



GROUND UP

Cultivating Sustainable Agriculture in the Catskill Region

Prepared by the Columbia University Urban Design Research Seminar >> Spring 2010



PROJECT TEAM

Urban Design Program, Graduate School of Architecture, Planning and Preservation, Columbia University >> www.arch.columbia.edu

Nidhi Bhatnagar, Elenora Encheva, Jenny Joe, Brad Kingsley, Henry Martes, Cyntia Navarro, Julia O'Brien, Monica Pinjani, Josh Turner, Manas Vanwari, Sunghwan Yoon, Richard Plunz (Director)

Urban Design Lab, Earth Institute, Columbia University >> www.urbandesignlab.columbia.edu

Kubi Ackerman, Richard Gonzalez, Tong Hao, Richard Plunz (Director), Maria-Paola Sutto, Emily Weidenhof, Xiaomeng Xu

Open Space Institute >> www.osiny.org

Tally Blumberg, Pati Canseco, Jennifer Grossman, Gillian Weber-Mollod, Abigail Weinberg

Catskill Mountain Keeper >> www.catskillmountainkeeper.org

Wes Gillingham (Director)

PUBLICATION EDITORS

Emily Weidenhof, Editor
with Nidhi Bhatnagar

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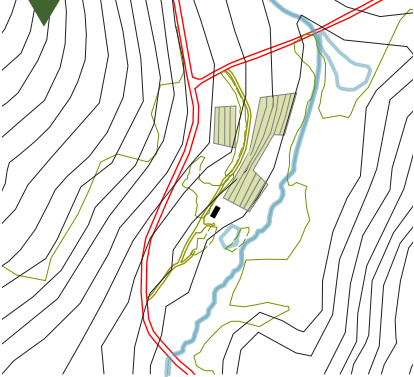


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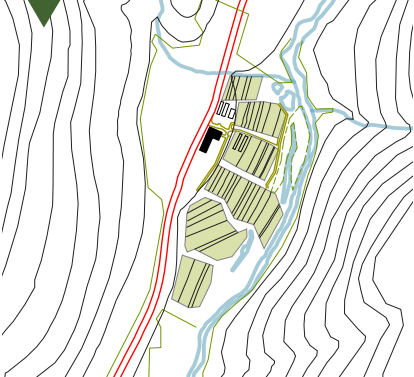
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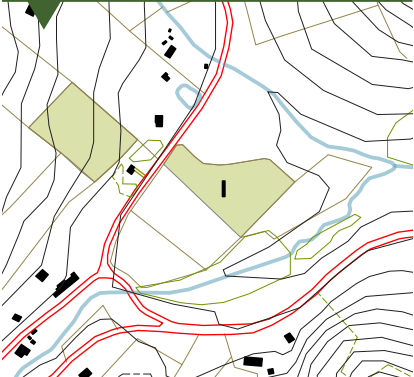
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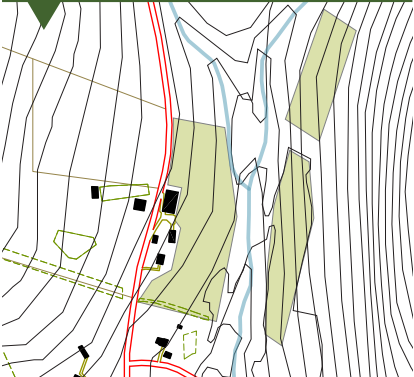
GORZYNSKI FARM
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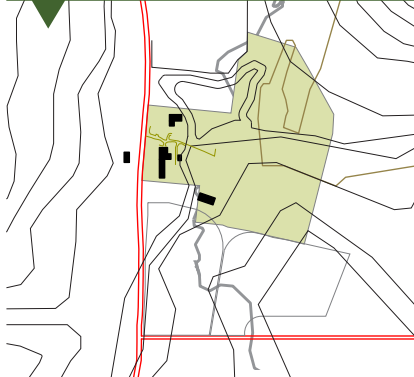
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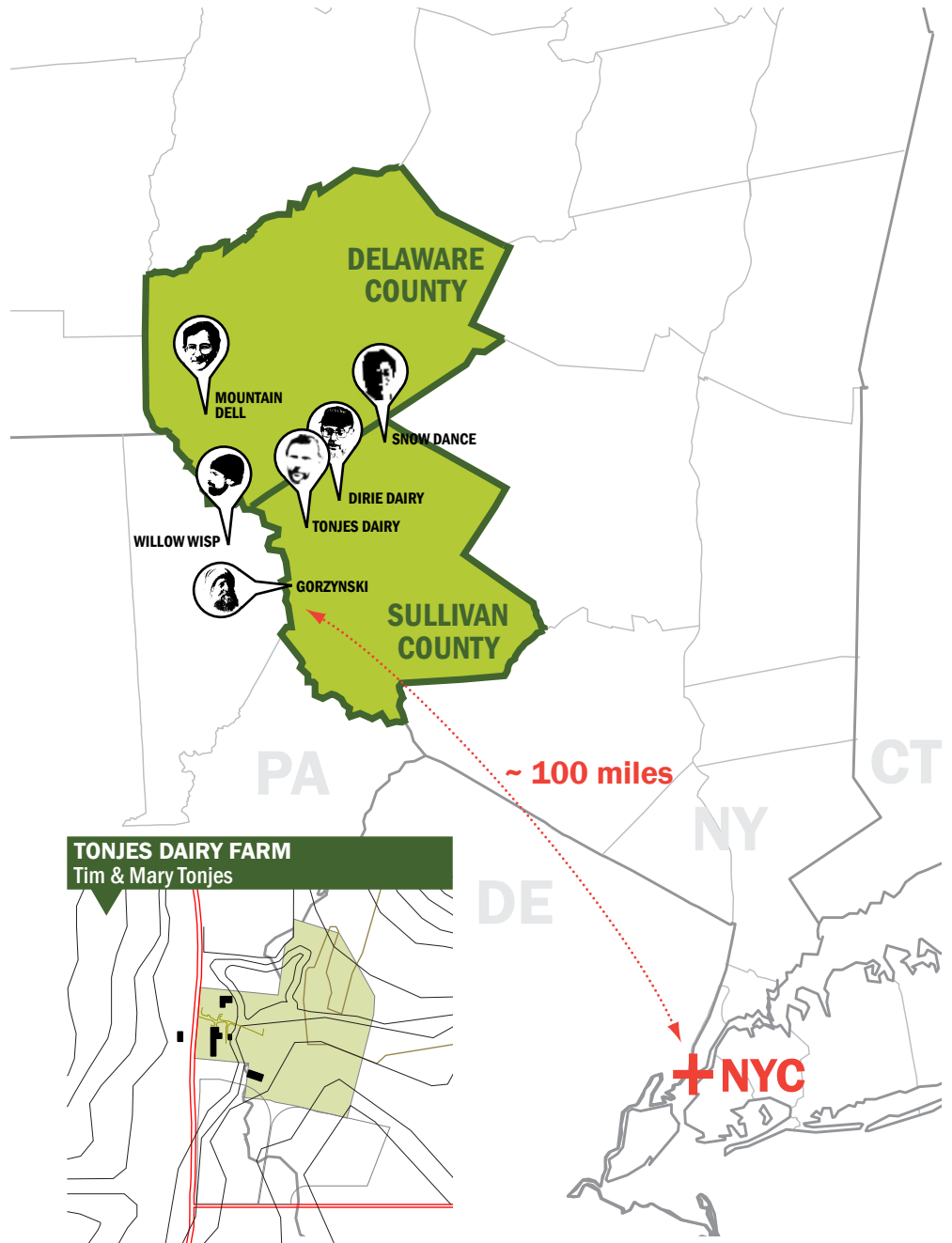
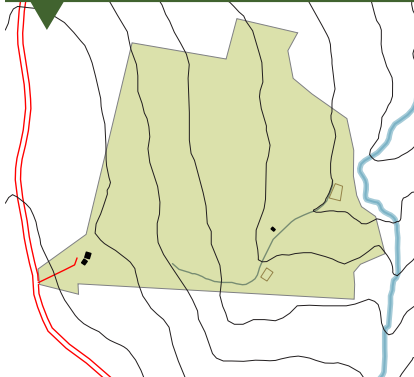
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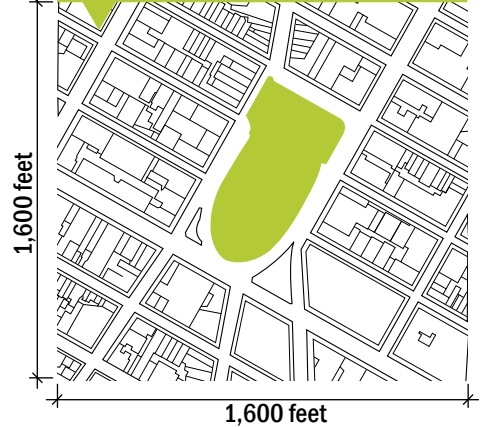
TONJES DAIRY FARM
Tim & Mary Tonjes



SNOW DANCE FARM
Marc Jaffe



NEW YORK CITY
Union Square



“The glory of the farmer is that, in the division of labors, it is his part to create ...
... But as I said, we must not paint the farmer in rose-color.”

Ralph Waldo Emerson, “Farming,” (1858)

BEYOND “ROSE-COLOR”

This publication is fourth in a series produced by a post-graduate-level seminar within the Urban Design Program at Columbia University. Each has been focused on environmental issues facing the Upper Delaware River region¹: the development potential of the Route 97 highway corridor (spring 2002)²; the impacts of the proposed New York Regional Interconnection power transmission line (spring 2007)³; the impacts of residential subdivision within the watershed (spring 2008); and the impact of Marcellus Shale gas extraction (spring 2009)⁴. The connection between this year’s study and last year’s is particularly timely, given the growing impetus to industrialize the agrarian landscape through gas extraction. Involved is the question of food versus fuel, and short-term profit versus long-term economic development.

Emerson had it right. Farming is a “creative act.” But even in 1858 the romance of farming had its down side and more so today. Heeding Emerson’s advice, this publication is not a study in “rose-color.” In recent decades, the agricultural statistics have not been on the farmer’s side. For example, the

decline in agricultural production in Sullivan County has been drastic. In 1920 the U.S. Department of Agriculture recorded 3,543 farms with 414,841 combined acreage. In 2003, only 235 farms remained, with 63,500 combined acreage.⁵ Recently, however, there are signs that this downward trend may have bottomed out. One 2008 estimate indicates an increase of 149 farms, to 384 total, since 2003.⁶ We are interested in the trajectory of this renewed activity.

On the following pages are chronicles of six farms that are doing things differently. In recent years one of the most important changes in farming has been the renewal of regional agricultural markets, and especially the rapidly expanding urban appetite for fresh local produce. The growth of the New York City Greenmarket Program, the largest in the country, is an impressive indicator of this trend.⁷ Farmers are innovating outreach to new markets. Concurrent has been innovation in local farming techniques. The intention of this study is to provide a public affirmation of these potentials through conversations within the farming community.

In surveys, local residents routinely value the rural landscape and agrarian lifestyle,⁸ yet there appears to be mixed political support for landscape preservation options. To date there has been no participation in the New York State Farmland Protection Program in either Sullivan or Delaware counties. By contrast, Orange County has enrolled 3,151 acres.⁹ The Town of Warwick in Orange County has pioneered agricultural protection zoning, which is an alternative way of securing preservation.¹⁰ It is important to counter the common perception that somehow community economic growth must prioritize consumptive land “development” and accompanying service sector jobs. On this question the economic evidence has not been conclusive.¹¹ And local economic alternatives are evolving. For farmers and their communities, the long-term rewards of initiating farm businesses begin to look attractive. Innovation and an initial leap of faith are required. It is especially the “leap” that herein gains our gratitude and respect.

Richard Plunz, Columbia University

1. K.J. Hutzler, K. Saul, eds., *Case Studies in Regional Environmental Design: Upper Delaware River Corridor*. Columbia University Urban Design Research Seminar, 2002.
2. *A River Endangered. Proposed Power Transmission and Its Impact on Cultural History along the Upper Delaware River*. Columbia University Urban Design Research Seminar, Spring 2007.
3. *A Citizen’s Guide to Residential Development. Western Sullivan and the Upper Delaware River Basin*. Columbia University Urban Design Research Seminar, Spring 2008.
4. E. Weidenhof, editor with V. Ngo and R. Gonzalez, *Hancock & The Marcellus Shale: Visioning the Impacts of Natural Gas Extraction along the Upper Delaware*. Columbia University Urban Design Research Seminar, Spring 2009.
5. <http://www.agcensus.usda.gov> (accessed August 2010).
6. “Sullivan County Agricultural Facts and Figures 2008,” Cornell Cooperative Extension of Sullivan County.
7. Jane McGroarty, “Green Market,” *New Village Journal* 2 (2000), www.newvillage.net/Journal/Issue2/2greenmarket.html. There are currently 50 Greenmarket locations in New York City. <http://www.cenyc.org/greenmarket/marketfacts> (accessed August 2010).
8. For example, surveys indicate that the agrarian landscape is fundamental to sustaining the second home economy. See: “2008 Second Home Owner Study” conducted by the Sullivan County Division of Planning and Community Development. <http://co.sullivan.ny.us/?TabId=3259> (accessed August 2010).
9. “New York State Farmland Protection Program Funding History,” American Farmland Trust (2009). Sullivan County has developed a planning strategy for agricultural redevelopment. See: <http://www.co.sullivan.ny.us/.../Sullivan2020/AgriculturalDiversificationGoals.pdf> (accessed August 2010). Orange County Acreage from D. Church, Commissioner of Planning.
10. J. Russell, “Agricultural Protection Zoning: How Well Has It Worked?” *Planning News*, New York Planning Federation, Spring 2010, Summer 2010.
11. Compared with residential subdivision, the agricultural land use represents a far higher return to local governments on the tax dollar. See: “A Cost of Community Services Study for Sullivan County,” Sullivan County Division of Planning and Community Development. <http://co.sullivan.ny.us/Departments/PlanningandEnvironmentalManagement/MunicipalResources/> (accessed August 2010).

BIG PICTURE

“The average food item in America now travels at least [1,490 miles] from farm to plate.”¹

THE GLOBAL EDIBLE ISSUE

The mass quantities of food imported between countries have nearly quadrupled over the past four decades alone as the world’s total population has doubled.² This dependence on long-distance food is affecting rural economies, as small farms and small food businesses become the most expendable links in an ever-growing food chain. The globalization of our food system also has a heavy reliance on artificial methods: storage using chemicals and preservatives, and packaging to keep food “fresh” during travel. Food from the average supermarket can travel more than 1,500 miles. By contrast, locally sourced food travels an average of just 44.6 miles.³

Today, there is a growing awareness of the importance of eating healthful and fresh food. However, today’s food network is sensitive to disruptions by climate change and rising fuel prices. It is important to be innovative and create local food systems that can provide fresh and nutritious food choices.

WHAT IS LOCAL FOOD? WHY LOCAL FOOD?

The definition of local food can vary; local food is food that is grown within a “reasonable” distance from where it is consumed. What local food consumers have in common is a commitment to purchase food that ensures environmental, social, and economic stability.⁴ In New York State, local food travels less than 200 miles.⁵

FARMS IN THE UNITED STATES

According to a July 2009 U.S. Census Bureau report, the total population in the United States was 307,006,550. Of that population, fewer than one percent claimed farming as an occupation (and about two percent actually lived on farms). Only about 960,000 persons claimed farming as their principal occupation, and a similar number of farmers claimed some other principal occupation.

John & Sue Gorzynski’s Farm



“1% of the population is responsible for feeding 100% of the population in the United States.”⁶

Today there are 2.1 million farms in the United States, a drastic drop from 6.8 million in 1935. As the number of farms has decreased, the average age of farmers has continued to rise. Forty percent of the farmers in this country are 55 years old or older.⁷ The thinning farm population has led to concerns about the long-term sustainability of family farms in the United States.

However, the demand for local food continues to increase. As food travels longer distances, increased packaging, storage, transportation and distribution costs have decreased the farmer’s profit margin. About 20 percent of each dollar spent on food purchased in a supermarket goes to the farmer. That amount could increase up to 80 percent if food were distributed locally and sold via direct sales.⁸ Thus, farmers markets provide a competitive edge for New York State farmers.

ECONOMIC STRENGTH AND CONTRIBUTION

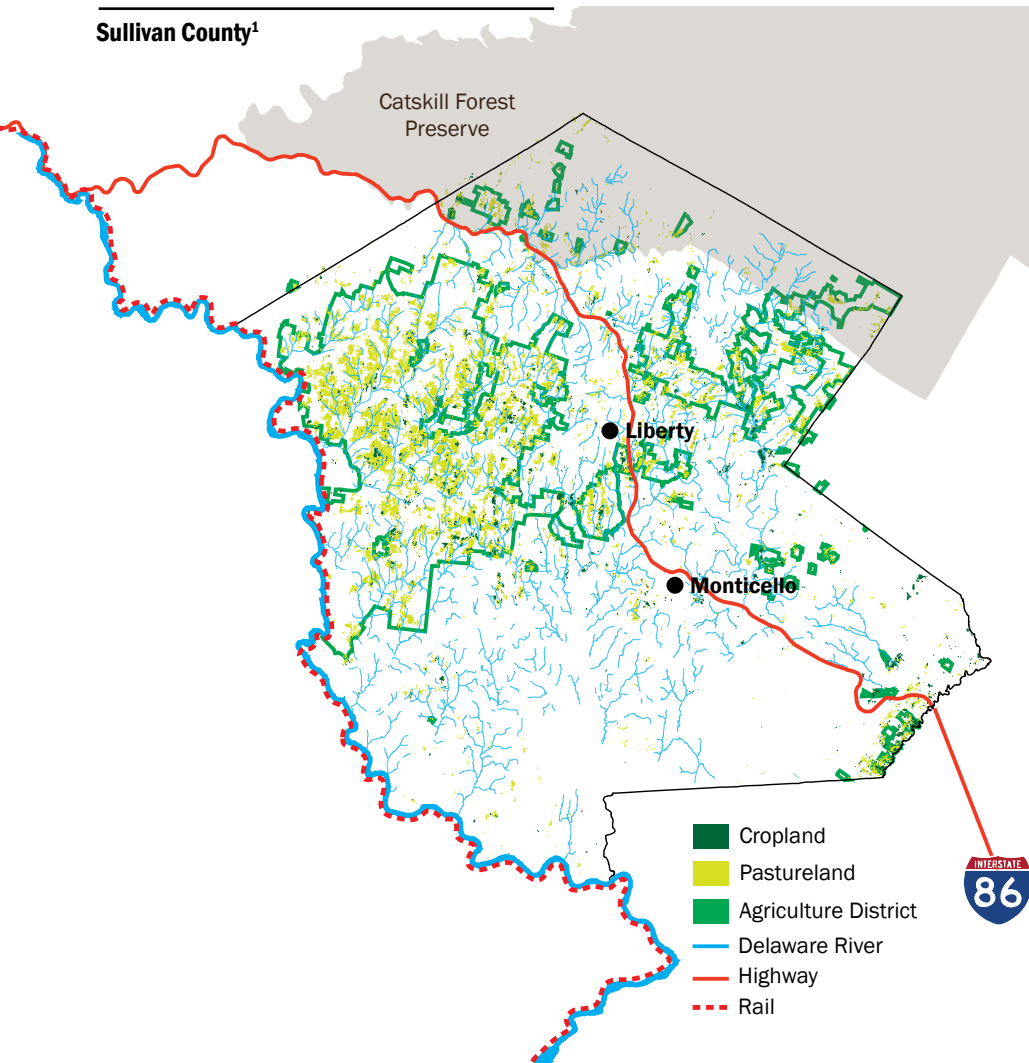
Local and regional food systems contribute to ensuring the economic, environmental, and social sustainability of local farms and the communities they serve. Buying local keeps dollars within the community. It also brings farmers and consumers closer together, increasing consumers’ knowledge of seasonal produce and the nutritional advantages of eating locally grown food. Programs such as urban agriculture, community gardens, farmers markets and farm to school initiatives also work to enhance this critical connection while encouraging potential farmers to learn about the basics of farming and agriculture.

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1. B. Halweil, “Healthy Food, Healthy Communities,” Worldwatch Institute, 2004, <http://www.worldwatch.org/node/4132> (accessed September 2010).
 - 2., 3. C. Lazaroff, “Food Travels Far to Reach Your Plate,” 2002, <http://www.ens-newswire.com/ens/nov2002/2002-11-21-06.asp> (accessed September 2010).
 4. S. Dewerrdt, “Is local Food Better?” The Worldwatch Institute, 2009, <http://www.worldwatch.org/node/6064> (accessed September 2010).
 5. W.P. Heddenn, How Great Cities Are Fed, D.C. Heath and Company, New York, 1929, p. 1. (as cited in S. Stringer, “Food In the Public Interest,” February 2009.)
 6. “Ag 101: Demographics,” U.S. Environmental Protection Agency, <http://www.epa.gov/agriculture/ag101/demographics.html> (accessed September 2010).
 7. U.S. Bureau of Labor Statistics.
 8. USDA Economic Research Service.



SULLIVAN COUNTY

Sullivan County¹



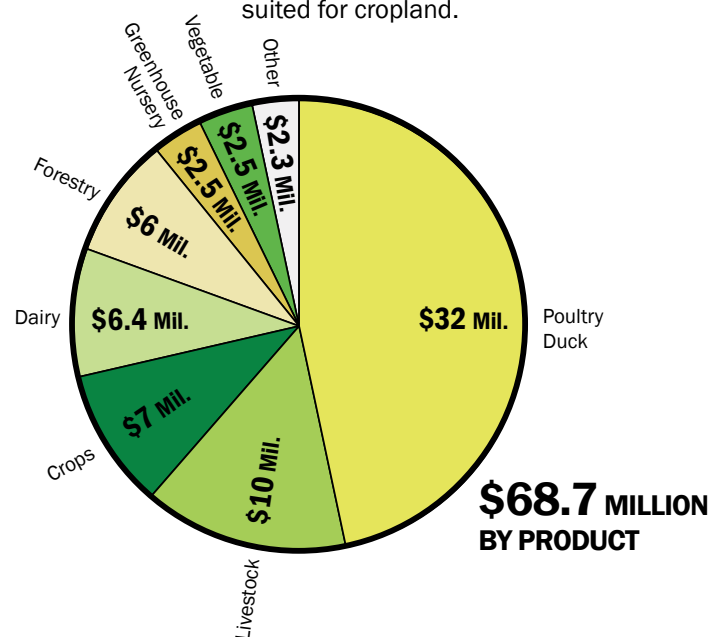
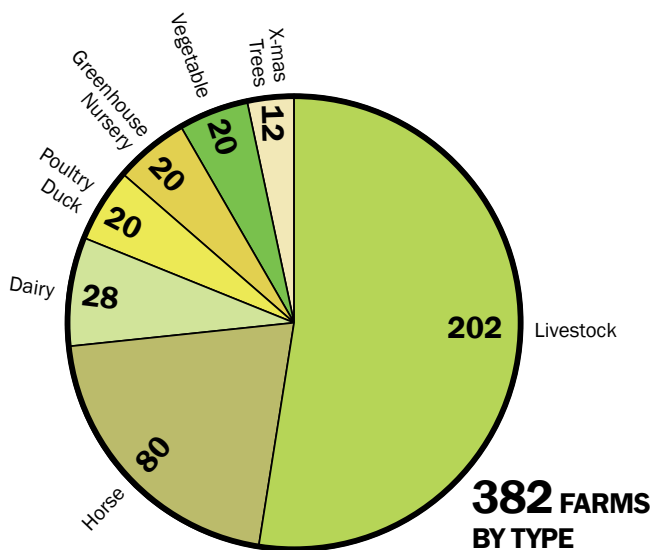
HISTORY

Agriculture has long been a predominant industry for Sullivan County. The influx of European immigrants in the 1800s transformed the county into a sizable farming establishment. With the advent of rail transportation, agricultural products were distributed within the region as well as north to the capital, Albany, and south to New York City. Sullivan County became a significant food supply resource to urban communities. This trend continued through the 1960s, when Sullivan County's agricultural production peaked, with more than 500 operating farms. Today, the agricultural sector generates a total of \$68.7 million a year, with 382 farms on 57,877 acres of land. The cumulative economic impact is \$206.1 million a year as each dollar turns over three times in the county.²

WATER AND SOIL

Sloped woodland, lush valleys, and freshwater lakes and streams largely dominate Sullivan County's landscape which is bounded by the Delaware River to the southwest. The abundance and accessibility of clean water has supported farming operations for generations. About 2 percent of Sullivan farmland is Grade I soil, which is best suited for cropland.

Current Sullivan County farmland and products³



Marcellus Shale play in the Northeast U.S.



REGION

Sullivan County is about a two-hour drive from New York City, which is the largest metropolitan region in the country. With such close proximity to more than 21 million urban dwellers and the growing popularity of farmers markets, Sullivan County producers are well situated to supply fresh, local food for residents and commercial enterprises in the metro region.

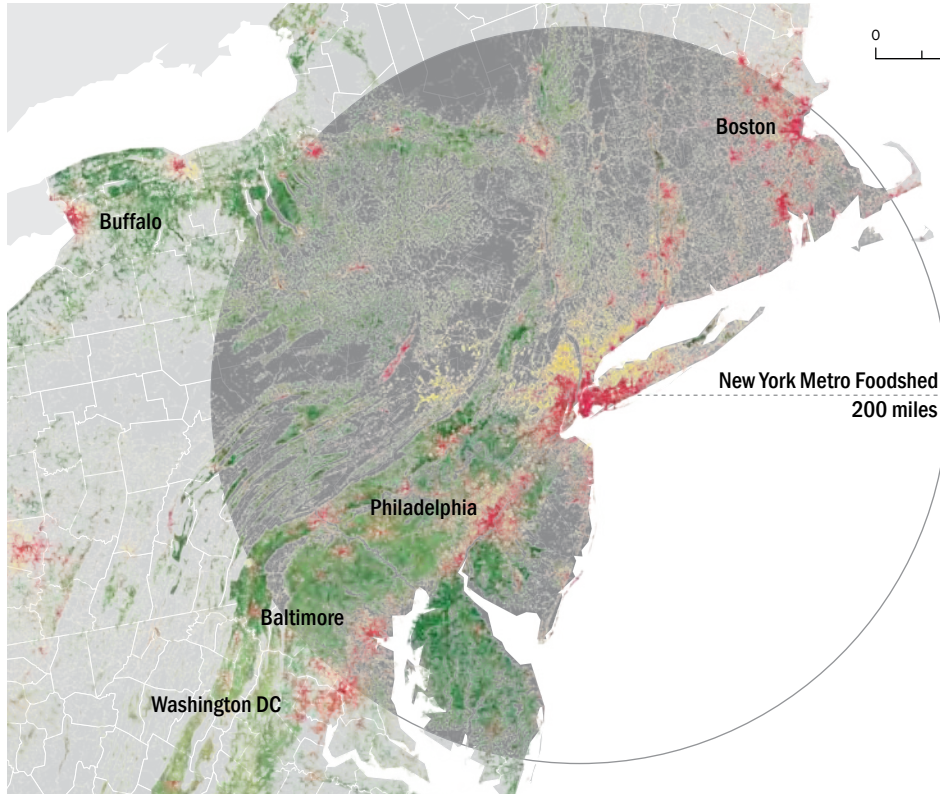
FOOD MOVEMENT

Since the 1990s, the organic, local and slow food movements have reinvigorated farming in Sullivan County. Of the county's 382 farms, more than half are livestock, followed by dairy, vegetable, greenhouse nursery, and poultry and duck farms.

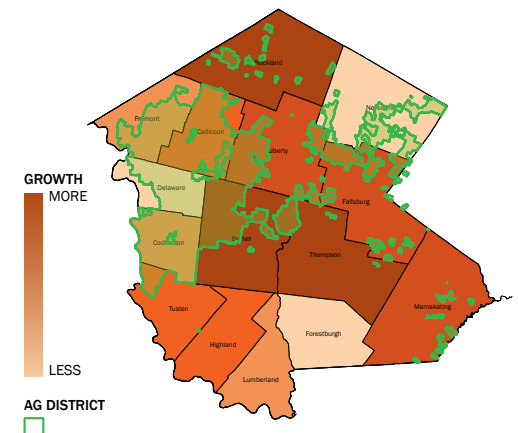
DEVELOPMENT PRESSURE

Challenges to the agricultural districts in Sullivan County have grown along with its rural enterprise expansion. Because farmland typically has significant road frontage, cleared fields, and access to sewer and water lines, real estate speculators identify it as prime land for a second-home market. Rising land prices encouraged many farmers to sell their properties between 2001 and 2007, and at the same time Sullivan County experienced a 65 percent increase in second-home ownership.⁵ Sullivan County also sits above vast natural gas reserves in the Marcellus Shale formation. Drilling companies make aggressive leasing offers, often with a high signing bonus. As a result, many struggling farmers sell leases on their fields and meadows.

New York metro region foodshed⁴



Second-home growth vs. agriculture districts⁶



1. Sullivan County Soil Data, USDA National Soil Survey.
 2, 3. "Sullivan County Agricultural Facts and Figures," Cornell Cooperative Extension of Sullivan County, 2009.
 4. Image courtesy of The Urban Design Lab, The Earth Institute at Columbia University, 2010.
 5, 6. "Second Home Owner Study: Assessing Attitudes, Consumer Behavior and Housing Tenure in Sullivan County," Division of Planning & Environmental Management, October 2008. 5

MOUNTAIN DELL FARMS

An aerial photograph of Mountain Dell Farms. The image shows several long, narrow, terraced vegetable beds arranged in a grid-like pattern on a hillside. The beds are filled with dark brown soil, and some have white plastic mulch. The surrounding area is lush with green trees and grass. In the upper right, there are several buildings, including a large red barn and a smaller blue building. A dirt road winds through the property.

Mark Dunau & Lisa Wujnovich

BACKGROUND: Playwright and NYC caterer

ACRES: Five in production

PRODUCT: Leafy greens

MARKETS: High-end restaurants, health food stores, local restaurants, CSA

Source: Unless otherwise noted, M. Dunau, personal communication, February 5 and May 6, 2010.



I CAN PROVIDE FOR MY FAMILY WITH ONLY FIVE ACRES

“My son is graduating from college and my daughter is in her first year ... these five acres have provided all of our income for 20 years, so you can make it off of five acres ... even here.”

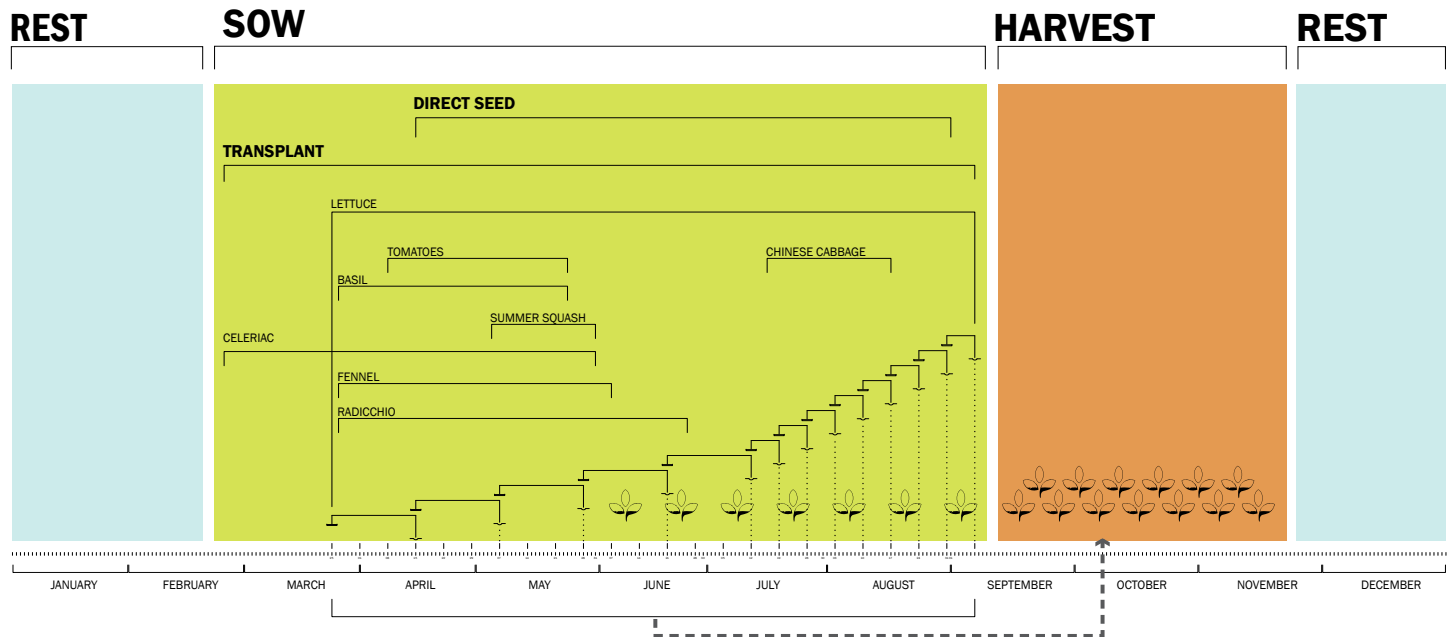
Mountain Dell Farm is owned and operated by Mark Dunau, his wife Lisa Wujnovich, and their two children. The family owns 50 acres of land in Delaware County just south of the Cannonsville reservoir but keep only five of these acres in production at one time. They supply leafy greens to health food stores, local restaurants, and community supported agriculture (CSA) customers, with their primary focus on high-end restaurants in New York City. Prior to starting the farm, they lived in New York City, where Mark was a playwright and Lisa was in the catering business. With these past contacts, they have built a network for their current market.

Mountain Dell was certified Organic for 11 years before Mark and Lisa purposefully gave up the certification because they consider the program flawed, a belief shared by many farmers. Mark is quick to point out that this change was a luxury he could afford because his business plan was built around direct sales to upscale restaurants in New York. He differentiates himself from commodity organic if they wish to be allowed in the market under the USDA Organic label. Mark and Lisa’s close relationship with their clientele, half of whom have been with them during their entire 20 years of farming, allows them flexibility and

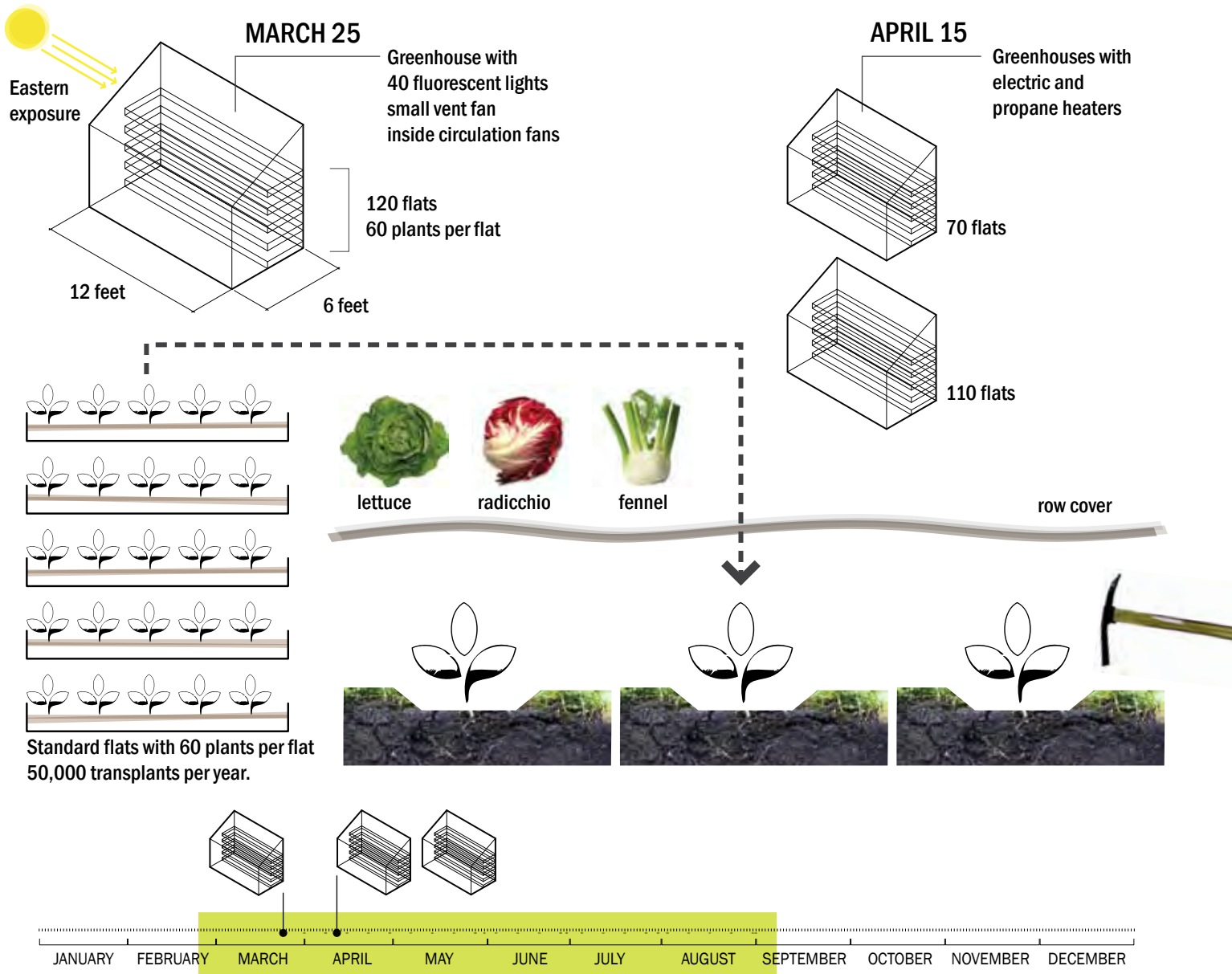
adherence to quality standards that are often more sustainable than USDA Organic label requirements.

Mountain Dell Farm grows 50 types of vegetables on fields that are approximately 15 to 25 feet wide and up to 600 feet long. The success of the farm is largely due to the use of floating row covers, which are fabric tarps that cover a field of vegetables to retain moisture and heat during the coldest parts of growing season. By using row covers, Mark and Lisa are able to increase their production by 50 percent. This allows Mountain Dell to continually provide fresh products to their customers, even late into the fall season.

Mark & Lisa’s long growing season



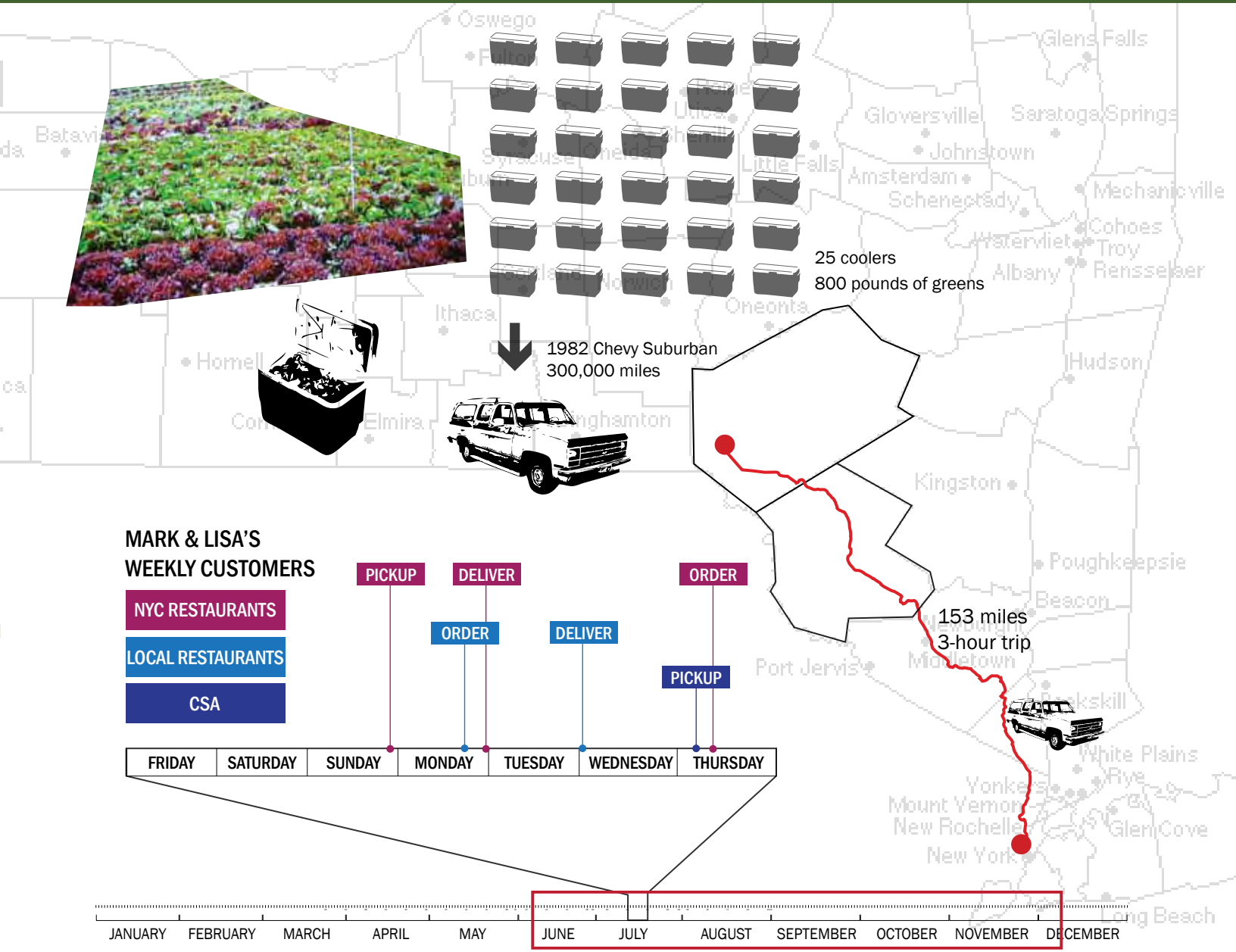
MOUNTAIN DELL



Mark & Lisa's fields - Photograph by Mark Dunau

Mark and Lisa transplant close to 50,000 seedlings by hand each year, primarily lettuce, radicchio, and fennel. They directly seed brassicas (arugula, broccoli rabe, tatsoi, bok choy, kyona mizuna, and hakurei turnips) from mid-April until the beginning of September. The row cover is an important component to their success. These layers of cloth placed over the seedlings maintain moisture in the soil and protect plants from frost damage. A typical brassica grows 50 percent faster when protected.





Mountain Dell Farms



ORGANIC CERTIFICATION

ORGANIC CERTIFICATION

The United States Department of Agriculture (USDA) established the Organic Foods Production Act in 1990 with a stated goal to “respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.”¹ The current National Organic Program (NOP) develops, implements, and administers national production, handling, and labeling standards. With 827 certified farms, New York State ranks fourth in the

country for organic farms and is seeing a steady increase. But while more and more farms are adapting to the organic method of production, many farmers still maintain conventional practices because of the costs associated with going organic. In the United States, the average yearly production expenditures for organic farms are higher, at \$171,978, versus a conventional farm’s average yearly expenditures of \$109,359.² These conventional farms are excluded from many local and regional markets because all produce sold under the Organic label must meet the criteria set forth by the USDA.

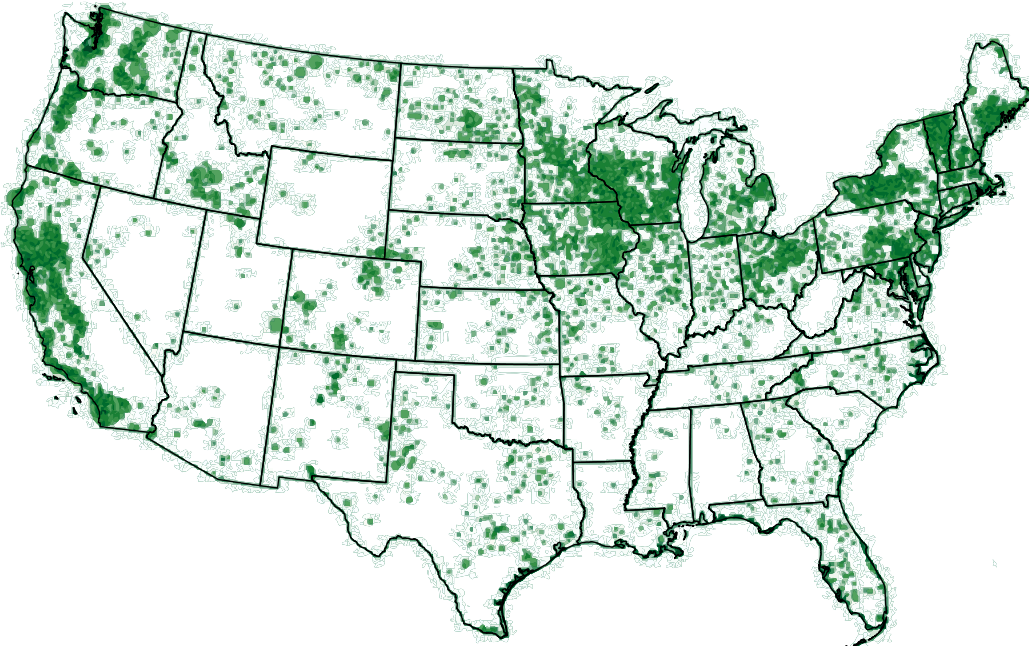
\$3.16 billion total sales in 2008 by U.S. certified & exempt organic farms.³

\$1.94 billion crop sales

\$1.22 billion livestock, poultry, & poultry product sales

\$105,133,000 New York State organic sales, about 3.3% of U.S. total

Organic farms in the United States⁴



FARMER'S PLEDGE

“The Farmer’s Pledge is committed to socially just, ecologically sound and humane growing practices not covered by the National Organic Program.”

THE FARMER’S PLEDGE⁵

At the time of the implementation of the National Organic Program, half of the organic farmers in New York and the United States were not certified. Without this certification, they were prohibited by law from describing themselves as organic. Mark Dunau started the Farmer’s Pledge with the Northeast Organic Farming Association (NOFA) of New York as an alternative to USDA organic certification. This is a pledge made by farmers to farm in an organic, sustainable way, documented in one page rather than the 200 pages of USDA regulations. Currently 120 farmers that are not certified USDA organic are still farming organically, following the Farmer’s Pledge. Most of the signers of the pledge make their living through direct sales and do not need USDA approval. It is their relationship with their customers, not USDA, that keeps them in business. Mark remains active in local politics and is continually working to improve USDA organic certification standards. The following four sections from the Farmer’s Pledge express commitments that are not included in USDA organic standards:

“PRACTICE MINIMAL PROCESSING OF FOOD PRODUCTS TO PRESERVE THE NATURAL NUTRITIONAL VALUE OF FOOD”

No use of irradiation, ultra-pasteurization, excessive heat, synthetic preservatives, or GMO processing agents or additives is permitted. Include all ingredients on labels. This method succeeds in extending the shelf life of milk, thereby creating less demand for organic milk and lowering the price paid to organic dairy farmers.

“REDUCE FOOD MILES BY SELLING PRODUCE LOCALLY AND REGIONALLY”

Much of the lettuce consumed in New York State is grown in California using water that has been diverted several hundred miles with the help of federal water subsidies. This practice enables lettuce to grow in vast quantities in dry lands that would otherwise not be suitable and it also depresses the price paid for New York greens. Even if California lettuce is certified organic, the process of growing it and getting it to New York creates a large carbon footprint.

“CREATE BENEFICIAL HABITATS FOR WILDLIFE AND BIODIVERSITY”

For organic certification, USDA requires buffer zones around a farm field to protect against chemical contamination by runoff from nearby farms. This can compete with existing wildlife habitats surrounding the farms.

“PAY A LIVING WAGE TO ALL FARM WORKERS AND ACKNOWLEDGE THEIR FREEDOM OF ASSOCIATION”

The National Labor Relations Act does not cover farm workers, and consequently, they can be fired for union organizing. There is also no federal minimum wage law that covers all farm workers. Therefore, farm workers are often dependent on state minimum wage laws for protection. Unfortunately, many of those laws exempt farm workers from several of their provisions.

1. M. Gold, “Organic Production/Organic Food: Information Access Tools,” USDA, June 2007. <http://www.nal.usda.gov/afsic/pubs/ofp/ofp.shtml> (accessed July 2010).
2, 3. “2007 Census of Agriculture: 2008 Organic Production Survey,” USDA. http://www.agcensus.usda.gov/Surveys/Organic_Production_Survey/index.asp>.2007 (accessed July 2010).
4. H. Fairfield, “The Hotspots for Organic Food,” New York Times, May 3, 2009. <http://www.ams.usda.gov/AMSv1.0/nop> (accessed July 2010).
5. M. Dunau, “The Farmers Pledge,” NOFA-NY. <http://www.nofany.org/organic-farming/farmers-pledge-program/farmers-pledge> (accessed September 2010).

GORZYNSKI FARM

An aerial photograph of the Gorzynski Farm. The top half of the image is dominated by a dense, dark green forest. A winding stream flows through the middle of the forest. Below the forest, there is a cluster of farm buildings, including a prominent white building with a red roof. Surrounding the buildings are several rectangular fields in various stages of cultivation, some appearing brown and others green. A road or path runs through the farm area.

John & Sue Gorzynski

BACKGROUND: Farmer's son, one of the first farmers at the NYC Greenmarket

ACRES: 40

PRODUCT: 500 varieties of vegetables and 100 varieties of fruits

MARKETS: Farmers markets, direct sales

SOIL: Grade II

Source: Unless otherwise noted, J. Gorzynski, personal communication, February 5 and May 6, 2010.



CROP DIVERSITY IS KEY TO MY SUCCESS

“It begins with the basic elements of good soil, clean water, sunlight, and of course, seeds.”

In 1982, John Gorzynski and his wife Sue, bought 52 acres of Grade II soil in Cohecton Center to start an organic farm. A strong believer that “healthy soil grows healthy crops,” he produces more than 500 varieties of vegetables and about 100 varieties of fruits in a single year. Renowned throughout Sullivan County and a regular at the Union Square Greenmarket in New York City, John was one of the first farmers to directly sell his organic produce to an urban market.

John has been growing fresh produce for more than 30 years and was certified organic by NOFA of New York, the Organic Crop Improvement Association, NYC Greenmarket, and others. However, new regulatory standards for food safety and organic certification impose greater burdens than benefits to certain crops and the farmers cultivating them. As a result, John decided to forgo his organic certification and continue to operate on the basis of sustainable and natural food production.

Through his community supported agriculture (CSA) and apprenticeship

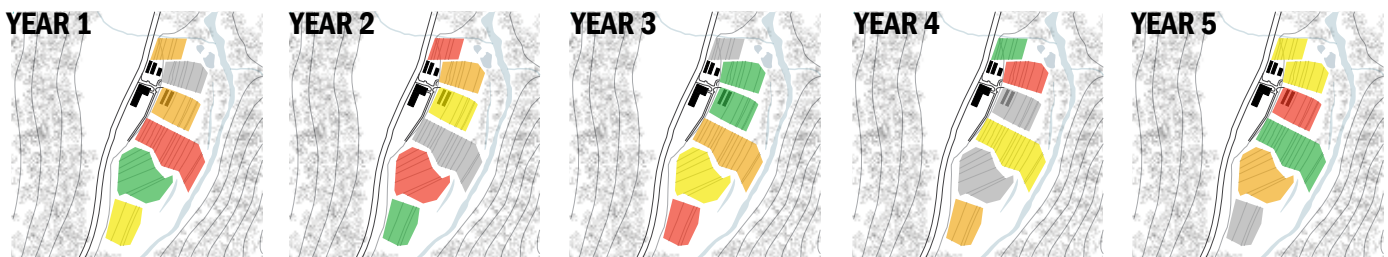
programs, John educates novice farmers on sustainable agricultural stewardship. John supplements his soil with organic rock fertilizers to enhance its fertility. He follows a five-year crop rotation system that helps reduce soil erosion, minimize the buildup of pests, improve yields, and ensure efficient water management.

Biodiversity in farming is critical for the individual farmer and for the nation at large. Insects, disease, or the vagaries of weather can wipe out entire crops. The strength of John’s model lies in his wide variety of crops. Should some crops fail, others continue to thrive, balancing the potential loss and ensuring enough yield to generate income. Unfortunately, trends in large-scale agro-industry encourage a monoculture approach for farming, shrinking the biodiversity in crops. According to the United Nations Food and Agriculture Organization, 75 percent of the world’s genetic diversity of agricultural crops has been eliminated. Today only 10 types of vegetables account for 95 percent of the worldwide vegetable production.¹

JOHN’S DIVERSE CROPS

- FALLOW**
 - Clover cover crop to fix nitrogen in the soil
 - Mulch hay cover to keep the ground from freezing
 - Rye
 - Winter wheat
 - Buckwheat
- CABBAGE (100+ varieties)**
 - Cabbage
 - Brussels sprouts
 - Cauliflower
 - Broccoli
 - Mustard greens
 - Radishes
- CORN**
 - Sweet corn
 - Spinach
 - Lettuce
 - Winter greens
- MIXED VEGETABLES**
 - Tomatoes
 - Carrots
 - Beets
 - Herbs
 - Onions
 - Scallions
 - Leeks
- SQUASH**
 - Zucchini
 - Pumpkin
 - Butternut squash

John’s five-year crop rotation cycle



1. D. Suzuki and M. Faisal, “Better than Nature?” Sustainable Table. <http://www.sustainabletable.org/index.php?s=biodiversity> (accessed September 2010).

USDA FOOD SAFETY RULES AND REGULATIONS

For Organic certification, the National Organic Standards Board requires buffer zones around a field to ensure that chemical drift and water runoff from roads and neighboring conventional farms do not contaminate the organically grown produce.

New regulations under the Food Safety Law require buffers of 100 feet from the farm field boundary along main access roads, and eight-foot buffers along other boundaries for protection from wildlife. If John Gorzynski were to comply with these requirements to be eligible for Organic certification, his arable area would decrease by almost 50 percent.

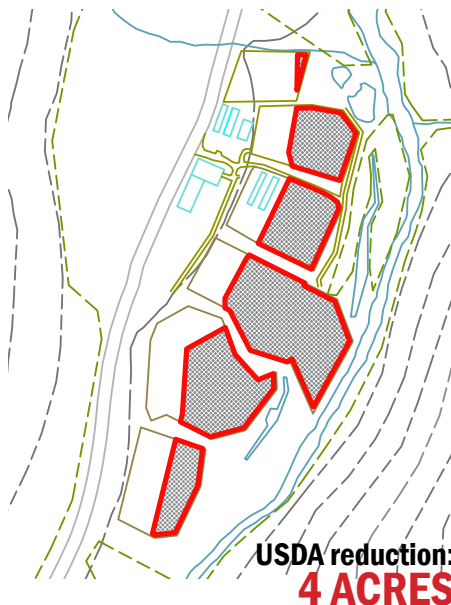
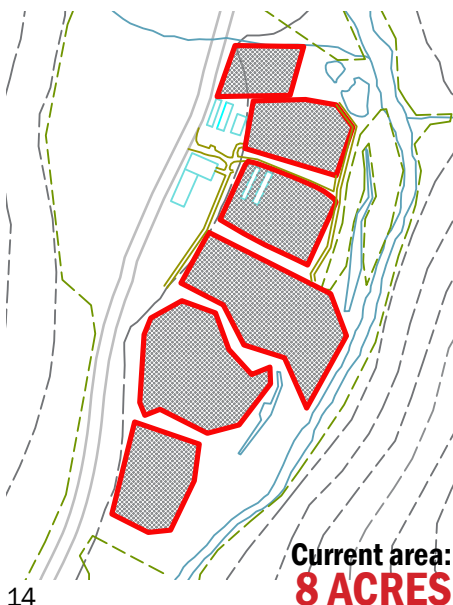
USDA requires certified Organic farmers to clean their fresh produce with a chlorine solution before sale.¹ Many farmers find this requirement contrary to the idea of fresh, chemical-free produce and have chosen to forgo their organic certification.

ENVIRONMENTAL IMPACT

The United States is the world's largest consumer of methyl bromide, a chemical proven to increase crop yields by about 20 percent. Currently it is used for growing 17 crops, including strawberries, tomatoes, peppers, and cucurbits. Approximately 83 percent of American use of this chemical is for soil fumigation and 11 percent is for postharvest treatment of stored commodities.²

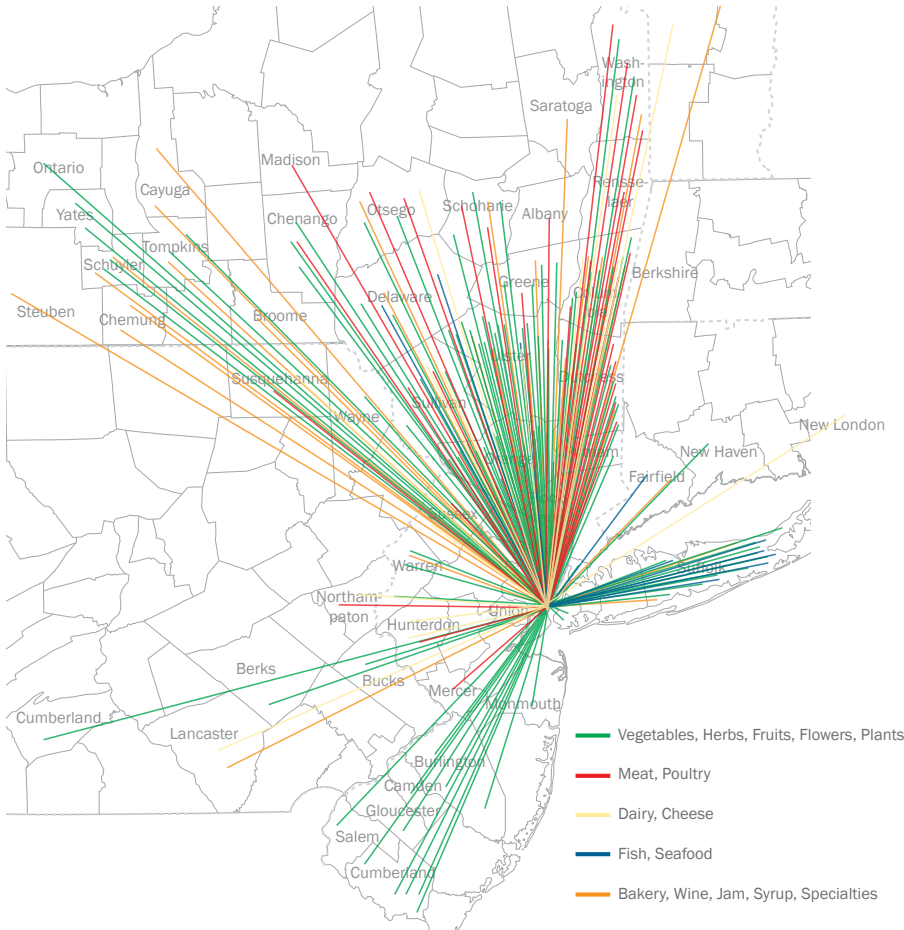
To produce higher yields without chemical inputs, many organic farmers—whether certified by USDA or not—use cover crops to feed their soil. Mulch hay, for example, conserves moisture, prevents weeds from growing, and as it decomposes, is a supplement feed for worms. Clover fixes nitrogen in the soil and costs only \$25 to \$30 per acre, as opposed to nitrogen-blend fertilizers that can cost up to \$44 per acre.

Gorzynski's farmland with and without required USDA buffers



FARMERS MARKETS

Greenmarket farms in New York State



FARMERS MARKETS IN NYC³

The New York City Greenmarkets program started in 1976 with one farmer. Today there are 46 market locations distributed throughout the five boroughs with 183 participating farms, and 16 markets operate year-round. A recent USDA report listed New York State as having the second-highest number of farmers markets in the nation. Approximately 250,000 customers, or 3 percent of the city's population, frequent these open-air markets each week during peak season.

Food purchased in supermarkets throughout the country travels an average of 1,500 miles before being placed on a shelf for consumption.⁴ Because fresh food loses 40 percent of its nutritional value during its first three days, local produce that is frequently sold very soon after harvest and sold at these greenmarkets is an incredibly important contribution to a healthy community.

1. J. Montecalvo, "Optimization of Food Safety Programs for Organic Post Harvest Handling of Foods," Department of Food Science and Nutrition, California. <http://www.ccof.org/pdf/food%20safety/Optimization%20of%20Food%20Safety%20Programs.pdf> (accessed September 2010).
2. D. Chellemi, G.T Church, N. Kokalis-Buelle, E. N. Rosskopf, "Alternatives to Methyl Bromide: A Florida Perspective," APSnet, 2005. <http://www.apsnet.org/publications/apsnetfeatures/Pages/MethylAlternatives.aspx> (accessed September 2010).
3. "Greenmarkets Farmers Markets." GrowNYC. <http://www.grownyc.org/greenmarket> (accessed 2010).
4. "What Is local?," Sustainable Table. <http://www.sustainabletable.org/issues/eatlocal/> (accessed 2010).

Union Square Farmers Market, New York City



WILLOW WISP ORGANIC FARM

An aerial photograph of the Willow Wisp Organic Farm. The image shows a large, rectangular field with distinct rows of crops, likely corn, in the foreground. A dirt road or path runs along the left side of the field. In the background, there are several buildings, including a large barn-like structure and a smaller house, surrounded by trees. The overall scene is a typical rural farm setting.

Greg Swartz

BACKGROUND: Translator, ski instructor, family hardware business, no farming background

ACRES: 12

PRODUCT: Fifty types of certified organic vegetables, culinary herbs, cut flowers

MARKETS: Local farmers markets, CSA, wholesale

SOIL: Grade II

Source: Unless otherwise noted, G. Swartz, personal communication, February 5 and May 6, 2010.



I STARTED MY FARM FROM SCRATCH

“Apprenticeships are key.”

Starting a farm from scratch is a tremendous challenge, especially for someone without any farming background. This was the case for Greg Swartz, of Willow Wisp Organic Farm. Ten years ago, Greg decided to become a farmer. He took two apprenticeships and then worked on another farm for five years. This practical experience and mentorship by successful farmers was the most effective way for Greg to learn the extensive skills that farming requires. He supplemented his hands-on experience by reading and attending conferences. Looking back, Greg strongly believes that mentoring is a critical way to promote and support the growth of new farmers.

In 2006, Greg and his wife, Tannis, decided to purchase farmland in the

Upper Delaware River valley because of their connections to a strong local community. Their search for land was primarily based on soil quality. They purchased 12 acres of land with Grade II soil: Basher Silt Loam for vegetables and Welsboro Channery Loam for fruits. At that time, the average cost was \$10,000 per acre. For a new farmer, the financial hurdle can be high. While Greg and Tannis invested in their farm and education without federal or state aid, many organizations do offer assistance. The USDA's Beginning Farmer and Rancher Development Program (BFRDP) educates emerging farmers in business and finance and provides alternatives to down payments on farmland. BFRDP organizes an exchange between retiring and beginning farmers. New York State also provides low-cost financial

assistance with the New York Beginning Farmer Loan Program. But based on his personal experience, Greg questions the effectiveness of these programs to get new farmers on land.

The primary investment for Greg was approximately \$200,000, including the 12-acre farmland purchase, basic transportation (12 foot box truck), basic equipment and tools (tractor, seeders, greenhouse, fencing, hand tools, etc.) and his first annual crop investment (seeds, perennial plants, etc.). For Willow Wisp Farm, the secondary investment during the first year of full production included a barn, a water well, and a walk-in cooler for approximately \$30,000.

Local farmers apprenticeship system

GORZYNSKI



Pioneered first NYC Greenmarket. Develops effective, regional farming techniques & passes these along to other farmers.

GILLINGHAM



Runs apprenticeship program on his farm, providing housing (cabins) & a stipend for interns.

DUNAU



Available for mentorship.

CORNELL UNIVERSITY COOPERATIVE EXTENSION

Teaches farming & management basics. Provides assistance with grant & loan applications.

SWARTZ



Two apprenticeships & then worked on another farm for five years. Supplementary reading & conferences.

JAFFE



Business skills.

TONJES



Value-added cheese making skills.

WILLOW WISP

The investment in starting a farm

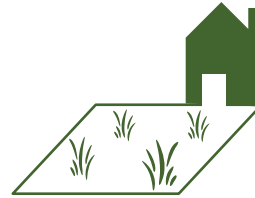


Start your own farm...



APPRENTICESHIP

Reading, conferences
7-year internship



\$120,000

12 acres total:
5 acres of vegetables
4 acres of fruit



CROP YIELD

50% to local greenmarkets
25% to CSA (40 people)
25% wholesale to restaurants,
stores, retreat centers, caterers



\$20,000

Transportation:
12 foot box truck



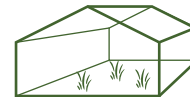
\$30,000

Other investments:
barn, water well,
walk-in cooler



\$55,000

Tools & equipment



\$6,000

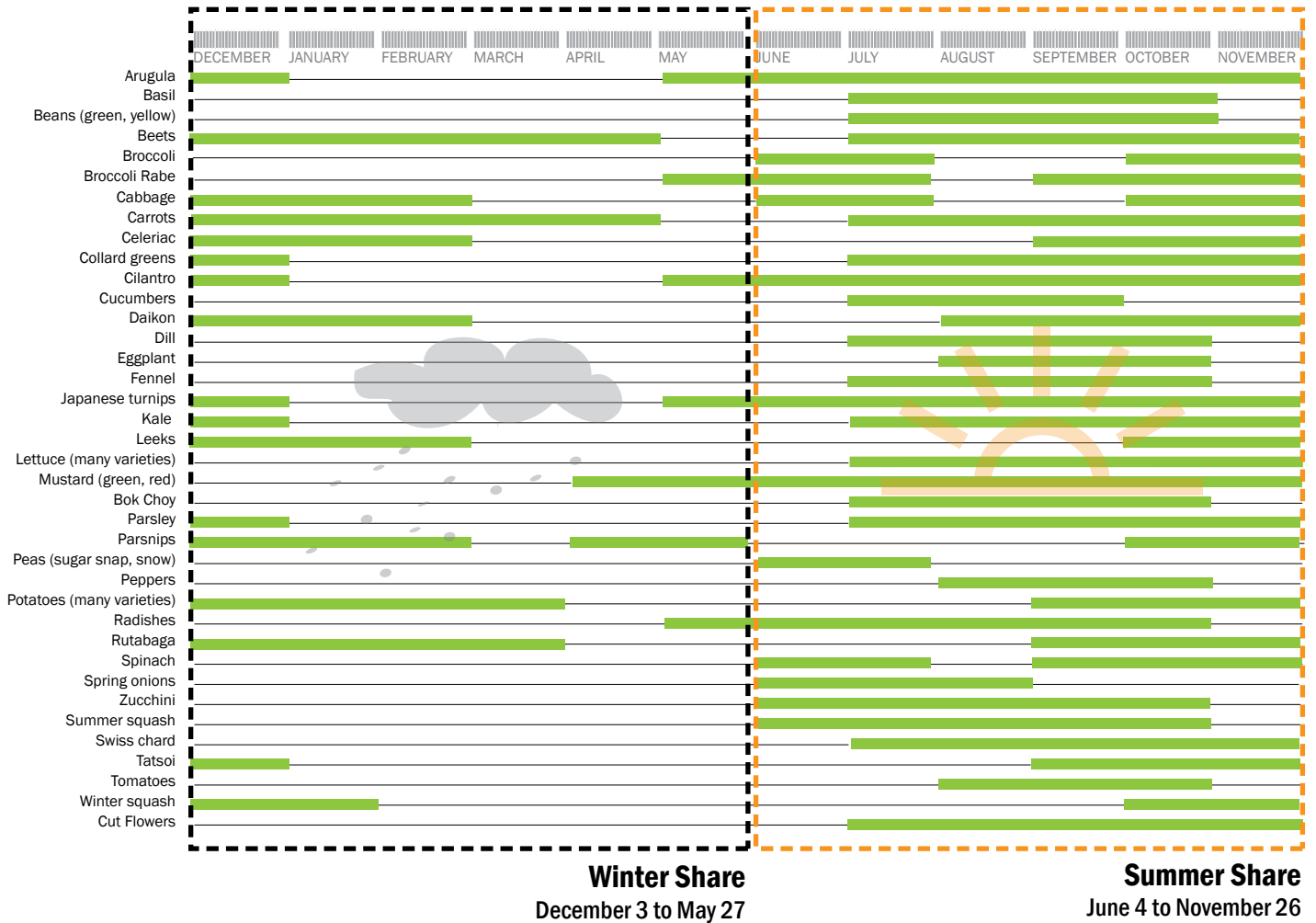
Greenhouse



Willow Wisp farmland and barn



Annual crop list and CSA share goals



Summer crops



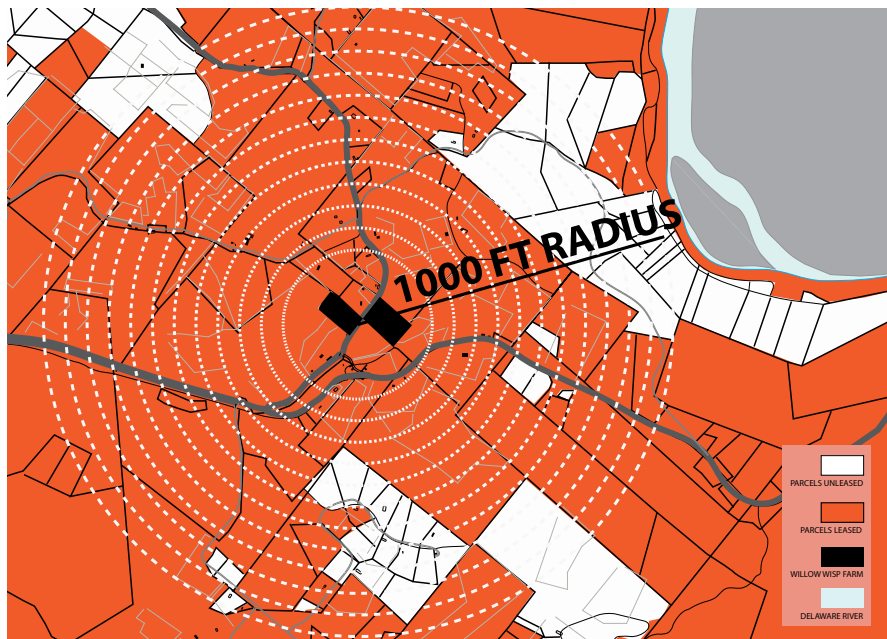
Winter crops inside greenhouse



Willow Wisp’s CSA program brings high-quality food to the community, raises awareness about the benefits of local food consumption, and provides a direct connection between farmer and consumer. Each stakeholder—the farm has about 40 families—pays \$575 in the summer and \$400 in the winter and receives more than 50 varieties of vegetables, herbs, and flowers. That accounts for a quarter of Willow Wisp’s market; sales to local wholesale markets, restaurants, retreat centers, and caterers are another 25 percent and sales to local greenmarkets constitute 50 percent.

MARCELLUS SHALE

Gas drilling parcels leased around Willow Wisp Farm as of May 2010



THE MARCELLUS SHALE AND THE GAS DRILLING IMPACT

In addition to the challenges of starting a farm from scratch, Greg Swartz faces the growing threat of natural gas drilling. The Catskill region is extremely valuable in the Northeast because of its pristine natural environment. The Delaware River and its reservoir network, some of the purest water in the country, supplies drinking water to the DE, NJ, PA, and NY region including New York City. The agricultural and dairy farms in the area are dependent on the abundance and purity of this water. And the Catskill economy is dependent on these productive farms. Energy companies have identified the potential for vast quantities of natural gas in the Marcellus and Utica shale substrates that run thousands of feet below the region's surface. The gas is located deep within the shale in small, dispersed pockets, making conventional extraction very inefficient and difficult. Hydraulic fracturing and the horizontal drilling process, developed for this difficult extraction, pump large quantities of chemical-laden water into the earth. This poses significant threats to the environment, since many of the fracturing chemicals can contaminate aquifers and the groundwater supply. Adverse impacts on local communities include noise and pollution from heavy drilling equipment and the high volume of water transport by truck to and from the drilling site.

Gas drilling on farmland in Dimock, PA - Photograph © 2009 J. Henry Fair



All of the properties directly surrounding Willow Wisp Farm have been leased to gas companies to allow for natural gas exploration and extraction. The Swartz family declined to sign a lease but this leaves them little recourse if the companies decide to drill on the neighboring land. The worst scenario, Greg says, would be to leave and lose the equity in their farm. And while the deflated property proceeds would pay off their debt, it would not leave them with enough capital to begin farming elsewhere.

Just Food CSA Program



Just Food City Farm Program



Just Food Fresh Food for All Program



JUST FOOD¹

Just Food is a not-for-profit organization that seeks to decrease the divide between New York City and rural food producers. Its various programs connect nearby farms with NYC neighborhoods by facilitating farms' production, marketing, and distribution to urban consumers. Small to medium-sized farmers find customers in the city through Just Food's community supported agriculture operation in NYC, where city-dwellers can purchase a share of the crop directly from a farmer. The consumer receives fresh produce throughout the growing season, and the farmer benefits from the security of guaranteed income. Just Food's Fresh Food for All program connects city pantries and soup kitchens with a network of local family farms that provide fresh, healthful fruits and vegetables. The program also connects the farmers to the urban communities they serve through educational programming and farm visits. To find out more, visit www.justfood.org.

HAWTHORNE VALLEY FARM²

The 400-acre Hawthorne Valley Farm is located about 35 miles southeast of Albany, New York, close to the Massachusetts border. The farm was established in 1972 by farmers, artisans, and educators who wanted to safeguard the future of small-scale farming through the education of children and young adults. The farm has multiple departments: farm, dairy, greenmarket; a CSA program, bakery, and a retail store. Each department is run by a different manager while functioning under the umbrella of Hawthorne Valley Farm. Some of their current programs include:

FARMER APPRENTICE PROGRAM

Aspiring farmers of all ages, spend five months to two years living and working on a farm receiving comprehensive exposure to dairy, beef, and vegetable operations.

VISITING STUDENTS PROGRAM

Young adults work alongside farmers as counselors and as interns, teaching students from various nearby schools.

FARMSCAPE ECOLOGY PROGRAM

Interested farmers learn about aspects of their land, including the interrelationships between regional farming and ecosystem conservation.

FARM BEGINNINGS PROGRAM

This program offers business planning courses and visits to successful sustainable farms for both aspiring and established farmers.

1. "Building a Just and Sustainable Food System for NYC!" Just Food. <http://www.justfood.org> (accessed September 2010).

2. "Farm Departments," Hawthorne Valley Farm, <http://www.hawthornevalleyfarm.org/departments/departments.htm> (accessed September 2010).

DIRIE DAIRY FARM

An aerial photograph of a dairy farm. The main building is a large, light-colored barn with a tall, cylindrical silo attached to its side. To the left, there are several smaller buildings, including a red-roofed structure and a white building. A paved road with yellow double lines runs diagonally across the upper half of the image. The surrounding area is a mix of green grass and brown, tilled soil. The sky is not visible, as the image is an aerial view.

Richard & Mary Ann Dirie

BACKGROUND: Established by Richard's parents in 1944

PRODUCT: Raw milk, third-party supply to Dairylea

MARKETS: Local residents, Dairylea

LIVESTOCK: 40-50 grass-fed Holsteins

Source: Unless otherwise noted, R. Dirie, personal communication, February 5 and May 6, 2010.



THE RAW-MILK MARKET IS MY LAST RESORT

“We can't say how much we want for the milk. We get whatever they say ... They make a blend price, but how do I know what's going for what?”

The Dirie Dairy Farm has operated on Sullivan County's Shandeleer Mountain for more than six decades. The 95-acre traditional dairy farm has been in the Dirie family since 1944, and Richard and Mary Ann Dirie now operate it with their two sons, Doug and Mike.

The future of the farm, however, remains unknown because the current turbulence in the dairy industry. Federal regulations designed for large-scale operations and fixed pricing structures render smaller dairies, like the Diries, uneconomical, as the cost of milk production outweighs the price farmers are paid. To stabilize their operations, some dairy farms have invested in on-site pasteurization or contributed to the construction and operation of local creameries. Value-added products are

keeping many local farms in business. Marketing and distribution then become critical steps in this strategy.

In April 2009, the Dirie's small-scale dairy became one of only 25 New York State farms licensed to sell raw milk. While this was an exciting venture to provide a new product in a growing niche market, the decision to sell raw milk was necessary to maintain the farm's bottom line.

Raw milk is unpasteurized and unprocessed. Despite debate about the safety of raw milk for human consumption, demand has increased in recent years. At the Dirie Dairy, raw milk—typically the milk that remains after sales to third-party processors, like Dairy-leaf—is bottled as demand warrants.

Dirie sells raw milk for \$5 a gallon, or \$4 if the consumer supplies the bottle. In New York State the sale of raw milk is prohibited everywhere except on the producer's farm, and it may only be sold directly to the consumer. This strict law severely limits a farmer's ability to market raw milk. Dirie's raw-milk sales are mostly reliant on word of mouth, local press releases, and a sign posted at the foot of their driveway. The summer brings a strong market from second-home owners and vacationing families. The Diries could increase raw-milk sales substantially if they could reach a broader market year-round.

For now, the sale of raw milk has heightened Dirie's profile within Sullivan County and is adding to the farm's viability.

Mary Ann Dirie explains mechanical milk pumps

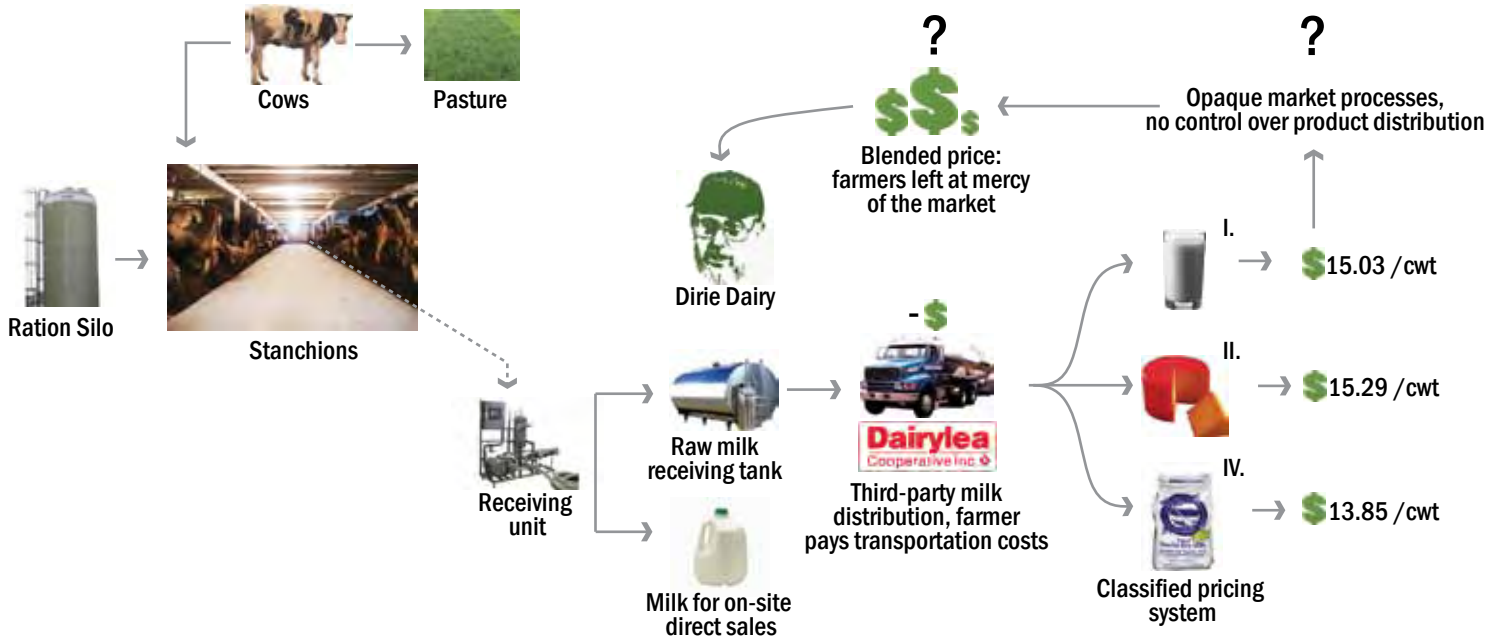


Dirie's advertising



DIRIE

Milk pricing system as explained by the Diries



Dirie's farm and cows



Classes of milk

CLASS I	CLASS II	CLASS III	CLASS IV
Grade A milk used in all beverage milks	Grade A milk used in fluid cream products, yogurt, or perishable manufactured products (ice cream, cottage cheese, & others)	Grade A milk used to produce cream cheese & hard manufactured cheese	Grade A milk used to produce butter & any milk in dried form

FARM TO SCHOOL

Potential growth of Farm to School Program



FARM TO SCHOOL¹

U. S. Department of Agriculture and New York State Farm to School programs allow school districts to buy directly from local farmers and educate students about the benefits of eating local food. Passed in 2002, the New York State Farm to School legislation is a collaboration between the state and USDA to encourage the purchase of New York farm products by schools, universities, and other educational institutions. The program's current coordinating committee is a group of school service personnel, local farmers, health care professionals, local associations, and government officials who are committed to the importance of eating local. This diverse committee meets regularly to respond to the needs of schools and farmers and to generate strategies to raise awareness.

The programs and initiatives train school chefs to cook with local foods and develop recipes and new products using local resources. The Farm to You Fest! (NY Harvest for NY Kids Week) is held in the fall to celebrate locally grown produce. In 2009, the Department of Agriculture & Markets provided close to 82,000 educational materials to schools, libraries, and 4-H Clubs to help promote healthful and local eating. The Cornell University Farm to School

Research and Extension Program is another important collaborator in the NYS Farm to School effort. Its aim is to provide important outreach education, research, and development for local agriculture.

The Sullivan County Board of Cooperative Educational Services (BOCES) works with all eight school districts in the county and therefore has the potential to implement the NYS Farm to School initiatives.

To realize this goal, BOCES must first compile all federal, state, and local legislation related to school meals and identify standards for farmer eligibility. Next, the board must reach out to the 16 local dairy farmers who would benefit from this program and guide them through the certification process and food safety rules. Then distribution that ensures freshness and convenience must be arranged. Finally, BOCES must create cost calculation tools for schools to assist them in allocating federal and state funds to maintain the program.

Teachers play an important role in these initiatives by educating students about healthful food choices. And parents can set a good example by serving local, fresh food at home and supporting the farmers in their communities.

1. "Farm to School, New York Profile," Urban & Environmental Policy Institute, Occidental College. <http://www.farmtoschool.org/state-home.php?id=17> (accessed 2010).

TONJES DAIRY FARM



Tim & Mary Tonjes

BACKGROUND: Dairy farmers, became cheese-makers in 2003

ACRES: 130 owned, 170 rented

PRODUCT: Yogurt, Kefir, buttermilk, ricotta, mozzarella, Caerphilly, Rambler, blue, Cow Hill cheeses

MARKETS: Greenmarket, Sullivan & Orange county farmers markets, Peck's Supermarket

LIVESTOCK: 90-100 grass-fed Holsteins

Source: Unless otherwise noted, T. Tonjes, personal communication, March 1, 2010.



VALUE-ADDED PRODUCT HELPS ME STAY COMPETITIVE

“It’s a dairy farm; you change, otherwise we would be out of business.”

Tim and Mary purchased the Tonjes Dairy Farm, in operation since 1950, from Tim’s father. Located in Callicoon, the 130-acre farm has 90 to 100 Holsteins, 50 of which are milked at any one time. The dairy cows are considered a closed herd, which means that all the animals are born and raised on-site. The herd has a diet of 98 percent grasses and 2 percent grains for nutritional diversity. The reliance on a grass-based diet requires more land than the Tonjeses own, so they rent an additional 170 acres for harvesting hay. This arrangement with a neighbor is quite common for pasture-raised herds and is mutually beneficial. Mary and Tim are able to avoid the financial

burdens of additional landownership, and the neighbor receives a lower tax assessment for keeping his land in active agricultural production.

In 1999, as milk prices were in a downward trend, Tim began researching cheese making as a way to stabilize the family business. Three years later, Rick Bishop of Sullivan County’s Agricultural Economic Development program (and a fellow farmer) unveiled the Cheesemobile—a 12-by-36-foot mobile dairy processing facility approved by New York State. After brief training on the fundamentals of cheese production, the Tonjeses became the first dairy farmers to use this “incubator” equipment to

learn the art of cheese making. With their newfound expertise, they created a line of dairy products that fostered a loyal local customer base. With this success, they eventually invested in a retrofit of their traditional dairy operation and purchased pasteurizing and processing equipment to support their growing cheese market. Their “cheese cave” is built into the sloped ground on their property. The surrounding earth helps maintain a constant temperature in summer and winter, which is essential for curing the cheese. This business is a family endeavor; Tim and Mary’s 14-year-old son is very interested in farming and now works hard alongside his parents.

The cheese vat at Tonjes Farm



TONJES

Tonjes cheeses on sale at the Union Square



When working with short-shelf-life products such as dairy, immediate access to markets is critical. The Tonjeses have sold their products at Union Square's Greenmarket for nearly eight years, generating 75 percent of their yearly revenue. The products sold include pasteurized yogurt, Kefir, cultured buttermilk, *fromage blanc*, whole-milk ricotta, and mozzarella, as well as aged cheeses such as Caerphilly, Rambler, blue cheese, and Cow Hill. Of all the products offered, yogurt accounts for the most sales throughout the year, followed by mozzarella and buttermilk. In addition to the Union Square Greenmarket, the Tonjeses have also dealt with smaller grocery markets, such as Peck's. Small retail stores accept smaller quantities of product, in contrast to large chain stores that demand distribution by the pallet.

The cheese cave at Tonjes Dairy Farm



Not all the milk produced by the Tonjeses is used for cheese production. According to Tim, about half of the total production is sold wholesale as fluid milk. Although the low price of fluid milk is one of the primary reasons the Tonjeses began making cheese, selling wholesale ensures that all their milk is sold fresh and is a sound fallback if cheese sales decline. In all, Tonjes Dairy Farm produces nearly 20,000 pounds of milk products per year.

MOBILE PROCESSING

The Cheesemobile



THE CHEESEMOBILE TODAY¹

The Cheesemobile was the result of an incubator initiative funded by the Northeast Sustainable Agriculture Research and Education Program. This modular cheese-making unit helps train novice cheese makers in Sullivan County, providing them with on-farm equipment and expertise to produce quality cheese.

The unit is a 12-by-36-foot trailer equipped with air handlers, a boiler, sinks, coolers, and a room with the essential equipment to make, package, and age cheese. Tonjes Dairy was the first farm to participate in this incubator program, and the unit was leased to their farm for a period of two years. Apart from instruction in making quality cheese, the program also provided knowledge about how to anticipate demands for aged versus fresh cheese, and how to calculate the quantity of milk required.²

The one-year contract for the Cheesemobile is \$200 per month, and the tenant must invest in installation and time for skill development. Despite the success of the Cheesemobile at the Tonjes Farm, the unit went underutilized during its lease in Grahmsville, and no other dairies have leased it since.

GLYNWOOD MOBILE MEAT PROCESSING³

The awareness and recent popularity of locally grown, pasture-fed, organic meat have increased demand and created a new market in Sullivan County, where the climate and topography are well suited to livestock. Because of the lack of local slaughterhouses, farmers who want to sell meat to local customers must transport their livestock long distances for processing and then bring the carcasses back after two weeks, which is the USDA allotted time for meat to cure.

Following the strategy of the mobile cheese-processing unit that helped the Tonjeses launch their cheese business, the Glynwood Center has created a mobile meat-processing unit. The Modular Harvest System is currently the only modular mobile slaughterhouse in the country, with processing capacity for large animals in sanitary conditions, approved by USDA. It consists of a 53-foot-long trailer for slaughter and chilling, a refrigeration truck where the carcasses can then be cut and wrapped, a waste trailer, and a small office trailer.

Innovative ideas like the mobile meat-processing unit and the Cheesemobile are giving medium- and small-scale farmers infrastructure that's essential to the sustainability of their farms.

1. P. Smith, "Cheese on Wheels," The CBS Interactive Business Network, April 2006. http://findarticles.com/p/articles/mi_qa3846/is_200604/ai_n17185820/ (accessed July 2010).

2. K. Newman, "Have Rennet, Will Travel," New York Times, March 8, 2006. http://www.nytimes.com/2006/03/08/dining/08truck.html?_r=1 (accessed 2010).

3. "Local Meat Processing: The Glynwood Solution," Glynwood Farm. <http://www.glynwood.org/publications-multimedia/video-projects/local-meat-processing-the-glynwood-solution/> (accessed September 2010).

SNOW DANCE FARM

Marc Jaffe

BACKGROUND: Information technology business professional

ACRES: 80

PRODUCT: Chicken, turkey, pork

MARKETS: Farmers markets, restaurants

SOIL: Grade II

Source: Unless otherwise noted, M. Jaffe, personal communication, March 1 and May 6, 2010.



FARMING AS A LIFESTYLE CHOICE

“For me, it’s about personal relationships with the chefs. They invite me to their restaurants, we share a gourmet meal with a wine connoisseur, and this way I get personal feedback.”

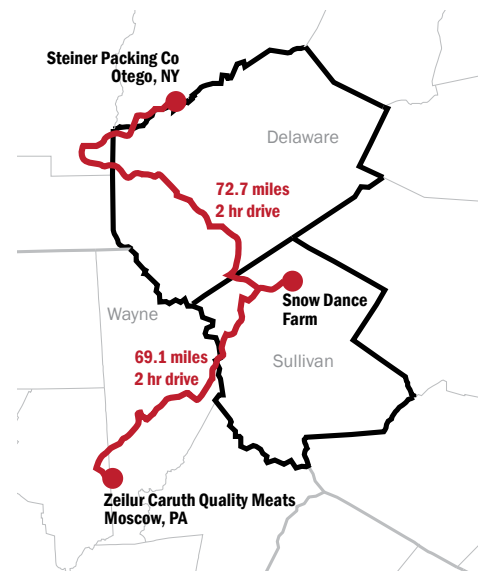
Marc Jaffe, an IT professional who formerly owned a firm in Manhattan, moved to his second home in Sullivan County post 9/11. He started farming as a lifestyle choice and today owns 80 acres of land. Without prior knowledge of farming, he began by training with the Cornell Cooperative Extension. He soon began raising livestock, as the land was not suitable for crops. With less than \$50,000 in capital and only a tractor and manual labor, he started by raising pasture-fed chickens. After various experiments with breeds, Jaffe today deals exclusively with chickens, turkeys, pigs, goats, lambs, and ring-necked pheasants. He distributes his meat to high-end restaurants locally and in New York City.

Jaffe breeds Tamworth pigs and ring-necked pheasants at chefs’ requests. Believing in face-to-face relationships with his chefs, he has limited his

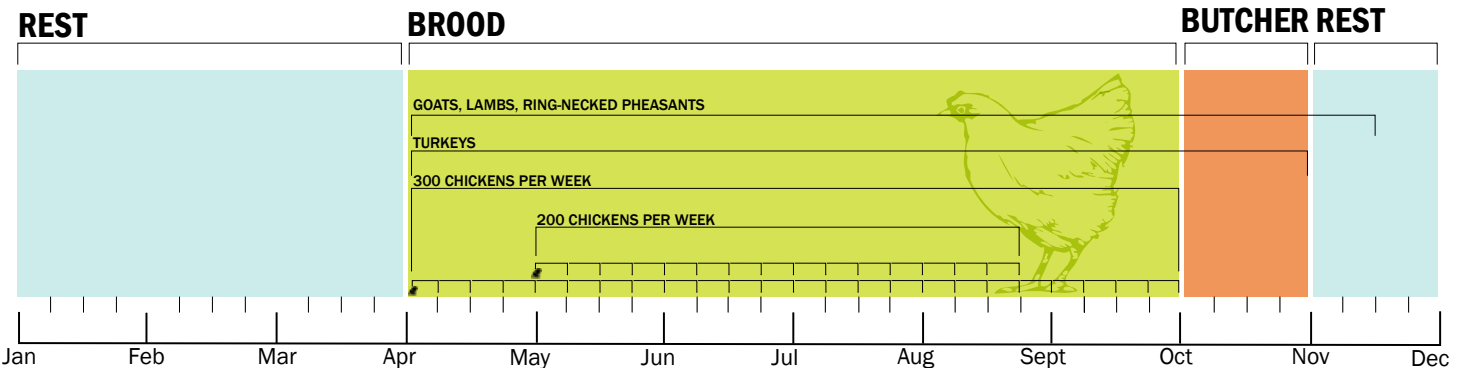
dealings to a select few, since every chef has his or her own requirements. Because farming is a lifestyle choice for Marc, he does his business on the basis of personal relationships with people who understand and recognize that not every bird will be the same weight and size. The chickens at his farm range from three to five pounds each, and Marc gets a price of \$14-\$15 per chicken. Each pig provides approximately 200-300 pounds of meat at a price of \$3-\$3.50 per pound. Delivery is done through a distributor in Monticello, but Marc makes a personal visit to the restaurants now and then.

Marc transports his animals for slaughter to a USDA and a state-inspected facility, each two hours’ driving distance from the farm. A slaughterhouse in the county would allow him to operate more efficiently.

Closest USDA-approved facilities



Marc’s yearly raising cycle



SNOW DANCE

Marc rotates the animals seasonally to protect the land and avoid excess accumulation of manure. His animals are secured on 80 acres surrounded by electric fences that run on 12-volt batteries. A creek corridor acts as a USDA-approved riparian buffer zone to filter wastes that might drain into the creek. Currently, 20 acres of land is in use for farming, and Marc has no plans for expansion.

Marc is a firm believer that nature replenishes itself. The sheds that he uses for his animals are mobile, and he simply transports them to a different

location every season. He follows this procedure to avoid overgrazing yet allow for fertilization. This pasture rotation system gives the grass time to grow back.

Marc also uses the topography of his land to the fullest extent. He keeps his pigs at the bottom of the slope, ensuring odors don't reach his home. The piglets are moved up the slope as they grow, and in the final few weeks before they are taken for slaughter, they are kept in a wire pen near the road for easy access to transportation.

Jaffe's Tamworth pigs



CORNELL COOPERATIVE EXTENSION¹

Cornell Cooperative Extension is a state and national outreach network for agricultural education. The Sullivan County office primarily works on agricultural production, business, and ag-economic development, which seeks to bridge the gap between the consumer and the farmer. Its also gives consumers greater access to local food, with six farmers markets selling local produce in Sullivan County from May through October.

With the help of Cornell Cooperative Extension, the Tonjeses were able to secure a Land Grant in 2002 for the mobile cheese-processing facility that helped them implement their new business model. Recently Extension has obtained a grant for building a meat-processing facility and slaughterhouse in Sullivan County to serve the more than 200 livestock farms in the region.

The New Farmer Training Program at Cornell Cooperative Extension has 60 to 65 graduates, more than 85 percent of whom work in agricultural enterprises. There are two main courses in the program: Business Management and Principles of Livestock Management. Students come from a variety of backgrounds. Among them are retirees with experience in business but not in agriculture, and young entrepreneurs who are passionate about agriculture but lack their own startup capital.

NEW FARMER DEVELOPMENT PROJECT²

The New Farmer Development Project (NFD) is an initiative by GrowNYC, a nonprofit whose goal is to improve the quality of life in New York City through a clean and healthy environment. NFD helps connect immigrants who have some farming experience with small farms in the region. It also focuses on additional educational support for the immigrants.

Created in 2000 as a collaboration between Greenmarket and Cornell Cooperative Extension's NYC Program, the project supports novice farmers in the City, Hudson Valley and Catskill Regions, New Jersey, and Northeastern Pennsylvania. By providing support to the next generation of farmers, NFD helps strengthen farmers markets and regional food security by providing the public with easy access to fresh food. At the same time, this strategy helps preserve local farmland and farm communities.

To date, 16 individuals and their families—from the Dominican Republic, Colombia, Ecuador, and Mexico—have started their own farms with the support of NFD's La Nueva Siembra Program. These new farmers sell vegetables, flowers, traditional ethnic produce, eggs, and honey at more than 40 farmers markets. Many of these markets are located in immigrant neighborhoods, allowing NFD farmers to sell to members of their community.

NFD has partnered with the National Immigrant Farming Initiative and the Northeast Network of Immigrant Farming Projects to further develop its model.

1. "Learn about Cornell Cooperative Extension," Cornell Cooperative Extension, March 15, 2010. <http://cce.cornell.edu/learnAbout/Pages/About.aspx> (accessed July 2010).

2. "New Farmer Development Project," GrowNYC. <http://www.grownyc.org/greenmarket/nfdp> (accessed September 2010).

NEXT CONSIDERATIONS...

The case studies in this report have illustrated the Catskill region's potential to generate local economic activity and be a significant part of the New York metropolitan area's foodshed. Realizing that potential depends on the success of small-scale agriculture.

More than half of Sullivan County's productive soil is not being used for agriculture. The lack of infrastructure and distribution impedes the growth of existing farms and hinders the creation of new enterprises. A quick-freeze facility for fruits and vegetables, for example, would create jobs, permit farmers to expand their operations, and give consumers—particularly institutional customers like schools and hospitals—access to local food outside the growing season. It could even help farmers extend their CSA seasons.

The connections between farmers and their markets must also be addressed. At the local scale, Sullivan County could procure local produce and milk for district schools and other institutions. The implementation of farm-to-school programs would give struggling farmers a stable, consistent market. The county could also help develop a local brand for its agricultural sector, a marketing strategy that could play into the robust demand for fresh food in New York City and the greater metropolitan area. Moreover, urban dwellers are a likely target for agritourism in Sullivan County. Agritourism, along with organic labeling, helps increase farm incomes. All such efforts that connect farmers with their local and regional markets would improve the profitability of farming in Sullivan County.

This report seeks to raise awareness—among farmers, their neighbors, governments and agencies, and local businesses—about the viability of farming in Sullivan County, its contribution to the county's economy, and its potential to grow, given innovative technology, strategic marketing, and farm-friendly policies. The ultimate goal is to cultivate sustainable agriculture in the Catskills.

Next, we pose a series of hypothetical “what ifs” to encourage creative thinking and new ideas that will help agriculture become a vibrant sector in Sullivan County.



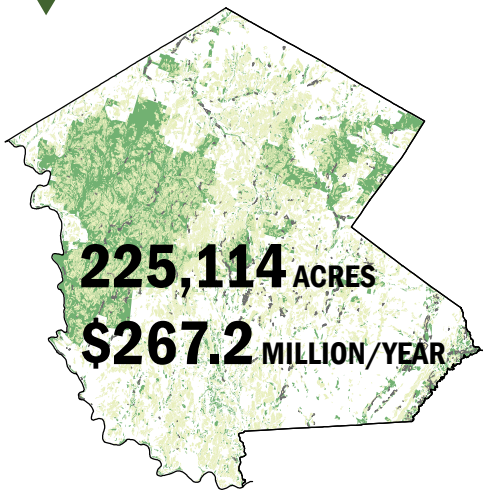
WHAT IF...

- 1. All available land in Sullivan County were in production?**
- 2. Schools in Sullivan County were mandated to serve local milk?**
- 3. Sullivan County developed value-added products?**
- 4. The government supported agritourism policy?**

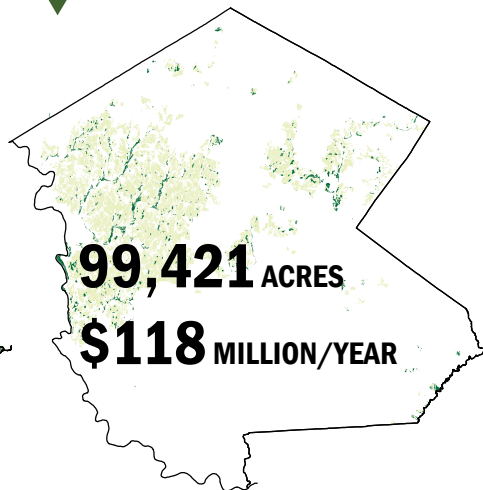
WHAT IF...

ALL AVAILABLE LAND IN SULLIVAN COUNTY WERE IN PRODUCTION?

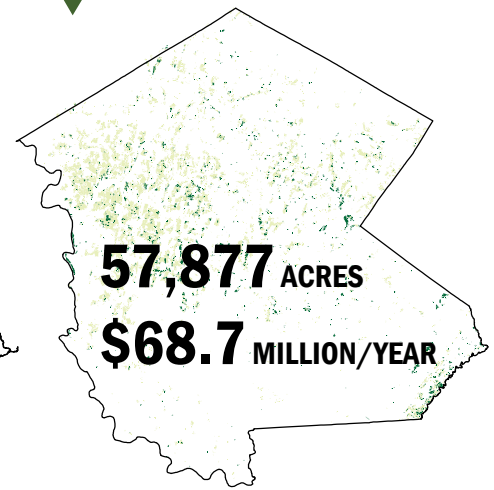
TOTAL AVAILABLE FARM-WORTHY SOIL



TOTAL AVAILABLE FARM-WORTHY SOIL WITHIN AG DISTRICT



CURRENT SOILS IN PRODUCTION



SUPPLY¹

According to the Sullivan County annual farm survey in 2009, a total sum of 57,877 acres of land was in some sort of active production, with a total economic value of \$68.7 million. This means a total yield of \$1,187 per year per acre of cultivated land. The projections above are based on a complete use of farm worthy soil (Grade I,II,III) within the agricultural districts of Sullivan County.

WHAT DOES THE COUNTY GET BACK?²

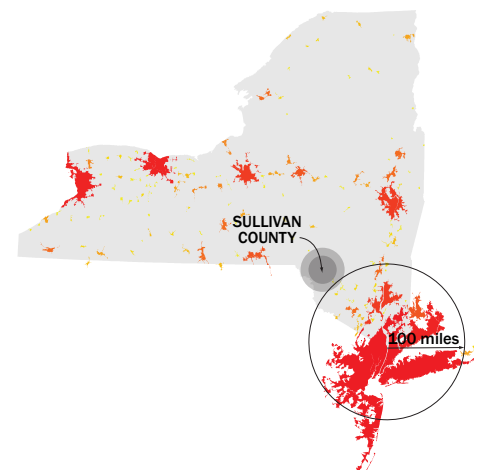
Production on all farm-worthy soils could in fact generate revenue for the county three-fold. The agricultural tax base requires less infrastructure than residential development and can better withstand the boom and bust cycles of real estate speculation. In a survey of second-home owners in Sullivan County, the vast majority of respondents showed at least some concern for the amount of taxes they paid. Most felt as though they received little in exchange.

DEMAND³

Sullivan County is on the edge of one of the largest consumer markets in the world. The New York City metro area has a population of approximately 18,818,536. Manhattan alone hosts a market of more than 9 million people and is one of the world's premier dining-out destinations, with more than 18,696 restaurants. The NYC food market is a \$30-billion-a-year industry. The fresh food component (dairy, produce, meat, and eggs) was worth \$500 million for the years 2004-2010, but demand is growing. While a large quantity of several major New York State products (apples, cabbage, onions, and sweet corn) make their way through existing food distribution systems, channels for other products grown in-state are less developed. Poultry and meat products, for example, have little representation in current NYC local distribution systems. It is estimated that the overall annual demand for local agricultural products exceeds \$866 million within the NYC metro area. Currently, the total annual

supply of local food for NYC amounts to only \$147 million, divided among suppliers from New York, New Jersey, and Connecticut. Thus, the total demand for local far outweighs the supply. Sullivan County has the land, water, location, and potential connections to become a premier food supply source for the New York City metropolitan area.

New York City metropolitan area



1. "Sullivan County Agricultural Facts and Figures," Cornell Cooperative Extension of Sullivan County, 2009.

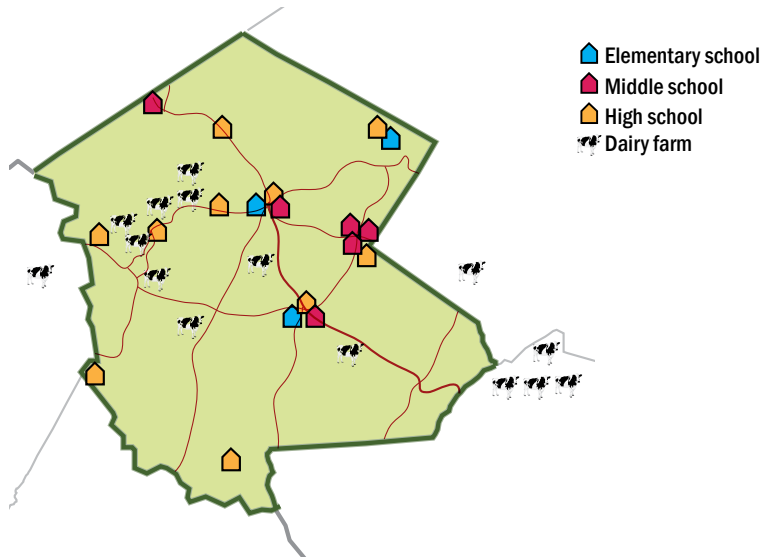
2. "Second Home Owner Study: Assessing Attitudes, Consumer Behavior and Housing Tenure in Sullivan County," Division of Planning & Environmental Management, October 2008.

3. "Final Report: NYC Wholesale Farmers Market Study," Market Ventures, Inc./Karp Resources, Albany, January 2005.

WHAT IF...

SCHOOLS IN SULLIVAN COUNTY WERE MANDATED TO SERVE LOCAL MILK?

Local schools & dairy farms



16 Dairy farmers

21 Schools¹

11,000 Students

1 cup (1/16 gallon) Daily milk serving per student²

687.5 gallons/day Daily school milk volume

43 gallons/day Daily supply per farmer

A NEW PROGRAM

Establishing a connection between public schools and local farmers is an important consideration in increasing marketing options for Sullivan County farmers and keeping farmland in production. At the same time, it is a vital step toward improving the health of the county's youngest population. Such a connection would have immediate as well as indirect long-term positive results, not only to the agricultural and educational sectors, but also to the overall quality of life. New York State already has a Farm to School program, which could be implemented through the Sullivan County Board of Cooperative Educational Services (BOCES). Since starting a new program entails many logistical challenges, an easy first step is to mandate that schools serve local milk. Among other benefits, that action would give dairy farms the steady market they need, saving acres of farmland from abandonment.

THE EFFECTS

ON THE FARMING SECTOR: The implementation of a Farm to School milk program could stabilize income for 16 local dairy farms by securing a daily demand of 43 gallons, at five times the purchase price from a processing plant like Dairylea. In the example of Dirie Dairy, this means that 10 percent of their milk production would provide nearly 40 percent of their income for at least nine months of the year.

ON SCHOOLS: Purchasing from local dairy farms would directly affect the price of milk sold to students. Even if farmers sold at their retail price (\$5.00 per gallon), and with a generous allocation of 20 percent for distribution and administrative costs, schools and parents would still save nearly 20 percent in milk costs. Enrollment in the USDA Special Milk Program reimburses schools \$0.16 per cup, allowing them to reduce the selling price. No new

refrigeration equipment would be necessary since milk would be delivered fresh and ready to serve daily.

ON SULLIVAN COUNTY: The program would help sustain 16 dairy farms and create new jobs for administrative staff at BOCES and for local distributors. It would also allow farms to hire new workers and improve their business strategies. County children would be served fresh milk with greater nutritional value daily, while their parents would pay less for it. The county government would save on infrastructure costs for second homes that would be built on approximately 400 acres of farmland that would now not be abandoned. Preserving that farmland would also maintain the environmental benefits derived from its carbon-absorbing vegetation and fertile soil.

1. New York Schools, Sullivan County School Districts, <http://www.newyorkschoools.com/counties/sullivan.html> (accessed September 2010).

2. USDA, Food Buying Guide for Child Nutrition Programs, http://www.fns.usda.gov/tn/resources/FBG_Introduction.pdf (accessed September 2010).

SULLIVAN COUNTY DEVELOPED VALUE-ADDED PRODUCTS?

ADDING VALUE¹

Value-added agriculture involves increasing the economic value and consumer appeal of an agricultural commodity. Some examples of value-added agricultural products are cheese (from milk) and jam (from fruit). It is a production and marketing strategy that requires a better understanding of the rapidly changing food industry, food safety issues, and consumer preferences. For producers, capturing value usually means additional processing and marketing costs. For example, the producer's share of the food dollar has seen a steady decline since 1900. In 2005, the average farmer's share of the food dollar was 22 cents, down from about 33 cents in the 1970s. The rest of the food dollar goes to processing, distribution and marketing.

AN EXAMPLE

Red Jacket Orchards in Geneva, NY, is a family fruit farm. It processes, packs, and markets fruit and value-added products through its own distribution network. Red Jacket transports its own products and some products from other neighboring farms to 25 New York City Greenmarkets, the Hunts Point Terminal Market, and a number of restaurants and specialty food stores. Red Jacket Orchards recently leased 5,000 square feet of warehouse space in Brooklyn so that it can offer more efficient delivery. This warehouse provides one central point to manage packaging size, labeling, and other marketing strategies.

UNDERSTANDING MARKET TRENDS²

USDA's Agricultural Marketing Service works to improve agricultural product distribution by identifying opportunities,

developing solutions, and opening up market channels. The service analyzes critical "megatrends"—availability of labor, the declining supply and rising cost of natural resources, and shifting models of distribution and transportation. It also determines the ideal distance between farmer and consumer to ensure high-quality products.

CREATING PARTNERSHIPS³

Foodlink Distribution Center, based in Rochester, NY, believes partnerships and collaboration are fundamental components to product sales. Foodlink provides food, nutrition, education, and resources to at-risk communities in ten counties of central and western New York State. Foodlink partners with Freshlink Farms, Red Jacket Orchards, and Pederson Farms to supply local New York produce to schools, wholesalers, suppliers, and restaurants in the greater Rochester area.

BENEFITS OF VALUE-ADDED PRODUCTS⁴

Value-added products generate new markets for commodity farm produce, increasing farm incomes, and generating new jobs and rural development. Some farmers can diversify by renting their space and land for catered events to generate added revenue. Educational campaigns that explain to passersby what is happening in the fields during the growing season can attract visitors and remind customers to return each year when products become available. Industry statistics indicate that retaining past customers is a much more efficient use of time, effort, and marketing dollars than working to establish or reestablish a new customer base each year.

1, 4. J. Fulton, "Value-Added Business Ventures through Producer Alliances," New Ventures In Food and Agriculture for Indiana, Purdue University. <http://www.extension.purdue.edu/extmedia/ID/ID-318.pdf> (accessed September 2010).

3. <http://www.ams.usda.gov/AMSV1.0/> (accessed September 2010).

3. J. Barry, "Smart Distribution Strategies – A Review of Some Northeast Distribution Businesses and Their Strategies," May 2006.

THE GOVERNMENT SUPPORTED AGRITOURISM POLICY?

AGRITOURISM

A recent study by the Leopold Center for Sustainable Agriculture at Iowa State University indicates that over the past 30 years, farm income has remained flat while farm expenses have more than tripled. To balance their bottom line, many farmers have become dependent upon government subsidies and income from second jobs known as “off-farm activities.” Statistics from the Economic Research Service, an agency within the Department of Agriculture, provide a snapshot of the situation. In 1977, family farmers had an average household income of \$14,867, with 70 percent of that figure from off-farm activities. By 2005, the gap between these income sources had widened, with the average income at \$81,420 and off-farm income accounting for 80 percent.¹

Agritourism entails activities, conducted by a farmer on the farm, that promote the sale, marketing, production, harvesting, or use of farm products and educate the public about farming methods and farm life.² Agritourism enables farmers to generate additional revenue while staying on the farm and using their already established skills.

THE EUROPEAN EXAMPLE

The European Union (EU) has created incentives for producers to add value to agricultural production by participating in agritourism.³ The EU designates certain geographic regions, and within these regions, local products that are linked to the area’s culture and history. The government protects these products against production in any other part of that country. This encourages agritourism, which can be a method of revitalizing rural areas by increasing farm income, creating new jobs and diversifying the tourism sector.⁴

Veneto, a region located in northeastern Italy, comprises 7,194 square miles of flatland, hills, and mountains with 15,000 farms. The average farm is 4.5 hectares (about 12 acres).⁵ Agritourism in the Veneto reverses the traditional method of transporting agricultural products to off-farm markets: it brings customers to the farm. Customers are prepared to spend generously on vacations in rural areas. In most cases agricultural production remains the primary activity of the farm, and agritourism adds value to marketing opportunities.⁶

Italy has three national rural tourism organizations.⁷ Terra Nostra supports many farms in 18 regional associations by publishing and advertising local guides, providing local development projects, and forming joint ventures with schools. Turismo Verde promotes hundreds of farms through an “information service” tool. Agritourist promotes 200 farms with publications, activities, and promotional events, such as seminars and conferences.

1, 6. M. Villano, “How Old McDonald Keeps His Farm. *New York Times*. February 17, 2007.

2, 3, 7. R. Clemens, “Keeping Farmers on the Land: Agritourism in the European Union,” *Iowa Ag Review*, Summer 2004, Vol. 10 No. 03.

4. N.Y. AGRIC & MKTS 301.15 Definitions, 308. Right to farm.

5. E. Biuso, “Down on the Farm with Your Sleeves Rolled Up. *New York Times*. November 23, 2007.

WHAT IF...

ENCOURAGING AGRITOURISM⁸

IN KENTUCKY

The Kentucky legislature is considering a bill that would give professionals in agritourism protection from liability and would require sites of agritourism activities to post appropriate warning notices.

IN KANSAS

The Agritourism Promotion Act of 2004 limits liability through mandatory signage. The bill also creates a tax credit equal to 20 percent of the agritourism liability insurance that farmers are required to buy, up to \$2,000 a year.

Businesses must register with the Kansas Department of Commerce to be eligible.

IN NEW YORK

The Upstate New York Agritourism and Education Program offers three levels of grants between \$10,000 and \$50,000 to local farmers to encourage agritourism development. These grants can be used to finance projects such as sightseeing amenities, farm tours, and tourist accommodations.

“FOR A SMALL FARM TO SURVIVE IN TODAY’S WORLD, IT’S GOING TO HAVE TO COME UP WITH SOME KIND OF PLAN TO DIVERSIFY. GROWING CROPS IS NO LONGER ENOUGH TO SURVIVE ON SMALL ACREAGE.”

Ken Cook, President of the Environmental Working Group⁹

“WE COULDN’T SURVIVE ON TOURS ALONE, BUT THE MONEY WE MAKE FROM THEM CERTAINLY ALLOWS US TO STAY SMALL AND DEDICATED TO QUALITY ARTISAN CHEESE-MAKING. IT’S BECOME A HUGE AND IRREPLACEABLE PART OF OUR INCOME.” Dee Harley, Harley Farms, Pescadero, CA¹⁰

ACCORDING TO A CORNELL REPORT FROM 2000, FARMERS WHO TURNED TO AGRITOURISM COULD BE AS MUCH AS 40 PERCENT MORE PROFITABLE.¹¹

In August 2006, State Senator George H. Winner, Jr. (R-C, Elmira) and Assemblyman David Koon (D, Fairport) sponsored a bill that promotes agricultural tourism as an increasingly popular practice vital to the future of the state’s agricultural industry. It was signed into law by Governor George Pataki. According to Winner and Koon, the 2006-2007 **STATE BUDGET INCLUDED \$1 MILLION FOR AGRITOURISM PROJECTS** administered through the State Department of Agriculture and Markets. Additional grants will provide up to \$50,000 in matching funds for projects involving traditional agritourism activities.¹²

The Department of Agriculture does not keep statistics on agritourism, but Jane Eckert, president of Eckert AgriMarketing, a consulting firm in St. Louis, estimates that **4 OR 5 PERCENT OF THE NATION’S 2.1 MILLION FARMS ENGAGE IN SOME FORM OF AGRITOURISM**, up from her 2 percent estimate in the 1990s.¹³

8. The Vermont Legislative Research Shop, Government Activities in Support of Agritourism, The University of Vermont.

9. J. Iovine, “A New Cash Crop: The Farm as a Theme Park.” New York Times. November 2, 1997.

10, 13. M. Villano, “How Old McDonald Keeps His Farm.” New York Times. February 17, 2007.

11, 12. Press release from New York State Assembly, August 31, 2006.

EATING IS AN AGRICULTURAL ACT

With an expanding global population, increasing pressure on our natural resources, and food insecurity for many communities around the world, locally grown food is becoming a more critical focus for us all. According to the Regional Plan Association, in the Northeast alone, where 2 percent of the country's land base contains 20 percent of the nation's population, an 18 percent increase in the population is expected by 2025. That's 9 million more mouths to feed. At the same time, we are losing our agricultural land base at an alarming national rate of two acres each minute. This rate of conversion has accelerated in each successive decade since the 1950s and reached a peak in the early 1990s. During that period, New York State saw one farm lost to development every three days. The reliance on food imported from across the country, and even across the globe, has wide ranging implications. Today, one in five children in New York City has Type II diabetes, a result of poor diet and inadequate exercise, and one in four people under the age of 18 is considered obese. The production and transportation of food is responsible for 20 percent of all fossil fuel consumption. The frequency of contaminated food outbreaks from large commodity-based farms continues to increase. Responding to this situation requires a coordination of diverse

interests, investment from a variety of sectors, and an acknowledgment that we must act now to preserve the core of our local food system.

The basic concept of a foodshed connects food with its origin – the land from which it comes. Local farmland is what makes local food possible. To build a more locally based, self-reliant food economy, we must understand a foodshed's specific geographic and ecological dimensions and conditions. Local food is not a fixed concept; it constantly adapts to harmonize with nature and shifting development patterns. Sustainable food production, processing, distribution, and consumption can be integrated only after we safeguard and enhance this farmland foundation. Through a collaborative effort to establish an awareness of how current trends influence land use and human health, we can design wise policy to encourage food security, nutrition, and environmental protection. Energy use and climate change concerns suggest that food grown in closer proximity to its point of consumption will use less energy and produce less pollution. The closer food is produced to where it is consumed, the greater the likelihood that it will be fresh, in season, and more nutritious.

This report has profiled Catskill farmers to illustrate their creative solutions to obstacles that prevent a more viable economic model for small scale local agriculture. Together they have the capacity to sustain a regional foodshed. Their stories are intended to motivate a movement that connects us to a local food base that changes our food consumption patterns to improve human nutrition and reduce agriculture's environmental footprint. In turn, this can increase a farmer's access to a regional market that pays a decent wage for labor, encouraging communities to develop infrastructure and networks to support local farms, and ultimately protecting farmland from conversion.

A new conservation paradigm is required to preserve our farms and our local food. We must create a system that can attract newcomers by making land affordable and create sustainable markets by developing infrastructure to process, distribute, and transport our food. Whether you buy local food because it's convenient or tastes better, your dollar will support the local economy, protect the environment, and conserve a working landscape. Local food is a part of our culture. Local food is an investment in New York State's future. Buy local, and vote with your fork.

Jennifer Grossman, Open Space Institute



10 POINTS

FOR POLITICIANS

- Create incentives to buy local at county and statewide scales, strengthening relationships between local food production and food consumers.
- Target incentives toward entrepreneurs interested in starting a farm or expanding a current business.
- Enact policies to reduce risk and liability for farmers who participate in agritourism.

FOR CONSUMERS

- Purchase fresh groceries from local farmers, through a CSA, or at a farmers market. Know the benefits of eating seasonally and sustainably.
- Understand the principles of organically grown food and the importance of balanced nutrition.
- Encourage children and others to learn about how and where food is grown. Take trips to local farms and ask your supermarket to identify locally grown food.

FOR FARMERS

- Sign up for distribution assistance programs, such as Greenmarkets and the Just Food Program.
- Start an apprenticeship program at your farm to teach aspiring farmers and receive extra help.
- Allocate 100% of your land to new farming strategies and techniques. Test organic approaches.
- Reach out to your end market and get to know consumers personally, to better understand their needs.

RESEARCH SEMINAR PARTICIPANTS

Nidhi Bhatnagar is a native of New Delhi, India. She received her Bachelor of Architecture from the School of Architecture, C.E.P.T University, Ahmedabad. A registered architect in India, she worked professionally before receiving her Master of Science in Architecture and Urban Design from Columbia University in 2010.

Eleonora Encheva is a native of Bulgaria. She received her Bachelor of Arts in Architecture and Mathematics from Columbia University in 2007. She was cofounder and president of the Green Builders at Columbia club in 2008-09 and is committed to promoting sustainability practices. She received her Masters in Architecture from Columbia in 2010.

Jenny Joe is a native of Nanjing, China. She received her Bachelor of Architecture from Rensselaer Polytechnic Institute. She worked professionally in New York City before receiving her Master of Science in Architecture and Urban Design from Columbia University in 2010.

Brad Kingsley is a native of Hutchinson, Kansas. He received his Bachelor of Architecture from Kansas State University in 2005. He worked professionally in Kansas City, Missouri, and New York City before receiving his Master of Science in Architecture and Urban Design from Columbia University in 2010.

Henry Martes is a native of Bronx, New York. He received his Bachelor of Architecture from Rensselaer Polytechnic Institute. He has interned for the City of New York and worked professionally in White Plains, New York before receiving his Master of Science in Architecture and Urban Design from Columbia University in 2010.

Cyntia Navarro is a native of Lima, Peru. She received her Bachelor of Architecture from Florida International University. She worked professionally for AECOM Design and Burt Hill Architects before receiving her Master of Science in Architecture and Urban Design from Columbia University in 2010.

Monica Pinjani is a native of Karachi, Pakistan. She received her Bachelor of Architecture from Indus Valley School of Art and Architecture. She worked as an architect in Karachi before receiving her Master of Science in Architecture and Urban Design from Columbia University in 2010.

Josh Turner is a native of Kansas City, Missouri. He received his Bachelor of Architecture from the University of Kansas. He is a LEED accredited professional and worked as an architect in Dallas, Texas, before receiving his Master of Science in Architecture and Urban Design from Columbia University in 2010.

Manas Vanwari is a native of Mumbai, India. He received his Bachelor of Architecture from Kamla Raheja Vidyanidhi Institute of Architecture in Mumbai. He worked professionally for Charles Correa before receiving his Master of Science in Architecture and Urban Design from Columbia University in 2010.

Sunghwan Yoon is a native of Seoul, South Korea. He received his Bachelor of Architecture and Master of Architecture from Hanyang University. He worked professionally for four years in Seoul before receiving his Master of Science in Architecture and Urban Design from Columbia University in 2010.

Richard Plunz is Professor of Architecture at the Graduate School of Architecture, Planning and Preservation at Columbia University, where he directs the Urban Design Program. He also directs the Urban Design Lab at Columbia's Earth Institute. He is a member of the Town of Lumberland Planning Board in Sullivan County, New York.

