$41,994
White	5,327,603	$61,044	$49,474	$45,367
Hispanic	1,180,706	$33,163	$30,499	$33,676
Black	1,310,228	$34,496	$31,364	$29,423
Asian	458,704	$54,548	$45,402	$51,908

In addition to its high wealth, the NYMSA market area supports a racially and ethnically diverse population that includes large Hispanic/Latino, Asian, African, East European, Mediterranean, Russian and West Indian populations. In fact, of the 109 ancestries reported by the United States Census Bureau, the New York Metropolitan Market supports 10 percent or more of the national population of 57 nationalities. These groups also demonstrate high income characteristics. The combined levels of ethnic diversity and high income create a positive market environment for farmers and food marketers within the region.

Combined, these demographic conditions create a full range of niche marketing opportunities for enterprising agricultural operations that can target product and service development to the needs of one or more of these discrete market segments.



Comparison: Regional and New York Consolidated Metropolitan Statistical Area (CMSA) Population by Ethnicity

Hudson Valley study area	17,649 2.7%	64,689 9.9%	56,672 8.7%	514,019 78.7%
New York CMSA	441,055 5.8%	1,245,539 16.3%	1,124,034 14.7%	4,813,584 63.1%
New York State	321,702 4.6%	1,031,866 14.8%	840,357 12.1%	4,763,779 68.5%
United States	3,129,127 3.0%	12,023,966 11.6%	9,272,610 9.0%	78,983,497 76.4%
	Asian	Black	Hispanic	White

REGIONAL RECREATION & TOURISM ECONOMY

What is it?

In rural areas, recreation and tourism often occurs amidst a backdrop of working landscapes. Sometimes agriculture interacts directly with the recreation and tourism industry, with u-pick crops, agri-tainment businesses, hunting and horse trails, for instance. More often, farms add ambiance to rural activities, providing a secondary public benefit beyond the production of food and plants.

Why is it important?

Making the connection between tourism and agriculture is important for a number of reasons. Agriculture gives tourism a big part of its "product." Tourism, in turn, can bring potential direct market consumers to farmers' doorsteps. Often, tourism capitalizes on the presence of working landscapes without any consideration for the industry that sustains them. The vistas are taken for granted and those planning for tourism assume that pastoral views will always be there. In some communities, tourism is a larger industry than agriculture, but nevertheless depends on farming. Linking the two industries will raise the profile of agriculture in the minds of citizens whose support is needed to protect the land base and support agricultural economic development initiatives.

Regional Considerations

Measuring the consumer dollars spent on tourism and recreational activities is complex, especially when agriculture is involved. With a thriving tourism industry in the Hudson River Valley, most communities understand that agriculture plays a key role in regional tourism, providing pastoral landscapes and scenic vistas. Agricultural events and recreational activities certainly abound in the region.

In 1999, more than $2.7 billion was spent in the Hudson Valley region for tourism, according to Marist College. This included lodging, transportation, food, entertainment and shopping. The industry employed 64,752 people in the region in 2001, accounting for a $1.2 billion payroll. Surveys indicate that those visiting the region increasingly tend to be families coming from farther away and staying longer.

Regional Agri-Tourism Venues

	On-Farm Venues	Farmers' Markets
Columbia	54	4
Dutchess	68	7
Greene	39	1
Orange	50	10
Ulster	71	3
Westchester	11	12
Total	293	37

Source: New York Department of Agriculture and Markets

The equine industry is one of the leading industry proponents of greater integration among recreation, tourism and agriculture. Currently, the equine industry supports a wide variety of tourist oriented activities, including ranked shows and events that draw international participation; several regional fox hunts; and a widely dispersed but underdeveloped/under-marketed trail system that takes advantage of the region's scenic vistas.

The produce industry, focused in large part on apple production, similarly takes advantage of weekend travelers through the use of roadside stands, farm markets, on-farm entertainment (hay rides, corn mazes, etc.) and fall festivals. Another important industry sector taking advantage of the relationship between tourism and agriculture is the wine industry, which is anchored by two wine trails that attract significant regional day trip and weekend travelers.

Sample of Regional Agri-Tourism Events

Shawangunk Wine Trail
Dutchess County Wine
Warwick Apple Festival
Huguenot Street Apple Festival
Autumn Fest at Fly Wheel Park
Cider Harvest Festival
Future Farmers of America Fall Festival
Grape Harvest Festival
Great Pumpkin Giveaway
New Paltz Harvest Festival
NYS Sheep and Wool Festival
Campbell Hall Pumpkin Festival
Wigsten's Farm Corn Maze

A 2003 report of the Glynwood Center Countryside Exchange, *The Agri-Tourism Exchange in the Hudson River Valley*, addressed some of the challenges of integrating both tourism and agriculture.

"*It is clear that the Hudson River Valley has physical and cultural attributes that are highly desirable for tourism. Farmers hope that agri-tourism attractions can be linked with existing tourist sites, but until now they have not been successful in connecting their businesses with the cultural heritage movement. Creating a vital agri-tourism industry in the Hudson River Valley will be dependent on and must be linked with other rural tourism activities….*

The potential for agri-tourism is far greater than just entertainment, although this aspect shouldn't be dismissed. Many of the farms that are already involved in agri-tourism are engaged with educational tours, pick-your-own, events, etc. These activities, however, are largely being used for direct marketing of local products rather than as income-generating tourism.

Most of the agri-tourism farms that the team visited are the result of enthusiasm and hard work on the part of individual farmers…. However, they all expressed a serious need for technical, financial and promotional support.

Many large landowners also expressed an interest in considering agri-tourism as an additional income source.... While agri-tourism may only provide a small piece of the answer for these farmers, it may make the difference between keeping the land in agriculture and selling it for development.

A region which supports rural tourism also indirectly supports the large landowners, even those who do not sell any products or services locally. Rural tourism educates the public about agriculture and food and an educated public is essential for any policy reform…."

Despite clear recognition that the tourism industry exists symbiotically with agriculture, it remains somewhat unclear if local farms and agribusinesses make the most of the opportunities. Certainly, commodity grain, livestock, and dairy operations are not generally direct beneficiaries of agri-tourism opportunities, despite the fact that these operations often make up the bulk of the visible working landscape.

ENVIRONMENTAL ASSETS

What is it?

Environmental assets are the components of the physical world that make agriculture possible: soils, water and climate. Of primary concern in this analysis is the *accessibility* of the core assets—soil and water—to the farmer.

Why is it important?

Good soils, adequate water and favorable climate are the essential prerequisites for an agricultural industry. Their characteristics and location largely determine the type of agriculture in an area. The better the natural conditions for agriculture, the less soil disturbance occurs, the fewer inputs (e.g., fertilizer, pesticides) are needed, and the least interventions are required (e.g., irrigation). Generally speaking, these translate into lower production costs and more environmentally benign farming. However, highly productive soils are often the most easily developable lands. In the Hudson River Valley, high land values, driven by developability and demand, add pressure for production agriculture to maximize its return on assets, both natural and capital.

Regional Considerations

The region has substantial soil resources but they are not uniformly distributed, nor are the best soils equally accessible for farming. Orange County, for example, contains a solid base of highly productive soils anchored by nearly 15,000 acres of muck soils. Dutchess, Columbia and Ulster counties also hold large contiguous blocks of prime farmland.

On the other hand, in the southern portion of the region (Putnam, Rockland, Westchester and parts of Dutchess and Orange Counties), much of the best soils have been made inaccessible to agriculture by development. Only the fertile muck land in Orange County (where development potential is limited naturally) and those prime soils throughout the region that are permanently protected by conservation easements are secured for future agricultural use.

Access to water is a highly localized issue, but water is generally considered abundant in the area. In the southern portion of the region, water resources are largely reserved for local and New York City public water systems and recreational use. As development increases and the region transitions to more water-intensive agriculture such as nursery/greenhouse, water may become a significant issue, creating competition for ground and surface water. Water may also be a limiting factor based on the availability of municipal and private water and sewer systems needed to support expanded food processing in the region.

The area's climate is generally supportive of a wide variety of crops and animal agriculture, although the season is relatively short compared to regional competitors on Long Island and in Southern New Jersey.

The land cover maps in Appendix 7 look at regional land "cover," or broad categories of land use. The presence of farming (cropland and pasture) indicates good soils still available for farming. Residential, commercial and recreational uses—developed lands—are lands no longer available for farming. The geographic distribution of all of these various land uses has ramifications both for potentially conflicting uses and for nearness of markets to production.

As evidenced above, access to good quality soil resources in economically viable farming units and access to water resources are critical success factors for the continuation of agriculture in the Hudson Valley. While these resources do exist in abundant supply, they are many areas fundamentally threatened by fragmentation of the resources.

FINANCIAL CAPITAL

What is it?

Financial capital drives operations and capital investments in agriculture. Most people think of capital in terms of debt instruments like mortgages, credit cards, operating loans, commercial credit and leases secured by a claim on assets. However, financial capital also includes equity investments made by venture capitalists and angel investors.

Why is it important?

Entrepreneurship depends on human and financial capital. Given the relatively low financial returns to agriculture in the last decade, it is important to consider the types of financial capital available to the industry. Traditional debt instruments—limiting because of the immediate cash flow needed to support debt service—are not flexible enough to accommodate the types of risks and cash flow patterns of inventive agricultural businesses. This stifles innovation on farms. Without "risk" capital, few farmers have the ability to capitalize expansions, develop new products or adopt new, unproven technology.

Regional Considerations

The region is well served by traditional lenders and trade credit. Low interest rates and a trend of wealthy individuals purchasing farmland have contributed to a supportive climate for growth in mortgage financing. Despite the availability of debt financing, the study team found few farmers willing to assume additional debt, given depressed farm-gate sales and the attendant cash flow impact. For those farms in a position to assume debt, the current loan terms are highly favorable. This means that additional debt sources to support agriculture are unlikely to have a significant impact on the future of agriculture.

2002 Second Quarter Venture Capital Funding

Region	Value	Deals
Upstate New York[1]	$ 33,000,000.00	4
New York Metro[1]	$ 399,000,000.00	58
United States	$4,465,345,000.00	699

[1] *No agriculturally related investments were reported for this quarter.*

Source: PriceWaterhouseCoopers

2002 First Pioneer Farm Credit Lending Activity

	All	Beginning	Young (< 35 Years Old)
Number of Loans	2,390	723	600
% of Loans	100%	30.3%	25.1%
Average Loan Size	$175,258	169,448	$148,167

Source: Farm Credit Association

Agriculture's financing challenge is finding a source of risk capital. Risk capital, an investment in the success or failure of the business, is rewarded through distribution of profits and enhancement of business value. New York is home to the world's best known financial industry and many high wealth individual investors, yet few of these investment dollars ever reach agriculture. This supposition is corroborated by quarterly MoneyTree reports produced by PriceWaterhouseCoopers that show less than a handful of agriculturally related equity investments over the last three years. According to this data, none of the investments have occurred in the Hudson River Valley.

In summary, debt resources seem widely available for qualified agricultural and related needs in the Hudson Valley Region. Yet, the access of farmers and agribusinesses to risk and equity capital is very restricted, which may have a negative impact on entrepreneurship and on-farm innovation.

LAND TENURE

What is it?

Land tenure refers to the degree of owned farmland versus rented farmland as well as certain characteristics of owners and operators.

Why is it important?

Traditionally, this measure gauges the level of control that farm operators have over their agricultural properties. In areas where significant acreage is transitioning from owner/operators to non-operator ownership, one might expect to see a less stable agricultural base and lower operator investment. Acres not under direct control of the operators (tenant acres) are usually seen as being "at risk" for conversion to non-agricultural uses. Characteristics of owners and operators speak to issues of intergenerational transfer of operations and farmland.

Regional Considerations

Farmers in the region are, as a group, slightly older than their counterparts in other parts of the state. More than half are older than 55 years of age. They are somewhat less likely to live on the land they farm but are more likely to cite farming to be their principal occupation. Farms in the region also seem more likely than others in the state to be under corporate and partnership legal structures. This is important for a number of reasons. The corporate form of ownership facilitates intergenerational transfer by reducing the estate tax burden on succeeding generations. There is also anecdotal evidence that corporate farms are more likely to transfer management to a younger generation at an earlier stage than are sole proprietors.

The project team found a significant presence of wealthy landowners willing to buy large farmed properties for country estates that often challenged the conventional wisdom about non-owner operators and the "riskiness" of rented land. These individuals may or may not actually be directly involved in agriculture, but they keep the land in active agriculture to maintain their lower agricultural tax assessment and to keep their immediate surroundings pastoral. This is particularly true on the east side of the Hudson River, which has historically seen a high concentration of wealth among landowners. Country estates do take land out of the direct control of the producers, but there are some positive elements of this arrangement:

Farm Tenure Characteristics

	Region	NY State
Total # Farms	2,365	31,757
Total farm acres	453,818	7,254,470
Legal structure		
Sole Proprietorship	74%	85%
Partnership	12%	10%
Corporation	14%	5%
Other	1%	1%
Type of Interest		
Full Owner - farms	59%	50%
Full Owner - acres	34%	38%
Tenant - farms	10%	6%
Tenant - acres	7%	5%

Source: 1997 Census of Agriculture

- Large expanses of land are kept open and available for farming, often at minimal rental prices.
- These new landowner/farmers often make significant investments in capital items such as tractors, barns, etc., which supports local infrastructure.
- These owners are more likely to push the innovation envelope when engaged in the operations.
- There may be some correlation to higher levels of permanent land protection.

For farming, this is better than development that permanently takes land out of production, but the situation does keep land values high, making land

ownership expansion by existing producers nearly impossible. These types of farms are also rarely conducive to supporting all types of agricultural production (e.g., livestock and hogs), often seeking agriculture operations that are supportive of lifestyle choices and other uses of the land (e.g., trail riding and hunting).

The high land values in the Hudson River Valley have another, perhaps temporary, side-effect: The high cost of entering the market area from a land acquisition standpoint makes it difficult for new farm entrants to come into the Hudson River Valley. This provides a degree of protection to existing landowners and producers, offering them the opportunity to develop significant localized niches, but it may limit industry transition and expansion.

Farm Operator Characteristics		
	Region	NY State
Total farm operators	2,365	3,175,700
Average Age	57	53.5
Operator by age group		
54 and younger	49%	55%
55 and older	51%	45%
Operator by place of residence		
On-Farm	78%	83%
Off-Farm	16%	12%
Principal Occupation		
Farming	61%	58%
Other	39%	42%
Operators by gender		
Male	87%	90%
Female	13%	10%
Source: 1997 Census of Agriculture		

Based on the above regional analysis, Hudson Valley agriculture is faced with a true mixed bag of benefits and challenges relative to land tenure (see table in next column).

Benefits	Challenges
Influx of potential new farmers from non-traditional sources	High average age of farm operators, indicating a wave of near-term and mid-term retirements
Land rents are falling as new rural land owners seek to maintain preferential tax assessment thus reducing the costs of farming	Land values are rising as non-farmers compete against farmers for agricultural land for purposes other than farming
Large blocks of prime and productive remain in the region	Many of these same large blocks are managed for agricultural as well as recreational use and other purposes that may conflict with the agricultural use

Case Study: Saving Critical Farms in Carroll County, Maryland

In the late 1970s, Carroll County, Maryland—located within easy commuting distance of both Baltimore and Washington D.C.—established a goal of permanently protecting 100,000 acres of farmland. The county enacted 1:20 cluster zoning (a change from 1:1 zoning) to stabilize the land base and then began vigorously participating in the state's purchase of development rights program. (To date, the county has agricultural easements on over 33,000 acres.) However, the county soon discovered that the state program could not respond quickly enough when prime land was at the critical point of changing ownership.

The county's response was to develop a critical farms program that functions as an enhancement to the state PDR program, guaranteeing a minimum easement value for farms that are being transferred. Applicants must be the contract purchasers or recent purchasers of a farm that qualifies for the state PDR program and ranks high on the county's preference formula. Based on an appraisal of the easement value, the county offers the new owner a payment of 75 percent of the easement value in exchange for an option for the county to acquire the easement at the end of the five-year period.

When the new owners receive the money for the option contract, they are obligated to put the farm in a state agricultural district and to offer to sell the easement to the state program for five years. If the state acquires the easement, the county is repaid the exact amount that was provided up-front and no-interest payment is required. The money is then recycled into the Critical Farms Program. At the end of five years, if the easement has not been purchased by the state, the farm owner has two options: repaying the county with interest for termination of the option agreement; or accepting the easement as permanent with no additional payment from the county. Since it began in 1992, the Critical Farms Program has entered into 30 option contracts on 3,946 acres. So far almost all of the easements have been purchased by the state; the rest are in the pipeline.

LABOR FORCE

What is it?

Human capital, as well as financial capital, is a key determinate of the success of any business. Agriculture is no exception. Evaluation of an industry's labor force looks to characteristics of the current labor force, including skill level, employment categories, historic employment trends, commuting patterns, availability, training, work ethic and cost. Also important is the future direction of the labor force as measured by primary and secondary school programs, immigration patterns and work force training programs.

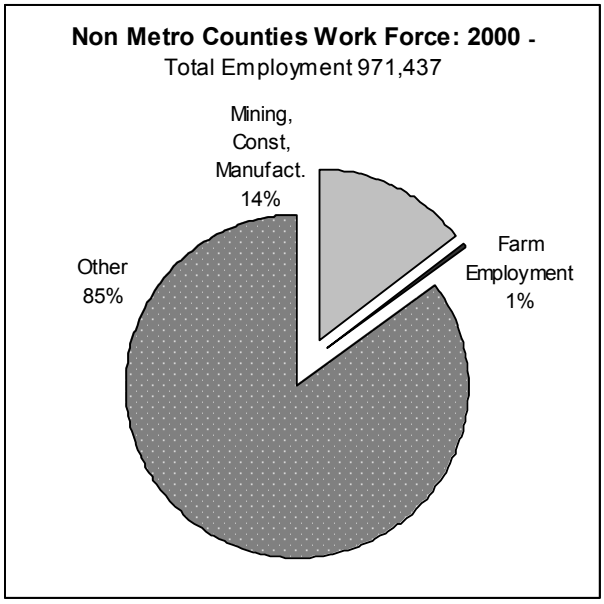
Why is it important?

Agriculture is a labor intensive industry that relies heavily on skilled, semi-skilled and low skill labor. The agricultural labor pool can be highly seasonal and generally pays low wages relative to other industries employing a similarly skilled labor base. However, as regional agriculture becomes more sophisticated, the demand for a more skilled labor force will increase. With competition for workers from so many other sectors of the economy, the availability of labor to agriculture will remain a perennial question.

Regional Considerations

Under current conditions—an economic downturn and an annually renewing work force of new Americans—regional agriculture is currently well served by a sufficiently skilled work force. By and large, interviewed farmers considered the work force to be readily available and affordable, with wages for entry level and field labor ranging from $7.00 to $12.00 per hour. Since many laborers are immigrants or new citizens from agrarian backgrounds, they have a basic understanding of farming. Concerns about this labor force revolve around language and communications, timing to market and the development of advanced skills (including acquisition of driver's licenses, chemical applicator's licenses, etc.). Despite a generally high level of contentment with the labor force, farmers remain concerned that a significant upturn in the economy will draw down the labor pool as highly mobile, entry-level labor turns to restaurant, landscape and building trades, which often pay higher wages.

Attracting farm management seems to be reasonably easy for many farms. However, some farm operators, especially in dairy and fruit production, express strong reservations about their ability to attract skilled management. Many such managers, especially those within the family, are opting for careers outside of agriculture or in other agricultural economies.



Labor force training is a challenge because the region supports few ways for young people and new Americans to gain adequate skills. SUNY Morrisville, for instance, integrates training and job preparation for the food industry as well as for production agriculture through equine, livestock, and dairy programs. The Hudson River Valley

region has no such programs and must largely recruit its management and skilled labor from outside.

Despite the industry's overall satisfaction with the labor force, the project team feels that there is the potential for labor to become a negative factor in the near future. Quick changes in the region's economic health can quickly draw down available sources of agricultural labor. Shifts in industry sectors away from dairy and livestock and toward higher value perishables will change labor force needs and skills requirements, making certain subsets of the labor pool in short supply. No real programs currently exist to deal with these issues.

H2A Labor Reform

Despite being relatively satisfied with the current labor situation, many farmers are concerned about the fate of migrant labor reform. Based on interviews, regional farmers demonstrated a strong interest in improving the functionality of federal labor programs and improving their relations with labor advocacy groups.

STAKEHOLDER & PUBLIC SUPPORT

What is it?

Stakeholders are the individuals who have a direct interest in the success of an industry. Public support is the willingness of the larger community to participate in the development and sometimes the funding of public policy, outreach and programming initiatives. No economic development planning and implementation will be successful without both groups on board.

Why is this important?

Economic development is conducted in part to enhance a community's tax base, create jobs, generate wealth and sustain or improve the quality of life. In the case of agriculture, a relatively small proportion of the population is directly involved in the industry. However, the health of the agricultural industry has broad ramifications based on its potential to stabilize local economies, help balance government budgets and contribute to the quality of life. In order to become reality, any actions taken to benefit the agricultural industry need the support of the broader community, whose members are indirect beneficiaries and often the political force behind public policy. In regions experiencing growth from outside, the demographic profile of the community is most likely changing. The challenge is to engage the newcomers who have their own reasons to support agriculture.

Regional Considerations

Regional stakeholders are generally stymied by the plethora of programs and initiatives in the region. This creates confusion about who the players and organizations are, and what the scope and authority is of their missions. As a result of the lack of focus by stakeholders, many individual counties have seen poor economic development coverage.

The general public tends to be vocally supportive of agriculture, demonstrating a willingness to support agriculture related programming. Ironically, the residential growth being experienced in parts of the region has raised awareness of agriculture's contribution to local fiscal health and quality of life for both new and long-standing residents. While interest in enhancing agriculture seems nearly universal, there are often missteps between community leaders and the agricultural industry. Active, assertive public education is the key to educating local policymakers as well as new residents, who may want nothing to change now that they have arrived.

This latter group often seeks to keep the rural character in place that attracted new residents to the area, without much understanding of the industry that produces the rural landscape. Although they may be the very people whose arrival contributes to the conversion pressure on agriculture, the sentiment they embody can be a powerful tool in supporting, protecting and rejuvenating agriculture.

There are several tangible indicators of this trend on the part of citizens, not necessarily involved in natural resource industries like farming, to become interested in protection of the land base. The first is the growth and activity of private, nonprofit land trusts dedicated to protecting land in their locality or region by conservation easements or outright land purchases. The northeast region of the United States (CT, MA, ME, NH, NY, RI, VT) leads the nation in the number of such organizations, with 497 in the year 2000. In the previous decade, those organizations increased their protected lands by 188 percent to a total of 1,735,971 acres. New York alone has 72 land trusts statewide that have protected 552,220 acres, half of that with conservation easements on private land. In the Hudson Valley (as geographically defined in this study), a survey by American Farmland Trust found that ten nonprofit

land trusts had conserved approximately 22,472 acres of farmland by 2004. In addition, the New York State Farmland Protection Program—which often works in partnership with regional land trusts—had conserved 5,183 acres of the region's farmland by the end of 2003 and awarded grants to protect an additional 1,609 acres in January 2004.

Another rough measure of public support for government initiatives to protect land from development can be seen at the ballot-box. Twelve referenda concerning the funding of open space, natural resources and recreation initiatives passed in towns in New York in 2000. Two other similar referenda passed in 2002.

In October of 2003, residents in the Dutchess County town of Red Hook voted by a 4-to-1 margin in favor of a proposed $3.5 million bond to purchase the development rights from interested town farmers (in addition, matching funds will be provided by Dutchess County, which has earmarked $7 million from its own Open Space and Agricultural Protection Fund to help communities buy development rights on local land). The Red Hook town board unanimously approved the bonding in July of 2003, but a resident referendum was required after enough votes were collected on a petition. Still, the ensuing public interest in the referendum was generally positive, given the overwhelming final voter tally in favor of the land protection spending.

Also in 2003, five Orange County towns—including Goshen, Crawford, Hamptonburgh, Montgomery and Warwick—proposed a 0.75 percent fee on property sales in order to use revenue from the real estate transfer fee to fund open space protection. When the state legislature failed to vote on the proposal, the town of Goshen instead asked taxpayers' permission to borrow money to purchase the development rights on approximately 750 acres of farmland and open space. Although the town passed a resolution in August of 2003 authorizing a $10 million bond for land conservation, Goshen voters narrowly defeated the proposition at a public referendum in November 2003. Opponents argued that the town's plan would drive up property taxes, although Goshen Supervisor Honey Bernstein had argued that the plan would actually help stabilize the tax rate, since preserving open space would slow down growth and ease the strain on town resources.

Public referenda of this sort tend to ebb and flow with economic cycles, but they reflect an awareness on the part of the general public that meeting the community's open space needs (including valued working landscapes) requires deliberate action and public investment. The project team feels that the lack of congruence in goals, and therefore action, between the agricultural industry and new rural residents—who are creating the land conversion pressure and pushing restrictive land-use policies—must be addressed before stakeholder and public support becomes a more consistent positive factor for agriculture. This new rural public is currently an under-utilized constituency that could support agriculture or turn away from agriculture.

DEVELOPMENT PATTERNS

What is it?

Development patterns refer here to the amount and location of residential and commercial development in agricultural areas of the region. No longer does growth tend to concentrate in or near towns and villages. Increasing, low-density development spreads across the landscape, seemingly without rhyme or reason. Contributing to this is the pervading view that farming is an "interim" land use and farmland is a "holding zone" for residential development. This notion is often supported by local zoning regulations that typically accommodate agriculture within residential zoning categories (which tend to be restrictive of agricultural uses), instead of within agricultural or industrial zoning categories (with restrictions to residential development), which would be more fitting for agriculture as an economic use. While agriculture benefits from regional approaches to industry problems (including protecting a land base), land use authority—where the development decisions are made—resides at the smallest level of local government: towns, villages and cities.

Why is it important?

Agriculture and residential developments do not always make good neighbors. Despite the bucolic setting sought by people moving to the country, farming smells, noise and dust are rarely welcome realities to new residents. Nevertheless, the best agricultural lands, generally speaking, are also the easiest to develop, especially low-density residential developments that use well and septic systems. A significant exception to this is the highly productive "muck" soil in parts of the region that is not suitable for development.

Development patterns affect agriculture at two scales: the shear number of acres converted and lost to production and the *form and specific location* that the development takes at the community level. Because conversion is incremental and scattered, even small numbers of acres have a "zone of influence" around them that makes farming more difficult for surrounding operations and conflicts more likely.

Regional Considerations

American Farmland Trust's 1997 report *Farming on the Edge* (updated in 2002), identified the Hudson Valley as the tenth most threatened agricultural region in the nation, due in part to the proximity of major metropolitan areas and the amount of prime or unique farmland converted to urban uses.

The relatively rapid pace of urbanization in upstate New York, however, can not necessarily be linked to population growth. Rolf Pendall's 2003 report "Sprawl Without Growth: the Upstate Paradox," published by the Brookings Institution, found that 425,000 acres of land in upstate New York were converted from rural uses (mainly farm and forest land) to urban development between 1982 and 1997, a 30 percent increase. At the same time, however, the region's population grew only by 2.6 percent, resulting in urban sprawl in the form of reduced density.

Growth in Single Family Construction Permits
Second Quarter 2002 - 2003

Counties w/ Growth	% Change
Columbia	25%
Dutchess	8%
Ulster	46%
Hudson Valley Region	**31%**

Source: Marist College Bureau of Economic Research

While much of the Hudson Valley is feeling growth pressure, the strongest pressure is relative to distance from New York City and regional

highways. Rates of population growth in the region vary widely from 0.2 percent in Columbia County to 11 percent in Orange County over the past decade. Growth is being driven by a variety of factors, including rapidly rising house values in the southern part of the region, the attraction of local amenities (including open space) and, to a certain extent, an exodus from New York City following September 11, 2001. Given the current economic situation facing agriculture nationally, it is difficult for farmers to compete against this onslaught of competition for land resources.

	Average Selling Price of Single Family Homes			
	1st Quarter			
	1999	2000	2001	% Change
Columbia	$167,391	$188,374	$209,329	25%
Dutchess	$190,386	$204,926	$205,726	8%
Greene	$83,055	$97,152	$97,114	17%
Orange	$151,232	$175,734	$203,921	35%
Ulster	$119,409	$156,877	$174,328	46%
Westchester	$380,064	$525,328	$537,878	42%
Hudson Valley Region	**$181,923**	**$224,732**	**$238,049**	**31%**
New York State	$145,968	$150,518	$143,372	-2%

Source: Marist College Bureau of Economic Research

Much of the growth experienced by the region is in the form of low-density single-family homes. In agricultural areas this can often mean at least two acres of land are consumed by each new home—at least a thousand acres for every 500 new homes built. With this growth comes demand by essentially suburban populations for non-agricultural uses on open land, including recreation (e.g., dirt bike riding, hunt clubs, environmental research, retreat centers, parks, greenways, wildlife habitats, etc.), environmental buffers and reserve land for public infrastructure to accommodate growth.

The valuation of agricultural land for non-agricultural uses, especially residential development, is quickly outstripping the land's intrinsic agricultural value. With few local controls on the consumption of agricultural land and limited investment in farmland protection, the future of the land base is in serious question.

Case Study: Long Island Real Estate Transfer Fee

In June of 1998, New York Governor George Pataki signed the Land Bank Bill authorizing five towns on the East End of Long Island to collect a two percent fee on most real estate transactions in order to fund the protection of farmland and open space. The five Suffolk County towns—East Hampton, Southampton, Shelter Island, Southold and Riverhead—were then required to gain voter approval for the fee through referendums.

The real estate transfer fee was expected to raise $10 million annually for the Peconic Bay Community Preservation Fund, which protects environmentally and culturally significant lands through acquisition or conservation easements. By 2003, the Nature Conservancy estimated that the fee had produced $140 million on the East End and saved 7,500 acres.

The real estate transfer fee is paid by those who purchase property, although it provides an exemption for land sold to a farmer who intends to farm it or for lower-priced properties to avoid increasing the cost of affordable housing. In East Hampton, Southampton and Shelter Island, the first $150,000 of a home sale is exempt from the land transfer fee. The first $100,000 of a vacant land sale is also exempt from the fee. In Riverhead and Southold, the first $150,000 of a home, and the first $75,000 of a land sale, is exempt.

In 2003, the town of Brookhaven in eastern Long Island attempted to fund an open space trust program through a similar two percent real estate transfer fee. Although a state Supreme Court justice ordered the measure to be removed from the ballot less than a week before the election, citing confusion in the wording of the proposition, the town intends to resubmit the referendum proposal in November of 2004.

SERVICE AND SUPPLY NETWORKS

What is it?

Service and supply networks represent the input, output and ancillary industries that support production agriculture: the cluster of businesses that collectively form a healthy agricultural economy. The service and supply network varies by industry, but it is an essential component for any production agriculture sector. Examples of service and supply businesses include agricultural finance, food processing, agricultural chemicals, sales and service of dairy equipment, veterinary services and corrugated box manufacturers.

Why is it important?

Production agriculture does not exist in a vacuum. It relies on a network of inputs and services as well as product markets to thrive. Unfortunately, much of this infrastructure is specialized by industry and requires a regional "critical mass" of agriculture to survive. As agricultural production diminishes, so does the infrastructure that supports it. As infrastructure shrinks, farmers are often forced to go farther for basic inputs and services, or the area may end up with one, non-competitive provider. Each scenario has the effect of reducing competitiveness, increasing costs of doing business and can make production agriculture economically unfeasible.

Regional Considerations

The Hudson River Valley is highly challenged on the input service and supply side, with steadily diminishing local options available to producers. The burden falls hardest on traditional, commodity agriculture sectors such as field crops, dairy and livestock. For instance, the region supports only one livestock auction, one dairy service firm, no rendering capacity, only three grain elevators, five agricultural tractor dealers and only six field crop and orchard service companies (i.e. soil preparation and agricultural chemicals). Welders and mechanics that do field service also are in short supply.

SERVICE AND SUPPLY NETWORKS	# of Firms		
	1993	2000	% Change
Agricultural Support	89	75	-16%
Veterinary	150	172	15%
Farm Supplies	59	25	-58%

Source: Minnesota Implan Group.

While the area is served by local agricultural infrastructure, farmers are increasingly turning to a broader geographic region for competitively priced inputs and equipment. For more expensive capital items, farmers are finding sources on a national basis. Many in the dairy industry express a high level of concern over the loss of infrastructure, especially the ability to get timely veterinary care and milking equipment service. Generally speaking, though, the infrastructure for growth sectors such as equine and nursery/greenhouse sectors are sufficient.

With an ever shrinking base of service and supply networks, it is becoming more costly, and in many cases less efficient, to farm in the Hudson River Valley as logistics lines become stretched and local markets become less competitive.

COST OF DOING BUSINESS

What is it?

Cost of living analyses measure the costs of doing business in a region against other rural/farming areas of the country. They also analyze the actual costs of supporting a family in the local economy, based on factors such as the cost of consumer goods, housing and transportation.

Why is it important?

Given the highly competitive nature of agricultural markets, the costs of operating in a region must not exceed the market's ability to provide a fair return to farm businesses. Therefore, the costs of operating in the Hudson Valley must not exceed the market opportunity (price point) and the transportation differential with other regions of the country.

Agriculture relies heavily on the availability of a land base for economic success. It is often in the best interests of agricultural producers to own/control a large portion of the land base they require. This is especially true in commodity agriculture, but because commodity agriculture often exhibits low marginal returns, holding excess land capacity can be a challenge.

Regional Considerations

Without question, the Hudson River Valley is a high cost of living environment, whether examining housing, food or utilities costs. This is complicated by low average regional farm wages of $17,434[1], which are significantly lower than non-farm employee wages averaging $42,444 across the region. This means that regional farms often require an outside income to sustain farm operations. Considering the average net cash return to regional farms is approximately $40,000 annually, it is difficult to understand how the average Hudson Valley farm can even maintain its capital structure.

Cost of Living - US & Region

	Cost of Living Index	
	US Avg.	HV Region Avg.
Consumables	1	1.10
Transportation	1	1.09
Health Services	1	1.15
Rent, Utilities, Insurance	1	1.20
Income and Payroll Tax	1	1.05
Total Cost of Living	1	1.11

Source: Economic Research Institute, Geographic Assessor, 2003

This study collected anecdotal information about investment decisions faced by farms, including how farmers assess opportunity cost[2]. For most interviewees, the primary determinates of land investment decisions were high property taxes and the ratio of land values over agricultural value per acre (e.g., a $200.00 net return for hay on land worth $25,000).

The first challenge facing Hudson Valley farmers is the high cost of acquiring land relative to regional competitors in western New York and South Central Pennsylvania. With agricultural land selling for as much as a $25,000 premium per acre[3], it is difficult to make a case for strategically acquiring land to be used exclusively for agricultural purposes. There are, of course, exceptions in the greenhouse, equine and winery sectors.

The second key issue is the annual tax burden of agricultural property. New York has several farm tax relief programs, including Agricultural

[1] Bureau of Economic Analysis, 2001.

[2] Opportunity costs are the measure of foregone income based on a particular investment or operational decision.

[3] Based on anecdotal evidence collected through the interview process.

Assessment, the Farmers' School Tax Credit and various farm building exemptions (for more information, see American Farmland Trust's *New York Agricultural Landowner Guide to Tax, Conservation and Management Programs*). However, New York farmers still face a significant property tax burden relative to jurisdictions such as Maryland, where state and local income tax play a greater role in tax structure. Combined with cost of living, the property tax burden can mean that it is difficult for farmers to acquire land for production and even more difficult for them to hold on to it, given the property taxes and opportunity costs (forgone income opportunity) of the initial investment.

The regional cost of living cannot be overstated as an impediment to agricultural industry development, especially as it relates to current industry structure. Simply put, it is very difficult to maintain a low cash return/low wage industry in a high income/high cost of living environment.

REGIONAL COOPERATION

What is it?

Regional cooperation is the capacity of stakeholders, agencies and government entities in a geographical region to work together for mutual benefit, despite the fact that certain counties, based on market conditions, are likely to benefit more at any given time from a program or business attraction/expansion effort than other counties.

Why is it important?

The Hudson River Valley region is nearly uniform in its access to an enormous market (NYC), but is not uniform in its distribution of physical assets and industry sector make-up. Nevertheless, agriculture exists to some degree in every county and has some common needs. Viewed another way, industry sectors in each county are relatively small and are not necessarily focused on common objectives. Pooling resources on a regional basis to solve sector-wide problems would make for more efficient and effective actions. For example, a unified region has a far better chance of attracting needed agribusinesses than if individual entities in different counties compete against each other for the same benefit.

Regional Considerations

The region does not suffer from lack of effort to find solutions beyond the county level. In fact, it suffers from too many programs operating with vaguely stated goals and insufficient funding to have any real impact. The counties tend to have strong self-identities and, generally, little interest in cooperation. Few people in local government seem to subscribe to the theory that "a rising tide raises all boats." For example, the area currently has four meat packing feasibility discussions in progress and at least two regional product-branding discussions under way. There seems to be some reluctance to join together in properly supported/capitalized efforts. This leaves producers confused about who is doing what, for whom and when.

During the course of discovery, the project team was confronted with the fact that, during the last decade, at least 25 studies addressing agricultural land-use, agricultural development and agricultural marketing have been undertaken. Despite costing an estimated $2.8 million, these efforts generated few long-term programmatic successes due to improper resource access, lack of authority, poor capitalization, competition or the fact that these efforts simply lacked industry support.

Adding complexity to the above situation is the inherently independent nature of regional farmers. This natural independence is reinforced by the development tract followed by most industry sectors, which has focused on internal business and market improvement strategies rather than industry-wide development. This has left a highly independent group of producers who tend to be protective of market positioning and employ adaptive business strategies that keep their operations financially healthy rather than openly cooperative.

The lack of a cohesive approach to regional needs combined with a lack of leadership on a regional level may be a "chicken and egg" situation, but they certainly contribute to one another. There are few leaders rising from the various industry sectors for a number of reasons: some of the most capable people are busy with their own businesses; and so many initiatives have led nowhere that many people have simply stopped participating. The average age of the region's farmers does not help either. Beyond the nursery/greenhouse sector there is little young blood with an eye to the future coming into organizations.

Finally, the industry compositions, varied cultures, and diverse asset bases represented by the study counties make it a true challenge to develop a region-wide concept of problems and solutions. Within an economic development context, some counties may view other regional players as competitors rather than collaborators, reducing the imperative for cooperation. This makes regional players like Empire State Development, Non-Governmental Organizations (NGOs), Cornell Cooperative Extension and RC&D councils critical for bridging the gap.

In summary, without the emergence of a key regional player that represents industry interests and has the resources and capacity to carry out region-wide development efforts, it is unlikely that regional planning and development efforts will succeed.

COMMUNITY DEVELOPMENT CORPORATIONS

Community Development Corporations (CDC) first formed 30 y
decaying urban communities. Since then, CDCs have been used
economic and community development issues. A common them
on numerous related projects—such as small business assistanc
development—with a "single minded attack on one issue."[1]

CDCs are most often formed as not-for-profit, non-stakeholder
participation that represents the private and public sector as wel
This type of partnership has been essential to bring together the
by formulating a shared vision and working toward common go
supports long development horizons—typically 10 to 20 years f
projects. Recently there has been a trend toward foundation-sup
sponsor's interests with a community development mission as ic
Typical project types for CDCs include—but are not limited to—
education; business development; community finance; work for
programs; healthcare; downtown/street revitalization; and home

Capitalization of CDCs has changed in the last decade, which is
development projects in which CDCs can engage. Programs suc
HUD's HOPE VI provide assistance in housing and industrial p
Community Development Financial Institutions (CDFI) and Co
(CDVC) funds and SBA's 504 program expand opportunities to
using both debt and equity financing. There are many other fund
foundation level, including the National Equity Fund, the Local
the Enterprise Foundation and others, each providing discrete su
initiatives, making CDCs highly adaptable development tools.

Private sector investments have also increased in the last decade

[1] "The Whole Agenda", LISC.

COMMUNITY DEVELOPMENT CORPORATIONS (CONTINUED)

the Community Reinvestment Act (CRA), which provides an incentive for bank participation in CDC projects for CRA credits. As well, the Internal Revenue Service allows taxpayers to receive tax credits for donations and loans to CDCs for qualified purposes. Numerous CDCs, such as the Greater Southwest Development Corporation in Chicago and the Rural Capital Network in California, have also demonstrated to private companies that investments in their projects and communities can be profitable.

While CDCs have largely been an urban development phenomenon, they are increasingly being employed in rural areas to address a range of issues from youth retention and healthcare access to providing speculative development financing as part of business attraction and retention efforts. In some areas of the country, CDCs provide important linkages for small business financing as well as work force training. Based on recent research conducted by LISC, it is expected that CDCs will play a greater role in rural economic and community development over the coming decade, as CDCs adapt to the needs of more dispersed populations and as new funding opportunities arise.

Case Study: Lightstone Community Development Corporation

Lightstone Community Development Corporation (LCDC) was founded in 1994 by the Lightstone Foundation to enhance social, economic and environmental viability by supporting sustainable enterprises in the rural mountain communities of West Virginia and Virginia. LCDC—one of three Community Development Financial Institutions (CDFIs) certified in West Virginia—is the only CDFI in West Virginia focusing on small business lending and lending to resource based industries. LCDC operates several programs including the Sustainable Enterprise Loan Fund, which provides equity and debt financing for local small businesses and start-ups; an equity investment program which syndicates investments in resource based industries; and the Welfare to Micro-enterprise Program, which seeks to encourage commercial self-sufficiency. In addition, LCDC is engaged in the development of rural industrial clusters in food, wood, fiber, crafts, tourism and services in collaboration with other private and public sector entities. LCDC's activities support the broad funding objectives of the Lightstone Foundation, including community based economic development; support for small family farms; enhanced agroforestry stewardship; increased internet capacity and literacy; and the development of entrepreneurial capacity.

Case Study: New York AgriDevelopment Corporation

In June 1999, the Metropolitan Development Association (central New York's principal economic, planning and research organization) joined with several leading agricultural companies and their business partners to form a new organization to stimulate statewide business growth in the food and agricultural sector. The mission of the NY AgriDevelopment Corporation is to increase the number and profitability of agribusiness companies, the number of people employed by those companies, the level of investment in agriculture projects and ventures, and the visibility and viability of agriculture in New York state. Thirteen firms have committed resources to fund the organization, and those firms determine what types of projects and programs are pursued. Representatives from the firms comprise the organization's board, which has elected officers and relies on MDA staff to provide day-to-day administrative support. Current initiatives of NY ADC include growth of controlled-environment agriculture facilities; new market opportunities for upstate processors and growers; and attraction of new meat processing facilities.

INVESTMENT IN THE FUTURE

What is it?

This refers to the gradual capital disinvestment in individual operations (known as the *impermanence syndrome*) as well as the lack of a traditional "next generation" of farmers to take over the industry in the Hudson Valley region. The two phenomena are deeply connected.

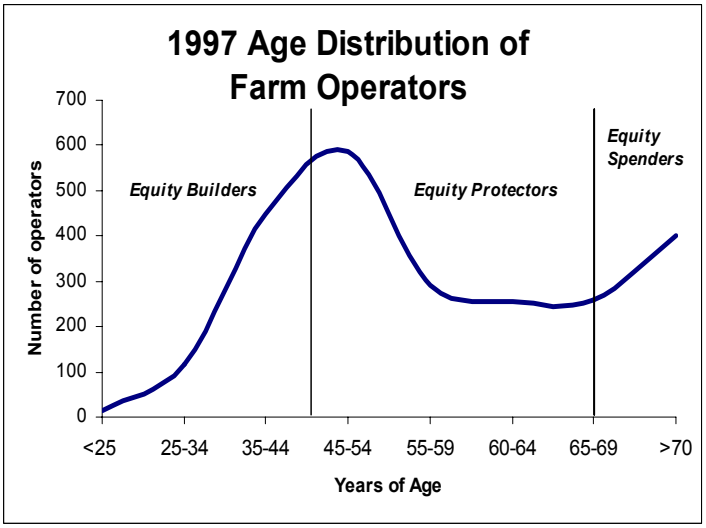
Why is it important?

A whole range of attitudes underpin the decisions made by individual operations, from uncertainty made worse by shifts to different commodities and types of agriculture to the knowledge that the next generation in a traditionally *family* business may not want to farm. In the best of circumstances, intergenerational transfer—the passing of the farm operation to sons and daughters—can be a challenge for the families involved and a critical moment in the farm's survival. Development pressure can mean lucrative alternatives to farming, for both the landowners and the young people making career decisions.

Regional Considerations

The average age of Hudson Valley farmers is 57, slightly higher than the statewide average of 54. The age distribution of the region's farmers is important when considering how, when and who will take over the reins of the industry. Based on his or her stage in the work-life cycle, a farmer's concept of investment and equity building can be fundamentally affected. Younger farmers tend to be e*quity builders* (investors/risk takers) while older operators tend to be *equity spenders* as they spend down their assets during retirement. Farmers and farmland owners in the middle and later career brackets (ages 50 to 65) tend to focus on protecting their equity base from erosion as they plan for retirement. The land under control of the largest age cohort group of farmers can represent an increased vulnerability of the agricultural land base at a point in time—10, 15 or 20 years ahead—as this cohort group spends down its equity (land, equipment, etc.).

Even for those farmers whose children are interested in taking over the farm operation, careful estate planning is critical. Especially in areas near cities where land values are high or climbing rapidly, estate taxes can deal a fatal blow if not planned for. In addition, farmers in the region tend to treat the next generation of farmers as laborers until the parents (farm owners/ operators) pass away. In many cases, this leaves a middle-aged worker suddenly in charge of managing the farm without sufficient skills or access to resources.



An alternative scenario is that a portion of the next generation of farmers may indeed be *new citizens* from current waves of Hispanic and Asian immigrants, following previous generations of German and Italian immigrants. Another phenomenon is the "non-traditional" or "second career" farmers. These groups often bring different concepts of agriculture and can push market and/or product innovation. However, there

are currently few effective programs linking these individuals with skills training, land, finance and mentors.

One issue that the project team feels is significantly over-emphasized in transition support programs for these groups is land ownership. Given current trends in the region, farm operators are increasingly divested from the land and are paying, in some cases, substantially less to lease agricultural property than they would to own the properties. Matching new farmers with willing lessors may prove to be a more advantageous strategy than trying to match new farmers with willing sellers of land.

Impermanence Syndrome

Impermanence syndrome is a condition recognized by economists and industrial psychologists. The syndrome occurs when industries and individuals believe their status is declining and the situation is out of their control. As a result, they do not make the necessary investments in their businesses and do not employ best management practices. Ultimately, the defeated attitude becomes a self-fulfilling prophecy. The impermanence syndrome is a wide-spread phenomenon in agricultural areas near expanding suburban and urban parts of the country.

Without investment in agricultural infrastructure, both on- and off-farm, the future of agriculture is in question. Introducing new capital into the industry will only happen when the industry, by virtue of a positive economic climate or by stage of life cycle, sees a clear economic incentive for such an investment. Bringing new farmers and young farmers into the community may be a good step in closing this loop.

FINDINGS OF THE AGRICULTURAL ECONOMIC DEVELOPMENT ASSESSMENT

The Hudson Valley has a long and storied agricultural history dating back to the Colonial period when the river served as the nation's largest transportation corridor. At that time, the region established its reputation as the birthplace for some of America's great entrepreneurs. These traditions continue today, as agriculture finds the means to survive in the rapidly changing economic environment found between Albany and New York City.

Agriculture fits within a complex fabric of local communities and economies, which often depend on the agricultural industry for certain private and public benefits, ranging from employment opportunities to scenic vistas. Many times these benefits are clearly understood and articulated, for instance, agriculture's positive impact on tourism. More often than not, the benefits provided by agriculture go unrecognized. For instance, farming often provides positive, yet intangible, impacts on the region's quality of life.

In order for agriculture to maintain its connections within the community—and more importantly for it to remain profitable—public policy makers and industry officials should consider some of the following key findings of the report.

1. Market opportunities abound in the region, given the near immediate access to a population base of 31 million people. However, marketing opportunities are varied and seem dominated by direct market oriented wholesale and retail outlets.

2. Farmers tend to be highly independent and naturally protective of market opportunities. This generally means that cooperative solutions to marketing opportunities are difficult to organize.

3. Intergenerational transfers are a challenge, as there are fewer farms with a willing next generation of farmers. New farmers are increasingly likely to come from new sources such as the current labor force and "second career" or avocational farmers.

4. Individual initiative and market innovation are dominant characteristics of many of the region's successful agricultural entrepreneurs.

5. Despite infrastructure depletion on the agricultural input side, output industries such as wholesalers, distributors and processors are plentiful in the Hudson Valley and metro New York.

6. The Hudson Valley Region supports several viable agricultural sectors including dairy, vegetable, fruit, equine and nursery/greenhouse. However, the economic and market conditions facing each of these sectors are fundamentally different, leading to a high level of disaggregation of the agricultural industry. This disaggregation does not naturally lead to inter-industry cooperation and reinforces individualist behavior.

7. Despite having solid downstream market infrastructure, there is little integration between agriculture and these industry sectors.

8. Within the agricultural industry, there is a high level of interest in protecting working landscapes as long as those lands can support viable production agriculture. However, despite the high level of public interest in open space protection, the public does not necessarily recognize of the needs of the farmers who maintain the working landscapes.

9. Agricultural economic development and land protection are crowded fields in the Hudson Valley region. Most entities engaged in these processes suffer from one of the following: 1) No program authority; 2) Too few resources; or 3) No clear program mission. This environment is confusing for farmers and policy makers alike.

10. The agricultural work force is currently solid but highly mobile between sectors such as construction and landscaping, meaning the labor market will likely tighten with economic recovery.

11. There is little imperative for counties in the region to cooperate in agricultural economic development and land planning initiatives due to differences in assets base, public interest, market influences, stage of development and other factors.

12. There are no clear boundaries to the market area, especially when viewed through the eyes of individual industry sectors, making it difficult to develop a brand or image campaign.

UNDERPINNING STRATEGIES

The following recommendations are underpinning strategies upon which solid agricultural economic development and land-use strategies can be based. The project team has developed the following strategies in response to several factors that stand as the most significant hurdles in implementing regional programming.

These hurdles are as follows. First, the region, as defined for the purposes of this project, has no regionally authorized or endorsed entity to carry out regional agricultural development efforts. This factor is compounded by the sheer number of convening organizations with missions to support agriculture in some manner, but without programmatic authority.

Second: The region has a long track record—at the individual, community and county level—of developing innovative responses to local issues, but the initiatives often fail due to lack of funding resources and/or leadership.

Third: Those farmers who are left in the valley tend to be highly independent and are not prone to cooperative development efforts, but rather specific business development efforts.

Recommended Strategies

The four recommended strategies are:

1. Identify or create an entity(ies) with sufficient authority and resources to implement all or a portion of the programmatic recommendations found in this report.

This strategy addresses the need for an entity that is responsive to the needs of agribusinesses and farmers and can take a lead role in agricultural development initiatives, acting as a liaison between industry and government.

Goal: The creation of a private or quasi-public entity such as a Community Development Corporation (CDC), with specific authority to develop physical community assets, promote economic development, foster leadership development, assist agricultural businesses with technical and financial services, and build agribusiness capacity**.** Initial seed investments in the proposed entity should represent both the public and private sectors.

Implementation Strategy**:** Several existing entities in the region have the capacity to develop the needed systems and the infrastructure to achieve this goal, but start up funding will be a constraint.

Funding Considerations**:** Institutional funding will be necessary to encourage the formation of a new entity and to encourage existing entities to engage in building this new business enterprise. The projected annual operating budget for a Hudson Valley Agricultural Development entity would range from $250,000 to $500,000.

2. Create a regional strategy for retaining, expanding and attracting regional agribusinesses in support of Hudson Valley production agriculture.

One of the primary reasons that economic development agencies such as Empire State Development are not involved in agriculturally related initiatives in the Hudson Valley is the absence of a cohesive plan for supporting the region's industry.

Goal**:** The Hudson Valley Agribusiness Retention, Expansion and Attraction Plan should be a joint effort of the various regional counties and shall outline regional development needs of production agriculture as well as critical input and output industries. Without a system to generate critical deal flow, important business attraction opportunities may be bypassing the region. In addition, many local agribusinesses do not realize that economic development programs are available to assist with expansion, relocation and retention issues. This plan will help to effectively target such resources where they can have the greatest impact on Hudson Valley's agricultural economy. This program should include direct coordination with the regional tourism and economic development industries.

Implementation Strategy**:** As mentioned in this study's prior recommendations, the region lacks a financial catalyst to engage in a regional BREA planning effort that will require seed funding. A newly formed agricultural development entity would be a preferred lead agency for such a task.

Funding Considerations**:** Regardless of which entity takes the lead in implementing this study's recommendations, most comprehensive regional BREA planning efforts will cost approximately $50,000.

3. Develop and expand enhanced technical and professional services for agribusinesses and farms.

Due to the level of disaggregation of industry relations within most agricultural sectors, wide spread efforts to support industry development—such as targeted workforce training—are unlikely to produce broad community benefits at this point. Instead, greater community benefit will be derived from supporting the discrete needs of individual operations through the provision of technical and professional support services.

Goal**:** Encourage the expansion or development of a regional technical and professional support network for farms and agribusiness based on an "Incubator without Walls" model. Access to quality business development services in the Hudson Valley is limited especially for small farms and food processors. Opening access to sophisticated services may improve bottom-line conditions as well as the success rate of start-up businesses.

Implementation Strategy**:** A regional agricultural development entity would be an ideal program coordinator and delivery agency for new and existing small business development programs for farms and agribusinesses.

Funding Considerations**:** Business development programs generally require operational support for at least five years until they reach operational self-sufficiency. Sources such as USDA's Rural Development office

and New York State's Grow New York program often provide seed funding and may also be a source of limited levels of short-term operating capital.

4. Encourage greater program flexibility and enhanced funding for purchase of development rights programs in the region that target high concentrations of prime and productive soils.

This strategy addresses the need to stabilize a base of high quality soil resources in sufficient densities to allow for economically viable farming, in the face of wide spread regional development pressure.

Goal**:** The Hudson Valley is rich in programming to support farmland protection programs, but most programs are under funded or have too few program options to react effectively in this period of high development pressure and rapidly rising land values.

Implementation Strategy**:** A three-pronged strategy is needed. First, new and increased sources of funding are needed for farmland protection efforts to continue. Substantial funding increases across the board are essential—at the state, local and federal levels and from private funding sources. Second, the lease of development rights should be explored as an interim option to stabilize the land base and promote continued agricultural use. And third, program funds should be targeted to critical farms and farming areas with the best soils and most viable farming operations.

Funding Considerations**:** Given the intensity of development pressure and the overwhelming demand for farmland protection program funds, the region will need at least $100 million over the next five years for farmland protection. The region will need more than twice that amount over the next 10 years to help stem the loss of its most productive agricultural land.

Underpinning Strategies Matrix

Recommendation	*Possible Lead Agencies and Program Partners*
1. Identify or create an entity(ies) with sufficient authority and resources to implement all, or a portion of, the programmatic recommendations found in the strategies section of this report	*Possible Lead Agencies:* County IDAs/Economic Development offices; Empire State Development; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners*: Cornell Cooperative Extension; county Agricultural and Farmland Protection Boards; Farm Bureau; industry associations; RC&D councils; and others
2. Create a regional strategy for retaining, expanding and attracting regional agribusinesses in support of upstream and downstream industries as well as production agriculture	*Possible Lead Agencies*: County IDAs/economic development offices; Empire State Development; Hudson Valley agricultural development entity; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners:* Cornell Cooperative Extension; county Agricultural and Farmland Protection Boards; Farm Bureau; industrial park developers; industry associations; and others
3. Develop and expand enhanced technical and professional services for agribusinesses and farms	*Possible Lead Agencies:* Hudson Valley agricultural development entity; Northeast Center for Food Entrepreneurship; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners:* Cornell Cooperative Extension; Farm Bureau; Farm Credit; industry associations; and others
4. Encourage greater program flexibility and enhanced funding for agricultural land preservation programs in the region, targeting high concentrations of prime and productive soils	*Possible Lead Agencies:* American Farmland Trust; county Agricultural and Farmland Protection Boards; Farm Bureau; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners:* Cornell Cooperative Extension; industry associations; land trusts; local governments; Open Space Institute; Scenic Hudson; and others

PROGRAM STRATEGIES

Program strategies include recommendations, action items, strategies and partnerships that the project team feels are necessary to address discreet conditions within the Hudson Valley.

Regional Action Items

The ten recommended regional action items are:

1. Establish alternative grant making services that promote innovation and entrepreneurship.

Additional public and private incentives are needed to promote innovation and private entrepreneurial ventures that offer private benefits as well as community benefits, including industry stabilization, tax base enhancement and job creation.

Goal**:** Matching funds from a farm viability grants program should be more widely available to farmers and agribusiness owners in the Hudson Valley Region. The successful Massachusetts Farm Viability Program could serve as a model.

Implementation Strategy**:** Such programs or services should be linked with strong technical and professional services, building on existing programs at the state and federal level and possibly including innovative forms of matching requirements such as agricultural use covenants, which are used in Massachusetts' Farm Viability Program.

2. Create alternative financing vehicles to support agriculture.

Improved access to capital will provide for needed capital investment in regional agriculture.

Goal**:** Develop debt and equity tools to broaden access to capital. For instance, a regional bridge loan program like the Carroll County Critical Farms Fund in Maryland can bridge financing for the acquisition of critical farms, PDR settlements, conventional debt and lenders of last resort. Additional programming may include credit enhancements such as loan guarantees and linked deposits. In addition, an agricultural "angel" network that bridges the gap between the region's high wealth individuals and farmers/agribusinesses and could improve farmers' access to much needed risk capital.

Implementation Strategy**:** A regional partnership effort is needed to create a "critical farms fund" and a more effective "agricultural angel capital network" to enable farmers' access to additional sources of investment capital.

3. Enhance farm transition programming.

The majority of farm owners in the region are over 55 years old and in many cases the next generation is not going to take over the farming business.

Goal**:** In addition to providing financing support as outlined above, a greater level of transition support should be made available to new farmers including those who are non-career farmers as well as New Americans who may have special needs.

Implementation Strategy**:** Using the successful NY FarmLink program as a model or umbrella, the development of regional programs such as mentoring, specialized skills training, estate planning and farm management will be essential.

4. Encourage greater participation among farmers, especially young farmers, in leadership training programs.

As the LEAD NY program has successfully demonstrated, it is essential to develop leadership skills and integrate a new generation of agribusiness leaders with the agricultural industry and the broader community.

Goal**:** Create a Hudson Valley regional agricultural leadership training program.

Implementation Strategy**:** Modeled on the successful LEAD NY program, these efforts should be used to enhance farmer participation within economic development and public policy forums, in partnership with organizations like Farm Bureau, county agricultural and farmland protection boards, the Hudson Valley Greenway and Cornell Cooperative Extension.

5. Create a public outreach and marketing campaign.

Public support for agriculture is critical to its future success. Positive public support can help motivate consumers to buy local agricultural products and can encourage local governments to buy development rights, reduce property taxes and craft farm-friendly local laws as ways to plan for agriculture.

Goal**:** Initiate a campaign to formally bridge information gaps between farmers and the general community. The outcome should be goal congruence between the economic use of working landscapes and the quality of life desires of an expanding New York metropolitan region that now stretches from New York City to Albany. Stronger relationships between these interests should be used to enhance regional marketing opportunities, both in the Hudson Valley itself and in the New York metropolitan region.

Implementation Strategy**:** In light of the widespread interest in this issue, a broad-based partnership effort among area groups—such as the Hudson Valley Agricultural Partnership, agricultural and farmland protection boards, American Farmland Trust, Farm Bureau, Cornell Cooperative Extension, the Glynwood Center, Scenic Hudson, the Open Space Institute, local land trusts and local governments—could really move this forward.

6. Provide marketing and product development assistance.

Increasing the market share for Hudson Valley agricultural and food products will require significant market development.

Goal**:** Work with Northeast Center for Food Entrepreneurship to create a market development program modeled after the West Virginia Specialty Foods Program.
Implementation Strategy**:** Services should be focused on opening markets, reducing stocking costs, product development, labeling, cooperative marketing and similar services. Services should be supported by industry and offered on a cost recovery basis.

7. Enhance work force conditions.

Despite the fact that the current agricultural workforce is generally viewed as sufficient, this condition is likely to change with time.

Goal**:** Matching work force quality and availability with the needs of specific industry sectors in the region will require an active, long-term set of strategies that focus on providing the labor force with the appropriate life, professional, technical and language skills to achieve upward mobility and success in the work force.

Implementation Strategy**:** Needs of each industry sector should be clearly understood and periodically updated to provide tailored solutions. Issues such as H 2A reform and farm worker housing will need to be addressed in the near future.

8. Strengthen and expand marketing opportunities in the New York metropolitan region.

This major market region includes high income and ethnic consumers with great potential. In addition, the New York City Greenmarkets attract thousands of consumers at locations around the metro region, providing direct market opportunities for hundreds of farmers in the region.

Goal**:** Build on the successful efforts at the Greenmarkets and explore ways to tap the wholesale market and other retail market opportunities in the metro region.

Implementation Strategy**:** Secure a more permanent status for Greenmarket sites in New York City and explore the feasibility of a wholesale farmers' market in the New York metropolitan area.

9. Advocate for increased state and federal funding for farmland protection programs and creative local financing options like real estate transfer fees and installment purchase agreements.

Productive and prime soils, a finite resource, are critical to the future of farm businesses in the Hudson Valley. The critical mass of farmland needed by the region's agricultural industry is quickly eroding as

rapidly rising real estate values price farmers out of the market for farmland and limit their access to rented land.

Goal**:** Increase funding available from federal, state, local and private sources to $20 million per year and protect 100,000 acres of farmland within 10 years.

Implementation Strategy**:** Increase funding from the Federal Farmland Protection Program, the New York Environmental Protection Fund and local governments (by using bonding authority and/or real estate transfer fees) and leverage private funding from organizations like Scenic Hudson, the Open Space Institute and other land conservation organizations.

10. Establish a Lease of Development Rights (LDR) program.

Leasing development rights for a term of years would help communities "buy" time and stabilize the farmland base while farmers expand, diversify or transfer their operations.

Goal**:** Create an additional tool for landowners and communities, providing a mechanism to keep land in agricultural use while longer term strategies to strengthen agriculture and protect farmland are implemented.

Implementation Strategy**:** Two basic options that should be explored include a locally funded lease program that makes direct rental payments and a state-funded enhanced farmland property tax credit modeled after the Farmers' School Tax Credit but not subject to the "full time" farming requirements or income caps of that program. Under both scenarios, farmland owners would agree to a "rolling" term of 8 or 10 years in exchange for the rental payment or tax credit and a right of first refusal.

Program Strategies Matrix

Recommendation	*Possible Lead Agencies and Program Partners*
1. Establish alternative grant making services that promote innovation and entrepreneurship	*Possible Lead Agencies:* Hudson Valley agricultural development entity; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners*: Cornell Cooperative Extension; county AFPBs; Farm Bureau; industry associations; Farm Credit; USDA (various programs); and others
2. Create alternative financing vehicles to support agriculture	*Possible Lead Agencies:* County IDAs; Empire State Development; Hudson Valley agricultural development entity; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners*: AFT; Cornell Cooperative Extension; Farm Bureau; industry associations; local governments; Farm Credit; OSI; Scenic Hudson; and others
3. Enhance farm transition programming	*Possible Lead Agencies:* Cornell Cooperative Extension; Farm Bureau; Farm Credit; and others *Possible Program Partners*: AFT; industry associations; regional NGOs; and others
4. Encourage greater participation by farmers, especially young farmers, in leadership training programs	*Possible Lead Agencies:* County AFPBs; Farm Bureau: and others *Possible Program Partners*: Cornell Cooperative Extension; industry associations; Farm Credit; and others
5. Create a public outreach and marketing campaign	*Possible Lead Agencies:* Hudson Valley agricultural development entity; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners*: Cornell Cooperative Extension; Farm Bureau; Glynwood Center; Hudson Valley Agricultural Partnership; industry associations; Farm Credit; and others
6. Provide marketing and product development assistance	*Possible Lead Agencies:* Hudson Valley agricultural development entity; Northeast Center for Food Entrepreneurship; and others *Possible Program Partners*: Cornell Cooperative Extension; NYS Dept. of Agriculture and Markets; industry associations; and others

7. Enhance work force conditions	*Possible Lead Agencies:* Hudson Valley agricultural development entity; NYS Dept. of Agriculture and Markets; and others *Possible Program Partners*: BOCES; Cornell Cooperative Extension; Empire State Development; Farm Bureau; industry associations; local chambers; NGOs; private industry councils; regional economic development offices; SUNY; and others
8. Strengthen and expand marketing opportunities in New York metropolitan region	*Possible Lead Agencies*: NYS Dept. of Agriculture and Markets; NYC Greenmarkets *Possible Program Partners*: Glynwood Center; Hudson Valley Agricultural Partnership
9. Advocate for increased state and federal funding for farmland protection programs and for creative local financing options like real estate transfer fees and installment purchase agreements	*Possible Lead Agencies*: AFT; county AFPBs; Farm Bureau; local governments; OSI; Scenic Hudson; and others *Possible Program Partners:* Cornell Cooperative Extension; local land trusts; industry
10. Establish a Lease of Development Rights (LDR) program	*Possible Lead Agencies*: AFT; county AFPBs; Farm Bureau; local governments; and others *Possible Program Partners*: Cornell Cooperative Extension; industry; OSI; Scenic Hudson

American Farmland Trust (AFT) is a private, nonprofit farmland conservation organization founded in 1980 to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. AFT's action-oriented programs include public education, technical assistance in policy development and demonstration farmland protection projects. AFT's Northeast office serves New York and New England. Contact: 6 Franklin Square, Suite E, Saratoga Springs, NY 12866; 518-581-0078; neaft@farmland.org; www.farmland.org

Columbia Land Conservancy (CLC) is a member-supported, nonprofit organization dedicated to protecting farmland, wildlife habitat and rural open space in the Columbia County region. CLC encourages environmental sensitivity and enlightened planning to guide the region's growth, and is strongly committed to the region's agricultural economy. The conservancy accepts conservation easements; acquires land; provides technical land planning and conservation assistance to landowners; and works with government officials and the public in support of planning and zoning practices that protect the region's open space resources. Contact: PO Box 299, 25 Main Street, Chatham, NY 12037; (518) 392-5252; info@clctrust.org; www.clctrust.org

Cornell Cooperative Extension (CCE) operates offices in all 57 New York counties. CCE helps individuals and agricultural businesses thrive by maintaining strong rural communities; advancing a clean, healthy environment; promoting attractive landscapes; assuring a safe, nutritious, and abundant local food supply; and supporting the New York economy.

- Columbia County CCE: Route 66, Hudson, NY 12534; (518) 828-3346; columbia@cornell.edu; www.cce.cornell.edu/columbia/columbia.html
- Dutchess County CCE**:** 2715 Route 44, Suite 1, Millbrook, NY 12545; (845) 677-8223; www.cce.cornell.edu/dutchess
- Greene County CCE**:** HCRC Box 906, Cairo, NY 12413; (518) 622-9820; www.cce.cornell.edu/greene/greene.html
- Orange County CCE: Community Campus, 1 Ashley Avenue, Middletown, NY 10940; (845) 344-1234; orange@cornell.edu; www.cce.cornell.edu/orange
- Ulster County CCE: 10 Westbrook Lane, Kingston, NY 12401-2928; (845) 340-3990; ulster@cornell.edu; www.cce.cornell.edu/ulster/ulster.html
- Westchester County CCE: 26 Legion Drive, Valhalla, NY 10595; (914) 285-4620; westchester@cce.cornell.edu; www.cce.cornell.edu/westchester

Cornell Food Venture Center helps entrepreneurs start new food manufacturing businesses, provides technical assistance to established food companies and conducts training on food manufacturing issues. The center, with support from Cornell experts, works closely with regulatory agencies: the New York State Department of Agriculture and Markets, the FDA and USDA. The center offers telephone consultations, laboratory assistance, technical information, pilot plant access and processing/formulation recommendations. The center also has processing authority to issue a schedule process, which is necessary to obtain a food-manufacturing license in New York. Contact: (315) 787-2273; oip1@cornell.edu; www.nysaes.cornell.edu/fst/fvc

County Agricultural and Farmland Protection Boards (AFPBs) were created under New York's Agricultural and Farmland Protection Program, Article 25-AAA, which was enacted in 1992. The program

makes state assistance payments available for counties to cover up to 50 percent of the costs to develop agricultural and farmland protection plans. Such plans locate important county agriculture, identify threats to agriculture and suggest strategies that will keep county land in agriculture. To date, 48 counties in the state have formed AFPBs and written plans.

- Columbia County AFPB: Joel Allen; RR#1, Box 9, Hudson, NY 12534; (518) 828-3346; jwa4@cornell.edu
- Dutchess County AFPB: Thomas Sanford; Macintosh Farm; Route 216, Box 160, Poughquag, NY 12570; (914) 221-2522
- Greene County AFPB: Matthew Story; 4640 Route 32, Catskill, NY 12414
- Orange County AFPB: Jack Hoeffner; 405 Goodwill Road, Montgomery, NY 12549; (845) 258-4215
- Ulster County AFPB: Lydia Reidy; Cooperative Extension; 10 Westbrook Lane, Kingston, NY 12401; (845) 340-3990
- Westchester County AFPB**:** Westchester County Department of Planning; 148 Martine Avenue, Room 432, White Plains, NY 10601; (914) 995-4400; gtd1@westchestergov.com www.westchestergov.com/planning/environmental

County Planning Departments are often directly involved in providing research and recommendations on agricultural policy. County planning departments can make informal comments or supply technical assistance on the compatibility of various land uses; traffic; the impact of proposed land uses; the protection of community character as related to land use, population density, and the relation between residential and nonresidential areas; drainage; and official municipal and county development policies, as expressed through comprehensive plans, capital programs or regulatory measures.

- Columbia County Planning: 401 State Street, Hudson, NY 12534; (518) 828-3375
- Dutchess County Planning**:** 27 High Street, Poughkeepsie, NY 12601; (845) 486-3600; plandev@co.dutchess.ny.us; www.dutchessny.gov/planning.htm
- Greene County Planning: 909 Greene County Office Building; Cairo, NY 12413; (518) 622-3251; gcpldept@francomm.com
- Orange County Planning: 124 Main Street, Goshen, NY 10924; (845) 291-2318
- Ulster County Planning: 244 Fair Street, Box 1800, Kingston, NY 12401; (845) 340-3340; planning@co.ulster.ny.us; www.co.ulster.ny.us/planning
- Westchester County Planning**:** 148 Martine Ave. Room 432, White Plains, NY 10601; (914) 995-4400; www.co.westchester.ny.us/planning

Dutchess Land Conservancy (DLC) is a private, nonprofit land conservation program dedicated to the preservation of scenic, agricultural and important environmental resources in Dutchess County for the benefit of the public. Since 1985, DLC has protected over 17,800 acres of land in Dutchess County through the donation and purchase of conservation easements and the outright acquisition of land. DLC is partnering with Dutchess County to leverage state, county and local acquisition dollars to buy conservation easements on agricultural land. DLC also works with municipalities to encourage environmentally sound planning concepts and undertakes public education efforts. Contact: 2908 Route 44, Millbrook, NY 12545; 845-677-3002; becky@dutchessland.org; www.dutchessland.org

Glynwood Center strives to help communities address change in ways that conserve local culture and natural resources, while strengthening economic well-being. Because much of their work is in small and rural communities, agriculture is a primary focus of Glynwood's efforts. Glynwood coordinated the *Hudson Valley Agri-tourism Countryside Exchange*, which brought a team of volunteer professionals from the US and Europe together to travel throughout the region and make recommendations on agritourism in the valley. Glynwood is also working to develop a regional food system. Contact: Route 301, Box 157, Cold Spring, NY 10516; 845-265-3338; info@glynwood.org; www.glynwood.org

Greenmarket, a program of the Council on the Environment of NYC, promotes regional agriculture and ensures a continuing supply of fresh, local produce for New York City residents. Greenmarket has organized and managed open-air farmers markets in NYC since 1976. By providing regional farmers with opportunities to sell their fruits, vegetables and other farm products to New Yorkers, Greenmarket supports farmers and helps preserves farmland. Forty-two markets in 31 locations in Manhattan, Brooklyn, Queens, Bronx, and Staten Island are frequented by 250,000 customers every week during peak season. Contact: Council on the Environment of New York City; 51 Chambers Street, Room 228, New York NY 10007; (212) 477-3220; greenmarket@rcn.com; www.cenyc.org/HTMLGM/maingm.htm

Hudson Mohawk Resource Conservation and Development Council (RC&D) includes the counties of Albany, Columbia, Greene, Montgomery, Rensselaer and Schenectady. The RC&D program can assist in establishing outlets for a wide variety of natural resource and agricultural products while attracting industries to take advantage of raw materials. The Hudson Mohawk RC&D program is currently involved in production and alternative agriculture programs including grazing programs and livestock processing, tourism development, community programs, forestry and water quality. Contact: 1024 Route 66, Ghent, NY 12075; (518) 828-4385; mark.grennan@ny.usda.gov

Hudson River Greenway is a state agency created to facilitate the development of a regional strategy for preserving scenic, natural, historic, cultural and recreational resources of the Hudson River Valley, while encouraging compatible economic development and maintaining the tradition of home-rule for land-use decision making. Through voluntary participation in the Greenway, communities in the Hudson River Valley can receive technical assistance and funding for local land use planning and implementation projects, land and water based trail development, and heritage promotion. Greenway funding is available to all communities in the valley that voluntarily pass a resolution to join the Greenway and support its goals (currently 183 out of 259 eligible communities have joined). Contact: Capitol Building, Capitol Station, Room 254, Albany, NY 12224; (518) 473-3835; hrvg@hudsongreenway.state.ny.us; www.hudsongreenway.state.ny.us

Hudson Valley Agricultural Partnership (HVAP) is dedicated to protecting farmland and strengthening agriculture in the Hudson River Valley. Members of the coalition include farmers, conservation organizations, farming advocates, local government leaders, consumers and environmentalists. The partnership intends to secure greater public support and increased funding for programs that support purchase of development rights, agricultural support systems and farm viability and stewardship. Contact: Michael Turton; c/o Scenic Hudson; 9 Vassar Street, Poughkeepsie, NY 12601; (845) 473-4440; clarus123@earthlink.net

Hudson Valley Economic Development Corporation works to increase and enhance opportunities for employment within the Hudson Valley by attracting inward capital investments through a coordinated regional marketing program. The corporation emphasizes the geographic, technological, educational, cultural, and environmental advantages of the Hudson Valley. Contact: Anthony Campagiorni, Executive Director, 33 Airport Center Drive, Suite 107, New Windsor, NY 12533; (845) 220-2244; www.hvedc.com

Hudson Valley Fruit Grower Task Force lobbies for government aid and crop insurance reform. The group formed to assess the damage from the 2002 crop season, in which 53 percent of the Hudson Valley apple crop, worth $65 million, was lost to frost and hail. According to the task force, the present crop insurance system doesn't reimburse adequately and fails to reimburse for certain types of crop damage. Farmers who direct mark generally receive more for their fruit, so are eligible for higher insurance reimbursements. However, the Hudson Valley is currently included with the rest of New York, which competes primarily in a wholesale market. The task force would like to see Hudson Valley fruit growers included with New England growers instead, since both markets rely heavily on direct marketing. Peter Barton, orchard owner and chairman of the task, has testified in Congress about the effects of Chinese imports on the Hudson Valley apple industry. Contact: Peter Barton; Barton Orchards; 63 Apple Tree Land, Poughquag, NY 12570; (845) 227-2306; orchard@bestweb.net

Hudson Valley Harvest Campaign was developed to strengthen Hudson Valley agriculture and food systems through a partnership to create public awareness of the importance of farming; promote agriculture and food literacy; and foster economic development and consumer loyalty to Hudson Valley farms and food products. The campaign is a collaboration of CCE Dutchess County, the Dutchess County Tourism Agency, Dutchess County Economic Development Corp. and the Dutchess County Industrial Development Agency. The campaign developed a Hudson Valley Harvest logo for producers in the region. Contact: Les Hulcoop; CCE Dutchess County; P.O. Box 259, Millbrook, NY 12545; (914-677-8223 x130); LCH7@cornell.edu

Hudson Valley Livestock Marketing Task Force is committed to exploring and developing a processing and marketing system for livestock producers in the Hudson Valley. The task force strives to assist producers in developing a market; consumers in purchasing local product; and the community in sustaining open spaces and strengthening their economic base. The group surveyed livestock producers to quantify the need for a slaughter/processing facility and for marketing education and assistance (results available on their Web site). The task force is currently looking for a site and funding/investors for a slaughter and processing facility. Contact: Lisa Lafferty; Cornell Cooperative Extension Columbia County; 479 Route 66, Hudson, NY 12534; (518) 828-3346; lai2@cornell.edu; www.sheepgoatmarketing.org/sgm/education/projects/hudson.htm

Hudson Valley Smart Growth Alliance (HVSGA) is a regional partnership of diverse interests including environmental, land conservation and economic development organizations, builders, realtors, tourism officials and planning agencies. The group works to build consensus on smart growth principles and to promote local and regional solutions to sprawl. HVSGA advocates for the implementation of smart growth tools and techniques in order to promote economically feasible and environmentally sound development practices. The alliance holds an annual conference and publishes a quarterly newsletter. Contact: Scenic Hudson; 9 Vassar Street, Poughkeepsie, NY 12601; (845) 473-4440; www.scenichudson.org/hvsga.htm

Hudson Valley Tourism Development Council (TDC) is a public/private partnership of tourism interests in the Hudson River Valley Region (defined as 10-counties). The council's mission is to strengthen the region's economic base by effectively coordinating and implementing tourism development efforts. The TDC is working to create a cohesive whole-region identity, promoting the Hudson Valley as a major tourism destination, domestically and internationally. The TDC holds meetings bi-monthly throughout the year and encourages all tourism businesses to attend. Contact: Hudson River Greenway; Capitol Building, Capitol Station, Room 254, Albany, NY 12224; (518) 473-3835; www.hudsongreenway.state.ny.us/tourism/MISSION.htm

LEAD NY is a two-year training program of seminars, workshops and field travel for individuals involved in the state's food and agricultural industry. The program helps participants improve their skills in communication, leadership, issue analysis and networking. Alumni include farmers, lenders, shippers, retailers, educators, marketers, consultants and nonprofit representatives. Contact: 406 Kennedy Hall, Cornell University, Ithaca, New York 14853; (607) 255-6891; www.cals.cornell.edu/LEADNY

Mid-Hudson Pattern for Progress is a nonprofit public policy research and planning institute serving a nine-county region. Their mission is to preserve and promote the social, economic and natural environments of the Hudson Valley region by building a consensus for a pattern of growth that will ensure a high quality of life. For the organization, securing a high quality of life involves protecting the natural environment and taking from it only those resources needed to promote economic prosperity, and providing adequate opportunities and incentives for capital formation and meaningful, gainful employment. Contact: Desmond Campus, 6 Albany Post Road, Newburgh, NY 12550; (845) 565-4900; www.pattern-for-progress.org/home_frame.htm

New Farmer Development Project (NFDP) is jointly coordinated by Cornell Cooperative Extension's New York City programs and by the Council on the Environment of New York City. The NFDP identifies agriculturally experienced immigrants in the New York City region and helps them establish economically and environmentally sound, small-scale farm operations. The group strives to help preserve regional farmland, strengthen farmers' markets and expand access to high quality, locally grown farm products. Most of the participants are originally from Latin America, with strong backgrounds in agriculture. Contact: Rachel Dannefer, Project Director; (212) 477-3220; newfarmer@greenmarket.cc; www.cenyc.org/HTMLGM/nfdpfaq.htm

New York Farms! is a diverse, statewide coalition of farmers, agricultural organizations, businesses, educational agencies, nonprofit organizations, environmentalists, consumer groups, community planners, economic developers and public entities such as Cornell Cooperative Extension. The coalition works to promote farming, protect New York farmland and foster consumer loyalty to New York farm products. The organization provides mini-grants for "Buy NY" products and works with various groups to develop regional product identities. Contact: 125 Williams Road, Candor, NY 13743; (607) 659-3710; nyfarms@baldcom.net

New York Farm Bureau is a non-governmental, volunteer organization financed and controlled by families for the purpose of solving economic and public policy issues challenging the agriculture industry. Farm Bureau's "grass roots" policy development process ensures that the organization represents the majority

position of its membership. Policy development begins at the county level with problem identification and culminates at the New York Farm Bureau annual meeting with a resolution addressing the issues. Contact: Route 9W, PO Box 992, Glenmont, NY 12207; (518) 436-8495; www.nyfb.org

- Columbia County Farm Bureau: Eric Ooms, President; 153 Hartigan Road, Old Chatham, NY 12136; (518) 392-9813; eaooms@taconic.net; www.nyfb.org/counties/columbia/columbia.htm
- Dutchess County Farm Bureau (serves Dutchess, Putnam and Westchester counties): Mark Adams, President; (845) 471-8655; or Marilyn Howard, Field Advisor; (845) 868-7171; nymhoward@fb.org; www.nyfb.org/counties/dutchess/dcfb.htm
- Greene County Farm Bureau: James Van Orden, President; 173 Embought Road, Catskill, NY 12414; (518) 943-2894; or Bambi Baehrel, Agent; 16 Sugar Loaf Road, Earlton, NY 12058; (518) 634-7852; nybbaehrel@fb.org
- Orange County Farm Bureau: John Lupinski, President; One Houston Road, Goshen, NY 10924; (845) 294-5557
- Ulster County Farm Bureau: Tony Moriello, President; 167 Lower Whitfield Road; Accord, NY 12404; (914) 626-7284

New York FarmNet is an information, referral and consulting program for members of New York's farm community. NY FarmNet consultants around the state are available to work with farmers and their families on issues related personal or business transitions and challenges. NY FarmNet administers the NY FarmLink program, a transition network designed to help farmers get into or out of farming. FarmLink provides comprehensive farm transfer assistance. Contact: 414 Warren Hall, Cornell University, Ithaca, NY 14853; (800) 547-FARM; www.nyfarmnet.org

New York State Department of Agriculture and Markets promotes a viable agricultural industry, fosters agricultural environmental stewardship, and safeguards the food supply. The department administers the Agricultural Districts Program, the state Farmland Protection Program and Agricultural Environment Management. Contact: Division of Agricultural Protection and Development Services; 1 Winners Circle, Albany, NY 12235; (518) 457-7076; info@agmkt.state.ny.us; www.agmkt.state.ny.us

Northeast Organic Farming Association of NY (NOFA-NY) is an organization of organic gardeners and farmers, farmers interested in converting from conventional to organic methods and consumers interested in supporting organic farming in the Northeast. NOFA-NY works to create a sustainable regional food system that is ecologically sound and economically viable. Through demonstration and education, NOFA promotes land stewardship, organic food production and local marketing. NOFA-NY, governed by a volunteer council of farmers, consumers, and gardeners, is one of seven northeastern state organizations that work together under the umbrella of the Northeast Organic Farming Association (NOFA). Contact: P.O. Box 880, Cobleskill, NY 12043; (518) 734-5495; office@nofany.org; www.nofany.org

Open Space Institute (OSI) is a nonprofit conservation organization that acquires significant recreational, environmental, historic and cultural properties throughout New York state, and supports the efforts of citizen activists working to protect environmental quality in their communities. Since its inception nearly 25 years ago, OSI's work has added to, or created, more than 30 parks and preserves and has permanently protected

more than 80,000 acres from the Adirondacks to the Palisades. Contact: 1350 Broadway, Room 201, New York, NY 10018; (212) 629-3981

Orange County Land Trust was established in 1994 to preserve open space in Orange County through education efforts, easement acquisitions and outright land acquisition where appropriate. Contact: PO Box 2442, Middletown, NY 10940; (845) 343-0840; oclt@warwick.net

Regional Farm and Food Project is an independent non-profit membership organization founded in 1996 to foster new opportunities for family-scale farming. They offer workshops, farm tours, and mentoring opportunities; organize networks and initiatives to strengthen agriculture and bring about social change; work to develop new markets for local farms; facilitate solutions to agriculture and food system challenges; and raise public awareness through a newsletter, farm guides, radio show, cultural and culinary events, forums, and the media. Contact: 295 Eight Street, Troy, NY 12180; (518) 271-0745; farmfood@capital.net; www.capital.net/~farmfood

Rondout-Esopus Land Conservancy, founded in 1989, works to conserve farm and forest land in Ulster County. Contact: 4243 Route 28 A, West Shokan, NY 12494; (845) 687-7553

Scenic Hudson is a 37-year-old nonprofit environmental organization and separately incorporated land trust dedicated to protecting and enhancing the scenic, natural, historic, agricultural and recreational treasures of the Hudson River and its valley. To date they have protected more than 17,700 acres of land in nine counties and created or enhanced 28 parks and preserves for public enjoyment. Contact: 9 Vassar Street, Poughkeepsie, NY 12601; (845-473-4440); www.scenichudson.org

Stone Barns Center for Food and Agriculture is a nonprofit farm and educational center in Westchester County. The center demonstrates, teaches and promotes sustainable, community-based farming. The center's programs include hands-on learning opportunities for adults, children, producers and consumers; a working four-seasons farm; a restaurant featuring seasonal and local cuisine operated by Blue Hill Restaurant owners Dan, David and Laureen Barber; and seminars and conferences that examine the wider implications of community-based sustainable agriculture. Contact: Daphne Derven; daphne@stonebarnsccenter.org; www.stonebarnscenter.org

Walkill Valley Land Trust in New Paltz is actively working to preserve farms and working landscapes in the eight towns of southern Ulster County. Among their easements are three working farm operations, including the Phillies Bridge Farm Project, a biodynamic farm in Gardiner. They also own five properties outright. The land trust recently received a grant from the Land Trust Alliance to expand the executive director's position to full-time. Contact: PO Box 208, New Paltz, NY 12561; (845) 255-2761; wallkillvalleylt@msn.com

Westchester Land Trust is dedicated to protecting open space and promoting responsible land use throughout Westchester County. The organization, which was founded in 1988, works to protect Westchester's landscapes, communities and natural resources by protecting land in partnership with private property owners; helping communities create new public parks and preserves; and fostering sound land use

planning rules. The land trust acquires land and interests in land, promotes land protection and educates the public on land use preservation approaches and issues. Contact: 31 Main Street, Bedford Hills, NY 10507; (914) 241-6346; info@westchesterlandtrust.org; www.westchesterlandtrust.org

Woodstock Land Conservancy (WLC) is a non-profit organization committed to the protection and preservation of open land, forests, wetlands, scenic areas and historic sites in Woodstock and the surrounding area. The Conservancy has protected over 388 acres to date in fifteen different properties, through conservation easements and outright land acquisition. WLC is essentially an all-volunteer operation with one very part-time executive director. Contact: PO Box 864, Woodstock, New York 12498; (845) 334-2418; info@woodstocklandconservancy.org; www.woodstocklandconservancy.org

REFERENCES

ACDS, LLC. *Economic Trends and Impacts of the Agriculture Industry in Orange County, N.Y*. Columbia, M.D.: ACDS, LLC, 2003.

Alpern, Sherry. *Re-invigorating a Wholesale Farmers' Market in New York City: A Study by New York State Department of Agriculture and Markets*. New York, N.Y.: New York State Department of Agriculture and Markets, 2004.

Berkenkamp, JoAnne and Mark Lattanzi. *Harvesting Support for Locally Grown Food: Lessons Learned from the Be a Local Hero, Buy Locally Grown Campaign*. Amherst, M.A.: Community Involved in Sustaining Agriculture, 2003.

Bills, Nelson and Maureen Maloney Robb. *Farmland Protection Planning in New York.* Ithaca, N.Y.: Department of Applied Economics and Management, College of Agriculture and Life Sciences, Cornell University, 2001.

Columbia County Patterns for Progress Task Force. *Report of the Columbia County Patterns for Progress Task Force*. Saratoga Springs, N.Y.: The Saratoga Associates, 1999.

Dutchess County Agricultural and Farmland Protection Board. *Dutchess County Agricultural and Farmland Protection Plan.* Poughquag, N.Y.: Dutchess County Agricultural and Farmland Protection Board, 1998.

Goldsmith, Kate. "Farming at a Crossroads." Dutchess May/June 2003: 28-37.

Greene County Agricultural and Farmland Protection Board. *Greene County Agricultural Development and Farmland Protection Plan.* Catskill, N.Y.: Greene County Agricultural and Farmland Protection Board, 2002.

Glynwood Center. *The 2003 Countryside Exchange*. Cold Spring, N.Y.: Glynwood Center, 2003.

Greenberg, Jan. *Hudson Valley Harvest*. Woodstock, V.T.: The Countryman Press, 2003.

Ferguson, Kirsten. *Saving Working Landscapes*. Saratoga Springs, N.Y.: American Farmland Trust, Scenic Hudson and Open Space Institute, 2002

Kealy, Janet. "The Hudson River Valley: A Natural Resource Threatened by Sprawl." The New York Environmental Lawyer Winter 2003: 9-23.

New York State Legislative Commission on Rural Resources. *Columbia County Guide to Technical and Financial Assistance for Economic and Business Development Leaders*. Albany, N.Y.: New York State Legislative Commission on Rural Resources, 2002.

New York State Legislative Commission on Rural Resources. *Greene County Guide to Technical and Financial Assistance for Economic and Business Development Leaders*. Albany, N.Y.: New York State Legislative Commission on Rural Resources, 2002.

REFERENCES

New York State Legislative Commission on Rural Resources. *Ulster County Guide to Technical and Financial Assistance for Economic and Business Development Leaders*. Albany, N.Y.: New York State Legislative Commission on Rural Resources, 2002.

New York State Senate. *Task Force for Hudson Valley Fruit Growers: White Paper Outlining Fruit Growers Action Plan, Second Draft*. Albany, N.Y.: New York State Senate, 2004.

Nolan, John. *Drawing the Boundaries of Growth*. Newburgh, N.Y.: Mid-Hudson Pattern for Progress, 2003.

Northeast Sustainable Agriculture Working Group. *Agricultural Policy in the Northeast States: Inventory and Innovation*. Belchertown, M.A.: Northeast Sustainable Agriculture Working Group, 2003.

Northeast Sustainable Agriculture Working Group. *Northeast Farms to Food: Understanding our Region's Food System*. Belchertown, M.A.: Northeast Sustainable Agriculture Working Group, 2002.

Orange County Agricultural and Farmland Protection Board. *Orange County Agricultural and Farmland Protection Plan*. Orange County, N.Y.: Orange County Agricultural and Farmland Protection Board, 1996.

Pendall, Rolf. *Sprawl Without Growth: The Upstate Paradox*. Washington D.C.: The Brookings Institution Center on Urban and Metropolitan Policy, 2003.

Robb, Maureen Maloney with R. David Smith and Nelson Bills. *Grow New York: Review of Neighboring County Farmland Protection Plans*. Ithaca, N.Y.: Cornell University, 2001.

Robb, Maureen Maloney. *Defining Indicators of Success for Agricultural Economic and Community Development Efforts*. Ithaca, N.Y.: Cornell University AIDER Program, 2001.

Robb, Maureen Maloney. *Defining Indicators of Success for Agricultural Economic and Community Development Specialists*. Ithaca, N.Y.: Cornell University AIDER Program, 2001.

The Trust for Public Land. *Report on Conservation Finance Options, New York Metropolitan Region: Catskills, Lower Hudson, Long Island*. New York, N.Y.: The Trust for Public Land, 2003.

The Trust for Public Land. *A Conservation Finance Ballot Measure for Orange County*. New York, N.Y.: The Trust for Public Land, 2003.

Ulster County Agricultural and Farmland Protection Board. *Ulster County Agricultural and Farmland Protection Plan*. Kingston, N.Y.: Ulster County Agricultural and Farmland Protection Board, 1997.

U.S Department of Agriculture National Agricultural Statistics Service. *2000 Direct Marketing Survey*. Washington, D.C.: National Agricultural Statistics Service, 2000.

APPENDIX 1

Data and Models Used in the Following Reports

The following reports assemble data from many different sources to provide a complete picture of the agriculture industry in Hudson Valley counties. The data are published by several different government agencies at varying time intervals. We sought to provide the most recent data available from each source, but the years on some statistics differ due to the various publication schedules.

We relied on the Census of Agriculture from 1987, 1992, and 1997 to provide details on farm numbers, farm acreage, vegetable production, and greenhouse and nursery production. These censuses are conducted in five-year intervals. (Note: county specific data from the 2002 Census of Agriculture was not available at the time of this report. However, preliminary statewide data from the 2002 Census is listed in Appendix 9.) In addition, data from the New York Agricultural Statistics Service was used for annual field crop estimates and dairy cow information from 1992 to 2001.

Data on farm sales, employment, and income from 1975 to 2000 also were collected from the Regional Economic Information System (REIS) from the U.S. Department of Commerce's Bureau of Economic Analysis.

Agricultural industry sector data on number of firms, employment and payroll were taken from the Bureau of Census County Business Pattern data sets from 1993 to 2000.

The IMPLAN model was used to estimate economic impacts of the various crop sectors. IMPLAN uses data from the population census, County Business Patterns, Regional Economic Information System (REIS) data, and especially the annual BLS ES-202 wage and employment data. All data sources for the IMPLAN model are based on 1997 information. IMPLAN is an inter-industry input-output model used to capture the inner-workings of local economies. The USDA Forest Service, in cooperation with other federal agencies, originally developed IMPLAN. To address the prohibitive cost of extensive primary data collection on local inter-industry purchases, IMPLAN and other "non-survey" modeling systems combine available data about the national economy with state and county level data to estimate the flow of goods and services through a local economy.

One of IMPLAN's strengths is the fact that it integrates many sources of data at different levels of aggregation into a comprehensive, internally consistent system that can be applied to any county or region in the United States. Although this integration requires numerous assumptions and estimations of data for specific industries in specific counties, great effort is made to make all estimates compatible with the most accurate available measured data.

Economic Trends and Impacts of the Agriculture Industry in Columbia County, NY

Columbia County's agricultural economy is dominated by its dairy sector and the related sectors for feed and cattle. Although nearly half of the dairy farms in Columbia County exited the industry or shifted to other commodities in the last decade, those that remain have grown larger and have significantly expanded their output. While the dairy sector has been a source of some growth in recent years, an outlook for dismal milk prices and shifting economics of dairy production that favor western states suggests that Columbia County's agricultural sector may go through further adjustments in coming years. Currently, no single commodity appears poised to absorb any losses that could occur from a declining dairy sector. Although a number of sectors have shown positive growth, such as greenhouse/nursery, vegetables, and minor livestock products, these remain relatively small components of the county's farm sector.

Key Findings of the Study

1. Columbia County's farm economy produced $76.1 million in output value in 2000, which generated an additional $27.4 million in related economic activity locally.

2. There has been a noticeable decline in mid-sized farms. As such, most of the economic activity comes from a small number of very large farms. The largest 28 farms in the county with sales greater than $500,000 total only 6 percent of all farms, but account for over two-thirds of the economic output from the county's farm sector.

3. Farm profitability has improved in recent years. This could be attributed to better production practices of individual farms or higher prices of select commodities, but it is also driven by the elimination of unprofitable farms over this time period.

4. Increased farm size is being driven by the dairy and feed sector, where lower real commodity prices and increased productivity are causing farms to get bigger to improve profitability.

5. The dairy sector will likely continue to contract as milk prices are expected to trend lower in coming years. As such, future output growth in the county's agricultural sector may be limited.

6. A number of smaller sectors of the county's agricultural economy have expanded in recent years. However, at current growth rates, these sectors seem unlikely to absorb any future losses that could occur in the dairy and feed sectors.

7. There has been limited growth in the manufacturing, wholesaling or retail sector of the agricultural economy. This may potentially impact growth at the farm level into non-traditional crops.

Agricultural Economic Development Assessment

APPENDIX 1

Farm Characteristics

Advances in agricultural technology over the last 100 years have increased the productivity and output of agriculture in the United States. As agricultural productivity growth has outpaced population growth and the demand for food, the result has been a decline in U.S. farms and land devoted to farming. Although much of this adjustment occurred between 1930 and 1970, during which half of all U.S. farms exited the industry, more recent times also suggest a continued loss of farms. From 1987 and 1997, U.S. farm numbers declined by one percent while land in farms declined by 4.3 percent.

However, on a regional level other economic pressures can exacerbate these trends, such as urban encroachment or changing economics of commodity production. This is true in Columbia County, where farm numbers have fallen by 18 percent and land in farms has fallen by 14 percent. These losses are more severe than those experienced in New York state overall, where farm numbers and land in farms fell by 10 percent from 1987 to 1997.

In Columbia County, land in farms totals over 110,000 acres based on the 1997 Census of Agriculture, accounting for 30 percent of the county's total land area. Farm size, as measured by average acreage per farm, increased modestly from 236 acres per farm to 248 acres per farm from 1987 to 1997. Much of the growth in average farm size is attributable to the dairy sector and the supporting feed sectors in the county. From 1987 to 1997, the number of milk cows per dairy farm has increased from 80 cows per farm to 144 cows per farm. At the same time, production of corn for grain or silage in the county has increased from 136 acres per farm in 1987 to 250 acres per farm by 1997. As the dairy and feed sector have posted declining real commodity prices and increased productivity in the last twenty years, farms have adapted to these changes by increasing farm size in an attempt to lower per-unit production costs.

Table 1. Number of Farms, Land in Farms and Average Farm Size for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Farms	567	484	464	-18%
Land in Farms (Acres)	133,623	111,974	114,883	-14%
Average Farm Size (Acres)	236	231	248	5%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Although average farm size has increased, there have been important shifts in the distribution of farms by size in Columbia County. In 1987, the largest class size of farms in Columbia County was 180 to 499 acres per farm. In the 10-year period from 1987 to 1997, the number of farms in this size category fell by 40 percent—significantly more than the 18 percent loss in all farms over this same period. The declining real commodity prices in the dairy sector and the feed sector have likely put pressure on farmers to either grow larger—thereby reducing per-unit production costs—or to sell off land and take off-farm employment. Because smaller farms are likely supported by off-farm income, they are less vulnerable to lost income from farming

and the economic pressures of the dairy and feed sector over this time period. Therefore, the number of small farms declined relatively less from 1987 to 1997, as compared to the mid-sized farms.

Table 2. Farms By Size of Acreage for Columbia County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	45	31	41	-9%
10 to 49 acres	100	103	103	3%
50 to 179 acres	172	160	150	-13%
180 to 499 acres	179	127	108	-40%
500 to 999 acres	55	46	47	-15%
More than 1,000 acres	16	17	15	-6%
TOTAL	567	484	464	-18%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

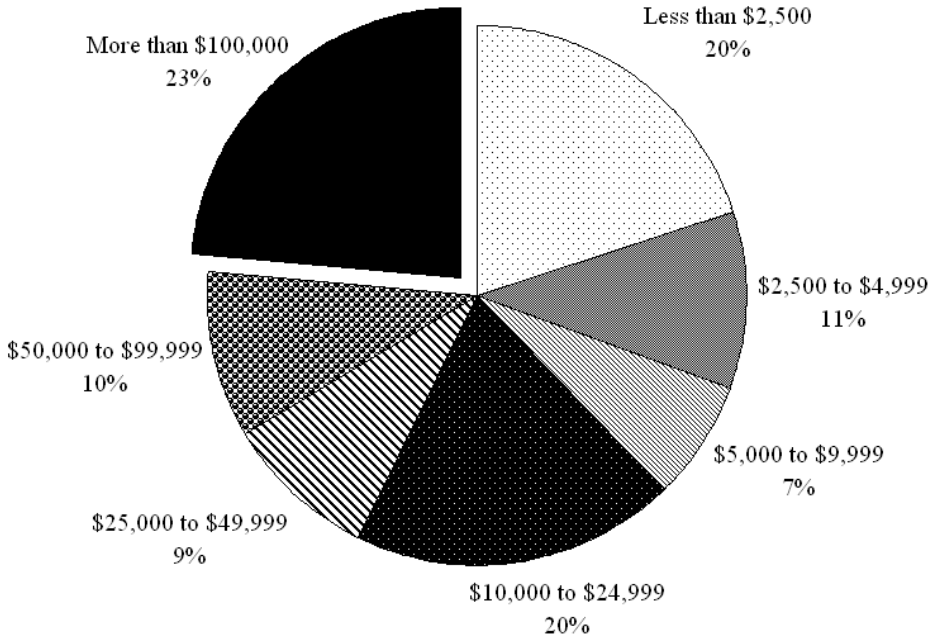
The decline in mid-sized farms is also apparent by examining the change in farm numbers based on gross sales per year. For example, the number of farms selling $100,000 to $500,000 per year declined by 49 farms, or 38 percent, from 1987 to 1997. While some of these 49 farms likely grew bigger, the number of farms posting more than $500,000 in sales increased by only 15 farms over this period. This suggests that most of the farms in the $100,000 to $500,000 sales category either exited farming or scaled back to a smaller size.

Table 3. Farms By Value of Sales for Columbia County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	123	95	93	-24%
$2,500 to $4,999	44	42	49	11%
$5,000 to $9,999	48	55	33	-31%
$10,000 to $24,999	102	80	91	-11%
$25,000 to $49,999	47	44	42	-11%
$50,000 to $99,999	60	49	47	-22%
$100,000 to $500,000	130	107	81	-38%
More than $500,000	13	12	28	+115%
TOTAL	567	484	464	-18%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Figure 1. Proportion of Farms by Value of Sales for Columbia County, NY: 1997

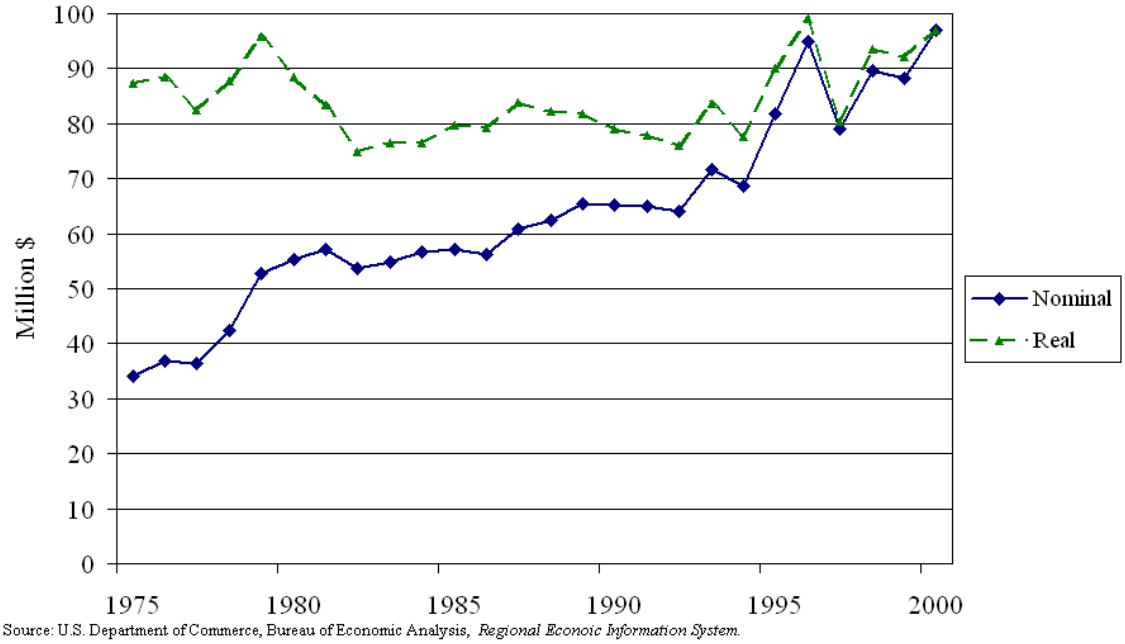


The decline in mid-sized farms suggests that most of the economic activity in the county's agriculture sector comes from a few large farms. The largest 28 farms in the county with sales greater than $500,000 total only six percent of all farms, but account for over two-thirds of the economic output from the county's farm sector.

Agricultural Commodity Output

For much of the 1980s, the sales value of Columbia County's farm commodities increased slowly but steadily. By the mid-1990s, this growth accelerated dramatically, but also showed significant swings from year to year. This volatility and growth was a result of expansion by dairy farms during this time period, as well as more volatile farm milk prices.

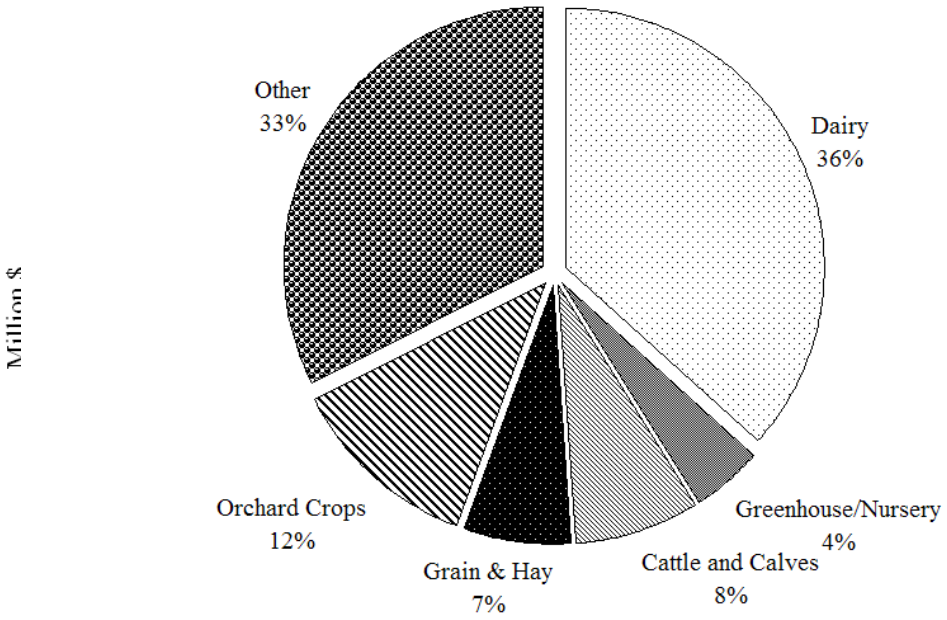
Figure 2. Value of Farm Marketings for Columbia County, NY: Nominal and Real 2000 Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

While those farms that have remained in the dairy industry have expanded output in recent years, there have also been important increases in the crop sector. Since 1983, the value of crop sales has increased from $11.3 million to $18.6 million by 2000. Some of this growth is attributable to the feed sector, but other crops like orchard crops, greenhouse/nursery, and vegetable products have contributed to this growth as well.

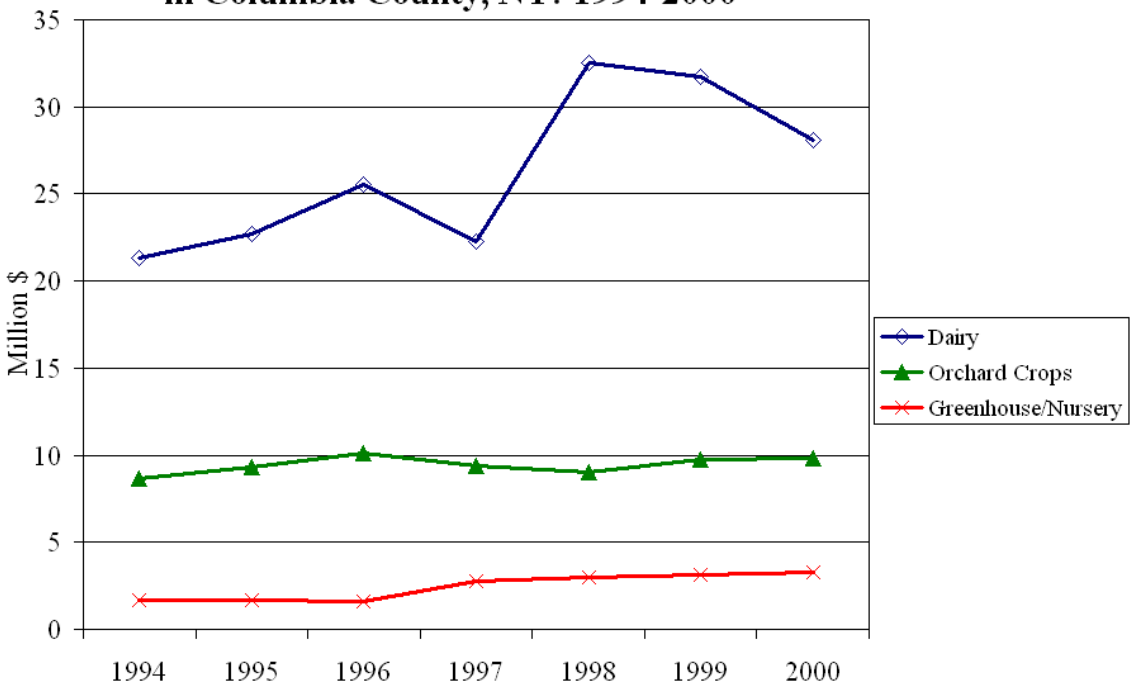
Figure 4. Proportion of Commodity Output Value for Columbia County, NY: 1997



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Although there has been some expansion into other commodities, Columbia County's agricultural sector is still heavily reliant on the dairy sector. Indeed, the importance of the dairy sector in the county's agricultural sector has increased in recent years. For example, in 1994 the dairy sector accounted for 37 percent of the county's agricultural output, but increased to 44 percent by 1998 as a result of high milk prices. As milk prices have declined in recent years, dairy's share of the economic output has declined (36 percent in 2000).

Figure 5. Cash Receipts for Primary Commodities in Columbia County, NY: 1994-2000



If one were to include the grain and hay sector, as well as the cattle and calves sector, which have important linkages to the dairy sector, then the importance of the dairy sector would be even more pronounced. No other single commodity matches the size of dairy's output for Columbia County. Instead, Columbia County farmers produce a number of different products in smaller magnitudes, including orchard crops and greenhouse/nursery products. Although the output from the orchard crop sector has remained relatively stable from 1994 to 2000, the greenhouse/nursery sector has nearly doubled over this same time period. Even so, the greenhouse/nursery sector remains a relatively minor component of the county's agricultural economy.

An increase in the number of farms, as well as the production capacity for these crops, has driven the growth in the greenhouse/nursery and vegetable crops sector. Greenhouse/nursery crop acreage nearly doubled, while the number of farms producing these crops increased 245 percent from 1987 to 1997.

Table 4. Farms and Acreage by Primary Crops for Columbia County, NY: 1987 to 1997

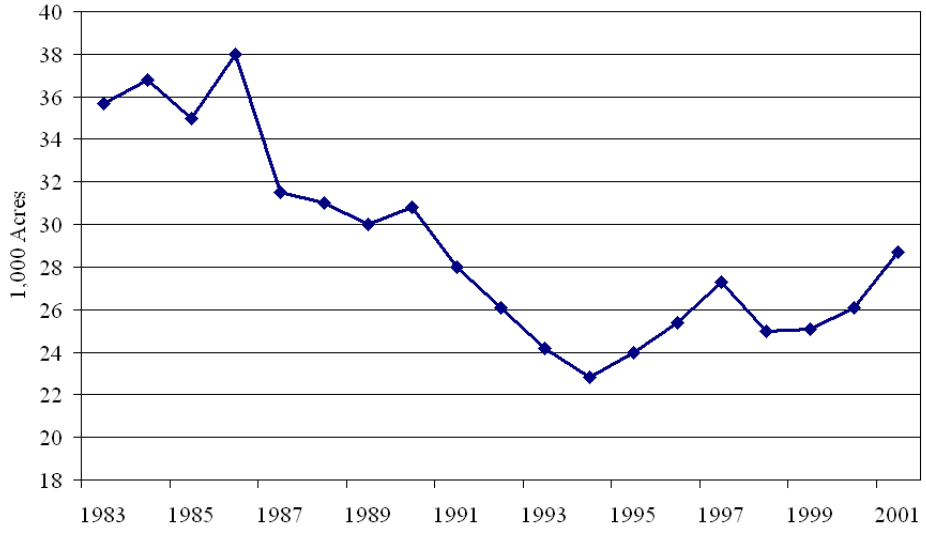
Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	-------- Number of Farms ----------				---------- Acres ----------			
Vegetables	53	50	48	-9%	1,374	1,058	1,138	-17%
Corn	134	101	81	-40%	11,255	9,127	11,427	2%
Hay	342	284	256	-25%	36,633	33,711	36,111	-1%
Greenhouse/Nursery*	22	45	76	245%	395.44	453	785	99%
Orchard Crops	115	103	79	-31%	5,960	4,754	3,647	-39%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

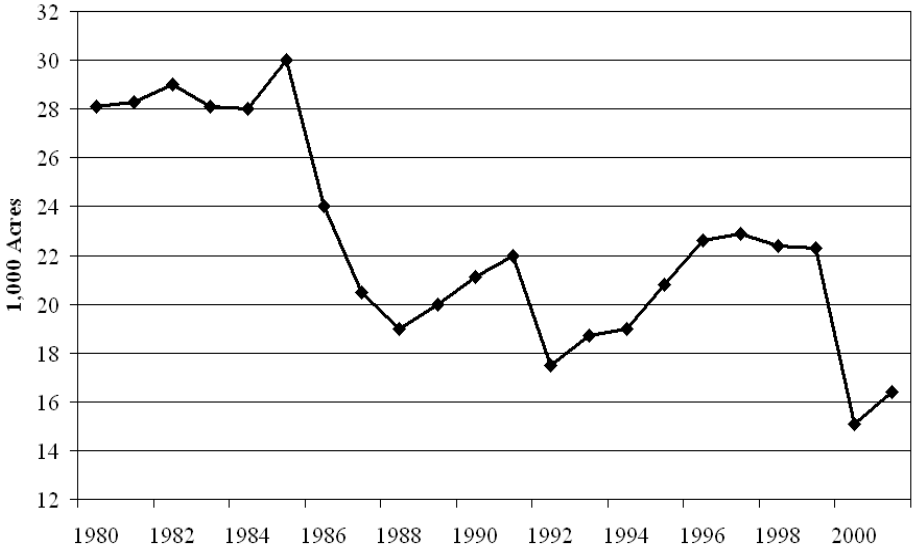
For other crops, however, there was less growth in the number of farms, as well as acreage. The exception was corn and hay acreage, which was largely unchanged from 1987 to 1997. However, this example masks some significant swings in the production that occurred over this time period. Both posted declining acreage for the late 1980s and early 1990s, but then rebounded in 1992, which coincided with the expansion in the dairy sector.

Figure 6. Hay Acreage in Columbia County, NY: 1983-2001



Source: New York Agricultural Statistics Service.

Figure 7. Corn Planted Acres for Columbia County, NY: 1980-2001



Source: New York Agricultural Statistics Service.

In the vegetable sector, there have been small declines in the number of farms and the acreage devoted to the production of vegetable crops. However, output value over the period of 1987 to 1997 more than doubled from $1.1 million in 1987 to $2.3 million by 1997. Much of this growth could be attributable to shifts away from sweet corn production to the production of alternative vegetable crops. For example, in 1987 nearly two-thirds of the vegetable acreage in Columbia County was for the production of sweet corn, but by 1997 only 37 percent of the vegetable acreage was for sweet corn.

The loss in sweet corn production led farmers to expand into other vegetable commodities, with pumpkin production posting the largest absolute increase in acres. On a smaller scale, the county's vegetable farmers also grew more broccoli, cantaloupes, cauliflower, cucumbers, eggplant, sweet peppers, squash and tomatoes from 1987 to 1997.

Table 5. Vegetables for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			------- Acres -----		
Broccoli	6	na	6	3	na	30
Cabbage	12	3	7	16	**	6
Cantaloupes	7	3	8	8	**	14
Cauliflower	6	na	5	7	na	20
Cucumbers	10	11	10	20	9	28
Eggplant	7	4	5	7	3	13
Lettuce	na	4	6	na	17	39
Peas, Green	9	8	4	17	7	6
Peppers (Sweet)	11	13	13	12	7	35
Pumpkins	24	18	18	130	147	190
Squash	15	20	15	39	42	71
Sweet Corn	31	30	22	514	688	299
Tomatoes	27	32	23	40	50	59

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Like the vegetable sector, the greenhouse and nursery industry saw higher sales. More farms grew greenhouse/nursery products from 1987 to 1997, with a 178 percent increase in production area under glass, as well as a 98 percent expansion in production in the open.

Table 6. Greenhouse/Nursery Production for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	22	45	76	245%
Production Area under Glass or Protection (sq. feet)	62,650	78,828	173,881	178%
Production in the Open (acres)	394	451	781	98%
Value of Sales (million)	**	$1.45	$3.24	na

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

The expansion in the number of farms and in area devoted to the production of greenhouse/nursery crop has led to a sizable expansion in the value of sales from this sector. The output from this sector more than doubled from $1.45 million in 1992 to $3.24 million by 1997. In addition, this expansion occurred across a number of different product types, including bedding/garden plants, Christmas trees, nursery crops and greenhouse vegetables. Only potted flowers showed a decline over this period.

Table 7. Greenhouse/Nursery Principal Crops for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			--- Sales (Million $) ---		
Bedding/Garden Plants	8	23	27	$0.06	$0.28	$0.90
Potted Flowers	5	8	6	**	$0.12	$0.06
Christmas Trees	na	na	23	na	na	$0.26
Nursery Crops	11	18	17	$0.80	$0.98	$1.27
Greenhouse Vegetables	na	4	7	na	**	$0.36
All Greenhouse/Nursery Crops				**	$1.45	$3.24

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

In the orchard industry, there have been significant declines for most major crops. Especially large was the drop in the number of farms producing grapes and pears, both of which declined by about 50 percent from 1987 to 1997. The number of farms producing cherries and peaches also fell over this time period, but by a smaller amount. While the number of farms producing apples also declined from 1987 to 1997, the number of apple trees and the production of apples actually increased.

Table 8. Fruit Farms and Inventory for Columbia County, NY: 1987 to 1997

Item	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change
	--Number of Farms--			--Vines or Trees--			-Production (1,000 Pounds)-		
Apples	88	62	-30%	400,790	453,944	13%	43,208	50,945	18%
Cherries	28	21	-25%	5,383	4,707	-13%	120.6	71.1	-41%
Grapes	50	21	-58%	210,855	113,532	-46%	2,163	795	-63%
Peaches	25	20	-20%	10,394	8,787	-15%	757	335	-56%
Pears	49	25	-49%	38,408	27,951	-27%	3527.8	1673.3	-53%

Source: U.S. Census of Agriculture, 1987 and 1997

In the livestock sector, the number of farms producing livestock commodities declined from 1987 to 1997 across all major groups. The inventory of livestock also was lower, except for sheep and milk goats. However, these numbers hide some large changes. Namely, the sales of dairy, sheep, milk goats and poultry have shown varied degrees of growth over this period, while cattle sales and horse sales have fallen.

Table 9. Livestock Farms and Inventory for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Dairy	154	108	82	-47%	13,000	11,000	10,500	-19%
Cattle	92	85	81	-12%	14,501	12,101	12,241	-16%
Sheep	51	41	35	-31%	1,470	1,502	3,373	129%
Milk Goats	15	11	13	-13%	841	1,080	1,977	135%
Poultry	53	31	26	-51%	**	**	**	**
Horses	144	110	99	-31%	1,510	1,364	974	-35%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997
*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Even though the dairy farm sector saw 51 percent fewer farms and 47 percent fewer dairy cows, the value of dairy output increased by 17 percent from 1987 to 1997. This was due to increased productivity, as well as higher nominal prices in 1997 as compared to 1987. Since 1997, farm-level milk prices have been extremely volatile and reached record lows in 2003 as milk production has expanded in the western states. In February 2003, New York state average milk prices were $12 per hundredweight as compared to an average price of $14 per hundredweight in the 1990s. Prices are likely to continue to be low in the future and will lead to more losses in Columbia County's dairy sector, which still represents a significant portion of the county's agricultural output.

Table 10. Dairy Farms for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Dairy Farms	154	108	82	-47%
Number of Milk Cows	13,000	11,000	10,500	-19%
Total Value of Milk Sold	$22.7 Million	$21.9 Million	$26.6 Million	17%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the beef cattle sector, there was a 31 percent decline in the number of cattle sold from 1987 to 1997. The large number of cattle sold in 1987 was likely a result of the liquidation of dairy cows that was occurring in the 1980s, since there was little change in the number of cattle sold from 1992 to 1997.

Table 11. Cattle for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Cattle (Number of Farms)	265	198	176	-34%
Number of Cattle Sold	13,689	9,395	9,379	-31%
Total Value of Cattle Sold	$5.7 Million	$3.8 Million	$3.3 Million	-42%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

On a smaller scale, there have been significant increases in the sheep sector and the milk goat sector in Columbia County. The number of farms producing sheep has declined, but both the number of sheep sold and the pounds of wool sold have increased dramatically from 1987 to 1997. However, due to lower prices, the value of sheep products has not increased as significantly. U.S. wool prices have been sharply lower, falling from $1.38 per pound in 1987 to $0.60 per pound by 1997. Today, wool prices are depressed even further at around $0.50 per pound.

Table 12. Sheep Farms for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms Selling Sheep	47	38	27	-43%
Number of Sheep Sold	750	1,160	2,644	253%
Pounds of Wool	7,044	8,192	10,783	53%
Total Value of Sheep Products	$61,000	**	$178,000	192%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

As in the case of sheep, milk goat production has expanded sharply, but the value of sales has not increased as dramatically. From 1987 to 1997, milk production from goats increased three-fold, but the value of sales increased by only 61 percent.

Table 13. Milk Goat Farms for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms Selling Sheep	7	5	5	-29%
Number of Milk Goats	841	1,080	1,977	135%
Gallons of Milk Sold	83,720	179,599	283,460	239%
Total Value of Sales	$615,000	**	$988,000	61%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the poultry sector, farm numbers have declined, but the value of poultry sales have increased sharply. In 1987, the value of poultry sales totaled $700,000, but grew to more than $1.7 million by 1997.

Table 14. Poultry for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Poultry (Number of Farms)	37	27	15	-59%
Total Value of Poultry Sold	$0.7 Million	**	$1.7 Million	140%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997
*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

The horse sector represents an especially noticeable area of decline in recent years. Not only did the number of farms selling horses and the number of horses sold decline from 1987 to 1997, the value of the horses sold also fell sharply. In 1987, horse sales generated nearly $8 million in revenue to Columbia County farms, but by 1997 the total value of horse sales was only $700,000.

Table 15. Horses for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sales of Horses (Number of Farms)	45	38	27	-40%
Number of Horses Sold	264	185	129	-51%
Total Value of Horses Sold	$7.9 Million	$1.5 Million	$0.7 Million	-91%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farm Costs and Returns

As the livestock sector has expanded in Columbia County, so too have the expenses related to the production of these commodities. In the dairy sector, larger farms have led to a greater demand for hired labor. As a result, hired labor expenses have increased the most for the county, growing by 71 percent from 1987 to 1997. In addition, higher energy costs and feed costs are likely linked to growth in livestock operations, although higher energy demand can also be a result of a growing greenhouse/nursery sector.

Table 16. Farm Production Expenses for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------Million $----------			
Agricultural Chemicals	1.63	1.58	1.72	5%
Energy, Electricity	1.28	1.50	1.91	49%
Energy, Petroleum Products	1.54	2.05	2.34	52%
Feed for Livestock	6.50	6.91	9.91	52%
Fertilizer	1.76	1.70	2.07	18%
Labor, Contract	0.64	1.04	0.34	-47%
Labor, Hired	8.89	10.77	15.18	71%
Livestock Purchased	3.10	2.61	2.20	-29%
Repairs and Maintenance	3.02	3.14	3.83	27%
Seeds, Bulbs, Plants and Trees	0.74	0.90	1.14	55%
Taxes, Property	2.12	2.76	2.76	30%
Other	12.28	14.34	12.51	2%
TOTAL	43.50	49.29	55.89	28%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Overall, total farm production expenses increased 28 percent across the entire county. However, since farm receipts were up more than expenses over this time period, farm net returns managed to increase. From 1987 to 1997, total net-returns to Columbia County farms increased from $11.39 million to $18.80 million, or a 65 percent increase. Even more dramatic was the increase per farm, which showed net-returns doubling from $20,000 to $40,000 per farm over this time period. In addition, 60 percent of the farms were profitable in 1997 as compared to only 50 percent of the farms in 1987. This improved profit situation may be attributable to better production practices of individual farms or higher prices of select commodities, but it is also likely driven by the elimination of unprofitable farms over this time period.

Table 17. Farm Net-Returns for Columbia County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net-Returns	$11.39 Million	$5.69 Million	$18.80 Million	65%
Net-Returns per Farm	$20,091	$11,719	$40,264	100%
Farms with Net Gains (%)	50%	49%	59%	17%
Net-Returns per Farm with Net Gains	$48,145	$34,017	$78,240	63%
Farms with Net Losses (%)	50%	51%	41%	-17%
Net-Returns per Farm with Net Losses	$8,463	$9,504	$14,129	67%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

More recent data suggests that farm profitability has continued to improve since 1997. From 1997 to 2000, per-capita farm income grew from $32,000 to more than $60,000. This growth occurred as farm revenue increased in all major commodity sectors over this time period, with the exception of orchard crops and field crops. Indeed, the sharp growth in revenue helped lift per-capita farm income well above the non-farm per-capita income in Columbia County of $29,000 in 2000.

Economic Impact of Columbia County's Agriculture Sector

Quantifying the economic impact of Columbia County's agriculture sector is an important tool for allocating investment resources, whether from the public or private sector. There are two common methods for measuring the economic impact of any sector of the economy.

The first is a direct measure of a sector's economic importance by examining the value of output from the sector. This represents the price of the sector's output multiplied by the quantity produced by that sector of the economy. However, this only measures the direct value of a sector's importance. Since economic output does not happen in a vacuum, analysts often use output multipliers. Goods, services, and labor from within the economy are used to produce that output (sometimes referred to as upstream effects). Employee payroll is one such measure of this impact, but there are other important factors as well. For example, the output of primary commodities usually leads to further transformations by other sectors of the economy, stimulating more business activity. Thus, a second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

Columbia County's dairy sector is the largest single commodity in terms of economic output, accounting for 37 percent of the county's agricultural output. However, dairy accounts for only 28 percent of the employee payroll generated by the farming sector. Other sectors tend to account for less output but several sectors have higher relative employee payrolls, such as orchard crops and greenhouse/nursery. These sectors require more labor than dairy or feed sectors.

Table 18. Output and Employee Payroll by Commodity Sector for Columbia County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Dairy	$26.6	$2.76
Orchard Crops	$8.57	$2.38
Cattle and Calves	$5.72	$0.42
Grain and Hay	$4.87	$0.18
Greenhouse/Nursery	$3.24	$1.00
Vegetables	$2.26	$0.50
Poultry and Eggs	$2.23	$0.17
Other	$19.18	$2.33
Farm Sector Total	**$72.67**	**$9.74**

Source: *IMPLAN*

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Columbia County's farm commodities, every $1 increase in total farm output led to an additional 36 cents in economic activity in other sectors of the local economy. Thus, the direct output of Columbia County's agricultural sector was $72.7 million, but an additional $26.9 million was generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $76.1 million, which generated another $27.4 million in other sectors.

Table 19. Output Multipliers by Commodity Sector for Columbia County, NY: 1997

Farm Sector	Output Multiplier
Dairy	1.33
Orchard Crops	1.37
Cattle and Calves	1.46
Grain and Hay	1.43
Greenhouse/Nursery	1.35
Vegetables	1.40
Poultry and Eggs	1.25
Other	1.36
TOTAL	**1.36**

Source: *IMPLAN*

Agricultural Service, Wholesale and Retail Sectors

Although there were important areas of growth in Columbia County's farming sector in the last 20 years, there has been little growth in the county's marketing and manufacturing sector related to these products.

In the service-related firms, which consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services, and farm supplies, the number of firms was generally lower from 1993 to 2000. The exception was the number of veterinary firms, which managed to increase. However, this may have been driven more from non-farm pet services and less from the agricultural sector, since most of the livestock sector declined over this time period.

Food manufacturing activity in Columbia County is limited only to fruit and vegetable manufacturing, with the number of firms falling from three in 1993 to one by 2000. In the wholesale trade sector, however, fresh fruit and vegetable wholesale firms increased from two to three over this same time period. In addition, with the growth in the county's greenhouse/nursery sector there has been an increased number of firms in the wholesale trade. Dairy wholesalers, however, fell from two firms in 1993 to none in 2000.

On the retail/consumer side, the number of nursery and garden centers fell by one firm and the number of landscaping firms fell slightly from 1993 to 2000.

Table 20. Number of Firms in Related Agricultural Sectors for Columbia County, NY: 1993 and 2000

Sector	1993	2000	% Change
SERVICES			
Agricultural Support	6	4	-33%
Veterinary	7	10	43%
Farm Supplies	3	2	-33%
MANUFACTURING			
Fruit and Vegetable	3	1	-67%
WHOLESALE			
Dairy Products	2	0	-100%
Flower and Nursery Stock	0	3	Na
Fresh Fruit and Vegetable	2	3	50%
Farm Product Raw Material	1	0	-100%
RETAIL			
Nursery and Garden Centers	7	6	-14%
Landscaping	29	28	-3%

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

Economic Trends and Impacts of the Agriculture Industry in Dutchess County, NY

Dutchess County's agricultural industry at one time consisted largely of dairy production and the production of feedstuffs to support the dairy industry. However, as federal dairy policies changed significantly in the 1980s, and the 1990s saw an emergence of corporate-sized dairies in the west, family-sized dairy farms in the Northeastern U.S. faced a rough economic climate. In Dutchess County, these events led to significant losses.

For example, over the ten-year period from 1983 to 1992, the county's dairy industry, as measured by the number of milk cows, fell by over 60 percent going from 13,500 cows in 1983 to 5,000 cows by 1992. Today, milk cows in the county total only 2,500. As the dairy industry contracted, so too did the feed sector, with hay and corn acreage dropping as well during this same time period. However, hay production has recovered in recent years with the growth of the horse sector.

Despite the decline in the dairy sector, certain areas of Dutchess County's agriculture have shown growth. In recent years, the county's agricultural industry has been transformed from a dairy-commodity industry built on low-valued production to an industry that capitalizes on a growing consumer population producing high-valued agricultural products, such as vegetables, as well as greenhouse and nursery products. These crops have a high value to suburban consumers but are costly to transport. As a result, local vegetable producers in large population areas typically find they have a ready market for their products and a comparative advantage. This has been true in Dutchess County.

Key Findings of the Study

1. Dutchess County's farm economy produced $38.9 million in output value in 2000, which generated an additional $14.4 million in related economic activity within other sectors of the local economy.

2. In the last 15 years, growth in Dutchess County's vegetable and greenhouse/nursery sectors helped offset the lost revenues in the dairy and feed sectors. Cash receipts for vegetables and greenhouse/nursery crops increased $7.4 million between 1987 and 2000, while the dairy and feed sectors declined by nearly $7 million over this time period.

3. Although the dairy sector has declined in recent years, it still remains the top revenue commodity for Dutchess County agriculture. Even so, growth in vegetables and greenhouse/nursery, along with a sizable horse and orchard industry, suggest that the county's agricultural base is diversified.

4. The dairy sector will likely continue to contract as milk prices are expected to trend lower in coming years. As such, future output growth in the county's agricultural sector may be limited.

5. Farm revenue growth and profitability are a problem for many Dutchess County farmers. A majority of farms in Dutchess County have less than $10,000 in sales per year and the number of farms with greater than $100,000 in sales has been declining. In addition, only about one third of Dutchess

county farms were profitable in 1997. However, strong revenue growth since 1997 may have helped to mitigate some of these problems.

6. Growth in vegetable production and the greenhouse/nursery sector have been partially matched by an increase in Dutchess County's wholesale trade and in the increase of vegetable manufacturing. The decline in the dairy sector caused similar losses in the number of farm supply stores and dairy manufacturers in Dutchess County.

Land Use Patterns

Forestland and water comprise more than two-thirds of the land area in Dutchess County. The remaining acres are either developed (7.9 percent of the land) or in open-space grasslands and crops (18.3 percent). This high density of residential and industrial development impacts the county's agricultural sector in two ways. First, the demand for residential and industrial development drives up real estate prices, forcing land out of lower value agricultural uses, such as traditional field crops and livestock enterprises. In addition, the development of residential and industrial areas stimulates the demand for greenhouse and nursery products, as well as vegetable crops. These crops tend to have higher returns per acre, but also are costly to transport. Hence, production close to urban areas is essential. Agriculture in Dutchess County reflects these trends, as growth in farm output has been mostly from vegetables, as well as greenhouse and nursery products.

Farm Characteristics

Dutchess County, like most of the U.S., has experienced a decline in the number of farms and a drop in the amount of farmland. Between 1987 and 1997, the number of farms in Dutchess County fell by 12 percent with most of the decline occurring between 1987 and 1992. At the same time, land in farms fell by 14 percent. The 106,000 acres of farm land accounts for 22 percent of the total land area in Dutchess County.

Farm size, as measured by average acreage per farm, declined modestly from 203 acres per farm to 198 acres per farm from 1987 to 1997. Although national trends show farms growing larger, the shift of Dutchess County's agriculture from dairy to vegetables and greenhouse/nursery crops would explain why farm sizes have remained nearly constant, as these crops are more labor intensive.

Table 1. Number of Farms, Land in Farms and Average Farm Size for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Farms	613	554	539	-12%
Land in Farms (Acres)	124,401	109,692	106,749	-14%
Average Farm Size (Acres)	203	198	198	-2%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In terms of the size distribution of farms in Dutchess County, there remains a fairly even distribution of farms from 10 acres in size up to 500 acres in size. However, the largest grouping of farms is in the 50 to 179-acre range, which accounted for 34 percent of the farms in 1997. In addition, the number of farms of this size has remained the most stable—falling only 5 percent between 1987 and 1997—while the total number of farms fell by 12 percent. The largest relative loss of farms occurred for 1,000 acre or larger farms. From 1987 to 1997, the number of farms of this size fell by 31 percent.

Table 2. Farms by Size of Acreage for Dutchess County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	68	63	56	-18%
10 to 49 acres	139	113	122	-12%
50 to 179 acres	192	188	183	-5%
180 to 499 acres	149	132	125	-16%
500 to 999 acres	49	44	42	-14%
More than 1,000 acres	16	14	11	-31%
TOTAL	613	554	539	-12%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Another way to measure farm size is by the value of sales per farm. On this account, a significant portion of Dutchess County farms have relatively low sales. In 1997, nearly half (47 percent) of the farms had annual sales of less than $10,000 and nearly one quarter of the farms had sales less than $2,500. Furthermore, the percentage of farms with sales over $100,000, while a small proportion of the total farms in 1997, has fallen over time, from 18 percent of all farms in 1987 to 15 percent by 1997.

Figure 2. Proportion of Farms by Value of Sales for Dutchess County, NY: 1997

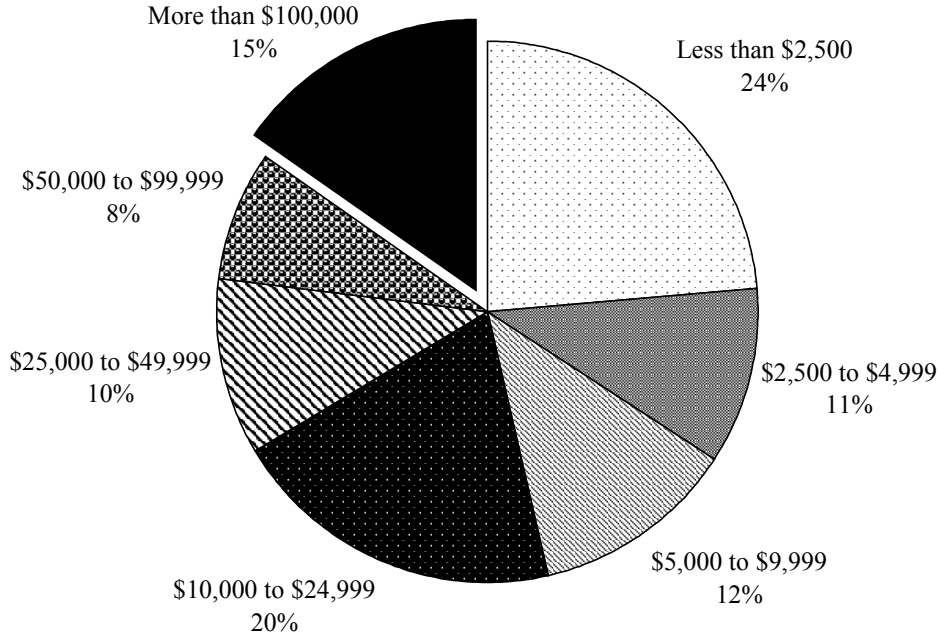


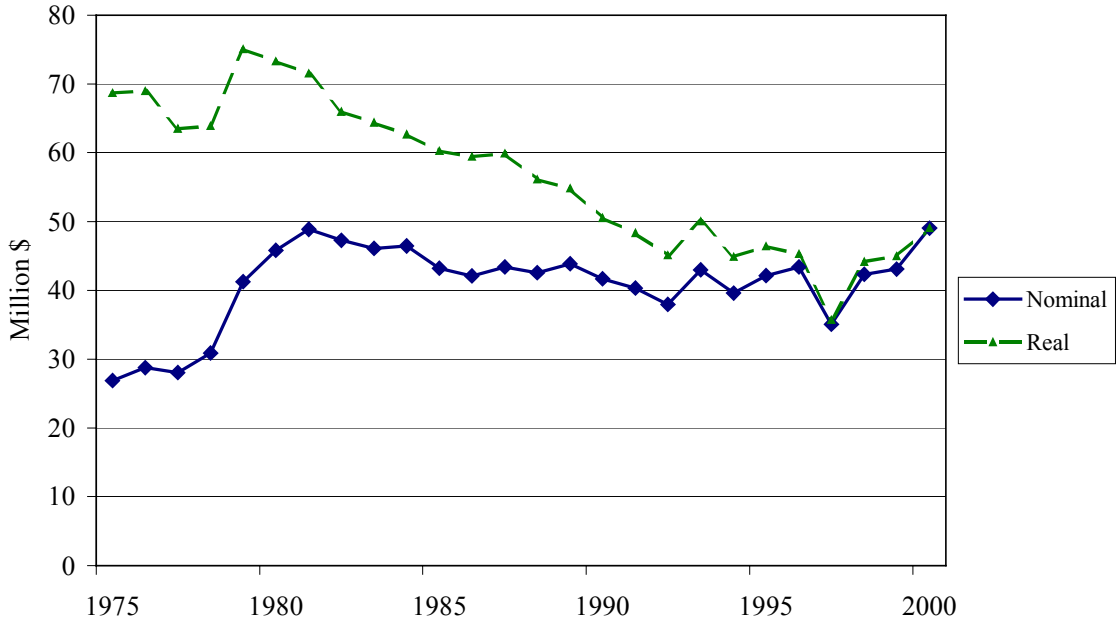
Table 3. Farms by Value of Sales for Dutchess County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	163	123	127	-22%
$2,500 to $4,999	67	73	57	-15%
$5,000 to $9,999	67	71	66	-1%
$10,000 to $24,999	97	103	108	11%
$25,000 to $49,999	57	52	56	-2%
$50,000 to $99,999	52	43	43	-17%
More than $100,000	110	89	82	-25%
TOTAL	613	554	539	-12%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Despite the low value of sales for nearly half of the county's farms, the bulk of Dutchess County's agricultural output comes from farms with sales greater than $100,000. These large farms accounted for only 15 percent of the farms in Dutchess County, but nearly 78 percent of the county's agricultural output in 1997.

Figure 3. Value of Farm Marketings for Dutchess County, NY: Nominal and Real 2000 Dollars 1975 to 2000



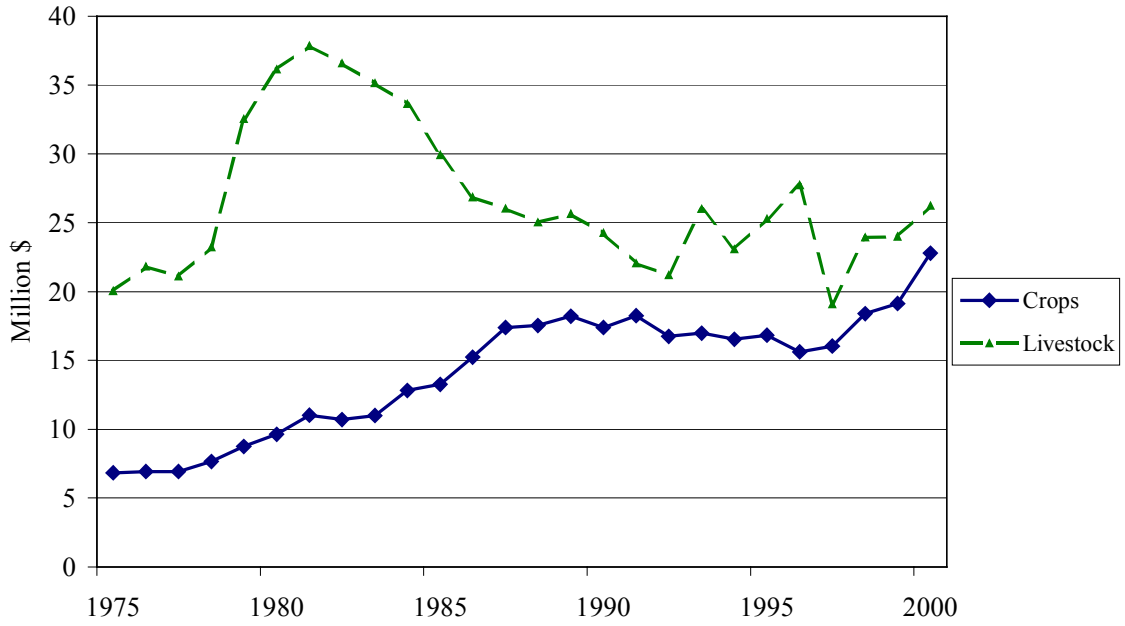
Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Agricultural Commodity Output

In nominal terms, Dutchess County's agricultural output has remained relatively stable between $40 and $50 million dollars in the last 20 years. However, when adjusted for inflation, the county's real-dollar output value declined by over 30 percent in the last two decades.

The stability in nominal farm output over the last 20 years hides the significant shifts that were occurring in commodity output over this time. After peaking at $38 million in 1981, the livestock sector declined steadily in the 1980s, but remained around $25 million for much of the 1990s. This loss was driven by the decline in the dairy industry experienced in the 1980s. However, losses in the dairy sector were mostly matched by increases in the crop sector, predominately from vegetables and greenhouse/nursery crops. In the aggregate, the crop sector grew from $10 million in 1980 to $23 million by 2000.

Figure 4. Value of Crop and Livestock Farm Sales for Dutchess County, NY: Nominal Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

As a result of this shift in production, Dutchess County's agricultural output is diversified among several major commodity groups. Dairy continues to be the largest commodity sector, accounting for 26 percent of the county's agricultural output in 1997. Greenhouse/nursery crops account for 22 percent of the county's output, while vegetables account for 12 percent.

Figure 5. Proportion of Commodity Output Value for Dutchess County, NY: 1997

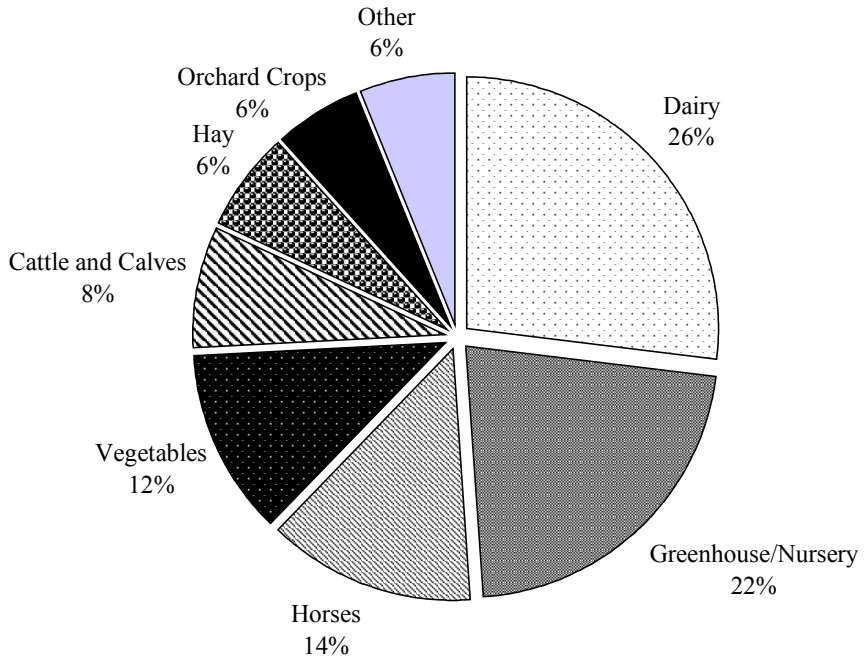
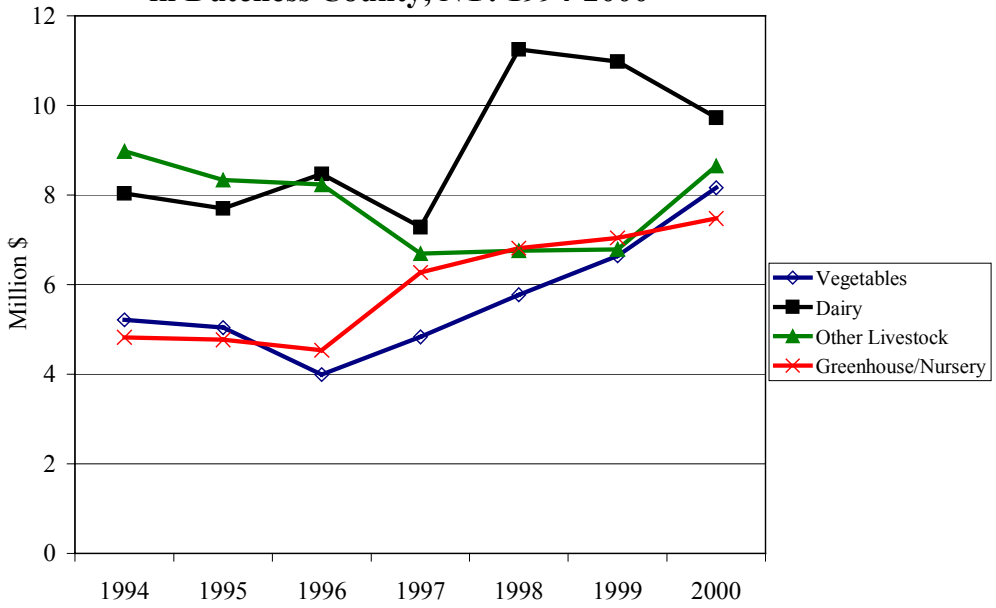


Figure 6. Cash Receipts for Top 4 Commodities in Dutchess County, NY: 1994-2000



More recent data from 2000 suggests a further shift towards higher-valued crops, as greenhouse/nursery and vegetables combined for over 40 percent of the county's output while the dairy sector slipped to 25 percent. Both greenhouse/nursery and vegetable crops experienced significant growth as output value expanded nearly 100 percent in each sector in the five-year period from 1996 to 2000. Although the dairy sector's output grew significantly between 1997 and 1998, this was largely a result of short-run improvements in milk prices. Other livestock, which is predominately the sale of horses and cattle and calves, has remained fairly steady between 1994 and 2000.

The growth witnessed in the output of greenhouse/nursery and vegetable crops sector was largely driven by more farms and more production capacity in these crops. The number of farms producing vegetables and greenhouse/nursery crops increased by 33 and 45 percent, respectively, between 1987 and 1997. Along with more farms, there were also more acres used in the production of these commodities. Greenhouse/nursery crop acreage expanded 164 percent, while vegetable acreage expanded only 18 percent between 1987 and 1997. On the other hand, farms growing orchard crops fell by 26 percent between 1987 and 1997 while acreage of orchard crops fell by 52 percent.

Table 4. Farms and Acreage by Primary Crops for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	Number of Farms				Acres			
Vegetables	45	61	60	33%	2,374	2,218	2,800	18%
Greenhouse/Nursery*	58	64	84	45%	326	312	860	164%
Orchard Crops	53	49	39	-26%	2,328	1,941	1,124	-52%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

Although vegetable acreage increased by 18 percent between 1987 and 1997, the value of vegetable output grew by 55 percent. This suggests that Dutchess County farmers either improved vegetable production practices over this time period or were getting better prices for the vegetable crops produced. Although shifts to higher-valued vegetable crops could potentially explain better output value for the vegetable sector, this seems unlikely in Dutchess County, as the mix of vegetables produced has remained fairly stable.

Sweet corn is by far the largest vegetable crop, accounting for nearly 75 percent of all vegetables acres in 1997. However, this is lower than in 1987 when sweet corn acreage accounted for 87 percent of all vegetable acres. Expansion occurred in numerous other vegetable crops, although pumpkins and tomatoes had the largest absolute increase in acres. Combined acreage of these two crops expanded by 220 percent or nearly 200 acres between 1987 and 1997. On a smaller scale, the county's vegetable farmers also grew more beans, garlic, herbs, lettuce, peppers and squash, but less acreage of broccoli and cabbage between 1987 and 1997.

Table 5. Vegetables for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			------ Acres -----		
Beans (Snap)	9	11	13	11	15	33
Broccoli	9	10	6	30	5	9
Cabbage	4	8	6	52	41	12
Garlic	na	na	5	na	na	35
Herbs	na	4	7	na	5	10
Lettuce	5	7	4	5	10	17
Peppers (Sweet)	4	5	16	2	5	11
Pumpkins	11	25	27	62	168	205
Squash	9	20	20	12	49	33
Sweet Corn	33	41	37	2,072	1,811	2,121
Tomatoes	12	28	33	26	67	80

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Like the vegetable sector, the greenhouse and nursery industry saw higher sales. This expansion came from more farms growing greenhouse/nursery products from 1987 to 1997, as well as a 171 percent increase of open-area production. However, production of greenhouse/nursery crops under glass actually fell by 5 percent over this 10-year period.

Table 6. Greenhouse/Nursery Production for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	58	64	84	45%
Production Area under Glass or Protection (sq. feet)	572,605	559,506	543,004	-5%
Production in the Open (acres)	313	299	848	171%
Value of Sales (million)	$5.63	$4.10	$7.37	31%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

The growth in sales of greenhouse/nursery crops occurred largely in bedding/garden plants as output value increased by $1.56 million between 1987 and 1997. This accounted for nearly 90 percent of the total $1.74 million growth in the entire greenhouse/nursery sector between 1987 and 1997.

Table 7. Greenhouse/Nursery Principal Crops for Dutchess County, NY: 1987 to 1997

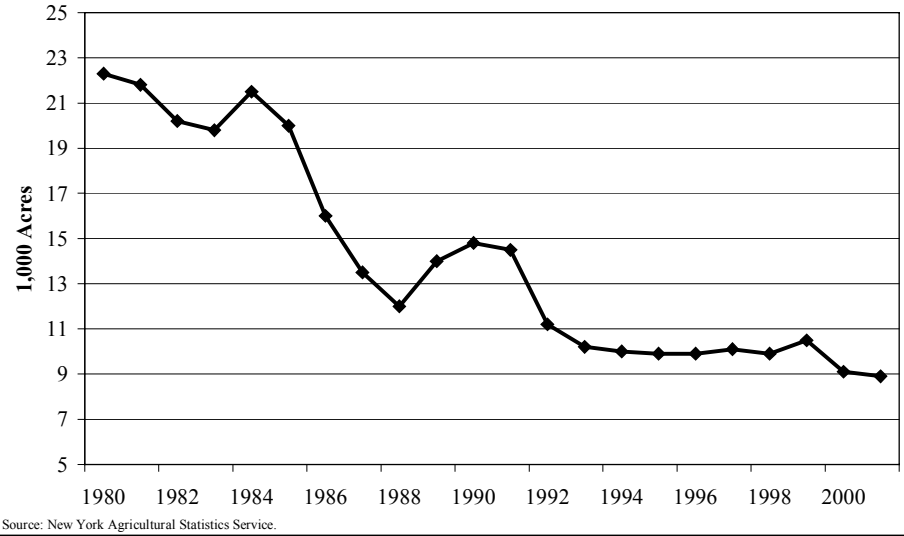
Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			-- Sales (Million $) ---		
Bedding/Garden Plants	24	32	36	$1.35	$2.10	$2.91
Foliage Plants	5	4	3	**	$0.17	$0.32
Potted Flowers	12	10	12	**	$0.35	$0.72
Christmas Trees	na	na	31	na	na	$0.69
Nursery Crops	24	24	17	$1.53	$0.85	$1.90
All Greenhouse/Nursery Crops				$5.63	$4.10	$7.37

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

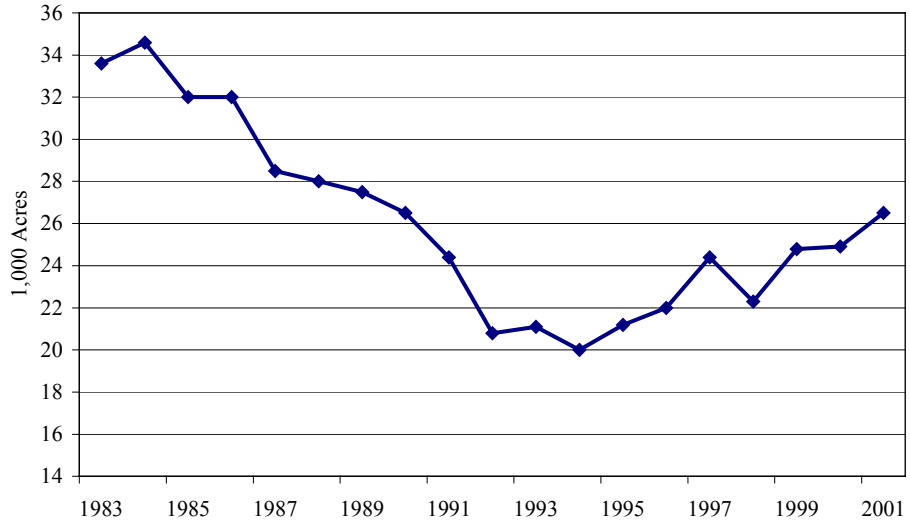
Aside from vegetables and greenhouse/nursery crops, there were few areas of growth in Dutchess County's crop sector. Traditional feedstuff production, like hay and corn, fell substantially in the 1980s, mirroring the declines of the dairy sector during this period. Although corn acreage continued to trend lower in the 1990s, the amount of hay acreage in the county actually increased through much of the 1990s, potentially as a result of a growing horse sector after 1992.

Figure 8. Corn Planted Acres for Dutchess County, NY: 1980-2001



Source: New York Agricultural Statistics Service.

Figure 7. Hay Acreage in Dutchess County, NY: 1983-2001



Source: New York Agricultural Statistics Service.

In the orchard industry, there have been significant declines in the apple sector. Between 1987 and 1997, the number of farms producing apples declined by 33 percent and the number of apple trees in the county declined by a similar magnitude. Production of apples was off significantly between 1987 and 1997, but much of this was due to a poor apple crop in 1997.[4] The number of farms producing grapes and pears also fell between 1987 and 1997. However, there was an increase in the number of grape vines and pear trees.

Table 8. Fruit Farms and Inventory for Dutchess County, NY: 1987 to 1997

Item	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change
	--Number of Farms--			--Vines or Trees--			-Production (1,000 Pounds)-		
Apples	39	26	-33%	176,571	113,907	-35%	21,308	10,794	-49%
Grapes	16	12	-25%	80,608	142,302	77%	1,053	578	-45%
Pears	12	8	-33%	4,623	6,239	35%	404	112	-72%

Source: U.S. Census of Agriculture, 1987 and 1997

[4] Annual apple production at the county level is not published by the New York Agricultural Statistics Service. However, state-level data suggests that apple production fell 15 percent between 1996 and 1997, which would explain some of the drop in Dutchess County apple production in 1997 as compared to 1987.

While Dutchess County's crop sector has several growth areas, its livestock sector has mostly declined. The number of farms producing livestock or livestock products fell from 381 to 287 farms from 1987 to 1997—a loss of 25 percent. A majority of the decline, however, can be attributed to losses in the number of dairy farms. Between 1987 and 1997, Dutchess County lost 53 dairy farms—over half of its dairy farms. A similar magnitude of losses occurred in the number of dairy cows in the county. However, most of the losses in dairy cows occurred in the 1980s, as dairy cattle numbers in the 1990s have remained more stable.

Table 9. Livestock Farms and Inventory for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Dairy	104	67	51	-51%	7,732	4,637	4,129	-47%
Cattle	113	106	97	-14%	11,319	8,762	8,237	-27%
Sheep	72	69	52	-28%	2,315	3,085	2,856	23%
Horses	192	177	178	-7%	2,160	1,893	2,303	7%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farms producing beef cattle and calves, sheep and horses also fell between 1987 and 1997, although the loss of farms in these sectors was much smaller than the dairy sector. In addition, while beef cattle inventories slipped between 1987 and 1997, the number of sheep and horses managed to increase slightly over this ten-year period. However, in the case of the sheep industry, although sheep inventory numbers increased 23 percent between 1987 and 1997, the value of the output from this sector (the sale of sheep, lambs and wool) increased only 7 percent from $121,000 in 1987 to $130,000 in 1997.

Even though the dairy farm sector saw 51 percent fewer farms and 47 percent fewer dairy cows, the value of dairy output fell only 37 percent from 1987 to 1997. This was due to increased productivity and higher nominal prices in 1997 compared to 1987. Since 1997, farm-level milk prices have been extremely volatile, reaching record lows in 2003 with milk production expanding in the west. In February 2003, New York State average milk prices were $12 per hundredweight, compared to an average price of $14 per hundredweight in the 1990s. Prices are likely to stay low in the future and will lead to more losses in the county's dairy sector, which still represents a significant portion of the county's agricultural output—nearly 25 percent in 2000.

Table 10. Dairy Farms for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Dairy Farms	104	67	51	-51%
Number of Milk Cows	7,732	4,637	4,129	-47%
Total Value of Milk Sold	$14.7 Million	$9.3 Million	$9.2 Million	-37%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the beef cattle sector, there was a 42 percent decline in the number of cattle sold between 1987 and 1997. However, the value of the cattle sold fell only 26 percent during this time period. The large number of cattle sold in 1987 was likely a result of liquidation of dairy cows that was occurring in the 1980s.

Table 11. Cattle for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Cattle (Number of Farms)	234	189	163	-30%
Number of Cattle Sold	10,204	7,332	5,904	-42%
Total Value of Cattle Sold	$3.5 Million	$2.9 Million	$2.6 Million	-26%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

While the value of cattle sold and the output from the dairy sector fell significantly between 1987 and 1997, the value of horse sales in the county remained relatively stable during this period. Even though the number of horses sold fell 34 percent between 1987 and 1997, the total value of the horses only slipped by 1 percent. This suggests that the price of horses sold increased from over $11,000 per horse in 1987 to nearly $17,000 per horse by 1997.

Table 12. Horses for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sales of Horses (Number of Farms)	67	68	66	-1%
Number of Horses Sold	410	362	271	-34%
Total Value of Horses Sold	$4.7 Million	$4.8 Million	$4.6 Million	-1%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farm Costs and Returns

As the agricultural sector shifted toward the production of vegetable crops and greenhouse and nursery products, production expenses in the county shifted as well. Most notable was the increased expenditures on seeds, bulbs, plants, and trees, which accounted for a 177 percent increase from 1987 to 1997. The only other major cost increase was in property taxes which grew by 74 percent in a ten-year period. Overall, total farm production expenses fell 17 percent across the entire county. On a per farm basis, however, the decline in farm production expenses was only 6 percent between 1987 and 1997.

Table 13. Farm Production Expenses for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------Million $----------			
Agricultural Chemicals	0.86	0.82	0.47	-45%
Energy, Electricity	1.04	0.94	0.60	-43%
Energy, Petroleum Products	1.61	1.52	1.07	-34%
Feed for Livestock	4.18	3.31	2.95	-29%
Fertilizer	1.40	1.13	0.73	-48%
Labor, Contract	0.74	0.43	0.09	-88%
Labor, Hired	6.08	6.29	6.10	0%
Livestock Purchased	2.09	1.83	1.78	-15%
Repairs and Maintenance	2.85	2.51	2.46	-14%
Seeds, Bulbs, Plants and Trees	0.72	0.66	2.00	177%
Taxes, Property	2.29	3.71	3.99	74%
Other	8.58	7.62	4.68	-45%
TOTAL	32.45	30.77	26.91	-17%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

While most major cost components were lower between 1987 and 1997, hired labor, the largest component in farm production expenses, was up only marginally between 1987 and 1997. Contract labor costs were significantly lower over this ten-year period, suggesting that few Dutchess County farms use contract workers to fill seasonal labor needs.

Although total farm expenditures fell by 17 percent from 1987 to 1997, farm sales also were down by 10 percent in the aggregate over this same period, which would suggest improved profitability. However, because government farm program payments fell by 72 percent between 1987 and 1997, this led to lower aggregate net-returns for farms in Dutchess County. The loss of government farm program payments in the late 1980s and 1990s was likely due to losses in corn acres, which is the primary commodity in Dutchess County that was eligible for government payments under farm policy in the 1980s and 1990s.

As total net-returns declined in the county, so did the net-returns per farm as well as the proportion of farms that were profitable. On average, net-returns in 1987 totaled nearly $7,300 per farm, but that number had fallen to $6,400 per farm by 1997. Over this same period, the proportion of farms that were profitable fell from 4 percent in 1987 to 36 percent by 1997. The farms that were profitable, however, increased profitability by 20 percent from 1987 to 1997.

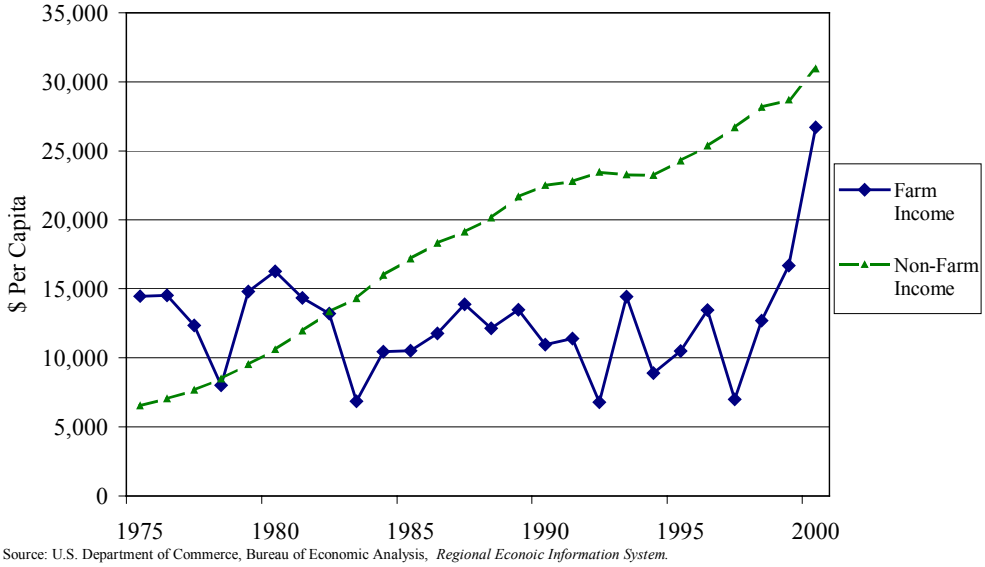
Table 14. Farm Net-Returns for Dutchess County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net-Returns	$4.48 Million	$1.49 Million	$3.49 Million	-22%
Net-Returns per Farm	$7,293	$2,697	$6,440	-12%
Farms with Net Gains (%)	41%	35%	36%	-13%
Net-Returns per Farm with Net Gains	$39,183	$32,943	$46,901	20%
Farms with Net Losses (%)	59%	65%	64%	9%
Net-Losses per Farm with Net Losses	$15,057	$13,389	$16,116	7%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

However, more recent data suggests that farm profitability has improved since 1997. From 1997 to 2000, per-capita farm income grew from $7,000 to over $26,000. This growth occurred as farm revenue increased in all major commodity sectors except orchard crops over this time period. Indeed, the sharp growth in revenue helped lift per-capita farm income closer to the per-capita income from non-farm income in Dutchess County for the first time since the early 1980s.

Figure 10. Per-Capita Farm Income and Per-Capita Non-Farm Income for Dutchess County, NY: 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Economic Impact of Dutchess County's Agriculture Sector

Quantifying the economic impact of Dutchess County's agriculture sector is an important tool for allocating investment resources, whether from the public or private sector. There are two common methods for measuring the economic impact of any sector of the economy.

The first is a direct measure of a sector's economic importance by examining the value of output from the sector. This represents the price of the sector's output multiplied by the quantity produced by that sector of the economy. However, this only measures the direct value of a sector's importance. Since economic output does not happen in a vacuum, analysts often use output multipliers. Goods, services and labor from within the economy are used to produce that output (sometimes referred to as upstream effects). In addition, output is usually further transformed by other sectors of the economy, stimulating more business activity. Thus, a second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

Table 15. Output and Employee Payroll by Commodity Sector for Dutchess County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Dairy	$9.19	$0.87
Greenhouse/Nursery	$7.37	$1.80
Horses	$4.60	$1.32
Vegetables	$4.05	$0.97
Cattle and Calves	$2.58	$0.09
Hay	$2.19	$0.27
Orchard Crops	$1.90	$0.68
Other	$2.08	$0.10
Farm Sector Total	**$33.96**	**$6.10**

Source: *IMPLAN*

For the top four farm commodities in Dutchess County, the output value was $25.2 million in 1997, accounting for 74 percent of the county's $33.9 million farm output. Although dairy continues to be the largest sector in Dutchess County's farm economy, other sectors of the local farm economy have grown significantly in recent years. For example, vegetable output in 2000 totaled over $8 million while dairy output was only $9.7 million.

In terms of employment, the greenhouse/nursery, horse and vegetable sectors contribute significantly more to the local economy than the dairy industry. As a percent of commodity output value, dairy employment accounts for only 9 percent of the total sector's output, while the greenhouse/nursery, horse and vegetable sectors have employee payrolls that are 24 to 29 percent of total output. This occurs because these sectors tend to be more labor intensive than dairy and, as a result, these sectors will impact the local economy more than the dairy sector.

Table 16. Output Multipliers by Commodity Sector for Dutchess County, NY: 1997

Farm Sector	Output Multiplier
Dairy	1.30
Greenhouse/Nursery	1.38
Horses	1.32
Vegetables	1.40
Cattle and Calves	1.35
Hay	1.46
Orchard Crops	1.43
Other	1.38
TOTAL	**1.37**

Source: *IMPLAN*

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Dutchess County's farm commodities, every $1 increase in total farm output led to an additional 37 cents in economic activity in other sectors of the local economy. Thus, the direct output of Dutchess County's agricultural sector was $33.9 million, but an additional $12.5 million was generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $38.9 million, which generated another $14.4 million in other sectors.

Of the four principle farm commodities, vegetables and greenhouse/nursery production contributed more to the local economy, as their output multipliers are higher than the average for the farm sector. These commodity sectors are relatively labor intensive, which stimulates more economic activity in other sectors. The dairy sector, in contrast, had the lowest output multiplier, which tends to use less labor relative to other inputs such as equipment and feed, which may not be locally produced.

Agricultural Service, Wholesale and Retail Sectors

As the previous section illustrated, there are important economic linkages between the farm sector and other sectors of the local economy. As certain parts of Dutchess County's farm sector grew, others declined. This had important implications for input suppliers and agricultural service firms, as well as wholesale and retail trade. In this section, we explore the growth in agricultural service firms, farm input suppliers, and the wholesale and retail sectors of Dutchess County's economy directly related to the farm sector.

Service-related firms consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies. The number of firms providing agricultural support services increased by 67 percent from 1993 to 2000, with all the increase coming from firms that specialize in animal production support. However, the number of farm supply firms showed a precipitous drop, falling from nine firms in 1993 to only two firms by 2000. Veterinary services increased slightly from 1993 to 2000. However,

this may have been driven more from non-farm pet services and less from the agricultural sector since most of the livestock sector declined over this time period.

Food manufacturing activity in Dutchess County reflected the trends experienced at the farm level. Dairy manufacturing fell from two firms in 1993 to only one firm by 2000. On the other hand, the number of fruit and vegetable manufacturers increased from one firm to two firms over this same time period.

In addition, the wholesale trade sector increased for fresh fruit and vegetables, with the number of firms increasing from two in 1993 to five by 2000. Farm product wholesalers also increased from one firm to three firms over this time period.

However, on the retail/consumer side, the number of nursery and garden centers remained stable, although employment in this segment of the industry increased by 15 percent. Landscape service firms managed a small increase in the number of firms and employment. The only major growth at the retail sector was the creation of three fresh fruit and vegetable markets by 2000, which did not exist in 1993. Such marketplaces may provide better access to local producers than grocery chains.

Table 17. Agricultural Industry Sector Firms, Employment and Payroll for Dutchess County, NY: 1993 and 2000.

	----1993 ----			---- 2,000 ----			--% Change 1993 to 2000 --		
Sector	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)
SERVICES									
Agricultural Support	12	67	1,296	20	**	**	67%	**	**
Veterinary	23	222	4,226	28	302	7,424	22%	36%	76%
Farm Supplies	9	41	876	2	**	**	-78%	**	**
MANUFACTURING									
Dairy Products	2	**	**	1	**	**	-50%	**	**
Fruit and Vegetable	1	**	**	2	**	**	100%	**	**
WHOLESALE									
Dairy Products	1	**	**	1	**	**	0%	**	**
Flower and Nursery Stock	2	**	**	2	**	**	0%	**	**
Fresh Fruit and Vegetable	2	**	**	5	9	266	150%	**	**
Farm Product Raw Material	1	**	**	3	13	112	200%	**	**
RETAIL									
Nursery and Garden Centers	21	151	2,382	21	173	3,908	0%	15%	64%
Landscaping	100	361	5,498	106	373	8,864	6%	3%	61%
Fruit and Vegetable Markets	0	**	**	3	9	89	na	**	**

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

*** Data withheld by Census Bureau to avoid disclosing individual firms.*

Economic Trends and Impacts of the Agriculture Industry in Greene County, NY

Greene County's farm sector has historically consisted of dairy and related sectors for feed and cattle. However, as the 1980s ushered in significant changes in U.S. dairy policies and the 1990s saw large-scale dairies expand in the west, farmers in Greene County faced tough economic conditions. As a result, Greene County lost half of its dairy farms and 75 percent of its dairy cows in the last two decades. Even so, dairy continues to be the largest single sector in the county's farm economy. With no signs of improvement in the U.S. dairy sector, further losses in Green County's dairy sector seem likely.

Although dairy losses have been significant, Greene County has had some new farms emerge in the greenhouse/nursery business and, to a lesser extent, the vegetable sector. These new farms tend to be smaller in size relative to the dairy farms that have exited, which has resulted in sizable losses of farmland in Greene County. Even though the greenhouse/nursery and vegetable sectors have shown solid growth in recent years, they still remain relatively small when compared to the current size of the dairy sector.

Key Findings of the Study

1. Greene County's farm economy produced $9.7 million in output value in 2000, which generated an additional $3.4 million in related economic activity locally.

2. A large proportion of Green County's farms have low farm sales. Based on 1997 data, nearly 60 percent of the farms in Greene County have sales less than $10,000 per year.

3. Nearly two-thirds of Greene County's farms were unprofitable in 1997. Although returns per farm managed to increase between 1997 and 2000, they still remain well below non-farm per-capita income suggesting that most farmers must utilize off-farm employment.

4. The dairy sector will likely continue to contract as milk prices are expected to trend lower in coming years. As such, future output growth in the county's agricultural sector may be limited.

5. Vegetables and greenhouse/nursery crops represent one of the few areas of growth in the farm economy. More farms producing these crops as well as more land devoted to the production of these crops have helped offset losses in the dairy sector.

6. There has been limited growth in the manufacturing, wholesaling or retail sector of the agricultural economy. This may potentially impact growth at the farm level into non-traditional crops.

Farm Characteristics

Like much of the Hudson Valley region, Greene County has experienced significant losses in farms and land in farms. From 1987 to 1997, Greene County lost 13 percent of its farms and 14 percent of its farmland. However, most of the loss in farms and farmland occurred between 1987 and 1992. Indeed, from 1992 to 1997 the number of farms increased by 22 farms, while farmland increased by nearly 3,000 acres.

The large decline in farm numbers between 1987 and 1992 was largely driven by a loss in dairy farms, the largest sector of Greene County's farm economy. Of the 59 farms lost between 1987 and 1992, 25 of these farms were dairy operations. In contrast, of the 22 farms that entered the industry between 1992 and 1997, 13 of the operations produced greenhouse/nursery products. Thus, there appears to be an important shift in the county's farm economy away from dairy and towards higher-valued greenhouse and nursery commodities.

Table 1. Number of Farms, Land in Farms and Average Farm Size for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Farms	279	222	244	-13%
Land in Farms (Acres)	56,441	45,820	48,770	-14%
Average Farm Size (Acres)	202	206	200	-1%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

With these changes in the county's farm economy, there are important economic consequences at a local level. First, greenhouse and nursery products tend to require more labor than dairy, thus providing a stimulus to the local labor market. Second, dairy operations require substantial inputs from other farm sectors, including grain, hay and cattle. Therefore, losses in the dairy industry will spawn additional losses in other segments of the local farm economy. Finally, dairy operations tend to be land intensive relative to greenhouse/nursery operations. This trend is evident from the data from 1992 to 1997 as new greenhouse/nursery operations entered the industry. During this time the number of farms increased by 22 and the total farmland increased by 2,950 acres, or an average of 134 acres per farm. This is well below the average farm size of 200 acres for all farms in 1997. Thus, if farmland preservation is an objective, replacement of dairy operations with greenhouse/nursery operation may do little to stop the loss of Greene County's farmland.

Although average farm size has changed little between 1987 and 1997, there have been changes in the distribution of farms by size. In the 10-year period from 1987 to 1997, the number of farms in the 180 to 499-acre size category fell by 24 percent—significantly more than the 13 percent loss in all farms over this same period. In contrast, there was an increase over this same time period in the number of larger farms and smaller farms as compared to mid-sized farms. The modest increase in larger farms is likely a reflection of

mid-sized dairy operations growing larger in an attempt to capture economies of scale, while having more small farms is systematic of a growing greenhouse/nursery sector.

Table 2. Farms By Size of Acreage for Greene County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	19	15	21	11%
10 to 49 acres	48	39	38	-21%
50 to 179 acres	104	77	95	-9%
180 to 499 acres	84	71	64	-24%
500 to 999 acres	20	16	23	15%
More than 1,000 acres	4	4	3	-25%
TOTAL	279	222	244	-13%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

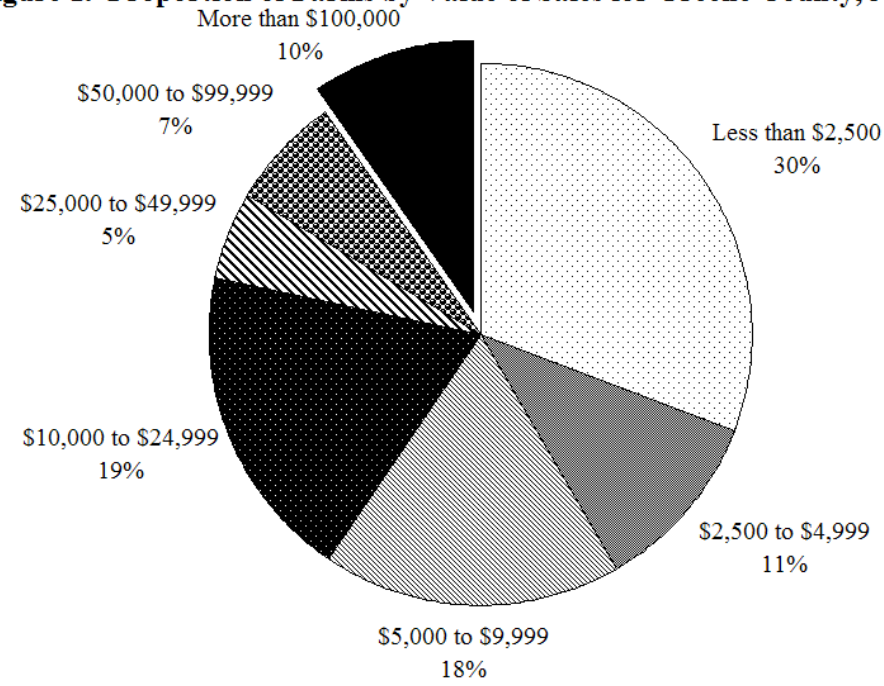
Although there was a slight increase in the number of farms larger than 500 acres from 1987 to 1997, there was actually a decline in the number of farms generating $25,000 in sales per year over this same time period. Thus, it appears that the growth in large farms has done little to stimulate additional economic output from the farm sector. Along with limited growth in output from large farms, there remain a sizable number of farms that generate low sales. Based on 1997 data, nearly 60 percent of the farms in Greene County generated $10,000 or less in sales per year.

Table 3. Farms By Value of Sales for Greene County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	99	67	75	-24%
$2,500 to $4,999	33	31	27	-18%
$5,000 to $9,999	30	36	43	43%
$10,000 to $24,999	39	30	46	18%
$25,000 to $49,999	29	20	13	-55%
$50,000 to $99,999	25	14	16	-36%
More than $100,000	24	24	24	0%
TOTAL	279	222	244	-13%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Figure 1. Proportion of Farms by Value of Sales for Greene County, NY: 1997



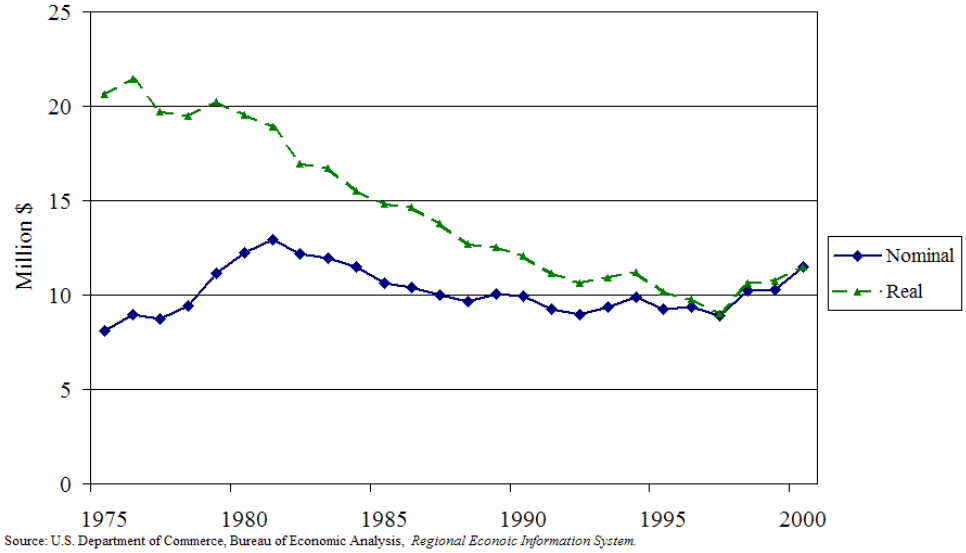
Agricultural Commodity Output

Greene County's farm economy has historically relied on dairy production and feedstuffs for the dairy industry. As federal milk price supports began to come down in the mid-1980s causing farm milk prices to fall, Greene County's dairy and feed sector lost significant revenue. From 1981 to 1992, the value of sales by Greene County farms fell by 31 percent.

Since 1992, farm sales have generally been steady, although they increased sharply beginning in 1997. Driven by higher sales of livestock and crop products, total farm sales increased 29 percent from 1997 to 2000.

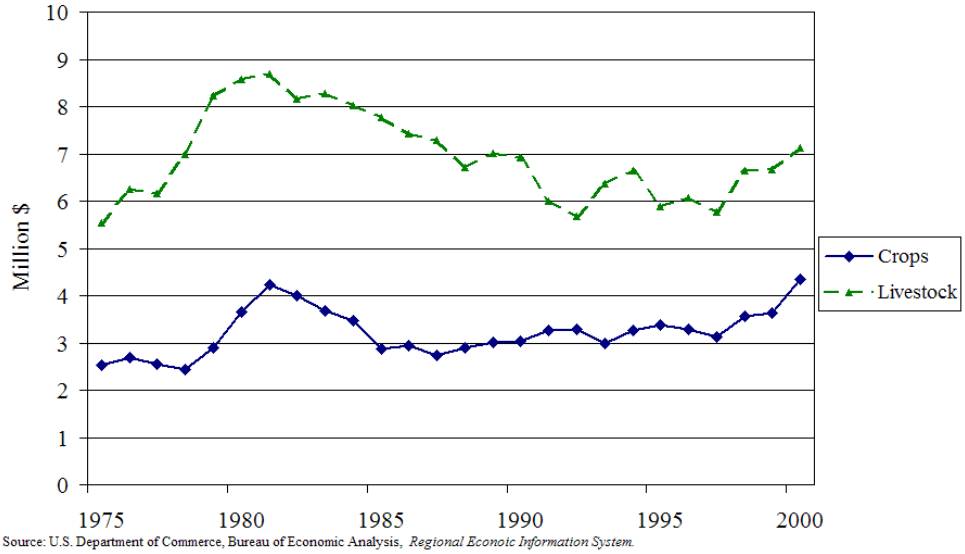
Although there has been some expansion into other commodities, Greene County's agricultural sector is still heavily reliant on the dairy sector as it accounts for 32 percent of all farm sector output based on 1997 data. If grain, hay and cattle output are included, then the dairy and related feed and cattle sectors accounted for nearly half of all farm output in the county. Greenhouse and nursery products, along with poultry products, each accounted for 18 percent of the farm output in the county, while vegetables, the next largest sector, accounted for 8 percent of the county's farm output in 1997.

Figure 2. Value of Farm Marketings for Greene County, NY: Nominal and Real 2000 Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Figure 3. Value of Crop and Livestock Farm Sales for Greene County, NY: Nominal Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Figure 4. Proportion of Commodity Output Value for Greene County, NY: 1997

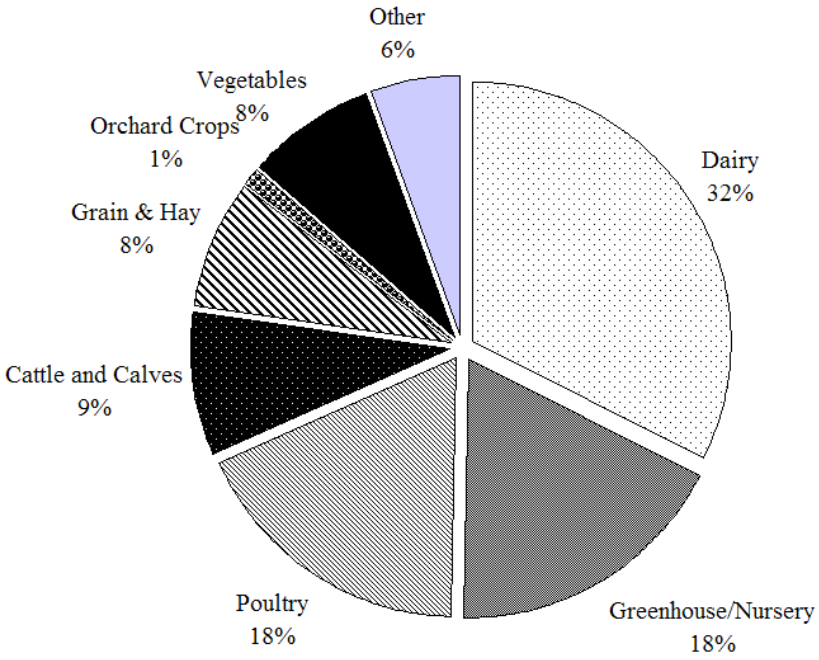
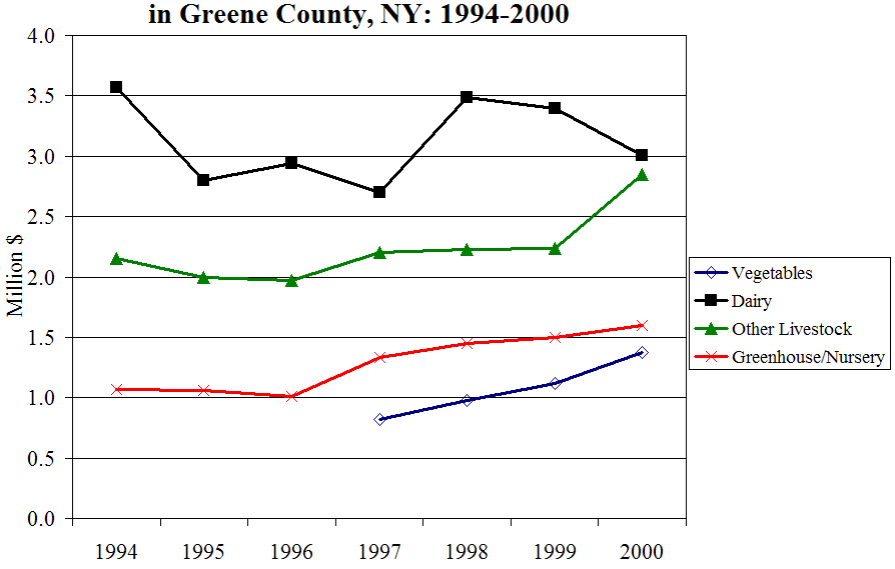


Figure 5. Cash Receipts for Top 4 Commodities in Greene County, NY: 1994-2000



Since 1997, all of the four principle commodities of Greene County have shown positive growth, albeit for different reasons. First, farm milk prices increased sharply in 1998 and 1999, helping to increase the value of dairy sales. However, by 2000, milk prices began to slump and current milk prices continue to be depressed, putting added pressure on dairy sales. As a result of low dairy prices in 2000, dairy operations cutback significantly in terms of the number of dairy cows. This liquidation of dairy cows in 2000 is likely the cause of the large increase in "other livestock" sales in 2000.

From 1997 to 2000, sales of greenhouse/nursery products and vegetables also increased but did so systematically over time, suggesting solid growth driven by expanded production, and not as a result of abnormally high prices as in the case of dairy. Over this four-year period, the sale of vegetable products increased 68 percent while greenhouse/nursery product sales increased 20 percent. Even so, these sectors still remain smaller than the county's dairy sector.

Not only have sales of greenhouse/nursery products and vegetable products grown over time, so has the number of farms and land devoted to the production of these crops. Although the number of farms growing vegetables increased only 18 percent from 1987 to 1997, the total acreage of vegetable production more than doubled over this time period. In the greenhouse/nursery sector, the growth was even more pronounced, with the number of farms increasing by 67 percent and the land devoted to production growing from 19 acres to over 250 acres.

Table 4. Farms and Acreage by Primary Crops for Greene County, NY: 1987 to 1997

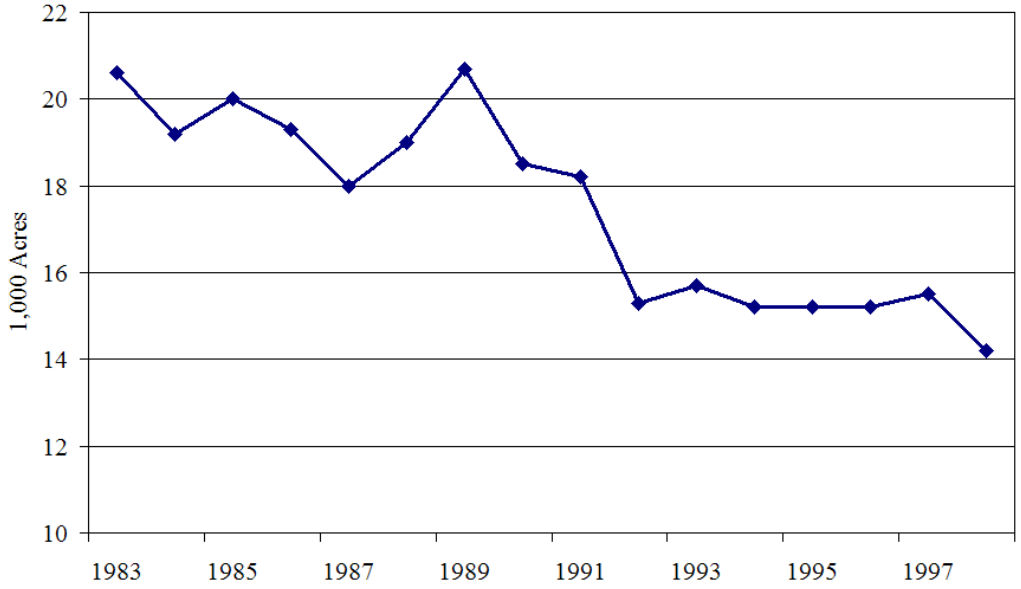
Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	-------- Number of Farms ----------				---------- Acres ----------			
Vegetables	11	11	13	18%	241	409	514	113%
Greenhouse/Nursery*	18	17	30	67%	19	44	255	1242%
Orchard Crops	17	15	11	-35%	174	176	143	-18%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

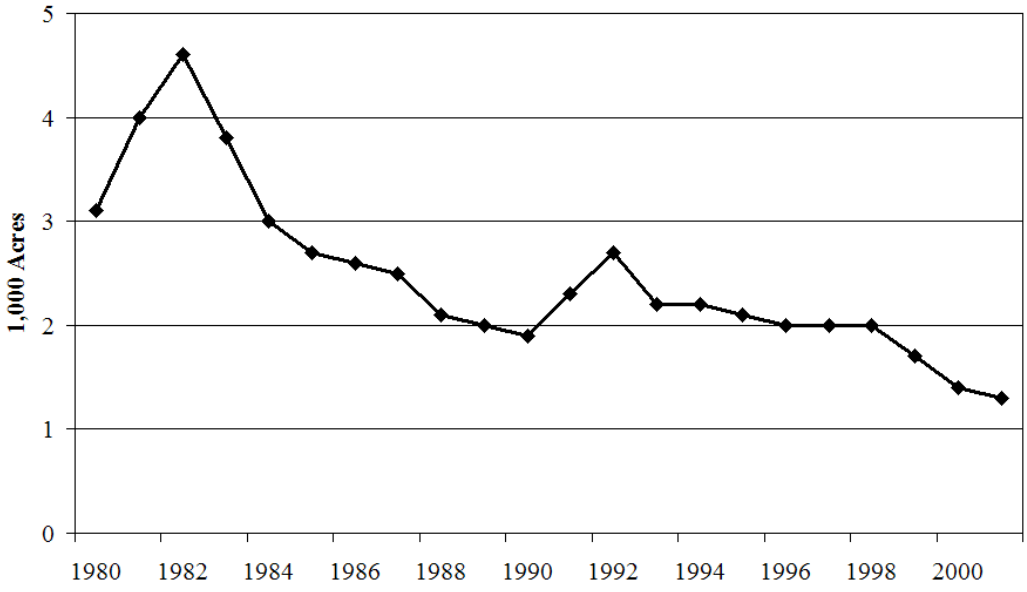
For other crops, however, there has been a steady decline over this same time period. The number of farms growing orchard crops and the acreage of orchard crops fell by 35 percent and 18 percent, respectively, from 1987 to 1997. With the decline in dairy, there was also a corresponding loss in acreage devoted to corn and hay production in the county.

Figure 6. Hay Acreage in Greene County, NY: 1983-2001



Source: New York Agricultural Statistics Service.

Figure 7. Corn Planted Acres for Greene County, NY: 1980-2001



Source: New York Agricultural Statistics Service.

Although the vegetable sector has grown, it still remains relatively small, making data availability a problem. However, enough data exists to spot some trends in this sector. First, sweet corn is the dominant vegetable crop grown by producers and accounts for the largest share of the vegetable acreage. Second, vegetable farms in 1997 are more diverse in their production than they were in 1987. For example, in 1987 only five of the 12 vegetable crops listed in table 5 were produced in Greene County, but by 1997 all 12 crops were being produced by at least three farms. Although the lack of reported data restricts us from knowing exactly the distribution of vegetable acreage, the total acreage for vegetables increased by 273 acres from 1987 to 1997, of which sweet corn accounted for 61 acres of the increase. Thus, the remaining 212 acre increase occurred in these other new crops.

Table 5. Vegetables for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			-------- Acres -------		
Beans (Snap)	0	0	4	0	0	**
Broccoli	0	0	3	0	0	**
Cantaloups	0	0	5	0	0	8
Cucumbers	3	3	3	**	**	**
Eggplant	0	0	3	0	0	**
Lettuce	0	0	3	0	0	**
Peas, Green	0	3	3	0	**	**
Peppers (Sweet)	3	3	3	**	**	**
Pumpkins	4	3	6	**	18	27
Squash	0	4	4	0	**	**
Sweet Corn	9	6	8	154	167	215
Tomatoes	4	7	6	**	15	18

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Like the vegetable sector, the greenhouse and nursery industry saw higher sales. More farms grew greenhouse/nursery products from 1987 to 1997, and a huge expansion occurred in production on open space land.

The expansion in the number of farms and in area devoted to the production of greenhouse/nursery crops has led to a sizable expansion in the value of sales from this sector. The output from this sector more than doubled from $0.74 million in 1987 to $1.57 million by 1997. However, this expansion occurred across three types of products: bedding/garden plants, potted flowers and cut flowers. There is little or no economic activity in the production of Christmas trees, sod or nursery crop in Greene County based on 1997 data.

Table 6. Greenhouse/Nursery Principal Crops for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			--- Sales (Million $) ---		
Bedding/Garden Plants	11	9	16	$0.21	$0.22	$0.48
Potted Flowers	8	4	3	$0.07	**	1/
Cut Flowers	0	0	4	$0.00	$0.00	1/
All Greenhouse/Nursery Crops				$0.74	$0.91	$1.57

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

1/ Data withheld, but combined 1997 Sales of Potted Flowers and Cut Flowers totaled $0.478 million.

Table 7. Greenhouse/Nursery Production for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	18	17	30	67%
Production Area under Glass or Protection (sq. feet)	118,262	105,867	122,174	3%
Production in the Open (acres)	16	42	252	1475%
Value of Sales (million)	$0.74	$0.91	$1.57	113%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the orchard industry, apples represent the only significant crop in Greene County. The number of farms producing apples fell by 35 percent from 1987 to 1997, although the number of apple trees increased sharply by 83 percent over this same time period. The drop in apple production from 1987 to 1997 was likely a result of a poor crop year.

Table 8. Fruit Farms and Inventory for Greene County, NY: 1987 to 1997

Item	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change
	--Number of Farms--			--Vines or Trees--			Production (1,000 Pounds)		
Apples	17	11	-35%	7,787	14,272	83%	898	637	-29%
Peaches	na	4	na	na	312	na	na	22	na

Source: U.S. Census of Agriculture, 1987 and 1997

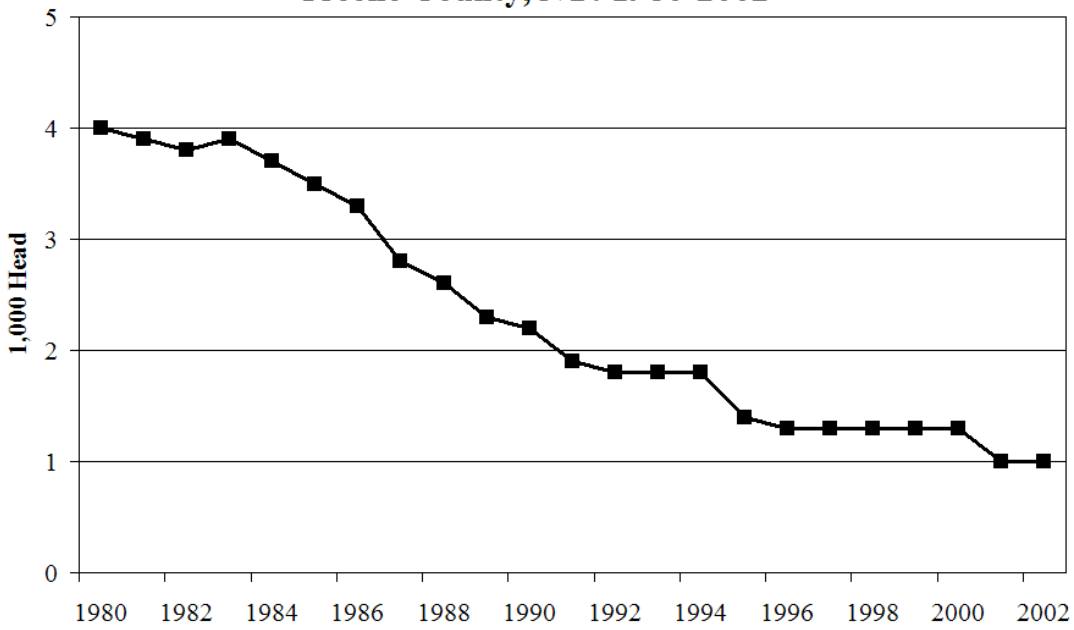
In the livestock sector, the number of farms producing livestock commodities declined from 1987 to 1997 across all major groups. The inventory of livestock also was lower. Dairy, which is the most economically significant of the livestock sectors, showed the largest decline in farms and in the inventory of dairy cows, both of which fell by over 40 percent from 1987 to 1997. Although the number of farms raising horses and the inventory of horses fell by a similar magnitude as dairy, this sector had little sales from horses suggesting that horses on farms are more for recreation or hobbies.

Table 9. Livestock Farms and Inventory for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Dairy	57	34	32	-44%	2,817	1,799	1,658	-41%
Cattle	78	66	70	-10%	4,002	3,538	3,487	-13%
Sheep	33	25	20	-39%	610	688	546	-10%
Horses	71	51	49	-31%	555	340	293	-47%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Figure 8. Number of Milk Cows for Greene County, NY: 1980-2002



Although the dairy sector has declined significantly in recent history, most of the decline occurred in the 1980s and early 1990s. Since the mid-1990s, dairy cow numbers in Green County have remained relatively stable, although they continue to slip as dairy prices become depressed, as was the case in 2000. With current dairy prices still well below historical levels, it seems likely that Greene County will continue to lose dairy operations over time. Since dairy remains an important component of the Green County agriculture sector, this will have important implications for the county in the future.

Table 10. Dairy Farms for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Dairy Farms	57	34	32	-44%
Number of Milk Cows	2,817	1,799	1,658	-41%
Total Value of Milk Sold	$4.5 Million	$3.1 Million	$2.8 Million	-36%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the cattle sector, there have been similar losses in farms and cattle numbers as there have been in the dairy sector. From 1987 to 1997, the number of farms raising cattle fell by nearly 30 percent while the number of cattle sold by the county's producers fell by 46 percent.

Table 11. Cattle for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Cattle (Number of Farms)	154	108	109	-29%
Number of Cattle Sold	3,769	2,783	2,019	-46%
Total Value of Cattle Sold	$1.2 Million	$0.73 Million	$0.77 Million	-35%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the poultry sector, farm numbers have declined, but the value of poultry sales remains relatively high. Based on 1997 data, the total value of poultry products sold was over $1.5 million.

Table 12. Poultry for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Poultry (Number of Farms)	32	26	22	-31%
Total Value of Poultry Sold	**	**	$1.59 Million	na

Source: U.S. Census of Agriculture, 1987, 1992, and 1997
*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Farm Costs and Returns

Farm costs in Greene County increased rather sharply from 1987 to 1997. Overall, total expenditures by Green County farms increased by 25 percent, driven by higher labor costs, property taxes, energy costs and feed costs. On a farm basis, the increase was even larger as average farm expenses increased from $25,000 per farm in 1987 to $35,000 per farm by 1997, a 40 percent increase.

Table 13. Farm Production Expenses for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------$1,000 ----------			
Agricultural Chemicals	191	150	110	-42%
Energy, Electricity	271	356	348	28%
Energy, Petroleum Products	317	352	490	55%
Feed for Livestock	1,786	1,677	2,007	12%
Fertilizer	232	187	281	21%
Labor, Contract	142	11	19	-87%
Labor, Hired	884	1,053	1,371	55%
Livestock Purchased	257	361	377	47%
Repairs and Maintenance	596	615	834	40%
Seeds, Bulbs, Plants and Trees	248	235	203	-18%
Taxes, Property	605	951	926	53%
Other	1,510	1,096	1,811	20%
TOTAL	7,039	7,044	8,777	25%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

With increasing costs and stagnant farm revenue, net-returns to Greene County farms have fallen sharply over time. From 1987 to 1997, total net-returns for the farm economy fell from slightly more than $1 million to a net-loss of $0.2 million. Furthermore, nearly two-thirds of the farms operated at a net-loss in 1997. For the small proportion of farms that were profitable, average net-returns were relatively low at just under $15,000 per farm.

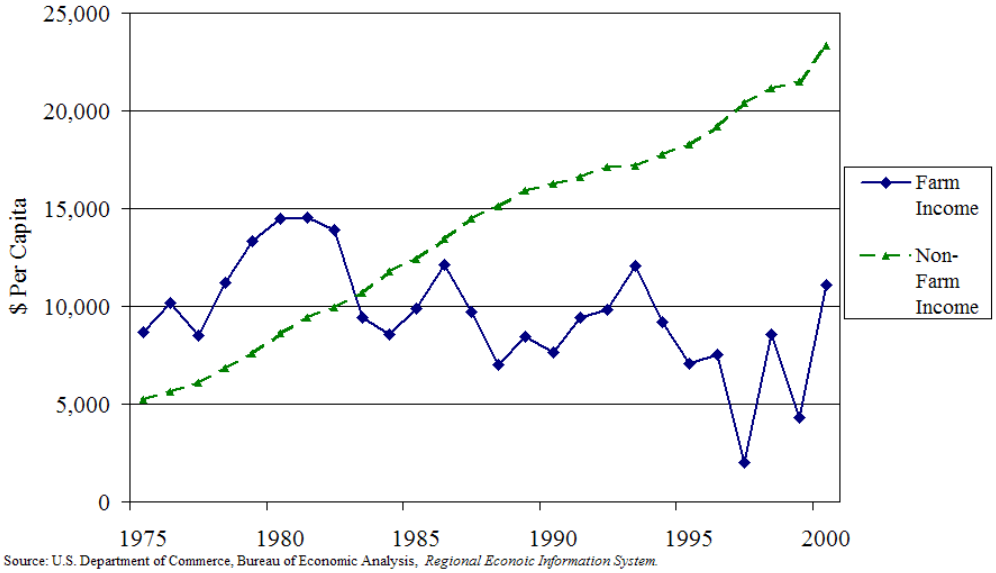
Table 14. Farm Net-Returns for Greene County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net-Returns	$1.05 Million	$0.74 Million	-$0.20 Million	-119%
Net-Returns per Farm	$3,779	$3,302	-$819	-122%
Farms with Net Gains (%)	44%	41%	37%	-17%
Net-Returns per Farm with Net Gains	$15,233	$17,711	$14,883	-2%
Farms with Net Losses (%)	56%	59%	63%	13%
Net-Returns per Farm with Net Losses	$5,252	$6,818	$9,920	89%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Fortunately, more recent data suggests that farm profitability has improved since 1997. From 1997 to 2000, per-capita farm income grew from $2,000 to more than $11,000. This growth occurred as farm revenue increased in all major commodity sectors over this time period (see Figure 5). However, per-capita farm income still remains well below non-farm per-capita income in Greene County of $23,000 in 2000.

Figure 9. Per-Capita Farm Income and Per-Capita Non-Farm Income for Greene County, NY: 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Economic Impact of Greene County's Agriculture Sector

There are two common approaches to measuring the economic importance of a sector to the general economy. The first approach is to examine the output value of output from the sector or from the employment generated in that sector. However, such direct measures ignore spillover impacts into other segments of the economy, either from input suppliers or from those sectors that further transform raw commodities. Thus, a second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

Table 15. Output and Employee Payroll by Commodity Sector for Greene County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Dairy	$2.85	$0.49
Poultry and Eggs	$1.59	$0.21
Greenhouse/Nursery	$1.57	$0.84
Vegetables	$0.68	$0.27
Other	$2.09	$0.17
Farm Sector Total	**$8.78**	**$1.98**

Source: *IMPLAN*

As a single sector, dairy represents the largest segment of the county's farm output, accounting for 32 percent of the total farm output in 1997. However, in terms of employee payroll, it ranks well behind the greenhouse/nursery sector. In 1997, the employee payroll expenditures from the dairy sector accounted for only 25 percent of all employee expenditures in the farm sector while the greenhouse/nursery sector accounted for 42 percent. The poultry sector as well has similar properties to the dairy sector, with relatively high output but low employee payrolls. Since both the dairy and poultry sector are relatively capital intensive as opposed to labor intensive, their employee payrolls tend to be relatively low compared to the greenhouse/nursery and vegetable sectors.

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Greene County's farm commodities, every $1 increase in total farm output led to an additional 35 cents in economic activity in other sectors of the local economy. Thus, the direct output of Greene County's agricultural sector was $8.78 million, but an additional $3.07 million was generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $9.69 million, which generated another $3.39 million in other sectors.

Table 16. Output Multipliers by Commodity Sector for Greene County, NY: 1997

Farm Sector	Output Multiplier
Dairy	1.33
Poultry and Eggs	1.25
Greenhouse/Nursery	1.48
Vegetables	1.44
Other	1.36
TOTAL	**1.35**

Source: *IMPLAN*

Not surprisingly, the dairy and poultry sectors tend to have relatively low output multipliers as compared to the greenhouse/nursery and vegetable sectors. This implies that any increases in output in the dairy/poultry sector would have smaller impacts on the local economy than an increase in either the vegetable or greenhouse/nursery sectors.

Agricultural Service, Wholesale, and Retail Sectors

As sectors of the farm economy grow or contract, this can have important implications for service related firms, wholesalers and retailers that deal directly with farmers and their products. In the case of Greene County, there has been little growth in the last decade with regards to agricultural related firms.

In the service-related firms, which consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies, the number of firms was generally lower from 1993 to 2000. The exception was the number of veterinary firms, which remained unchanged. Especially important is the complete elimination of farm supply firms from the county.

Food manufacturing activity in Greene County is limited to only one livestock processing firm. In the wholesale trade sector, however, one new flower and nursery stock firm entered the industry while one fruit and vegetable wholesaler left the industry.

On the retail/consumer side, the number of nursery and garden centers increased by one firm as did the number of landscape firms.

Table 17. Agricultural Industry Sector Firms for Greene County, NY: 1993 and 2000

Sector	1993	2000	% Change
SERVICES			
Agricultural Support	3	1	-67%
Veterinary	4	4	0%
Farm Supplies	4	0	-100%
MANUFACTURING			
Livestock Processing	1	1	0%
WHOLESALE			
Flower and Nursery Stock	0	1	na
Fresh Fruit and Vegetable	1	0	-100%
RETAIL			
Nursery and Garden Centers	3	4	33%
Landscaping	1	2	100%
Fruit and Vegetable Markets	2	2	0%

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

Economic Trends and Impacts of the Agriculture Industry in Orange County, NY

Historically, dairy farms and feed production to support the dairy industry have comprised a significant portion of Orange County's agriculture industry. However, with the change in federal dairy policies in the 1980s and the emergence of corporate-sized dairies in the west in the 1990s, family-sized dairy farms in the eastern states faced a rough economic climate. Orange County was not immune. From 1985 to 2000, dairy cow numbers in the county were cut in half. The amount of hay and corn acreage dropped dramatically as well during this same time period.

Despite the decline in the dairy sector, Orange County's agriculture has adapted to national and local economic forces. At a local level, Orange County has experienced significant growth in population: 31 percent in the last 20 years. Such growth can contribute to higher land and labor costs for farmers, but also can lead to opportunities. In Orange County, the agricultural industry has been transformed from a dairy-commodity industry built on low-valued production to an industry that capitalizes on its urbanization by producing high-valued agricultural products such as vegetables and greenhouse/nursery products. These crops have a high value to suburban consumers but are costly to transport. As a result, local vegetable producers in large population areas typically find they have a ready market for their products and a comparative advantage. This has been true in Orange County. For similar reasons, the greenhouse and nursery sector of the county's farm economy also has grown in recent years, although it remains significantly smaller than the vegetable sector.

Key Findings of the Study

1. Orange County's farm economy produced $108 million in output value in 2000, which generated an additional $59 million in related economic activity within other sectors of the local economy.

2. In the last 15 years, growth in Orange County's vegetable and greenhouse/nursery sectors have more than offset the declines experienced in the dairy and feed sectors. Cash receipts for vegetables produced in Orange County were up 52 percent from 1987 to 2000, while cash receipts for the sale of greenhouse and nursery crops more than doubled during this time period.

3. The vegetable sector is the largest segment of the farm economy and accounts for nearly 40 percent of Orange County's agricultural output. However, there have been significant swings in this sector's output in the last decade, suggesting some instability.

4. Few farms with relatively high sales provide most of Orange County's agricultural economic activity. In 1997 the largest 30 percent of the farms accounted for 86 percent of the county's agricultural output.

5. After trending higher for much of the 1980s, farm profitability in Orange County fluctuated widely in the 1990s. These variations likely reflected changes in the vegetable sector over the same period.

6. Growth in vegetable production and the greenhouse/nursery sector have been matched by an increase in Orange County's wholesale trade, and in the case of vegetables, vegetable manufacturing. The decline in the dairy sector caused similar losses in the number of farm supply stores, dairy manufacturers and dairy wholesalers in Orange County.

Land Use Patterns

Forestland and water comprise more than two-thirds of the land area in Orange County. The remaining acres are either developed (8.5 percent of the land) or open-space grasslands and crops (21.1 percent).

This high density of residential and industrial development impacts the county's agricultural sector in two ways. First, the demand for residential and industrial development drives up real estate prices, forcing land out of lower value agricultural uses, such as traditional field crops and livestock enterprises. In addition, the development of residential and industrial areas stimulates the demand for greenhouse and nursery products, as well as vegetable crops. These crops tend to have higher returns per acre, but also are costly to transport. Hence, production close to urban areas is essential.

Agriculture in Orange County reflects these trends, as growth in farm output has been mostly from vegetables and greenhouse/nursery products.

Farm Characteristics

The number of farms in Orange County fell by 17 percent from 1987 to 2001, with most of the decline occurring from 1987 to 1997. At the same time, land in farms fell by 20 percent. Based on data from the New York Agricultural Statistics Service for 2001, the most recent year available, there were 730 farms in Orange County that covered nearly 95,000 acres—18 percent of the total area in Orange County.

Farm size, as measured by average acreage per farm, declined modestly from 135 acres per farm to 129 acres per farm from 1987 to 2001. Although national farming trends show farms growing larger, the shift of Orange County's agriculture from dairy to vegetables and greenhouse/nursery crops would explain why farm sizes have remained nearly constant over the last 15 years, as these crops are more labor intensive.

Table 1. Number of Farms, Land in Farms and Average Farm Size for Orange County, NY: 1987 to 2001

Item	1987	1997	2001	1987 to 2001 % Change
Farms	880	750	730	-17%
Land in Farms (Acres)	118,800	101,900	94,500	-20%
Average Farm Size (Acres)	135	136	129	-4%

Source: New York Agricultural Statistics

In terms of the size distribution of farms in Orange County, there remains a fairly even distribution of farms from 10 acres in size up to 500 acres in size. However, the largest grouping of farms is in the 50 to 179 acre range, which accounted for 35 percent of the farms in 1997.

Table 2. Farms By Size of Acreage for Orange County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	94	77	78	-17%
10 to 49 acres	221	143	162	-27%
50 to 179 acres	255	241	221	-13%
180 to 499 acres	182	146	132	-27%
500 to 999 acres	30	26	25	-17%
More than 1,000 acres	7	8	6	-14%
TOTAL	789	641	624	-21%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Even though Orange County farms are relatively small in terms of acreage, a significant proportion of these farms post high sales figures. For 1997, 30 percent of Orange County's farms had gross sales of more than $100,000, up from only 25 percent in 1987. There are just as many farms with sales of less than $10,000, but this group of farms shrunk from 33 percent of all farms in 1987 to 30 percent by 1997.

Table 3. Farms By Value of Sales for Orange County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	150	97	101	-33%
$2,500 to $4,999	51	40	48	-6%
$5,000 to $9,999	56	51	39	-30%
$10,000 to $24,999	129	110	127	-2%
$25,000 to $49,999	87	80	58	-33%
$50,000 to $99,999	113	78	66	-42%
More than $100,000	203	185	185	-9%
TOTAL	789	641	624	-21%

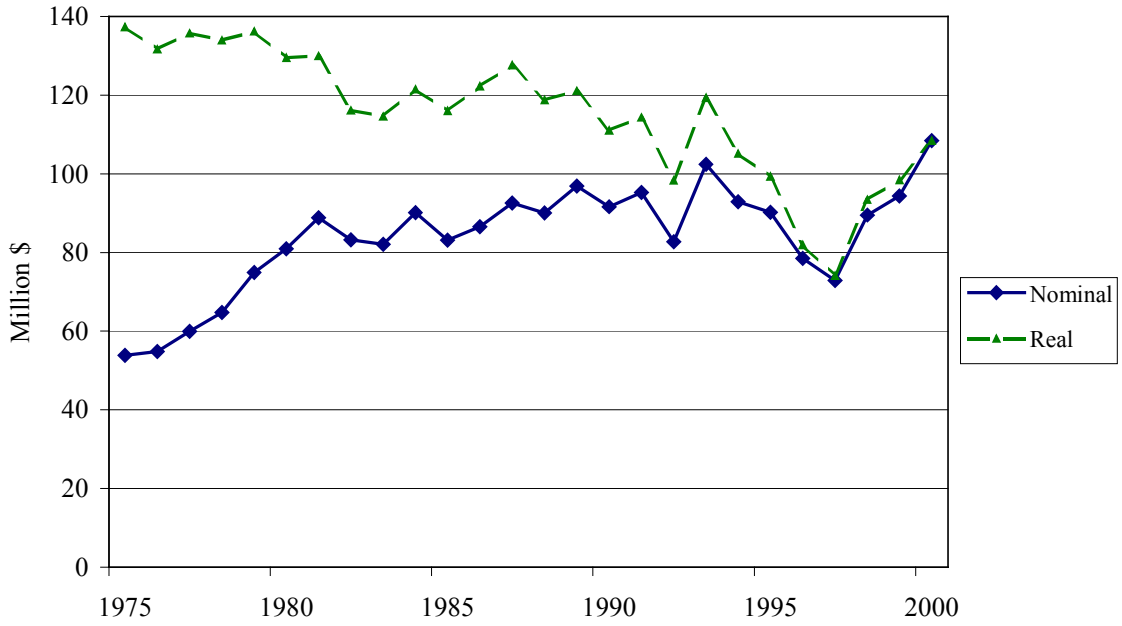
Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Despite the low value of sales for nearly 30 percent of the county's farms, the bulk of Orange County's agricultural output comes from farms with sales greater than $100,000. These large farms accounted for 30 percent of all farms in Orange County, but nearly 86 percent of the county's agricultural output in 1997.

Agricultural Commodity Output

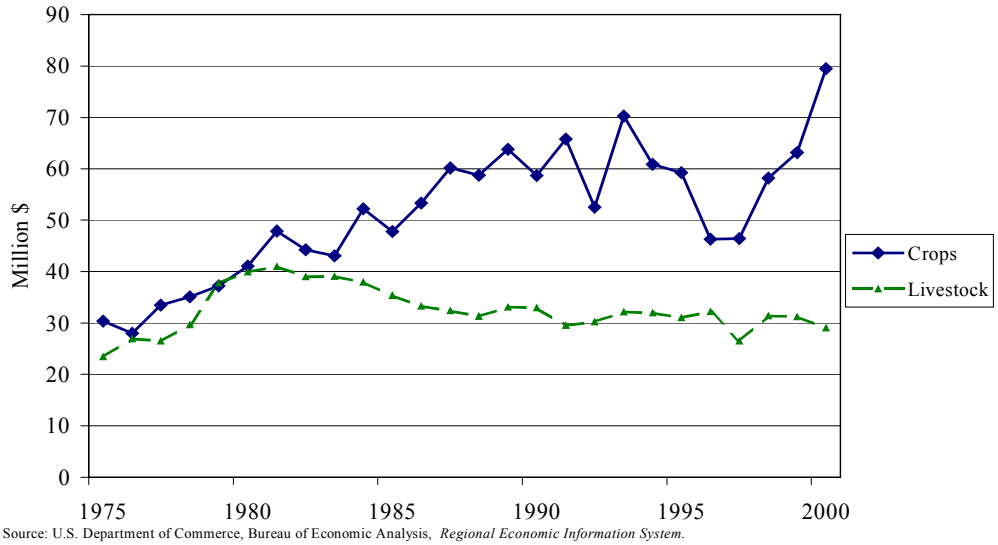
For much of the 1980s and early 1990s, Orange County's agricultural output value tended higher in nominal dollars from 80 to 100 million dollars per year, although in inflation-adjusted dollars, the county's farm output value fell slightly. Much of the growth in the nominal value of agricultural output occurred in the crop sector, where expansion in vegetables and greenhouse/nursery crops, helped more than offset declines in the county's dairy sector.

Figure 2. Value of Farm Marketings for Orange County, NY: Nominal and Real 2000 Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoimc Information System.*

Figure 3. Value of Crop and Livestock Farm Sales for Orange County, NY: Nominal Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System.*

While the 1980s were times of reasonable growth in Orange County's output, the 1990s marked a time of significant ups and downs. From 1992 to 1997, agricultural output declined by 25 percent, but rebounded to $108 million by 2000. This swing in Orange County's agricultural output in the 1990s was largely driven by changes in the crop sector, especially vegetable output.

Although there has been significant growth in Orange County's agricultural output, this expansion has been largely confined to two commodity groups: vegetables and greenhouse/nursery products. Along with dairy and orchard crops, these four commodity groups comprised 92 percent of the county's agricultural output in 2000. The greenhouse/nursery sector saw the largest expansion from 1987 to 2000, where output value doubled over this time period. Vegetables, while expanding less in percentage terms, boosted output value by nearly $15 million dollars from 1987 to 2000. On a smaller scale, the output of orchard crops expanded as well, although much of the expansion came in the late 1980s and early 1990s.

Figure 4. Cash Receipts for Top 3 Commodities in Orange County, NY: 1994-2000

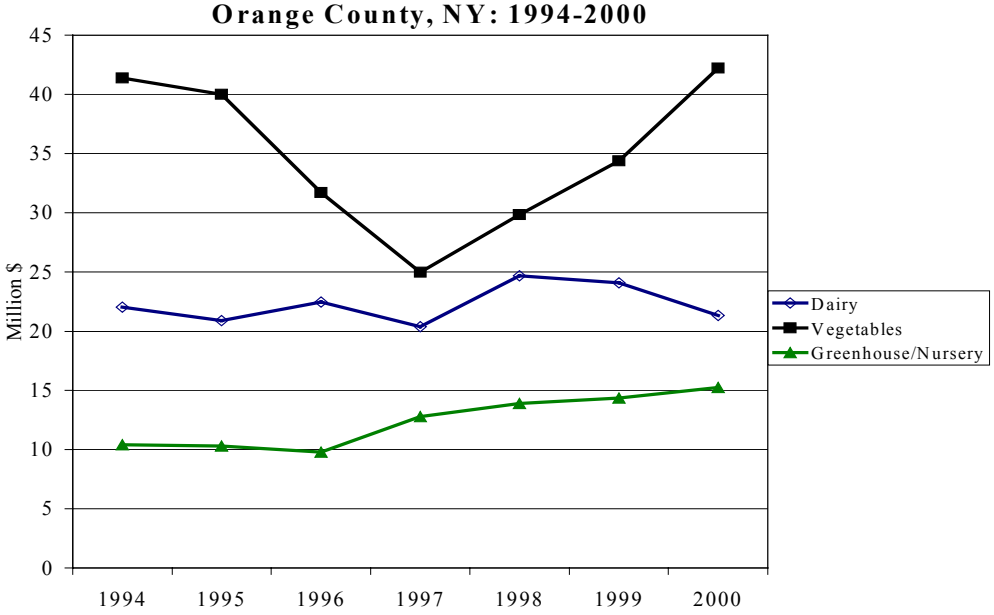


Table 4. Value of Sales by Primary Commodities for Orange County, NY: 1987 to 2000.

Commodity	1987*	2000**	1987 to 2000 % Change
	Million $		
Orchard Crops	$5.7	$6.9	21%
Greenhouse/Nursery	$7.6	$15.3	101%
Dairy	$21.2	$21.3	0%
Vegetables	$27.7	$42.2	52%

* *Source: U.S. Census of Agriculture,1987.*

** *Source: New York Agricultural Statistics Service, 2000.*

The only major commodity with no growth since 1987 was the dairy sector, which showed no change in output value from 1987 to 2000. However, this sector declined significantly in the early 1980s, as a result of lower federal milk price supports and the Dairy Herd Termination program.

Although there has been significant increase in vegetable sales, the number of farms producing vegetables actually fell by 28 percent from 1987 to 1997. In contrast, the number of farms growing greenhouse/nursery crops nearly doubled in the same 10-year period. Similar shifts occurred in acreage under production by commodity, as greenhouse/nursery production acreage expanded, while vegetable acreage declined. The increase in greenhouse/nursery acreage was mostly as a result of more acreage under glass.

Table 5. Farms and Acreage by Primary Crops for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	-------- Number of Farms ----------				---------- Acres ----------			
Vegetables	232	186	166	-28%	9,864	8,916	8,538	-13%
Greenhouse/Nursery*	54	75	104	93%	1,563	1,007	1,791	15%
Orchard Crops	47	37	32	-32%	2,880	2,159	2,170	-25%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

Dry onions represent the most significant vegetable crop, accounting for 60 percent of all vegetable acreage. However, acreage of dry onions fell 10 percent from 1987 to 1997. In addition, acreage in lettuce production, the second most significant crop, fell by 63 percent over this same time period. There was no primary vegetable crop that farmers seemed to shift into during this time period. Instead, farmers grew a broader mix of crops, expanding acreage in cabbage, cucumbers, eggplant, pumpkins, squash, sweet corn and tomatoes.

Like the vegetable sector, the greenhouse and nursery industry saw higher sales. This expansion came from nearly twice as many farms growing greenhouse/nursery products from 1987 to 1997, as well as a 123 percent increase in production under glass or protection.

Table 7. Greenhouse/Nursery Production for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	54	75	104	93%
Production Area under Glass or Protection (sq. feet)	597,979	916,864	1,334,465	123%
Production in the Open (acres)	1,549	986	1,760	14%
Value of Sales (million)	$7.62	$8.85	$15.03	97%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Table 6. Vegetables for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			--------- Acres --------		
Beans (Snap)	12	20	11	58	51	24
Broccoli	13	12	7	34	23	7
Cabbage	10	17	15	57	54	77
Carrots	5	5	7	**	**	54
Cucumbers	11	20	16	12	39	24
Eggplant	3	9	10	1	17	13
Herbs	**	6	3	**	42	1
Lettuce	26	13	13	1,294	484	489
Onions, Dry	154	99	89	5,816	5,274	5,248
Onions, Green	12	7	5	187	329	35
Peppers (Sweet)	16	19	12	221	34	38
Pumpkins	42	46	49	352	496	670
Squash	20	28	20	52	65	69
Sweet Corn	41	51	40	683	824	767
Tomatoes	32	34	36	107	86	122

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

The growth in sales of greenhouse/nursery crops occurred largely in bedding/garden plants and potted flowers. The combined sales of these crops grew 242 percent from 1987 to 1997, while production under glass area grew 123 percent. Thus, Orange County's producers either improved production efficiency or shifted to higher-valued crops over this time period. The other major greenhouse/nursery crop in Orange County is sod. Sales of sod increased somewhat from 1987 to 1997, after falling substantially in 1992.

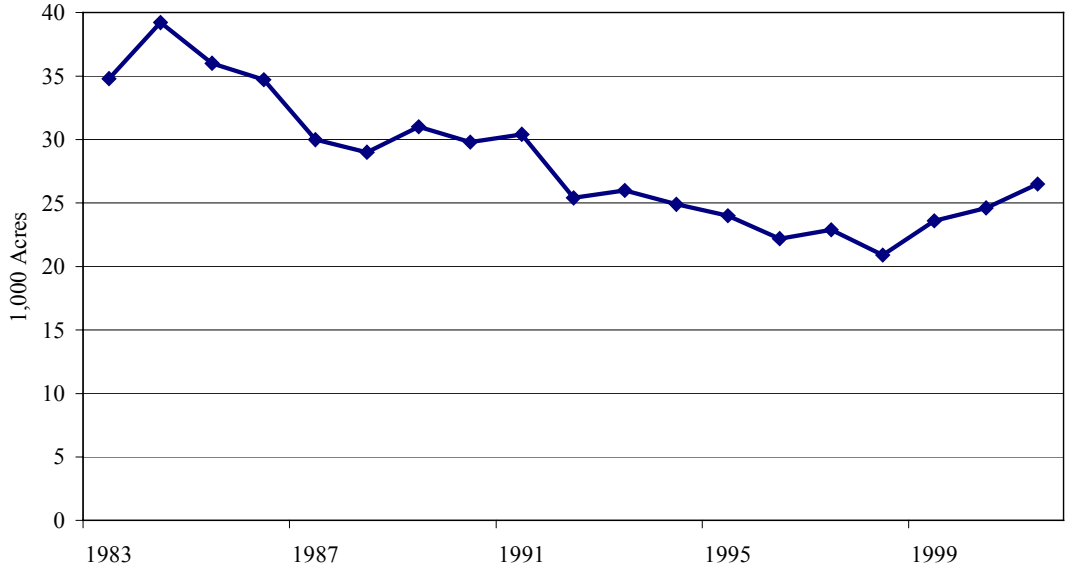
Table 8. Greenhouse/Nursery Principal Crops for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			--- Sales (Million $) ---		
Bedding/Garden Plants	31	49	51	$1.09	$2.19	$5.36
Potted Flowers	23	25	25	$1.28	$2.75	$2.75
Nursery Crops	10	15	14	$0.38	$0.70	$0.88
Sod	7	6	9	$4.53	$2.67	$4.78
Other				$0.34	$0.54	$1.26
TOTAL				$7.62	$8.85	$15.03

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

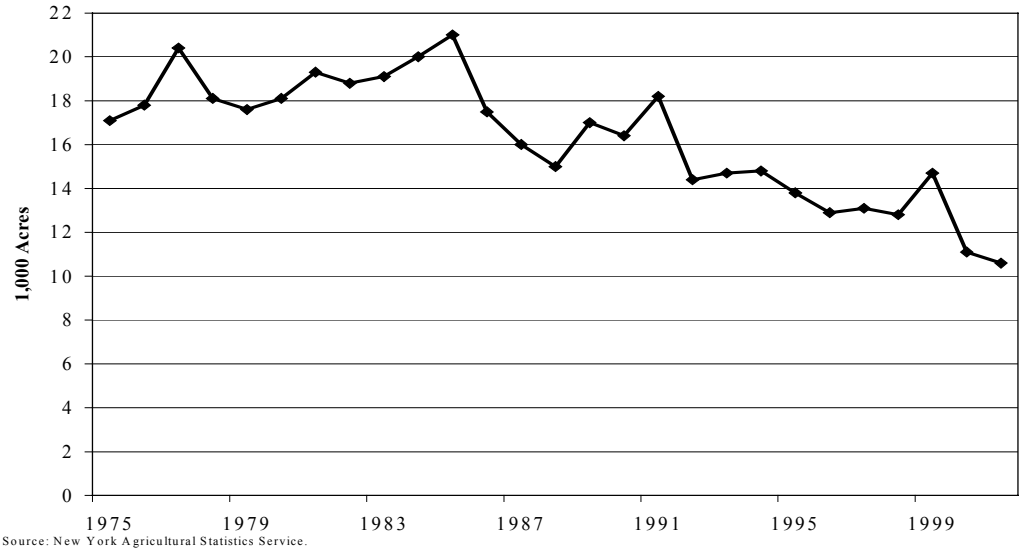
Aside from vegetables and greenhouse/nursery crops, there were few areas of growth in Orange County's crop sector. Field crops like hay and corn fell substantially in reaction to the decline in the county's dairy industry during the last 20 years.

Figure 5. Hay Acreage in Orange County, NY: 1983-2001



Source: New York Agricultural Statistics Service.

Figure 6. Corn Planted Acres for Orange County, NY: 1975-2001



In the orchard industry, the apple sector continues to be the most economically significant, although cherries, grapes and peaches remain important products in Orange County. Even though overall orchard farm sales slipped from 1992 to 1997, there were signs that an expansion may come in subsequent years. The number of apple trees in Orange County expanded by 58 percent from 1992 to 1997, with 74 percent of those trees not of fruit-bearing age. Thus, apple production will likely expand significantly in coming years. Grapes showed significantly lower vine counts from 1992 to 1997, but 60 percent of the industry's 1997 inventory was not of fruit-bearing age. In contrast, peach tree numbers doubled from 1992 to 1997, but 83 percent of the industry's 1997 inventory was of fruit-bearing age.

Table 9. Fruit Farms and Inventory for Orange County, NY: 1987 to 1997

Item	1992	1997	1992 to 1997 % Change	1992	1997	1992 to 1997 % Change
	--Number of Farms--			--Vines or Trees--		
Apples	33	29	-12%	180,881	285,728	58%
Cherries	8	4	-50%	1,634	1,512	-7%
Grapes	9	5	-44%	43,915	24,120	-45%
Peaches	10	11	10%	3,586	7,355	105%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

While Orange County's crop sector has several growth areas, its livestock sector is mostly in decline. The number of farms producing livestock or dairy products fell by 30 percent across most major livestock sectors, although the inventory of livestock fell mostly by 20 percent from 1987 to 1997.

Table 10. Livestock Farms and Inventory for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Dairy	187	145	125	-33%	12,145	10,328	9,525	-22%
Cattle	113	92	96	-15%	9,731	8,641	8,262	-15%
Sheep	37	36	24	-35%	1,196	2,086	973	-19%
Horses	196	127	135	-31%	3,038	1,960	2,295	-24%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Even though the dairy farm sector saw fewer farms and fewer dairy cows, the value of dairy output held reasonably constant from 1987 to 1997. This was due to increased productivity, as well as higher nominal prices in 1997 compared to 1987. Since 1997, farm-level milk prices have been extremely volatile and often low as milk production expanded in the western states. This trend is likely to continue and will lead to more losses in Orange County's dairy sector, which still represents nearly 20 percent of the county's agricultural output.

Table 11. Dairy Farms for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Dairy Farms	187	145	125	-33%
Number of Milk Cows	12,145	10,328	9,525	-22%
Total Value of Milk Sold	$21.2 Million	$20.4 Million	$20.2 Million	-5%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Sharper losses occurred in the cattle and horse sectors from 1987 to 1997. Both sectors had 30 percent losses in the number of farms. However, the value of horse sales dropped by 76 percent from 1987 to 1997, while cattle sales fell only 39 percent.

Table 12. Cattle for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Cattle (Number of Farms)	241	199	154	-36%
Number of Cattle Sold	5,115	3,776	3,063	-40%
Total Value of Cattle Sold	$2.5 Million	$2.5 Million	$1.5 Million	-39%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Table 13. Horses for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sales of Horses (Number of Farms)	196	127	135	-31%
Number of Horses Sold	450	291	308	-32%
Total Value of Horses Sold	$3.0 Million	$2.0 Million	$0.7 Million	-76%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farm Costs and Returns

As the agricultural sector shifted toward vegetable crops as well as greenhouse and nursery products, production expenses in the county shifted as well. Most notable was the increased expenditures on seeds, bulbs, plants and trees, which accounted for a 42 percent increase from 1987 to 1997.

Increases were prevalent in most other major categories, but in smaller magnitudes. The exception was a relatively large drop in contract labor expenditures, which fell by 48 percent. Hired labor, the largest component in farm production expenses, increased by only two percent from 1987 to 1997, and even declined from 1992 to 1997 by nearly 12 percent.

Although total farm expenditures fell by two percent from 1987 to 1997, farm sales also were down in the aggregate over this same period, leading to 17 percent lower farm net-returns. However, average net returns per farm did manage to increase by four percent from 1987 to 1997. Even so, profitability of Orange County farms did not seem to improve overall. For example, in 1987, 60 percent of Orange County's farms had net gains, but by 1997 only 50 percent of the farms had net gains. The farms that were profitable, however, increased profitability by 35 percent from 1987 to 1997. Since average losses for farms with net losses also increased over this time period, the few farms that were profitable fueled the growth in the county's farm net-returns.

Table 14. Farm Production Expenses for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------Million $----------			
Agricultural Chemicals	3.33	2.96	3.68	11%
Energy, Electricity	1.86	1.86	1.85	-1%
Energy, Petroleum Products	2.57	2.74	2.50	-3%
Feed for Livestock	7.47	7.12	8.10	8%
Fertilizer	2.21	1.92	2.10	-5%
Labor, Contract	1.30	0.97	0.68	-48%
Labor, Hired	11.74	13.49	12.00	2%
Livestock Purchased	2.58	2.51	1.49	-42%
Repairs and Maintenance	3.91	3.96	4.18	7%
Seeds, Bulbs, Plants and Trees	1.75	2.53	2.49	42%
Taxes, Property	2.66	3.70	3.26	23%
Other	14.75	12.88	12.41	-16%
TOTAL	56.13	56.64	54.74	-2%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Table 15. Farm Net-Returns for Orange County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net Returns	$15.5 Million	$17.1 Million	$12.8 Million	-17%
Net-Returns per Farm	$19,583	$26,598	$20,346	4%
Farms with Net Gains (%)	60%	58%	50%	-18%
Net-Returns per Farm with Net Gains	$40,866	$53,819	$55,337	35%
Farms with Net Losses (%)	40%	42%	50%	25%
Net-Losses per Farm with Net Losses	$12,782	$11,532	$14,091	10%

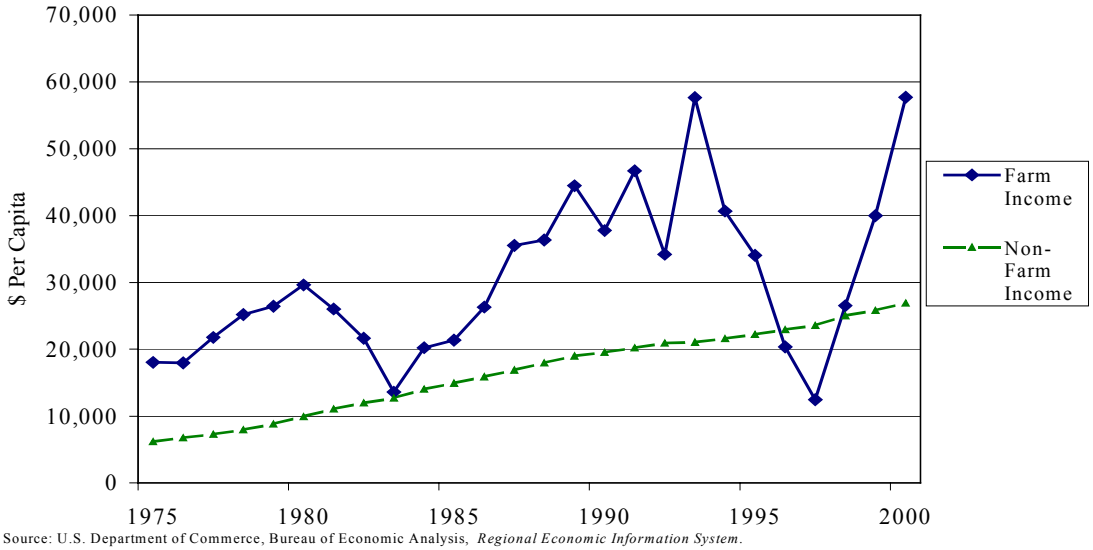
Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Even though farm net returns increased substantially, this doesn't necessarily mean that all farms experienced improved profitability. Indeed, when looking at the proportion of farms that were profitable from 1987 to 1997, there were fewer profitable farms in 1997 than in 1987. In 1987, 60 percent of the farms posted net gains, but only 50 percent had net gains by 1997. However, those farms that were profitable had average

returns that grew substantially over this period. For those farms with net gains, average net returns per farm were $40,866 in 1987 but grew to $55,337 per farm by 1997.

However, since 1997 was a point of significantly lower sales in the vegetable sector, these figures may not be reflective of trends in farm profitability, but instead represent the outcome of a particularly poor crop year. More recent data suggested farm net returns accelerated in recent years. From 1997 to 2000, farm income grew from $12,500 per farm to nearly $58,000 per farm by 2000, and surpassed non-farm per-capita income in Orange County by a substantial margin.

Figure 7. Per-Capita Farm Income and Per-Capita Non-Farm Income for Orange County, NY: 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System*.

Economic Impact of Orange County's Agriculture Sector

Quantifying the economic impact of Orange County's agriculture sector is an important tool for allocating investment resources, whether from the public or private sector. There are two common methods for measuring the economic impact of any sector of the economy.

The first is a direct measure of a sector's economic importance by examining the value of output from the sector. This represents the price of the sector's output multiplied by the quantity produced by that sector of the economy. However, this only measures the direct value of a sector's importance. Since economic output does not happen in a vacuum, analysts often use output multipliers. Goods, services, and labor from within the economy are used to produce that output (sometimes referred to as upstream effects). In addition, output is usually further transformed by other sectors of the economy, stimulating more business activity. Thus, a

second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

Table 16. Output and Employee Payroll by Commodity Sector for Orange County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Orchard Crops	$6.0	$1.63
Dairy	$20.2	$1.96
Greenhouse/Nursery	$15.0	$4.50
Vegetables	$20.9	$4.50
Other	$7.7	$0.42
Farm Sector Total	**$69.8**	**$13.01**

Source: *IMPLAN*

For the four principle farm commodities in Orange County, the output value was $62.1 million in 1997, accounting for 89 percent of the county's $69.8 million farm output. In 1997, the vegetable and dairy sectors were of equal value, just over $20 million dollars per industry. However, since 1997, the vegetable sector has increased substantially while the dairy sector has stayed fairly constant. In terms of employment, the vegetable and greenhouse/nursery sectors contribute significantly more to the local economy and account for 60 percent of the total employment payroll.

Table 17. Output Multipliers by Commodity Sector for Orange County, NY: 1997

Farm Sector	Output Multiplier
Orchard Crops	1.66
Dairy	1.47
Greenhouse/Nursery	1.55
Vegetables	1.66
Other	1.48
TOTAL	**1.55**

Source: *IMPLAN*

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Orange County's farm commodities, every $1 increase in total farm output led to an additional 55 cents in economic activity in other sectors of the local economy. Thus, the direct output of Orange County's agricultural sector was $69.8 million, but an additional $38.4 million was generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $108.4 million, which generated another $59.6 million in other sectors.

Of the four principle farm commodities, orchard crops and vegetables had higher than average output multipliers. These commodity sectors are relatively labor intensive, which stimulates more economic activity in other sectors. The dairy sector, in contrast, had the lowest output multiplier, which tends to use less labor relative to other inputs such as equipment and feed, which may not be locally produced.

Agricultural Service, Wholesale and Retail Sectors

As the previous section illustrated, there are important economic linkages between the farm sector and other sectors of the local economy. As certain parts of Orange County's farm sector grew, others declined. This had important implications for input suppliers and agricultural service firms, as well as wholesale and retail trade. In this section, we explore the growth in agricultural service firms, farm input suppliers and the wholesale and retail sectors of Orange County's economy directly related to the farm sector.

Service-related firms consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies. The number of firms providing agricultural support services declined by 45 percent from 1993 to 2000. However, a more precipitous drop occurred in farm supply firms, falling from 20 firms in 1993 to only eight firms by 2000. Veterinary services increased slightly from 1993 to 2000. However, this may have been driven more from non-farm pet services and less from the agricultural sector since livestock numbers declined over this time period.

Food manufacturing activity in Orange County reflected the trends experienced at the farm level. Dairy manufacturing fell from five firms in 1993 to only one firm by 2000. On the other hand, the number of fruit and vegetable manufacturers increased by 60 percent over this same time period.

In addition, the wholesale trade sector increased for fresh fruit and vegetables, with the number of firms increasing from six in 1993 to 10 by 2000. In addition, firms specializing in the wholesaling of flower and nursery stock increased from three firms to eight firms.

However, on the retail/consumer side, the number of nursery and garden centers declined slightly, although employment in this segment of the industry increased by 28 percent. Landscape service firms managed an increase in the number of firms, but employment numbers remained nearly constant for this segment of the industry. At the retail sector, the number of fruit and vegetable markets increased from five firms in 1993 to eight firms by 2000.

Table 18. Agricultural Industry Sector Firms, Employment and Payroll for Orange County, NY: 1993 and 2000

	1993			2,000			--% Change 1993 to 2000 --		
Sector	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)
SERVICES									
Agricultural Support	20	82	1,262	11	**	**	-45%	**	**
Veterinary	28	154	3,375	29	271	6,522	4%	76%	93%
Farm Supplies	20	214	4,367	8	85	1,622	-60%	-60%	-63%
MANUFACTURING									
Dairy Products	5	**	**	1	**	**	-80%	**	**
Fruit and Vegetable	5	35	171	8	19	278	60%	-46%	63%
WHOLESALE									
Dairy Products	9	100	3,932	7	84	4,587	-22%	-16%	17%
Flower and Nursery Stock	3	**	**	8	92	3,160	167%	**	**
Fresh Fruit and Vegetable	6	**	**	10	107	3,210	67%	**	**
Farm Product Raw Material	2	**	**	3	**	**	50%	**	**
RETAIL									
Nursery and Garden Centers	16	79	1,764	12	101	1,694	-25%	28%	-4%
Landscaping	80	273	3,155	106	265	5,854	33%	-3%	86%
Fruit and Vegetable Markets	5	35	171	8	19	278	60%	-46%	63%

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

*** Data withheld by Census Bureau to avoid disclosing individual firms.*

Economic Trends and Impacts of the Agriculture Industry in Ulster County, NY

Like much of U.S. agriculture, Ulster County's farm sector has witnessed limited growth in the last twenty years. Total output from the county's farm economy in 2000 was $51.1 million. Although higher than the $46.8 million output in 1980, current output remains well below the peak of $63.7 million reached in 1991.

Despite this weakening trend, the slowdown masks important changes that point to better growth in the future. Over the last decade, there has been solid growth in the output of orchard crops, vegetables, and greenhouse/nursery crops. Combined output of these three crops grew 74 percent from 1987 to 2000. While in 1987 these three crops accounted for 50 percent of the county's farm output, today these three crops account for more than 85 percent of the county's farm output. As such, these commodities represent an important area of emphasis for continued growth in the County's farm sector.

Key Findings of the Study

1. Ulster County's farm economy produced $50.6 million in output value in 2000, which generated an additional $25.8 million in related economic activity across other sectors of the local economy.

2. Growth in Ulster County's orchard, vegetable and greenhouse/nursery sectors have helped offset the declines from the livestock sector in recent years. From 1992 to 2000, cash receipts from these three crops increased by nearly $11 million.

3. A majority of farms in Ulster County had less than $10,000 in sales per year in 1997. Furthermore, the largest 16 percent of the farms in Ulster County accounted for nearly 89 percent of the county's agricultural output in 1997. Thus, a minority of large farms in the county contributes the most to the farm sector's economic activity.

4. Although there has been growth in the production of orchard crops, vegetables and greenhouse/nursery products, there has been little or no corresponding increase in the county's wholesale trade or manufacturing sector related to these crops. The lack of suitable wholesale or manufacturing trade could possibly limit future growth in the farm sector.

Land Use Patterns

Forestland and water comprise more than 85 percent of the land area in Ulster County. The remaining acres are either developed (4.0 percent of the land) or open-space grasslands and crops (8.2 percent). Land in farms accounts for just under 10 percent of the total land area of Ulster County.

In comparison to other counties in New York, residential development pressure seems limited. In addition, population growth in Ulster County has been below other counties in the region, with Ulster's population growing only 12 percent in the last twenty years while Orange County (south of Ulster) has grown 32 percent

over this time period. Being in close proximity to a growing population base has helped stimulate the demand for greenhouse/nursery products and vegetable crops. These crops tend to have higher returns per acre, but also are costly to transport. Hence, Ulster County's production base can make the county a valuable supplier to these growing urban areas.

Farm Characteristics

From 1987 to 1997, Ulster County lost nearly one out of every four farms and 12 percent of its farmland. While losses in farms and farmland are consistent with national trends, the losses in Ulster County were much larger (the U.S. lost one percent of farms and four percent of farmland from 1987 to 1997). Much of the Ulster County farm and farmland loss occurred from 1987 to 1992. Farms and land in farms remained relatively stable from 1992 to 1997, suggesting that recent economic conditions have improved for Ulster County farms.

Table 1. Number of Farms, Land in Farms and Average Farm Size for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Farms	539	433	409	-24%
Land in Farms (Acres)	78,437	69,643	68,989	-12%
Average Farm Size (Acres)	146	161	169	16%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farm size, as measured by average acreage per farm, increased modestly from 146 acres per farm to 169 acres per farm from 1987 to 1997. In terms of the size distribution of farms in Ulster County, there remains a fairly even distribution of farms from 10 acres up to 180 acres in size. However, the largest grouping of farms is in the 50 to 179-acre range, which accounted for 38 percent of the farms in 1997. The largest percentage loss in farms from 1987 to 1997 occurred with farms in the 1 to 9-acre size range. The number of farms of this size fell 40 percent in ten years—a much more significant loss than the 24 percent loss in all farms in Ulster County over this time period. In contrast, farms greater than 1,000 acres were up slightly over this time period, growing from six farms in 1987 to eight farms by 1997.

Another way to measure farm size is by the value of sales per farm. On this account, a significant portion of Ulster County farms have relatively low sales. In 1997, more than half (52 percent) of the farms had annual sales of less than $10,000 and one quarter of the farms had sales less than $2,500. Furthermore, the proportion of farms with sales over $100,000 is a relatively small proportion of the total number of county farms.

Table 2. Farms by Size of Acreage for Ulster County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	84	54	50	-40%
10 to 49 acres	139	122	107	-23%
50 to 179 acres	202	155	156	-23%
180 to 499 acres	87	76	75	-14%
500 to 999 acres	21	17	13	-38%
More than 1,000 acres	6	9	8	33%
TOTAL	539	433	409	-24%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Figure 2. Proportion of Farms by Value of Sales for Ulster County, NY: 1997

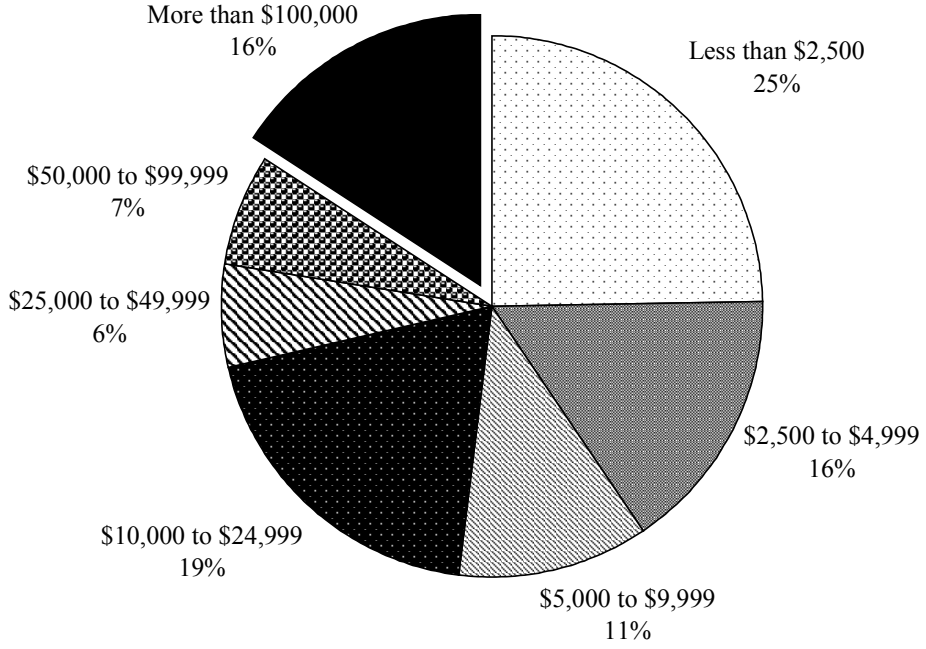


Figure 2. Proportion of Farms by Value of Sales for Ulster County, NY: 1997

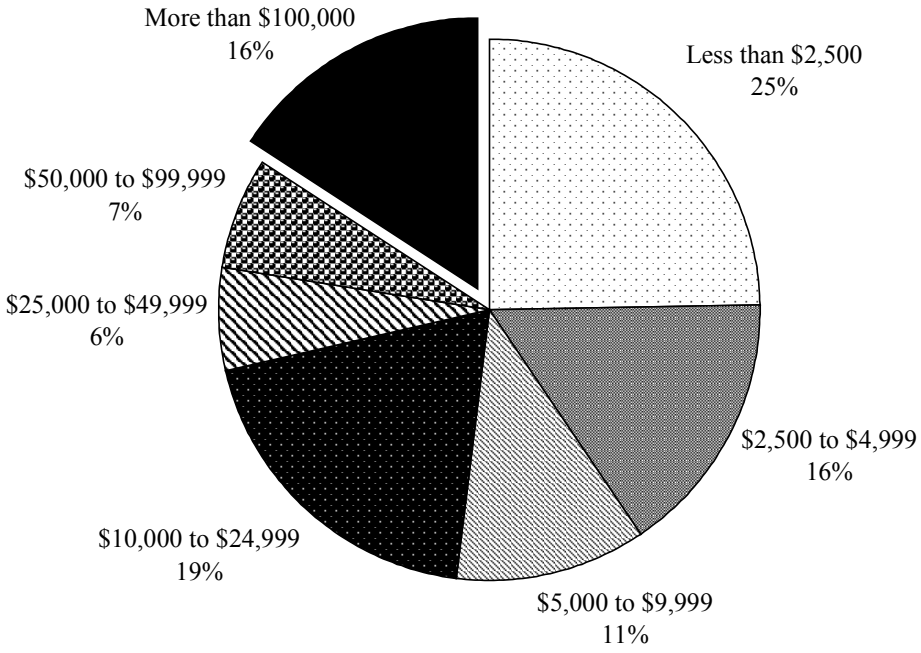


Table 3. Farms By Value of Sales for Ulster County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	171	108	101	-41%
$2,500 to $4,999	76	55	65	-14%
$5,000 to $9,999	51	63	47	-8%
$10,000 to $24,999	85	64	79	-7%
$25,000 to $49,999	44	31	25	-43%
$50,000 to $99,999	29	35	27	-7%
More than $100,000	83	77	65	-22%
TOTAL	539	433	409	-24%

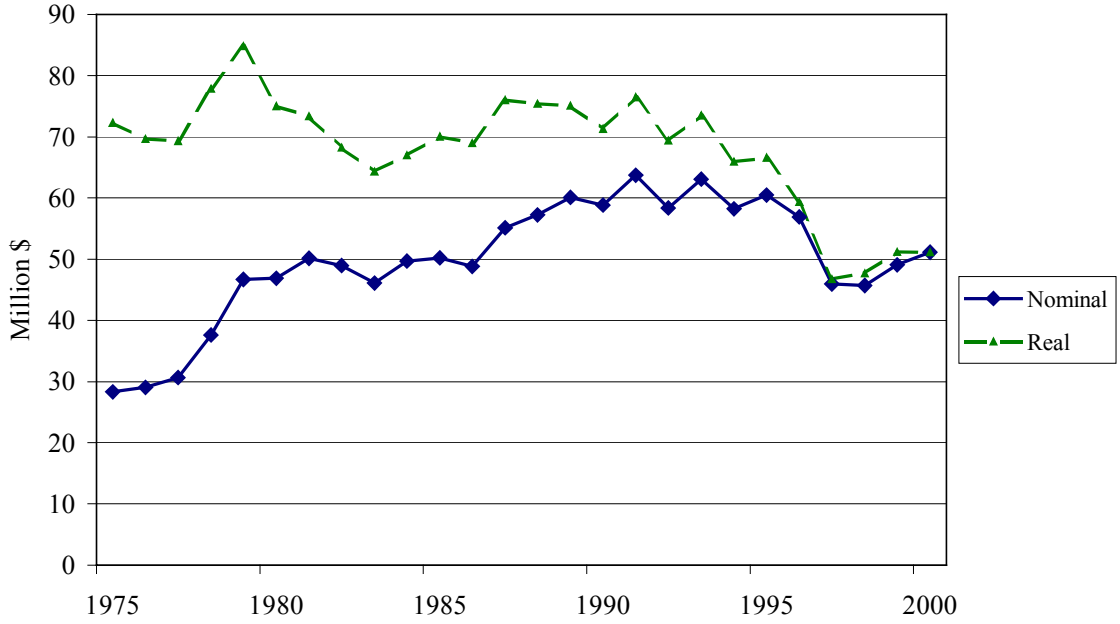
Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Despite the low value of sales for nearly half of the county's farms, the bulk of Ulster County's agricultural output comes from farms with sales greater than $100,000. These large farms accounted for only 16 percent of all farms in Ulster County, but nearly 89 percent of the county's agricultural output in 1997.

Agricultural Commodity Output

For much of the 1970s and 1980s, farm output value in Ulster County increased steadily in nominal dollars. However, after peaking in 1991 at $63.7 million, output value declined to $45.7 in 1998, but has since increased to $51.1 million in 2000. In inflation-adjusted dollars, the county's farm output value has declined over time as real-dollar commodity prices have declined.

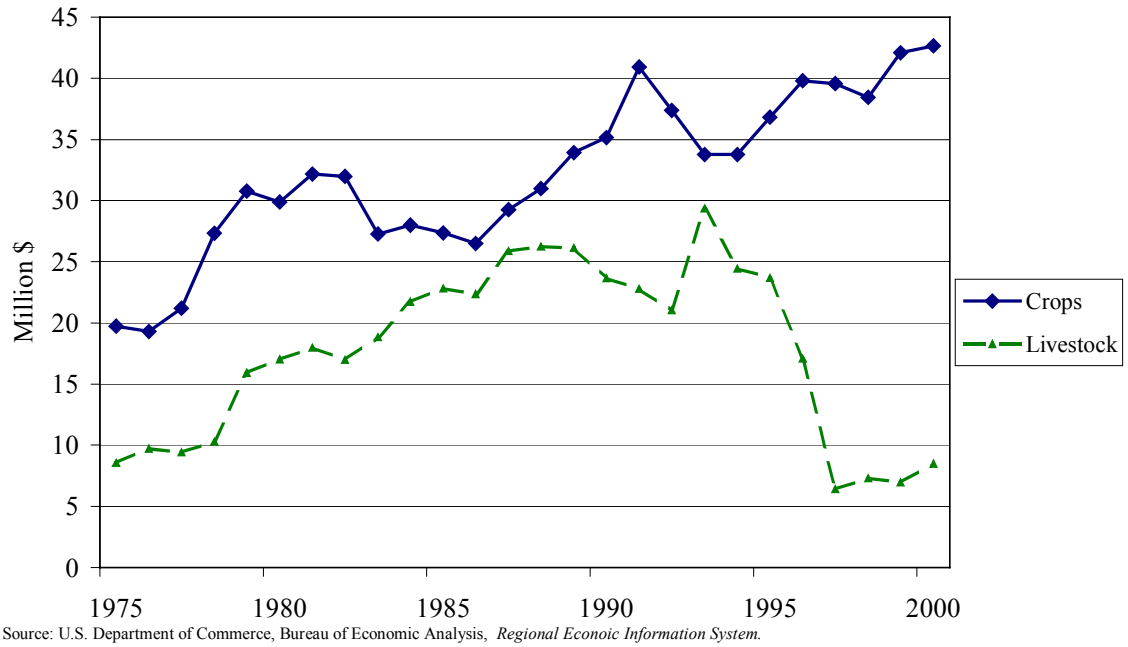
Figure 3. Value of Farm Marketings for Ulster County, NY: Nominal and Real 2000 Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

While nominal farm output value increased in the 1980s and declined throughout much of the 1990s, this masked important shifts occurring in commodity production at the farm level. During the 1980s, the county witnessed solid growth in both the crop and livestock sector's output. Beginning in the early 1990s, livestock output declined. Although the crop sector continued to grow over the 1990s, it was not enough to offset the significant losses occurring in the livestock sector, causing aggregate farm output to decline. Since 1997, the livestock sector has stabilized and even managed a modest increase, while the crop sector has continued its impressive growth.

Figure 4. Value of Crop and Livestock Farm Sales for Ulster County, NY: Nominal Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

As a result of this shift, Ulster County's agricultural output is diversified among several major commodity groups. Orchard crops represent the largest single commodity sector of the county's farm economy, accounting for 64 percent of the county's agricultural output in 1997. But vegetables and greenhouse/nursery crops account for another 20 percent as well.

All three commodities have posted growth in recent years as well. Since 1997, vegetable output has grown 69 percent, while greenhouse/nursery output grew 19 percent. Although output growth has been less significant in the orchard crop sector, it is still up 6 percent since 1997.

Even though there has been solid growth in output value across the orchard, vegetable and greenhouse/nursery sectors, farms growing these crops and acreage devoted to the production of these crops have not increased universally. In fact, the number of farms growing orchard crops and the acreage of orchard crop production fell by more than 20 percent from 1987 to 1997, while the value of output increased by 37 percent over this same time period. Land in vegetable production and greenhouse/nursery production increased over this 10-year period, as did the number of farms growing these crops. However, the growth in farm numbers and land in production was much larger in the greenhouse/nursery sector as compared to vegetables.

Figure 5. Proportion of Commodity Output Value for Ulster County, NY: 1997

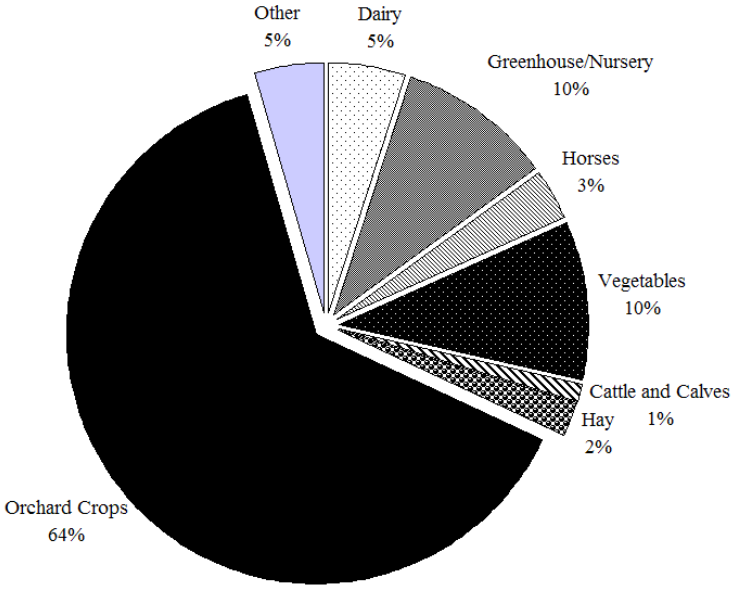


Figure 6. Cash Receipts for Top 3 Commodities in Ulster County, NY: 1994-2000

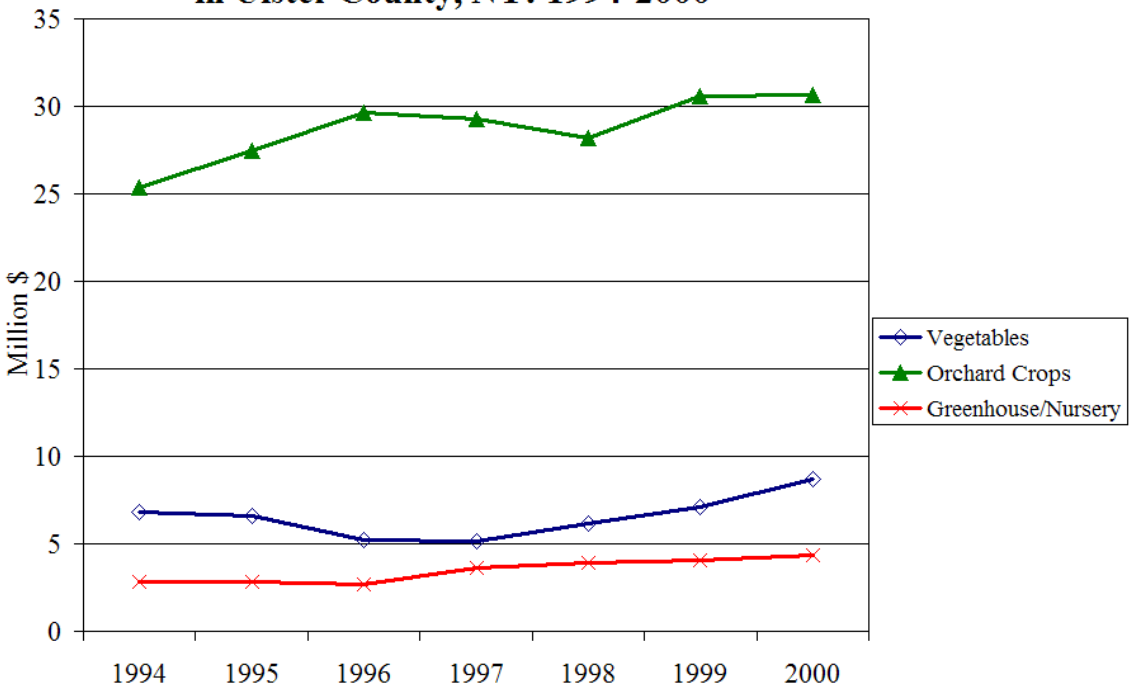


Table 4. Farms and Acreage by Primary Crops for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	-------- Number of Farms ------- -				---------- Acres ----------			
Orchard Crops	140	123	111	-21%	12,549	11,540	9,475	-24%
Greenhouse/Nursery*	52	54	69	33%	88	116	666	657%
Vegetables	51	57	52	2%	2,392	3,116	3,250	36%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

In the vegetable sector, the growth witnessed in Ulster County has been driven by the expansion in production of a few select vegetable crops. Most notable is the production of sweet corn, which accounts for 80 percent of Ulster County's vegetable acres. From 1987 to 1997, sweet corn acreage increased by 31 percent going from 1,900 acres to 2,500 acres over this time period. On a smaller scale, the production of pumpkins also increased from 265 acres to 338 acres over this same 10-year period, for a 28 percent increase. The county's vegetable farmers also grew more broccoli, cucumbers, eggplant, squash and tomatoes, but these crops were relatively minor in comparison to the production of sweet corn and pumpkins in the county.

Table 5. Vegetables for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			------- Acres -----		
Beans (Snap)	11	24	15	56	89	48
Broccoli	15	10	12	24	25	69
Cabbage	9	6	7	21	15	19
Cantaloupes	9	7	7	15	7	12
Cucumbers	11	10	17	7	18	17
Eggplant	6	10	7	2	11	10
Lettuce	na	9	7	na	84	**
Peas, Green	7	8	9	**	23	15
Peppers (Sweet)	16	22	11	35	68	10
Pumpkins	26	25	28	265	296	338
Squash	16	24	19	27	40	45
Sweet Corn	22	43	22	1,922	2,383	2,511

Tomatoes	21	36	28	31	73	66

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Like the vegetable sector, the greenhouse and nursery industry saw higher sales. This expansion came from more farms growing greenhouse/nursery products from 1987 to 1997, as well as a 772 percent increase in production in the open. However, production of greenhouse/nursery crops under glass actually fell by 7 percent over this 10-year period.

Table 6. Greenhouse/Nursery Production for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	52	54	69	33%
Production Area under Glass or Protection (sq. feet)	584,155	524,559	542,298	-7%
Production in the Open (acres)	75	104	654	772%
Value of Sales (million)	$2.57	$2.41	$4.25	65%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

The growth in sales of greenhouse/nursery crops occurred largely in bedding/garden plants as output value increased by $1.01 million from 1987 to 1997. This accounted for nearly 60 percent of the total $1.68 million growth in the entire greenhouse/nursery sector from 1987 to 1997.

Table 7. Greenhouse/Nursery Principal Crops for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			--- Sales (Million $) ---		
Bedding/Garden Plants	**	**	19	$0.54	$0.68	$1.55
Cut Flowers	4	4	11	$0.03	**	$0.07
Potted Flowers	13	11	12	$0.31	$0.46	$0.25
Nursery Crops	15	20	12	$0.65	$0.53	**
Greenhouse Vegetables	na	4	4	**	**	$0.25
All Greenhouse/Nursery Crops				$2.57	$2.41	$4.25

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Ulster County's orchard industry consists of several commodities. However, apples clearly represent the most significant of these crops, accounting for 93 percent of the land devoted to the production of orchard crops. From 1987 to 1997, the number of farms growing apples fell by 23 percent, but the number of apple trees increased by 44 percent over this same time period. Production of apples over this same time period was up only 10 percent, but would have likely been higher if not for poor growing conditions in 1997.[5] Farm numbers also declined in other orchard crops, but only grapes and cherries had fewer trees or vines in 1997 as compared to 1987. Thus, although farm numbers are lower across all major orchard crops, it appears that existing farms producing these crops are growing larger to capture economies of scale.

Table 8. Fruit Farms and Inventory for Ulster County, NY: 1987 to 1997

Item	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change	1987	1997	1987 to 1997 % Change
	--Number of Farms--			--Vines or Trees--			--Production (1,000 Pounds)--		
Apples	120	93	-23%	917,705	1,325,105	44%	130,465	144,161	10%
Cherries	18	14	-22%	5,632	2,619	-53%	109	80	-26%
Grapes	35	34	-3%	148,722	106,089	-29%	912	670	-27%
Peaches	23	15	-35%	8,177	10,134	24%	535	516	-4%
Pears	41	33	-20%	47,712	58,442	22%	4,021	4,356	8%

Source: U.S. Census of Agriculture, 1987 and 1997

Field crops like hay and corn fell substantially in the 1980s, mirroring the declines of the dairy sector during this period. Although corn acreage continued to trend lower in the 1990s, the amount of hay acreage in the county actually increased beginning in 1998, potentially as a result of a growing horse sector.

Figure 7. Hay Acreage in Ulster County, NY: 1983-2001

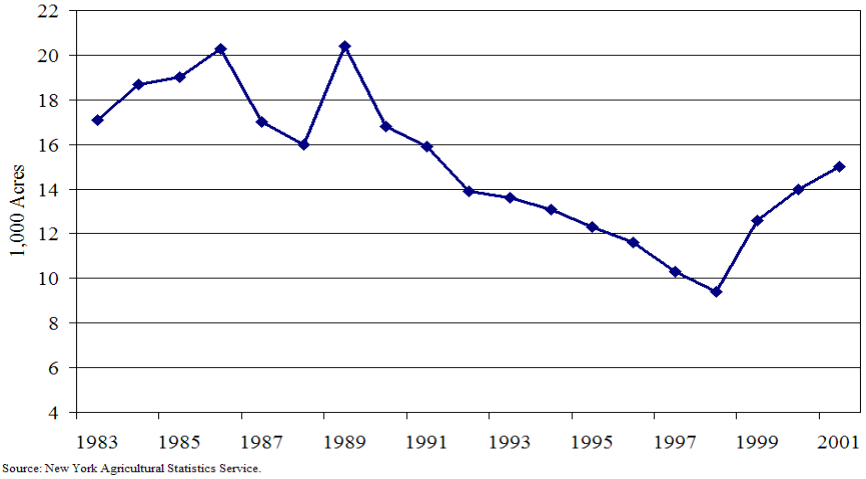


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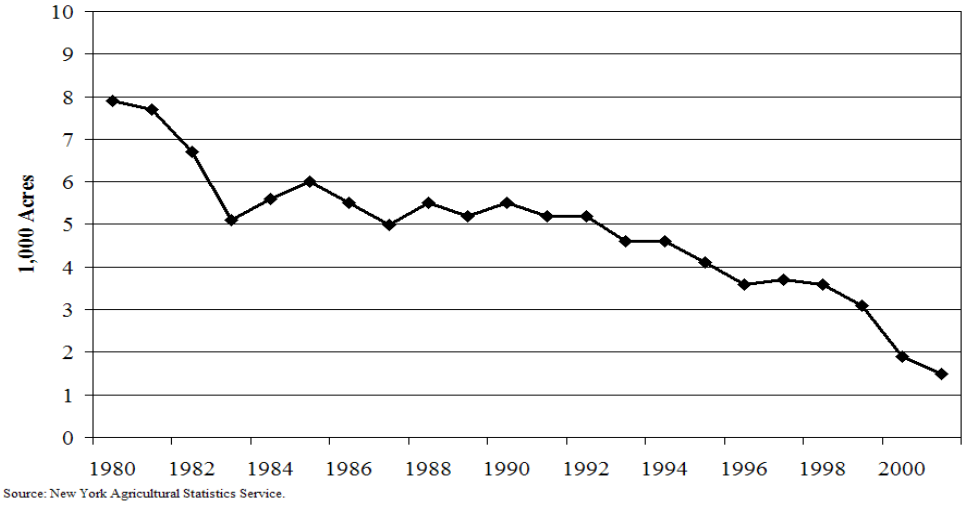
Figure 8. Corn Planted Acres for Ulster County, NY: 1980-2001



Source: New York Agricultural Statistics Service.

While Ulster County's crop sector has several growth areas, its livestock sector has mostly been in a state of decline over the last 15 years. The number of farms producing livestock or livestock products fell from 247 farms in 1987 to 169 farms by 1997, a loss of 32 percent. The largest percentage loss occurred in the dairy sector where 51 percent of the farms exited the industry between 1987 and 1997.

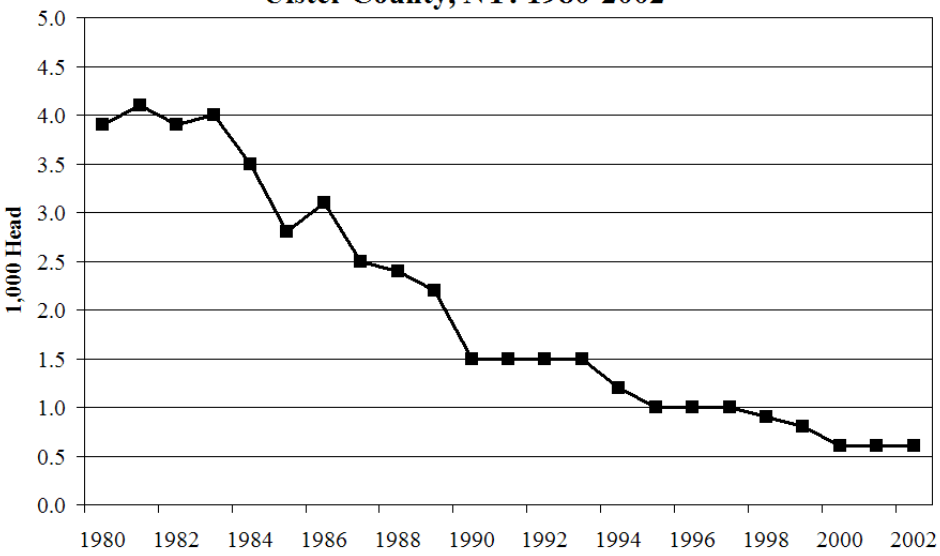
Table 9. Livestock Farms and Inventory for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Dairy	43	27	21	-51%	2,360	1,377	1,103	-53%
Cattle	99	68	74	-25%	5,797	4,614	4,172	-28%
Sheep	55	35	32	-42%	1,254	965	679	-46%
Horses	152	113	97	-36%	1,539	1,115	1,234	-20%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farms producing beef cattle and calves, sheep and horses also fell between 1987 and 1997, although not as significantly as the loss of dairy farms. In addition, while beef cattle and calf inventories slipped from 1987 to 1997, the number of horses managed to increase slightly from 1992 to 1997.

Figure 9. Number of Milk Cows for Ulster County, NY: 1980-2002



Even though the dairy farm sector saw 51 percent fewer farms and 53 percent fewer dairy cows, the value of dairy output fell only 49 percent from 1987 to 1997. This was due to increased productivity, as well as higher nominal prices in 1997 compared to 1987.

Table 10. Dairy Farms for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Dairy Farms	43	27	21	-51%
Number of Milk Cows	2,360	1,377	1,103	-53%
Total Value of Milk Sold	$4.1 Million	$2.9 Million	$2.1 Million	-49%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

In the beef cattle sector, there was a 63 percent decline in the number of cattle sold from 1987 to 1997. However, the value of the cattle sold fell only 48 percent during this time period. The large number of cattle sold in 1987 was likely a result of liquidation of dairy cows that was occurring in the 1980s.

Table 11. Cattle for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sale of Cattle (Number of Farms)	148	109	99	-33%
Number of Cattle Sold	3,537	2,553	1,322	-63%
Total Value of Cattle Sold	$1.0 Million	$1.2 Million	$0.53 Million	-48%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

While the value of cattle sold and the output from the dairy sector fell significantly from 1987 to 1997, the value of horse sales in the county actually increased. From 1992 to 1997, the value of horses sold in the county increased by 52 percent, even though the number of horses sold during this period actually fell. This suggests that the value of horses sold increased from more than $3,500 per horse in 1987 to more than $5,500 per horse by 1997.

Table 12. Horses for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sales of Horses (Number of Farms)	31	34	34	10%
Number of Horses Sold	214	263	253	18%
Total Value of Horses Sold	**	$0.92 Million	$1.4 Million	**

Source: U.S. Census of Agriculture, 1987, 1992, and 1997
*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Farm Costs and Returns

Expansion in the orchard industry, as well as the vegetable and greenhouse/nursery sectors, led to higher costs associated with this type of production. Most notable was the increased expenditures on seeds, bulbs, plants and trees, which accounted for a 66 percent increase from 1987 to 1997. The only other major cost increase was a 22 percent increase in expenses related to repair and maintenance. Overall, total farm production expenses fell 20 percent across the entire county. On a per farm basis, expenses increased by four percent from 1987 to 1997.

Although total farm expenditures fell by 20 percent from 1987 to 1997, farm sales were also lower during this time period. In the aggregate, net-returns to Ulster County farms slipped by four percent from 1987 to 1997. However, on a per-farm basis, net-returns managed to increase over this time period, growing from $17,000 per farm in 1987 to over $21,500 per farm by 1997. Even so, a significant number of farms in Ulster County experienced net losses. In 1997, 58 percent of all Ulster County farms experienced net losses, although this was an improvement from 1987 when 63 percent of the farms were not profitable.

Table 13. Farm Production Expenses for Ulster County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------Million $----------			
Agricultural Chemicals	2.31	2.90	2.33	1%
Energy, Electricity	1.34	1.55	1.02	-24%
Energy, Petroleum Products	1.57	1.89	1.68	7%
Feed for Livestock	8.62	6.42	1.34	-84%
Fertilizer	1.14	1.06	0.77	-33%
Labor, Contract	2.22	2.31	1.98	-11%
Labor, Hired	9.90	10.74	9.01	-9%
Livestock Purchased	1.04	0.68	0.42	-60%
Repairs and Maintenance	2.24	3.25	2.73	22%
Seeds, Bulbs, Plants and Trees	0.51	0.60	0.84	66%
Taxes, Property	2.29	2.45	2.14	-7%
Other	7.44	9.58	8.12	9%
TOTAL	40.61	43.42	32.36	-20%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Table 14. Farm Net-Returns for Ulster County, NY: 1987 to 1997

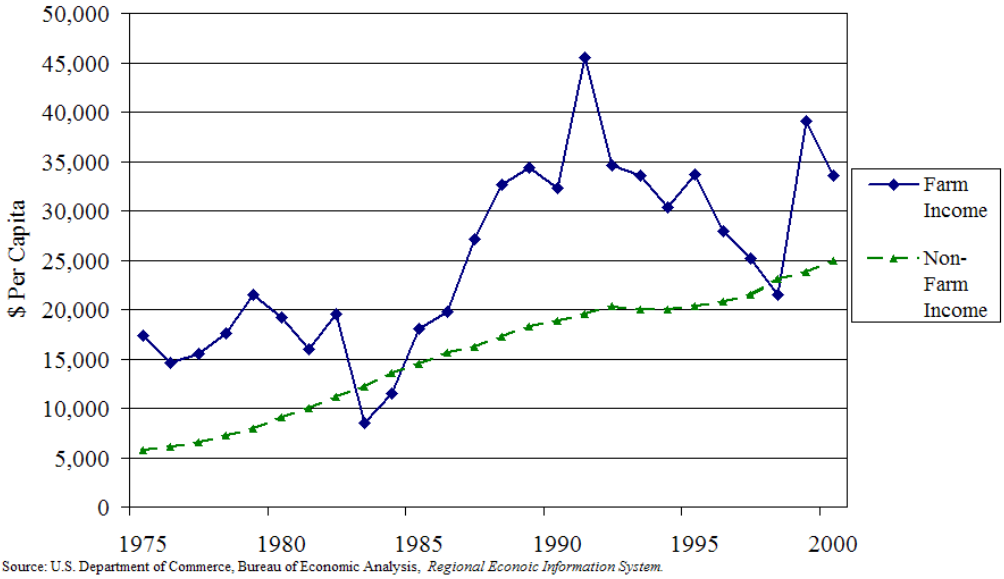
Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net-Returns	$9.32 Million	$6.63 Million	$8.93 Million	-4%
Net-Returns per Farm	$17,268	$15,347	$21,662	25%
Farms with Net Gains (%)	37%	43%	42%	15%
Net-Returns per Farm with Net Gains	$60,115	$49,991	$65,545	9%
Farms with Net Losses (%)	63%	57%	58%	-8%
Net-Losses per Farm with Net Losses	$7,539	$11,095	$10,103	34%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

However, more recent data suggests that farm profitability has improved since 1997. From 1997 to 2000, per-capita farm income grew from $21,000 to nearly $40,000. This growth occurred as farm revenue increased in the three major crop sectors of orchard crops, vegetables and greenhouse/nursery crops over this time period.

Indeed, the sharp growth in revenue put per-capita farm income well above per-capita income from non-farm income in Ulster County.

Figure 10. Per-Capita Farm Income and Per-Capita Non-Farm Income for Ulster County, NY: 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Economic Impact of Ulster County's Agriculture Sector

Quantifying the economic impact of Ulster County's agriculture sector is an important tool for allocating investment resources, whether from the public or private sector. There are two common methods for measuring the economic impact of any sector of the economy.

The first is a direct measure of a sector's economic importance by examining the value of output from the sector. This represents the price of the sector's output multiplied by the quantity produced by that sector of the economy. However, this only measures the direct value of a sector's importance. Since economic output does not happen in a vacuum, analysts often use output multipliers. Goods, services, and labor from within the economy are used to produce that output (sometimes referred to as upstream effects). In addition, output is usually further transformed by other sectors of the economy, stimulating more business activity. Thus, a second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

For the top three farm commodities in Ulster County, the output value was $35.4 million in 1997, accounting for 84 percent of the county's $42.3 million farm output. In terms of employment, these sectors also account for the largest shares of employee payrolls in the agricultural sector, accounting for 93 percent of all wages

paid by the farm sector. The large wage bill of these sectors occurs because these crops are more labor intensive than other farm commodities. As a result, these sectors will have a larger impact on the local economy.

Table 15. Output and Employee Payroll by Commodity Sector for Ulster County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Orchard Crops	$26.8	$7.85
Vegetables	$4.3	$1.01
Greenhouse/Nursery	$4.3	$1.39
Dairy	$2.1	$0.22
Hay	$0.9	$0.04
Other	$3.9	$0.48
Farm Sector Total	**$42.3**	**$10.99**

Source: *IMPLAN*

Table 16. Output Multipliers By Commodity Sector for Ulster County, NY: 1997

Farm Sector	Output Multiplier
Orchard Crops	1.53
Vegetables	1.63
Greenhouse/Nursery	1.47
Dairy	1.39
Hay	1.43
Other	1.39
TOTAL	**1.51**

Source: *IMPLAN*

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Ulster County's farm commodities, every $1 increase in total farm output led to an additional 51 cents in economic activity in other sectors of the local economy. Thus, the direct output of Ulster County's agricultural sector was $42.3 million, but an additional $21.6 million was generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $50.6 million, which generated another $25.8 million in other sectors.

Of the three principle farm commodities, vegetables contributed more to the local economy, as the output multiplier for this industry is higher than the other major commodities. Because of the significant demand for

labor in the production of vegetables, this tends to stimulate more economic activity in other sectors. The dairy sector, in contrast, had the lowest output multiplier, which tends to use less labor relative to other inputs such as equipment and feed, which may not be locally produced.

Agricultural Service, Wholesale and Retail Sectors

As the previous section illustrated, there are important economic linkages between the farm sector and other sectors of the local economy. As certain parts of Ulster County's farm sector grew, others declined. This had important implications for input suppliers and agricultural service firms, as well as wholesale and retail trade. In this section, we explore the growth in agricultural service firms, farm input suppliers and the wholesale and retail sectors of Ulster County's economy directly related to the farm sector.

Service-related firms consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies. In this category, there was a decline in the number of firms, except in the case of veterinary service firms, which increased marginally. However, this may have been driven more from non-farm pet services and less from the agricultural sector since most of the livestock sector declined over this time period.

Food manufacturing activity in Ulster County also declined, with two manufacturing firms of fruit and vegetable product going out of business from 1993 to 2000. Likewise, wholesale operations in the fruit and vegetable sector, as well as the flower and nursery stock business, declined over this time period.

The only notable increase in farm-related businesses occurred at the retail sector. The number of nursery and garden centers remained stable, although employment in this segment increased slightly. Landscape service firms managed a larger increase in employment as well as more firms providing this service. The only major growth at the retail sector was the creation of one additional fresh fruit and vegetable market by 2000, which did not exist in 1993. Such marketplaces may provide better access to local producers than grocery chains.

Table 17. Agricultural Industry Sector Firms, Employment and Payroll for Ulster County, NY: 1993 and 2000

	1993			2,000			% Change 1993 to 2000		
Sector	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)
SERVICES									
Agricultural Support	7	**	**	5	**	**	-29%	**	**
Veterinary	16	126	1,664	17	155	2,630	6%	23%	58%
Farm Supplies	5	23	565	3	20	776	-40%	-13%	37%
MANUFACTURING									
Dairy Products	1	**	**	2	**	**	100%	**	**
Fruit and Vegetable	2	**	**	0	**	**	-100%	**	**
WHOLESALE									
Dairy Products	2	**	**	1	**	**	-50%	**	**
Flower and Nursery Stock	4	48	569	1	**	**	-75%	**	**
Fresh Fruit and Vegetable	6	89	3,483	5	74	2,111	-17%	-17%	-39%
RETAIL									
Nursery and Garden Centers	7	35	379	8	39	560	14%	11%	48%
Landscaping	46	82	1,356	58	106	2,410	26%	29%	78%
Fruit and Vegetable Markets	2	**	**	3	**	**	50%	**	**

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

*** Data withheld by Census Bureau to avoid disclosing individual firms.*

Economic Trends and Impacts of the Agriculture Industry in Westchester County, NY

The agriculture industry in Westchester County possesses many characteristics of a farm economy in a highly urbanized area, where high land costs prevent the growth of low-value, traditional grain and livestock products. Not surprisingly, greenhouse and nursery products dominate the county's agriculture landscape. These crops have a high value to suburban consumers, but are costly to transport. As a result, local greenhouse and nursery producers in large population areas typically find they have a ready market for their products. This has been true in Westchester County. For similar reasons, the vegetable sector of the county's farm economy has also thrived in recent years, although it remains significantly smaller than the greenhouse and nursery sector. The horse industry, which is the only economically significant component in the county's livestock sector, has expanded in recent years but only through the sale of high-value horses.

Key Findings of the Study

1. Westchester County's farm economy produced $15.6 million in output value in 2000, which generated an additional $6.6 million in related economic activity within other sectors of the local economy.

2. From 1987 to 1997, growth in Westchester's farm economy was confined to three main commodity sectors: greenhouse and nursery crops, vegetable crops and horses.

3. The greenhouse and nursery sector is the largest segment of the farm economy and accounts for 56 percent of Westchester County's agricultural output. It underwent significant structural change from 1992 to 1997, as the industry shifted from nursery crops grown on open land areas to bedding and garden plants grown in greenhouse facilities, with limited growth in output value.

4. Productive capacity in both the vegetable and horse industries remained nearly constant from 1987 to 1997, but output value in these two segments soared more than 140 percent, as Westchester farmers produced higher value products.

5. Few farms with relatively high sales provide most of Westchester County's agricultural economic activity. In 1997 the largest 21 percent of the farms accounted for 86 percent of the county's agricultural output.

6. Overall, farm profitability has increased substantially in recent years. But only a small population of profitable farms fueled this growth.

7. Growth in vegetable production has been matched by an increase in vegetable wholesale trade and in the number of fruit and vegetable retail markets. However, the greenhouse and nursery industry saw little growth at the wholesale and retail level in the 1990s.

Agricultural Economic Development Assessment

APPENDIX 6

Land Use Patterns

Forestland and water comprise more than two-thirds of the land area in Westchester County. The remaining acres are either developed (12.2 percent of the land) or open-space grasslands and crops (15.6 percent). However, since land in farms accounts for only three percent of the county's total land area, most of the grassland and crop area is not used in the production of agricultural products.

This high density of residential and industrial development impacts the county's agricultural sector in two ways. First, the demand for residential and industrial development drives up real estate prices, forcing land out of lower value agricultural uses, such as traditional field crops and livestock enterprises. In addition, the development of residential and industrial areas stimulates the demand for greenhouse and nursery products, as well as vegetable crops. These crops tend to have higher returns per acre, but also are costly to transport. Hence, production close to urban areas is essential.

Agriculture in Westchester County reflects these trends, as growth in farm output has been mostly from greenhouse/nursery products and vegetables, while other traditional commodities, such as milk, cattle, and grain have fallen substantially. In the last twenty years, agriculture in Westchester County also has grown through the marketing of high-value horses, with some spillover benefits to the hay producers.

Farm Characteristics

The number of farms in Westchester County fell by 25 percent from 1987 to 1997, with most of the decline occurring from 1987 to 1992. Based on data from the 1997 Census of Agriculture, the most recent available, there were 91 farms in Westchester County that covered more than 7,500 acres or 2.7 percent of the total county area.

Farm size, as measured by average acreage per farm, increased from 70 acres per farm to 83 acres per farm from 1987 to 1997. However, this increase in farm size is somewhat deceptive because *cropland* per farm actually fell from 1987 to 1997. In 1987, there were 37 acres of cropland per farm, while in 1997 cropland on farms averaged only 34 acres. The increase in average farm size is attributed to relatively more land in pasture as well as land in house lots, ponds or non-productive uses.

Table 1. Number of Farms, Land in Farms, and Average Farm Size for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Farms	121	97	91	-25%
Land in Farms (Acres)	8,519	5,709	7,528	-12%
Average Farm Size (Acres)	70	59	83	19%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

The distribution of farms by acreage size reveals a large number of small farms and small numbers of large farms. As of 1997, 60 percent of Westchester County's farms were smaller than 50 acres. However, the number of farms in this size category has fallen dramatically in recent years: 86 percent of the farms lost from 1987 to 1997 were less than 50 acres.

Table 2. Farms By Size of Acreage for Westchester County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
1 to 9 acres	50	43	38	-24%
10 to 49 acres	31	30	17	-45%
50 to 69 acres	6	2	8	33%
70 to 99 acres	6	2	3	-50%
100 to 139 acres	8	8	8	0%
140 to 179 acres	1	2	4	300%
180 to 219 acres	6	3	4	-33%
220 to 259 acres	5	1	4	-20%
260 to 499 acres	5	4	2	-60%
500 to 999 acres	3	2	3	0%
TOTAL	121	97	91	-25%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Another measure of farm size is the value of sales per farm. In Westchester County, the majority of farms have relatively low sales. In 1997, 70 percent of the farms had less than $25,000 in product sales.

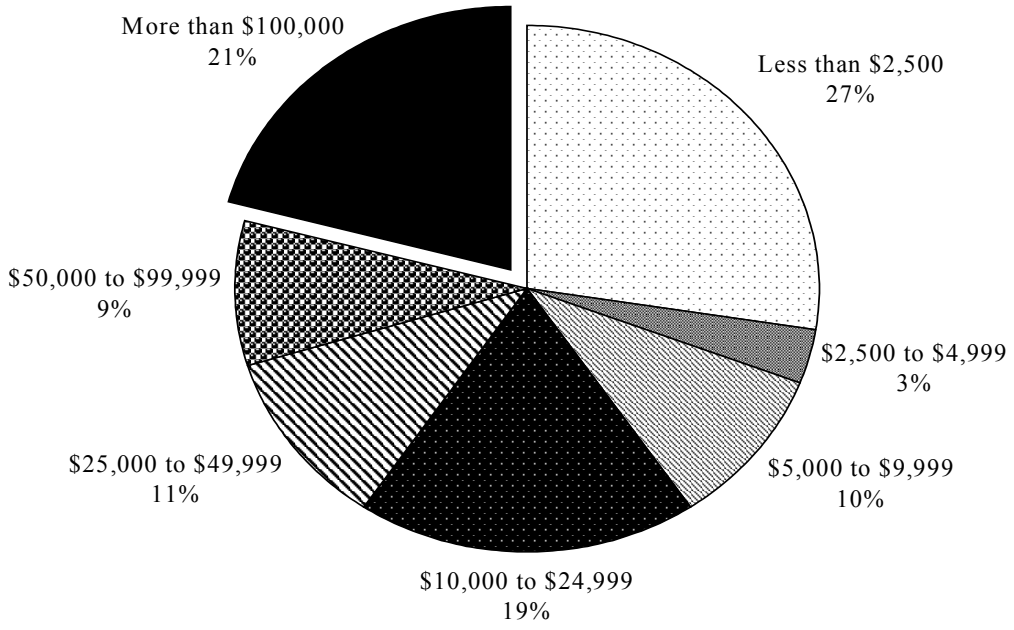
Table 3. Number of Farms by Value of Sales for Westchester County, NY: 1987 to 1997

Farm Size	1987	1992	1997	1987 to 1997 % Change
Less than $2,500	22	29	25	14%
$2,500 to $4,999	11	8	3	-73%
$5,000 to $9,999	15	13	9	-40%
$10,000 to $24,999	22	17	17	-23%
$25,000 to $49,999	12	2	10	-17%
$50,000 to $99,999	17	9	8	-53%
More than $100,000	22	19	19	-14%
TOTAL	121	97	91	-25%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Despite the low value of sales for the majority of county farms, 21 percent of Westchester's farms had sales exceeding $100,000 in 1997. Those farms accounted for 86 percent of agricultural sales for that year. Thus, a few large farms account for most of the county's agricultural output.

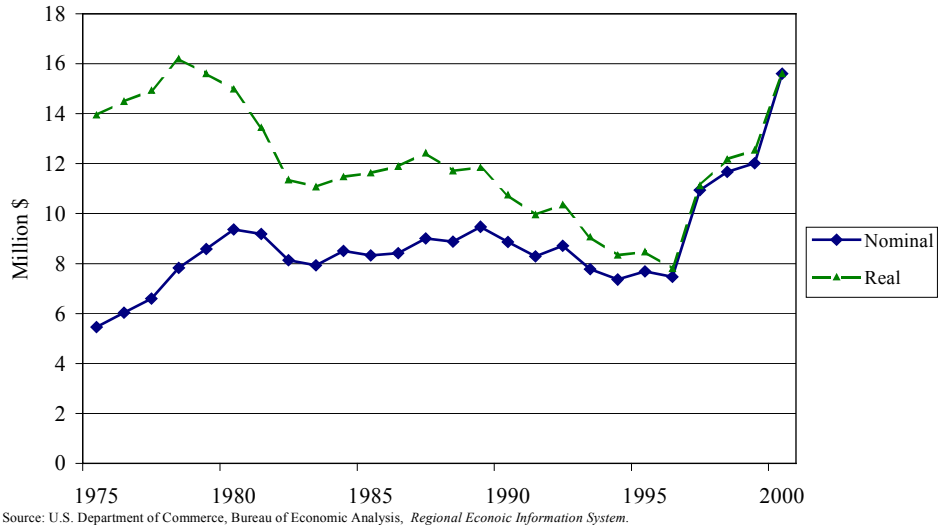
Figure 2. Proportion of Farms by Value of Sales for Westchester County, NY: 1997



Agricultural Commodity Output

For much of the 1980s and 1990s, Westchester County's agricultural output value was relatively stable at $8 million to $9 million dollars per year, although in inflation-adjusted dollars, the county's farm output value fell. However, starting in 1997, agricultural output expanded significantly in Westchester County, growing from $7.8 million in 1996 to $15.6 million by 2000. The overall growth rate was equal to 19 percent per year during that time.

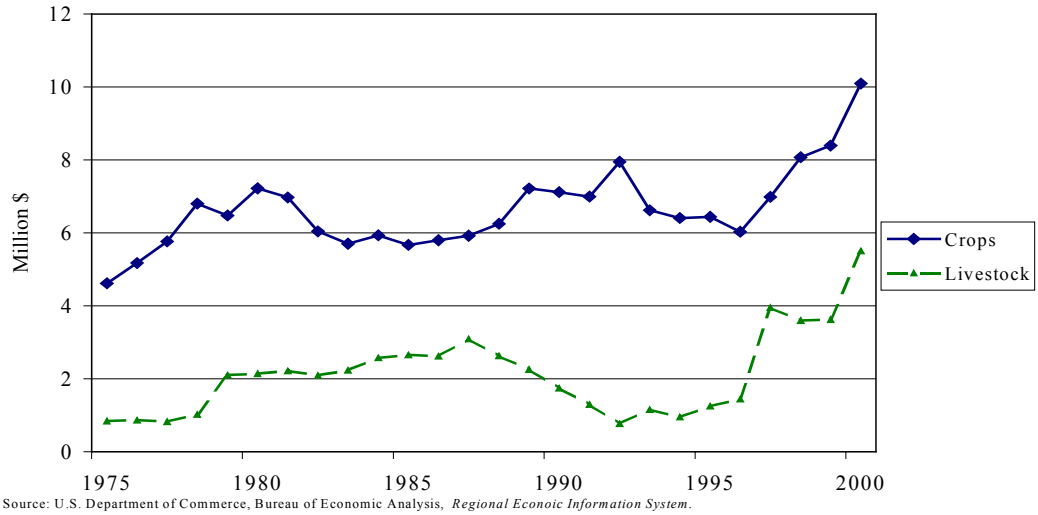
Figure 3. Value of Farm Marketings for Westchester County, NY: Nominal and Real 2000 Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System*.

The growth over this short time period came from both crop and livestock sales. However, the percentage of livestock sales expanded the most. From 1996 to 2000, crop sales increased 67 percent, while livestock sales soared 280 percent.

Figure 4. Value of Crop and Livestock Farm Sales for Westchester County, NY: Nominal Dollars 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System*.

Although there has been significant growth in Westchester's agricultural output, this expansion has been largely confined to three commodity groups: horses, vegetables and greenhouse/nursery products. From 1987 to 1997, the value of horses sold in Westchester County increased 150 percent, and the value of vegetables sold increased by 141 percent. The greenhouse and nursery industry posted the largest expansion in nominal dollars, increasing sales by $2.5 million or 72 percent from 1987 to 1997.

Table 4. Value of Sales by Primary Crops for Westchester County, NY: 1987 to 1997

Commodity	1987	1997	1987 to 1997 % Change
Apples	$334,000	$269,000	-19%
Greenhouse/Nursery	$3,459,000	$5,963,000	72%
Horses	$1,200,000	$3,000,000	150%
Vegetables	$406,000	$980,000	141%
Other	$1,592,000	$356,000	-78%
TOTAL	$6,991,000	$10,568,000	51%

Most other major commodities saw output values decline over this time period. Apples, which accounted for nearly five percent of Westchester County's agricultural output in 1987, fell by 19 percent from 1987 to 1997. A $740,000 decline in the sale of cattle and calves resulted in most of the drop posted in the "other" commodities category.

Although there has been significant increase in vegetable sales and greenhouse/nursery sales, farm numbers and acreage have changed little over time. For example, the number of farms growing vegetables increased 36 percent from 1987 to 1997, while acreage only expanded 10 percent. Since vegetable sales increased 141 percent, but acreage only expanded by 10 percent, vegetable output per acre increased a substantial 131 percent from 1987 to 1997. This could be a result of better production practices, as well as shifts in production to higher value crops.

Table 5. Farms and Acreage by Primary Crops for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	-------- Number of Farms ----------				---------- Acres ----------			
Hay	23	16	14	-39%	1566	854	1297	-17%
Vegetables	14	16	19	36%	302	263	331	10%
Apples	12	11	11	-8%	307	240	248	-19%
Greenhouse/Nursery*	46	43	45	-2%	219	556	205	-6%

Source: U.S. Census of Agriculture, 1992, and 1997

**Acres for Nursery/Greenhouse crops includes acreage in the open and acreage under glass.*

While vegetable acreage increased only slightly from 1987 to 1997, there was a significant shift in the acreage among types of vegetables produced. The two primary vegetable crops grown in Westchester County were sweet corn and tomatoes, accounting for 76 percent of the vegetable acreage from 1987 to 1997. However, there was a significant shift from these two crops during that same time period. Sweet corn acreage dropped by 55 acres or 28 percent, while tomato acreage increased by 80 acres or 178 percent.

Table 6. Vegetables for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			------ Acres -----		
Beans (Snap)	6	4	3	8	4	**
Broccoli	3	0	3	**	0	2
Eggplant	0	3	6	0	6	7
Parsley	0	0	4	0	0	10
Peppers (Sweet)	11	3	8	17	**	9
Pumpkins	5	8	6	20	22	18
Squash	7	7	7	18	19	10
Sweet Corn	8	8	8	195	139	140
Tomatoes	12	10	12	34	41	114

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Acreage in other vegetables also expanded somewhat by 1997. Specifically, eggplant and parsley were not grown in the county in 1987. However a combined 17 acres of the two commodities were produced in 1997. These new crops accounted for five percent of the vegetable acres in 1997.

Like the vegetable sector, the greenhouse and nursery industry saw higher sales, but not as a result of more farms or added acreage in production. From 1987 to 1997 the number of farms producing greenhouse and nursery products fell by two percent, while acreage used for the production of these crops fell six percent. Even with the small declines in the number of farms and the acreage for production, greenhouse and nursery sales expanded by a significant 72 percent over this 10-year period, suggesting more efficient production practices and higher value crops. However, most of the sales growth occurred between 1987 and 1992. Sales growth in the five-year period from 1992 to 1997 was a slim 1.7 percent.

Table 7. Greenhouse/Nursery Production for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Number of Farms	46	43	45	-2%
Production Area under Glass or Protection (sq. feet)	655,126	674,318	924,200	41%
Production in the Open (acres)	204	541	184	-10%
Value of Sales (million)	$3.50	$5.86	$5.96	70%

Although sales growth of greenhouse and nursery products was stagnant from 1992 to 1997, there was a sizable shift in the industry from open space production to production under glass. During this five-year time period, square feet of production area under glass or protection increased by 37 percent, while open space production fell 66 percent. This shift in production practices was also evident in the sales of primary greenhouse and nursery crops. From 1992 to 1997, the value of nursery crops fell from $3.5 million to $2.1 million, while the sales of bedding and garden plants, produced primarily in greenhouses, increased from $1.1 million to $2.7 million.

Table 8. Greenhouse/Nursery Principal Crops for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987	1992	1997
	-- Number of Farms ---			-- Sales (Million $) ---		
Bedding/Garden Plants	30	26	28	$1.00	$1.15	$2.74
Potted Flowers	17	15	18	**	$0.60	$0.56
Nursery Crops	0	3	6	$1.44	$3.52	$2.11
Other*	0	0	4	$1.02	$0.59	$0.55
TOTAL				$3.46	$5.86	$5.96

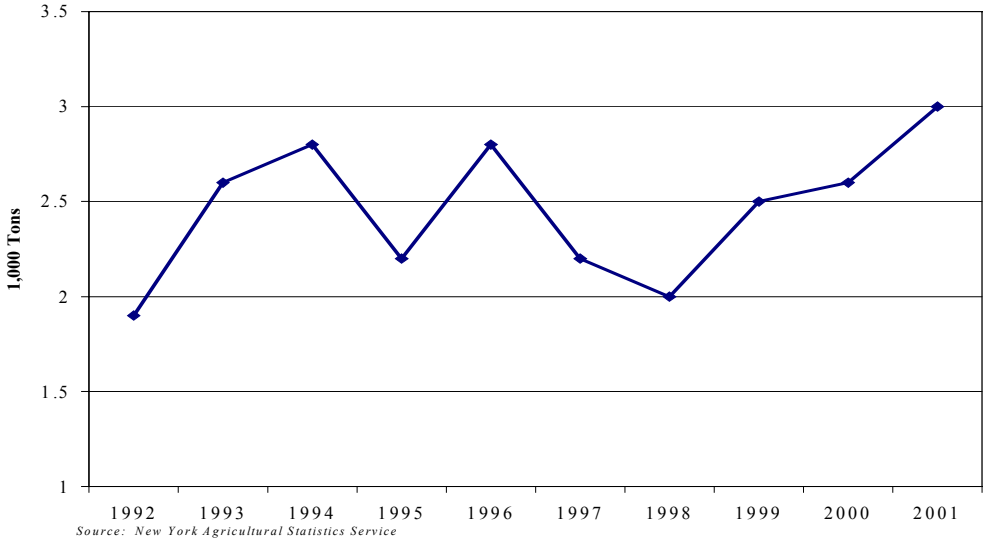
Source: U.S. Census of Agriculture, 1987, 1992, and 1997

**Other for 1987 includes Potted Flowers, which had insufficient data to report*

*** Data withheld by Census of Agriculture to avoid disclosing individual farms.*

Aside from vegetables and greenhouse/nursery crops, there were few areas of growth in other crop sectors of Westchester County. Most other crops produced in Westchester County experienced dramatic declines in acreage and farm numbers from 1987 to 1997. For example, acreage of apple orchards fell by 19 percent between 1987 and 1997, although the number of farms producing apples remained about the same. Furthermore, apple tree populations per acre fell, sharply reducing output from two million pounds in 1987 to one million pounds in 1997.

Figure 5. All Hay Production for Westchester County, NY: 1992-2001



As for hay, farm numbers slipped from 1987 to 1992, but were virtually unchanged from 1992 to 1997. Acreage reported in the Census of Agriculture fell from 1987 to 1997. However, hay production expanded since that time period. Hay production in Westchester County, as reported by the New York Agricultural Statistics Service, expanded from 2,000 tons in 1998 to 3,000 tons in 2001. The expansion was likely in response to the earlier noted increases in the horse industry.

While Westchester's crop sector had several growth areas, its livestock sector has mostly been in a decline. The number of farms producing livestock and the inventory of livestock fell substantially from 1987 to 1997. Especially pronounced was the drop in the number of farms with cattle and the number of cattle in the five-year period from 1987 to 1992. During this time period, 75 percent fewer farms raised cattle and the number of cattle on farms fell by nearly 88 percent. Some of this decline may be attributed to the loss of five dairy farms from 1987 to 1992. Based on the 1997 Census of Agriculture, there were no remaining dairy farms in Westchester County.

Table 9. Livestock Farms and Inventory for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change	1987	1992	1997	1987 to 1997 % Change
	---------- Number of Farms ----------				---------- Number of Head----------			
Cattle	23	6	6	-74%	888	110	384	-57%
Poultry	14	7	6	-57%	4032	148	344	-91%
Sheep	6	2	4	-33%	124	73	93	-25%
Horses	34	27	25	-26%	633	504	435	-31%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Along with the loss of cattle farms, the number of farms producing poultry, sheep or horses fell substantially from 1987 to 1992, but then stabilized from 1992 to 1997. Inventory numbers also fell sharply from 1987 to 1992, but remained relatively stable from 1992 to 1997.

Horses are the one area of growth in Westchester's livestock sector. Even though horse numbers in the county declined from 1987 to 1997, the value of horse sales rose substantially from $1.2 million in 1987 to $3 million by 1997. This growth was spurred by a sharp increase in the average value per horse sold, since the number of horses sold actually fell during this time period. From 1987 to 1997, the average value of a horse sold rose from $10,150 to more than $37,000.

Table 10. Horses for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
Sales of Horses (Number of Farms)	19	15	11	-42%
Number of Horses Sold	120	52	81	-33%
Average Value per Horse Sold	$10,150	$8,870	$37,050	265%
Total Value of Horses Sold	$1.2 Million	$0.46 Million	$3 Million	150%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Farm Costs and Returns

As the agricultural sector shifted toward greenhouse/nursery and vegetable crops, production expenses in the county shifted as well. Most notable were the increased expenditures on seeds, bulbs, plants and trees, which accounted for a 222 percent increase from 1987 to 1997. Feed expenses for livestock decreased by 83 percent.

Increases were prevalent in most other major categories. Hired labor, the largest component in farm production expenses, increased by only five percent from 1987 to 1997, and even declined from 1992 to 1997 by nearly 35 percent. Over this five-year period, the proportion of part-time labor (150 days or less) increased from 48 percent in 1992 to 58 percent by 1997. This labor was likely seasonal and based on the demands of the greenhouse/nursery and vegetable sectors.

Table 11. Farm Production Expenses for Westchester County, NY: 1987 to 1997

Item	1987	1992	1997	1987 to 1997 % Change
	----------Million $----------			
Agricultural Chemicals	0.14	0.08	0.10	-28%
Energy, Electricity	0.15	0.16	0.17	14%
Energy, Petroleum Products	0.31	0.30	0.44	40%
Feed for Livestock	0.60	0.22	0.10	-83%
Fertilizer	0.07	0.10	0.09	24%
Labor, Contract	0.16	0.04	0.15	-6%
Labor, Hired	1.43	2.29	1.51	5%
Repairs and Maintenance	0.32	0.43	0.60	86%
Seeds, Bulbs, Plants, and Trees	0.15	0.17	0.47	220%
Taxes, Property	0.47	0.59	0.67	44%
Other	1.25	1.88	2.07	66%
TOTAL	5.05	6.26	6.37	26%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Although total farm expenditures increased by 26 percent from 1987 to 1997, the 51 percent growth in farm sales over this time period helped to substantially increase farm net-returns. Total net-returns to Westchester County farms equaled $1.22 million dollars in 1987, but ballooned to $4.19 million by 1997. Net-returns per farm increased substantially as well, from $10,123 per farm in 1987 to $46,095 by 1997.

Table 12. Farm Net-Returns for Westchester County, NY: 1987 to 1997

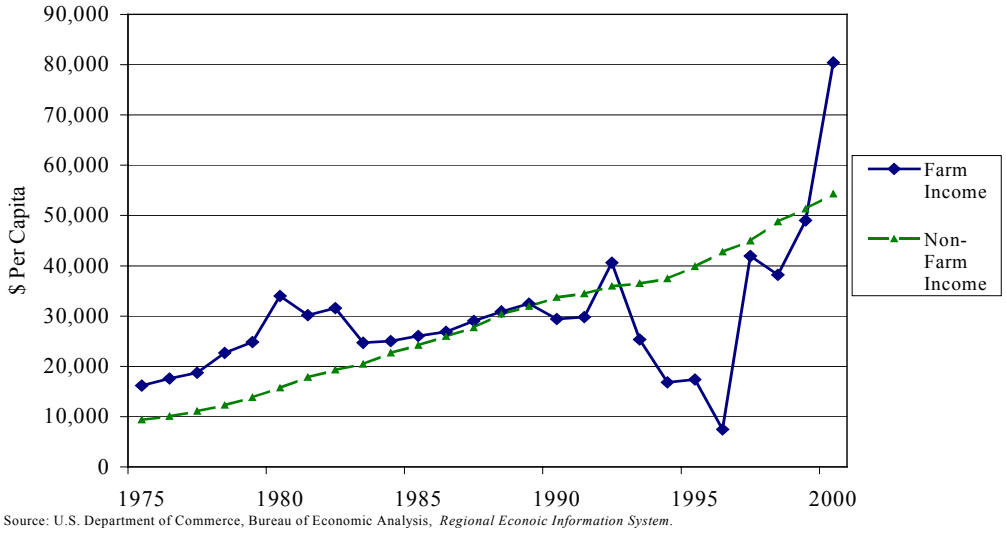
Item	1987	1992	1997	1987 to 1997 % Change
Total Farm Net-Returns	$1.22 Million	$0.89 Million	$4.19 Million	245%
Net-Returns per Farm	$10,123	$9,273	$46,095	355%
Farms with Net Gains (%)	55%	50%	48%	-12%
Net-Returns per Farm with Net Gains	$28,448	$42,876	$113,141	298%
Farms with Net Losses (%)	45%	50%	52%	15%
Net-Returns per Farm with Net Losses	$12,276	$24,331	$16,671	36%

Source: U.S. Census of Agriculture, 1987, 1992, and 1997

Even though farm net-returns increased substantially, this doesn't necessarily mean that all farms improved farm profitability. Indeed, when looking at the proportion of farms that were profitable from 1987 to 1997, there were fewer profitable farms in 1997 than in 1987. In 1987, 55 percent of the farms posted net-gains, but only 48 percent had net-gains by 1997. However, those farms that were profitable had average returns that grew substantially over this period. For those farms with net-gains, average net-returns per farm were $28,448 in 1987, but grew to $113,141 per farm by 1997. Since average losses for farms with net losses also increased over this time period, the few farms that were profitable fueled the growth in the county's farm net-returns.

More recent data suggested this growth in farm net-returns even accelerated in recent years. From 1998 to 2000, farm income per-capita doubled, growing from $38,150 per farm to $80,400 per farm by 2000, and surpassed non-farm per-capita income in Westchester County for the first time since 1992.

Figure 6. Per-Capita Farm Income and Per-Capita Non-Farm Income for Westchester County, NY: 1975 to 2000



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Econoic Information System.*

Economic Impact of Westchester County's Agriculture Sector

Quantifying the economic impact of Westchester County's agriculture sector is an important tool for allocating investment resources, whether from the public or private sector. There are two common methods for measuring the economic impact of any sector of the economy.

The first is a direct measure of a sector's economic importance by examining the value of output from the sector. This represents the price of the sector's output multiplied by the quantity produced by that sector of the economy. However, this only measures the direct value of a sector's importance. Since economic output does not happen in a vacuum, analysts often use output multipliers. Goods, services and labor from within the economy are used to produce that output (sometimes referred to as upstream effects). In addition, output is usually further transformed by other sectors of the economy, stimulating more business activity. Thus, a second measure of economic impact is an output multiplier for a sector, which quantifies the sum total of these upstream and downstream effects.

Table 13. Output and Employee Payroll by Commodity Sector for Westchester County, NY: 1997 Million $

Farm Sector	Output	Employee Payroll
Greenhouse/Nursery	$5.96	$0.75
Horses	$3.00	$0.41
Vegetables	$0.55	$0.06
Apples	$0.37	$0.05
Hay	$0.22	$0.01
Other	$0.47	$0.23
Farm Sector Total	**$10.57**	**$1.51**

Source: *IMPLAN*

For the five principle farm commodities in Westchester County, the output value was $10.1 million in 1997, accounting for 96 percent of the County's $10.57 million farm output. Greenhouse and nursery crops were by far the largest sector, accounting for $5.96 million or 56 percent of total output and $750,000 in employee payroll or 50 percent of the farm sector. Horses accounted for $3 million in output and $410,000 in employee payroll, both of which were about 28 percent of the farm sector output and employee payroll.

Table 14. Output Multipliers by Commodity Sector for Westchester County, NY: 1997

Farm Sector	Output Multiplier
Greenhouse/Nursery	1.50
Horses	1.35
Vegetables	1.47
Apples	1.51
Hay	1.58
Other	1.25
TOTAL	**1.42**

Source: *IMPLAN*

Although economic output and employee payroll measure the relative size of a sector's output, the output multiplier provides a way to assess how much activity a specific sector will generate in other parts of the economy. Based on the output multipliers for Westchester County's farm commodities, every $1 increase in total farm output led to an additional 42 cents in economic activity in other sectors of the local economy. Thus, the direct output of Westchester's agricultural sector was $10.57 million, but an additional $4.43 million were generated in other sectors of the local economy, based on 1997 data. Using the latest data from 2000 for the aggregate farm sector, output value was $15.6 million, which generated another $6.6 million in other sectors.

Of the five principle farm commodities, four of the commodities had higher than average output multipliers. The exception was the horse industry, which generated 35 cents in additional economic output for every $1 in

sales. Hay, apples, greenhouse/nursery and vegetables all generated above average output in other sectors. All of these commodity sectors are relatively labor intensive, which stimulates more economic activity in other sectors.

Agricultural Service, Wholesale and Retail Sectors

As the previous section illustrated, there are important economic linkages between the farm sector and other sectors of the local economy. As certain parts of Westchester County's farm sector grew, others declined. This had important implications for input suppliers and agricultural service firms, as well as wholesale and retail trade. In this section, we explore the growth in agricultural service firms, farm input suppliers and the wholesale and retail sectors of Westchester County's economy directly related to the farm sector.

Service related firms consist of agricultural support services (e.g., crop consultants, animal production support), veterinary services and farm supplies. The number of firms providing agricultural support services declined by 17 percent from 1993 to 2000, with the biggest drop in the number of crop production service firms. Indeed, of the 34 firms in agricultural support services all but one firm specialized in animal production services. However, a more precipitous drop occurred in farm supply firms, falling from 18 firms in 1993 to only 10 firms by 2000. Veterinary services increased slightly from 1993 to 2000. However, this may have been driven more from non-farm pet services and less from the agricultural sector since livestock numbers declined over this time period.

On the manufacturing side, Westchester County had a sizable food-manufacturing sector with more than 55 firms in 2000, excluding retail bakeries. However, for the commodities produced in Westchester County, only the fruit and vegetable-manufacturing sector seemed directly relevant to Westchester's farm output. The number of fruit and vegetable manufacturing firms slipped from seven firms in 1993 to four firms by 2000.

The wholesale trade sector increased for fresh fruit and vegetables, with the number of firms increasing by 67 percent from 1993 to 2000, and the number of employees increasing by 43 percent. However, nursery product wholesale firms fell by 17 percent, while firms that trade raw farm product fell by 59 percent.

Similarly, on the retail/consumer side, landscape firms and retail nursery and garden centers saw declines in recent years. The number of nursery and garden centers at the retail level slipped by 25 percent, although employment in this segment of the industry fell by only 18 percent. Although the number of landscaping firms fell only slightly from 1993 to 2000, employment fell by 25 percent. As in the case of the wholesale sector, the retail sector for fruits and vegetables increased from 1993 to 2000. During this time period, the number of retail markets for fruits and vegetables increased by 60 percent.

Table 15. Agricultural Industry Sector Firms, Employment and Payroll for Westchester County, NY: 1993 and 2000.

	1993			2000			% Change 1993 to 2000		
Sector	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)	Firms	Employees	Payroll ($1,000)
SERVICES/INPUTS									
Agricultural Support	41	**	**	34	**	**	-17%	**	**
Veterinary	72	474	10,172	84	648	17,413	17%	37%	71%
Farm Supplies	18	185	8,060	10	78	5,516	-44%	-58%	-32%
MANUFACTURING									
Fruit and Vegetable	7	288	6,502	4	**	**	-43%	**	**
WHOLESALE									
Flower and Nursery Stock	18	322	5,326	15	197	9,534	-17%	-39%	79%
Fresh Fruit and Vegetable	15	74	3,800	25	106	7,038	67%	43%	85%
Farm Product Raw Material	17	56	2,484	7	24	1,727	-59%	-57%	-30%
RETAIL/CONSUMER									
Nursery and Garden Centers	48	382	9,126	36	312	10,460	-25%	-18%	15%
Landscaping	504	3,044	74,160	502	2,293	80,911	0%	-25%	9%
Fruit and Vegetable Markets	20	87	1,541	32	102	1,335	60%	17%	-13%

Source: U.S. Census Bureau. County Business Patterns, 1993 and 2000

*** Data withheld by Census Bureau to avoid disclosing individual firms.*

Appendix 7:

Land Cover Maps

Presented in this Appendix are six figures which graphical illustrate the land coverage for each of the following six counties profiled: Columbia, Dutchess, Greene, Orange, Ulster, and Westchester.

Figure 1: Land Cover Map - Columbia County, NY

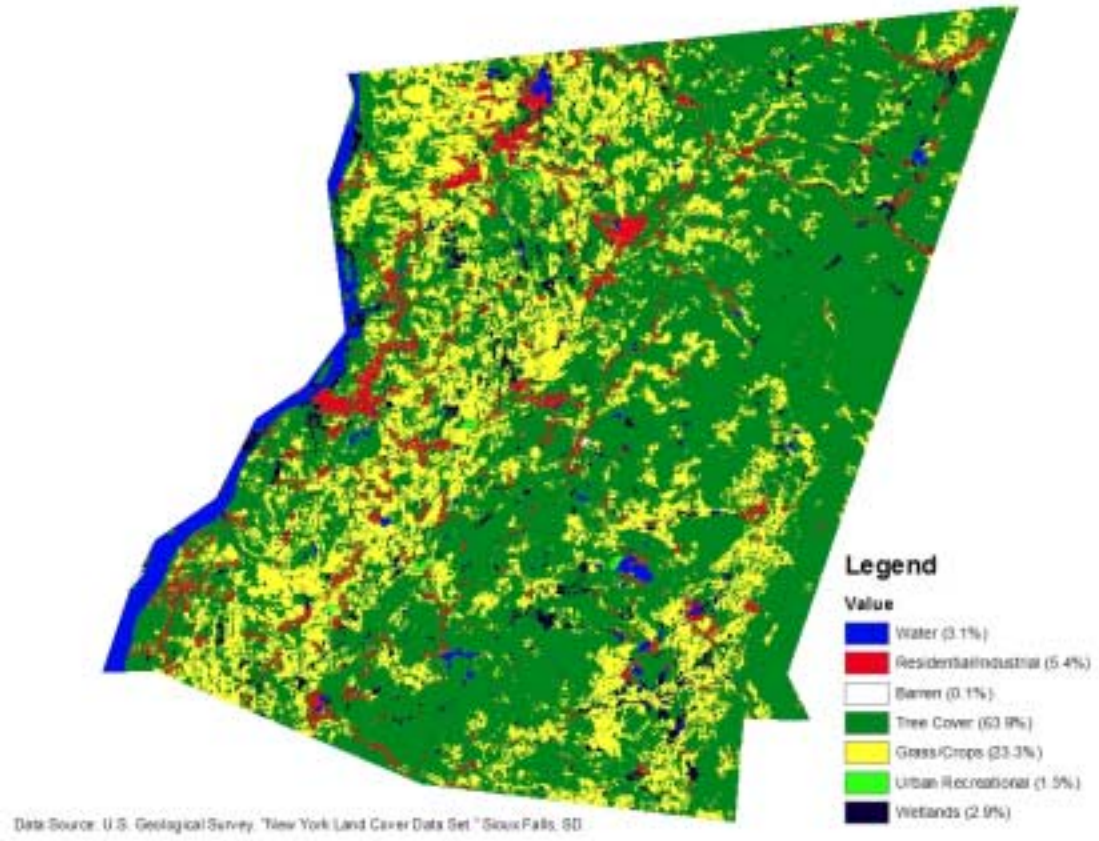


Figure 2: Land Cover Map - Dutchess County, NY

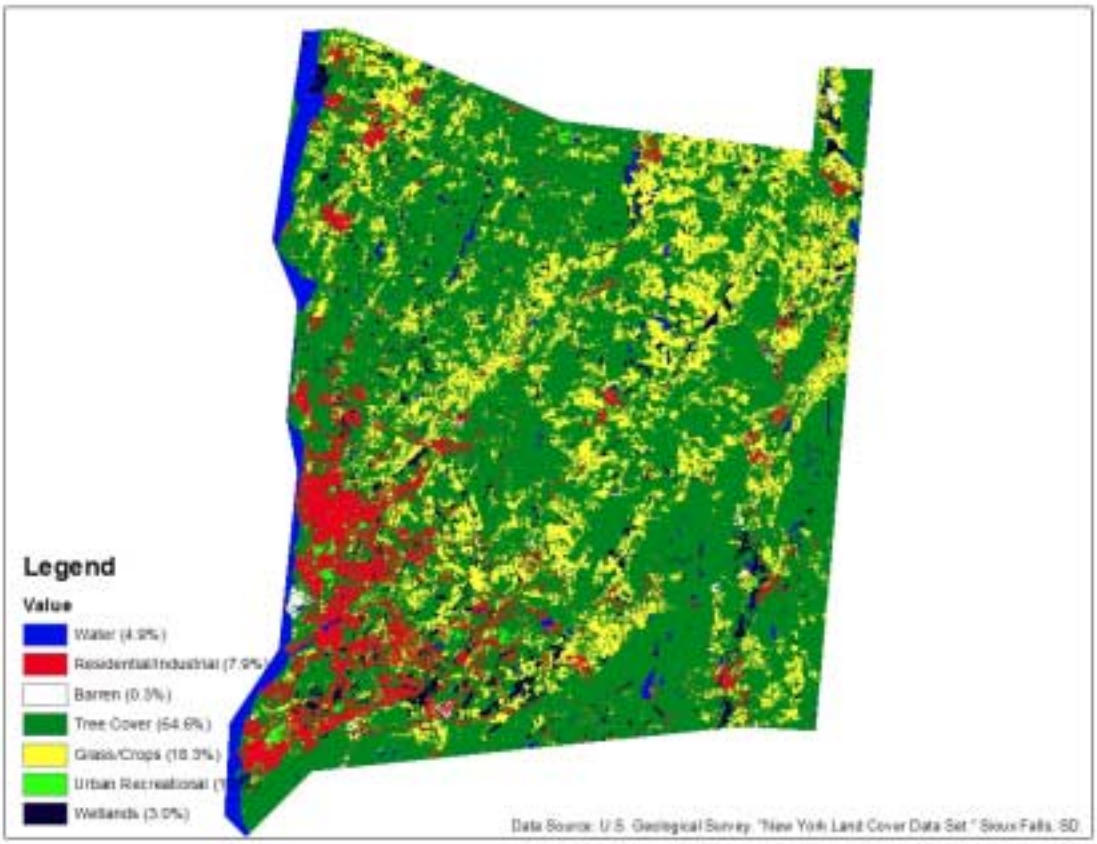


Figure 3: Land Cover Map - Greene County, NY

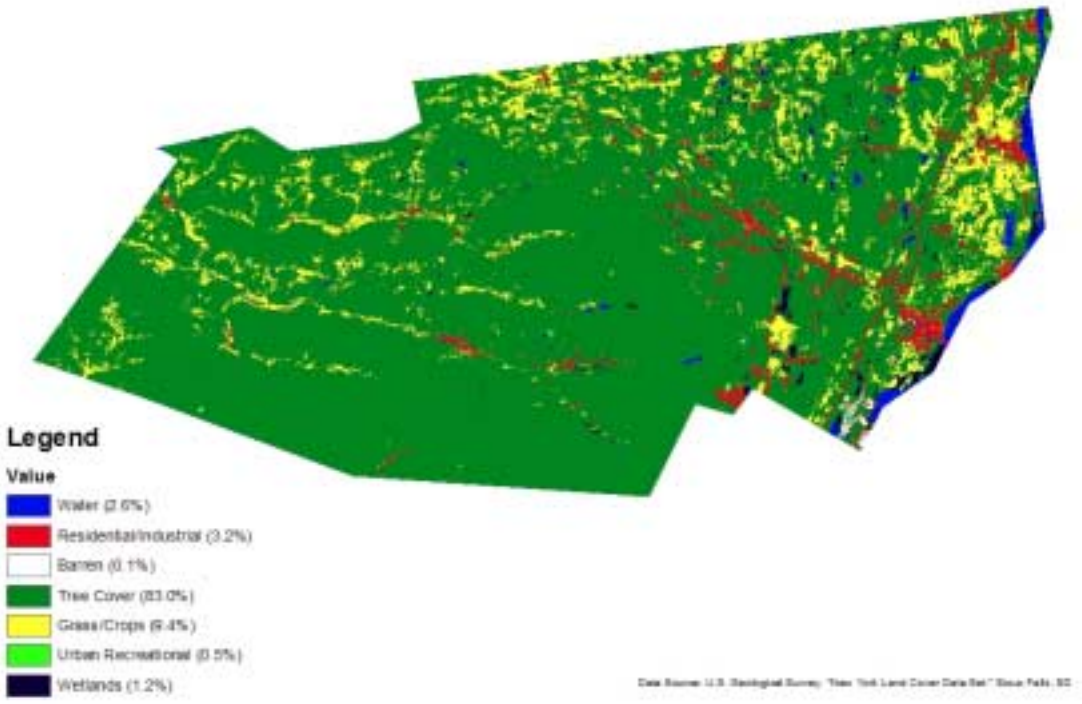


Figure 4: Land Cover Map - Orange County, NY

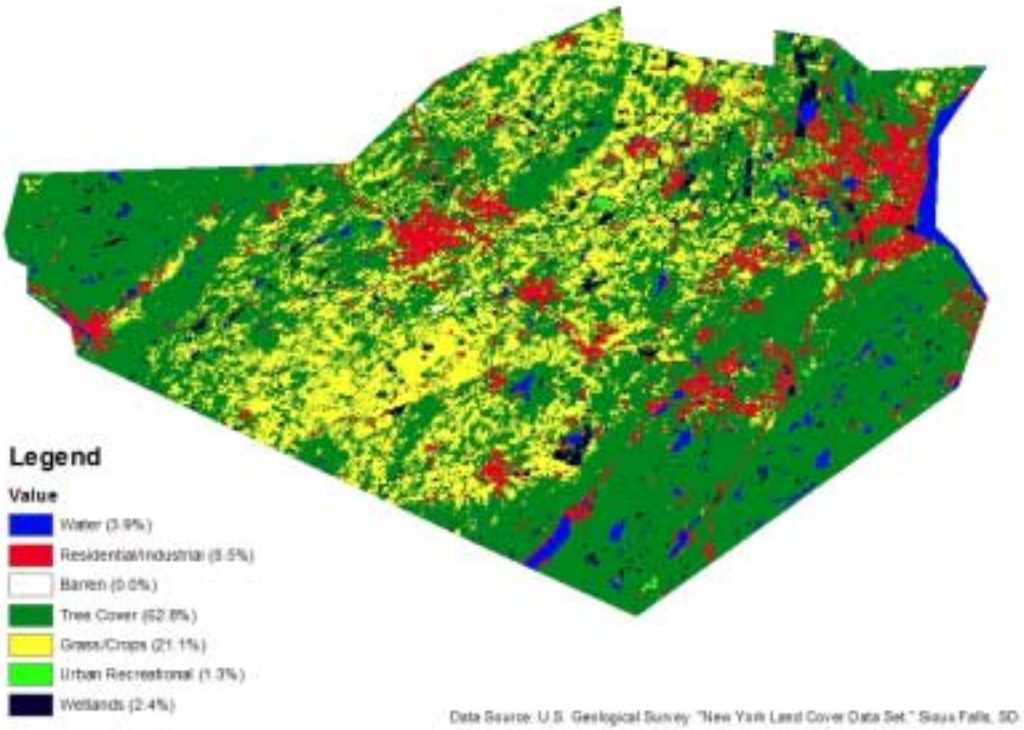


Figure 5: Land Cover Map - Ulster County, NY

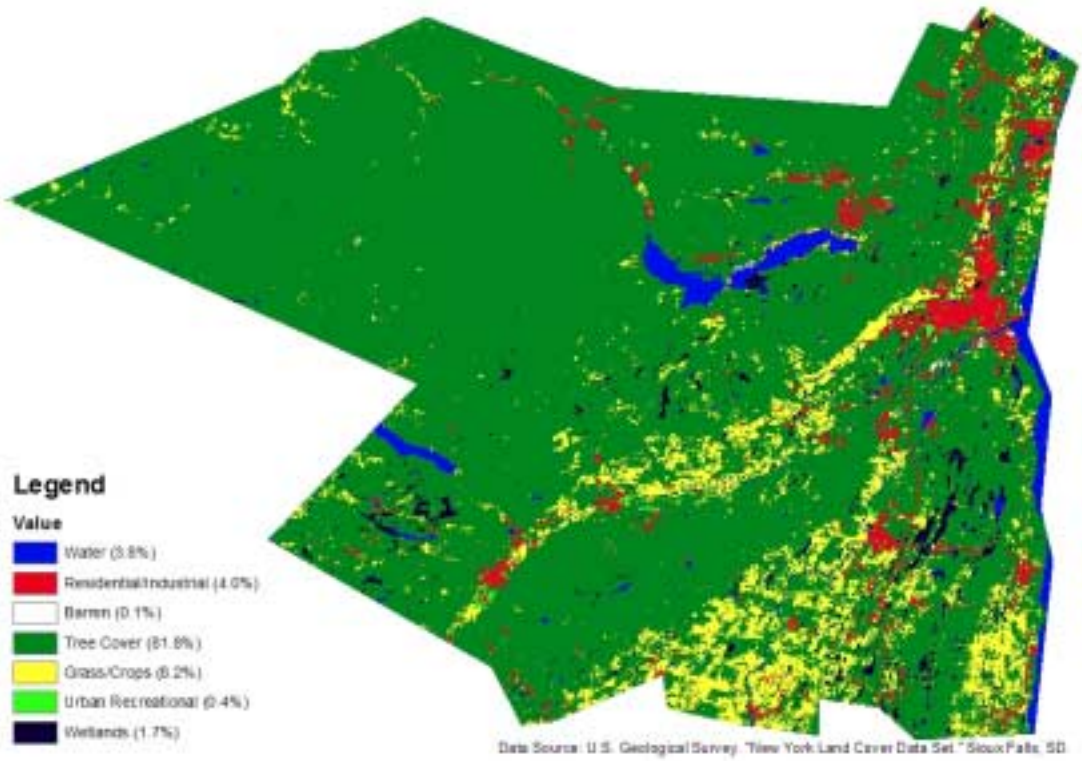
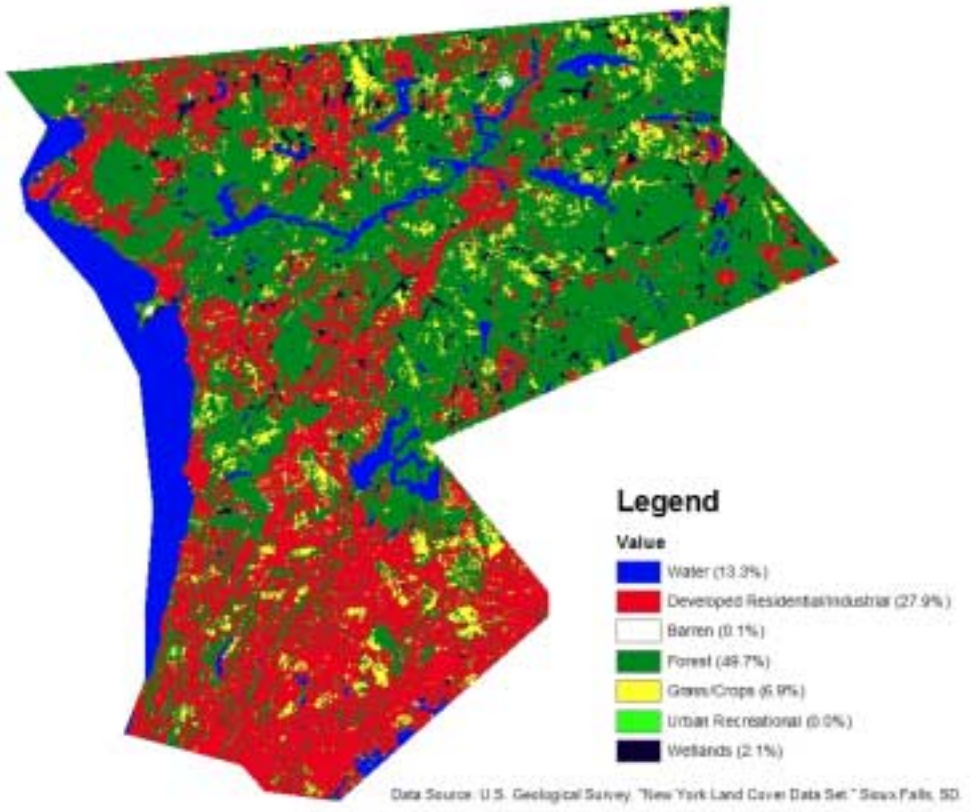


Figure 6: Land Cover Map - Westchester County, NY



Study Interviewees

More than 100 individuals were interviewed as a part of this study's process. Their views and comments have been incorporated within this report, *Agricultural Economic Development for the Hudson Valley*. Where practical, the data gathered through the interview process was verified against independent sources. The conclusions presented in this report should be considered a regional "self-analysis" of current economic and community conditions.

The following people were interviewed by ACDS during this project. Some names have been left off the list at the request of the interviewees. (And, we apologize to anyone we may have unintentionally left off the list.)

Mark Adams, *Adams Fairacre Farms*
Blane Allen, *First Pioneer Farm Credit*
Joel Allen, *Columbia County CCE*
Louis Antonelli, *Dutchess County EDC*
Ed Armstrong, *Livestock farmer*
Rose Baglia, *Orange County CCE*
Honey Bernstein, *Town of Goshen*
Mick Bessire, *Greene/Columbia County CCE*
Rick Bishop, *Sullivan County Rural Economic Area Partnership*
Tom Blanchard, *NY Agridevelopment Corporation*
Charles Bohan, *Town of Blooming Grove*
Jesse Bontecou, *Rally Farms*
Albert Buckbee, II, *Bellvale Farm*
Peter Carofano, *Ulster County Tourism*
Jeff Christ, *Christ Brothers Orchard*
David Church, *Orange County Planning*
Francessco Ciummo, *Demarist Winery*
Jim Closs, *Dutchess County EDC*
Ron Coan, *Dutchess County EDC*
Tom Cogger, *Westchester County AFPB*
Gene Colley, *Westchester farmer*
George Constable, Sr., *Orange County Farm Bureau*
Richard Coombe, *Coombe Farm*
Debbie Corr, *Mid-Hudson Horse Trails*
Jean Paul Courtens, *Roxbury Farm*
Jerry Cunningham, *Greene County farmer*
Frank Dagele, Jr., *Degele Brothers Produce*
Jayne Daly, *Glynwood Center*
Anna Dawson, *Hudson Valley Hometown Foods*
Leonard DeBuck, *DeBuck's Sod Farms*
Wayne Decker, *Orange County legislator*
Mike Dignelli, *Westchester AFPB*
Mike DiTullo, *Mid-Hudson Pattern for Progress*
John D'Maria, *Hemlock Hill Farm*
Mark Doyle, *Listening Rock Farm*
Rod Dressel, *Dressel Farms*
Marian Dunbar, *Columbia County AFPB*
Todd Erling, *Columbia Hudson Partnership*
Annie Farrell, *Cabbage Hill Farm*
Jennifer Fimble, *Dutchess County CCE*
Dean Ford, *dairy farmer*
Jim Galvin, *Columbia Hudson Partnership*
Thea Glaser, *Ducthess County EDC*
John Glebocki, *Glebocki Farms*
Seymour Gordon, *Town of Warwick*
Mark Grennan, *Hudson-Mohawk RC&D*
Jason Grizzanti, *Warwick Valley Winery*
Dr. Allen Grout, *Golden Harvest Farm*
Maureen Halahan, *Orange County Partnership*
Bill Heafy, *Clermont Fruit Processors*
Joe Heller, *Lower Hudson RC&D*
Jack Hoeffner, *Hoeffner Farms*
Don Homer, *Hudson Pines Farm*
Mary Howard, *Greene County Planning*
Mark Hoyt, *Orange County AFPB*
Richard Hubner, *Warwick Town Assessor*
Les Hulcoop, *Dutchess County CCE*
Larry Hulle, *Orange County CCE*

David Jackson, *Westchester County ORPS*
Gerald Jacobowitz, *attorney*
Jan Jansen, *Jansen Nursery*
Erick Jensen, *Wolfe's Neck Farm*
Bill Johnson, *Orange County AFPB*
Christine Lasher-Jones, *Greene County farmer*
Chris Kelder, *Kelder Farm*
Alex Kocut, *Kocut Farms*
Nikki Koenig, *Ulster County farmer*
Arthur Lain, *Orange County AFPB*
Chip Lain, *Pine Island Nusery*
Larry Larsen, *Orangce County SWCD*
Jim Lee, *Westchester County CCE*
Bob Lewis, *NYS Department of Agriculture and Markets*
Peter Loomis, *Dutchess County farmer*
John Lupinski, *Orange County Farm Bureau*
Sandy Maithis, *Greene County IDA*
Tom Makuen, *Tractor Sales and Service*
Mike Manek, *Crop Production Services*
Virginia Martin, *Borderland Farm*
Seth McKee, *Scenic Hudson*
Patty Moore, *Dutchess County Tourism*
Neal Needleman, *USDA FSA*
Carmen Nero, *Hudson Processing*
Eric Ooms, *Columbia County Farm Bureau*
Chris Pawelski, *Pawelski Farms*
Eve Pawelski, *Pawelski Farms*
Tim Purdy, *agricultural landowner*
Lee Reidy, *Ulster County CCE*
Tressa Rusnick, *Ulster County CCE*
Elizabeth Ryan, *Breezy Hill Orchards*
Doc Sanford, *Dutchess County Farm Bureau*
Larry Saulpaugh, *Columbia County farmer*
Dr. Larry Sautter, *veterinarian*
Mike Saviola, *Watershed Agricultural Council, East of Hudson*
Tom Shepard, *Dairylea Agri-Edge Development*
Pat Sidoti, *Sidoti Produce*
Larry Silverman, *Silverman Greenhouse*
Marion Sinek, *Town of New Castle*
R.J. Smith, *R.J. Smith Realty*
Brian Spahr, *Toad Haul Farm*
Gary Stellingwerf, *Stellingwerf Farm*
Stuarts Orchard
Powers Taylor, *Rhosedale Nursery*
Paul Taxter, *Empire State Development*
Dave Tetor, *Town of Sanford*
Becky Thornton, *Dutchess Land Conservancy*
Phil Trowbridge, *Gallagher Stud*
Mike Turton, *Hudson Valley Agricultural Partnership*
Mary Ullrich, *Orange County CCE*
Al Valk, *Town of Montgomery*
John Valk, *Town of Shawangunk*
Jim Van Orden, *Greene County farmer*
Roland Vosburgh, *Columbia County Planning*
Mary Kay Vrba, *Dutchess County Tourism*
John Walston, *Stone House Farms*
Chip Watson, *Equine Farm*
George Whalen, *real estate*
Bob Weybright, *Hudson Valley Foodworks*
Barbara Wilkens, *Wilkens Fruit and Fir Farm*
Karen Woods, *Dutchess County Tourism*
Richard Woodard, *The Meadows Farm*
Marylin Wyman, *Greene County CCE*
Tom Zangrillo, *Orange County Vegetable Growers*

2002 Census of Agriculture - Preliminary Data - New York
Abbreviated Historical Highlights: 2002 and Earlier Census Years

All farms	2002	1997	1997*	1992
Farms.....number:	37,243	38,264	31,757	32,306
Land in farms.....acres:	7,656,532	7,788,241	7,254,470	7,458,015
Ave. size of farm...acres:	206	204	228	231
Farms by size:				
1 to 9 acres.....:	2,948	3,102	2,226	2,129
10 to 49 acres.....:	8,350	7,723	5,499	5,201
50 to 179 acres.....:	13,488	14,085	11,319	11,147
180 to 499 acres.....:	8,971	9,897	9,327	10,305
500 to 999 acres.....:	2,464	2,567	2,530	2,713
1,000 to 1,999 acres...:	804	721	688	680
2,000 acres or more....:	218	169	168	131
Farms by value of sales 1/:				
Less than $2,500.....:	14,273	11,542	7,707	7,324
$2,500 to $4,999.....:	3,349	4,096	3,424	3,389
$5,000 to $9,999.....:	3,197	4,119	3,484	3,536
$10,000 to $24,999.....:	4,177	4,997	4,269	4,156
$25,000 to $49,999.....:	2,733	2,941	2,673	2,601
$50,000 to $99,999.....:	3,083	3,496	3,335	3,973
$100,000 to $499,999....:	5,347	6,077	5,883	6,588
$500,000 or more.....:	1,084	996	982	739
Farms by type of organization:				
Family or individual.....:	32,659	32,813	26,855	27,346
Partnership.....:	2,836	3,465	3,153	3,284
Corporation.....:	1,565	1,771	1,568	1,521
Other-cooperative, estate or trust, institutional, etc..:	183	215	181	155
Total operators.....:	57,961	(NA)	(NA)	(NA)

*The 1997 Census of Agriculture results are provided two ways. Data for 1997 are shown as published earlier with comparisons to previous censuses and then reweighted for undercoverage to be more comparable to the 2002 Census of Agriculture results.

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