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Hudson River Foodway Corridor Project

Prepared by Karp Resources for the Lower-Hudson Long Island Resource Conservation and Development Council & the New York State Energy Research and Development Authority

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Executive Summary

In March 2011, the Lower Hudson Long Island Resource Conservation and Development (RC&D) Council was awarded a New York State Energy Research and Development Authority (NYSERDA) grant to study the feasibility of using hybrid electric refrigeration trailers aboard barges to transport agricultural products via the Hudson River to New York City. The RC&D Council retained Karp Resources to assess which New York State agricultural products are best suited for waterborne transport to New York City, to inventory Hudson Valley production of these products, and to assess Hudson Valley producers' interest in barge transport as an alternative means of distribution to New York City.

Geographic Scope

The project's initial geographic focus area was the Hudson River Valley. As research progressed, the project team agreed that expanding the project geography in order to examine agricultural production and interest in waterborne transport among producers further west along New York's I-90 corridor—where there is larger scale agriculture production of less perishable products, more potential to leverage barge transport to open new NYC marketing channels, and longer travel time and higher costs for truck transport to NYC—would increase the potential to identify a viable barge distribution model.

The final geographic scope for the project includes 16 Hudson Valley counties (Albany, Columbia, Delaware, Dutchess, Greene, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Sullivan, Ulster, Washington, and Westchester) and 11 counties in Western and Central NY (Cayuga, Genesee, Livingston, Monroe, Onondaga, Ontario, Orleans, Oswego, Seneca, Wayne, and Wyoming)

High Potential Products

Barge transport along the Hudson River, a journey that requires 18 hours, will only be viable if it delivers high quality products to NYC customers, thus product durability and perishability are of primary importance when determining the most suitable products. Production volume and seasonality are additional key factors. Producers who sell pallets and trailer-loads of product many months throughout the year will experience greater benefit from reduced unit costs of transportation than growers who ship in lower volumes for shorter seasons.

A final consideration is whether the story of barge transport provides some additional value to the individuals or entities that are producing or marketing a product. Based on our interviews, producers of spirits and shelf stable value-added products see the highest potential for barge transport to contribute to their marketing strategy, value proposition, and potentially, price point.

At this stage of the project, Karp Resources recommends focusing on storage crops including apples, cabbage, and winter squash. Because of their durability, high-volume production, and near year-round availability from NY producers, these products best meet the key criteria for barge transportation.

New York State Agricultural Production

In 2011, New York was home to 36,000 farms on 7 million acres of land.[1]

[1] "New York Farm Numbers Decrease" Press Release, February 27, 2012, USDA NASS New York Field Office.
[2] The online producer survey, hosted through Karp Resources' Constant Contact account is still "live" and the

Table 1.			
New York production of high potential crops for barge transport, 2011			
	Harvested acres	Volume (1000 cwt.)	Value (1,000 dollars)
Cabbage (Fresh Market)	10,700	4,708	86,640
Squash (Fresh Market, All Varieties)	4,400	836	42,887
Apples	42,000	12,000	251,470

The tables below illustrate regional and county-level inventories of cabbage, winter squash, and apples, the durable, high-volume storage crops that Karp Resources identified as most suitable for barge transport intended for NYC wholesale customers. The full county-level agricultural overview and inventory table is attached as Appendix A.

Table 2.				
2011 Regional production of high potential crops for barge transport, 2007				
	Hudson Valley		Western and Central NY	
	Acres	Estimated Volume (1,000 cwt.)	Acres	Estimated Volume (1,000 cwt.)
Head Cabbage	113	52	9,638	4,433
Winter Squash	307	52	786	133
Apples	10,013	3,124	26,470	8,259

Table 3.							
Top counties, by production of high potential crops for barge transport							
		Head Cabbage		Winter Squash		Apples	
Region	County	Volume (cwt.)	Rank	Volume (cwt.)	Rank	Volume (cwt.)	Rank
Western & Central	Wayne			10,880	5	5,786,352	1
Western & Central	Orleans	991,760	4			1,483,872	3
Western & Central	Monroe	1,175,420	2	80,920	1	375,336	7
Western & Central	Ontario	671,760	5			182,208	10
Hudson Valley	Ulster					1,822,392	2
Western & Central	Genesee	1,405,380	1				
Western & Central	Onondaga			30,770	2	213,096	9
Hudson Valley	Columbia					588,120	6
Hudson Valley	Orange			22,790	3	227,136	8

Producer Perspectives

Karp Resources gathered responses, concerns, insights, and suggestions regarding a Hudson Valley barge transport model from 30 surveys and interviews representing over 100 individuals in New York's agricultural sector.

Shipping by barge is a new concept for farmers and food business operators, many of whom are skeptical about both the complex operational requirements of barge transport and its potential to align with their production and business models.

Barge transportation logistics and efficiencies presented the biggest hurdles to interview respondents' interest in and understanding of barge transport, and many farmers imagined that it would be unnecessarily complicated in an industry that is already logistically complex. Producers and food business owners expressed concerns about the difficulties of multiple loadings and unloadings of product as it travels by truck to the port and then again to the customer in NYC. They repeated that "too many hands on the product" could have deeply negative implications for time, cost, and food safety.

Based on the experience of interviewed farmers, food manufacturers, and food business owners, food industry buyers are demanding when it comes to timing, product quality and specifications, and logistics. In the context of this fast paced industry, interviewees had difficulty imagining a successful transition to a slower paced barge transport system.

Finally, farmers and other food producers want to know who would control the last leg of logistics, and who would ensure that products get from the NYC port to NYC customers, as well as who would identify new NYC customers, close the sales, and manage the relationships.

However, many interview and survey respondents agreed on a number of facets of waterborne transport that increased its relevance and potential. Financial viability is of upmost importance to interview respondents, who repeatedly returned to distribution costs and the potential price paid by the NYC buyers during interviews. Two-thirds of survey respondents noted that the price paid by the end consumer and the cost of shipping are critical factors in determining whether to consider barge transport. While they questioned the barge transport business model, many interviewees also noted that they pay significantly more to truck products to NYC than to locations the same distance away in another direction. Farmers are amenable to efforts to reduce their transportation costs, and the potential to avoid traffic and tolls en route to NYC stood out as a benefit of barge transport.

The role of the barge operator and a broker are key factors in increasing interest in barge transport. If the barge operator provided a brokering or sales service that generated new NYC markets for barge users, took ownership of product when it arrived at the Hudson Valley port—thus relieving farmers of the responsibility and risk of maintaining product ownership for the duration of the barge journey and related logistics—and controlled logistics to the NYC end buyer, this would increase interest. The role of a broker is crucial to build trust among farmers, aggregate product, create efficiencies, develop new markets, manage new customer relationships, and reduce the complexity of multiple loadings and unloadings from farm to NYC customer.

Introduction and Project Background

The 150-mile Hudson River corridor from Albany to New York City has historically served as a trade conduit, connecting upstate with downstate, urban with rural, and producers with consumers. Rail and barge trade comprised New York City's primary food distribution systems until the 1960s when refrigerated trucks traveling on the new interstate highway system became the dominant mode of food transport. However, New York City's waterfront industrial and transportation hubs, like the Hunts Point Food Distribution Center in the South Bronx and the Sunset Park waterfront district and Red Hook Container Terminal in Brooklyn, remain linked by water to the rich agricultural lands north of the city. Research to understand the highest potential policy, market, and infrastructure support to reconnect New York State farmers with the New York City marketplace consistently focuses on the Hudson Valley as a logical and important aggregation point for agricultural product en route to New York City.

In March 2011, the Lower Hudson Long Island Resource Conservation and Development (RC&D) Council was awarded a New York State Energy Research and Development Authority (NYSERDA) grant to study the feasibility of using hybrid electric refrigeration trailers aboard barges to transport agricultural products via the Hudson River to New York City. The RC&D Council retained Karp Resources to assess which New York State agricultural products are best suited for waterborne transport to New York City, to inventory Hudson Valley production of these products, and to assess Hudson Valley producers' interest in barge transport as an alternative means of distribution to New York City.

Geographic Focus – Looking Beyond the Hudson Valley

The project's initial focus area was the Hudson River Valley, with a secondary goal of understanding high potential products and producers or aggregators in other New York regions that could send additional products to a Hudson River port. As research progressed, however, the project team agreed that expanding the project geography in order to examine agricultural production and interest in waterborne transport among producers further west along New York's I-90 corridor would increase the potential to identify a viable barge distribution model. Though this model would necessitate a truck or rail component to deliver product from Western or Central New York to a Hudson Valley port, the project team cited a number of reasons to add Central and Western New York to the Hudson Valley Food Corridor analyses, including:

- The scale of production on Western and Central NY farms is better suited to efficiently filling trailer units (and multiple trailer units aboard a barge) and to providing appropriate product volumes and price points for New York City wholesale customers;
- Western and Central NY producers are less likely to have marketing and distribution relationships with New York City customers, and may be more interested than their Hudson Valley counterparts in barge transport as a means to enter a new marketplace;
- Because Western and Central NY farmers are further from New York City, higher travel costs and longer travel time may make alterative transportation models more attractive than they might be to Hudson Valley farmers; and
- According to an analysis by Sustainable Ports, the Federal Motor Carrier Safety Administration Hours of Service (HOS) rule is likely to apply to trucking between Western and Central NY and NYC, but would not apply to Hudson Valley truck distribution. The HOS

rule limits one driver to an 11-hour round trip. Farmers, aggregators, and distributors located outside of the 11-hour round trip boundary either have to pay for the driver's ten-hour rest time or hire another driver, both options adding to the cost and potentially making alternative transport more attractive.

The final geographic scope for the project includes:

- The Hudson Valley – 16 Counties
    - 12 counties that border the Hudson River: Albany, Columbia, Dutchess, Greene, Orange, Putnam, Rensselaer, Rockland, Saratoga, Ulster, Washington, and Westchester
    - 4 adjacent counties: Delaware, Schenectady, Schoharie, and Sullivan
- Western and Central NY – 11 Counties
    - Cayuga, Genesee, Livingston, Monroe, Onondaga, Ontario, Orleans, Oswego, Seneca, Wayne, and Wyoming

Methodology

The project team utilized United States Department of Agriculture (USDA) data, including the acreage, yield, and market value of a range of products to provide a detailed picture, or inventory, of agricultural production in the Hudson Valley and Western and Central NY. The team used the most recently collected data available through the USDA and the USDA National Agricultural Statistics Service (NASS) New York Field Office.

The Karp team conducted in-depth interviews with agricultural and value-added, producers, producer associations, cooperatives, aggregators, distributors, and production and marketing advisors. Interviews were designed to gather detailed data on current production and marketing channels and interest in accessing the NYC marketplace through alternative transport models, and to gather feedback on the barge transportation concept from farm and food businesses deemed to be high potential users of it.

The findings from nine initial interviews informed the development of a producer survey to collect current production, marketing, and distribution information; assess producers' interest in accessing the New York City marketplace; determine which operational, logistical, and financial aspects of a Hudson River waterborne transport system would make barge transport most viable and appealing; identify the potential obstacles to creating and utilizing waterborne transportation on the Hudson River; and understand how producers would expect to utilize this network.

Hudson River Foodway Corridor Study Technical Advisory Committee (TAC) members and colleagues publicized the survey, which is posted online, through organizational e-newsletters, postcards, announcements at agricultural organization meetings, and personal emails. While the team reached out to over 3,000 primarily Hudson Valley producers, a fairly low number of farmers completed the survey. The project team determined that additional qualitative interviews of producers, aggregators, and distributors would elicit more robust information about production and interest in barge transport than further survey outreach. The team conducted six additional in-depth interviews. Four of these interview respondents, all farmers, also completed the survey.

In total, the project team conducted 15 in-depth interviews. Nineteen producers completed the survey. [2] The interview list, in-depth interview guide, and a paper version of the producer survey are attached in the Appendices.

Karp Resources partnered with the Columbia University Urban Design Lab to create maps that visually illustrate the elements of the agricultural inventory and distribution of New York's fruit and vegetable production and the areas of concentrated production of the highest potential products for barge transport.

High Potential Products for Barge Transport

Durability and perishability are of primary importance when determining the most suitable and highest potential agricultural products for waterborne transportation. Barge transport along the Hudson River will only be viable if it delivers high quality products to NYC customers. The 18-hour barge journey (not including travel time to reach the port or aggregation point) is likely to be significantly longer than current trucking time between NY producers and their existing buyers, many of which are located in New York State or along the Eastern Seaboard. The quality of more perishable crops like leafy greens or berries may decrease substantially during the additional travel time. While it is not uncommon for a range of varieties of California produce to travel much longer than 18 hours and arrive in good condition on the East Coast, products grown in New York will not necessarily stay fresh for as long as their West Coast counterparts. This can be attributed to local varieties as well as NY production, post-harvest handling, and packing technology and infrastructure, very little of which has been developed or optimized for longer haul distribution.

Production volume and seasonality are key factors. Producers who sell pallets and trailer-loads of product many months throughout the year will experience greater benefit from reduced unit costs of transportation than growers who ship in lower volumes. In New York State many high value products, like strawberries for example, have a very short growing season. These products may ship for fewer than six weeks.

Market value is an important criterion to evaluate in a potential product. However, it is in tension with the necessity to transport high volume, durable New York State products. More perishable items generally command a higher price than lower value, durable commodities that are most often sold in bulk and not differentiated in the marketplace. In 2011, the average price per hundredweight (cwt.) for NY tomatoes was $84.80, and in 2010 the price for NY escarole was $62.00.[3] Cabbage sold for $20.00. However, cabbage is a less perishable product and there has been significantly more investment in the packing and storage infrastructure intended to preserve its freshness. Finally, NY producers planted cabbage on 10,900 acres in 2011, compared to 3,000 acres in tomatoes and 300 acres in escarole in 2010.[4] While tomatoes and escarole have more value in the marketplace, cabbage remains more suitable for larger-scale barge transport to wholesale customers.

In addition to pure market value, another consideration is whether or not the individuals or entities that are producing or marketing a product see value in the "green" transport mode and the Hudson

[2] The online producer survey, hosted through Karp Resources' Constant Contact account is still "live" and the RC&D Council can continue to use the survey to gather information from producers. A paper version of the survey is included in Appendix E.
[3] The hundredweight, abbreviated cwt. is equal to 100 pounds.
[4] New York Annual Statistics Bulletin 2011-2012, United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) New York Field Office.

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River's storied history as a distribution corridor. The story of waterborne transport along the Hudson could add to the marketing strategy, value proposition, and potentially the price point for some products. Based on our interviews, producers of spirits and shelf stable value-added items see the most potential in this element of barge travel.

An study of NYC customer demand for products that have traveled by barge will be an important next step of this research to determine who the NYC customers could be—manufacturers, distributors, and grocers are likely—and the products and logistics that that would increase potential sales and support the viability of the model.

At this stage of the project, Karp Resources recommends focusing on storage crops including apples, cabbage, and winter squash because of their durability, high-volume production, and near year-round availability from NY producers. Apples, cabbage, and winter squash are the products detailed in this report's county-level inventory and aggregation point case studies.

However, the barge concept was tested for a wider range of products in producer interviews, which included a spirits manufacturer, forest product association, co-packer of value-added product, and NY cheese producer in addition to farmers, producer associations and cooperatives, and distributors. Finally, the producer survey includes questions about production and interest in NYC-bound barge transport for a near-comprehensive list of NY products including: storage crops and other vegetables; apples, pears, other fruits, and berries; fresh cut and frozen fruits and vegetables; jarred and canned goods; grains; eggs; milk and dairy products; poultry and meat; fiber; timber and finished wood products; Christmas trees; wine, beer, and spirits; and honey and maple syrup.

New York State Agricultural Production

The most current data from the USDA's New York Field Office reports that in 2011, New York was home to 36,000 farms on 7 million acres.[5] In 2007, the year of the USDA's most recent Census of Agriculture, 36,352 NY farms operating on 7.17 million acres produced $4.42 billion in product.[6]

In 2011, New York ranked 5th in the nation for area harvested and value of vegetables grown for fresh market sales, with 11.3 million cwt. of fresh market vegetables, worth $329 million, harvested from 58,500 acres. Growers harvested 113 thousand tons, of vegetables for processing, valued at $27 million, from 23,400 acres.[7] New York's 2011 vegetable production totaled 13.56 million cwt. harvested from 81,900 acres and valued at $356 million.[8]

While milk is not a lead contender for barge transport, dairy is New York's top agricultural sector. In 2011, $2.7 billion in dairy sales represented 52 percent of New York's total agricultural sales. In 2007, 15 percent of New York's farms produced milk and other dairy products.

Source: Top 5 agriculture commodities, 2011, USDA Economic Research Service (ERS) New York State Profile. http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=36&StateName=New%20York
2007 Census of Agriculture, Table 59. Summary by Market Value of Agriculture Products Sold: 2007, USDA.

[5] "New York Farm Numbers Decrease" Press Release, February 27, 2012, USDA NASS New York Field Office.
[6] 2007 Census of Agriculture, Table 1. Historical Highlights: 2007 and Earlier Census Years, USDA.
[7] New York Annual Statistics Bulletin 2012, USDA NASS New York Field Office. http://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/index.asp
[8] In 2011, Hurricane Irene, caused severe flooding in many of the NY's agricultural regions, including the Hudson Valley. According to the USDA NASS field office, farmers harvested 94 percent of planted acres of fresh market vegetables in 2009 and 96 percent in 2010. In 2011, farmers harvested only 86 percent of the land they planted. At 11.3 million cwt, of fresh market vegetables, production decreased nearly 20 percent from 14.1 million cwt in

The value of New York's 2011 tree fruit and grape production totaled $351 million. Fruit production included: 5.9 million pounds of tart cherries, 700 tons of sweet cherries, 6,800 tons of peaches, 12,100 tons of pears, 3.6 million pounds of strawberries, and 1.9 million pounds of blueberries.[9]

Cabbage

In 2011, New York ranked 2nd in the U.S. for cabbage production for the fresh market. NY farmers harvested 4,708 thousand cwt. of cabbage from 10,700 acres.[10] At an average price of $20.00 per cwt., the total value of fresh market cabbage sales was $86.6 million.[11]

Squash

In 2011, New York farmers harvested 836 thousand cwt. of squash for the fresh market from 4,400 acres.[12] The average price for fresh squash was $51.30 per cwt., and total sales equaled $42.9 million.[13]

Apples

NY ranks 2nd in apple production, behind Washington. In 2011, 1.22 billion pounds of apples were produced in 42,000 acres of orchard. The value of apple sales totaled $251 million.[14]

New York State's Mid-Scale Agriculture

Mid-scale agriculture is defined by its position in the marketplace; producers that are too small for the consolidated supply chains that move commodities around the globe but too large for direct sales through farmers' market or CSAs are considered mid-scale. Small-scale direct retail and large commodity supply chains are growing, and increasingly polarizing U.S. agriculture. While mid-sized farms have the product diversity and volume to serve larger customers like schools and universities, there are not sufficient supply chains to make the connection.

What mid-scale agriculture looks like varies by region, crops produced, and market channels. However, sales are generally between $50,000 and $500,000 and mid-sized farms are most often operated by families that rely on farming as a primary source of income.

Mid-sized growers comprise an important sector in NY agriculture. In 2007, 20 percent of NY farms sold between $50,000 and $499,999 of product. Together, these farmers are responsible for 2.37 million acres, or one-third of the state's farmland. Eight-four percent of NY farms are organized as family farms and farming is the principal occupation for 54 percent of farm operators.

Efforts, like the Hudson River Foodway Corridor Project, to creatively build and enhance supply chain relationships and infrastructure, are key to keeping NY's mid-scale farms viable.

Sources: Agriculture of the Middle. http://www.agofthemiddle.org
Farm Characteristics. USDA Economic Research Service (ERS) New York State Profile. http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=36&StateName=New%20York
2007 Census of Agriculture, Table 59. Summary by Market Value of Agriculture Products Sold: 2007, USDA.

2010. In 2011, New York farmers planted 586,000 acres of vegetables for processing, less than half of the 586,000 acres planted in 2010. It is likely that this reduction is related to a decrease in upstate vegetable processing plants.

[9] New York Annual Statistics Bulletin 2012, USDA NASS New York Field Office. http://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/index.asp

[10] The USDA NASS New York Field Office did not publish the production data for processing cabbage in the NY Annual Statistics Bulletin.

[11] New York Annual Statistics Bulletin 2012, USDA NASS New York Field Office.

[12] The USDA NASS New York Field Office does not disaggregate Summer and Winter Squash. The reported production includes both varieties.

[13] New York Annual Statistics Bulletin 2012, USDA NASS New York Field Office.

[14] New York Annual Statistics Bulletin 2012, USDA NASS New York Field Office.

Table 1.			
New York production of high potential crops for barge transport, 2011			
	Harvested acres	Volume (1000 cwt.)	Value (1,000 dollars)
Cabbage (Fresh Market)	10,700	4,708	86,640
Squash (Fresh Market, All Varieties)	4,400	836	42,887
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County-Level Agricultural Inventory

For this inventory, the Hudson Valley is defined as the following 16 counties: Albany, Columbia, Delaware, Dutchess, Greene, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Sullivan, Ulster, Washington, and Westchester.

The Western and Central New York region is defined as the following 11 counties: Cayuga, Genesee, Livingston, Monroe, Onondaga, Ontario, Orleans, Oswego, Wayne, and Wyoming.

Hudson Valley Overview

In 2007, the most recent year for which county-level data is available, 7,116 farms in the Hudson Valley produced agricultural products valued at $646 million on 1.2 million acres. Over 16 percent of the state's farmland is in the Hudson Valley and sales from Hudson Valley producers were 14.6 percent of the total value of NY agricultural products.

Poultry and livestock and their products, including dairy account for 61 percent of the region's agricultural sales, with the remaining 39 percent, or $249 million, comprised of crop sales. Vegetable sales (including melons) total $59.4 million and sales of fruits, nuts, and berries sales equal $67.7 million.

When calculated across the region, an average of 21 percent of farms in each county sold over $50,000 of product in 2007. The majority of farms with sales over $50,000 would be considered mid-scale, and smaller farms are much less likely to sell in the wholesale quantities necessary for low unit costs of barge transport.

Western and Central New York Overview

Western and Central NY agricultural production is considerably greater than that of the Hudson Valley. In 2007, 7,820 farms in the Western and Central NY produced agricultural products valued at $1.53 billion on 1.9 million acres. The region's sales are 57 percent higher than Hudson Valley producers. Over 26 percent of the state's farmland is in Central and Western NY and sales from producers in the region were 34.7 percent of the total value of NY agricultural products.

The breakdown between poultry and livestock and crop production in Western and Central NY mirrors the Hudson Valley. Poultry and livestock and their products, including dairy account for 60 percent of sales, with the remaining 40 percent, or $611 million, comprised of crop sales. Vegetable sales (including melons) total $178 million and fruit, nut, and berry sales equal$ $151.2 million.

Individual farms in Western and Central NY are also larger than their Hudson Valley counterparts. An average of 30 percent of farms in the region sold over $50,000 of product in 2007, compared in 21 percent among farmers along the Hudson.

Production of High Potential Crops for Barge Transport

The tables below illustrate the regional and county-level inventories of cabbage, winter squash, and apples, the durable, high-volume storage crops that Karp Resources identified as most suitable for barge transport intended for NYC wholesale customers. The full county-level agricultural overview and inventory table is attached as Appendix A.

Table 2.

2011 Regional production of high potential crops for barge transport, 2007

	Hudson Valley		Western and Central NY	
	Acres	Estimated Volume (1,000 cwt.)	Acres	Estimated Volume (1,000 cwt.)
Head Cabbage	113	52	9,638	4,433
Winter Squash	307	52	786	133
Apples	10,013	3,124	26,470	8,259

Table 3.

Top counties, by production of high potential crops for barge transport

		Head Cabbage		Winter Squash		Apples	
Region	County	Volume (cwt.)	Rank	Volume (cwt.)	Rank	Volume (cwt.)	Rank
Western & Central	Wayne			10,880	5	5,786,352	1
Western & Central	Orleans	991,760	4			1,483,872	3
Western & Central	Monroe	1,175,420	2	80,920	1	375,336	7
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Hudson Valley	Ulster					1,822,392	2
Western & Central	Genesee	1,405,380	1				
Western & Central	Onondaga			30,770	2	213,096	9
Hudson Valley	Columbia					588,120	6
Hudson Valley	Orange			22,790	3	227,136	8

Aggregation Point Case Studies for the Transportation Mode Comparison

In addition to the county level data, Karp Resources collected production and distribution data from individual aggregators and producers to inform a comparison of the time, cost, and fuel use between truck- and barge-based transportation modes.

Cabbage

The point-of-origin for the cabbage case study is My-T-Acres, located at 8127 Lewiston Road in Batavia, Genesee County. My-T-Acres grows cabbage for both the fresh and processing markets, and has the capacity to produce 20 million pounds of cabbage per year, though they do not grow that quantity currently. Nearby growers also produce cabbage in significant volumes.

My-T-Acres could potentially distribute a total of 20 million pounds of cabbage per year, with 500 truckloads (at 40,000 pounds per truckload) between September and June. Forty-five percent of the cabbage would be distributed during the first four months, from September to December, with the remaining 55 percent shipped between January and June.

Butternut Squash

The point-of-origin is Del Mar Farms, located at 2684 Pratt Road in Batavia, Genesee County. The zip code is 14020.

Del Mar Farms could distribute 10 millions pounds of butternut squash, a variety of winter squash grown for both the processing and fresh market, between September and January. Squash could be distributed in 250 truckloads, at 40,000 pounds each.[15]

Apples

An aggregator, Pomona Packing, is the point-of-origin for the apple distribution case study. Pomona Packing is located at 11814 W. Main Street in Wolcott, Wayne County.

Pomona ships 400 truckloads (at 40,000 pounds per load) between September and June, for a total of 16 million pounds of apples shipped. Forty-five percent of the cabbage would be distributed during the first four months, from September to December, with the remaining 55 percent shipped between January and June. Pomona Packing's volume and location are representative of apple aggregators in the region. There are three packing plants clustered in Wolcott, within two miles of Pomona. One of the additional packers is just smaller that Pomona and the other is double its size.

Currently Pomona ships very little product to New York City. The majority of the apples are destined for mainstream supermarket distribution centers along the Eastern Seaboard, as far south as Florida.

Maps illustrating New York State agricultural production are included as Appendix B.

[15] The Genesee County Profile published in the 2007 Census of Agricultural does not include production acreage for cabbage. The data was withheld to avoid disclosing data for individual farms.

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Producer Perspectives – Interview and Survey Findings

Karp Resources gathered responses, concerns, insights, and suggestions regarding the Hudson Valley barge transport model from a wide range of voices in New York's agricultural sector. We heard from 30 individuals and organizations including farmers, producer associations, cooperatives, aggregators, distributors, a spirits manufacturer, a co-packer of value-added products, a NY cheese producer, and Cooperative Extension. The majority of interview respondents shared opinions that not only represented their own agriculture enterprise or expertise, but also the experience of other producers in their region, organization, or business. Our 30 interviews and survey respondents represent over 100 individuals in New York's agricultural sector.

Key factors that increase producers' interest in barge transport

Shipping by barge is a new concept for farmers and food business operators, many of whom are skeptical about both the operational details of the transportation network and its potential to align with their production and business models. However, many interview and survey respondents agreed on a number of facets of waterborne transport that increased its relevance and potential.

Financial viability is of upmost importance to interview respondents, who repeatedly returned to distribution costs and the price paid by the NYC buyers during interviews. Two-thirds of survey respondents noted that the price paid by the end consumer and the cost of shipping are critical factors in determining whether to consider barge transport. While they questioned the barge transport business model, many interviewees also noted that they pay significantly more to truck products to NYC than to locations the same distance away in another direction. Farmers are amenable to efforts to reduce their transportation costs, and the potential to avoid traffic and tolls en route to NYC stood out as a benefit of barge transport. One farmer, who doesn't own trucks and instead hires transport services, noted that barge transport would become more appealing as the distance to the port or aggregation point decreased. He is located 2.5 hours from Albany.

Ten survey respondents noted that their interest in barge transport would increase if the total cost of shipping by barge, from farm to NYC end buyer, were the same. Comparable shipping costs would not increase interest for five of the survey respondents. Very few farmers shared shipping costs. Cost per approximately 20-ton truckload, according to two producers, range from $1,200 to $1,600. A third producer pays $50 per pallet.

The role of the barge operator and a broker are key factors in increasing interest in barge transport. If the barge operator provided a brokering or sales service that generated new NYC markets for barge users, took ownership of product when it arrived at the Hudson Valley port—thus relieving farmers of the responsibility and risk of maintaining product ownership for the duration of the barge journey and related logistics—and controlled logistics to the NYC end buyer, this would increase interest.

Producer insights, concerns, and suggestions

The NYC Marketplace

About half of the producers included in the research are interested in selling into NYC. However, the right price, smooth logistics, and trusted distributors would increase producer interest in New York City markets. Based on interviews, the "right price" would need to be substantially higher than current prices to motivate concurrent marketing shifts—to the NYC marketplace and via the Hudson River.

Price emerges as a source of frustration with the NYC marketplace. Respondents reported low prices in tandem with complicated logistics and distribution constraints as primary sources of dissatisfaction when selling into NYC. Many interviewees do not enjoy doing business in NYC. Finally, many growers consider the Hunts Point Produce Market, New York's largest produce outlet, a market of last resort.

Controlling entity

The notion of product ownership was top of mind during interviews. When considering barge transport logistics, unless an alternative model was introduced, farmers assumed that they would maintain ownership of the product throughout the barge journey until it reached its NYC destination. Thus, producers entered the discussion with questions and concerns about logistical challenges from farm-to-barge-to-NYC that they believed would be theirs to solve.

In order to fully assess the potential of the barge transport model, interview respondents need to understand the chain of produce ownership from the farm or manufacturing site to the end consumer, and how the product is insured throughout. Producers are deterred by the long transport time with an untested transport mode, and want a controlling entity to take ownership of the product at the port in Albany. For farmers and other agricultural businesses to feel secure in the model, the product would need to be sold and no longer the responsibility of the producer before it ships from the Hudson River port.

Timing

Based on the experience of interviewed farmers, food manufacturers, and food business owners, food industry buyers are demanding when it comes to timing, product quality and specifications, and logistics. While the fresh produce industry is moving toward higher expectations for freshness, interviewees see barge transport as a step in the opposite direction. Farmers and food and agriculture businesses aim to move quickly in response to customer needs. In the context of this fast paced industry, interviewees had difficulty imagining a successful transition to a slower paced barge transport system.

Producers and marketers of shelf stable value-added products and less perishable crops were less concerned about timing than those that grow or sell perishable produce and wood products.

Logistics and Efficiencies

Barge transportation logistics and efficiencies presented the biggest hurdles to interview respondents' interest in and understanding of barge transport's relevance to their business and distribution models. Many farmers see barge transport as unnecessarily complicated in an industry that is already logistically complex.

Producers, who very often serve as aggregators and distributors as well, assumed during interviews that that the model would require them to maintain ownership of the product until it arrived in NYC and a high degree of responsibility for logistics. On interview respondent asked, "Once I'm on the truck, why not just drive to where the product needs to go?" Another asked, "What does it look like to get on a barge? Who does that?"

Interview respondents want to understand how product would be aggregated and how the barge operator would tap into effective formal and informal aggregation networks. A number of survey and interview respondents described aggregation systems that are not based in formally

established packing houses or aggregation businesses. For example the members of a NY producer cooperative described a system of rotating aggregation sites on different coop members' farms.

Interview respondents imagine that barge transport adds a leg to existing truck travel, as the product needs to travel by truck to the port and then again to the customer in NYC. Producers and food business owners expressed concerns about the difficult logistics and inefficiencies of multiple loadings and unloadings of product. They repeated that "too many hands on the product" could have deeply negative implications for time, cost, and food safety.

Interview respondents were wary of backhaul, which is notoriously difficult from NYC. Respondents would be concerned if a barge company or entity counted on backhaul to make the barge transport operation financially viable.

Interview respondents also asked about straightforward but important details regarding returning trailers and washing containers. One respondent noted that packing sheds deal in individual product varieties. In order to assemble a trailer a driver must go to more than one shed, usually between three and five. The number of trips would only multiply to fill a barge.

One interviewee suggested that RailEx trucks, which are not always full leaving Rotterdam NY, could truck product to a port. However, interview respondents had difficulty seeing beyond these inefficiencies to the potential of comparable costs. The model would require significant cost savings to spur a shift in the culture of trucking.

Food safety

Maintaining a safe product with a longer travel time and more product loading and unloading is a very clear concern. Interviewees see more time in transit and more handling as opportunities for error. An apple packer noted that they pack loads of apples with a temperature control stamp to show that the load has not been tampered with. The packer asked how this preventative technology would work if the product was repacked and reloaded onto a barge.

Reaching the customer

Questions about reaching the customer present another perspective on logistics and the role of a controlling entity. Farmers and other food producers want to know who would control the last leg of logistics, and who would ensure that products get from the NYC port to NYC customers. Finally, interviewees want to know who would identify new NYC customers, close the sales, and manage the relationships.

Where the barge lands is not particularly important to producers, who do not have a preference for a specific arrival location in NYC. What is important is ensuring that the product gets to the end consumer. Many research participants would prefer that the barge operator or a broker took on the responsibility of this final delivery.

While farmers do not have a strong preference for NYC port locations, it is clear from our research that the Hunts Point Produce Market is fairly undesirable, and that producers often conflate the produce market with the Hunts Point peninsula and food distribution zone, where there are other potential aggregation, distribution, and sales locations outside of the market.

Scale-inappropriate

Both small and large growers have difficulty understanding how barge transport will suit their scale of production and distribution, and the scale of production and distribution overall in the state and

the region. For example, producers and aggregators across scales noted that small farmers and even those selling by the pallet could not make this model work, and that it would only be viable for larger-scale growers already selling by the tractor trailer load. We also heard that barge transport would only be viable with new customers and a price premium of at least 20 percent, which indicates direct retail sales and small-scale production and distribution.

Environmental benefits and opportunities for education

Interview and survey respondents see the importance of the environmental benefits and educational opportunities that barge transport offers, and half of the nineteen surveyed producers said that demonstration of environmental benefits would increase their interest in shipping by barge. However, not all producers believe that their buyers are interested in environmental benefits. Even those who thought environmental benefits and education would be compelling did not think that buyers would be willing to pay the premium required to support the barge transport model and additional costs for education.

Designing a model that will appeal to NY farmers and food businesses

While it is clear that farmers and food business have shown skepticism regarding barge transport, key themes emerged about the type of model that could attract and maintain their interest and consideration. The role of a broker is crucial to build trust among farmers, aggregate product, create efficiencies, develop new markets, manage new customer relationships, and reduce the complexity of multiple loadings and unloadings from farm to NYC customer.

In order to take steps toward a Hudson Valley foodway corridor model that will strengthen the waterborne component of supply chains that connect mid-scale producers with NYC wholesale customers, we recommend a large role for trusted brokers in nurturing relationships with mid-scale growers, defining the NYC marketplace, managing relationships, and owning the product throughout its Hudson River journey.

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Appendix A

County Level Agriculture Overview and Inventory – *attached*

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Appendix B

New York State Agricultural Production Maps

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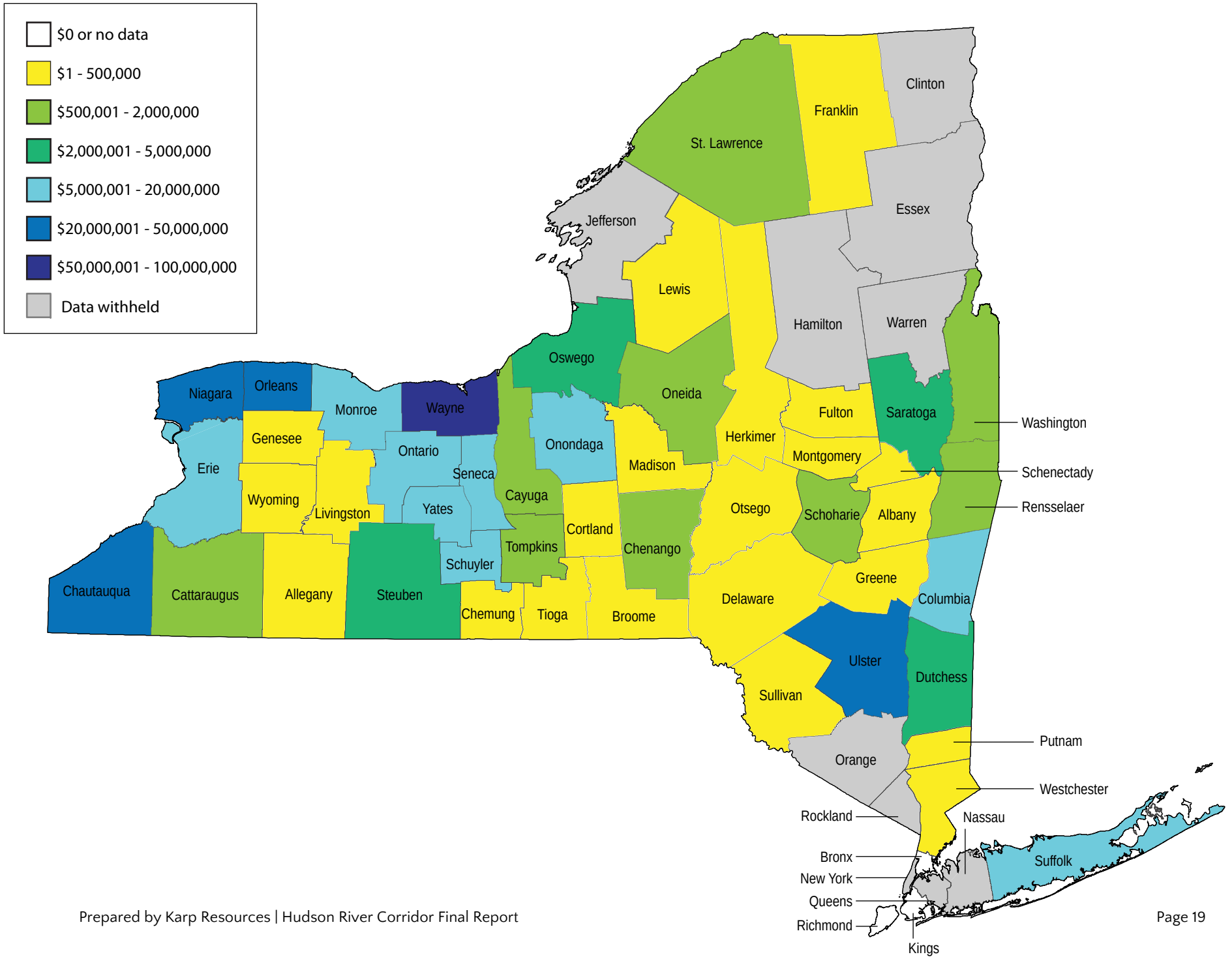
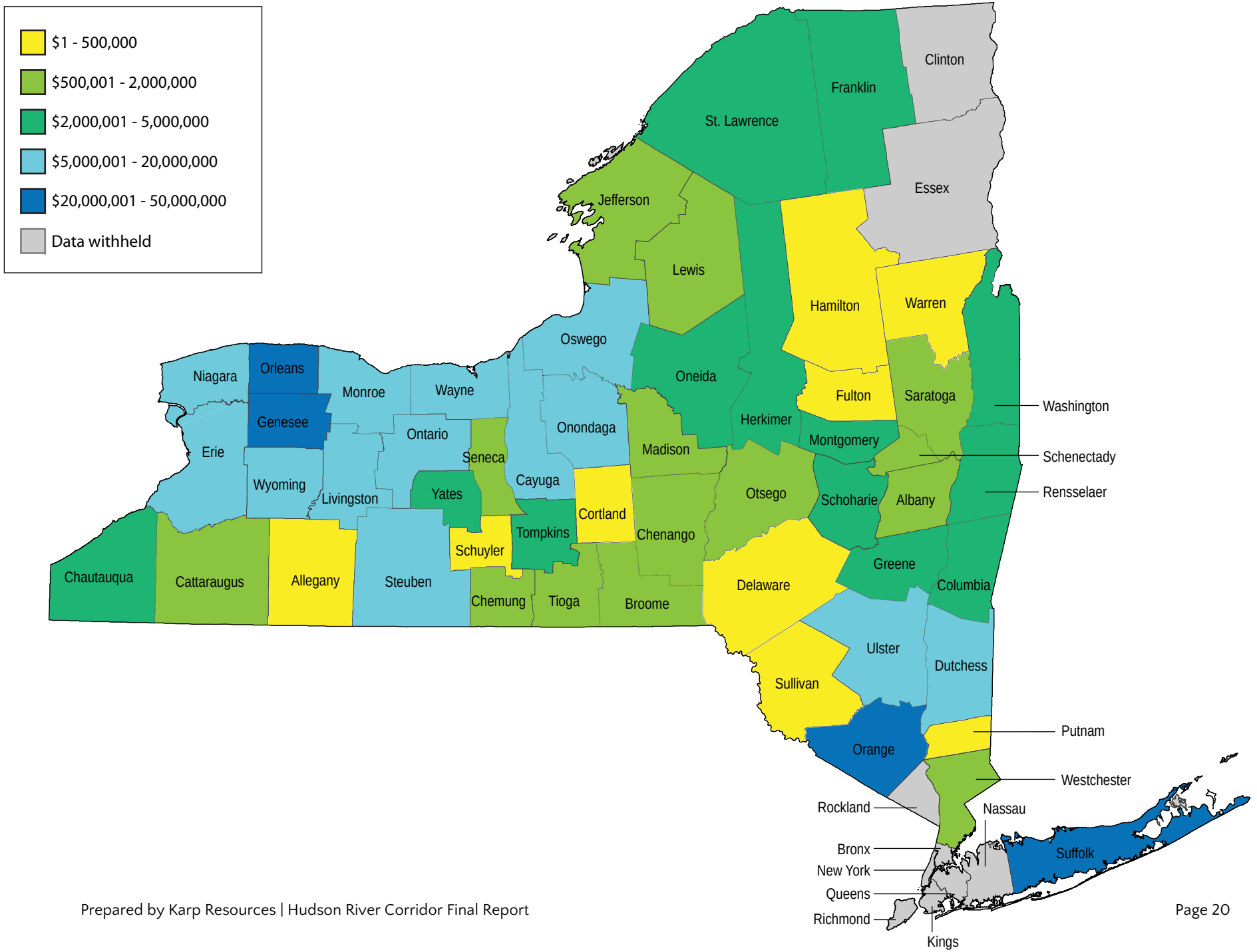
2007 Fruit and Tree Nut Sales



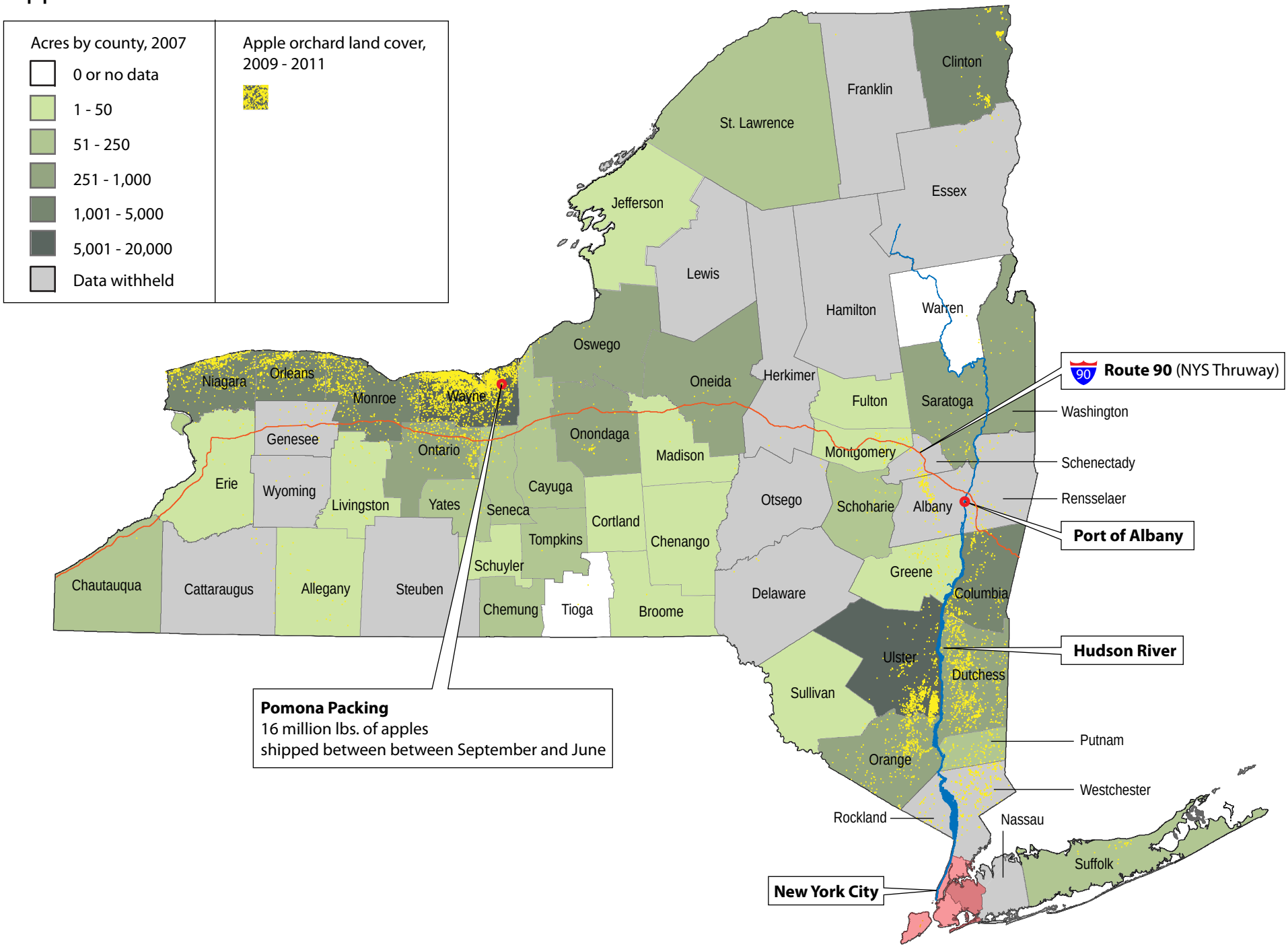
Source: USDA National Agricultural Statistics Service

2007 Vegetable Sales (Incl. Seeds & Transplants, in the Open)



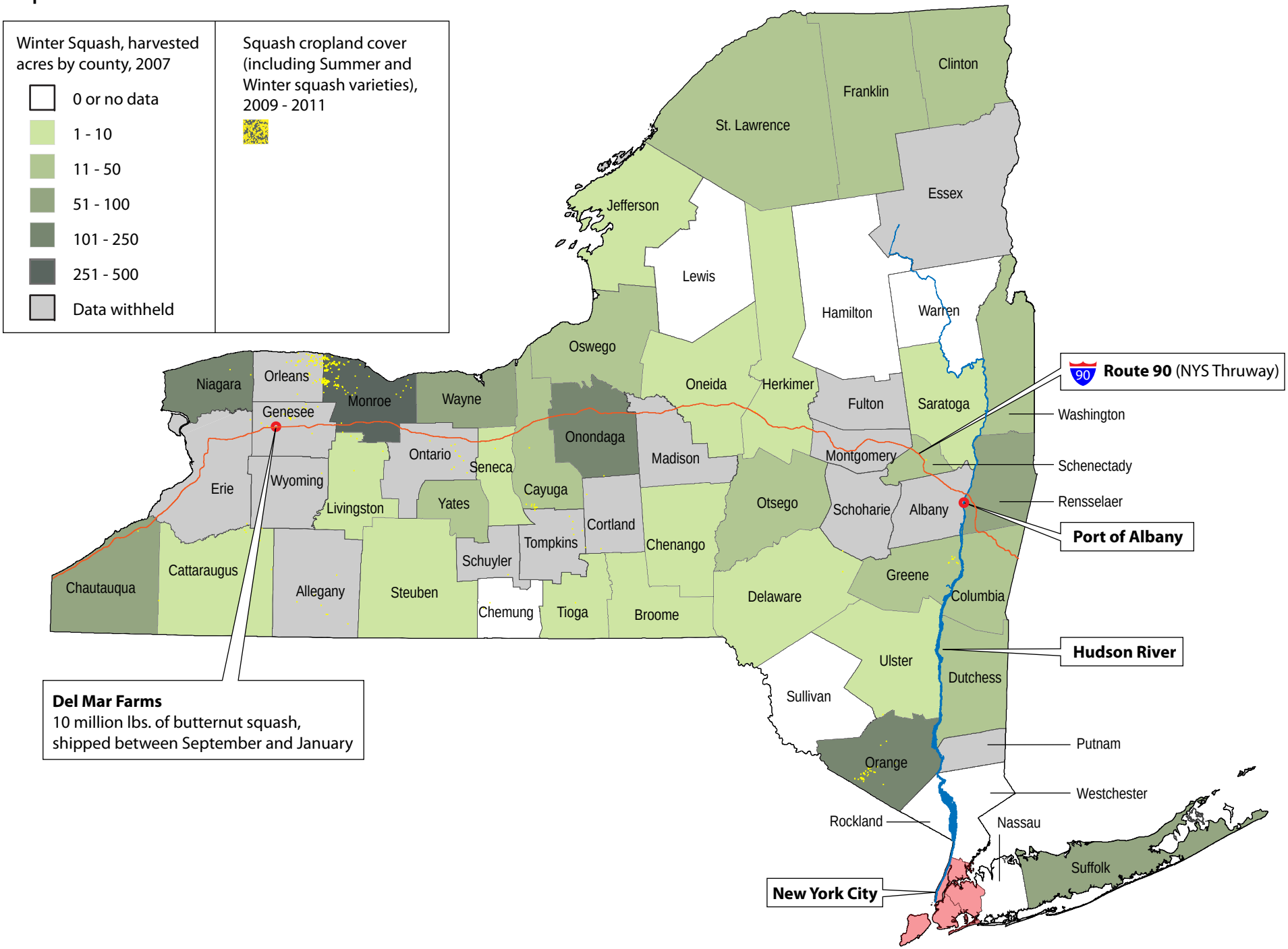
Source: USDA National Agricultural Statistics Service

Apples in New York State



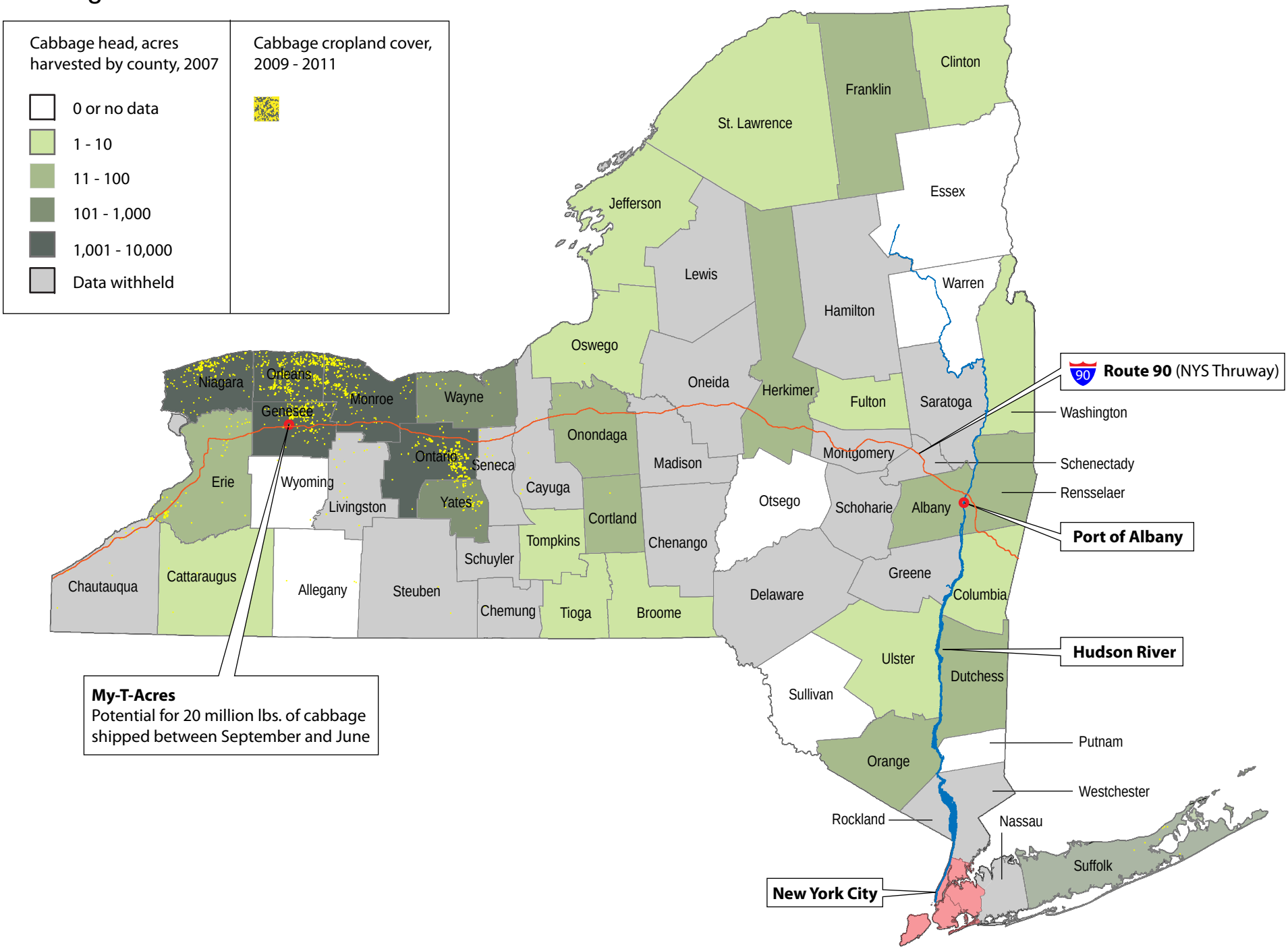
Sources: USDA National Agricultural Statistics Service: Census of Agriculture (acreage) and Cropland Data Layer (land cover); Farm Fresh First, LLC

Squash in New York State



Sources: USDA National Agricultural Statistics Service: Census of Agriculture (acreage) and Cropland Data Layer (land cover); Farm Fresh First, LLC

Cabbage in New York State



Sources: USDA National Agricultural Statistics Service: Census of Agriculture (acreage) and Cropland Data Layer (land cover); Farm Fresh First, LLC

Appendix C

Interview List

First Round

- Maire Ulrich, Cornell Cooperative Extension Orange County
- Marty Broccoli, Cornell Cooperative Extension Oneida County/ Upstate Growers and Packers Cooperative
- Jason Grizzanti, Warwick Valley Winery & Distillery/Doc's Draft
- Frank Dagele, Orange County producer
- Richard Ball, Schoharie Valley Farms
- Kaari Stannard, NY Apple Sales
- Tom Facer, Farm Fresh First
- Matthew Scott, The Pampered Cow
- Jim Hyland, Farm to Table Co-Packers

Second Round

- Tony Emmi, Emmi & Son, Onondaga County producer
- Dana Stafford, Regional Access
- Eric Carlson, President, Empire State Forest Products Association
- Steven Starowitz, Genesee County producer
- Jim Vincent, Central and Western NY producer
- Eric Hansen, Ontario County producer

Appendix D

In-depth Interview Guide

- What's your immediate reaction to the barge transport concept?
    - What questions does it raise for you?
    - What challenges do you foresee?
    - What benefits?
- Do you *(or farmers you represent)* currently access the NYC marketplace?
    - If so, how? Which NYC outlets?
    - Satisfaction with the process of accessing the NYC marketplace?
        - What works?
        - What doesn't?
        - Do you truck product into NYC now? Where in NYC? Challenges and benefits (logistics, etc) to specific drop off point?
        - Would you prefer to drive to a port and drop product there?
            - What conditions/factors would make this desirable?
    - Interest in accessing NYC in new ways? Interest in accessing new NYC customers?
- What is the added value of shipping by barge? Or trucking to ports?
- The barge model would depend strongly on effective aggregation points to serve farmers of all scales effectively.
    - What aggregation points are you already using or aware of that would serve this concept?
    - What are the key aggregating entities in the Hudson Valley? Beyond?
    - What do you see as natural aggregation locations?
- Which agricultural products would work best for this transport model? Why?
- Which products would not work? Why?
- What kind of farmers would use this model?
    - Scale, products, kinds of markets selling to now, volume of average sales now (by the case? Pallet? Trailer-load?)
- How would producers utilize this network?
    - How often?
    - In what quantities?
    - With expectations of what kinds of services and what kinds of sales?

- Are you, farmers you represent, or other producers seeking new ways to move products into NYC? If so – what ways (backhauling, new aggregation relationships, for example) are proving more and less successful?
- Would your current buyers consider "greener" transport an added value?
    - Would it have an added value to buyers you don't currently sell to but might like to sell to?
- Do you see a value of this for educational purposes?
- Though the focus is wholesale, opportunity to include specialized retail activity, such as periodic retail farmers markets on piers and NYC waterfront locations.
    - Would you be interested in participating in retail trade by barge?
        - Under what circumstances/conditions?
    - Would retail options add value to the barge concept as a wholesale transport option?
- What do you pay, on average, to transport a pallet now?
- Would you be interested in transporting product to NYC by barge? (Why, why not?)

Appendix E

Hudson River Corridor Survey

The Lower Hudson-Long Island Resource Conservation & Development Council and NYSERDA have funded a project to assess the feasibility of reinvigorating the Hudson River as a food transit corridor, transporting agricultural products from upstate NY to NYC by barge along the Hudson. Thank you in advance for your participation. The survey will take 10 to 15 minutes to complete.

General Producer Information

1. Where is your farm located?
    - Street address or nearest intersection: _____
    - Town: _____
    - Zip code: _____

2. How many acres were in production on your farm (or land you lease/rent) during the 2011 growing season?

    _____

3. Which products did you produce in 2011? (Check all that apply)
    - Storage crops like garlic, onions, root vegetables, potatoes, cabbage, hard squash, etc.
    - Other vegetables
    - Apples or pears
    - Other tree fruits (not including apples or pears) and/or berries
    - Fresh cut fruits and vegetables
    - Frozen fruits and vegetables
    - Shelf-stable jarred/canned products (e.g. jams, vinegars, salsas)
    - Jarred/canned products that are NOT shelf stable
    - Grains, including processed grains (e.g. flour) and/or dried beans or legumes
    - Eggs
    - Fluid milk
    - Value-added dairy (yogurt, cheese, etc.)
    - Poultry
    - Beef, pork, lamb, and/or goat
    - Fiber
    - Timber
    - Christmas trees
    - Finished wood products
    - Wine, beer, spirits, and/or hard cider
    - Honey and/or maple syrup
    - Other: _____

4. Which product, from list above, represented the **largest percentage of your production by volume** in 2011? Please name crop and estimate your average annual production, in pounds.

_____

5. Which product, from the list above, represented the **2nd largest percentage of your production by volume** in 2011? Please name crop and estimate your average annual production, in pounds.

_____

6. From the list of products above, what was your **3rd largest product by volume** in 2011? Please name crop and estimate your average annual production, in pounds.

_____

7. How do you sell your farm products? (Check all that apply)
   - o On-farm through a farm-stand, mail order, etc.
   - o Farmers' markets
   - o CSA (Community Supported Agriculture)
   - o Direct wholesale to restaurants, grocers, schools, manufacturers, processors, local vendors, etc.
   - o Auction
   - o Broker
   - o Distributors
   - o Terminal market or wholesale market
   - o Other: _____

8. Which sales channel currently represents the highest percentage of your sales? (Select only one)
   - o On-farm through a farm-stand, mail order, etc.
   - o Farmers' markets
   - o CSA (Community Supported Agriculture)
   - o Direct wholesale to restaurants, grocers, schools, manufacturers, processors, local vendors, etc.
   - o Auction
   - o Broker
   - o Distributors
   - o Terminal market or wholesale market
   - o Other: _____

9. What percentage of your 2011 gross sales was generated through the top marketing channel identified in question 8? *(Note: If 2011 was not an average year for your farm, due to Hurricane Irene or for other reasons, please base your answer on an average recent year.)*

_____

10. For the majority of your wholesale sales, do you sell by the case, the pallet, or the trailer-load?
    - Case
    - Pallet
    - Trailer-load

11. If you have changed your focus away from any markets or toward any markets in the past 3 years, briefly explain how and why you have shifted your business in that particular direction.

_____

_____

12. Do you currently have any of the following food safety or sustainability certifications? (Check all that apply)
    - Good Agricultural Practices (GAP)
    - Hazard Analysis & Critical Control Points (HACCP)
    - USDA Organic
    - Certified Humane
    - Other animal treatment certification (please describe below)
    - Food Alliance Certified
    - Other sustainability certification (please describe below)
    - Other: _____

_____

_____

_____

13. Do you plan to pursue any of the following food safety or sustainability certifications in the next five years? (Check all that apply)
    - Good Agricultural Practices (GAP)
    - Hazard Analysis & Critical Control Points (HACCP)
    - USDA Organic
    - Certified Humane
    - Other animal treatment certification (please describe below)
    - Food Alliance Certified
    - Other sustainability certification (please describe below)
    - Other: _____

_____

_____

_____

14. Please indicate your farm's average annual gross sales. *(Note: If 2011 was not an average year for your farm, due to Hurricane Irene or for other reasons, please base your answer on an average recent year.)*
    - Less than $1,000
    - $1,000-$2,499
    - $2,500 to $4,999
    - $5,000 to $9,999
    - $10,000 to $24,999
    - $25,000 to $49,999
    - $50,000 to $99,999
    - $100,000 to $249,999
    - $250,000 to $499,999
    - $500,000 to $999,999
    - $1,000,000 to $2,499,999
    - $2,500,000 to $4,999,999
    - $5,000,000 or more
    - I do not wish to share this information
    - Comment

NYC Marketplace Information

15. Do you currently sell any product in New York City?
    - Yes
    - No (if no, please skip directly to **question 25**)

16. How is your product currently transported to NYC? (Check all that apply)
    - Wholesale buyers pick up the product from my farm
    - I make deliveries to buyers in my own vehicle
    - I use my own vehicle to deliver product to an aggregation point outside of NYC
    - Wholesale buyers pick up product from me at a farmers' market
    - I deliver product to retail customers at NYC farmers markets or CSA
    - I ship my products with third party carriers
    - Other (please describe): _____

17. The US Department of Transportation's new Hours-of-Service (HOS) regulations limit truckers to no more than 11 consecutive hours of driving time or 14 consecutive hours on-duty. Will these regulations change your ability to affordably truck product from your farm to NYC?
    - Yes
    - No
    - Not Applicable

18. Do you currently sell in wholesale quantities in NYC?
    - Yes
    - No (if no, please skip directly to **question 25**)

19. Which products do you sell wholesale in NYC? (Check all that apply)
    - Storage crops like garlic, onions, root vegetables, potatoes, cabbage, hard squash, etc.
    - Other vegetables
    - Apples or pears

- Other tree fruits (not including apples or pears) and/or berries
- Fresh cut fruits and vegetables
- Frozen fruits and vegetables
- Shelf-stable jarred/canned products (e.g. jams, vinegars, salsas)
- Jarred/canned products that are NOT shelf stable
- Grains, including processed grains (e.g. flour) and/or dried beans or legumes
- Eggs
- Fluid milk
- Value-added dairy (yogurt, cheese, etc.)
- Poultry
- Beef, pork, lamb, and/or goat
- Fiber
- Timber
- Christmas trees
- Finished wood products
- Wine, beer, spirits, and/or hard cider
- Honey and/or maple syrup
- Other: _____

20. Describe your wholesale buyers in NYC. (Check all that apply)
    - Brokers
    - Distributors
    - Processors and manufacturers
    - Hunts Point Terminal Market
    - Direct wholesale to restaurants or caterers
    - Direct wholesale to retailers
    - Direct wholesale to institutions (schools, hospitals, senior centers, etc.)
    - Other: _____

21. How much product do you sell annually to wholesale buyers in NYC? (Please answer in cases, pallets, or trailer loads per month and number of months per year)

    _____

22. On a scale of 1 to 5, how would you rate your satisfaction with your current wholesale business relationships in New York City? (1 = very satisfied; 2 = somewhat satisfied; 3 = neutral; 4 = somewhat dissatisfied; and 5 = very dissatisfied. Rank all that apply.)
    - ____ Brokers
    - ____ Distributors
    - ____ Processors and manufacturers
    - ____ Hunts Point Terminal Market
    - ____ Direct wholesale to restaurants or caterers
    - ____ Direct wholesale to retailers
    - ____ Direct wholesale to institutions (schools, hospitals, senior centers, etc.)

23. Are you interested in increasing wholesale sales to New York City?
    - Yes
    - No

24. On a scale of 1 to 5, how would you rate your satisfaction with your current wholesale business relationships **outside of NYC**? (1 = very satisfied, 2 = somewhat satisfied, 3 = neutral, 4 = somewhat dissatisfied, and 5 = very dissatisfied. Rank all that apply.)
    - ____ Brokers
    - ____ Distributors
    - ____ Processors and manufacturers
    - ____ Direct wholesale to restaurants or caterers
    - ____ Direct wholesale to retailers
    - ____ Direct wholesale to institutions (schools, hospitals, senior centers, etc.)

25. If you do not currently sell wholesale in NYC, why not? (Check all that apply.)
    - o I am content with my current markets
    - o NYC prices are unsatisfactory
    - o I have had negative experiences selling to NYC buyers
    - o I have not been able to find buyers in NYC
    - o I do not have the land needed to meet NYC buyers' demand
    - o I do not have the labor needed to meet NYC buyers' demand
    - o I do not want to grow/harvest the products or volumes demanded by NYC buyers
    - o The logistics seem too complicated
    - o Shipping or distribution constraints.
    - o I have not found a desirable market place.
    - o Not applicable
    - o Other/Comment

26. Are you interested in accessing the NYC wholesale marketplace?
    - o Yes
    - o No (if no, please skip directly to the **Albany-to-NYC Barge Service** section on page 8)

27. Please check the **top 3** crops you would be interested in selling wholesale in NYC.
    - o Storage crops like garlic, onions, root vegetables, potatoes, cabbage, hard squash, etc.
    - o Other vegetables
    - o Apples or pears
    - o Other tree fruits (not including apples or pears) and/or berries
    - o Fresh cut fruits and vegetables
    - o Frozen fruits and vegetables
    - o Shelf-stable jarred/canned products (e.g. jams, vinegars, salsas)
    - o Jarred/canned products that are NOT shelf stable
    - o Grains, including processed grains (e.g. flour) and/or dried beans or legumes
    - o Eggs
    - o Fluid milk
    - o Value-added dairy (yogurt, cheese, etc.)
    - o Poultry
    - o Beef, pork, lamb, and/or goat
    - o Fiber
    - o Timber
    - o Christmas trees
    - o Finished wood products
    - o Wine, beer, spirits, and/or hard cider

- Honey and/or maple syrup
- Other: _____

Albany-to-NYC Barge Service

For the next section of this survey, imagine that there is a barge service, dedicated to shipping NY state agricultural products down the Hudson River, from Albany to New York City. The barge would carry about 8 tractor-trailer loads of product at a time and would take approximately 17 hours to travel from Albany's port to a port in New York City. Agricultural product would be aggregated either at a facility at the port of Albany or in facilities strategically located around the state, to enable producers of multiple scales (those selling by the pallet, bin, or truck-load) to utilize the barge service. The barge would feature state of the art refrigeration on-board, ensuring food safety and cold chain compliance, and would utilize new shipping technologies that could make it a more environmentally "green" transport option than trucking. Other services—such as sales brokering, supply chain and logistics coordination, and full traceability from farm to buyer— could also be offered.

28. What are the **top three (3)** most critical factors that would determine whether you use a barge to ship product to NYC?
    - Location of the port where product is loaded onto barge
    - Accessibility of the port where product is loaded onto barge
    - Location of aggregation point (where product could be delivered, aggregated and then trucked to the port)
    - Price paid by end buyer
    - Cost of shipping
    - Controlling entity (who takes ownership of product en route)
    - Assurance that the last leg of logistics (barge-to-NYC buyer) is taken care of
    - Brokering/sales services offered by the controlling entity (i.e. does the barge represent new market or sales opportunities?)
    - Extent to which green technologies are utilized
    - Successful marketing of the barge as an historic, romantic and/or environmentally friendly mode of shipping
    - Capacity to ensure food safety
    - Frequency of shipping (# of times per week the barge travels down the river)
    - Other:

      _____

29. How far would you be willing to truck your product to an aggregation point, to reach new markets by barge in NYC? Please answer in miles and in hours.

    _____ miles
    _____ hours

30. Currently, what/who are the key product aggregating entities in the Hudson Valley?

    _____

31. How far would you be willing to travel to a port, to reach new markets by barge in NYC? Please answer in miles and in hours.

    _____ miles
    _____ hours

32. In 2011, on average, what did you pay per pallet to ship product to NYC? _____

33. If the total cost of shipping by barge (from your farm to NYC buyers) were the same as the cost of trucking to NYC, would this increase your interest in shipping by barge?
    - Yes
    - No

34. If you selected no, why not:

    _____

    _____

35. If the barge operator provided a brokering or sales service that generated new NYC markets for barge users, would this increase your interest in shipping product by barge?
    - Yes
    - No

36. If the barge operator took ownership of product when it arrived at the Hudson Valley port and controlled logistics to the NYC end buyer, would this increase your interest in shipping by barge?
    - Yes
    - No

37. Would where the barge lands in NYC impact your decision about whether or not to ship by barge?
    - Yes
    - No

38. In NYC, where would be the optimal landing dock for a barge of regionally produced foods?
    - Hunts Point Terminal Market
    - New Fulton Fish Market (on the Hunts Point peninsula)
    - Elsewhere on the Hunts Point peninsula (giving proximity to the Terminal Market and other buyers)
    - Sunset Park, Brooklyn
    - Brooklyn Navy Yard
    - Other: _____

39. If the barge company could demonstrate that shipping by barge were a more environmentally-friendly mode of food transport, would this increase your interest in shipping by barge?
    - Yes
    - No

40. Would a service that shipped regionally produced agriculture products from Albany to NYC increase your ability to reach the NYC marketplace?
    - Yes
    - No

41. Are you interested in shipping your products by barge from Albany to NYC?

- Yes
- No (**if no, the survey ends here**)

42. What products would you most likely ship by barge to NYC? Please check the **top three** products.
    - Storage crops like garlic, onions, root vegetables, potatoes, cabbage, hard squash, etc.
    - Other vegetables
    - Apples or pears
    - Other tree fruits (not including apples or pears) and/or berries
    - Fresh cut fruits and vegetables
    - Frozen fruits and vegetables
    - Shelf-stable jarred/canned products (e.g. jams, vinegars, salsas)
    - Jarred/canned products that are NOT shelf stable
    - Grains, including processed grains (e.g. flour) and/or dried beans or legumes
    - Eggs
    - Fluid milk
    - Value-added dairy (yogurt, cheese, etc.)
    - Poultry
    - Beef, pork, lamb, and/or goat
    - Fiber
    - Timber
    - Christmas trees
    - Finished wood products
    - Wine, beer, spirits, and/or hard cider
    - Honey and/or maple syrup

43. For the three products you would be most likely to ship to NYC by barge, please estimate the potential volume and frequency of shipment.

    Product #1: _____
    Number of pallets per month: _____
    Number of months per year: _____

    Product #2: _____
    Number of pallets per month: _____
    Number of months per year: _____

    Product #3: _____
    Number of pallets per month: _____
    Number of months per year: _____

44. Please estimate how much your farm's total wholesale sales could increase if you were shipping product to NYC by barge. _____%

Thank you again for your participation in our survey. We value and appreciate your input.

Appendix F

Hudson River Foodway Corridor Producer Survey Responses – ***attached***

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