



# Agricultural Chapter Of Boscawen Master Plan

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## AGRICULTURAL COMMISSION INTRODUCTION

In 2009 a volunteer group of interested people, *The Boscawen Agricultural Commission Exploratory Group*, met regularly to discuss the future of agriculture and forestry in Boscawen, with a view to forming an Agricultural Commission, with the support of The Boscawen Board of Selectmen. In 2007 the New Hampshire General Court passed legislation (RSA 674:44-e) that enables the formation of these advisory commissions, in our case through a warrant vote at Town Meeting.

***“RSA 674:44e Agricultural Commission. An agricultural commission may be established in accordance with RSA 673 for the proper recognition, promotion, enhancement, encouragement, use, management, and protection of agriculture and agricultural resources, tangible or intangible, that are valued for their economic, aesthetic, cultural, historic, or community significance. The word “agriculture” shall include the entirety of RSA 21-34-a, which is the definition of farm, agriculture, and farming.”*** RSA 674:44-f goes on to define the parameters of such a commission, and RSA 674:44-g establishes the financial restrictions on such an agricultural commission.

The Town of Boscawen Agricultural Commission (AgComm) was established by vote at the March 9, 2010 Town Meeting. The Agricultural Commission is an independent land use commission; it serves in an advisory capacity to the Town of Boscawen’s Zoning Board of Adjustment, Planning Board, and Conservation Commission. By legislation it does not and shall not hold property. The Commission meets on the second Thursday of the month in the meeting room on the fourth floor of the town office building. Meetings are open to the public and the Commission invites your participation.

After an initial meeting, Commissioners and Alternates were selected by the Board of Selectmen and sworn in. The current slate of officers and Commissioners includes: John Keegan, Chair; Elaine Clow, Vice Chair; Tina Larochelle, William Bevans, Commissioners; Roger Sanborn, *Ex-Officio*; Tom Danko, Bruce Crawford, Ken Marshall, John Porter, Commission Alternates.

Given the Agricultural Commission’s goals of “recognition, promotion, enhancement, encouragement, use, management, and protection of agriculture and agricultural resources,” the AgComm has prioritized a set of activities in support of these goals: collaboration with other town departments, boards and commissions, educating the public about a range of agricultural topics, offering citizens the opportunity to raise their own food, supporting local agricultural enterprises, and participating in the development of state and national policies related to agriculture.

Collaboration with other land use boards and commissions is on-going. The Commission meets with the Planning Board to explore items of common interest. Results of that are a set of recommendations from the Agricultural Commission related to definitions of agriculturally related terminology found in the Zoning Regulations. The objective of this undertaking is to make the definitions clearer and agriculture friendly. Specific activities included: the ordinance to allow by right up to 12 hens throughout town, site visits to applicants seeking special exceptions to raise horses, to supply recommendations to the Zoning Board, and to give practical advice about building placement and Best Management Practices, (BMPs) including manure management.

This update to the Master Plan provides a discussion of the current status of Boscawen’s agricultural sector with recommendations for support of agriculture in the future. In addition, the AgComm has participated in: Old Home Days with floats and booths; co-sponsored events with Boscawen Conservation Commission, the Boscawen Historical Society, and the Boscawen Public Library.

We have worked closely with Cooperative Extension Staff and Master Gardeners to present throughout the year a “First Monday” series of educational programs. We have had approximately 250 attendees annually at the indoor lectures and the outdoor hands-on workshops. While most of the attendees are from Boscawen, the ‘First Monday’ has received publicity statewide resulting in attendees coming from throughout the State. Topics have included: wood-lot management, back yard chickens, starting seeds, composting, food preservation, safer burning of wood for heat, putting your garden to bed, high tunnels, low tunnels and greenhouses, history of barns in NH, and tool maintenance, among many others.

An AgComm sub-committee began working in 2010 to establish a Community Garden. The endeavor received support from the Board of Selectmen, and the University of New Hampshire Cooperative Extension along with local businesses, civic and religious groups and individuals. About 25 families and individuals cultivated 50 12' x 12' plots for their own use, with surplus produce donated to local food pantries. Crops included tomatoes, potatoes, corn, beans, cabbage, broccoli, peppers, onions, squash, cucumbers, peas, flowers, carrots, beets, chard, kale, eggplant, and numerous other edibles. The program continues to prosper. The most significant improvement at the garden since its inception has been to install a dedicated water line with a hydrant along with an irrigation system. This would not have been possible without the collaboration and support of the Penacook-Boscawen Water Precinct.

An ongoing initiative of the Agricultural Commission, as part of the mandate to support and encourage the production and consumption of locally grown food, is to design, provide seed money and build "Welcome to Boscawen" signs that include the message **"We support local agriculture."** The new signs, to be installed in the spring of 2014 by Public Works, will be located at the five major entry points to Boscawen.

During the 2010 State budgeting process the Commission shared its concerns with legislators and the general public about the massive cuts to the Cooperative Extension Service. The Merrimack County Cooperative Extension office is housed in Boscawen and provides research-based information to consumers and farmers. It is a critical resource for the Agricultural Commission as well as local agricultural producers.

At the present time the federal government, through the Food and Drug Administration (FDA), is reviewing public comments on the proposed two rules related to the Food Modernization Safety Act (FMSA). The AgComm has submitted comments on both proposed rules and contacted all members of the congressional delegation to enlist their active support to have the rules rewritten to eliminate the anticipated negative impacts on local agriculture. Two local farmers met in January 2014 with a representative of Senator Jeanne Shaheen to show first-hand what these proposed rules changes could mean to them. In late December the FDA agreed to allow additional feedback from the public for the next round of rule-making process.

A town's Master Plan determines the vision of the townspeople for land use in that community. This revision of the Agriculture Chapter of Boscawen's Master Plan provides the AgComm the opportunity to be a voice of clarity for agricultural and forestry interests. It is clear that many citizens are concerned about the maintenance of our working lands, agricultural heritage, and rural character. The Town of Boscawen Planning Board and the Zoning Board of Adjustment have asked for the Commission's input to assist their understanding of working land use in forestry and agriculture when revising land use ordinances, or considering applications for future development.



*Evelyn Pike, a member of the Granite State Draft Horse Association, took part in the 2012 Plowing Match at Community Garden with her mules*



## RESEARCH & OBJECTIVES SECTION

### INTRODUCTION AND RECOMMENDATIONS

Agriculture and forestry have always been given preeminence in state and local government in New Hampshire, because food and fiber production are essential to a healthy economy and society. Although in today's global economy food and forest products can travel very long distances to reach market, there is a growing interest in local products of the land. Local production has the advantage of freshness, being of known quality and origin, and contributes more to the local economy.

Local planning needs to be sensitive to the needs of agricultural and forest production and should not create road blocks that could cause hardships for farm or forest landowners or increase the cost of operation, making them less competitive. Agriculture and forestry preserve rural character, which is a top priority for virtually every small town. The planning needs to be done keeping in mind:

#### RSA 672:1, III-B:

Agriculture makes vital and significant contributions to the food supply, the economy, the environment and the aesthetic features of the State of New Hampshire, and the tradition of using the land resource for agricultural production is an essential factor in providing for the favorable quality of life in the state. Natural features, terrain and the pattern of geography of the state frequently place agricultural land in close proximity to other forms of development and commonly in small parcels. Agricultural activities are a beneficial and worthwhile feature of the New Hampshire landscape and shall not be unreasonably limited by use of municipal planning and zoning powers or unreasonable interpretations of such powers;

#### RSA 672:1, III-C:

Forestry, when practiced in accordance with accepted silvacultural principles, constitutes a beneficial and desirable use of New Hampshire's forest resource. Forestry contributes greatly to the economy of the state through a vital forest products industry; and to the health of the state's forest and wildlife resources through sustained forest productivity, and through improvement of wildlife habitats. New Hampshire's forests are an essential component of the landscape and add immeasurably to the quality of life for the state's citizens. Because New Hampshire is a heavily forested state, forestry activities, including the harvest and transport of forest products, are often carried out in close proximity to populated areas. Further, the harvesting of timber often represents the only income that can be derived from property without resorting to development of the property for more intensive uses, and pursuant to RSA 79-A:1, the state of New Hampshire has declared that it is in the public interest to encourage preservation of open space by conserving forest and other natural resources. Therefore, forestry activities, including the harvest and transport of forest products, shall not be unreasonably limited by use of municipal planning and zoning powers or by the unreasonable interpretation of such powers;

#### RSA 672:1, III-D:

For purposes of paragraphs III-a, III-b, III-c, and III-e, "unreasonable interpretation" includes the failure of local land use authorities to recognize that agriculture, forestry, renewable energy systems, and commercial and recreational fisheries, when practiced in accordance with applicable laws and regulations, are traditional, fundamental and accessory uses of land throughout New Hampshire, and that a prohibition upon these uses cannot necessarily be inferred from the failure of an ordinance or regulation to address them.

Although agriculture has traditionally been associated with barns, silos, and cows grazing in fields, today's farming often takes the form of greenhouses, specialty crops and pick-your-own fruits and vegetables. Another changing aspect is the movement from commodity and wholesale prices to value-added and retail.

All these things open agriculture up to a variety of land uses and building needs, which must be accommodated by the planning and zoning processes without putting the agricultural enterprises into complex commercial classifications. Similarly, forestry has changed with the times, with a wide diversity of operations including highly mechanized equipment capable of operating large acreages very efficiently. Planning and zoning also needs to be sensitive to unique aspects of today's forest management.

## **OBJECTIVES**

- To preserve the traditional, rural and visual character of the Town of Boscawen by conserving its natural, historic, scenic, agricultural, forestry and water resources.
- To create and implement incentives for landowners to keep their land in active agriculture and forestry management.
- To encourage implementation of Best Management Practices for agriculture, forestry and residential land to reduce nonpoint source pollution, erosion and runoff.
- To provide infrastructure and educational opportunities to complement and strengthen agricultural enterprises.
- To encourage local people to purchase and to use agricultural products from area producers.
- To encourage the rebirth of agritourism that enables farmers to diversify income and provide educational experiences for consumers.
- To retain larger unfragmented blocks of land, especially timber parcels that are conducive to forestry management.
- To encourage the establishment of new and/or diversified agricultural enterprises.
- To create a farm friendly atmosphere for food production, value added and retail sales.
- To promote more self-sufficiency of food supply in Boscawen.
- To research the feasibility of establishing a community kitchen in Boscawen.
- To encourage the involvement of all age groups in agricultural enterprises, especially younger people, by collaborating with schools as well as civic and religious organizations.

## **USE AND PROTECTION OF NATURAL RESOURCES**

### **Land Use**

Open spaces are vital to a healthy local economy, a livable community, and responsible management of the natural resources of a municipality. Well-managed forestry and agricultural lands are an asset to the financial well-being of a community by creating a sustainable source of income for the owner, who pays taxes and fees to the community. A healthy community offers the diversity of agriculture and forestry as part of its commercial and industrial land uses. Conflicts of land use should be minimized and upheld within the Zoning Ordinance.

### **Agriculture**

Agriculture is an important resource to Boscawen. Historically, agriculture has been the major land use. Many of the original agricultural fields have grown fallow and reverted to forests. Today, Boscawen contains some large, contiguous parcels of active farmland. Many of the existing agricultural conservation programs are concerned mainly with prime farmland soils and the productivity of the land. While these factors should not be ignored, they are not the only measures for evaluating the importance of agricultural areas.

Farms provide open space for viewing fields and hillsides, hunting opportunities, habitat, as well as scenic views of the farm itself. The visual presence of the farm buildings, pastures, croplands, and orchards are essential to the character of Boscawen. Farms, in general, provide the variety of habitats—fields, forests, streams, wetlands, and transitional areas—essential for species diversity.

Even on these small-scale farms, agricultural activity allows for self-sufficiency in food production, as well as providing excess crops that,” can be sold at farm stands, local restaurants, farmers' markets and other outlets.

Therefore, the preservation of agricultural should be a priority for Boscawen. The Town should seek to acquire development rights and easements for agricultural lands to ensure the continuation of farming in the community.

### **Forestry**

The forests of Boscawen have long been an important part of the Town’s history. The early settlers used the forest as a source of building material, fuel, and food. By the mid-1800s, most of the once-majestic forests were cleared for farmland. However, much of the land proved unsuitable for agriculture, and the abandoned fields and pastures quickly reverted to forest. The drier, sandy plains tended to favor pine, while the hillsides favored a mixed forest of oak, maple, beech, birch, pine, and hemlock.

These forests are once again providing a source of saw timber, pulpwood, biomass chips and firewood to the local population along with providing a place for recreation, wildlife habitat, and watershed protection. Publicly owned forests such as the State and Town Forests, as well as many private woodlots in town, are managed in a way to ensure that the forests remain a viable resource to help meet the future needs of townspeople.

Responsible timber management and following Best Management Practices (BMPs) enhances wildlife habitat and maintains open space, rural "viewsheds,” and viable income from the land without permanently developing it into other uses such as housing.

### **Recreational Opportunities**

Working land that is actively managed for agriculture and forestry is maintained as open space. Properly managed open space is essential for wildlife habitat and contributes to maintaining clean soil and water. Open space provides a variety of recreational opportunities including wildlife viewing, hiking, cross-country skiing, cycling, and hunting. Scenic vistas or “viewsheds” not only enhance recreation and contribute to the quality of life of a community, but also develop a community’s tourism opportunities. The Town Forest is an example of a variety of recreational opportunities within this context. An interpretive trail, hunting, wildlife observation, and other activities are commonly practiced. The Merrimack River is another option. Private enterprises in Boscawen provide services to residents and visitors enjoying outdoor activities.

### **Consumer Survey**

During June 2013 the Boscawen Agricultural Commission distributed over 1,400 one page surveys to most Boscawen households in the *Boscawen Newsvine*. The surveys were designed to learn more about residents’ attitudes, perceptions, and concerns with regard to local agriculture. The information is to help the Commission design programs and promotional efforts targeted to the interests of residents as well as agricultural enterprises in the community. Recipients were asked to complete the survey by June 30<sup>th</sup> and return it to the town office. Due to a low response rate, fewer than 20 surveys returned, the Commission decided to include the five test surveys, extend the deadline a month and placed surveys for distribution at the town office and library.

A total of 32 surveys have been received. Appendix 1 is a copy of the survey. The results are tabulated in Appendix 2, Boscawen Agricultural Commission Consumer Survey Summary. Comments and detailed written responses have been compiled in Appendix 3, Consumer Survey Commentary.

The small number of responses does not constitute a representative sample of Boscawen’s residents. However, the respondents do provide a window on the thoughts of those who are interested enough in Boscawen agriculture to share their views.

- Most purchase food locally and grow some of their own.
- Most think it is important to support local agriculture.
- Very few have attended any of the Commission's agriculture education programs.
- Most shop at the Concord and Penacook farmer's markets.
- The majority would support a farmer's market in Boscawen. About half prefer a weekend market. (See responses to Question 12 in Appendix 3) The producers who responded were about equally divided on this question. (See responses to Question 12 in Appendix 3)
- Most are aware that the Agricultural Commission sponsors the Community Garden.

## **INVENTORY OF NATURAL RESOURCES**

### **Current Use**

Property owners can file for reduced property taxes through the Current Use Taxation program. The current use value is the assessed valuation per acre of open space land based upon the income-producing capability of the land in its current use—not its real estate market value. This valuation shall be determined by the Town's assessor in accordance with the range of current use values established by the Current Use Board (CUB) and in accordance with the class, type, grade, and location of land. Owners of parcels of land that are not anticipated to be used for a different type of use in the future can apply at the Town Office for the following categories per RSA 79-A:2.

*Source: RSA 79-A:2 Current Use Definitions*

Definitions:

- "Farm land" means any cleared land devoted to or capable of agricultural or horticultural use as determined and classified by criteria developed by the commissioner of agriculture, markets, and food and adopted by the Current Use Board (1,385 acres in Boscawen).
- "Forest land" means any land growing trees as determined and classified by criteria developed by the state forester and adopted by the Current Use Board. For the purposes of this paragraph, the board shall recognize the cost of responsible land stewardship in the determination of assessment ranges (7,614 acres in Boscawen).
- "Unproductive land" means land, including wetlands, which by its nature is incapable of producing agricultural or forest products due to poor soil or site characteristics, or the location of which renders it inaccessible or impractical to harvest agricultural or forest products, as determined and classified by criteria developed by the Current Use Board. The board shall develop only one category for all unproductive land, setting its current use value not to exceed that of the lowest current use value established by the board for any other category (72 acres in Boscawen).
- "Wetlands" means those areas of farm, forest and unproductive land that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (859 acres in Boscawen).
- "Open space land" means any or all farm land, forest land, or unproductive land (See details above) as defined by this section. However, "open space land" shall not include any property held by a city, town or district in another city or town for the purpose of a water supply or flood control, for which a payment in place of taxes is made in accordance with RSA 72:11 (9,930 acres in Boscawen).

Approximately 9,930 acres or 65% of the Town's total land and water area of 15,385 acres were in current use as of April 1, 2013.

A land use change tax shall be levied when the land use changes from open space land to a non-qualifying use. At the 1999 Boscawen Town Meeting, residents voted for a 100% land use change tax allocation, with no cap, to be deposited into the Conservation Fund to support land conservation.

Conservation land consists of 15 parcels, totaling 737 acres. These parcels, generally agricultural or forested, may or may not be enrolled in the Current Use Program. Their use is limited by deed covenants, easements or other legal conditions. Examples are permanent conservation land, unofficial conservation land, unprotected water supply land and developed public land (See Map A).

### **Agricultural Resources**

The *Agricultural Soils Map* (See Map B) of Boscawen shows the locations of the best soils in Town for farming. Information was obtained from Granit.unh.edu and overlaid onto a parcel map that was created by Cartographic Associates. The parcels were then corrected using orthophotography and recent surveys.

Prime farmland soils shown in Table I, are described nationally as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for these uses. Most of the 628 acres found in Boscawen are concentrated in the Merrimack River intervals, north of Walker Pond, or along Daniel Webster Highway south of the Salisbury, Franklin, and Northfield town lines.

**Table I**  
Prime Farmland Soils in Boscawen

<b>Map Symbol</b>	<b>Full Name</b>	<b>Hydrolic Rating</b>	<b>Drain Class</b>	<b>Farmland Class</b>	<b>Total Acres</b>
101A	Ondawa very fine sandy loam, 0 to 3 percent slopes, frequently flooded	Not Hydric	Well drained	Prime farmland if protected from flooding or not frequently flooded during the growing season	126
104A	Podunk fine sandy loam, 0 to 3 percent slopes, frequently flooded	Partially Hydric	Moderately well drained	Prime farmland if protected from flooding or not frequently flooded during the growing season	13
166B	Canterbury fine sandy loam, 3 to 8 percent slopes	Partially Hydric	Well drained	All areas are prime farmland	20
201A	Ondawa very fine sandy loam, 0 to 3 percent slopes, occasionally flooded	Partially Hydric	Well drained	All areas are prime farmland	369
478B	Gilmanton fine sandy loam, 3 to 8 percent slopes	Partially Hydric	Moderately well drained	All areas are prime farmland	22
48A	Madawaska loamy sand, 0 to 3 percent slopes	Partially Hydric	Moderately well drained	All areas are prime farmland	22
64A	Groveton fine sandy loam, 0 to 3 percent slopes	Not Hydric	Well drained	All areas are prime farmland	56

**GRAND TOTAL**

**628 Acres**

*Source: NH Granit February 2009*



Categorized soils of statewide importance, shown in Table II, have properties that exclude them from the prime farmland list. However, they are important to agriculture in the State of New Hampshire. They produce fair to good crop yields when properly treated and managed. As a general rule, erosion control and irrigation practices are necessary to produce high-yield crops.

The 87 acres found in Boscawen are scattered throughout Town, but concentrations are found in the Valley of Industry and its outlying areas, along Water Street, and along the northern portion of Daniel Webster Highway.

**Table II**  
Soils of Statewide Importance in Boscawen

Map Symbol	Full Name	Hydrolic Rating	Drain Class	Farmland Class	Total Acres
166C	Canterbury fine sandy loam, 8 to 15 percent slopes	Not Hydric	Well drained	Farmland of statewide importance	11
458C	Metacomet fine sandy loam, 8 to 15 percent slopes	Partially Hydric	Moderately well drained	Farmland of statewide importance	2
478C	Gilmanton fine sandy loam, 8 to 15 percent slopes	Partially Hydric	Moderately well drained	Farmland of statewide importance	73
613A	Croghan fine sandy loam, 0 to 5 percent slopes	Partially Hydric	Moderately well drained	Farmland of statewide importance	1

**GRAND TOTAL 87 Acres**

*Source: NH Granit February 2009*

Soils of local importance shown in Table III are identified by County agencies within the State. These soils also support the production of food, feed, fiber, forage, and oilseed crops. These soils produce fair to good crops when managed properly. A total of 631 acres of these soils are mainly found on top of the stratified drift aquifers (along the Merrimack River, in lower Boscawen, and north of Walker Pond). An additional concentration is found in the north-central part of Town along High Street.

**Table III**  
Soils of Local (Merrimack County) Importance in Boscawen

Map Symbol	Full Name	Hydrolic Rating	Drain Class	Farmland Class	Total Acres
167B	Canterbury fine sandy loam, 3 to 8 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	55
167C	Canterbury fine sandy loam, 8 to 15 percent slopes, very stony	Not Hydric	Well drained	Farmland of local importance	11
167D	Canterbury fine sandy loam, 15 to 25 percent slopes, very stony	Not Hydric	Well drained	Farmland of local importance	33
220A	Boscawen fine sandy loam, 0 to 3 percent slopes	Not Hydric	Excessively drained	Farmland of local importance	21

Map Symbol	Full Name	Hydrolic Rating	Drain Class	Farmland Class	Total Acres
220B	Boscawen fine sandy loam, 3 to 8 percent slopes	Not Hydric	Excessively drained	Farmland of local importance	12
220C	Boscawen fine sandy loam, 8 to 15 percent slopes	Not Hydric	Excessively drained	Farmland of local importance	29
290B	Champlain-Woodstock complex, 3 to 8 percent slopes	Partially Hydric	Somewhat excessively drained	Farmland of local importance	94
290C	Champlain-Woodstock complex, 8 to 15 percent slopes	Partially Hydric	Somewhat excessively drained	Farmland of local importance	12
35A	Champlain loamy fine sand, 0 to 3 percent slopes	Partially Hydric	Somewhat excessively drained	Farmland of local importance	9
35B	Champlain loamy fine sand, 3 to 8 percent slopes	Partially Hydric	Somewhat excessively drained	Farmland of local importance	3
35C	Champlain loamy fine sand, 8 to 15 percent slopes	Not Hydric	Somewhat excessively drained	Farmland of local importance	15
443B	Chichester sandy loam, 3 to 8 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	9
443C	Chichester sandy loam, 8 to 15 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	26
443D	Chichester sandy loam, 15 to 25 percent slopes, very stony	Not Hydric	Well drained	Farmland of local importance	41
459B	Metacomet fine sandy loam, 3 to 8 percent slopes, very stony	Partially Hydric	Moderately well drained	Farmland of local importance	55
459C	Metacomet fine sandy loam, 8 to 15 percent slopes, very stony	Partially Hydric	Moderately well drained	Farmland of local importance	59
459D	Metacomet fine sandy loam, 15 to 25 percent slopes, very stony	Partially Hydric	Moderately well drained	Farmland of local importance	54
479B	Gilmanton fine sandy loam, 3 to 8 percent slopes, very stony	Partially Hydric	Moderately well drained	Farmland of local importance	32
479C	Gilmanton fine sandy loam, 8 to 15 percent slopes, very stony	Partially Hydric	Moderately well drained	Farmland of local importance	24
47C	Henniker fine sandy loam, 8 to 15 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	4

Map Symbol	Full Name	Hydrolic Rating	Drain Class	Farmland Class	Total Acres
47D	Henniker fine sandy loam, 15 to 25 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	5
480B	Millsite-Woodstock-Henniker complex, 3 to 8 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	1
480C	Millsite-Woodstock-Henniker complex, 8 to 15 percent slopes, very stony	Partially Hydric	Well drained	Farmland of local importance	19
64D	Groveton fine sandy loam, 15 to 25 percent slopes	Not Hydric	Well drained	Farmland of local importance	8

**GRAND TOTAL**

**631 Acres**

*Source: NH Granit February 2009*

In summary, Boscawen has a total of 1,346 acres of well rated farmland soils, distributed among three categories. This represents approximately 9% of the town's total land area. However, farming and farm related enterprises have not been limited to these areas. Currently active farms, orchards and agricultural enterprises includes at least 3,739 acres or 24% of Boscawen's total area. Several factors such as land availability, transportation routes, walking routes and access to markets are some of the other important factors that affect location. Table IV is a list of active farms, orchards, and agricultural enterprises in Boscawen, all of which are extremely important to protect from development or other use changes. For purposes of this chapter the term "active farm" means an agricultural enterprise with a gross annual income of \$1,500 or more. Consequently, the information in Table IV should be considered a conservative snapshot of Boscawen's agricultural enterprises.

In an effort to learn more about Boscawen's current agricultural productivity a survey of "active farms," Appendix 4, was mailed to the 32 owners listed in Table IV. The purpose was to get a sense of the size and scale of agricultural production in Boscawen; to document the industry, and, to assist in improving the awareness of local food production. Fifteen surveys were returned representing ownership of approximately 46% or 1,700 of the 3,739 acres of the active farms, orchards and agricultural enterprises in Boscawen. Among these "active farms" approximately 860 acres are cropped and the balance are managed woodlands (See below). A significant amount of this land is dedicated to pasture, hay, field corn and mixed legumes. The balance is vegetables, orchards, berries and nursery stock, including flowers, shrubs and ornamental trees. Sales outlets range from contracts or leases to farm stands, wholesale, farmers' markets, and, some Internet sales. About half of the 'active farms' have large animals: horses, beef and/or dairy cattle, goats and pigs, while about the same number raise ducks and chickens for meat and/or eggs.

**Table IV**  
Active Farms, Orchards and Agricultural Enterprises in Boscawen

Farm/Owner	Owner	Map/Lot	Address	Acreage	Use
Apple Ridge Farm & Orchard	Larochelle Family Trust	45 2	151 Water Street	58	flowers, vegetables, equine
Avaloch Farm	Tauber, Alfred	96 7	Hardy Lane	85	fruit, silage, hay
		47 56 2		21	
		96 7 1		44	
Black Forest Nursery	Towle, Robert & Nancy	81D 87 1	209 King Street	4	trees, shrubs, flowers
Colby	JM Colby Trust	47 9	346 High	97	hay, timber
		47 24	339 High	116	
Colby	JM & JG Colby Gerrish Trust	47 20 B	261 High & Merrill Corner	86	hay, timber
Colby	JG & BV Colby	47 15	270 High	258	hay, timber
		47 30	247 High	27	
Colby	RG Colby Trust	47 28	295 High	40	hay, timber
		94 37	No Water	120	
Jones Farm-Goodhue Road	Jones, Ernest & Lola	47 16	9 Goodhue Rd	38	hay
Jones Farm-Water St.	Jones, Jeffery	47 40	226 Water St.	35	hay
Corn Hill Farm, LLC	DeAlmeida, Joseph	45 6 2	128 Corn Hill Road	103	deer
Merrimack Country Farm	MC farm	49 21	Daniel Webster Highway	483	hay, timber
Tom Gilmore	Tom Gilmore	96 3	233 Water Street	144	hay, silage
Highway View Farm	Crete, Martha, Trustee	81 3	RR & Merr	114	active dairy, corn, beef
		81 4	River	8	
		81 5	Route 3	112	
		81 6	River	9	
		81D 1	100 River	155	
		183D 1	Merr River	170	
		183D 2	River	4	
		183D 7	River	1	
		183D 8	River	19	
Knowlton Farm	Robert Knowlton	45 29	17 Knowlton Rd Knowlton/Water	57	hay
		45 30		55	
		+lots			
Peor Es Nada Farm	John & Barbara Keegan Family Trust	45 54	242 Corn Hill Road	89	timber, eggs, vegetables, maple
Marshall Farm	Marshall, Keith	183D 14	169 North Main Street	39	pumpkins, vegetables

<b>Farm/Owner</b>	<b>Owner</b>	<b>Map/Lot</b>	<b>Address</b>	<b>Acreage</b>	<b>Use</b>
Morrill Farm Water/Long	Morrill Trust	96 1	7 Long St	122	hay
Porter Farm Porter's Perfect Peppers	Porter, John	183D 8 A	41 River Road	1	peppers, blueberries, potatoes
Richardson Farm	Richardson, James & Susan	47 42 & 47 45	170 Water Street	109	flowers, vegetables, ice cream and baked goods
Sanborn Farm	Sanborn Trust, Roger	94 3 & 94 24	111 North Water Street	131	leased corn hay
Goodrich Horse Farm—Foster Meadows	Goodrich, Pamela	47 40 1	216 Water Street	96	training horses
Silver Farms	Silver Estate, Stanley	47 44 94 17	120 Water St Backland	89 75	hay
Sunrise Knoll	Jaworski, Charles	83 39A	106 Queen Street	27	hay, leased corn, beef, eggs
Sweatt Farm	Mary Pearson, Dot Sweatt & Linda Riel	94 21	8 Long Street	74	hay
Rangeway Farm	Hardy, Alan & Pam	96 5	219 Water Street	88	stock, hay
Pustizzi Fruit Farm	Pustizzi Trust, Joseph	45 47 45 47 A 45 61	148 Corn Hill Road 146 Corn Hill Road Off Corn Hill Road	114 113 22	fruits, vegetables, maple syrup, eggs
Udder Hope Farm	Paul & Valerie Strieby	45 6 45 6 2 45 6 3	77 Water St 75 Water St 71 Water St	12 11 10	Dairy, Poultry Beef
Boutwell	Boutwell, Martin	45 46 1	136 Corn Hill Road	18	hay, beef
Phoenix Hill Farm	Ferdinand, Ryan & Hvizda, Michael	47 12	322 High Street	5	vegetables, pork, duck, chicken
Healthy Herds	Jessica Abbate	81B 23	332 Queen Street	10	goats
Sanborn Farm	Sanborn Trust, Roger & AV	81D 11	250 King Street	3	horses
Strieby	Paul & Valerie Strieby	45 6 2&3	77 Water St	10	Meat Eggs Vegetables

**GRAND TOTAL**

**3688 Acres**

*Source: subcommittee input September thru December 2013*



## Forest Resources

The *Forest Soils Map* (See Map C) of Boscawen shows the locations of the best soils in town for growing trees. Table V explains the Soil Types. Information was obtained from Granit.unh.edu and overlaid onto a parcel map that was created by Cartographic Associates. The parcels were then corrected using orthophotography and recent surveys.

**Table V**  
Forest Soil Groups

Forest Soils Type	Definition	Types of Wood
1A	Deeper loamy soils, moderately- to well-drained	prime northern hardwood
1B	Sandy or loamy soils, moderately- to well-drained	oak & beech
1C	Outwash sands & gravels	white pine
2A	1A & 1B with limitations (very steep, shallow, or rocky)	northern hardwood
2B	Poorly drained soils	northern spruce & fir
not considered	muck & peat, rock outcrop, gravel pits, marsh, etc.	n/a

Source: NH Granit February 2009

Currently, there are at least 75 active wood lots in Boscawen totaling 6,789 acres, of which approximately 3,970 acres or 58% are managed. The vast majority of the managed woodlands is hard and softwood timber and cordwood along with maple orchards. A managed wood lot would be a certified Tree Farm with a Stewardship Plan that meets the requirements of CUB 304.09(a) (3) (b) or a completed Form CU-1.

Table VI lists both managed and active forest properties in Boscawen.

**\*\*MANAGED FOREST PROPERTIES\*\***

- A Forest Stewardship Plan that meets the requirements of CUB 304.09(a) (3) (b) or completed form CU-1
- Documentation of a Certified Tree Farm
- Letter from the NH Tree Farm Committee Confirming Certification

**\*\*ACTIVE FOREST PROPERTIES\*\***

- Current Use properties of 10+ acres and same owner contiguous parcels

**Table VI**  
Active Forest Properties in Boscawen  
**\*\**(Bold/Italic = Managed Forest Properties)*\*\***

Farm/Owner	Owner	Map/Lot	Address	Acreage	Use
Colby	JM Colby Trust	47 9 47 24	346 High 339 High	97 116	hay, timber
Colby	JM & JG Colby Gerrish Trust	47 20 B	261 High & Merrill Corner	86	hay, timber
Colby	JG & BV Colby	47 15 47 30	270 High 247 High	258 27	hay, timber
Colby	RG Colby Trust	47 28 94 37	295 High No Water	40 120	hay, timber
Colby	JG & JM Colby Boscawen Trust	47 10 47 10 47 29 A	Off High Liz Choate Lot High St	150 52 124	hay, timber

<b>Farm/Owner</b>	<b>Owner</b>	<b>Map/Lot</b>	<b>Address</b>	<b>Acreage</b>	<b>Use</b>
<i>Morrill Farms</i>	<i>Morrill Trustees, DJM &amp; EM</i>	<i>96 1</i>	<i>7 Long Street</i>	<i>122</i>	<i>softwoods</i>
<i>Niebling Property</i>	<i>Charles &amp; Mabel Niebling</i>	<i>94 27</i>	<i>North Water Street</i>	<i>67</i>	<i>timber</i>
Sanborn Property	Sanborn Trustee, Roger	94 3 94 24	101 North Water Street	131	timber
Lorden Property	Lorden, Pamela	94 34	76 North Water Street	59	hardwood & hemlock
Olsen Properties	Olsen Family Partnership, Stanley	96 3	8 North Water St	256	timber
Gilmore Property	Tom Gilmore	47 16	233 Water Street	144	timber
Jones Property	Jones, Jeffrey	96 7 47 56 2 96 7 1	226 Water Street	35	timber
Avaloch Farms	Tauber, Alfred	47 44 94 17	Hardy Lane	85 21 44	timber
Silver Farms	Silver Estate	45 2	120 Water Street Backland	89 75	timber
Larochelle Property	Larochelle Family Trust	45 3, 45 77, 94 4 94 7, 81D 92	151 Water Street	58	timber
Millard Property	Millard Trust, Maxwell and Elizabeth	45 29 45 30	Water Street	117	timber
Knowlton Farm	Robert Knowlton	45 29 45 30 +lots	17 Knowlton Rd Knowlton/Water	57 55	hay
Wolf Property	Wolf Trust, Judith and Robert	47 8 47 6	Daniel Webster Highway	135	timber
McKerley Property	McKerley Trust, Sharon Johnson	79 2 1	247 & 233 Daniel Webster Highway	306	timber
Moreno Property	Scott & Christine Moreno	49 21	298 Daniel Webster Highway	6	timber
<i>Merrimack County</i>	<i>Merrimack County Farm</i>	<i>49 11</i>	<i>Stirrup Iron Road</i>	<i>483</i>	<i>timber</i>
<i>State of NH (State Forest)</i>	<i>NH St Forest Nursery</i>	<i>81D 68 81D 67A 2 81D 67A 3</i>	<i>405 Daniel Webster Highway</i>	<i>414</i>	<i>timber</i>
Bartlett Property	Bartlett, Todd & Susan	45 62	Newbury Road	15	timber

<b>Farm/Owner</b>	<b>Owner</b>	<b>Map/Lot</b>	<b>Address</b>	<b>Acreage</b>	<b>Use</b>
<b>Woodman Lot</b>	<i>Society for Protection of NH Forests</i>	<b>49 23 1</b>	<b>272 Corn Hill</b>	<b>93</b>	<i>timber</i>
<b>Cabot Forest</b>	<i>Society for Protection of NH Forests</i>	<b>94 1</b>	<b>458 High St</b>	<b>57</b>	<i>timber</i>
<i>Society for Protection of NH Forests</i>	<i>Society for Protection of NH Forests</i>	<b>83 57 83 44</b>	<b>Mutton Rd</b>	<b>2</b>	<i>timber</i>
<b>JJ Kelly Property</b>	<b>JJ Kelly</b>	<b>83 49</b>	<b>95-99 Queen 213 Queen</b>	<b>1002</b>	<i>timber</i>
<b>Town Forest</b>	<b>TOB</b>	<b>83 62</b>	<b>Weir Road</b>	<b>259</b>	<i>timber</i>
<b>NH Fish &amp; Game</b>	<b>NH Fish &amp; Game</b>	<b>45 54</b>	<b>55 Queen Street</b>	<b>140</b>	<i>timber</i>
<b>Peor Es Nada Farm</b>	<b>John &amp; Barbara Keegan Family Trust</b>	<b>45 6 2</b>	<b>242 Corn Hill Road</b>	<b>89</b>	<i>Timber, maple syrup, hunting, hiking, birding,</i>
<b>Corn Hill Farm, LLC</b>	<b>DeAlmeida, Joseph</b>	<b>83 7</b>	<b>128 Corn Hill Road</b>	<b>103</b>	<i>timber</i>
<b>Town Conservation Property</b>	<b>TOB</b>	<b>81D 91 81D 91 A&amp;B 81D 96</b>	<b>216 Queen Street</b>	<b>296</b>	<i>timber</i>
<b>Carey Property</b>	<b>Carey Trust, Bridget</b>	<b>45 94</b>	<b>Off Queen Street &amp; Newbury Road</b>	<b>61</b>	<i>timber</i>
<b>Jean V Lawrie</b>	<b>Jean V Lawrie</b>	<b>47 1 &amp; 79 2</b>	<b>267 Corn Hill Road</b>	<b>113</b>	<i>timber</i>
<b>Jens Paech</b>	<b>Jens Paech</b>	<b>47 39</b>	<b>DW Hwy</b>	<b>252</b>	<i>timber</i>
<b>Ronald Wareing</b>	<b>Ronald Wareing</b>	<b>49 56, 49 57, 49 58, &amp; 49 62</b>	<b>242 Water St</b>	<b>49</b>	<i>timber</i>
<b>Gail Devoid</b>	<b>Gail Devoid</b>	<b>81 18</b>	<b>High St</b>	<b>80</b>	<i>timber</i>
<b>Wayne Patenaude</b>	<b>Wayne Patenaude</b>	<b>83 5</b>	<b>Queen St</b>	<b>25</b>	<i>timber</i>
<b>Keith Marshall</b>	<b>Keith Marshall</b>	<b>83 7 1</b>	<b>169 North Main</b>	<b>39</b>	<i>timber</i>
<b>Alan Wayne O'Day</b>	<b>Alan Wayne O'Day</b>	<b>83 33 C</b>	<b>202 Queen</b>	<b>18</b>	<i>timber</i>
<b>James M Pierce</b>	<b>James M Pierce</b>	<b>83 41 &amp; 83 41 4</b>	<b>82 Queen</b>	<b>14</b>	<i>timber</i>
<b>Richard Green</b>	<b>Richard Green</b>	<b>94 12 1</b>	<b>224 &amp; 230 Queen</b>	<b>14</b>	<i>timber</i>

<b>Farm/Owner</b>	<b>Owner</b>	<b>Map/Lot</b>	<b>Address</b>	<b>Acreage</b>	<b>Use</b>
<i>Richard A. Heath II</i>	<i>Richard A. Heath II</i>	<i>81B 56 A</i>	<i>North Water</i>	<i>60</i>	<i>timber</i>
<i>Richard Hardy</i>	<i>Richard Hardy</i>	<i>81D 70</i>	<i>193 No Main</i>	<i>48</i>	<i>timber</i>
<i>Rebecca Jones</i>	<i>Rebecca Jones</i>	<i>81D 67 81D 70</i>	<i>5 Newbury 21 High St</i>	<i>3 128</i>	<i>timber</i>

**GRAND TOTAL**

**6789 Acres**

*Source: subcommittee input September thru December 2013*

## **SUMMARY**

The traditional land uses of agriculture and forestry are strong and import components of Boscawen's rural character. These working lands support Boscawen's economy, wildlife habitat and open space. The objectives listed in the beginning of this chapter resulted from the discussion among members of the Agricultural Commission with input from Boscawen citizens through the consumer and producer surveys. The Agricultural Commission welcomes further input from community members. The objectives listed in the opening pages provide a framework for initiatives to strengthen and grow agriculture and forestry during the next several years while contributing to public policy development at the State and Federal levels.

The Agricultural Commission's submittal to the Planning board is intended to be a "green" document. "Green" in the sense that it is not a static plan destined for a shelf where it will be consulted every five years, but as a dynamic plan subject to revision as goals are met and conditions change.

## APPENDIX I.

### CONSUMER SURVEY

The Boscawen Agricultural Commission is conducting this brief survey to learn more about residents' attitudes, perceptions, and concerns with regard to local agriculture. This information will help the Commission design programs and promotional efforts that are targeted to the interests of residents as well as agricultural enterprises in the community. The survey results will be published in a future issue of the Newsvine. Please take a few minutes to complete this survey. To return the survey, please fold in thirds with the mail panel facing out, tape closed, and either drop off at the town office or attach a stamp and mail by June 30, 2013. If you have any questions, please call Alan Hardy at 603-753-9188 ext.305 or email [alan@townofboscawen.org](mailto:alan@townofboscawen.org)

1) Which of the following options describe your interests in local agriculture? Check all that apply.

- a) I/my family consume local foods and agricultural products \_\_\_\_
- b) I/my family is a home gardener or producer \_\_\_\_
- c) I/my family is an agricultural producer for commercial or other sales \_\_\_\_

2) On a scale of 1 to 5, with 1 being "Not at all important" and 5 is "Very Important," how important is it to you to support local agriculture in Boscawen? Circle your response.

1 2 3 4 5

3) Do you know where to purchase locally produced food in Boscawen? \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_ Not Sure

4) Do you purchase locally produced agricultural products? \_\_\_\_ Yes \_\_\_\_ No

5) On a scale of 1 to 5, with 1 being "Not at all important" and 5 is "Very Important," how important is purchasing local products to you? Circle your response.

1 2 3 4 5

6) If you answered yes to (4), what local products do you purchase? Please describe:

\_\_\_\_\_

7) If you answered no to (4), are you interested in learning more about local agricultural products and their availability? \_\_\_\_ Yes \_\_\_\_ No

8) Have you attended any of the Boscawen Agricultural Commission's educational programs on home gardening, livestock and poultry keeping and food production? \_\_\_\_ Yes \_\_\_\_ No

9) If you are not currently a home gardener or producer, tell us what topics you might be interested in learning more about. \_\_\_\_\_

10) Do you shop at Community Farmer's Markets, such as in Penacook, Concord or Tilton?

\_\_\_\_ Yes \_\_\_\_ No      If yes, which one(s)? \_\_\_\_\_

11) Would you support a Farmer's Market if one were organized in Boscawen? \_\_\_\_ Yes \_\_\_\_ No

If no, why not? \_\_\_\_\_

12) If you answered yes to (11), what day of week and time of day is best for you to shop at a Farmers' Market? Day of week \_\_\_\_\_ Time of day \_\_\_\_\_



13) Are you aware that the Boscawen Agricultural Commission maintains a Community Garden for the benefit of residents of Boscawen? \_\_\_\_ Yes \_\_\_\_ No

14) Would you like additional information on the Boscawen Community Garden? \_\_\_\_ Yes \_\_\_\_ No

15) Please tell us if there is anything more that you think the Boscawen Agricultural Commission can do to support and promote local agricultural enterprise, home gardening and food production?

---

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Thank you for completing this survey. If you indicated that you are interested in learning more about local agricultural products or the Boscawen community garden, please provide us with your mailing address or email in the space below so that we may respond.

Name \_\_\_\_\_

Address \_\_\_\_\_

Email \_\_\_\_\_

TOWN OF BOSCAWEN  
116 NORTH MAIN STREET  
BOSCAWEN, NH 03303  
ATTN: Alan Hardy

## APPENDIX II

### CUSTOMER SURVEY SUMMARY

*32 Surveys received: please note that not all questions were answered by all respondents while some questions were answered multiple times by the same respondent. Hence, not all answers sum 32. **The number of responses is in bold.***

1) Which of the following options describe your interests in local agriculture? Check all that apply.

a) I/my family consume local foods and agricultural products   **27**

b) I/my family is a home gardener or producer                   **20**

c) I/my family is an agricultural producer for commercial or other sales   **8**

2) On a scale of 1 to 5, with 1 being “Not at all important” and 5 is “Very Important,” how important is it to you to support local agriculture in Boscawen? Circle your response.

1. **0**                    2. **3**                    3. **2**                    4. **6**                    5. **17**

3) Do you know where to purchase locally produced food in Boscawen? **21** Yes **5** No **4** Not Sure

4) Do you purchase locally produced agricultural products? **30** Yes    **1** No

5) On a scale of 1 to 5, with 1 being “Not at all important” and 5 is “Very Important,” how important is purchasing local products to you? Circle your response.

1. **2**                    2. **0**                    3. **5**                    4. **4**                    5. **20**

7) If you answered no to (4), are you interested in learning more about local agricultural products and their availability?                    **1** Yes                    **1** No

8) Have you attended any of the Boscawen Agricultural Commission's educational programs on home gardening, livestock and poultry keeping and food production?    **4** Yes                    **17** No

10) Do you shop at Community Farmer's Markets, such as in Penacook, Concord or Tilton? **9** Yes **9** No  
If yes, which one    **17** P                    **17** C                    **9** T

11) Would you support a Farmer's Market if one were organized in Boscawen?    **21** Yes                    **9** No

13) Are you aware that the Boscawen Agricultural Commission maintains a Community Garden for the benefit of residents of Boscawen? **24** Yes    **8** No

### APPENDIX III.

#### CUSTOMER SURVEY COMMENTARY ON SELECTED QUESTIONS

Survey #	6	9	11	12	15
001	Corn/Apples		Too Expensive		
002	Berries		Good idea		
003	Milk/Veg/Fruit/ Berries/Pork/ Eggs		Too Close Penacook, take away from Ag in town.		Feature local bus in news vine each month
004	Corn/IceCream/Vegs/ Fruit/ Meat/Bread	Food Safety/GMOS/ Ind Food vs sustainable	We have enough nearby & our producers have their own stand	All week, one location	Commercial kitchen for all local producer/vendors
005	Fruits&Vegs		Not enough vendors	Wknds until 6pm	Great Group, good focus
006	Fruits&Vegs		Encourage what farmers are already doing		Doing well, keep it up
007	Vegs/Fruit/eggs Meat/herbs/ Flowers		Support local farm stands	Promote farm stands & kids	
008	Apples	Lower Taxes	Prices too high		
009	Fruit/Vegs		Farm stands save money		
010	Fruit/Vegs Syrup			Sat am	On-line Orders see <a href="http://localfoodsplymouth.org">localfoodsplymouth.org</a>
011	Apple & Carter Hill/Rossvie			Sat 7-11 am	Farmer Market in Boscawen
012	Fruits/Vegs			All	
013	Fruits/Vegs/ Maple Syrpe			12-7pm	Drop rental fee for garden to \$5/lower income req to available enterprise to \$1000.
014	Fruits/Vegs			Saturday	Market during the holidays
015	Corn/Pies/Ice Cream			Fri after 5pm	Love the commercial kitchen idea
016	Fruits/Vegs			Tues,Wed,Thurs	Keep up the good work!
017	Fruit/Vegs		convenient	Thurs & Fri	

Survey #	6	9	11	12	15
018	Vegs			Tues 10am	
019		Bugs/Pests & Organics Fertilizer	Would buy from locals rather than commercial	Wed & Sat Afternoon and evenings	Good way to spread the word
020	Vegs	All of the above		anytime	No
021	Fruits			anytime	Help Boscawen become more food independent
022	Ice cream fruits			Mon 5pm	Got it covered
023	Any veggie			Any late pm	Use the Voice and Internet
024	Richardson's & Pustizzi			Thurs/Fri pm	Have a Coop Market
025	Farmers market			Fri am	
026	Vegs/Fruits				
027	Vegs/Fruits				Doing a great job now
028		Where to buy local produce			Map of local products
029	Milk/Honey	Easy things to grow in window boxes for apt living		Sat/Sun am	
030	CSA/Pustizzi			Wed 3-5	
031	Eggs/Fruit/ Veggies		yes	Fri pm	
032	Veggies		Yes	Thurs 6pm	Ad for 4-H

COLBY-SAWYER COLLEGE

# Kearsarge Regional Food System Report

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Colby-Sawyer College Environmental Studies Community  
Based Research Project

Fall 2011-Spring 2012

This report is respectfully submitted by the Colby-Sawyer College Environmental Studies Community Based Research Project. The members of this project are: Alex Banat, Laurel Bauer, Gage Bensley, Torrey Burns, Andrew Chase, Margaret Gousse, Tyler Hoppock, Iraj Khaliqi, James Montanari, Ryan Prothro, Ashley Reynolds and Adam Wilson



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## **Abstract**

The purpose of the Community-Based Research Project is to provide an in-depth, yearlong analysis of an environmental issue with detailed field work and extended site visits. The 2011-2012 Community-Based Research Project class worked with Kearsarge Area Eat Local (KAEL) as a community partner throughout the project. We looked into the current condition of the local food system and the surrounding community which includes fifteen towns in a twelve-mile radius around Mount Kearsarge. The towns are: Andover, Boscawen, Bradford, Danbury, Henniker, Hopkinton, New London, Newbury, Salisbury, Springfield, Sunapee, Sutton, Warner, Webster, and Wilmot. Throughout the year, our team gathered data pertaining to farm locations, distribution points for local food and other outlets such as supermarkets, demographic data, and agricultural trends related to New England. Furthermore, we distributed surveys to evaluate consumer perceptions at various locations among the towns.

Our team identified sixty three farms in the area and gathered data on the types of produce, whether they practice organic methods, number of acres in production, how they sell their produce, and more. The sixty three farms we gathered data on are a good representation of the local area. We also compiled basic demographic data, including population density, income and household size. The demographic data compiled will help us draw conclusions about the region's potential customers in tandem with the consumer perception survey.

This comprehensive final report includes an in-depth analysis of the consumer perception surveys and SWOT analysis. In addition, we identify stakeholders, analyze data and make recommendations for the Kearsarge Regional Food System including farmers' markets, networking between farmers, supermarket possibilities, food hub potentials and consumer education and outreach.

## **Executive Summary**

In this study our team studied the Kearsarge Regional Food System encompassing fifteen towns around Mount Kearsarge. We were able to collect information on sixty three farms in the area. We identified, analyzed and made recommendations for stakeholders in the Kearsarge regional food system.

We identified food outlets such as institutions and restaurants. In addition demographic information was collected on consumers in the Kearsarge Area.

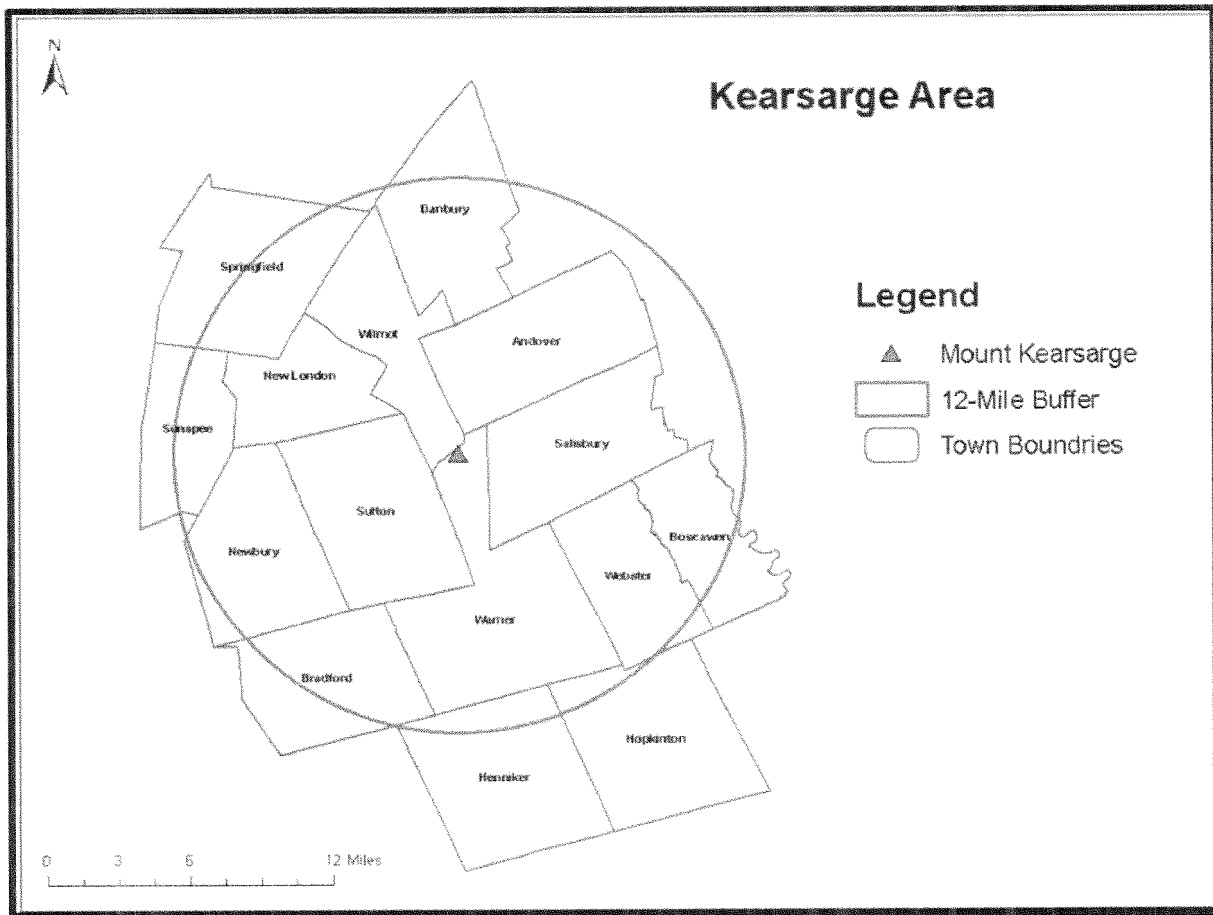
We created a SWOT analysis based on information we collected on farms and stakeholders. A consumer survey was also conducted and analyzed.

Based on the information that we analyzed, we made these recommendations:

- Reshaping Farmers' Markets
- Marketing
- Collaboration with Supermarkets
- Food Hub Facility
- Composting Facility
- Attracting Young Farmers
- Promoting Environmentally Conscious Farming Methods and Marketing
- Consumer Education and Perception

## Introduction

The Kearsarge Regional Food System includes fifteen towns located in a twelve mile radius of Mount Kearsarge. This radius was arbitrarily determined by our professors to designate a local area around Mount Kearsarge, which is our area of study for the length of the year. These fifteen towns include Andover, Boscawen, Bradford, Danbury, Henniker, Hopkinton, New London, Newbury, Salisbury, Springfield, Sunapee, Sutton, Warner, Webster, and Wilmot, as shown in Figure 1. As the Community-Based Research Project group at Colby-Sawyer College in the Environmental Studies Department, we are partnered with Kearsarge Area Eat Local (KAEL). KAEL is an organization based in Warner, New Hampshire that is composed of farmers and citizens of the surrounding area. KAEL is dedicated to promoting locally and sustainably grown food and organizing “eat local” events like the Warner Fall Foliage Festival and the Warner Winter Farmers’ Market. The objective of the project is to be able to provide KAEL with recommendations, as well as provide opportunities for farmers to collaborate with each other and connect with their community.



**Figure 1:** Towns included in the Kearsarge Area

## Resources

Each member of our team read *The New Organic Grower* by Eliot Coleman. This text is a manual on how to grow quality organic vegetables using the most sustainable methods. Coleman discusses the basics of farming such as organization of plots, crop rotations and the overall message of feeding the soil, not the plant. In reading this manual, we were able to understand the complexities of planning and operating a farm and the different aspects of managing the land. When we visited farms we were able to identify the concepts that Coleman described. One concept used by Coleman was season extension in the form of hoop houses. These structures are metal pole frames with a thick plastic covering. Farmers use these structures to allow produce to grow in colder temperatures and protect them from the elements.

We also read *The Town That Food Saved* by Ben Hewitt. This text gave us a history of the town of Hardwick, Vermont, including its most recent economic troubles and how they used local businesses and privately owned farms to create a community supported network to unify the local economy. See section titled "Visit to Hardwick Vermont" for more detailed information about the book.

The professors for this project include Leon-C Malan Ph.D., Laura Alexander Ph.D., Amy Ouellette M.S., and Waverly Thorsen Ph.D. Amy Ouellette is an adjunct professor at Colby-Sawyer College and she works for the University of New Hampshire Cooperative Extension for Merrimack County. Our professors lectured on a variety of current agricultural issues throughout the first semester. The topics we discussed are as follows:

- Introduction to farming in the northeast and the unique conditions of farming in New Hampshire and the types of food that are commonly grown
- Global food systems and the environmental impacts of agriculture and worldwide variation in diet
- Soil biology and the chemical composition of soil and essential elements to producing crops
- Local rules and regulations and the agencies that set and enforce them in New Hampshire, zoning regulations, and obstacles that these regulations present to local farmers
- The history of pesticides, their chemical composition, and effects on the environment and human health
- Integrated Pest Management (IPM), its background and how it works.
- The history of the Farm Bill, as well as the components and how much funding it receives
- Biotechnology and genetic engineering of food, its applications, and the reaction against consuming genetically modified foods (GMOs)
- Seed saving, where on a plant seeds are formed, how to harvest seeds, as well as breeding plants with specific traits

note  
info here

- Human health component of food and the effects on diet related diseases, as well as the chemical composition of food, molecular solubility, free radicals, additives, and chemical flavoring
- History of wheat
- Organic vs. non-organic

## **What is a farm?**

Our team agreed that it was necessary to define what a farm is to allow uniform data collection that could be used when exploring the Kearsarge area. The United States Department of Agriculture (USDA) defines a farm as "any operation that sells at least one thousand dollars of agricultural commodities or that would have sold that amount of produce under normal circumstances" (USDA, 2011). For the purpose of this project we excluded hay fields, horse farms and homestead operations. While these farms affect the food system, for the purposes of focusing on larger producers in the area, we did not include these operations in the project. We collected information on farms that were visible in the community and sold their products to the public.

## **What is local food?**

When defining a farm, the food that is produced has a distinction in terms of what is considered local. There is not one fixed definition of local because it is complex and difficult to define. Some definitions of local are provided below:

The New Oxford American Dictionary defines a "locavore" as a "local resident who tries to eat only food grown or produced within a 100-mile radius.

The 2008 Farm Act defines a "locally...produced agricultural food product" as a product that can be transported a total distance of less than 400 miles from its origin or within the state's boundaries (Steve Martinez, 2007).

Local is defined by the New Hampshire Department of Agriculture, Markets and Food as any product that is produced and distributed within the border of the state (Uncles).



One way to define local is to study a regional area and see if it logically contains a food system.

## **What is a food system?**

Throughout class discussions, we developed an idea of how to look at food systems. We learned that a food system has inputs and outputs that comprise it and how food is created and distributed within it. There is no clear definition of a food system because it can entail a variety of unique factors. One definition of a local food system is: "...a complex network of relationships between actors including producers, distributors, retailers and consumers grounded in a particular place" (Dunne, Chambers, Giombolini, & Schlegel, September 2010).

What makes a healthy food system is collaboration between producers, consumers and institutions. For example, producers can rely less on buying fertilizer if nutrients are composted and reused in the system. Also, if the food is purchased by individuals and institutions within the system, the local economy benefits because the money circulates within the system. If this project were to be replicated in the future, researching towns that have the potential to best utilize available resources to create a healthy food system would be ideal. Components that future studies could look for before defining a specific food system would be transportation routes, geographic location, producers, institutions and demographics.

A text that our class used to help understand how to think about systems was *Leverage Points: Places to Intervene in a System* by Donella Meadows. Meadows discusses how to think of the "state of the system," which is described as "whatever standing stock is of importance: amount of water behind the dam, amount of harvestable wood in the forest, number of people in the population, amount of money in the bank" (Meadows, 1999). In this case, food produced in the Kearsarge area is the standing stock. Inflows are what goes into the system and how it affects the "state of the system." The outflows are what leave the system. As a class, we used this article to discuss what inflows and outflows are in a food system and how they affect the "state of the system." For example, an inflow into the

system is fertilizer and an outflow is food that is produced and distributed. A model that displays inflow and outflows effectively is the Greater Hardwick Food System.

## Visit to Hardwick, Vermont

In *The Town That Food Saved*, author Ben Hewitt explores the area around Hardwick, Vermont. He begins by talking about how the town was fueled by the granite industry and then went into a period of decline, as a result the regional economy suffered. Throughout the rest of the book he discussed a reemergence in the local economy through meeting “agripreneurs.” The focus of these agricultural entrepreneurs is to revitalize the local economy by producing sustainable local food in an attempt to decrease the reliance on industrial food. He also explored how these high-end food products benefit the working class around Hardwick.



Pete's Greens Farm, Craftsbury, Vermont

After learning about this town and its agricultural community, we wanted to see how their food system works and to visit organizations that were discussed in this book.

The Center for an Agricultural Economy (CAE) is a small non-profit organization that began in 2004. Their mission statement is “to bring together community resources and programs needed to develop a locally-based food system that supports the desire of rural communities to rebuild their economic and ecological health” (About The Center for an Agricultural Economy ). It provides information to farmers and local businesses, while at the same time hosting bimonthly meetings where the community can come together and discuss what is working and what needs to change. The CAE also functions as a source for loans for farmers who may not have the capital to invest in new equipment or to repair what they already have.

In the Hardwick food system there is collaboration between the farmers and operations necessary for local agriculture production. Andrew Meyer and Todd Pinkham started Vermont Soy in 2007, which is now a small-scale production facility of GMO-free raw material. Their product line includes soy milk, tofu and cooking oils. They also share production space with Vermont Natural Coatings and serve as a distribution site for produce from a local farmer.

Highfields Center for Composting is a non-profit organization that educates farmers about composting and runs food waste recycling programs with a focus on action-based environmental education. During our visit, we met with the director, Tom Gilbert, and also witnessed the composting operation. Tom explained how composting is beneficial to a food system because it allows nutrients to remain in a system and be recycled. This enables farmers to use what the system creates, such as compost, rather than bring in synthetic or natural fertilizers that increase their environmental impact.

Pete's Greens of Craftsbury Village Farm is a large vegetable growing operation. Recently, a fire destroyed their storage and processing barn, which halted the operation. They received overwhelming support from the community and have recently built a large processing facility, which includes large storage units, produce sorting area and a kitchen. Pete Johnson, the founder, uses season extension methods, such as hoop houses, as well as the other aspects of running a vegetable growing operation in northern New England.

Down the road from Pete's Greens is Sterling College in the heart of Craftsbury, Vermont. This four-year college is one of only seven Work-Learn-Service colleges in the country. Sterling College has their own working farm on which they grow vegetables and raise animals. They use their produce in their dining hall where students prepare locally-produced meals. Their education is a combination of traditional classroom lectures, as well as applied knowledge on a farm setting.

After reading *The Town That Food Saved*, along with our visit to the town of Hardwick, we started to think critically about the components of a food system and the aspects that comprise it:

- Compost
- Soil
- Seeds
- Farms
- Transportation
- Processing & Storage
- Distribution
- Consumer
- Table

Figure 2 depicts the different components that comprise the greater Hardwick Food System. This food system is circular and continuous, meaning it doesn't necessarily have a beginning or end. In this example, compost will serve as the beginning, as well as the end. This is easily seen if we look at compost as a component of the system. Compost is created from food waste and breaks down to become soil. This process occurs at places such as Highfields Center for Composting. The soil that is created at the composting center is the nutrient-rich base for the seeds. The soil is then used by seed growers. These seeds are grown at High Mowing Organic Seeds, and then sold to farmers. Then Pete Johnson of Pete's Greens at Craftsbury Village Farm plants the seeds to grow crops. They then transport those crops to Vermont Soy or the Vermont Food Venture Center, a commercial processing kitchen, to be processed and stored. The produce is delivered through Black River Produce, a small-scale trucking company that transports goods throughout New England, where they will then be distributed by various outlets. The food is distributed to consumers via the Buffalo Mountain Coop, a small grocery store in the heart of downtown Hardwick, as well as through CSAs, farm stands and schools. That food is brought to the tables of families, institutions like Sterling College, inns and restaurants where the excess becomes waste that is given back to composting facilities, like Highfields Center for Composting, and returned to the system as soil.

Systems are comprised of inflows and outflows. The inflows that remain in the system include the compost, soil and seeds. The outflows that remain in the system include processing and storage, distribution and consumer. For example, an outflow of the food system that ultimately remains in the system and becomes an inflow is compost. Nutrients are recycled within the system and there is less reliance on nutrients coming from outside.

Seeds grown at High Mowing are an example of an inflow that remains in the system. There is also collaboration between High Mowing and Highfields Composting because they provide compost that is used to grow the seeds in. The food that is produced in the system goes to institutions, inns, restaurants and families, where the waste is brought back for composting. There are inflows and outflows of the system that come from outside the Hardwick region. Seeds are one example because not all seeds can be grown in Vermont. Compost also cannot provide all the nutrients needed for the soil to produce crops. Pete's Greens Good Eats CSA provides food that leaves the system and goes to cities such as Burlington, where there is more demand for the food. Thus, not all the food produced in the system stays in the system because not everyone in the greater Hardwick area can afford it (Hewitt, 2009). Vermont Soy for example, produces soy products that are sold to other institutions outside the system such as Colby-Sawyer College. The Hardwick system is a relatively independent system because, for the most part, the inflows and outflows come from, and remain within their regional system.

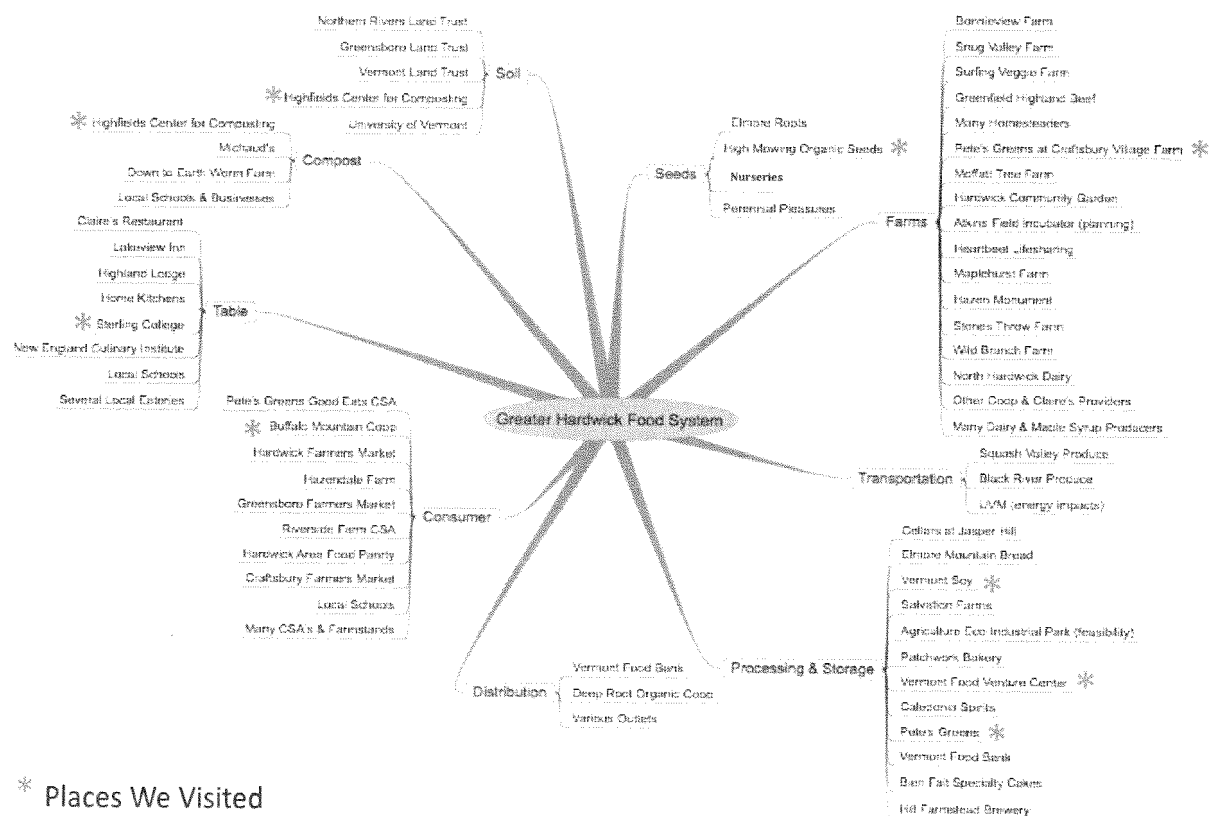


Figure 2: Greater Hardwick Food System recreated from CAE

The Greater Hardwick Food System does not rely solely on outside sources, but rather on collaboration to create goods and services that are contained within the system. A healthy food system relies less on external inputs, but utilizes the surrounding community as much as possible by spending money on local businesses and producers.

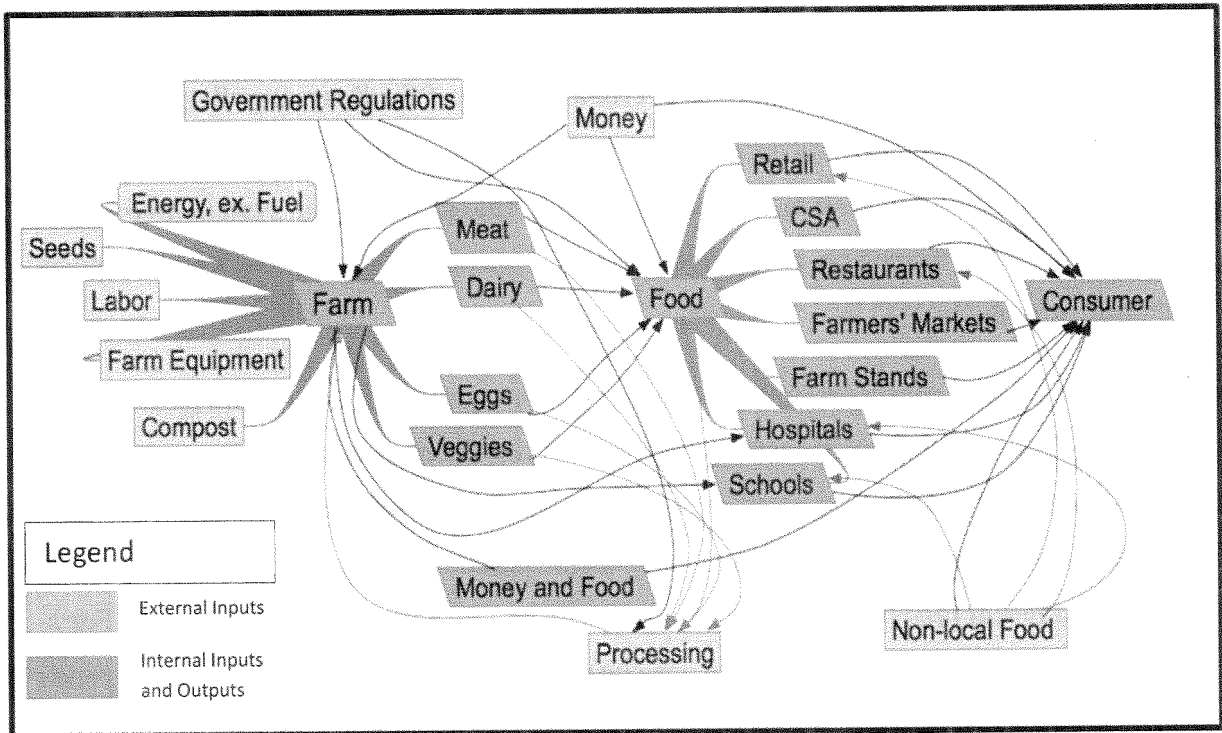
This visit and learning experience created background knowledge for our team to use when studying the Kearsarge Regional Food System. Looking at a system like Hardwick gave our project team ideas about what comprises a healthier and self-sufficient food system.

## **Kearsarge Regional Food System**

Using the Hardwick system as a model, we created a map of the Kearsarge Regional Food System (Figure 3). The model is described as linear because there are more inputs that come from outside of the system, and more outflows that go out of the system. In order to provide context for the region, we looked at trends on a statewide level related to aspects of a food system.

We collected information pertaining to farm data, demographic information, food outlets, transportation routes, government regulations and consumer perception. To understand the producers in the Kearsarge system we gathered information about inputs and outputs of farms and different farming practices. Our team visited ten farms that represent a variety of different farming models: dairy, meat, vegetable and orchard production. For a broader look at the current state of the agricultural system, we researched various trends related to agriculture and the Kearsarge food system. We also collected information on retail outlets, such as CSAs, restaurants, farmers' markets, farm stands, schools and a hospital. To better understand the consumer aspect of a food system, we did research on the demographics of the population in the Kearsarge region. Looking at Figure 3, we move through the diagram from left to right starting with farm inputs.

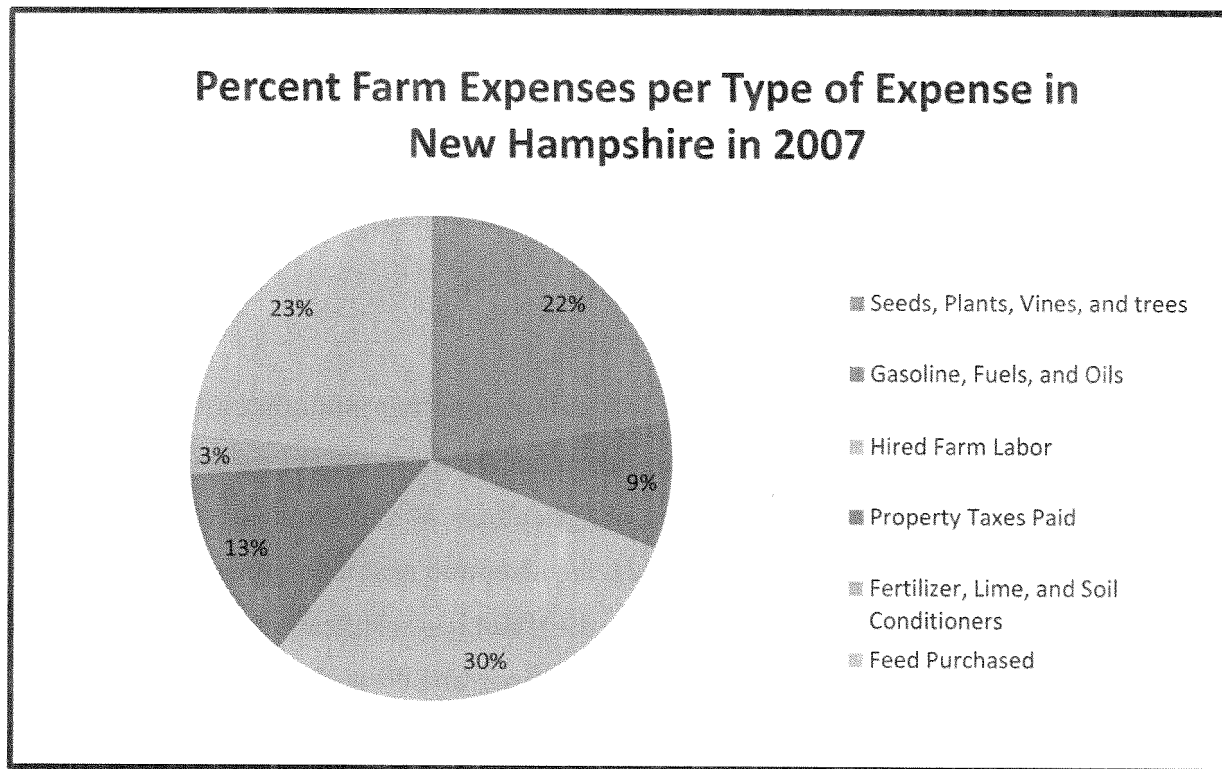




**Figure 3: Kearsarge Regional Food System**

## Farm Inputs

Creating and maintaining a farm costs money and requires land. Once the land is purchased, equipment must be used to prepare fields for planting seeds, which need to be purchased as well. It requires labor to maintain those growing seeds, as well as compost and soil amendments to keep the soil healthy. Most of the farm equipment needs energy to run, in the form of fuel. State and government regulations dictate organics certification, marketing and health inspections. New Hampshire Farm Expenses in 2007 illustrates the farm expenses per type of expense in Figure 4. Hired farm labor is the most expensive farm input while feed is the second most. Seeds, plants, vines and trees are the third most expensive farm input. Fertilizer, lime and soil conditioners are the least expensive farm inputs. This chart breaks down the inputs in terms of expenses that go into farms in New Hampshire.



**Figure 4:** Percent Expenses per Type of Expense in New Hampshire in 2007  
(Farm Production Expenditures 2007 Summary)

### Farm Labor

Labor was the largest farm expense in New Hampshire in 2007. There were 81,000 people employed in the food system in New Hampshire. Out of this total 8,987 were employed in agriculture. When comparing the percentage of people employed in agriculture in New Hampshire to Vermont, we found that Vermont has 5.8% employed compared to 1.7% in New Hampshire. It is clear that more people are employed in agriculture in Vermont (Carter & Gittell, 2010 ). We chose to compare this trend to Vermont because we studied the Greater Hardwick Food System and Vermont is in the same regional area as New Hampshire.

Within New Hampshire the average annual wage of persons employed in agriculture is \$6,220 compared to \$14,029 of the United States. This suggests that workers in New Hampshire are being paid considerably less than other agricultural workers in the nation, which may be due to small-scale farming. In New Hampshire 44% of all farm employees are

the owners of the farms themselves, and earn on average 35% of the total earnings of the farm they own (Carter & Gittell, 2010).

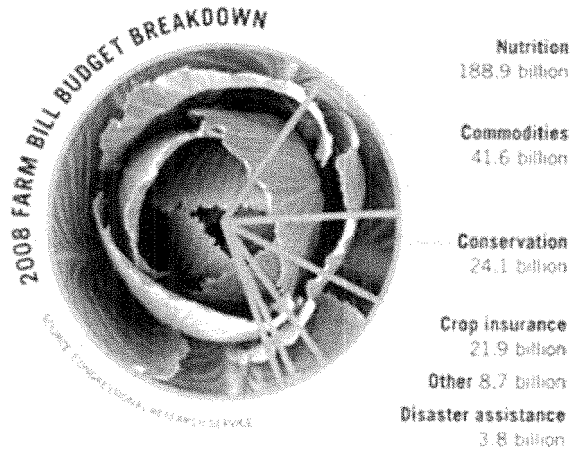
Overall, we can infer that New Hampshire's local agriculture is small because only 1.7% of all employment is generated by it, but still plays a part in employment within the state (Carter & Gittell, 2010).

### **Government Influences**

Government regulations on a state and federal level are another input that influences the food system. In New Hampshire, the organization that regulates the statewide agricultural industry is the New Hampshire Department of Agriculture, Markets and Food. They regulate animal health, farmland preservation, fertilizer and pesticide use and food products. In addition to regulating agriculture, the USDA has certification programs, one of which is the National Organic Program (NOP). This program allows farms to become USDA Certified Organic. The USDA has another program called Good Agricultural Practices (GAP). This program ensures that a farm adheres to certain farming practices as outlined by this process. In order to be GAP certified, a farm must undergo an audit process to ensure that they are following standards by this outline. This entails that livestock are not near crops to guarantee maximum sanitation. Many distribution outlets, such as Sodexo Dining Services, mandate that a farm is GAP certified before purchasing the product because this ensures a standard of quality. The NOP and GAP certification are both time consuming, through paperwork, training and planning, and expensive, through audits, posing a barrier to small-scale agriculture (Good Agricultural Practices, 2010). Government regulation is an input with important consequences that affects the entire Kearsarge food system, as well as the small farms that comprise it.

The government subsidizes agricultural activities with a piece of legislation called the Farm Bill, which is signed every five to seven years. This piece of legislation influences what happens on millions of acres of private property in our country. It can influence what sort of food Americans will eat and the cost, and in turn, can influence the health of our country (Imhoff, Food Fight: The Citizens Guide to a Food and Farm Bill, 2006).

The Farm Bill determines where government funding will be distributed and in what amounts. Figure 5 shows the distribution of funds for the 2008 Farm Bill (The 2008 Farm Bill: A New Direction in Farm Policy, 2012). Our current Farm Bill appropriates 67% of its funds to nutrition. This money is used primarily for food stamps and other emergency food programs. Commodity crop subsidies for rice, cotton, corn, soybeans, wheat and other crops command 14% of the bill. Conservation programs to protect wetlands, farmland and other sensitive lands receive 9% of the funding. Crop insurance and other smaller areas round out the last 10% (The 2008 Farm Bill: A New Direction in Farm Policy, 2012).



**Figure 5: 2008 Farm Bill Budget Breakdown**

The funding for commodity crops influenced a change in our country's food system in the 1970's. The system was designed to protect farmers against fluctuating produce prices for corn and other commodity crops. Government subsidies pay the farmers the difference if the price were to drop. This causes farmers to increase their productivity (Imhoff, Food Fight: The Citizens Guide to a Food and Farm Bill, 2006).

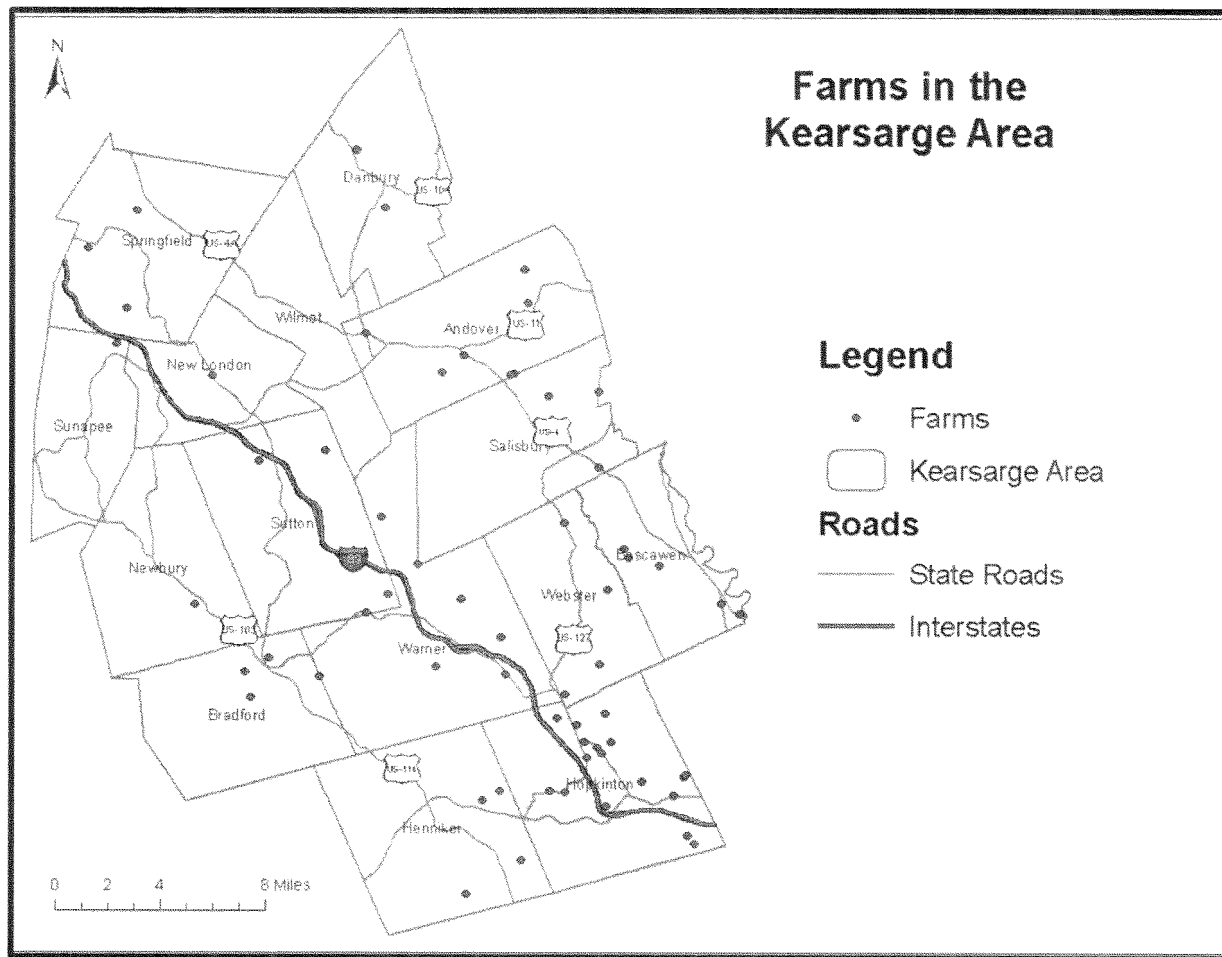
While this system changed the way farmers in the western part of our country grew food, smaller farms in the east remained relatively unaffected, as commodity crops are not grown in large numbers in the east. There are several farms in the Kearsarge area that have benefited from the Farm Bill's conservation program. In 2010, 4.5 billion dollars was spent on conservation in the United States. Under this program, our farmers were able to place land under conservation easement to protect and preserve the farmland for future generations. This helps farmers limit the cost of taxes on their property and protect their land by limiting nonagricultural use. Several of the farmers in the area have also been able to apply and receive grant funding by the Natural Resources Conservation Service for high tunnel greenhouses (Duncan M., 2007) (USDA NRCS Conservation Easement Programs, 2012). At several farms that we visited, such as Two Mountain Farm, Work Song Farm and

Vegetable Ranch, we were able to see high tunnel greenhouses that were paid for through the program. While these programs are beneficial to local farmers we have also found that there are regulations that are limiting. For example, livestock must be processed at a USDA approved slaughterhouse in order to legally sell the meat in a public place, and there are no USDA-approved slaughterhouses in the local region.

The Farm Bill is due for renewal in 2012 and there are several changes that may positively affect the Kearsarge area. The largest impact that may be felt is the addition of the Supplemental Nutrition Assistance Program (SNAP) program. Under this program, recipients of government food stamps will have the ability to purchase food at local farmers' markets. Since most of the farmers in this area make a large percentage of their revenue from direct sales, this program could increase the amount of money they receive from government funding.

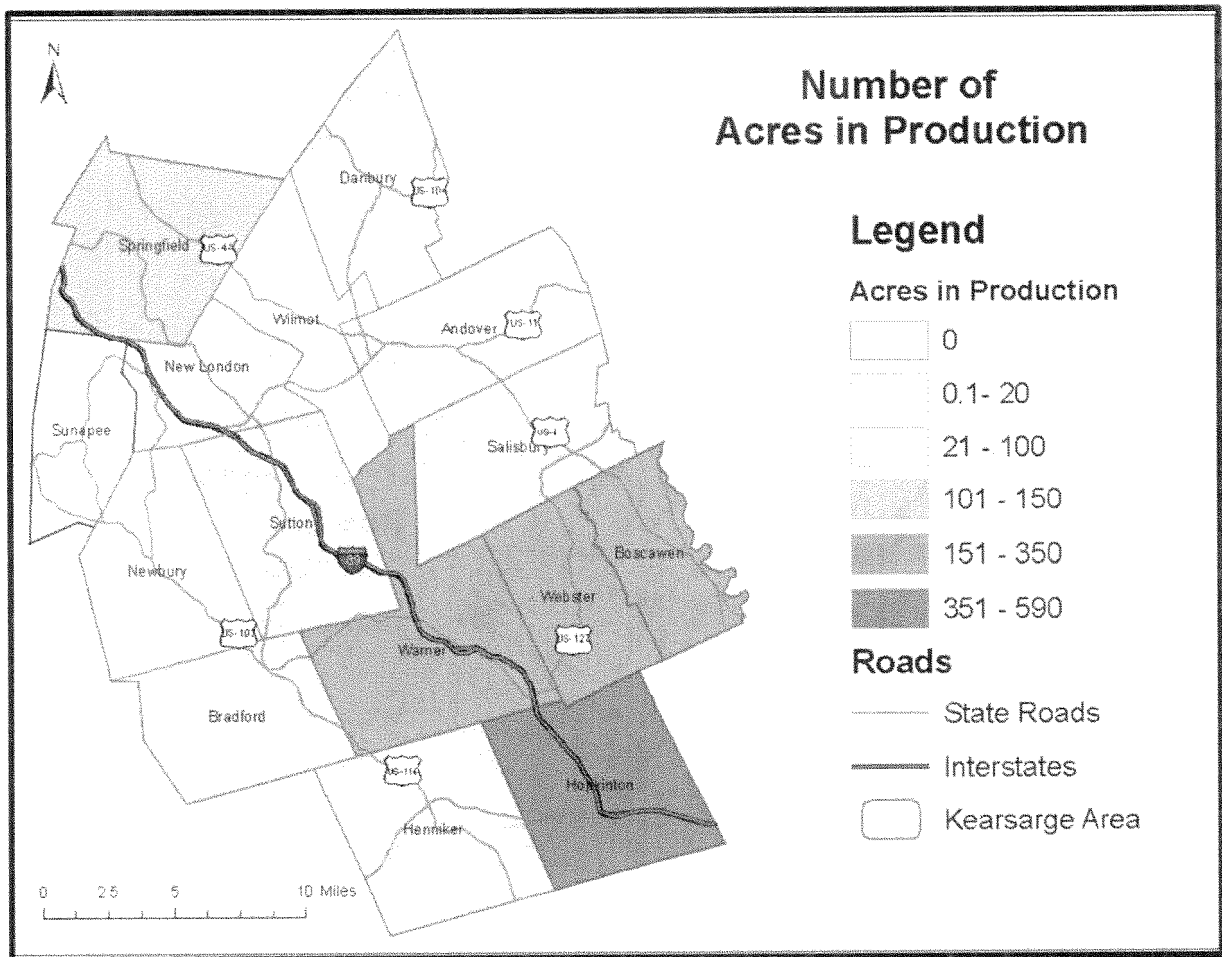
## **Farm Production**

We collected data for sixty three farms (see Appendix A), as shown in Figure 6. We are aware that we did not gather information on all of the producers, but represented the majority that comprise the food system.



**Figure 6:** Farms in the Kearsarge Area

After identifying the farms, we collected information on components such as acreage. Figure 7 shows the number of acres in production in the Kearsarge area. The total acres are 1,907.7, and the majority of the acreage falls in Warner, Webster, Boscawen and Hopkinton. In order to calculate the acreage, we used information provided by the farmers or estimated the area using Google Earth. Our calculation is for fifty nine out of the sixty three farms we identified because we could not get in contact with four of the farmers or identify the area on Google Earth.



**Figure 7: Number of Acres in Production**

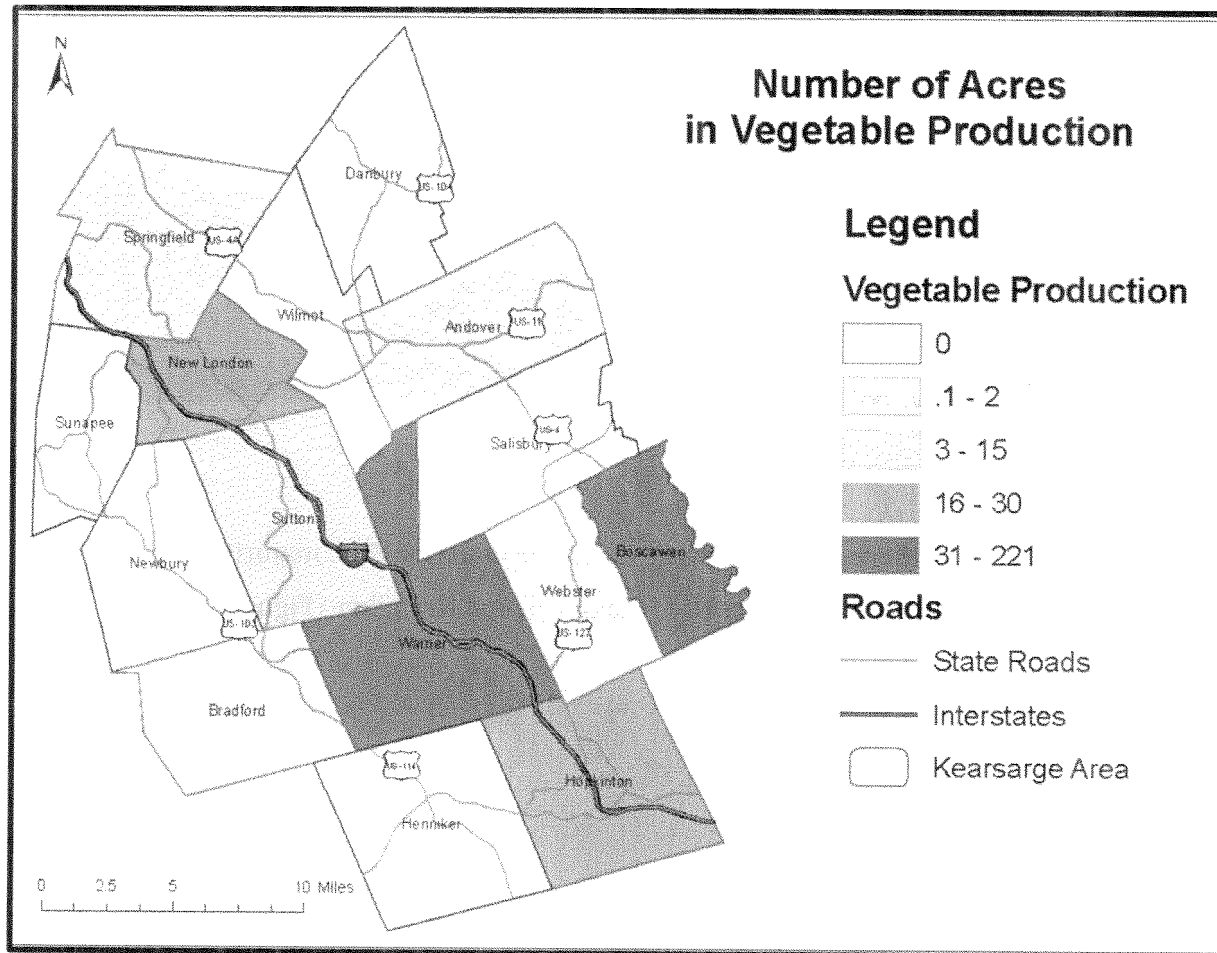
More specifically, these acres are used for four different areas of production: vegetable, orchard, dairy and meat. To highlight some of the farms we visited and the information we collected, the following section provides an example of a farm in each of the four farm categories in the Kearsarge region.

### **Vegetable**

Vegetable production is an important aspect of a food system. In New Hampshire, about 5,000 acres of land planted with vegetables is harvested by over 300 growers. This results in an 18 million dollar value in the vegetable production industry in New Hampshire alone (UNH Cooperative Extension).



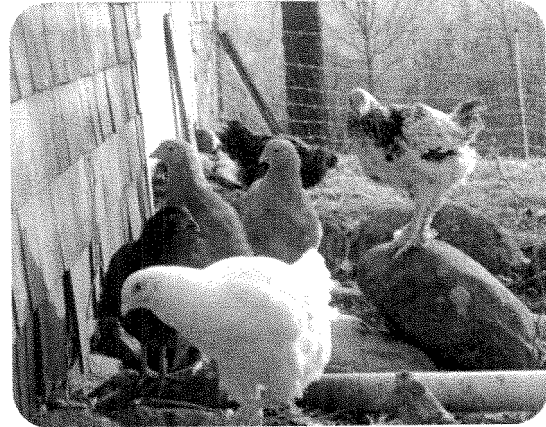
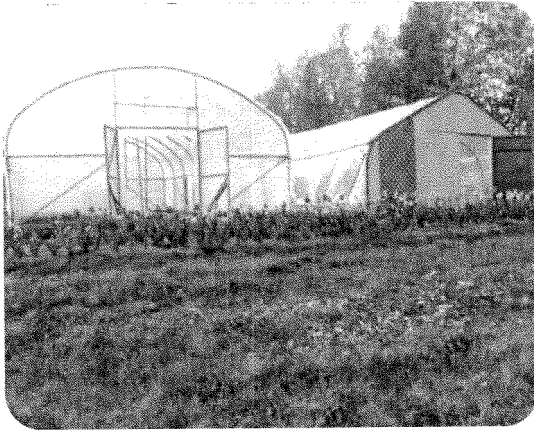
More specifically, in the Kearsarge area, Figure 8 shows the number of acres in vegetable production by town totaling 450 acres. The highest areas of vegetable production are Boscawen and Warner, followed by Hopkinton and New London.



**Figure 8:** Number of Acres in Vegetable Production

Kat Darling operates Two Mountain Farm in Andover, New Hampshire, a ten-acre, predominantly vegetable farm that has been in production for six seasons. The whole property is fifty five acres and is protected under a conservation easement. She raises chickens for egg production and grows a variety of crops such as leafy greens, root vegetables, berries, and summer produce. Though not certified organic, Kat utilizes organic practices such as IPM and purchases organic seeds from Johnny's Selected Seeds and High

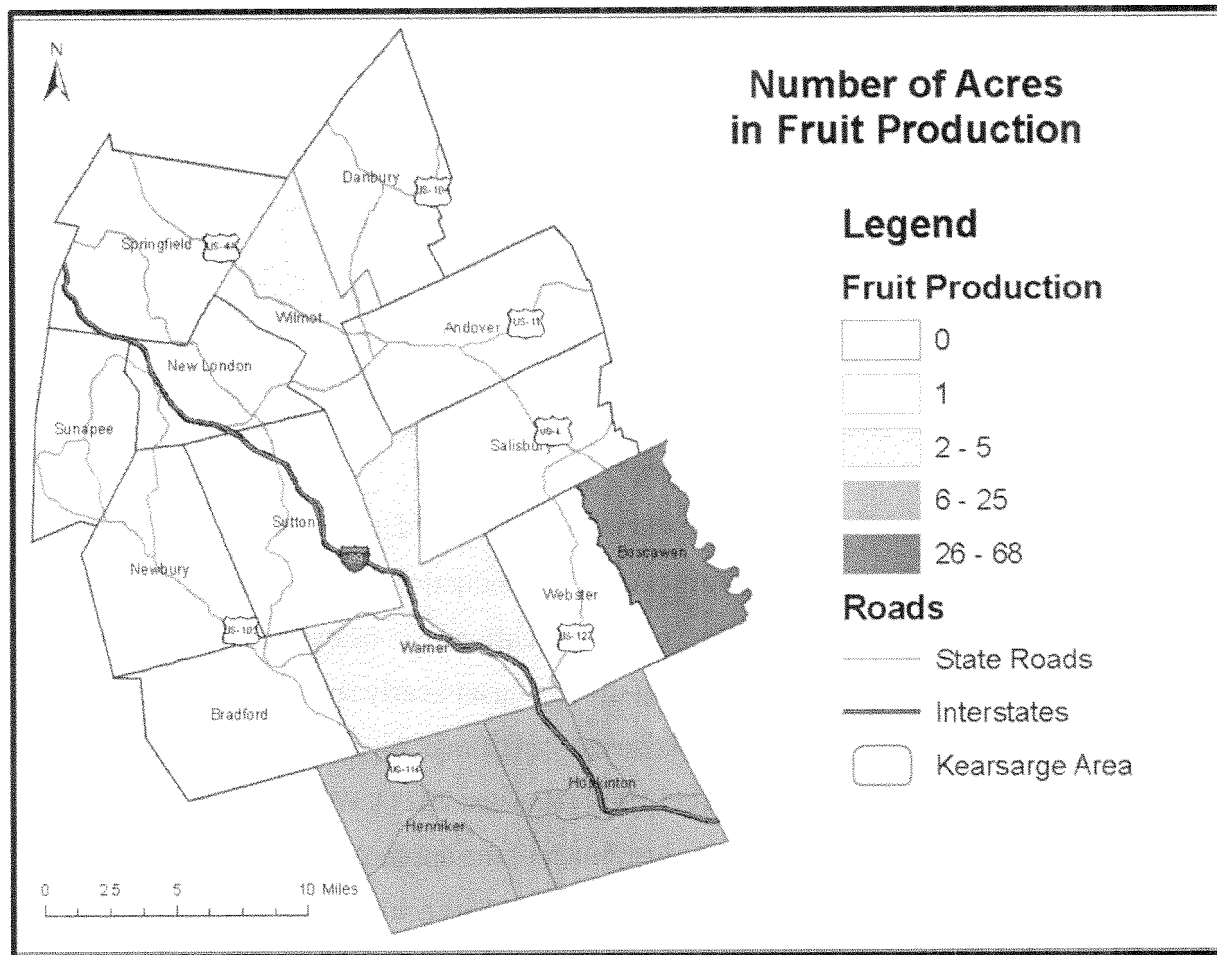
Mowing Seeds. She distributes produce through a thirty-member CSA and sells her products at the Andover and Concord Farmers' Markets.



Two Mountain Farm, Andover, New Hampshire

### **Orchard**

In the Kearsarge area, there are 116.5 acres in fruit production. The majority of fruit production falls in Boscawen, followed by Hopkinton and Henniker (Figure 9).



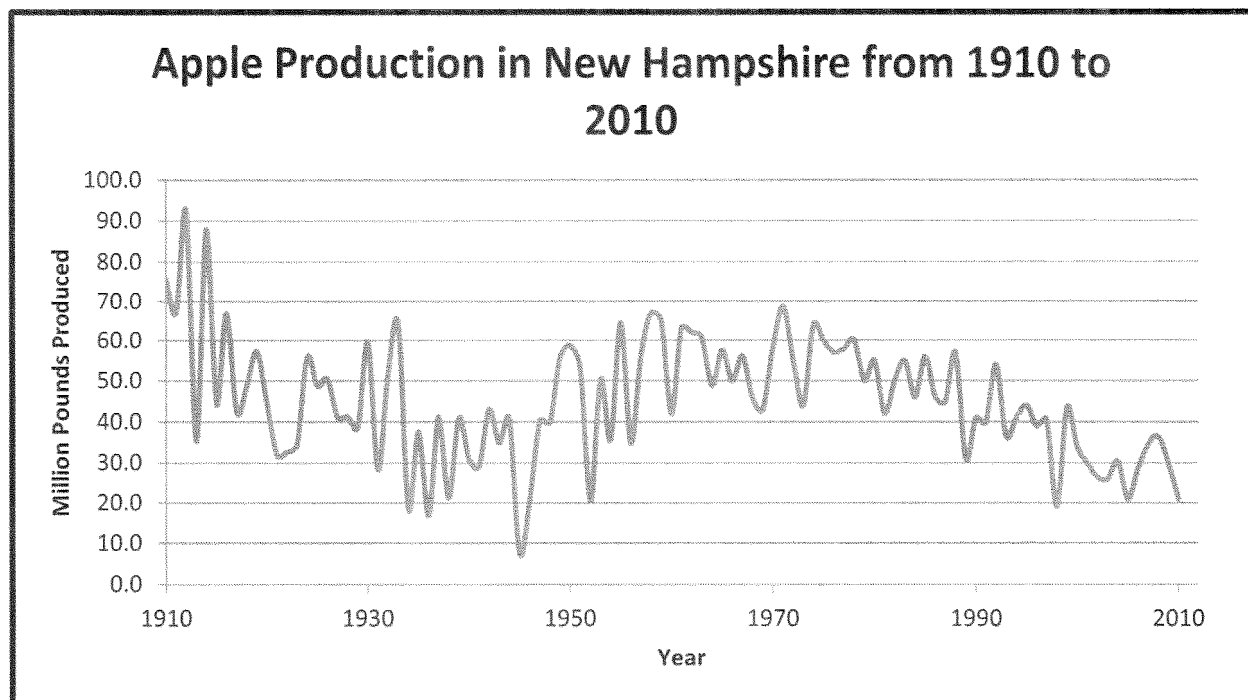
**Figure 9:** Number of Acres in Fruit Production

Gould Hill Farm in Hopkinton, New Hampshire is an example of an orchard operation. Tim and Amy Bassett cultivate twenty acres with eighty-five apple varieties, one and half acres of fifteen peach varieties, a half-acre of blueberries, one acre of pumpkins, plums, nectarines, summer squash, zucchini and herbs. These crops and other local products, such as cheeses, baked goods, honey, maple syrup, clothing and gifts, are sold at the store on site. Apples are wholesaled to Carter Hill Orchard for cider production. Gould Hill is not organically certified because it is difficult to produce organic apples when consumer demand is for blemish-free, aesthetically appealing apples, but they do practice IPM methods.



Gould Hill Farm, Contoocook, New Hampshire

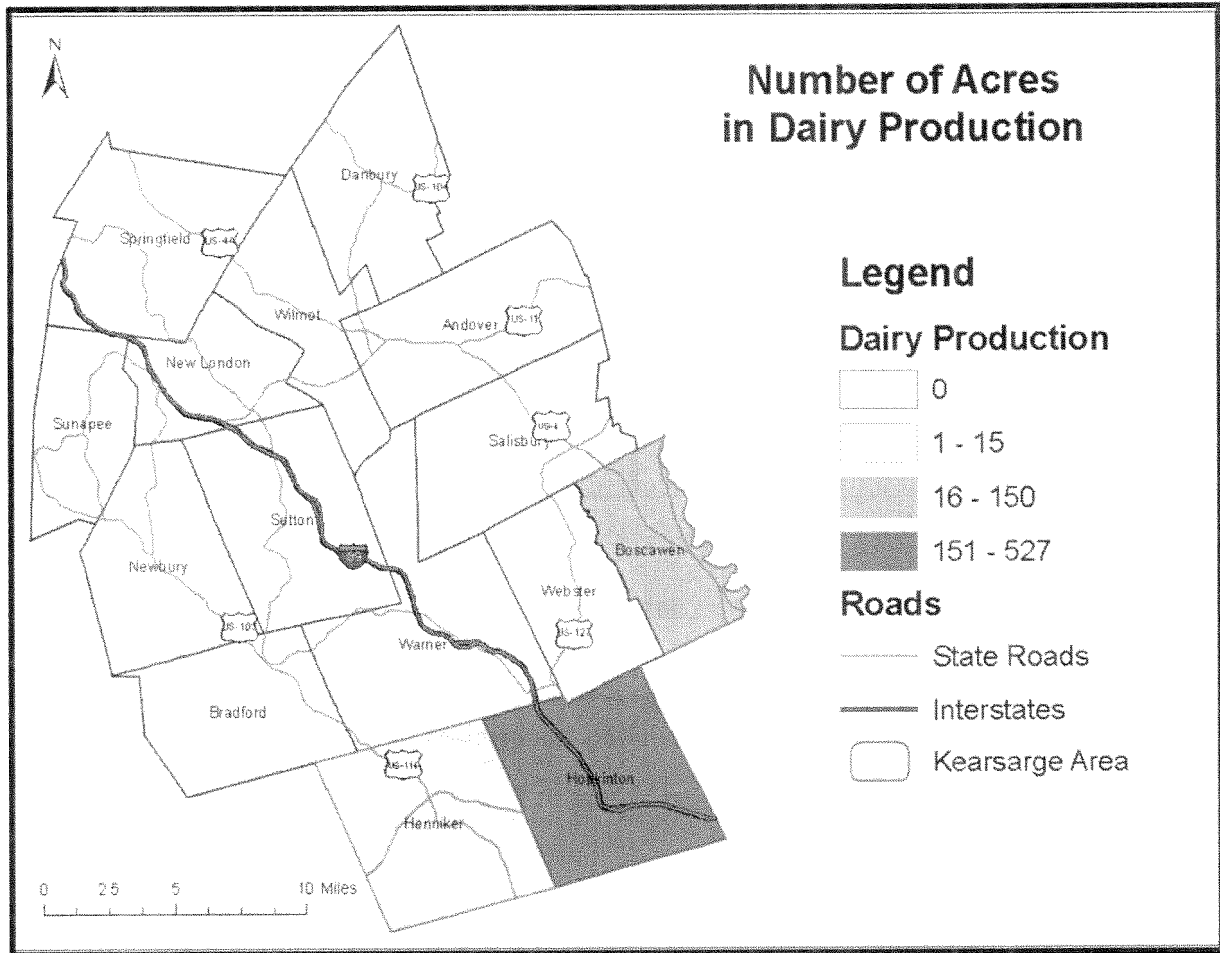
On a statewide level, New Hampshire is ranked twenty-second in the United States in apple production by volume. Figure 10 displays the apple production in New Hampshire which has been in decline since the 1970s. The yearly fluctuations can be explained by harsh weather conditions, such as late frost during the spring and early summer, which create conditions that make it difficult to control diseases and fungi. An example when this occurred is between the years of 1997 and 1999 (Nielsen, 2011). We learned on our visit to Gould Hill Orchard that New England has lost much of the apple industry to New York, at the national level, and China, at the international level. This could affect the amount of income for the state economy and the number of jobs in New Hampshire's apple industry provides.



**Figure 10:** Apple Production in New Hampshire from 1910 to 2010  
(Service, 2011)

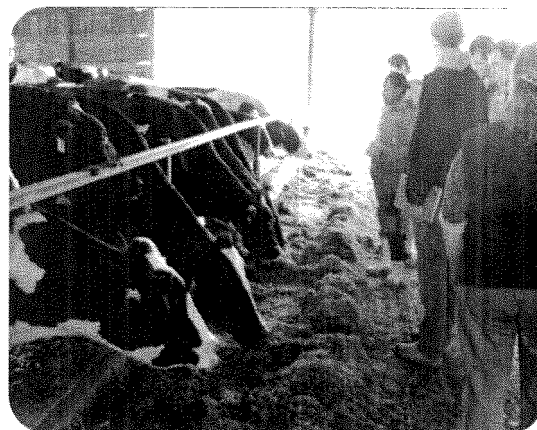
### Dairy

There are 692 acres under dairy production in the Kearsarge area. The majority of the acres fall in Hopkinton, followed by Boscawen and Henniker (Figure 11).



**Figure 11: Number of Acres in Dairy Production**

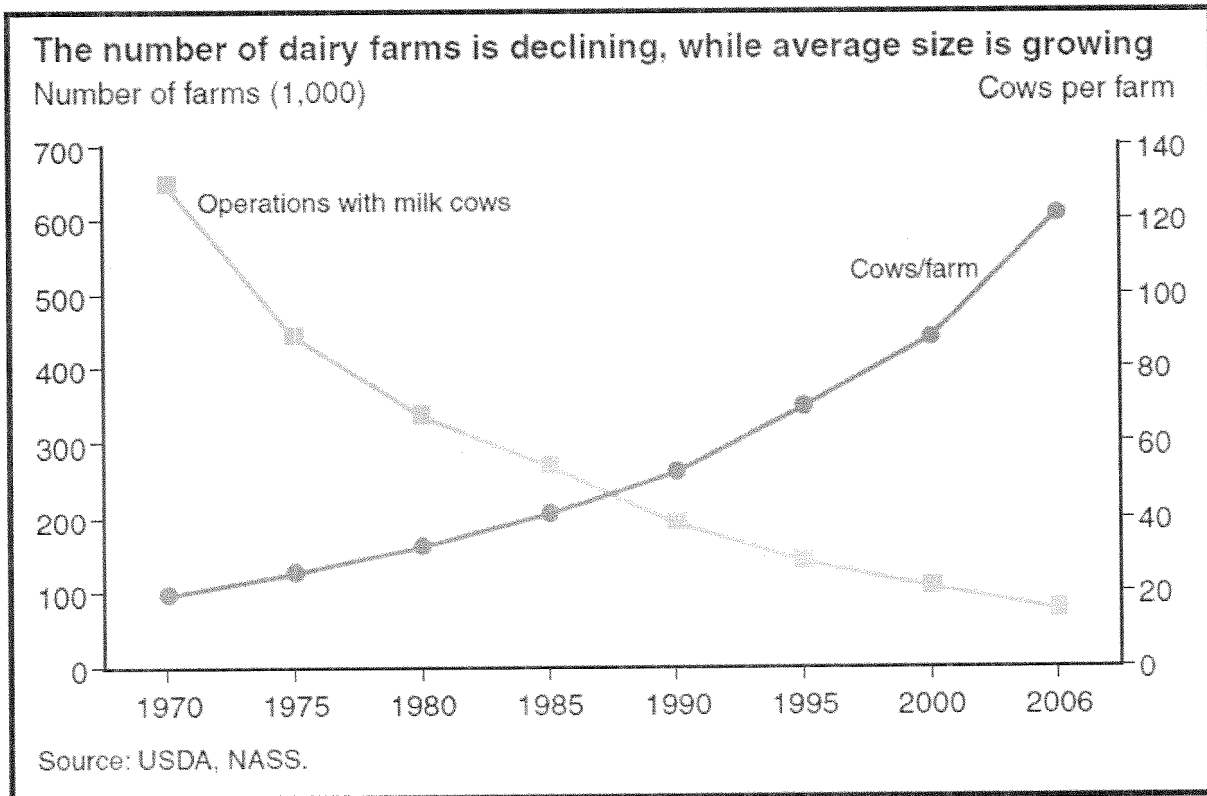
Contoocook Creamery at Bohanan Farm in Contoocook, New Hampshire is an example of a dairy operation. The property has been used for agriculture since 1907. Heather and Jamie Robertson are the current owners of the 417 acres, the majority of which are in a conservation easement. They grow hay on 125 acres and corn on 175 acres to supplement the feed for their 200 cows. They provide different varieties of bottled milk, such as skim, whole, one percent, eggnog, blueberry, strawberry, coffee, maple and chocolate. Previously, Contoocook Creamery sent their milk to a wholesaler, but since November 2010 they have been sending their milk to a bottling facility in Maine. Their bottled milk is then sent back to them and sold in local grocery stores and markets, presenting a costly challenge for transportation.



Contoocook Creamery at Bohanan Farm, Contoocook, New Hampshire

Bohanan Farm is a dairy operation that has not succumbed to the decline of dairy farms both state and nationwide. From 1970 to 2006, in the United States, the number of dairy farms decreased from 648,000 to 75,000 (88%). Average herd size increased from nineteen cows to 120, but milk production per cow doubled during the same time. As a result, total milk production increased, thus average milk production per farm increased twelvefold (Economic Research Service of the United States Department of Agriculture). Figure 12 displays a decrease in the number of dairy farms with an increase in the number of cows per farm, as well as milk production. The decrease in farms and the increase in number of cows and milk production is evidence that dairy farms have moved away from small, family-owned and operated farms and towards larger concentrated dairy operations to produce maximum yield. This trend forced smaller dairy farms out of business when they could not compete with larger farms.

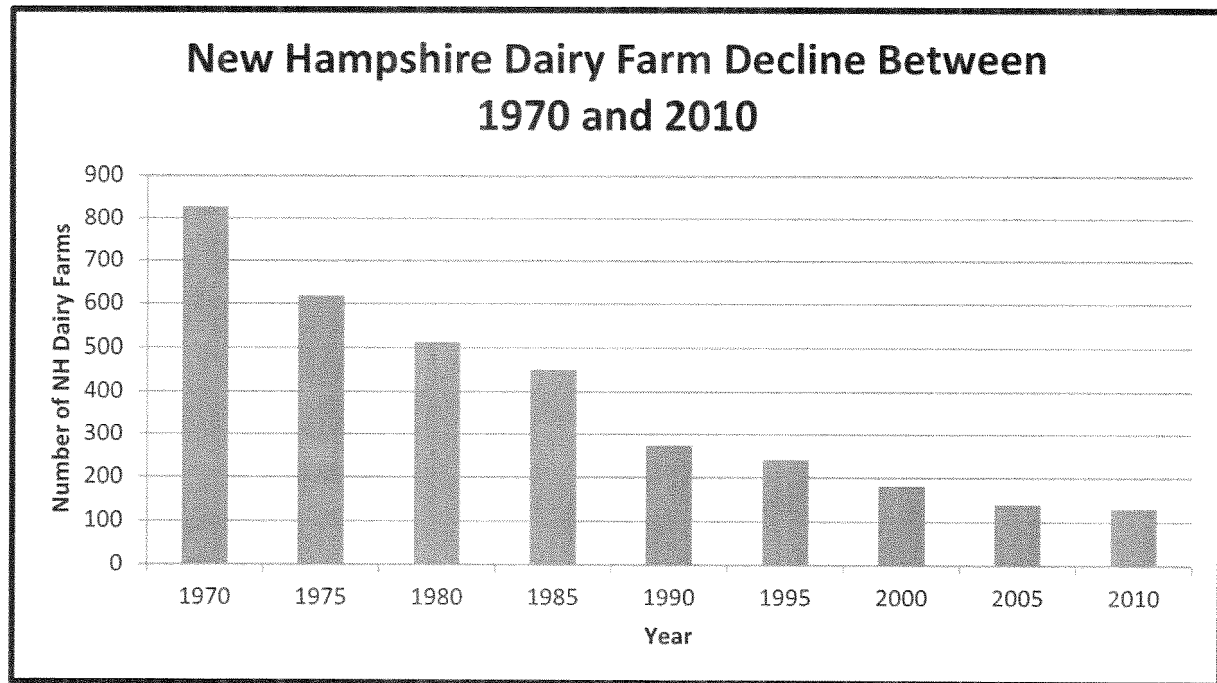




**Figure 12: National Dairy Farm Decline**

Figure 13 displays the decline in dairy farms in New Hampshire between 1970 and 2010. New Hampshire has lost 699 dairy farms (84%) since 1970. The New Hampshire dairy industry produces a total of more than 141 million dollars in income and 3,717 jobs, with more than 19 million dollars in labor expense. Between 1970 and 1975, New Hampshire lost a total of 211 farms alone (New Hampshire Dairy Industry). This decrease can be linked to several events, including wide spread inflation and oil embargos, as well as the fact that farmland was being rapidly developed in New England (Lougee, 2009). The other significant decrease occurs between 1985 and 1990, with a loss of 177 farms. This decrease can be linked to financial stress on dairy farmers that occurred in 1985. Dairy farmers experience the second most financial difficulty in agricultural production because they have to compete in the commodity market (Wadsworth & Bravo-Ureta, 1992). The decrease in the number of dairy farms in New Hampshire follows a similar pattern to the national decrease because smaller, family-owned dairy farms are moving towards larger dairy operations for increased yield. If the decline in dairy farms continues, this will affect

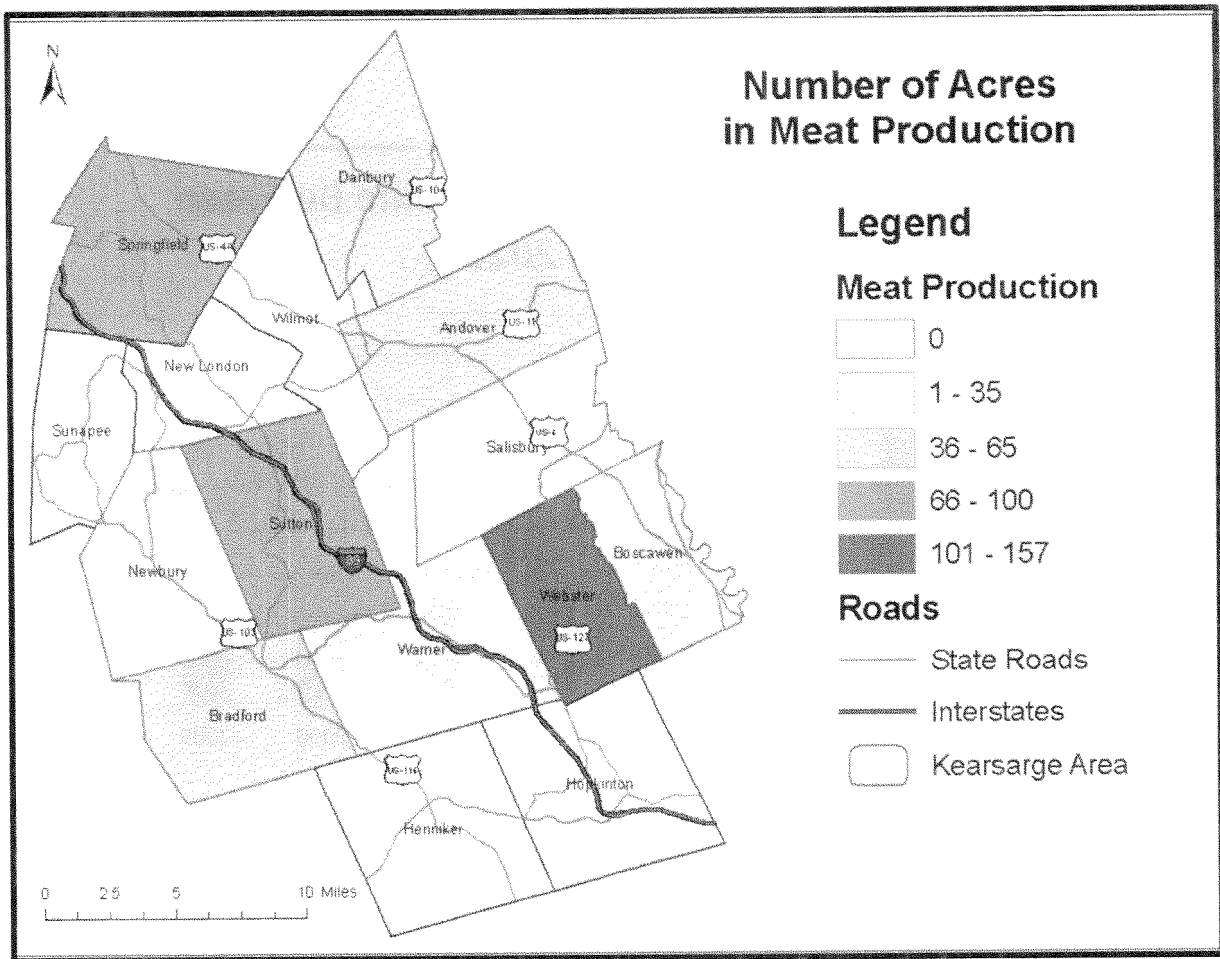
the number of people who are employed and would impact the amount of revenue the state receives from this industry.



**Figure 13:** Decline in New Hampshire Dairy Farms  
(State of NH-DHHS)

### Meat

Meat production acreage totals 596 in the Kearsarge area. The majority of the acreage falls in Webster, followed by Sutton and Springfield (Figure 14).



**Figure 14:** Number of Acres in Meat Production

Yankee Farmer's Market is an example of a meat operation. The farm opened in Warner, New Hampshire in 1999. The farm is operated by Brian and Keira Farmer, who raise thirty head of bison on twenty acres at their Warner location. Other locations include 300 acres in Hillsborough and 1,000 acres in New Boston, both overseen by family members. The meat is all-natural, hormone-free, antibiotic-free and pasture-raised at the Warner location. It is sold in their store along with a variety of other meats, such as beef, venison, elk, ostrich, pork, turkey, lamb and chicken, which are all raised on other local farms. They also sell Contoocook Creamery milk, local syrups, salsas, meat rubs and sauces. In addition to the farm store, their meat is wholesaled to restaurants, grocery stores, meat markets and co-ops throughout the northeast. Live bison are available for sale to farms for the purpose of meat production.



Yankee Farmer's Market, Warner, New Hampshire

## Processing

Once food is ready for consumption, whether it is produce or meat, it must be properly processed. Meat producers in the Kearsarge system, such as Yankee Farmers' Market, send their meat to a USDA inspected slaughterhouse. Dairy producers, such as Contoocook Creamery, have to ship their milk to bottling facilities, in this case to the state Maine. Eggs have to be sent to packaging facilities, except when on a smaller scale, such as Two Mountain Farm, where eggs are collected, cleaned and packaged by hand. Vegetables and fruit, depending on scale of production, have to be sent to packaging or canning facilities. At Gould Hill Farm, all of their apples are processed by hand and packaged on site. On a smaller scale, some of these farms do the processing themselves, such as packaging eggs, washing and packaging vegetables and fruit, slaughtering and butchering meat, or having a local slaughterer and butcher come to the farm to process the meat. However, these small-scale, self-processing farmers tend to run into many government regulations when they attempt to sell their products to the consumer. For example, raw meat must be stored at a certain temperature to be authorized for sale to consumers. These finished, processed products then either go back to the farm, as an input, to be distributed directly, or are distributed to food distribution sites around the area. We address the issue of processing in the Kearsarge area in the Recommendations section titled 'Food Hub Facility.'

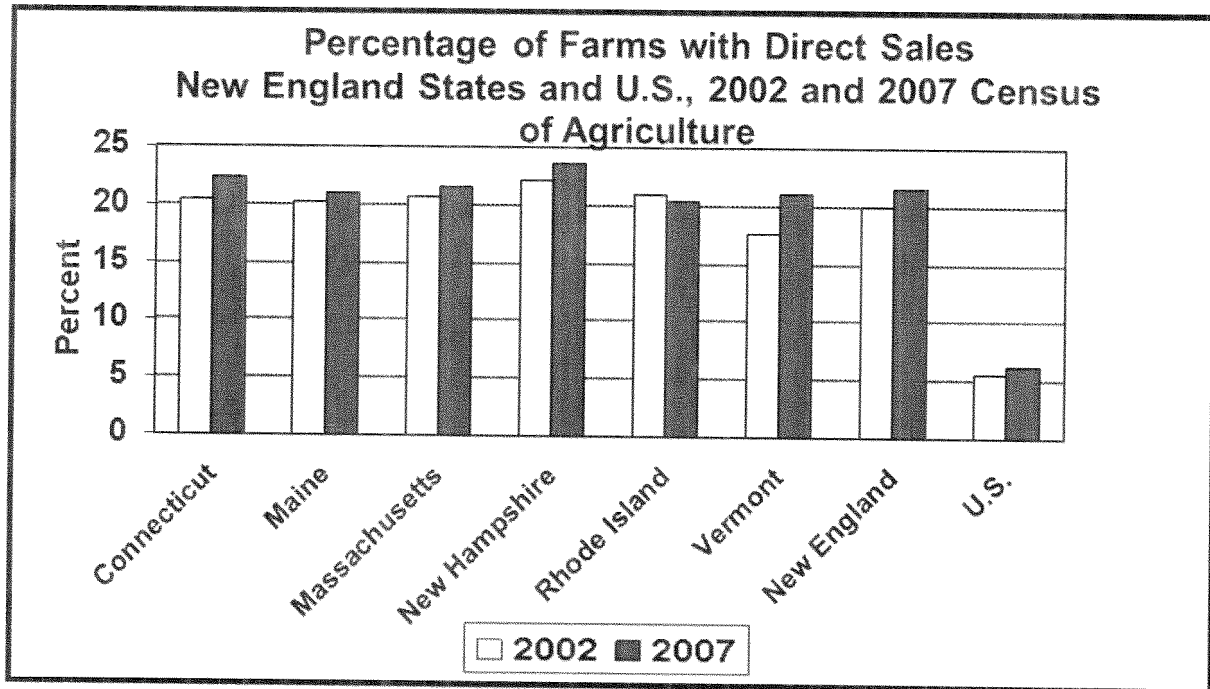
## **Food Distribution**

After food is processed it is ready for distribution to the customer. Food can be distributed from several venues including supermarkets, convenience stores and other institutions. These venues obtain food from outside the local system that cannot be produced within the system or are in high demand by consumers. Food can also be distributed through direct sales, such as farmers' markets, farm stands and CSAs.

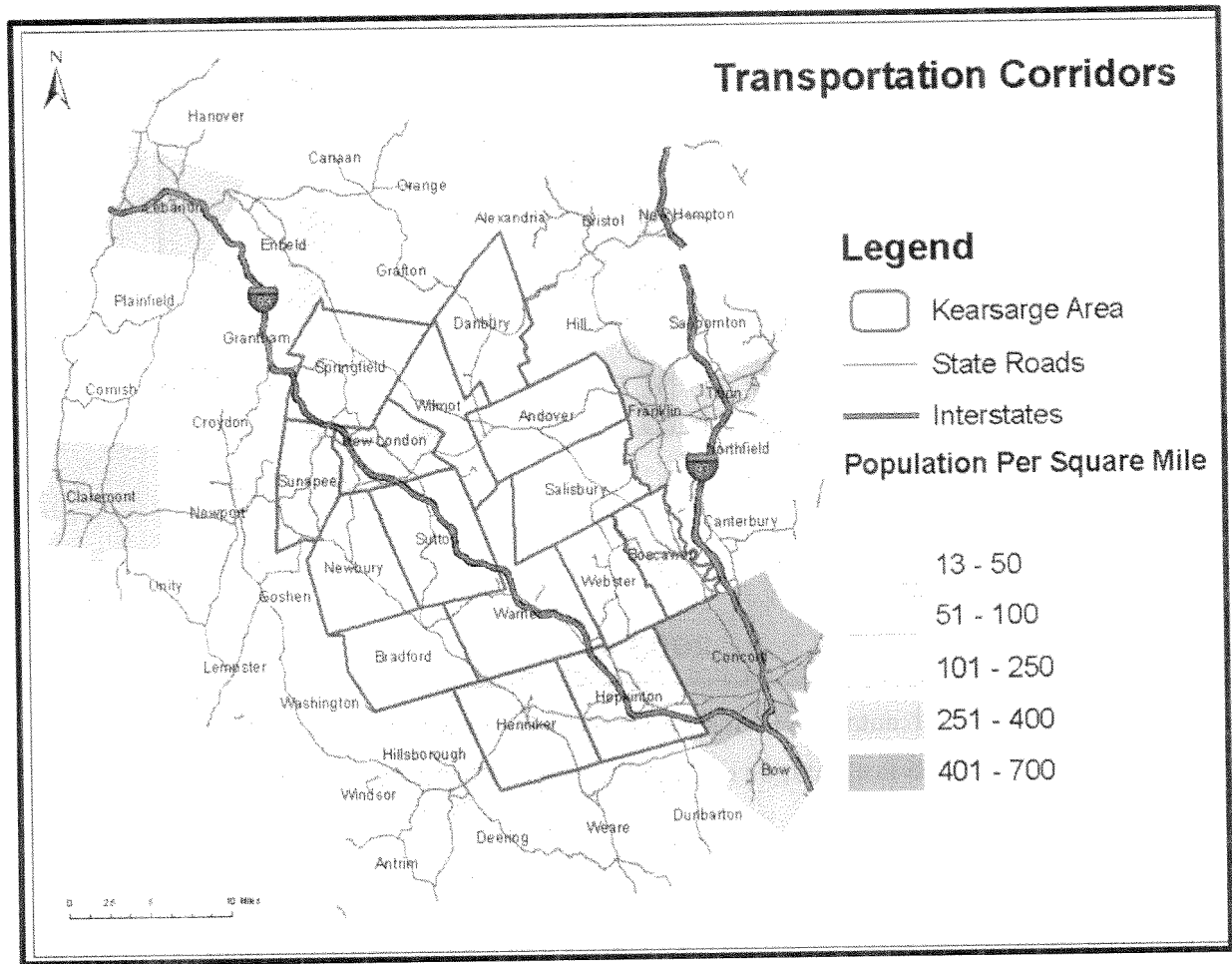
### **Direct Sales**

Direct sales refer to products that are sold directly to consumers through CSAs, farm stands and farmers' markets, where farms have a direct income from the consumer and bypass the retail channel. In the Kearsarge Regional Food System, there is food that does not necessarily go to a food distributor, such as supermarkets, co-ops or restaurants.

Figure 15 displays the percentage of farms in New Hampshire with direct sales to consumers. In both 2002 and 2007, New Hampshire had the highest percentage of farms with direct sales to consumers and an increase of 25% in those sales between those years. In 2007, New Hampshire led the nation in percentage of farms with direct sales, with 23.6%; Connecticut was second, followed by Massachusetts, Vermont, Maine, and Rhode Island. The fact that Vermont falls fourth in this order can be attributed to the fact that it has many dairy operations that wholesale through cooperatives, which would not be classified as direct sales. The reason why New England farms have a relatively high percentage of farms with direct sales is because New England agriculture is less like other states that focus on growing commodity crops for processed products, which would be considered indirect sales. New Hampshire's topography is not designed to grow commodity crops at a competitive level. There is more of a connection between farm and consumer in New England because a large share of the commodity market is not represented in the area.



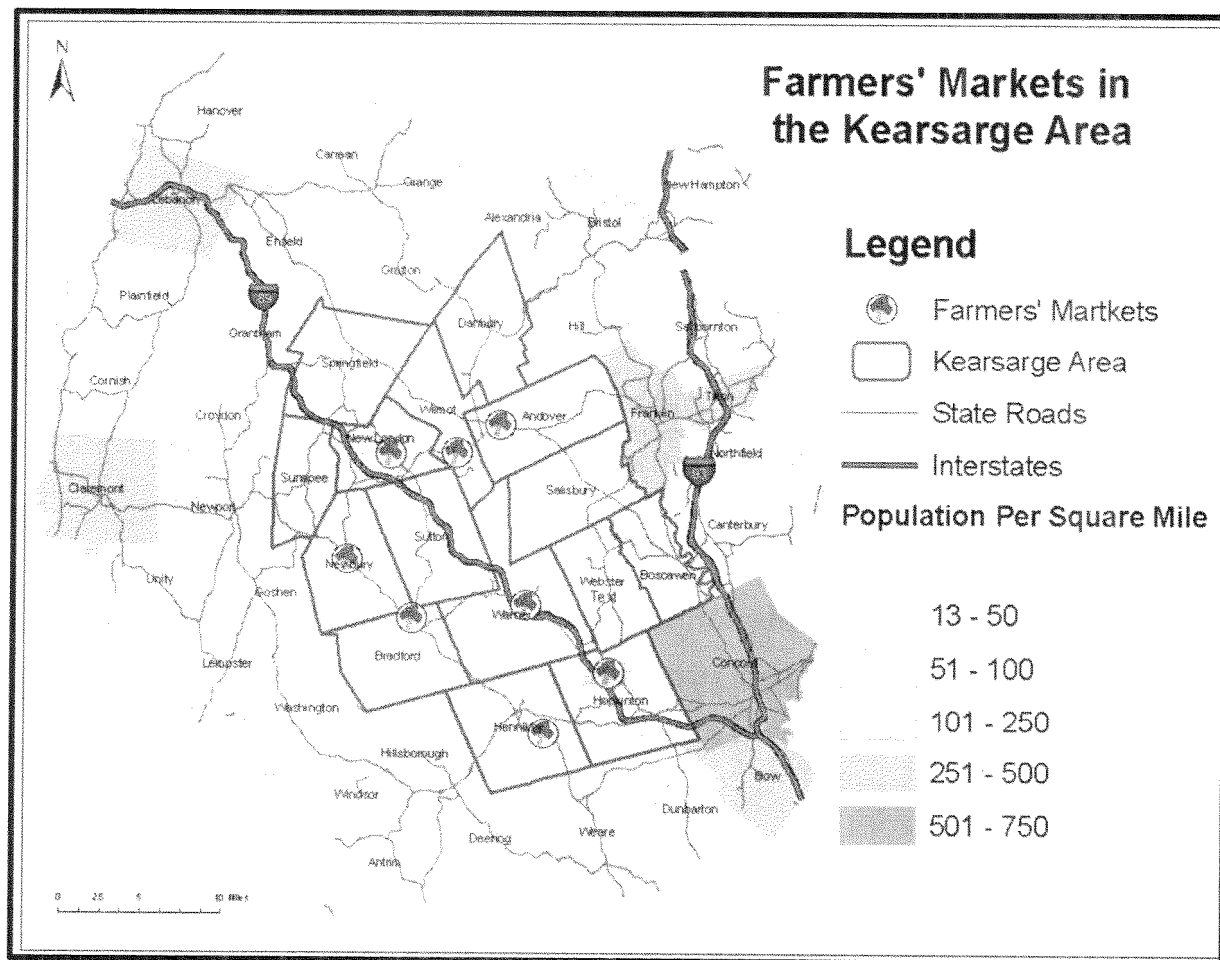
**Figure 15:** Percentage of Farms with Direct Sales New England States and U.S.  
(NASS Presentation on Trends in New England Agriculture)



**Figure 16:** Transportation Corridors in the Kearsarge Area

Interstate 89 runs right through the Kearsarge area. This is an important piece of infrastructure in terms of food distribution. Figure 16 displays the major interstates and routes in the region. The location of food distribution centers is very important to determine where the most accessible place to purchase food is. If a supermarket is located right off an exit, such as Market Basket in Warner, it is more accessible to consumers. Similarly, if a farmer's market is near the interstate it will be easier for farmers to get their goods to market and for customers to get to the markets. In our customer perception survey, which will be talked about later in the report, accessibility is one of the major barriers to buying local food. Figure 17 shows the location of farmers' markets relative to I-89. The farmers' markets in the Kearsarge area are: Warner, Contoocook, Henniker, New London, Andover, Winooski, Newbury and Bradford. The data collected at the farmers'

markets consisted of the total number of vendors, types of food vendors sold, total amount of products vendors sell, what towns the vendors are from and how much consumer traffic each farmers' market receives. These markets and the information gathered are displayed in Figure 18. This is important to note because the largest farmers' markets, as indicated by traffic size, shown in Figure 18, are located within five miles of the exits in New London, Warner, and Hopkinton. According to Figure 17, the other farmers' markets are located farther from I-89; have less vendor participation, and fewer people attending them. This suggests that if more farmers' markets or farm stands where local food is being sold are located closer to major highways then they could receive more business.



**Figure 17: Farmers' Markets in the Kearsarge Area**



Farmers' Markets in the Kearsarge Area			
Location	Name	Vendors	Traffic
Andover	Andover Farmers' Market	2 total	100 average
Contoocook	Contoocook Farmers' Market	13 food-based	250 average
Henniker	Henniker Farmers' Market	5 total	70 average
Newbury	Newbury Farmers' and Artisans' Market	8-10 total	100 average
New London	Market on the Green	26 total	300 average
Warner	Warner Farmers' Market	8-10 total	100-200 average
Wilmot	Wilmot Farmers' Market	13 total	200 average

**Figure 18:** Farmers' Markets in the Kearsarge Area

Farm stands and CSAs are two other forms of direct sales in the Kearsarge system. There are twenty four farms that have farm stands where fresh produce and other farm goods are available in season, usually on-site or just down the road from the farm. These farms are displayed in Figure 19.

Farms in the Kearsarge Area with a Farm Stand		
Beaver Meadow Brook	Musterfield Farm	Star Lake Farm
Breakwind Farm	North of Concord Farm	Tucker Mountain Maple Coop
Courser Farm	Owen Farm	Two Mountain Farm
Crimson Maple Farm	Pustizzi Fruit	Up Sheeps' Creek Farm
Dancin' Apple Farm	Ragged View Farm	Vegetable Ranch
Gould Hill Farm	Richardson Farm	Webster Ridge Farm
Hazzard Acres Farm	Riverfare Farm	Work Song Farm
Highland Lake Apple Farm	Springledge Farm	Yankee Farmers' Market

**Figure 19:** Farms with a Farm Stand in the Kearsarge Area

CSAs are shares of produce that are paid in full by the customer prior to production. This allows the local producers money upfront to purchase seeds, fertilizers and other farm inputs. In most situations, CSA members can choose a whole- or half-share depending on the number of people in their family. Some CSAs allow members to volunteer at the farms to help with production in exchange for a reduction in price; this is called a working share.

A difficulty associated with CSA's is that subscribers have to pick up their weekly share in a place that may not be convenient for the subscriber. One of the major barriers that respondents answered in the consumer perceptions survey when purchasing local food is location (see Survey Analysis section for more details). Our consumer perceptions survey shows that 87% of respondents buy some or the majority of their food from supermarkets. Colby-Sawyer College might be an ideal location for a CSA pick-up point, because it is located close to Hannaford's and might be more convenient for consumers when shopping for food. Our team realized this as an opportunity and researched this possibility with the College administration. The administration approved the idea of a CSA pick-up point at Colby-Sawyer College to take place in the commuter parking lot during the summer. Refer to the section in the Recommendations titled Marketing for more details.

Farms can get certifications that describe the farming practices they use. Two of the certifications available to farmers are certified organic and certified natural. According to

the USDA, “Organic is a labeling term that indicates that the food or other agricultural product has been produced through approved methods that integrate cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. Synthetic fertilizers, sewage sludge, irradiation, and genetic engineering may not be used” (USDA, 2011). Certified Naturally Grown, a non-profit organization, created a label to identify products as Certified Natural that “don’t use any synthetic herbicides, pesticides, fertilizers, antibiotics, hormones, or genetically modified organisms...Livestock are raised mostly on pasture and with space for freedom of movement. Feed must be grown without synthetic inputs or genetically modified seeds” (Certified Naturally Grown, 2012).

Some farmers are not certified, but do practice organic methods. These certifications and practices can be attractive to consumers because of the increased social movement towards organic and natural foods. Out of sixty farms that we gathered data on, six farms are certified organic. Refer to Carrot Survey Analysis section for more information regarding consumer preference for local and organic food.

## **Retail**

To gain experience collecting data about food outlets, we volunteered to work with the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC), an organization that requested our help conducting a national food availability survey. Working with this organization gave our team experience with collecting useful information about food outlets. We went on to collect data about the prices and accessibility of local, organic and conventional products in retail outlets in the Kearsarge area: Colonial Village Pharmacy in Contoocook, Hannaford’s in New London, Harvester Market in Henniker, Kearsarge Co-op in New London and Market Basket in Warner. These retail outlets offer a variety of food that comes from mostly outside the food system. Our team collected price and availability information for milk, ground beef, squash, potatoes, tomatoes, onions, lettuce and apples at these locations. Milk was the only product where local, organic and conventional were available. The average price per half gallon of local milk from Contoocook Creamery is \$2.98, organic is \$3.87 and conventional is \$2.08. This shows that, even though local milk is

available and less expensive than organic milk, conventional milk is the cheapest of the three choices. From the produce information, we found that local food is not readily available in retail outlets. In order to understand why local food is not readily available in supermarkets we visited the two largest in the region, Hannaford's and Market Basket.

Market Basket, a small to midsized grocery store, has sixty five stores in the United States. The company is worth about four billion dollars. Approximately 30,000 new items are introduced every year, most of which are only produced by several large food processors. Tom O'Loughlin, the manager at the Market Basket in Warner, gave us a tour of the store. The managerial position at Market Basket includes overseeing the store's employees, making sure they receive the amount of food they order on a weekly basis and that the product is in good condition. However, the manager cannot make sourcing decisions. One of the largest barriers Mr. O'Loughlin pointed out when asked about sourcing food locally is that small farmers simply cannot supply the store with enough produce fast enough. (O'Loughlin, 2012).

Hannaford's is mostly concentrated on the east coast, from Florida to Maine, and is similarly sized to Market Basket. Hannaford's is a part of a larger grocery industry with stores like Piggly Wiggly and Food Lion, located in other parts of the country. The store manager of Hannaford's in New London, Nate Kenyon, explained that most of the limitations he faces have to do with the fact that (much like at Market Basket) he answers to the corporate branch of Hannaford's and does not have a lot of control over what products the store receives. In contrast to Market Basket, Mr. Kenyon does have some control over the sourcing of his stores' produce and is able to source some of his products from local farmers and producers through Hannaford's "Close-to-Home" initiative. It was created in the interest of the consumers' awareness of where the food is coming from. The "Close-to-Home" program works with producers close to New London's Hannaford's to obtain some of their produce. Currently, Mr. Kenyon's branch is working with farms in Springfield, Claremont and Lebanon, for their produce (Kenyon, 2012). We developed a recommendation based on producers in the Kearsarge area collaborating with the supermarkets.

## Restaurants

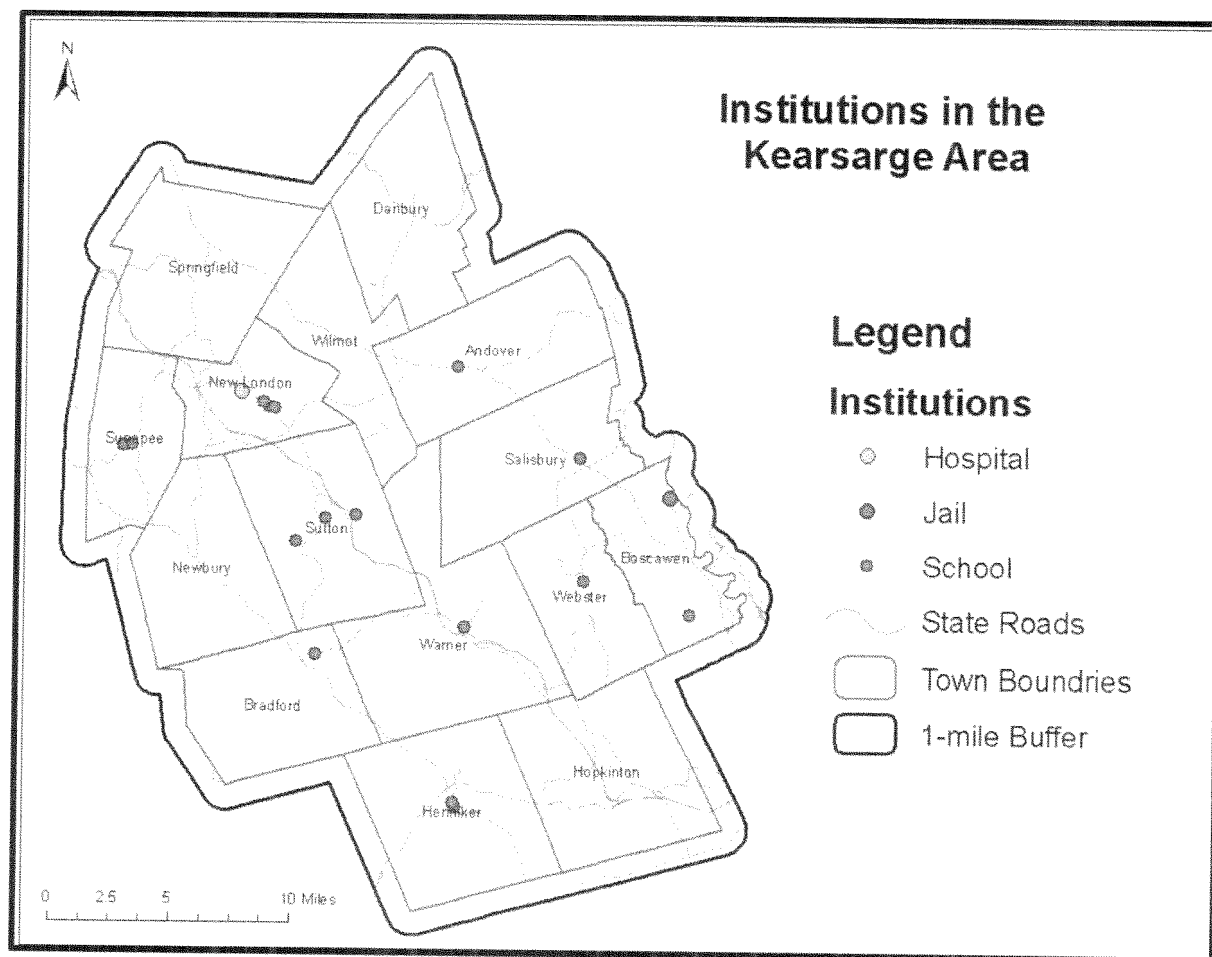
Restaurants are also an outlet for food in the Kearsarge system. We collected information about restaurants that includes location and if they served local food. These restaurants offer a variety of food that is mostly brought in from outside the local food system, though we found a few restaurants that use as much local food as possible because they serve food on a smaller scale than the supermarkets. Data was gathered by conversing with the managers on the phone. The restaurants that currently serve local food in the Kearsarge area are displayed in Figure 20.

Restaurants Serving Local Food in Kearsarge Area	
Alan's of Boscawen Restaurant & Lounge	Boscawen
Henniker Bed & Breakfast	Henniker
Colby Hill Inn	Henniker
St. George's Café	Henniker
Mary's Bakery & Café	Henniker
Daniel's Restaurant & Pub	Henniker
Henniker Junction Restaurant	Henniker
The Everyday Café	Hopkinton
Cathy's Kitchen	Hopkinton
The Flying Goose	New London
Ellie's Café & Deli	New London
Rockwell's at the New London Inn	New London
Hole in the Fence Café	New London

**Figure 20:** Restaurants Serving Local Food in the Kearsarge Area

## Institutions

Schools, hospitals, jails and nursing homes play a large role in the food system as well. In the Kearsarge area there are several schools, one hospital, a nursing home and a jail. These institutions offer a variety of food that is obtained mostly from outside the food system. We identified institutions as any organization that serves meals to a population every day. This information is important because they impact the inflows and outflows in the system and represent opportunities for local farmers to distribute their products. Figure 21 shows the institutions in the Kearsarge area.



**Figure 21:** Institutions in the Kearsarge Area

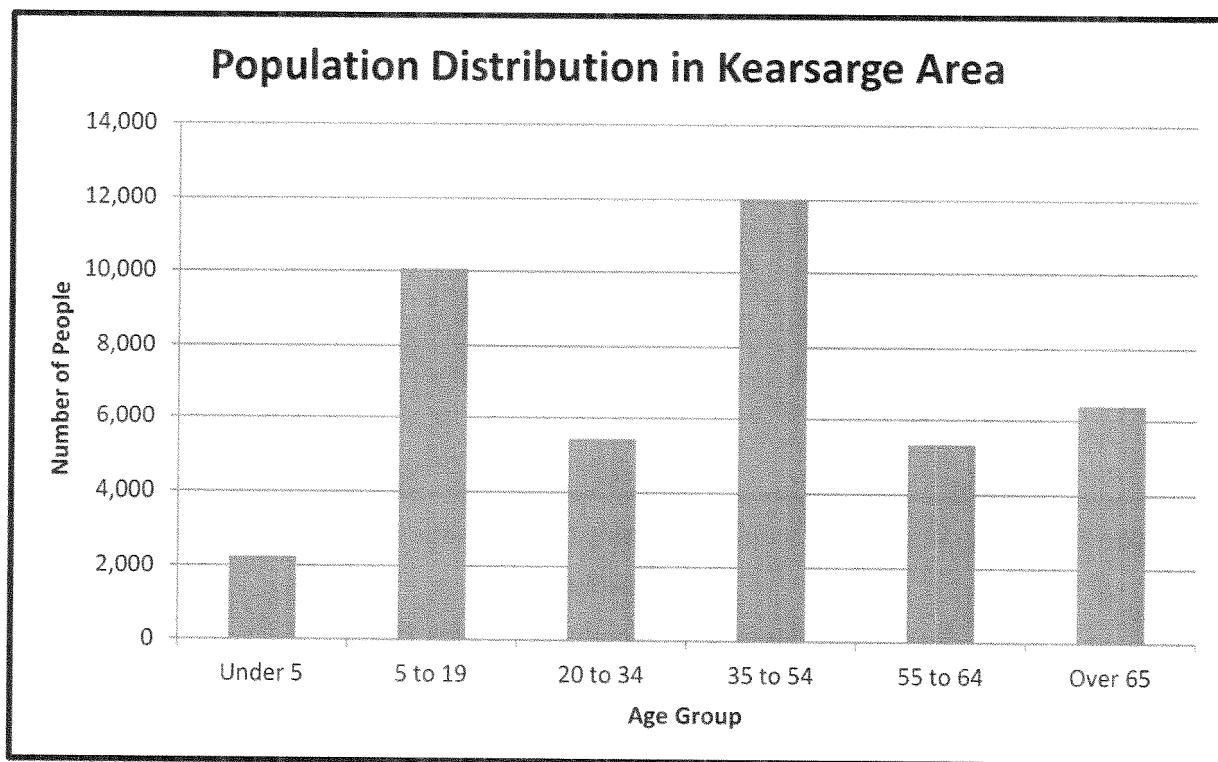
### **Colby-Sawyer College Dining Services Petition**

Our team realized that institutions play an important role in local food systems. We created a petition to create a policy where the Colby-Sawyer College Dining Hall would be mandated to provide students with a higher percentage of local food. Underclassman Garrett Dunnells came up with the idea of distributing a petition to students asking to increase the percentage of local food in the dining hall. We collaborated with Garrett and the Sustainability Core club on campus to get signatures. The petition mandates that 20% of the food served by dining services be produced within 100 miles of Colby-Sawyer College (see Appendix D) by the fall semester of 2013. The petition was signed by 726 out of approximately 1,200 students, or 61% of the student body. We met with President Tom Galligan and presented the petition to him. He was supportive of this initiative on campus and asked us to present the petition and proposed policy to the Senior Staff. Currently the proposed policy is under review, but we are confident that a policy will be in place soon that increases the percentage of local food served at the College.

## Consumer

The final aspect of the Kearsarge food system is the consumer. During the first part of the project, we researched demographic data for the Kearsarge area. Studying the demographic information of the area is important to our understanding of the entire food system.

The total population of the Kearsarge regional area in 2009 was 39,691 people; this represents 3.0% of the total population of New Hampshire. The median age in the region is 43.4 years old. Figure 22 shows the population distribution in the Kearsarge area. Five to nineteen year olds comprise 24.2% of the population and thirty five to fifty four year olds make up 28.9% of the population. These two age groups make up the majority of the population distribution, which suggest that the area may contain a lot of families (New Hampshire Community Profiles, 2010).

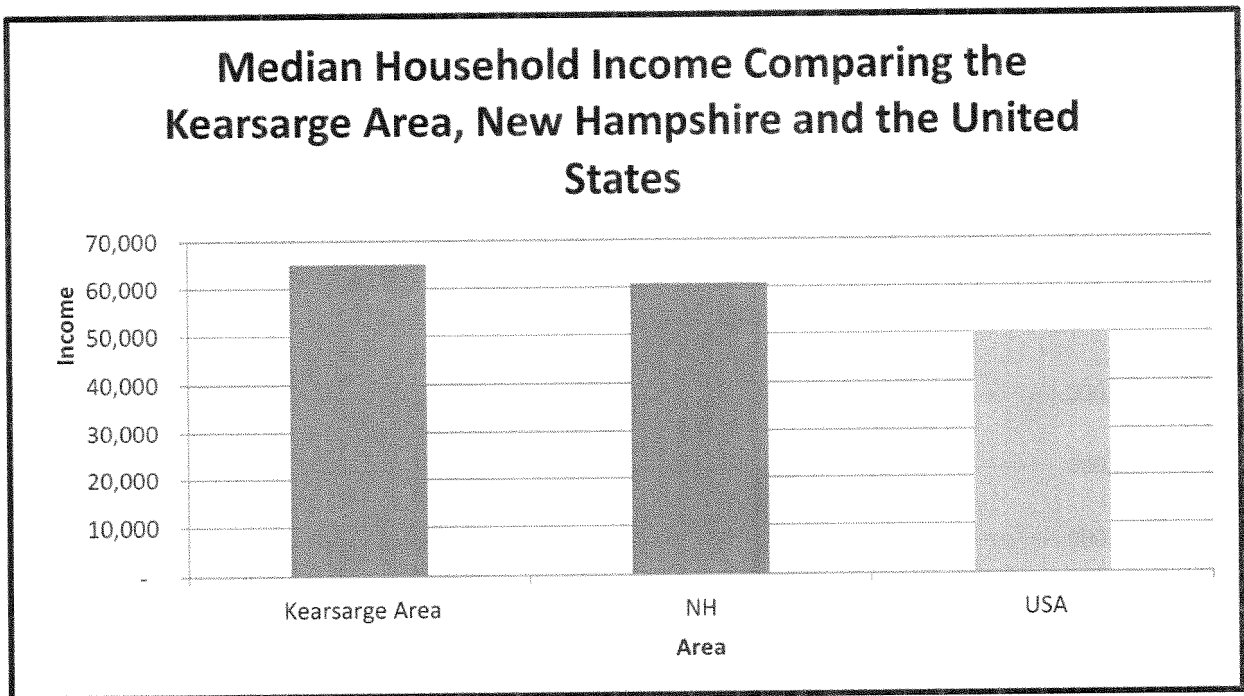


**Figure 22:** Population Distribution in the Kearsarge Area

(New Hampshire Community Profiles, 2010)



Figure 23 indicates the average median household income for the Kearsarge local area, New Hampshire and the nation. The average median household income for the Kearsarge area is \$65,101 (New Hampshire Community Profiles, 2010). For the state of New Hampshire it is \$60,734. The national average median household income is \$50,221 (U.S. Census Bureau, 2011). These statistics show that the Kearsarge local area has a higher average median household income than both the state of New Hampshire and the rest of the country. This means that the people in the Kearsarge area have the means to spend money on local products, which would help support the local economy.

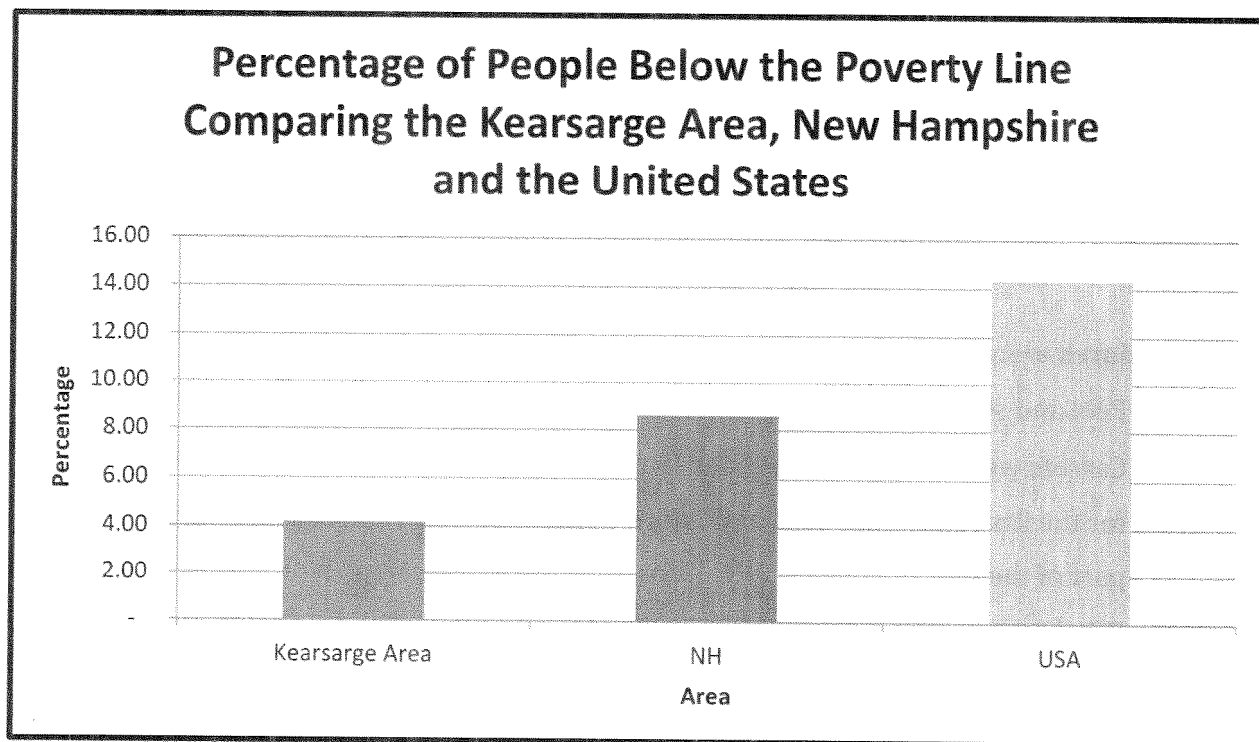


**Figure 23:** Median Household Income Comparing the Kearsarge Area, New Hampshire and the United States

(New Hampshire Community Profiles, 2010)

(U.S. Census Bureau, 2011)

Figure 24 shows the average percentage of people below the poverty line in the Kearsarge area, New Hampshire and the nation. The average percentage of people below the poverty line for the Kearsarge area is 4.16% (New Hampshire Community Profiles, 2010). In the state of New Hampshire it is 8.6%. The rest of the nation is at 14.3% (U.S. Census Bureau, 2011). These statistics indicate that the average persons below the poverty line in the Kearsarge area are lower than both the state and the nation.



**Figure 24:** Percentage of People Below the Poverty Line Comparing the Kearsarge Area, New Hampshire and the United States  
(New Hampshire Community Profiles, 2010)  
(U.S. Census Bureau, 2011)

## **Surveys – Taste Test and Consumer Perceptions**

An important aspect of the food system is consumer perceptions of local food. The Warner Winter Farmer's Market on December 10, 2011 presented an opportunity to conduct research on consumer perceptions with a taste test featuring local organic vs. conventional (store-bought) carrots. This was one of two research projects we undertook in order to understand consumer perceptions of local food and consumer food purchasing habits.

The carrot taste test and survey focused on attributes of food that are important to the consumer, along with questions (Appendix B1) that asked about where respondents purchased the majority of their food. The local organic carrots were provided by Larry Pletcher of Vegetable Ranch in Warner and the conventional store-bought carrots were purchased from Market Basket in Warner.

### **Procedures were as follows:**

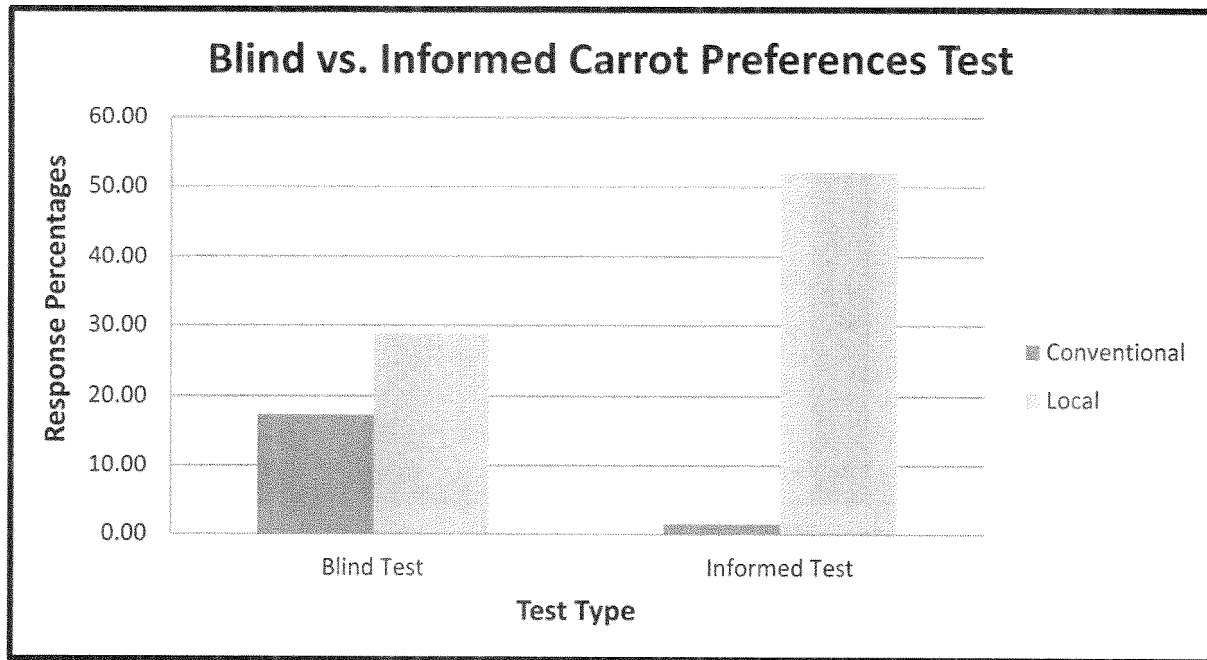
- Peel and slice carrots into quarter size pieces
- Carrots were labeled Carrot 1 for "Store-bought" and Carrot 2 for "local and organic" for the first part of the test, and "store-bought" or "local and organic" for the second part of the test
- Blind taste test by consumer
  - Adults [only] were allowed to participate

We are aware that there is an inherent bias in the results because respondents were people who had made a special trip on a Saturday to go to the Winter Farmers' Market in the basement of the town hall. This means the respondents are most likely part of a demographic profile which supports local foods as an important part of their food purchases. By understanding this bias, it is possible to gather information about a demographic profile that has interest in purchasing local foods.

### **Results and Discussion**

Figure 25 displays the number of respondents who preferred either the conventional store bought carrot or the local carrot in both the blind taste test and the informed taste test. In

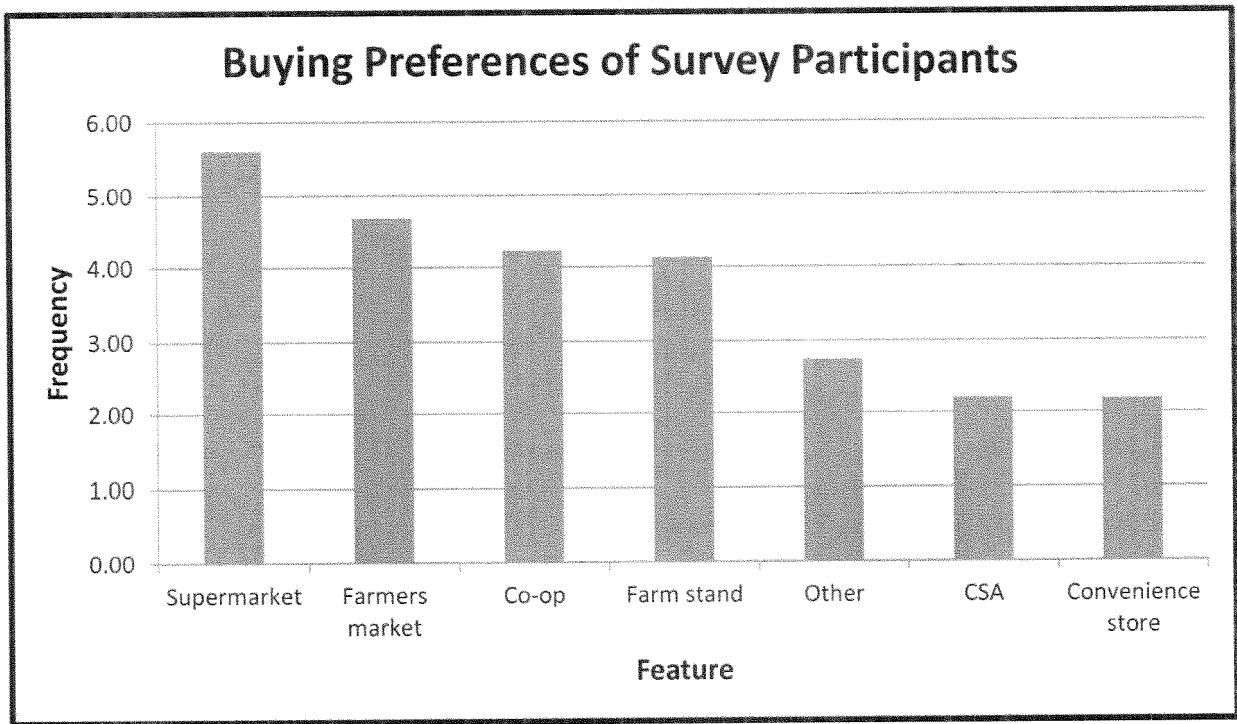
the blind taste test twelve (37.5%) respondents preferred the conventional store, and twenty (62.5%) respondents preferred the local and organic carrot.



**Figure 25: Blind vs. Informed Carrot Preferences Test**

When respondents knew which carrot they tasted, the store bought carrot was chosen only once, while the local and organic carrot was chosen thirty six times. This demonstrated that test respondents were affected by the labeling of the carrot, and clearly they wanted to prefer the local organic carrot.

Figure 26 displays the buying preference of all survey participants, in terms of where they obtain the majority of their food. This was ranked from one to seven with one being the least amount and seven being the most amount of food purchased. The supermarket was ranked the highest followed by farmers' market, co-op, farm stand, other, CSA and convenience store. The results are interesting, because despite the interest in supporting local food the highest ranked outlet was the supermarket. Farmers' market and co-op were ranked second and third not surprisingly because of the respondents' connection or interest in eating locally. Even though they have the interest in local and organic food, most of their food is purchased from supermarkets.



**Figure 26:** Buying Preferences of Survey Participants

Flavor stood out as the most important characteristic for both the local and conventional carrot, followed by texture for respondents choosing the local carrot over the store-bought carrot. This information is valuable to local producers because the respondents in this taste-test and survey were specifically coming to the farmers' market as potential customers for the local vendors. Since flavor and texture stood out in the taste test, local producers may want to focus on these characteristics when choosing varieties and marketing consumer preferences.

This survey and taste-test does not accurately represent the entire demographic profile of the Kearsarge Regional Food System because of the obvious bias in the sampling. However, the information collected is useful to local producers because it represents customers at the Warner Winter Farmers' Market. Thus, the information is helpful to understand a demographic profile with a connection to local food, which includes customers of local producers. More research in the Kearsarge area could be conducted to understand

perceptions and attitudes towards local food from samples with less bias in order to accurately gain information on the entire demographic profile.

To continue evaluating consumer perceptions we conducted another survey that focused on aspects such as buying habits, important food purchasing factors and barriers to buying local food. This survey (Appendix B2) was distributed online and in paper form to the fifteen towns in our study area.

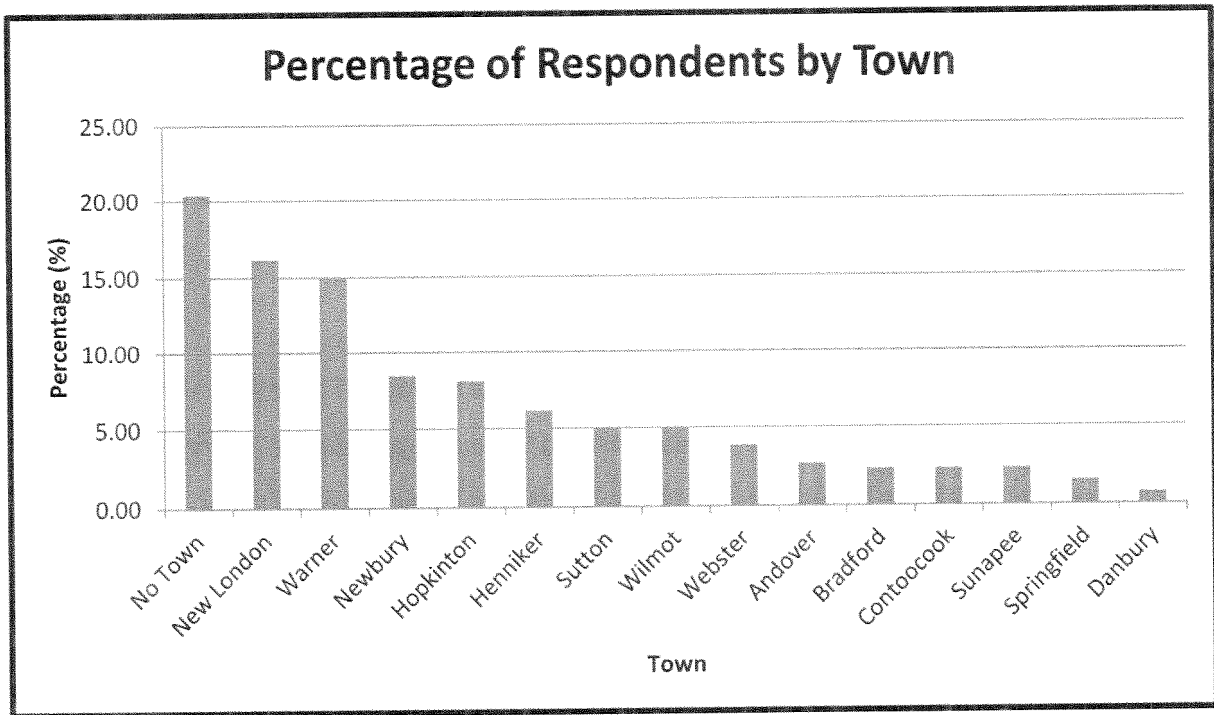
## **Procedures**

Our goal was to have this survey reach people in all fifteen towns. The online survey was distributed at Colby-Sawyer College. We advertised the survey in the Kearsarge Shopper which circulates to about 17,600 people in the Kearsarge Regional Area (Echo Communications Inc., 2011), which includes the majority of our towns. Through our ad, we asked people interested in taking the survey to contact us through an email address in the ad. This distribution avenue brought in ten online surveys. The online survey received 105 responses which included the faculty and staff at Colby-Sawyer College. The survey was dropped off at Pillsbury Free Library in Warner, Yankee Farmer's Market in Warner, Tracy Memorial Library in New London, Hogan Sports Center at Colby-Sawyer College in New London, the Andover Town Hall and the Newbury Library.

Students in our team went to three transfer stations: Hopkinton/Webster, Warner and Henniker, to conduct the surveys in person. At the transfer stations our team members stood outside the recycling section with the surveys on clipboards. We walked up to people dropping off their recycling and had two different techniques. First, we asked people to take the clipboard and fill out the survey themselves. The second and preferred option was to walk with the person, ask them the questions, and record their answers.

We collected a total of 289 surveys and 260 of them were usable. The twenty-nine surveys not used were taken by respondents outside of our fifteen town boundaries. After all of the data was collected we entered it into Microsoft Excel. The data was imported to Software Statistics Package for the Social Scientists (SPSS).

## Descriptive Statistics



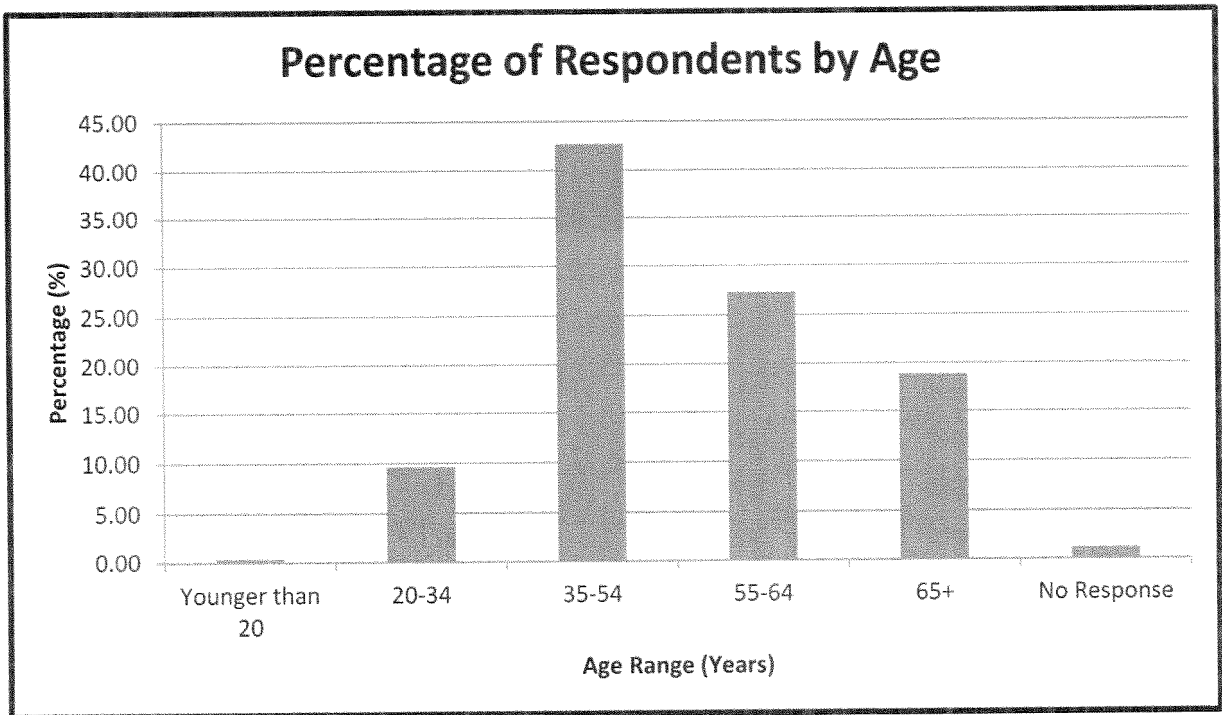
**Figure 27:** Percentage of Respondents by Town

Figures 27 and 28 show the percentage of respondents by the town they reside in. Fifty-three of the surveys had no town recorded on their survey. The second and third highest percentages of respondents were from New London and Warner. We performed a chi square test on our data and got a value of  $\chi^2 = 114$ . A chi square test is used to determine whether the proportion of surveys we received per town is similar to the proportion of the total population of residents that live in each town. With a p-value of 0.05 and fourteen degrees of freedom our f-statistics was 23.36. Our  $\chi^2$  value is significantly higher than 23.36, therefore it is very significant. This means that our sample was very biased towards the towns of New London and Warner.

Town	Pop/Town 2009	Observed # of Surveys/Town	Percentage of	Expected	Chi Square
			Population of Each Town From Total Population		
Andover	2,210	7	0.0557	11.53	1.78
Boscawen	3,984	0	0.1004	20.78	20.78
Bradford	1,526	6	0.0384	7.96	0.48
Danbury	1,138	2	0.0287	5.93	2.61
Henniker	4,997	16	0.1259	26.06	3.88
Hopkinton	5,586	27	0.1407	29.13	0.16
New London	4,401	42	0.1109	22.95	15.81
Newbury	2,075	22	0.0523	10.82	11.55
Salisbury	1,268	0	0.0319	6.61	6.61
Springfield	1,138	4	0.0287	5.93	0.63
Sunapee	3,357	6	0.0846	17.51	7.56
Sutton	1,844	13	0.0465	9.62	1.19
Warner	2,940	39	0.0741	15.33	36.53
Webster	1,882	10	0.0474	9.82	0.00
Wilmot	1,345	13	0.0339	7.01	5.11
TOTAL	39,691	207	1		114.68

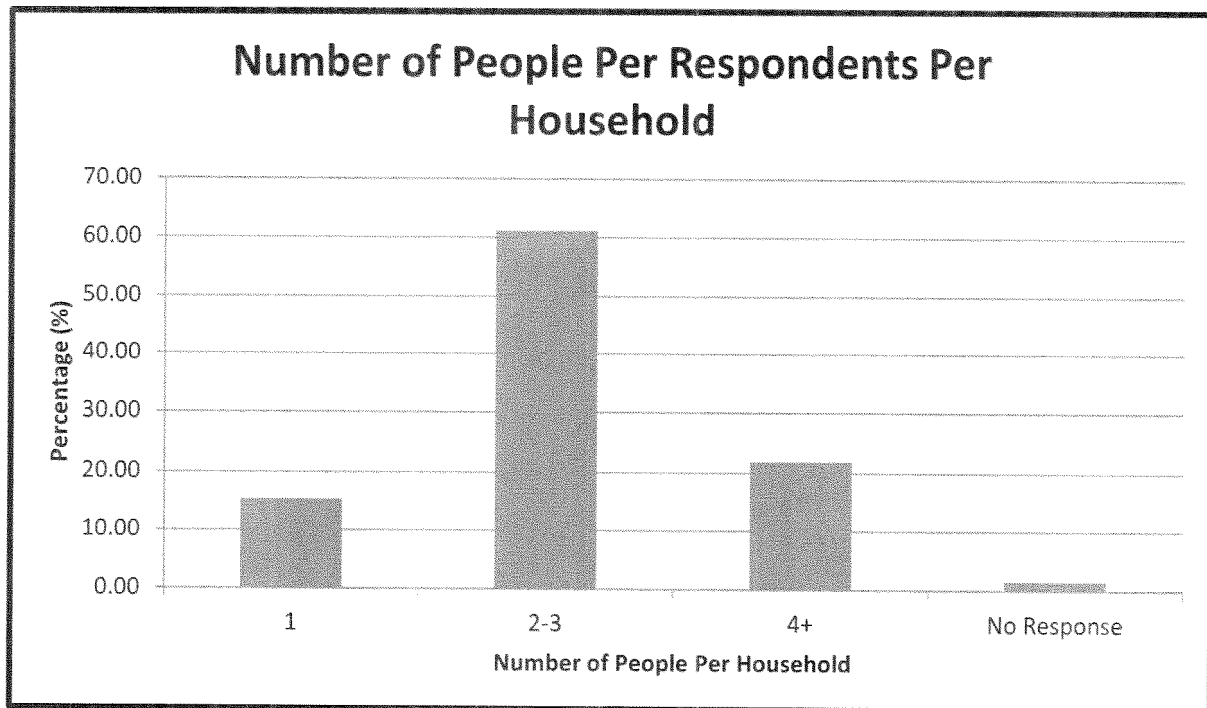
**Figure 28:** Percentage of Respondents by Town





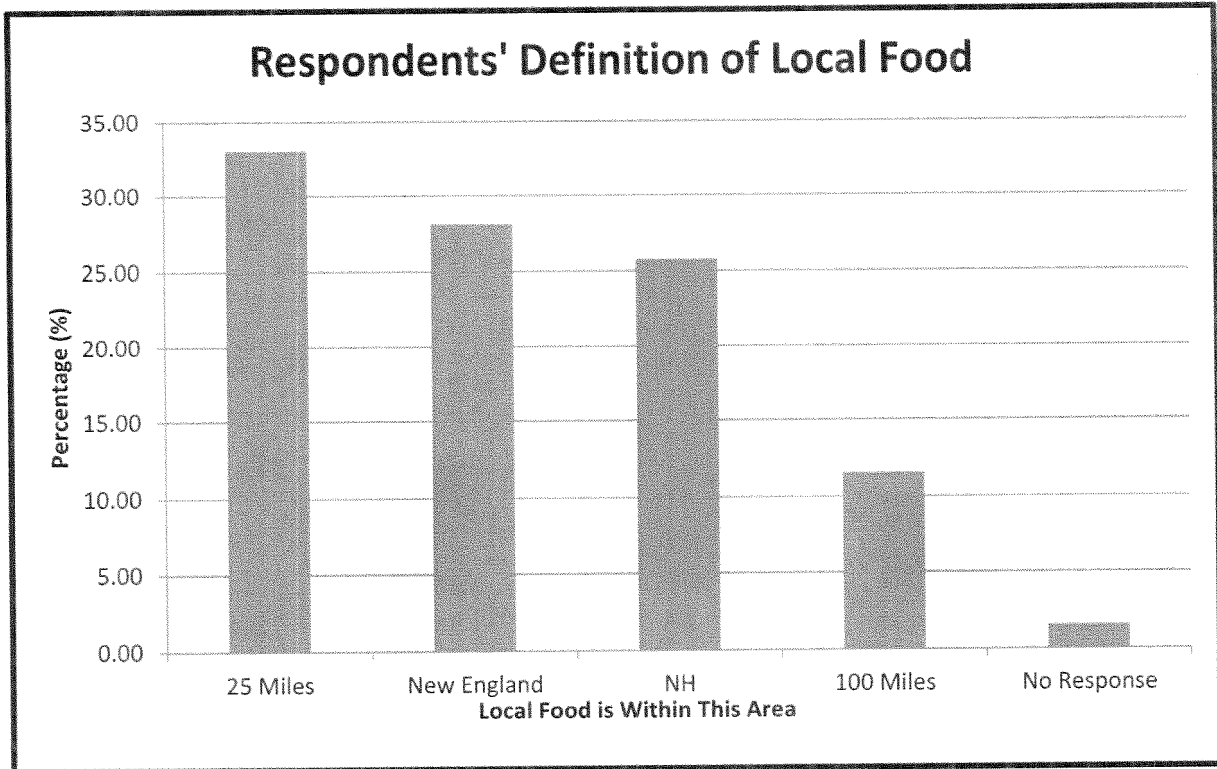
**Figure 29:** Percentage of Respondents by Age

Figure 29 displays the age ranges of our respondents by percentage. The majority of our respondents were between ages thirty five and fifty four.



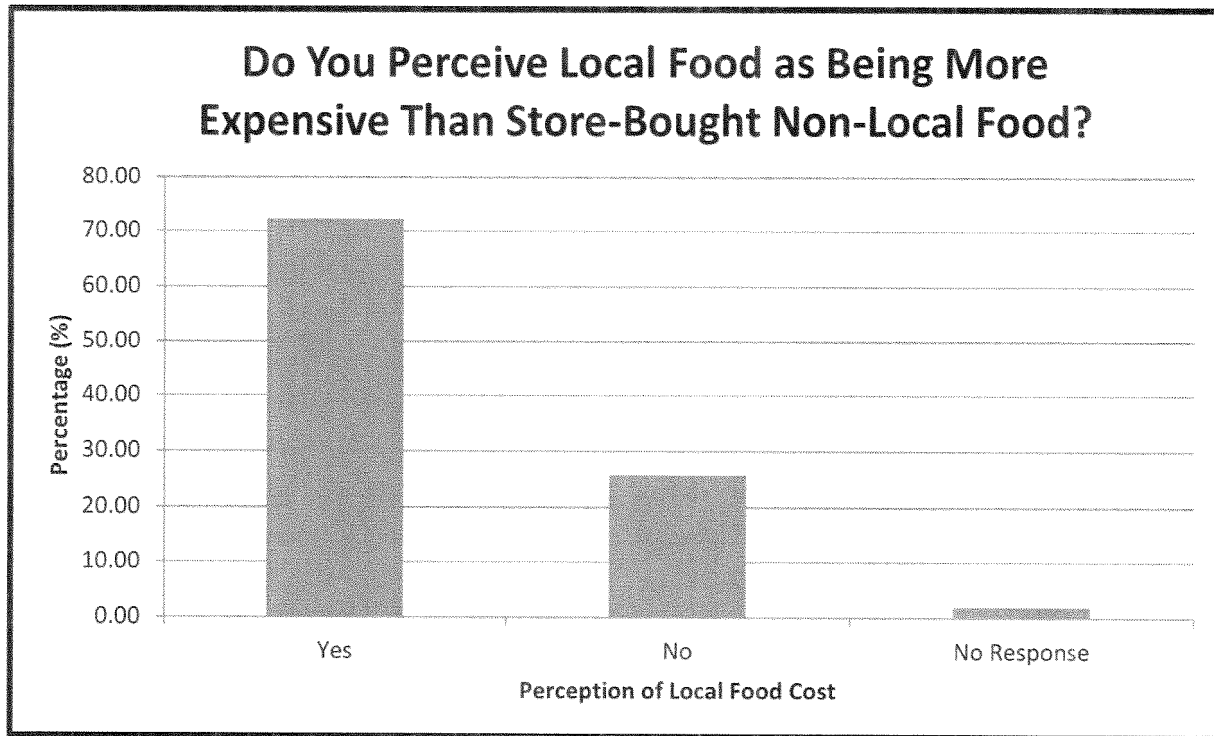
**Figure 30:** Number of People per Respondents per Household

Figure 30 shows the number of people per household of the respondents. The category with the highest percentage was two to three people per household. This suggests that our respondents may be couples with one or no children or single parents.



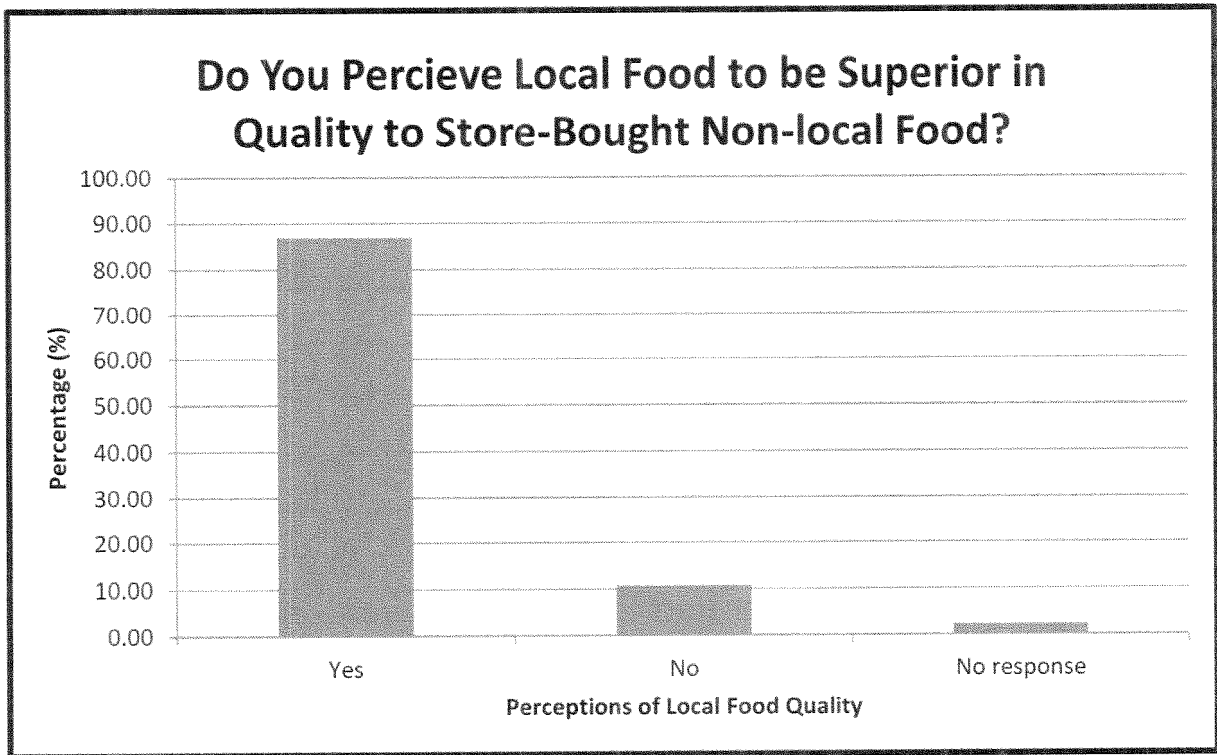
**Figure 31:** Respondents' Definition of Local Food

Figure 31 displays the respondents' definition of local by percentage. Our data shows that the majority of respondents, about 33%, believe that "local food" is defined as food produced within twenty five miles. Food produced within New England, and specifically within New Hampshire, are also acceptable definitions for about 28% and about 26% of our respondents, respectively.



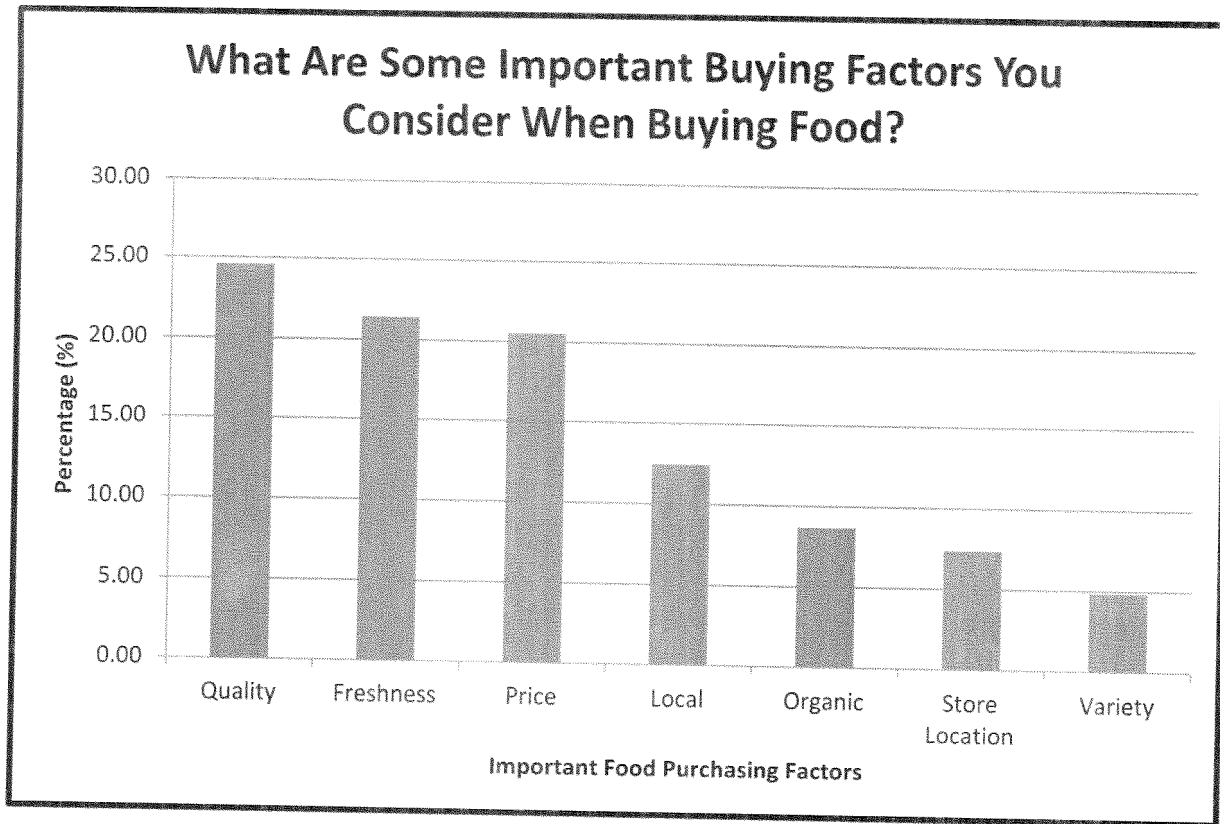
**Figure 32:** Perception of the Relationship Between Price and Local Food

Figure 32 shows that respondents' perceive local food as more expensive than non-local food. The majority of respondents, about 72%, answered yes they do perceive local food to be more expensive than non-local food.



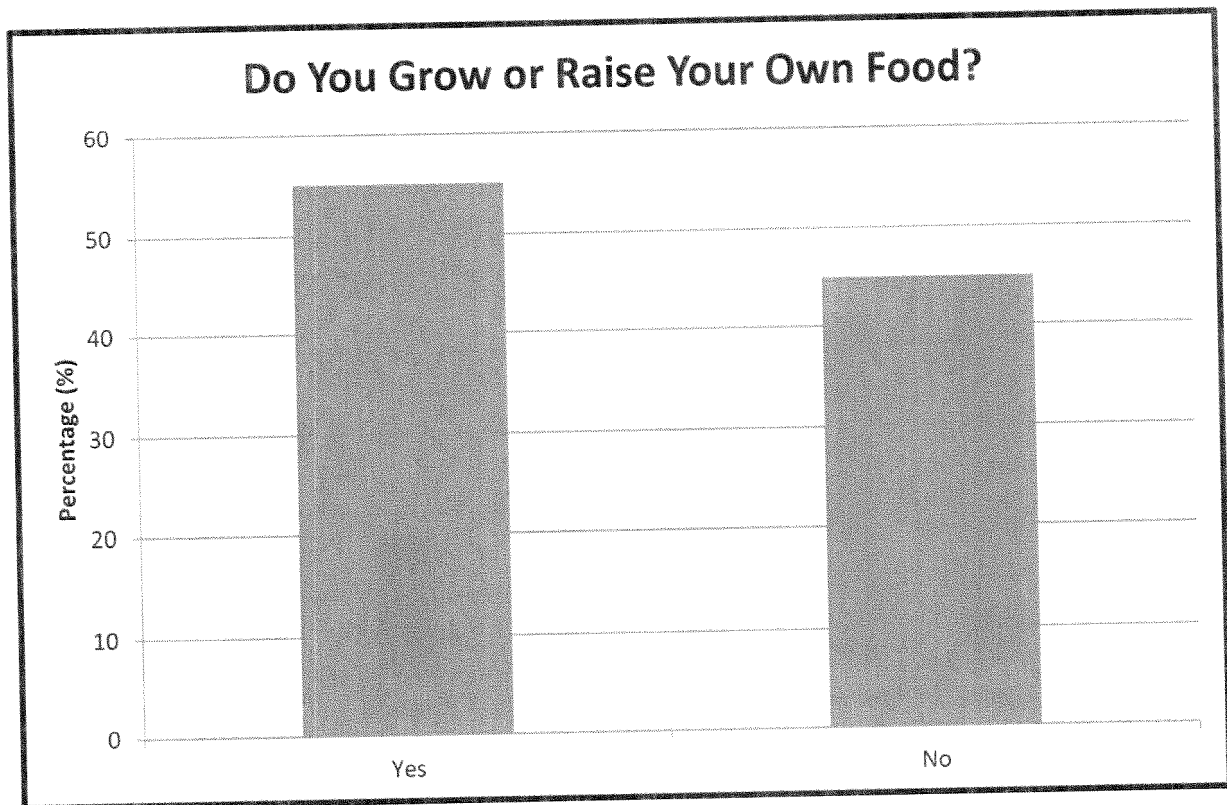
**Figure 33:** Perception of the Relationship Between Quality and Local Food

Figure 33 displays the respondents' perception that local food is of higher quality than non-local food. About 87% of respondents believe that local food is of superior quality.



**Figure 34:** Factors Considered in Food Purchases

Figure 34 represents the important food purchasing factors for respondents. It shows that about 25% of respondents think that quality is the most important factor when purchasing food. Freshness and price are the next most important factors at about 21% and 20%, respectively.



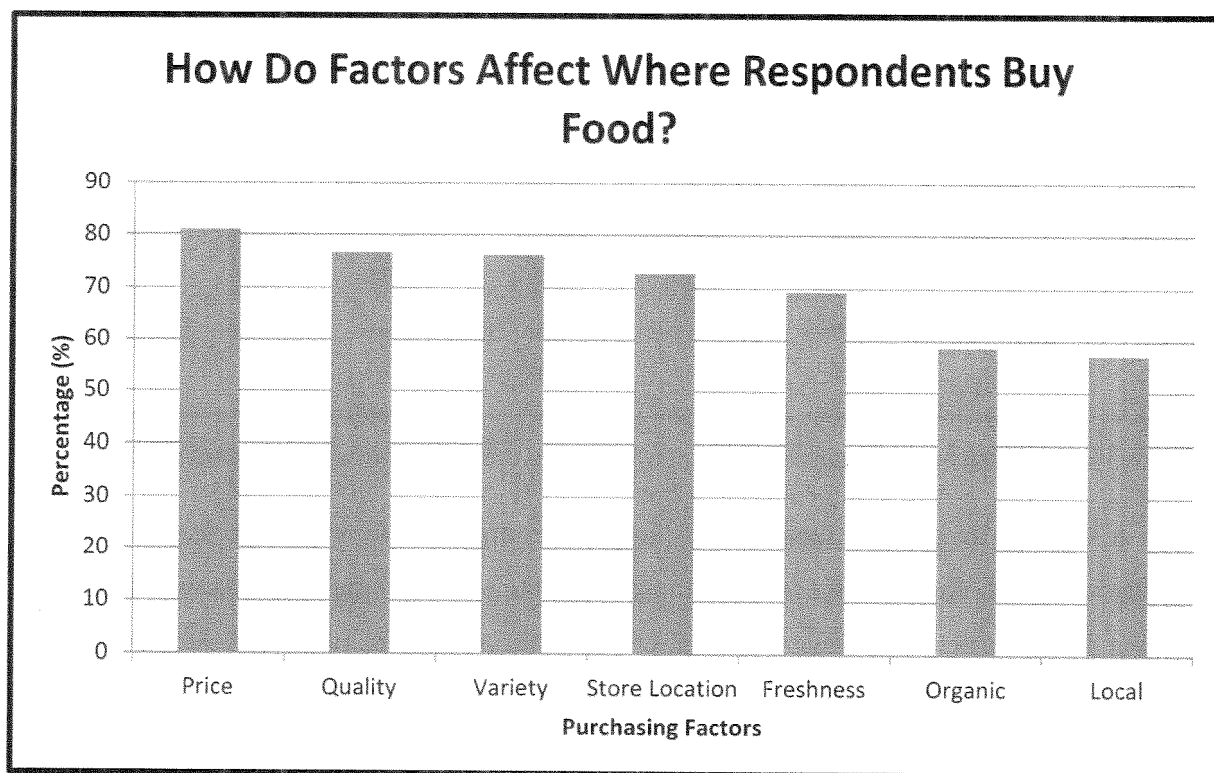
**Figure 35:** Percentage of Respondents Who Grow their Own Food

Figure 35 shows the percentage of respondents that grow or raise any of their own food. About 55% of respondents do grow their own food. We found that respondents between the ages of thirty five and fifty four were the majority of people who grow their own food, followed by ages fifty five to sixty four.

## Analysis

In our survey, one of the questions we asked respondents was which factors are most important when purchasing food from a list of seven factors. When we ran descriptive statistics we found that the most important factor for about 25% of the total respondents was the quality of the food being purchased.

To determine if purchasing factors play an important role in where respondents shop we compared purchasing factors and the outlets where respondents buy most of their food.

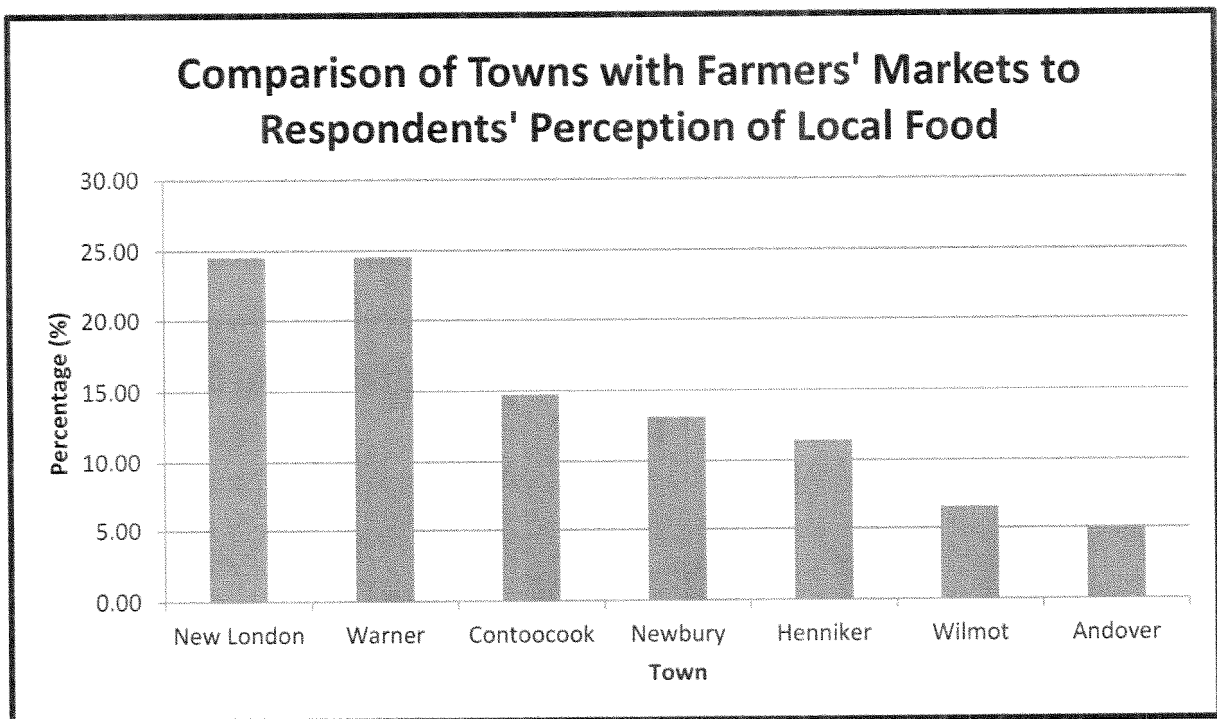


**Figure 36:** Purchasing Factors Considered in Food Purchases

In Figure 36, we compared the people who purchase the majority of their food from supermarkets with food purchasing factors. We were expecting to see that only the respondents that placed price as their most important factor would shop at supermarkets. However, it was interesting to see that the respondents who put organic and local as their important purchasing factors also shopped for the majority of their food at supermarkets instead of farmers' markets or farm stands. This could be due to the paradigm that local

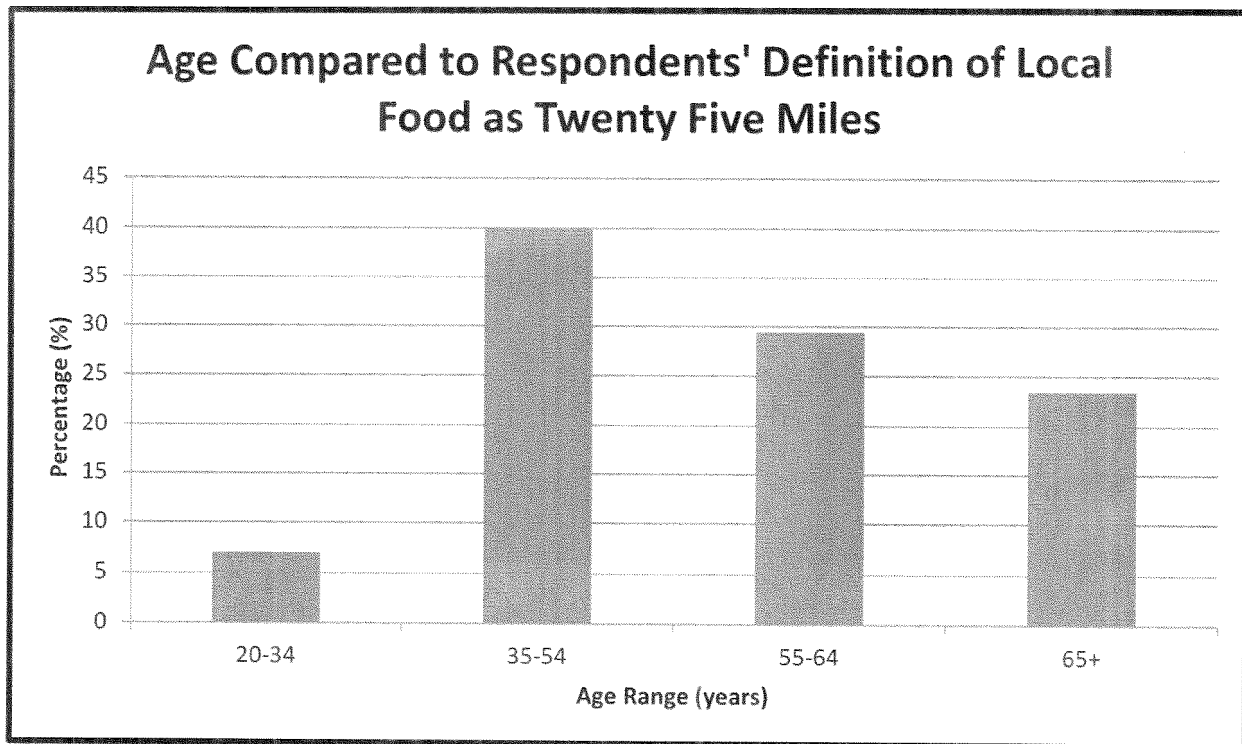


and organic food is more expensive at farmers' markets and farm stands than at supermarkets.



**Figure 37:** Comparison of Towns with Farmers' Markets to Respondents' Perception of Local Food

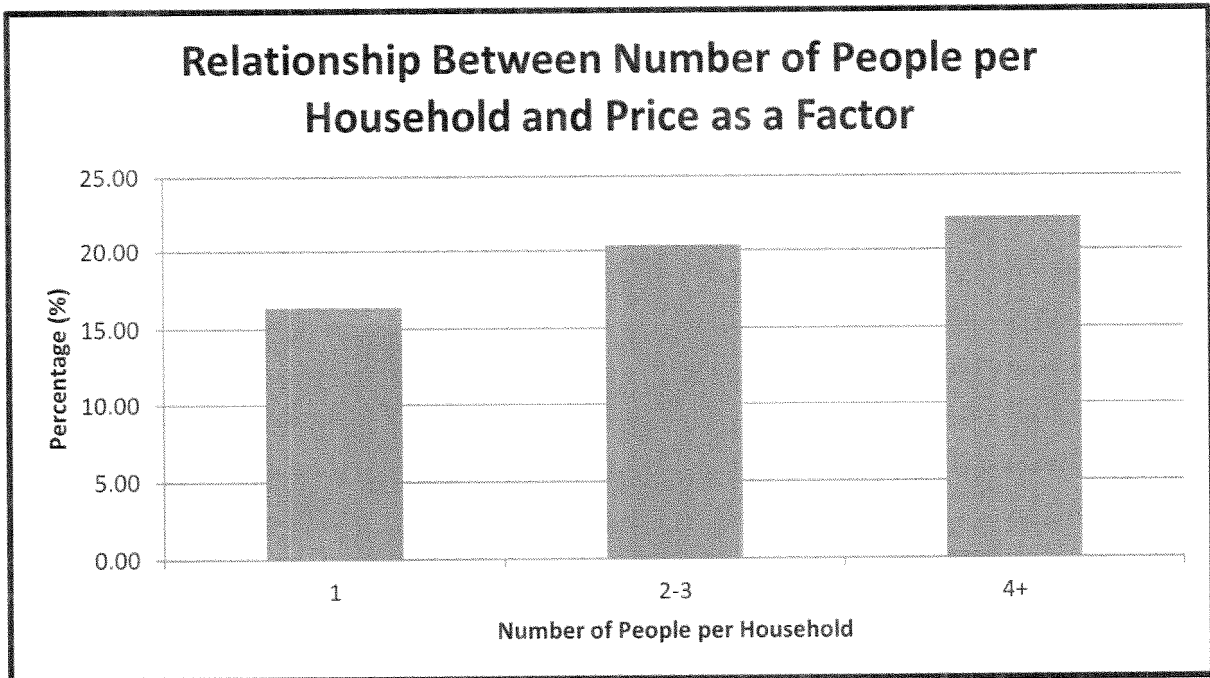
We looked at the towns with farmers' markets and compared them to respondents' definition of local. The purpose for this analysis was to see if people in towns with farmers' markets define local as the closest option we provided which was twenty five miles. Figure 37 displays the towns with farmers' markets which are New London, Warner, Contoocook, Newbury, Henniker, Wilmot and Andover. When we compared these towns with towns without farmers' markets we observed that the towns listed above chose the definition of local as twenty five miles more frequently than the towns without farmers' markets.



**Figure 38:** Age Compared to Respondents' Definition of Local Food as Twenty Five Miles

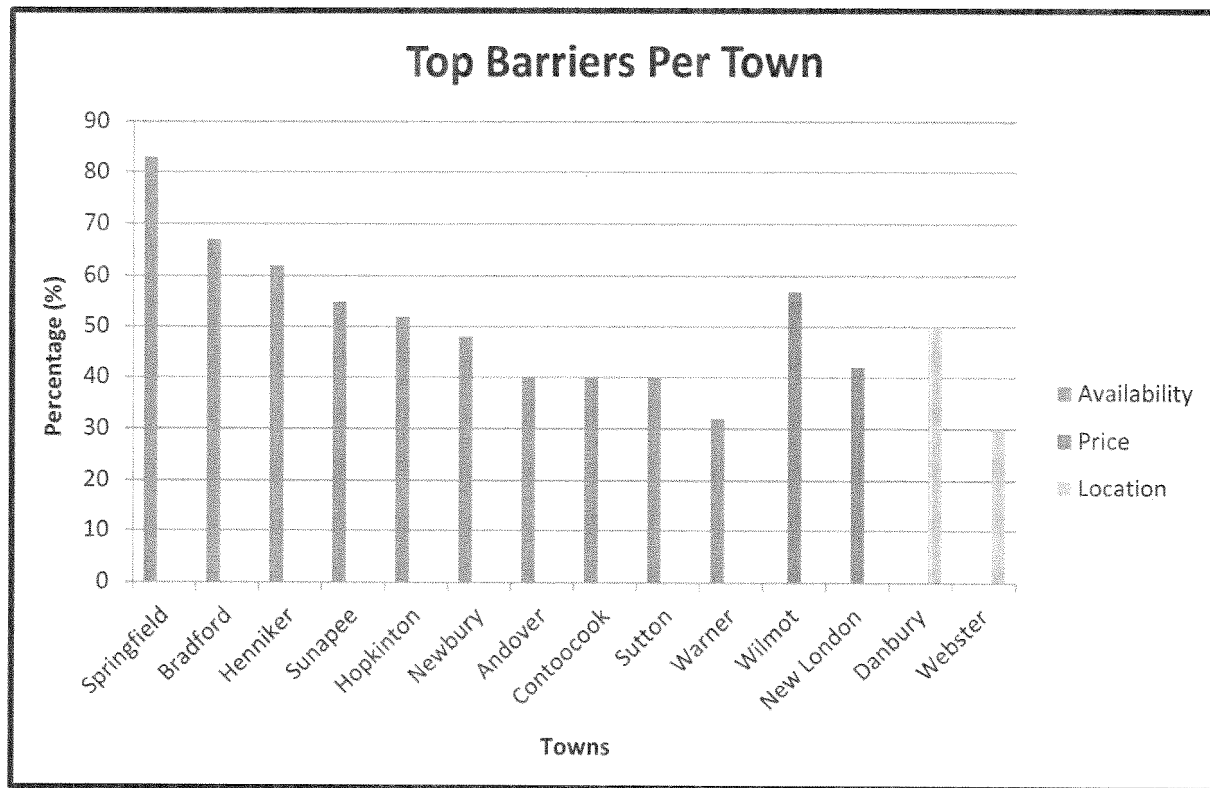
We compared the respondents' age group with the twenty five mile definition of local food. The purpose of this analysis was to see which age group defines local as twenty five miles more frequently than the others.

Figure 38 displays that 40% of respondents in the age group of thirty five to fifty four define local as twenty five miles. This percentage is higher than the other three age groups.



**Figure 39:** Relationship between Number of People per Household and Price as a Factor

We compared the number of people per household with price as an important factor when purchasing food. We hypothesized that households with more members tend to prioritize price in comparison to other factors. Figure 39 supports our hypothesis that as the number of members in a household increase price becomes a more important factor. As this group of respondents is strongly driven by price, farmers and agricultural organizations, such as KAEL, could focus on educating the community that local food is not necessarily more expensive than non-local food.



**Figure 40:** Top Barriers to Buying Local Food By Town

We compared the towns with the barriers they encounter when buying local food. In our descriptive statistics we found that availability was the most frequent barrier chosen by about 53% of total respondents in almost all of the towns. This could be due to the shorter growing season in New Hampshire and a general lack of cold storage space. The purpose of this analysis was to see if there were any specific barriers that one town faced more than the other towns. Figure 40 shows that availability is [again one] of the barriers that most of the towns are facing. Wilmot and New London are the towns where price is the major barrier, while in Danbury and Webster location is the major barrier.

#### **Discussion:**

Because of the locations of our surveys and the availability of the online survey our sample is biased. There are a few reasons why we may have such a biased sample. The surveys were distributed to faculty and staff of Colby-Sawyer, many of whom live in New London. They were also distributed to Tracy Memorial Library and Hogan Sports Center which are

places that many New London residents use. We got our second highest number of responses from Warner. This could be a factor because people in Warner could be more aware of our project. Kearsarge Area Eat Local (KAEL), our community partner for this project, is located in Warner. KAEL has been promoting local food by sponsoring events such as the Fall Foliage Festival and public movie showings. They also have a strong agricultural connection and focus much of their efforts on the local agricultural economy. Our sample also lacks any respondents from a few towns. Boscawen and Salisbury were not represented in our sample. This could be because the locations where we distributed our surveys were not places that many people from Boscawen and Salisbury visit frequently. They are farther away from Colby-Sawyer College compared to areas where we got high numbers of surveys such as Warner, Newbury, and New London. Salisbury has a smaller population than many of the towns in our area. According to our chi square test we only expected about six respondents from Salisbury to represent the town proportionally.

## **Conclusion**

To conclude our demographic trends, our data showed that about 43% of our respondents were between the ages of thirty five and fifty four and about 61% of our respondents lived in a household with two to three people.

To conclude the perceptions of our respondents about 33% of our respondents defined local as twenty five miles, 72% of our respondents thought local is more expensive than non-local while 86% of respondents said that local food is of higher quality than non-local food. We also found that quality is the more important factor for the majority of respondents instead of our original hypothesis which was price. Even though we realize that our data is biased we did find some trends that could open the possibilities for future studies in a larger context.

## SWOT Analysis

A SWOT analysis (strengths, weaknesses, opportunities and threats) was conducted for the Kearsarge area in order to have a better understanding of what aspects of the food system are strong and what areas could use improvement. The objective of this SWOT was to better understand the area so we could make recommendations for what could be done in order to make a healthy local food system (Figure 41).

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Farmers in the area have expertise and the ability to grow food effectively.</li> <li>• The location of major roads such as Interstate 89 going through the area.</li> <li>• High level of income of residents in the area.</li> <li>• Support groups for farmers such as KAEL, and the UNH cooperative extension.</li> <li>• Markets for farmers to sell products.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of communication, network, and collaboration amongst farmers.</li> <li>• Limited infrastructure support, in a form of shared information and tools amongst farms.</li> <li>• Lack of a processing facility, both on farms or a large shared processing facility for all the farms in the area.</li> <li>• Limited shared transportation and distribution.</li> <li>• Lack of storage facilities for produce on farms or shared facilities.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Food hub, a large shared location for farmers to process and distribute food.</li> <li>• Use of colleges and schools as a marketplace, or use of kitchens.</li> </ul>	<ul style="list-style-type: none"> <li>• Big supermarket providing food at a lower price than some farm goods.</li> <li>• Climate conditions, climate change, and pests changing how farmers</li> </ul>

<ul style="list-style-type: none"> <li>• Education for farmers focused on marketing goods and advanced farming technologies.</li> <li>• Perception shift to educating the consumer on the benefits of locally grown food.</li> <li>• Using markets, such as institutions, along with the collaboration of farmers markets in order to be more successful.</li> <li>• New farmers being introduced into the area.</li> <li>• Create collaborations by putting farmers in contact with each other so that they may work together.</li> </ul>	<p>must grow food.</p> <ul style="list-style-type: none"> <li>• Perception of consumers, and cost of local food.</li> <li>• Political/legal (GAP certification), forcing farmers to become certified, in order to compete in some markets.</li> <li>• Technology, in the form of high cost of updating farm equipment.</li> <li>• Farmers markets are fragmented and do not always collaborate with each other.</li> </ul>
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**Figure 41:** SWOT Analysis for the Kearsarge Regional Food System

### Strengths

- The farmers within our area are all experienced and have the knowledge required to run an effective farm. For example, Contoocook Creamery at Bohanan Farm has been in operation for over 100 years. Over the time that our farmers have been working they have built up the knowledge required to produce food in our area.
- The location of major roads, such as Interstate 89, is a strength in our area. According to NH Department of Transportation data, the traffic volume on I-89 between exits 8 and 9 in Warner was 21,000 vehicles per day (State of New Hampshire Department of Transportation).
- By marketing to buyers that are passing through the food area, our farmers have the ability to sell to a completely new customer base. The traffic route serves as an

outlet to potential customers and for farmers to get products to market. Along the interstate there are easily accessible farms and farmers' markets for passing consumers. Since there is not a slaughterhouse in the nearby area, this route also allows access north and south to USDA slaughterhouses. Besides Interstate 89, Interstate 93 is nearby this region and is a connection to major cities, like Boston, providing a higher influx of people to the area.

- The average income of people living in the Kearsarge area is \$65,101, which is higher than the average of New Hampshire, at \$63,277, and even higher than that of the United States, at \$51,914. With more disposable income, the residents of our food system have the capability to spend their money within the system on locally grown food. When asked what the most important factors are for shopping in the area, people stated quality and freshness as the two most important factors, with price as the third most important factor. Based on this information, it would appear that these shoppers would be willing to pay more for food of higher quality. It is not the case that in all instances local food is more expensive than food from a box store, however, with this data, it appears that a shopper is more interested in buying fresh food of higher quality than how much they spend on the food.
- Support groups for farmers, such as KAEL and the University of New Hampshire (UNH) Cooperative Extension, are groups that help farmers and agriculture in the region. KAEL supports farms in the area primarily through awareness efforts and UNH Extension supports farmers through lectures and classes. The Extension also offers a consulting service, workshops, visits with farmers and certifications for farmers for pesticide use.
- Within our area we have identified seven separate farmers' markets along with nine farms that offer CSA programs. With both farmers' markets and CSAs being used in our area, our farmers are taking advantage of several marketing tactics.

### **Weaknesses**

- Communication, networking and collaboration are areas that can be strengthened to benefit farmers. Since there is not a network system set up that puts all of the farms



in the area in contact with each other there is no way for them to share information and knowledge.

- Farmers' markets in the area are fragmented and do not always collaborate with one another. Since the farmers' markets are not always working together or communicating, there is the possibility that they have overlapping dates of operation that create competition instead of collaboration. This also hinders the farmer since they may be limited to only selling at one market. We saw an example of conflict in the New London and Andover markets because they occur on the same day in towns that are close to each other. Refer to the Recommendation section titled 'Reshaping Farmers' Markets.'
- Our food system lacks infrastructure in the form of processing facilities. Many of the farmers that we visited told us that having a shared processing facility where they could freeze and store produce or a kitchen in which they could prepare foods for customers would be ideal. Refer to the Recommendation section title 'Food Hub Facility.'
- There are several inputs into our food system that come from outside the local area. Currently there are no seed vendors within the area so farmers must look outside the system in order to buy the seeds that they need. Compost is also something that farmers must find from outside the system. Refer to the Recommendation section titled 'Composting Facility.' Within a healthy food system inputs are locally available to farmers. As for produce leaving the farm, there is also a weakness in infrastructure. There is only one slaughterhouse in New Hampshire and it is not located within this area, so farmers must send their animals outside of the system in order for it to be processed for sale. At Contoocook Creamery we learned that their milk must first be brought to Maine where it can be bottled and then brought back to be sold. The lack of these establishments is a weakness since food must leave the system before it can be sold within the system, adding fossil fuel emissions to the environmental cost of local food.

- There is a limited amount of carpooling between farmers in the distribution of farm goods in and outside our food system. Farmers might save time, fuel, and emissions by sharing truck space to markets.
- Small farms do not have the space to store all of their produce and goods. In our area, we have identified many farms that lack the ability to store all of the goods that they produce on their farm due to lack of storage space. This can result in having to dispose of produce when or if it spoils.

### **Opportunities**

- A food hub or a large shared location for farmers to process and distribute food would be beneficial to the area. Currently there is no communal, industrial kitchen that our farmers can use to process the food they grow. This is an opportunity that could benefit all of the farms in the Kearsarge area. We have identified a system that has been successful in Hardwick, Vermont and we believe it could work in our area. Refer to the Recommendations section title 'Food Hub Facility.'
- There is potential to utilize colleges and other schools in the area for their resources. Campuses may be able to be used for farmers' markets, and kitchens may be available for use during certain times of the year when not occupied by students. There are several schools within the area including, elementary and high schools, along with Colby-Sawyer College, which could all buy food from farmers to serve to their students. These institutions also have industrial kitchens that farms could potentially use in the preparation of food.
- Marketing is an important aspect of any business. It is one area that farmers could improve on by making their presence known on the Internet. With new marketing tactics farms would have a chance to sell to a wider range of consumers. Refer to the Recommendations section title 'Marketing.'
- With a wide range of customers, it is important that the buyers are aware of the benefits of supporting a local food system. An example of a local food system helping its community was during Hurricane Irene in Vermont. Even with blocked roads due to storm damage people in rural towns had food from local farms. It is necessary that buyers understand how important a food system is to the

community that it belongs to. An opportunity for the farmers of the area is to make buyers aware of their proximity to local farms and the food that they can provide to the buyer. Refer to the Recommendation section titled 'Promoting Environmentally Conscious Farming Methods and Marketing.'

- In this food system there are several farmers' markets that could collaborate with one another in order to run more efficiently. These markets have shoppers ranging from seventy to 300 people on the day the market takes place, with the number of vendors ranging from twenty six, in towns like New London, to only two at smaller markets. At bigger markets it is common to see vendors selling products other than food, such as arts and crafts. This can bring in a wider variety of customer who are likely to browse the local farmers' stands. By working together, farmers' markets will not have over-lapping times of operation and farms would have the opportunity to sell their goods at more than one market. Refer to the Recommendation section titled 'Reshaping Farmers' Markets.'
- There is an abundance of undeveloped land in the area, and there are opportunities for farmers to start new farms.
- In order to make working amongst each other more viable it would be beneficial for farmers to be in contact with each other. This would enable them to work together, coordinate events and help each other with advice, suggestions, or questions they may have. Refer to the Recommendation section titled 'Networking.'
- Farmers will have a new and larger market to sell their produce to if the petition at Colby-Sawyer College is successful.

### **Threats**

- Large supermarkets are able to buy produce in bulk and are able to sell it to the buyer at a lower price. It is not always the case that supermarkets have lower prices than farmers; however, the customer's general perception is that they do. This results in the shopper looking for the lowest price, so they may avoid local food. Seventy-two percent of the respondents of our survey stated that they perceive local food to be more expensive than food from large box stores. This is presented as a threat since a large portion of the group we surveyed believes local

food costs more and may be hesitant to shop locally if they are trying to save money. Refer to the Survey Analysis section where respondents received local food to be more expensive.

- As our climate conditions change and new pests are introduced to the area, farming practices will have to adapt to these changes, and that will be challenging. One example of pests is the Spotted Wing Drosophila (SWD). This is an invasive insect that came from China and Japan and has become established in NH, MA, CT, and RI (Eaton, 2011).
- In order for farms to compete in markets, such as selling to institutions like Colby-Sawyers dining hall, they must be GAP certified or meet other political and legal requirements. GAP refers to the way that fruits and vegetables are handled, harvested and stored. According to the USDA, the requirements set forth by GAP are set up to provide the customer with food free of microbial hazards and other health risks (USDA 2012). If a farm wishes to sell their produce to a buyer, such as Sodexo, for example, they must be GAP certified, and this may involve many changes to current practices.
- As improvements are made in the technology field, farms are constantly trying to keep up. It is expensive for farms to buy new equipment and machinery and make repairs on old machines that have broken down. This is a threat since small farms tend to have a hard time making the investment to upgrade farm equipment.

## **Discussion**

The SWOT analysis helps to break down and visualize what aspects of the food system are strong and what areas need improvement. In our recommendation section of this report, we address steps and changes that can be taken in order to create a more fluid food system; that is, a system that is more self-sustaining with the capability to grow food for the residents of the area with fewer inputs from outside the area.

## **Recommendations**

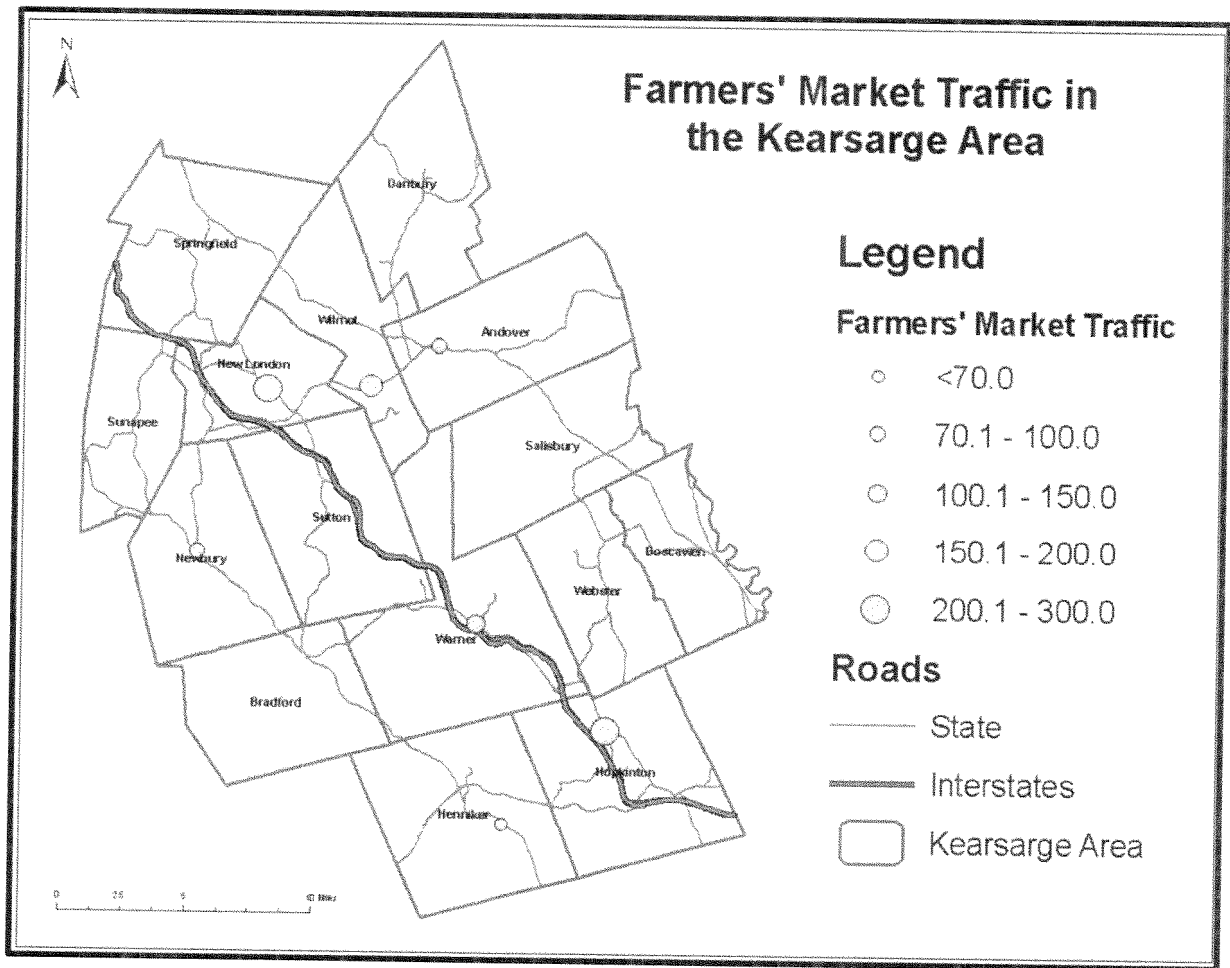
The strengths, weaknesses, opportunities and threats discussed in the SWOT analysis form a starting point for making recommendations in the Kearsarge Regional Food System. A food system, in general, consists of inputs and outputs, food production and distribution, the roads that connect the system and the transportation methods used on those roads as well as the people who participate and live within the system. The Kearsarge Regional Food System, though an artificially created collection of towns within a twelve-mile radius of Mount Kearsarge, can become a linked and connected system through implementing the recommendations we, have generated. The Kearsarge Regional Food System receives inputs, such as compost from outside the region. This food system also creates outputs, such as processing and distribution through retail, CSAs, farmers' markets and schools. Marketing is an essential aspect to promote produce and attract and retain customers. Marketing methods of environmentally conscious farming will also aid in promoting produce to attract consumers who are increasingly aware of the consequences of food choices. Collaboration with area supermarkets who are willing to initiate local food movements, such as Hannaford's, is necessary for meeting the demand and preferences of the consumer. Finally, attracting new and younger farmers to the area is a key component to this system to continue meeting the growing demand of local food. We make a number of specific recommendations below to address some of the opportunities to increase the health of the local food system.

### **Reshaping Farmers' Markets**

Within this food system there are eight farmers' markets (Contoocook, Henniker, Warner, Bradford, Newbury, New London, Wilmot and Andover). The objective of this recommendation is to maximize the success of farmers' markets by making suggestions for them to increase their traffic so local producers can optimize their time and effort at the markets and that farmers' markets are the ideal place to bring consumers and producers together. Our survey results suggest that 46% of people who participated in the survey purchase some or most of their food from farmers' markets. From that we can conclude that there is strong support for farmers' markets as a source for food purchases.

We also observed, when taking data from farmers, that some farmers take their produce to areas of larger population, such as Concord, through distributions such as CSAs and farmers' markets. For example, Larry Pletcher, of Vegetable Ranch, takes his produce to Concord for the Concord Farmers' Market and provides produce for the Local Harvest CSA. Bob Bower, of Kearsarge Gore Farm, takes his produce to Manchester for the Manchester Farmers' Market, and also provides produce for the Local Harvest CSA. This ensures a larger market for increased profit and demand of their goods. Given that we may not have information on all of the farms and the farmers' markets that they participate in, we can still make recommendations for consolidating some farmers' markets, as well as make observations of those farmers that provide for larger populations outside of this food system. By consolidating the farmers' markets in the area and increasing the number of vendors at each market, there will be more demand. Producers would rely less on larger population centers, like Concord and Manchester, if there were larger farmers' markets in this area. This would also reduce transportation costs and food miles because producers would travel a shorter distance.

As a general recommendation, farmers can increase the amount of sales in the local area by increasing marketing and consumer connections, while relying less on larger markets, such as Manchester and Concord, which have more concentrated population markets. This would reduce transportation costs because it will cut the distance they must travel to distribute their produce. In terms of more specific recommendations for the area, the Wilmot Farmers' Market could combine with the Andover Farmers' Market since they are both relatively small and closely located to one another. Since the Warner Farmers' Market is well established and located on the main street and the Bradford Farmers' Market is small, it could combine with Warner. Henniker is very small as well and could combine with the much larger Contoocook Farmers' Market. The Newbury Farmers' Market is also small and could combine with the larger New London Farmers' Market that is conveniently located on the main street. The size mentioned above is based on traffic flow and is depicted in Figure 47 below.



**Figure 47:** Farmers' Market Traffic in the Kearsarge Area

(Note: Bradford is not displayed because information was not gathered before end of season)

In order to create a larger venue and facilitate demand:

- Combine Wilmot and Andover Farmers' Markets
- Combine Bradford and Warner Farmers' Markets
- Combine Henniker and Contoocook Farmers' Market
- Combine Newbury and New London Farmers' Market

The basis on which this was determined is that they are located in a close proximity to one another.

To maximize traffic and consolidate currently occurring market days:

- Warner and Bradford Farmers' Market should be on Saturday and take place in Warner
- Contoocook and Henniker Farmers' Market should be on Friday and take place in Contoocook
- New London and Newbury Farmers' Market should be on Wednesday and take place in New London
- Andover and Wilmot Farmers' Market should be on Friday and take place in Wilmot

The basis on which this was determined is to ensure that the larger markets do not occur on the same day. The specific days of were chosen to continue with traditions and so that consumers would have the maximum amount of time to visit them.

Farmers' Market Current Day of Occurrence in the Kearsarge Area		
Farmers' Market	Day It Currently Occurs	Recommend Day of Occurrence
Andover Farmers' Market	Wednesday	Friday
Wilmot Farmers' Market	Saturday	Friday
New London Farmers' Market	Wednesday	Wednesday
Newbury Farmers' Market	Friday	Wednesday
Contoocook Farmers' Market	Saturday	Friday
Henniker Farmers' Market	Wednesday	Friday
Warner Farmers' Market	Saturday	Saturday
Bradford Farmers' Market	Thursday	Saturday

**Figure 48:** Farmers' Market Current Day of Occurrence in the Kearsarge Area



In order to implement these recommendations:

1. Contact farmers' market managers to see if collaboration is possible
  - Andover – Kat Darling 724-4983 or [2mtnfarm@gmail.com](mailto:2mtnfarm@gmail.com) (Darling, 2012)
  - Wilmot – Mary Lloyd-Evans 735-5058 or [mlloydevan@tds.net](mailto:mlloydevan@tds.net) (Wilmot Farmers' Market, 2012)
  - Warner – Bob Bower 456-2319 or [kgfarm@tds.net](mailto:kgfarm@tds.net) (Kearsarge Gore Farm, 2009)
  - Bradford – Kate Dobrowski 938-6228 (Bradford NH Community Farmers Market, 2010)
  - Henniker – Intervale Pancake House 428-7196 (Town of Henniker Farmers Market)
  - Contoocook – Amy Deutsch 746-5322 (Contoocook Farmers' Market, 2012)
  - New London – New London Recreation Department  
[marketonthegreennewlondon@gmail.com](mailto:marketonthegreennewlondon@gmail.com) (Market on the Green, 2012)
  - Newbury – Sue Russell 763-0181 or [crazyrussell@msn.com](mailto:crazyrussell@msn.com) (Newbury Farmers' Market)
2. Managers contact vendors to see if there is an interest in collaboration
3. If enough interest, vendors should meet to explore the opportunity further, as far produce and goods available and marketing the redesigned and newly located market
  - Vendors should inform consumers through marketing and communication where previously posted

## **Marketing**

Consumers today are strongly linked into social media outlets and the internet. Increasing visibility on popular websites and social networks, such as Facebook, Twitter, Google Plus, and Google Maps, would aid farmers in the Kearsarge area in increased business and visibility. More specifically in the Kearsarge area, the KAEL website would benefit from a more user-friendly and informative format for consumers. KAEL has expressed interest in an intern to increase the quality of their site. Since KAEL could potentially be an influential actor in this food system, there is room for them to grow and help the area farmers better market and sell their produce. Hosting educational workshops for farmers would build a better business and improve skills. These workshops, hosted by KAEL, could create increased personal connections with customers, as well as increased prompt responses. As a class, we found that, when contacting farmers, it sometimes took multiple phone calls and some farmers never responded. We recognize that small farmers are responsible for production, transportation, advertising and selling products, and may have to compromise where time can be spent. This recommendation is aimed at some of the time demands for producers.

Jim Ramanek and Anne Nason, of Warner River Organics, offer an online component at the Weare and Contoocook Farmers' Markets. Customers can order shares in their online CSA and place orders for CSA items on the internet. Customers can still order produce online without necessarily being a CSA member. The online CSA utilizes an online program on a website called Harvest to Market ([www.harvesttomarket.com](http://www.harvesttomarket.com)). The software provider is a New Hampshire based company and includes a newsletter for subscribers to a farmer's market. CSA members buy a discounted credit rate at the beginning of the season and have the entire season to use the credits up. The online ordering system is closed for orders the day before and the day of the market. This is because producers have limited time to prepare for the markets and cannot be processing and cleaning produce at the last minute before the farmer's market occurs. Customers can go to either the Weare or Contoocook Farmers' Market to pick up what produce they want in whatever quantity they specified on the online program. Jim and Anne also indicated that they would like to expand their online farmers' market influence to Canterbury, Penacook and Henniker. Jim and Anne offered

their opinion on the software provider. In their experience using the program, they have discovered that it takes a while for customers to use the online market. However, after they start using it they enjoy it. A benefit that they think the software provides is that it is important for vendors at winter markets because of spoilage that occurs by removing produce from cold storage and transporting it to market where it is exposed for four hours and then placed back into storage. Another benefit is that vendors know the exact amount of produce to bring to the farmer's market. The Harvest to Market website also has the ability to accept payment, but Jim and Anne use a pay at pick-up option. Jim and Anne implement a market fee of one dollar per order to cover the cost of operating the software.

Farmers in the Kearsarge region could offer online ordering using the Harvest to Market website. This way the producer would know the exact amount of food to bring to markets and increase the efficiency of distributing and selling their produce. Currently the online farmer's market with online ordering in the Kearsarge area is the Contoocook Farmer's Market. Andover is the only farmers' market that is not on the Harvest to Market website, but could consider making an online presence (Nason & Ramanek, 2012).

The Colby-Sawyer College administration recently approved a CSA pick-up point during the summer in the commuter parking lot. This pick-up point would increase the convenience of food purchasing by consumers in the area. Producers in the area should take advantage of this opportunity to potentially expand to a market that values convenience in food purchasing.

### **Recommendations**

- Producers should increase their visibility on the internet, using websites such as Facebook, Twitter, GooglePlus, and Google Maps. Producers should also consider making their own website.
- KAEL should offer an intern position to create a more informative and user-friendly web presence.
- KAEL should post the farmer directory created by this project on their website.
- Producers should have a presence on [www.harvesttomarket.com](http://www.harvesttomarket.com) , and consider selling produce via online ordering through farmers' markets and CSAs.

- Producers should utilize the newly approved CSA pick-up point at Colby-Sawyer College

Producers can easily create pages and free websites on the internet that are user-friendly and provide useful information about their operations. Examples of sites that offer web-building services are:

- [www.weebly.com](http://www.weebly.com)
- [www.webs.com](http://www.webs.com)
- [www.homestead.com](http://www.homestead.com)
- [www.sites.google.com](http://www.sites.google.com)

KAEL could offer an intern position for a Graphic-Design Major at Colby-Sawyer College. The intern could work during the summer to revamp the website and make it more informative and user-friendly for consumers. The intern can make the following improvements to their website:

- Post the farm directory created by this project
- Create a link to this project's final report
- Include information about events Kael is hosting

Producers should join the website [www.harvesttomarket.com](http://www.harvesttomarket.com), and post relevant information about their farm on the farmers' market page that they participate in. Producers should also contact their known customers and see their opinions about an online ordering system. If there is support for online ordering producers should consider setting up online ordering, and inform known customers a new option of ordering produce. Producers should also advertise at farmers' markets that they do online ordering, so new customers know that it is an option as well.

Producers interested in using Colby-Sawyer College for a CSA pick-up point should contact Sharon Williamson the Director of Campus Activities and the Coordinator of Orientation at 603-526-3756 or at [swilliamson@colby-sawyer.edu](mailto:swilliamson@colby-sawyer.edu).

## **Collaboration with Supermarkets**

Local supermarkets are an existing infrastructure that can be utilized by farmers for distribution of produce to a larger demographic. Hannaford's in New London is an example of a supermarket that strives to work with farmers for distribution of their produce through the "Close-to-Home" program. This term is used in place of the word "local" because the company decided that it was a widely interpreted term. The program was started in 2008 and is available throughout all of the Hannaford's stores. It allows the manager of the store to work with local farmers to sell their produce (Kenyon, Hannafords Market, 2012). In this way the manager is given some flexibility from management to decide what should be sold within the store regarding the Close-to-Home program. The New London store is currently working with farmers in Springfield, Claremont, and Lebanon, but, according to store manager Nate Kenyon, they are open to more connections with other farmers (Kenyon, Hannafords Market, 2012). Farmers who wish to participate in the program must be located within the state of the store location and must be able to provide a reasonable amount of produce. This ensures that Hannaford's has enough supply (Kenyon, Hannafords Market, 2012). Farmers must be insured and have their farms inspected by Hannaford's to ensure that they meet Hannaford's Acceptable Farming Standards, which mandates that livestock cannot be too close to the crops. Workers must have potable water and restrooms within the field (Duffy, 2008). In addition to this it is recommended that farmers become GAP certified, although this is not currently required (Duffy, 2008).

One way that farmers can help their product be competitive in the supermarket is to add value to it by labeling, naming, or any other way that distinguishes their product from others (Bloom & Hinrichs, 2010). A study was performed looking at how to successfully sell local food with an existing infrastructure and found that by adding value to differentiate it from other products is important (Bloom & Hinrichs, 2010). Through the area wide survey distributed by our class, we found that 87% of respondents acquire most of their food from a supermarket.

## Recommendations

- In order to sell in the supermarkets, producers should meet Hannaford's Acceptable Farming Standards.
- Producers should increase value by advertising their product as locally grown or produced. This would help differentiate their product and make their product competitive.
- Producers should become insured to be eligible for participate in Close-to-Home.

## Implementation

- Contact Hannaford's Close-to-Home coordinator Wendy Ward at 207-885-2711 or by email at [weward@hannaford.com](mailto:weward@hannaford.com) for more information about how to meet Hannaford's Acceptable Farming Standards.
- Market produce to sell in supermarket through labeling by communicating value through terms such as local and organic.

## Food Hub Facility

Throughout the data collection phase of the project we noticed that a recurring theme that many of the area farmers mentioned was that the lack of processing facilities in the area is a barrier. Some of the facilities the area farmers mentioned were a USDA or state certified slaughterhouse, milk bottling, cold storage, a certified commercial kitchen, and composting facility. Local farmer Larry Pletcher of the Vegetable Ranch built a walk-in cooler on his property to store his crops for longer periods of time. This was extremely beneficial for him to keep his crops longer. Since many farmers stated this as an issue, we started thinking about ways that farmers, businesses, and organizations could work together to build a "food hub" that can be used by everyone in the Kearsarge area. The definition of a food hub is a location which offers food processing and storage, is made up of businesses and organizations that mutually support each other, and is a resource for the agricultural community (Cheshire County Conservation District, 2012). Upon looking further into the idea of having a processing facility in the area, we learned the Cheshire County

Conservation District (CCCD) was looking into converting an old structure into a food hub. This could be a good model to follow in the Kearsarge food region.

An example of an existing food hub is the Vermont Food Venture Center (VFVC) located in Hardwick, Vermont. The VFVC is a non-profit organization operated by the CAE that provides three fully licensed commercial kitchens for farmers and businesses to rent for many different scenarios such as prep, catering, baking, and teaching. It is a 15,000 square foot facility fully equipped with hot and cold storage, a packaging facility, and a bakery. The equipment available for use at the VFVC includes:

- Double-stacked convection oven
- 4-8 burner gas commercial stove top
- Tilt skillets (small & large)
- Labeling machine
- Type 1 fume hood (16 ft.)
- 25 quart vertical cutter mixer
- Walk-in cooler
- Dehydrator/drier
- USDA approved scales
- Stainless steel sinks
- Water activity meter
- Moving cart
- Tables
- Pallet stacker
- Commercial bakery equipment
- Steam kettles (approx. 40 gal.)
- Automatic capper
- Food pump w/stainless steel
- Fruit & vegetable mills
- Immersion mixer
- Bottling and filling lines
- Robot Coupe
- Fruit and vegetable processing
- Double refrigerator & freezer
- pH meter
- Racks
- Pallet jack
- Small forklift

Along with the physical facilities, the VFVC provides assistance with business services, such as certification processes, financing, marketing, and more. There are also educational opportunities available to the community and local farmers. Visit <http://vermontfoodventurecenter.org/> for more information.

The CCCD submitted a draft of their report, *Cheshire County Farm and Infrastructure Feasibility* whose purpose was to assess the possibility of turning the old Cheshire County

Jail site into the Cheshire Count Commons Farm and Food Hub (Cheshire County Conservation District; Land For Good; Monadnock Conservancy, January 2012). Some of the proposed services for the food hub are:

- Food processing
- Food aggregation, distribution, and storage
- Food production
- Bulk purchase/re-sale
- Farmer and community education

Based on the information from CCCD's report, the costs associated with the project include:

- Demolition of the existing building interior
- Improving the exterior windows, doors, walls and air sealing
- Core mechanical and electrical improvements
- Preparation to accommodate a processing facility
- Costs associated with architects, contractors, design, furnishing and equipment

This food hub is in the process of being accepted, but they did extensive research on all of the aspects needed to build and run a successful food hub.

We looked into a few places that already have kitchens established such as schools and churches. We contacted people in charge of the kitchens at the Kearsarge Elementary School and the Kearsarge Community Presbyterian Church. Doreen Salera, the Administrative Assistant to the Superintendent, stated that the school kitchens are unequipped to handle large volumes for farmers to process and Arthur Makechnie, the Food Service Director for the Kearsarge Elementary School, said that the kitchen is already being used year round by other organizations and tend to have repairs done over the summer months (Makechnie and Salera 2012). The Presbyterian Church's facilities are only available for use by non-profit organizations due to the church's policies (McManus, 2012).

One potential site for a food hub that could accommodate the processing needs of the farmers is the old Kearsarge Middle School which is located in New London and is no longer in use (similar to that of the Cheshire County Jail). The old Kearsarge Middle School



would be a good fit for our area because there is already a kitchen in place. However, the Superintendent of the Kearsarge Regional School District stated that the old middle school is not currently for sale, but could be voted on by tax payers if there was a proposal to purchase it (Frew, 2012).

If no existing structures are available, researching the possibility of buying land and building a facility is an alternative.

### **Recommendation**

Create a food hub that suits the needs of the area farmers.

- Make hot and cold storage available
- Certified commercial kitchen for processing
- Milk bottling
- Meat processing (USDA or state certified)
- Space available for educational programs

### **Implementation**

- Create a group of farmers, businesses and organizations with sufficient interest in establishing a local food hub
- Develop and conduct a survey to determine what equipment/space is necessary to support the project partners and area farmers
- Look for property available for purchase
  - For example, the old Kearsarge Middle School in New London
- Create a cost-benefit analysis
  - Research processing equipment that fits the requirements of the area  
(See examples stated above)
- Write a grant proposals:
  - Rural Business Enterprise Grant (RBEG)
    - RBEG provides funds to rural entities (towns, communities, non-profit organizations) for projects that finance and facilitate development of small emerging businesses. (USDA Rural Development, 2011)

- Value Added Producer Grant (VAPG)
  - VAPG are meant for planning activities and for working capital for marketing value added agricultural products and farm based renewable energy (USDA Rural Development, 2012)
- For more information on specific grants you can visit [http://www.rurdev.usda.gov/RD\\_Grants.html](http://www.rurdev.usda.gov/RD_Grants.html) or call David Robinson or Sherry Paige at **802-828-6011**

### **Composting Facility**

When identifying gaps that are missing or could use improvement in our food system, composting surfaced as an area that requires attention. Composting is way to complete the nutrient cycle and to keep resources in the system. By throwing away and not recycling or composting our excess organic material, we are interrupting the nutrient cycle by taking molecules out, which could have otherwise been accounted for (Evoy). When we compost as much as possible we keep the important organic material in circulation, as well as provide farmers with a useful product that will add nutrients to and improve the quality of their soil.

Some towns in New Hampshire are composting on their own already. For example, in Lee, a “Lawn and Yard Waste” facility has been implemented and, in the spring, residents can come by and pick up some of the finished product for free. Additionally, the town sells “compost bins” for around forty dollars each to be used by residents in the area. The town of Hanover has a zero-waste action plan and is hoping to achieve zero-waste by 2021, through the participation of all residents composting. The town has put infrastructure, such as backyard composting bins and composting turners, up for sale to promote participation. Ideal Compost Company, in Peterborough, New Hampshire, collects waste products, such as horse litter, manure, grass, leaves and feed waste. They turn waste products from the surrounding area into nutrient-rich compost. They sell their product home gardeners, organic farmers, landscapers and greenhouse operators (Ideal Composting Co., 2012).

In Hardwick, Vermont they have a composting facility, Highfields Center for Composting. Here, they provide technical services for on-farm composting and comprehensive food waste recycling programs, which include action-based environmental education (Cultivating Sustainable Systems, 2012). Tom Gilbert, who runs Highfields, introduced “livestock mortality composting” to Vermont. He stresses the fact that on a dairy farm, each year about five percent of the herd will die and it is important to know what to do with the remains to utilize all parts of the animal to improve soil quality and minimize waste in the system. In addition to cows, Tom also composts much of the food waste from the surrounding area, including schools, farms, and restaurants (Gilbert, 2011).

Another example of a composting center that has been successful is at Proctor Academy in Andover. The school composts all food scraps and separates meat and dairy products from all fruit, vegetable, and grain-based waste. These products are transported to the composting facility where it is turned with a back hoe and mixed with local horse manure and used for landscaping.

### **Recommendation**

- Facilitate compost recycling in the Kearsarge area.
- Create a composting facility that accommodates the farmers in the area.
- Explore options for commercial composting enterprises that can benefit the food system.

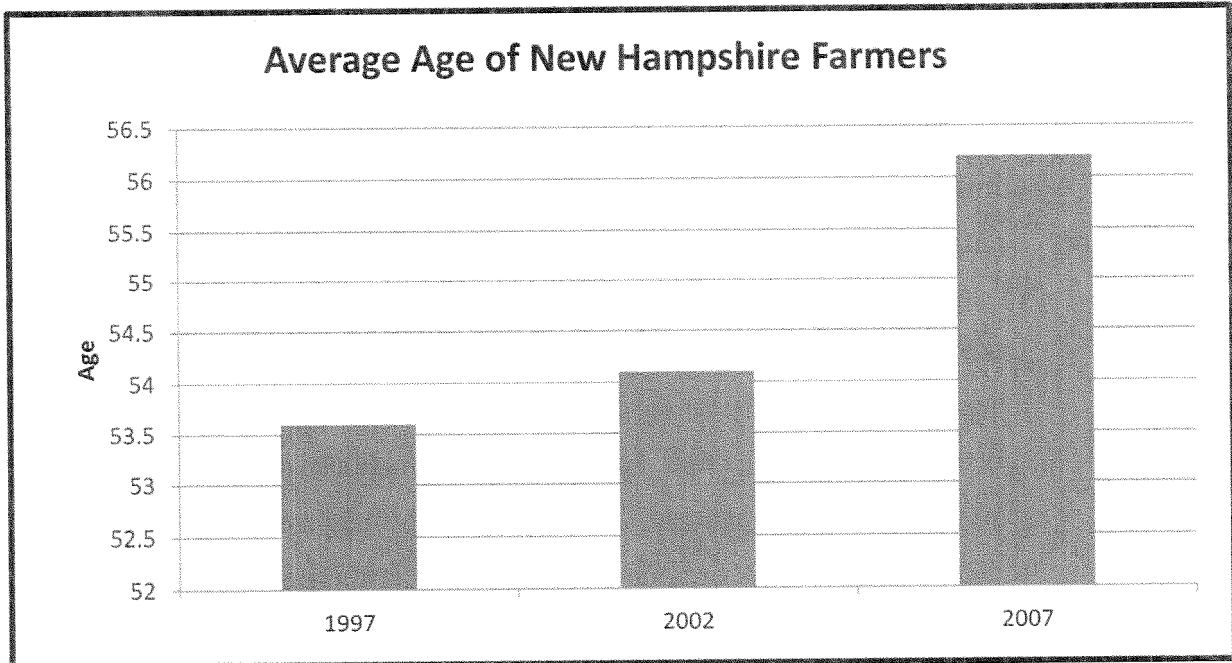
### **Implementation**

- KAEL should identify group of farmers with similar interests about a shared composting center. This can be done using the directory of farmers compiled in Appendix C.
- Look into institutions, businesses, farms, to institute a program for local residents who would be willing to contribute:
  - Buffalo manure at Yankee Farmer’s Market or manure from other farms, along with any produce from farms that has gone bad.
  - Schools, hospitals, residents, and restaurants with compostable material

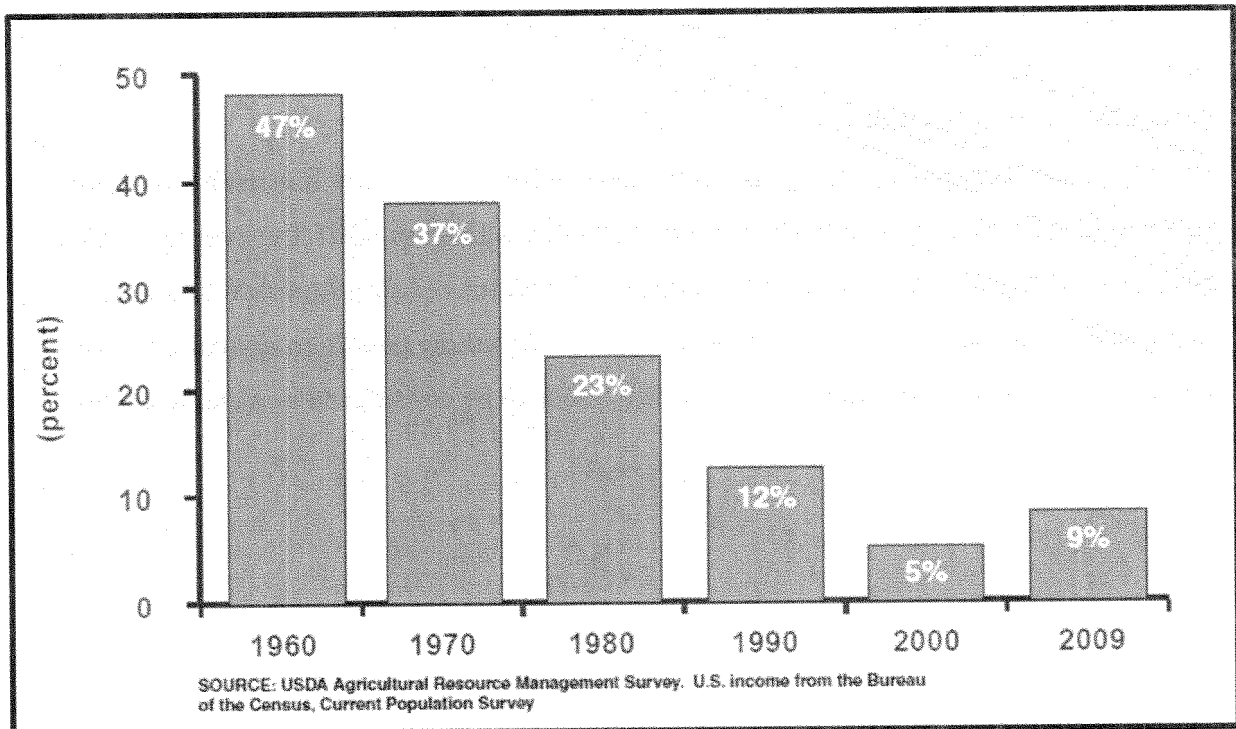
- Property should be purchased or attained that would be a suitable spot for a composting facility. This can be completed a few ways including the following:
  - Someone already in the system have spare land that can be utilized.
  - Composting can be achieved by either small scale operations, such as piles in a back yard, or can be as complex as a fully functioning business and facility to compliment it.
  - Land can be purchased for construction of a facility. This would also provide a business opportunity for someone looking to start a business with low upfront and operating costs. To view a similar business model in the area, visit [www.idealcompost.com](http://www.idealcompost.com). Composting can be achieved with little more than space, a source of organic material, and an ambition to work hard rotating the compost. It can also be done as intricately, as was evident at Highfields Center for Composting, where site work has been done to retain water and minimize runoff while also involving an overhead structure to allow composting indoors.

### **Attracting Young Farmers**

Over the past decade the average age of farmers in New Hampshire has risen from fifty three to fifty six (Figure 49). In the United States, from 1945 to 2007, the average age has risen from thirty nine to fifty eight (Briefing on the Status of Rural America, 2008). As farmers continue to get older it is important to attract young people to agriculture. We are trying to build local food systems, agriculture needs to be considered as a viable career option.

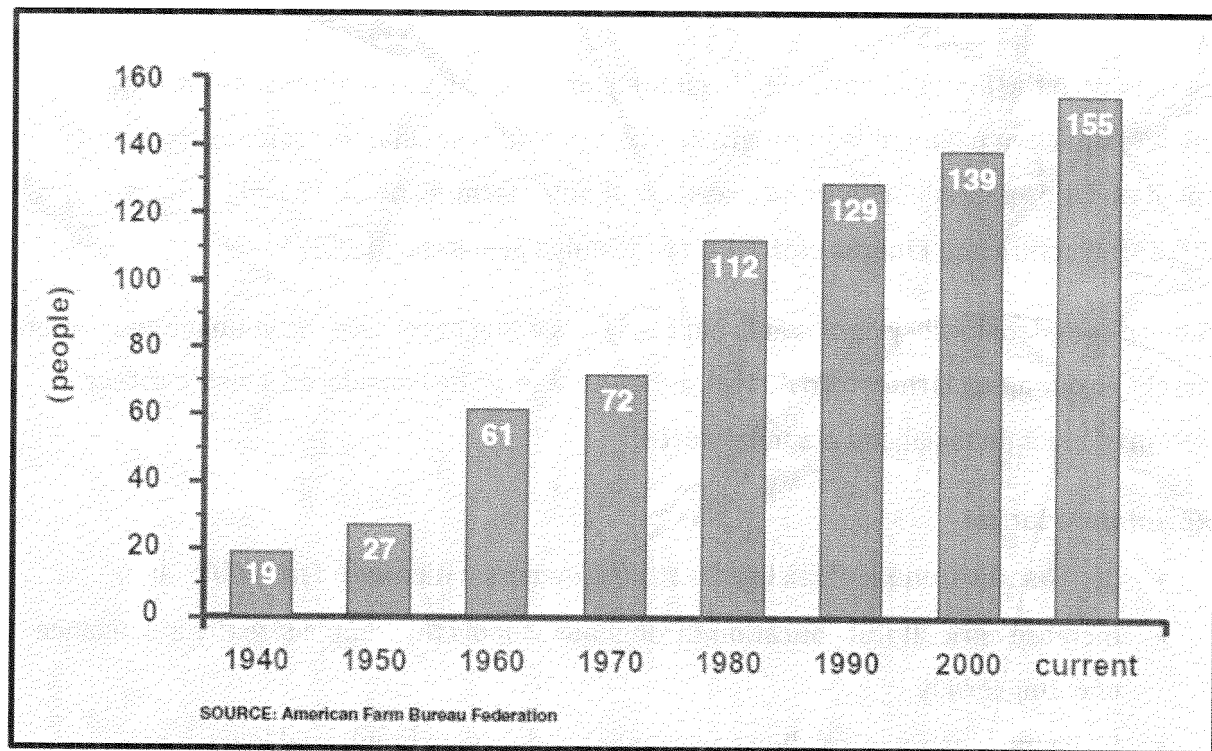


**Figure 49:** Average Age of New Hampshire Farmers



**Figure 50:** Farm Income as Percentage of Total Farm Household Income

In the current economy, the younger population is pressured to obtain a job that will best support their family and lifestyle. While farm productivity has risen over the past century it would be assumed that farm revenue would also rise. By looking at trend data, it shows farm productivity and farm revenue, the opposite trend is seen (Figure 50 and 51) (Breifing on the Status of Rural America, 2008).



**Figure 51:** Number of People Fed Annually by One American

In 2007, 70% of farms in New Hampshire had a net loss. This is the highest percentage in New England and significantly higher than the United States average of 53% (Magnusson, 2010). Becoming a farmer is not about the money, it's about the lifestyle and the enjoyment of producing your own food. It's about pureness of working the land, the belief that we can bring back the local food economy (Magnusson, 2010) (Structure and Finaces of U.S. Farms: Family Farm Report, 2007).

The younger farmers we talked to throughout this project mostly spoke about the difficulties of finding land to farm on. Alternatives have been implemented in our area. Some farmers are using conservation easements to relieve some financial stress brought on

by taxes. Conservation easements are also beneficial to land holders who allow farmers to use their land. Some farms in the Kearsarge Area that are protected under conservation easements include; Battles Farm, Kearsarge Gore Farm, Star Lake Farm, Two Mountain Farm, Hersey Farm, and Courser Farm. It is important for KAEL to support land trusts like the Ausbon Sargent Land Preservation Trust (ASLPT) and the Society for the Protection of Forests of New Hampshire (SPFNH), to protect farmland from development.

To help with the financial burden of beginning farmers, the USDA offers a direct farm ownership down payment loan program, which provides small interest loans that can be spent on land, equipment, livestock, seeds, and other farming needs (Farm Loan Programs, 2012) (Structure and Finances of U.S. Farms: Family Farm Report, 2007).

A more complete local system that is built to last is going to require the younger generation to relieve our aging farmers. To do this, agriculture must be considered a viable career option to meet financial and personal needs.

### **Recommendation**

- Increase awareness of tax breaks to land owners with unused farmable land.
- Increase agricultural education throughout schools that emphasize the importance of eating locally.
- Make information regarding government and private grants and loans more accessible.
- KAEL should increase connections with the ASLPT and SPFNH to protect farmland

### **Implementation**

- Create classified sections online to promote and advertise unused land. This can also be used to sell unwanted equipment.
- Hold more workshops on grant and proposal writing. There could also be a section on the KAEL website for grants.
- Provide connections to further information:
  - NOFA-NH Beginner Farmer Program

- NH Young Farmers
- NRCS grants
- UNH Cooperative Extension
- NH Institute of Ag. and Forestry
- Conservation Districts
- NH Small and Beginner Farmers Network

### **Promoting Environmentally Conscious Farming Methods and Marketing**

When it comes to consumers buying locally there are various motivations why they buy specific products. Identifying these motivations can help us to make recommendations for how farmers can market their products.

In a study done by Jesse McEntee called, “Contemporary and traditional localism: a conceptualization of rural local food” two different food buying motivations were revealed analyzed. The study took place in Grafton County, New Hampshire, and focused on local food, presenting an examination of food systems.

These two food buying motivations were labeled “contemporary” and “traditional” local. In terms of contemporary local it can be described as “food procurement activity informed by explicit desire to: be environmentally sustainable, support local economy, obtain healthier/fresher products, support farmers, and maintain rural character” (McEntee, 2010). In other words contemporary local describes a shopper who is not interested in the lowest price food, but supporting causes through buying local food.

The definition of traditional local is different from contemporary local as it is “a motivation to obtain fresh and affordable food” (McEntee, 2010). Often times this entails having your own garden, or exchanging local goods with neighbors and friends.

These two definitions are beneficial to our project in terms of recommending how farmers can market their product to customers. It is clear in this study that there is a market of individuals who want to purchase fresh food, people who could be defined under contemporary local and traditional local.



Overall, we have found that the farms in our area are small scale (as compared to large monoculture farms in Western America) often selling their product directly to consumers. This information allows us to group these farms in the Kearsarge area together and recommend that they use their overall environmentally friendly farming practices to their advantage. This offers a way in which local farms can gain competitive advantage by differentiating themselves.

Supporting of local agriculture is a type of consumerism that the farmers in the area can take advantage of, since there are consumers who want to buy products that are environmentally sustainable. We found support for sustainable and environmentally friendly food in our consumer perception survey in the Kearsarge area. We asked respondents if they had any comments or suggestions about a healthy food system. One response recorded was, "I believe supporting local agriculture and land use practices is a civil responsibility and a moral obligation." Another response stated that "a healthy local food system is imperative and should be a top priority for communities." A statement was also made saying we need to "recognize the importance and value of buying healthy food. The price is worth it to make ourselves healthier and our world more sustainable."

This supports the research done in Grafton County talking about the moral importance that consumers are responsible for supporting their local farmer, and would define these respondents under the contemporary local classification. Another respondent wrote, "The price is worth it to make ourselves healthier and our world more sustainable." Once again we have found that consumers are interested in the environmental advantages that local food has over monoculture non-local practices.

In order to capture these consumers we think that it is important that farmers use this knowledge to enhance their marketing approach. This argument would include emphasis on the environmental benefits of their product, health benefits, and local benefits in the community and for the farmer. As stated earlier in this recommendation, there is a market of consumers who are interested and willing to purchase based on this contemporary of "local food."

## **Recommendation**

- Capture consumers by promoting fresh food that is farmed locally.
- Differentiate their local fresh food from supermarket fresh food
- Enhance market approach to capture consumers
- Emphasis on the environmental benefits of their product, health benefits, and local benefits in the community and for the farmer.

## **Implementation**

- We recommend to farmers that they introduce and market their products highlighting the environmental advantages to their product.
- Phrases such as “locally grown”, “supporting your local farmer”, “keeping dollars within the community”, “healthier and fresher items” can be used to advertise advantages of locally grown food to consumers.
- Use pictures of the farm, and specific products that will intrigue customers to your business.
- This would be implemented individually for each farm, through advertising, and promotions.
- Use of the Internet, farm websites, Facebook pages, pamphlets encouraging consumers to visit your farm, and flyers to advertise the farms products.

## **Consumer Education and Perception**

Educating our next generation about the importance of farming is extremely vital to any local area because that generation will be the people who will take over our farms and feed our future. The health of the land and population will be the future farmers’ responsibility. If they are educated about the importance of local food, and how it can help every party involved, they will be able to spur the benefits of local food to the entire area. It is our responsibility to educate them about these issues because they will be in charge of our future.

Holding presentations at schools in the Kearsarge area are great ways to promote local food to students of the next generation. It is important to show them the importance of local food and the benefits of such and explaining the benefits of decreasing the environmental impacts from agriculture, supporting local economies to strong farming habits. One could educate students about the Farm Bill and how it helps or hurts farmers in the area.

It is important to promote local food education programs in the area's schools. This can be done through the strengthening of farm to school relations. The Andover, Henniker, Hopkinton, Kearsarge Regional and Sunapee School Districts already participate in the UNH Cooperative Extension Farm to School Program (Participating Schools, 2012). In order to educate the younger generations, it is important for school districts to connect with the New Hampshire Agriculture in the Classroom organization. This nonprofit organization educates children about the importance of New Hampshire agriculture. To do this, students attending elementary schools need to be introduced to agriculture and local agriculture every year. The earlier the idea of local food be introduced to the next generation, the easier it will be to understand the benefits can and difficulties of local. Field trips are another method by which students could learn about farms. Traveling to farms and learning through a hands-on experience will be another strong method of education. Post-secondary educational institutions are great places to educate the students that are about to enter into the work field and promote local food to our future consumers.

The Fall Foliage Festival is a community event that occurs each year in Warner, New Hampshire and this would be a good time to have educational events that discuss local food, and promote local food to the public. During the Fall Foliage Festival, it would be ideal to have educational paraphernalia that is distributed to children of all ages. Hands-on demonstrations and activities could be added to the program. Information tailored to children to remind them of the importance of local farms will help inform and remind them to support their local farmers and consume more local food.

## **Recommendations**

- Promote local food education programs in the areas' schools.
- Strengthen farm to school relations with New Hampshire Agriculture in the Classroom and UNH Farm to School Program
- KAEL holds educational events
- Events can be held for farmers through Colby-Sawyer College and New England College

## **Implementation**

- Colby-Sawyer College and New England College host speakers once a year that discuss the necessities of local food.
- KAEL contacts schools to see if they would like speaker to come in and present about local food.
- School districts in the area should contact:
  - UNH Farm to School Program – UNH Cooperative Extension 603-862-4088
  - New Hampshire Agriculture in the Classroom – Ruth A. Smith 603-224-1934
- Colby-Sawyer College or New England College to have speakers come to their campuses and discuss local food. These events will primarily educate the audience about the importance of eating locally, and consuming local produce. These educational events should be open to the surrounding communities.
- KAEL should offer an educational event to children about the importance of local agriculture at the Warner Fall Foliage Festival. They should find farmers or members of KAEL that are passionate about educating young people about the importance of farming.

## Conclusions

During the course of this project, we identified stakeholders that comprised the Kearsarge Regional Food System. These stakeholders include farms, food outlets and consumers. The major accomplishments of our study are as follows:

- Majority of the consumers perceive local food to be more expensive than non-local food. These consumers also consider quality as the most important factor in their area.
- Obtained approval for a CSA pick-up point at Colby-Sawyer College.
- Conducted a petition to increase the amount of local food in the Colby-Sawyer College dining hall, and collected 726 signatures out of approximately 1,200 students.
- We also conducted a SWOT analysis of the Kearsarge Area Food System and based recommendations on this.

Throughout the course of the project, our team was inspired by local farmers, and their extensive knowledge and experience. Without their support this project would not have been possible. This report serves as a guide for the Kearsarge Regional Food System to take advantage of opportunities identified, however it is up to the stakeholders to ensure that this report is utilized and implemented.

## Acknowledgments

On behalf of the 2011-2012 Colby-Sawyer College Community-Based Research Project Team, we would like to thank the following people for their knowledge, expertise, and encouragement throughout the course of our project:

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Tom Dunne of Bible Hill Farm	Ted Jarvis of Black Bear Vineyard
Jan Guglotti of Blue Moon Berry Farm	Bob Drown of Bokaja Enterprises
Patti MacMillan of Breakwind Farm	Ed & Cindy Canane of Cascade Brook Farm
Heather & Jamie Robertson of Contoocook Creamery at Bohanan Farm	Gerry Courser of Courser Farm
Gail Persichinò of Crimson Maple Farm	Susan & Keith Cutting of Cutting Farm
Theresa & Peter Mueller of Dancin' Apple Farm	Chris Carter of Fairhaven Farm
Vido Seaver of Fall Dog Farm	Freedom Hill Farm
French Pond Orchard	Ted Story of Gage Hill Sugar Shack
Tim & Amy Bassett of Gould Hill Farm	Eric Wiswall of Haunting Whisper
Donna Abair of Hazzard Acre Farm	Ed Epsen of Henwyn Farm
Peter Zac of Highland Lake Apple Orchard	Adam Crete of Highway View Farm

Marc Moran of Hopewell Farm	Phil & Donna Sprague of Huntoon Farm
Bob & Sam Bower & Jennifer Ohler of Kearsarge Gore Farm	Ken Marshall of Marshall Farm
Arthur Mountain of Mountain Farm	Steve Paquin of Musterfield Farm
Lorna Carlisle & Ray Dreary of North Of Concord Farm	Margaret Doscher & Doug Glines of Odey Farm
Ruth & Derek Owen of Owen Farm	The Family of Peak Orchard Farm
Ryan Ferdinand & Michael of Phoenix Hill Farm	Robert Houston of Pine Lane Dairy Farm
Len Buxton of Porkside Farm	Joe Pustizzi of Pustizzi Fruit Farm
Mark Cowdrey of Ragged View Farm	Rick Barry of Random Hills Farm
Jim & Sue Richardson of Richardson Farm	Kim Fortune of Riverfare Farm
Roger & Carolyn Keilig of Rollins Road Apiary	Peter Russell of Russell's Blueberries
Yvonne Hall of Siskagee Goat Dairy	Greg Berger of Springledge Farm
Todd Richardson of Star Lake Farm	Doug & Carol Troy of Stoneridge Farm
The Family of Stonynook Farm	Eric Johnson of Tucker Mountain Maple Co-Op
Kat Darling of Two Mountain Farm	Beth Bissonnette of Up Sheeps' Creek
Ben Kezar of Valley View Maple Farm	Larry Pletcher & Stacey Cooper of Vegetable Ranch

Jim Ramanek & Anne Nason of Warner  
River Organics

Brandon & Mary Sussman of Webster  
Ridge Farm

Dan Kilrain & Abby Dixon of Work Song  
Farm

Brian & Keira Farmer of Yankee  
Farmer's Market

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Tim & Amy Bassett of Gould Hill Farm

Ed Epsom of Henwyn Farm

Marc Moran of Hopewell Farms

Bob & Sam Bower & Jennifer Ohler of Kearsarge Gore Farm

Steve Paquin of Musterfield Farm

Kat Darling of Two Mountain Farm

Larry Pletcher of Vegetable Ranch

Dan Kilrain & Abby Dixon of Work Song Farm

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Vermont Soy

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Pete Johnson of Pete's Greens

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# Appendices

## Appendix A

Kearsarge Area Farms		
3D Farm	French Pond Orchard	Ragged View Farm
Amesbury Fruit	Gage Hill Sugar Shack	Random Hills Farm
Apple Farm	Gould Hill Farm	Richardson Farm
Apple Ridge Farm	Haunting Whisper Vineyard	Riverfare Farm
Apple Rock	Hazzard Acres Farm	Rollins Road Apiary
Battles Farm	Henwyn Farm	Russell's Blueberries
Beaver Meadowbrook Farm	Highland Lake	Siskagee Goat Dairy
Beech Hill Farm	Highway View	Springledge Farm
Bible Hill Farm	Hopewell Farm	Star Lake Farm
Black Bear Vineyard	Huntoon Farm	Stoneridge Farm
Blue Moon Berry Farm	Kearsarge Gore Farm	Stonynook Farm
Bokaja Enterprises	Marshall Farm	Tucker Mountain Maple Co-op
Breakwind Farm	Mountain Farm	Two Mountain Farm
Cascade Brook Farm	Musterfield Farm	Up Sheep's Creek
Contoocook Creamery at Bohanan Farm	North Of Concord	Valley View Maple Farm
Courser Farm	Odey Farm	Vegetable Ranch
Crimson Maple Farm	Owen Farm	Warner River Organics
Cutting Farm	Peak Orchard	Webster Ridge Farm
Dancin' Apple Farm	Phoenix Hill Farm	Work Song Farm
Fairhaven Farm	Pine Lane Dairy	Wychwood Farm
Fall Dog Farm	Porkside Farm	Yankee Farmer's Market
Freedom Hill Farm	Pustizzi Fruit Farm	

## Appendix B1

1. Which carrot do you prefer?
2. Why? Based on: (Circle top 3)
  - a. Appearance
  - b. Color
  - c. Aroma
  - d. Flavor
  - e. Texture
  - f. Other
3. What are some important factors you consider when buying food? (Rank 1 to 7, 1 being most important, 7 being least important)

<input type="checkbox"/> Price	<input type="checkbox"/> Local
<input type="checkbox"/> Organic	<input type="checkbox"/> Quality
<input type="checkbox"/> Freshness	<input type="checkbox"/> Variety
<input type="checkbox"/> Store Location	
4. Where do you buy your food? (Rank on volume purchased, 1 being most volume purchased)

<input type="checkbox"/> Supermarket	<input type="checkbox"/> Convenience Store
<input type="checkbox"/> Farmers' Market	<input type="checkbox"/> Farm Stand
<input type="checkbox"/> CSA	<input type="checkbox"/> Coop
<input type="checkbox"/> Other	

## Appendix B2

1. What town do you live in?
2. What is your age?
  - a. Younger than 20
  - b. 20-34
  - c. 35-54
  - d. 55-64
  - e. 65 +
3. How many people live in your household?
  - a. 1
  - b. 2-3
  - c. 4+
4. What is your definition of local food?  
*Food that's produced within:*
  - a. 25 miles
  - b. 100 miles
  - c. NH
  - d. New England
5. Do you perceive local food as being more expensive than store bought non-local food?
  - a. Yes
  - b. No
6. Do you perceive local food to be superior in quality to store bought non-local food?
  - a. Yes
  - b. No
7. What are some important factors you consider when buying food? (Rank top 3)
  - Price
  - Local
  - Organic
  - Quality
  - Freshness
  - Store location
  - Variety
8. Where do you buy your food? (Rank on volume purchased, 1 being most volume purchased)
  - Supermarket
  - Convenience Store
  - Farmers' Market
  - Farm Stand
  - CSA
  - Coop
  - Other \_\_\_\_\_
9. What are some barriers you encounter when buying local food?
  - a. Price
  - b. Location
  - c. Availability
  - d. Does not apply
  - e. Other \_\_\_\_\_
10. Do you grow or raise your own food?
  - a. Yes
  - b. NoIf yes, what percentage of your food do you grow \_\_\_\_\_

## Appendix C

Farm Information	Meat	Vegetables	Fruit	Other
<b>Andover</b>				
Two Mountain Farm, 76 Shaw Hill Rd, Andover NH, 2mtnfarm@gmail.com		arugula, spinach, lettuce, chard, kale, salad mixes, asian greens, beets, radishes, carrots, potatoes, squash, tomatoes, tomatoes, cucumbers, squash, zucchini, cut flowers, garlic, peppers, beans, cabbage, corn, onions, pumpkins, snap peas	blueberries, raspberries	Eggs
Tucker Mountain Maple Co-op, 224 Tucker Mtn Rd, Andover NH, (603) 735-5602				Honey, Maple syrup
Wychwood Farm, 42 Shaw Hill Rd, Andover NH, (603) 496-2783				Maple syrup
Freedom Hill Farm, 111 Salisbury Highway, Andover NH (603) 735-4187	Goats, Chickens		Fruit	Eggs
Fall Dog Farm, 334 Depot Rd, Andover NH (603) 470-8444	Goats, Pigs, Beef, Chickens			
Ragged View Farm, Bradly Lake Rd, Andover NH, (603)724-7511, mark@raggedviewfarm.com	Pork			Maple Syrup(through tucker mountain)
<b>Boscawen</b>				
Avaloch Farms 33 Hardy St. 290-7723 PYO			blueberries	
Ledge Top Sugar House 25 Oak St. 753-4973 ledgetopsh@myfairpoint.net				maple syrup, BBQ sauce
Highway View Farm 100 River Rd. 796-2893	beef	sweet corn (in the summer)		milk

Apple Ridge, 151 Water St. 796-2654		Apples, Beans, Peas, Squash, Crocifix Crops, Brussels Sprouts, Cauliflower, Broccoli, Potatoes, Mints, Chives, Onions, Oregano, Sage, Rosemary, Parsley, Cilantro and Basil		
Phoenix Hill Farm 322 High Street	Pork			
Richardson's Farm 170 Water St. 796-2788 suericharsdon@tds.net		seasonal vegetables	melons, peaches, apples	maple syrup, honey, ice cream, baked goods
Corn Hill Farm 130 Corn Hill Road	Venison, Chicken			
<b>Bradford</b>				
Battles Farm, 328 Center Rd., 938-5668	Beefalo, chicken, pork, turkey, lamb			Raw milk, eggs
Stoneridge Farm, 330 Cressy Rd., 938-6186, stoneridgeorganics.com		USDA certified organic vegetables		Maple syrup
<b>Contoocook/Hopkinton</b>				
Crimson Maple Farm, 888 Kearsarge Ave., 340-1600, gail@parkmodelsplus.com	pork, chicken, duck	seasonal vegetables		chicken and duck eggs
Gage Hill Sugar Shack, 328 Gage Hill Rd., 746-4347, theodore.story@comcast.net				maple syrup and other maple products
Random Hills Farm, 330 Maple St., 344-6913		seasonal vegetables		
Russell's Certified Organic Blueberries, 289 Maple St., 344-6913		garlic (10 varieties)	blueberries	
Stonynook Farm, 47 Emerson Hill, 746-3874		pesticide-free corn, vegetables		
Up Sheeps' Creek, 2597 Hopkinton Rd., bbissonn@live.com	pig, lamb, duck, chicken	squash, greens, beans, kale	apples, pears, plums, cherries, kiwis, grapes	

Gould Hill Farm 656 Gould Hill Road Contoocook 746-3811tim@gouldhillfarm.com http://www.gouldhillfarm.com			Apple orchard, baked goods, vegetables.	
Gage Hill Sugar Shack328 Gage Hill Road Contoocook 746-4347 theodore.story@comcast.net				Maple syrup, maple sugar, cream, barbeque sauce.
Contoocook Creamery/Bohanan Farm945 Penacook Road info@contoocookcreamery.com Contoocook 746-4633				Dairy, bottled milk and cream. Farm is in a conservation easement.
Fairhaven Farm743 Hopkinton Road Hopkinton 224-0214		Pesticide-free corn and veggies		
Pine Lane Dairy Farm 790 Main Street Contoocook 746-5240				Dairy and hay
Gould Hill Farm, 656 Gould Hill Rd. 746-3811, www.gouldhillfarm.com, barnstore			apples (85 varieties), peaches, plums, blueberries	cider, honey, maple products
Fairhaven Farm, 743 Hopkinton Rd. (Rte. 202/9), 224-0214			organic blueberries	
Odey Farm, 81 Brockway Rd., 229- 1876, dgiles3607@aol.com		seasonal vegetables		
Owen Farm, 580 Brockway Rd., 225- 2252, www.owenfarm.org	chicken, piglets	pesticide-free vegetables, herbs		eggs
Work Song Farm Beech Hill Road Hopkinton 219-0297 worksongfarm@gmail.com		Organic vegetables		Cut flowers



Beech Hill Farm 107 Beech Hill Road Hopkinton 223-0828 rmkimball@gmail.com <a href="http://www.beechhillfarm.com">http://www.beechhillfarm.com</a>		pumpkins, corn		hay, ice cream
<b>Danbury</b>				
Haunting Whisper, Oak Ridge Rd, Danbury NH <a href="http://Hauntingwhisper.net/contact.php">Hauntingwhisper.net/contact.php</a>				Wine
Huntoon Farm, 46 Huntoon Rd, Danbury NH (603) 768-5579 pdsprague@yahoo.com	Pork, beef			Baked goods
Three J Farm, (603) 768-3400	Beef			
<b>Henniker</b>				
Peak Orchard 56 Craney Hill Road Henniker 428-3397			Apples	
Porkside Farm 3 Dodge Hill Road Henniker 428-3378	Pork			
<b>Newbury</b>				
Hopewell Farm, 3 South Rd. 938-2043	Pork, turkey, chicken, beef	Seasonal vegetables		Maple syrup, cut flowers
<b>New London</b>				
Springledge Farm, 37 Main St, New London NH, 03257	Chickens	sweet corn, tomatoes, lettuce, basil, spinach, kale, bach choy, carrots, onions, micro mix greens, pumpkins, potatoes, sweet potatoes, arugula, zucchini, cucumbers, winter squash, summer squash, bell peppers, broccoli, asparagus	raspberries, blueberries, strawberries,	Eggs
<b>Salisbury</b>				
Family Heirlooms 406 Raccoon Hill Rd. 648-2510		seasonal vegetables		raw milk, eggs

North of Concord Farm 77 Old Turnpike Rd. (Rte 4) 648-6183 nofconcordfarm@yahoo.com		seasonal vegetables	strawberries, blueberries	eggs
Black Dog Vineyard 289 New Rd. 648-2339 kelly@theblackdogvineyard.com			grapes	
Henwyn Farm 108 Raccoon Hill Rd. 648-2815 epsen@gmx.com	pork, live sale pigs/piglets			
The Barn Store, 96 Old Turnpike Rd. (Rte 4) 648-2888 barnstoreofnewengland.com	frozen beef, lamb, bacon, sausage			
3D Farm	Buffalo			
<b>Springfield</b>				
Star Lake Farm	Beer- back ribs, hamburger, delmonico steaks, hamburger patties, NY, strip steak, stew meat, tenderloin, Chickens			Maple Syrup
Valley View Maple Farm, 935 New London Rd, Springfield NH				Maple Syrup
Hazzard Acres Farm, 95 Hazzardoad North, Springfield NH 03284	Pigs, 12 heads currently: bacon, boneless chops, boneless loin roast, tenderloin, butt roast, pork steaks 3-4 thick, baby back ribs, spare ribs, ground pork, pork cube steaks, hams, beer bratwurst			
<b>Sunapee</b>				
<b>Sutton</b>				

Cascade Brook Farm, 96 Baker Rd., 927-4013, info@cascadebrookfarm.com	100% Grass feed Black angus beef, Berkshire Pork			
<b>Warner</b>				
Apple Rock Farm, 366 Pumpkin Hill Rd., 456-3357, wendyhall@tds.net	chicken, lamb, call for availability			eggs
Beaver Meadowbrook Farm, 402 Rte 103 East, 456-6052 (call for addresses of other local syrup producers)				maple syrup
Bible Hill Farm, 206 Bible Hill Rd., 456-3504, heidi_fredrick@yahoo.com	chickens, pigs, pigeons	tomatoes, potatoes, carrots, lettuces, kale	apples, pears, peaches, grapes, elderberries	
Blue Moon Berry Farm, 195 Waldron Hill Rd., 456-3822, PYO and ready-picked			blueberries	
Courser Farm, 319 Schoodac Rd., 456-3521, self-serve farmstand		corn, cucumbers, squash, pumpkins		
Dancin' Apples Farm, 66 Eaton Grange Rd. East, 456-6109 (call for directions)		seasonal vegetables	apples, pears, peaches	eggs
Kearsarge Gore Farm, 173 Gore Rd., 456-2319, kgfarm@tds.net	beef, pork, lamb	certified organic vegetable, herbs		maple syrup
Vegetable Ranch, 443 Kearsarge Mountain Rd., 496-6391, www.vegetableranch.com, vegetableranch@gmail.com, <b>CSA</b> and farmstand		full range of certified organic seasonal vegetables		
Yankee Farmer's Market, 360 Rte. 103 East, 456-2833, yfm@tds.net., year 'round store	buffalo, elk, venison, ostrich, chicken, turkey	corn, squash, beans, tomatoes		local cheese, condiments, honey, syrup
<b>Webster</b>				
MilkCan Corner Farm 45 Mutton Rd. 648-2268 PYO blueberries			blueberries, raspberries	

Robert's Greenhouse and store, 1020 Long St. 648-2142	Pork, lam, hamburger			milk, eggs, maple syrup
Warner River Organics 119 Dustin Rd. 746-3018 wareneriverorganics@tds.net	beef, pork, lamb, chicken	Certified Organic vegetables, herbs, garlic		
Webster Ridge Farm 1482 Pleasant St. 648-2595 websterridge.com	beef, pork, lamb, free-range chicken	tomatoes, peppers, salad greens, potatoes		eggs
Bokaja Enterprises 1395 Battle St. 648-2520	Turkeys			
Riverfare Farm 301 Tyler Rd. 724-0231 info@riverfarenh.com	grass fed beef	Pumpkins		milk
Coffin Seller Vineyard 1224 Battle Street				Wine
<b>Wilmot</b>				
Highland Lake Farm, 50 Maple Street, Wilmot NH, (603) 735-5058, mlloydevans@tds.net			Apples	

## **Appendix D**

Do you want to see the Dining Hall serve more local food?

In accordance with living sustainably and linking to the outside world as stated in the strategic themes, the purpose of this petition is to enact a Colby-Sawyer College policy, which will amend that:

- 20% of all food served in the Colby-Sawyer dining hall will come from local sources.
- Local is defined by this petition as 100 miles radius.
- The policy to be implemented by beginning of fall semester 2013.

### **The Benefits of Local food:**

- Fresh food with high nutritional content.
- You know where your food comes from.
- Reduced environmental impact.
- Supports local economy.

If you agree that the policy stated above should be implemented, then please sign below:

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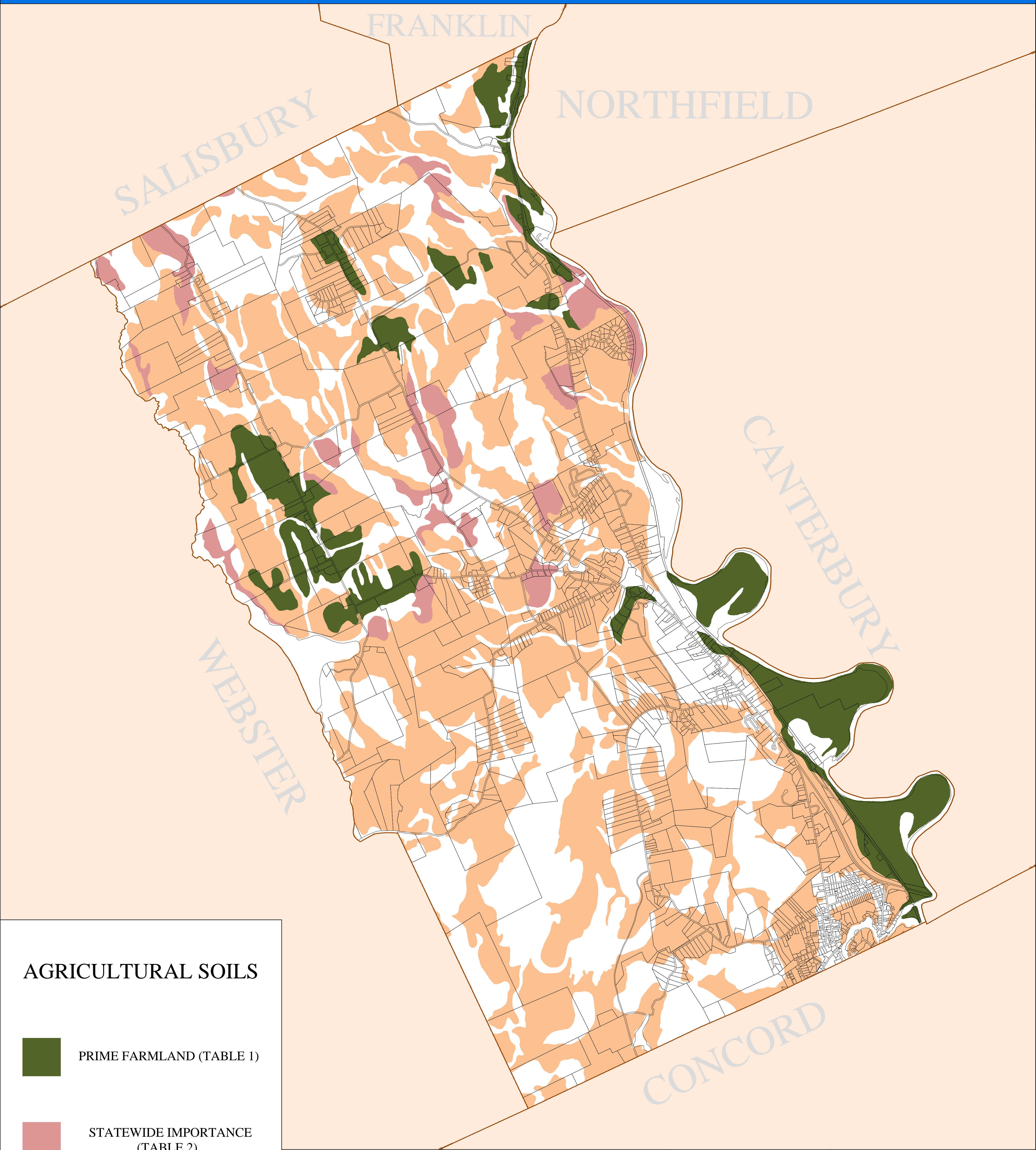
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# BOSCAWEN NEW HAMPSHIRE

# AGRICULTURAL SOIL MAP



## AGRICULTURAL SOILS

-  PRIME FARMLAND (TABLE 1)
-  STATEWIDE IMPORTANCE (TABLE 2)
-  LOCAL IMPORTANCE (TABLE 3)

## SOURCE OF INFORMATION

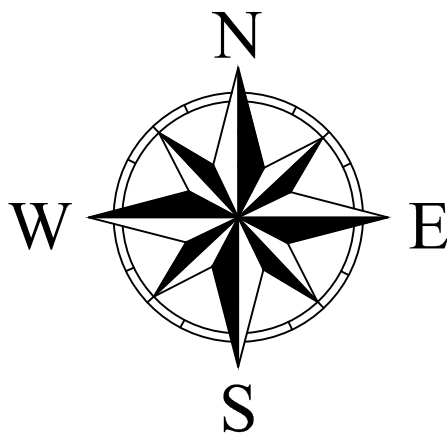
SOIL INFORMATION WAS OBTAINED FROM GRANIT.UNILEDU AND OVERLAYED ONTO PARCEL MAP WHICH WAS CREATED BY CARTOGRAPHIC ASSOCIATES. THE PARCELS WERE THEN CORRECTED USING ORTHOPHOTOGRAPHY AND RECENT SURVEYS.

## SCALE

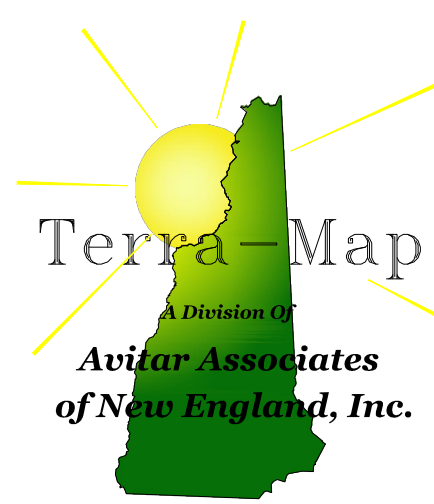
36"x48" = 1":1,200'

600 0 1200 2400 3600 6000 8400

● = MILE MARKER



MAP ORIENTATION:  
NAD83F - NEW HAMPSHIRE STATE PLAN COORDINATE  
SYSTEM, FEET

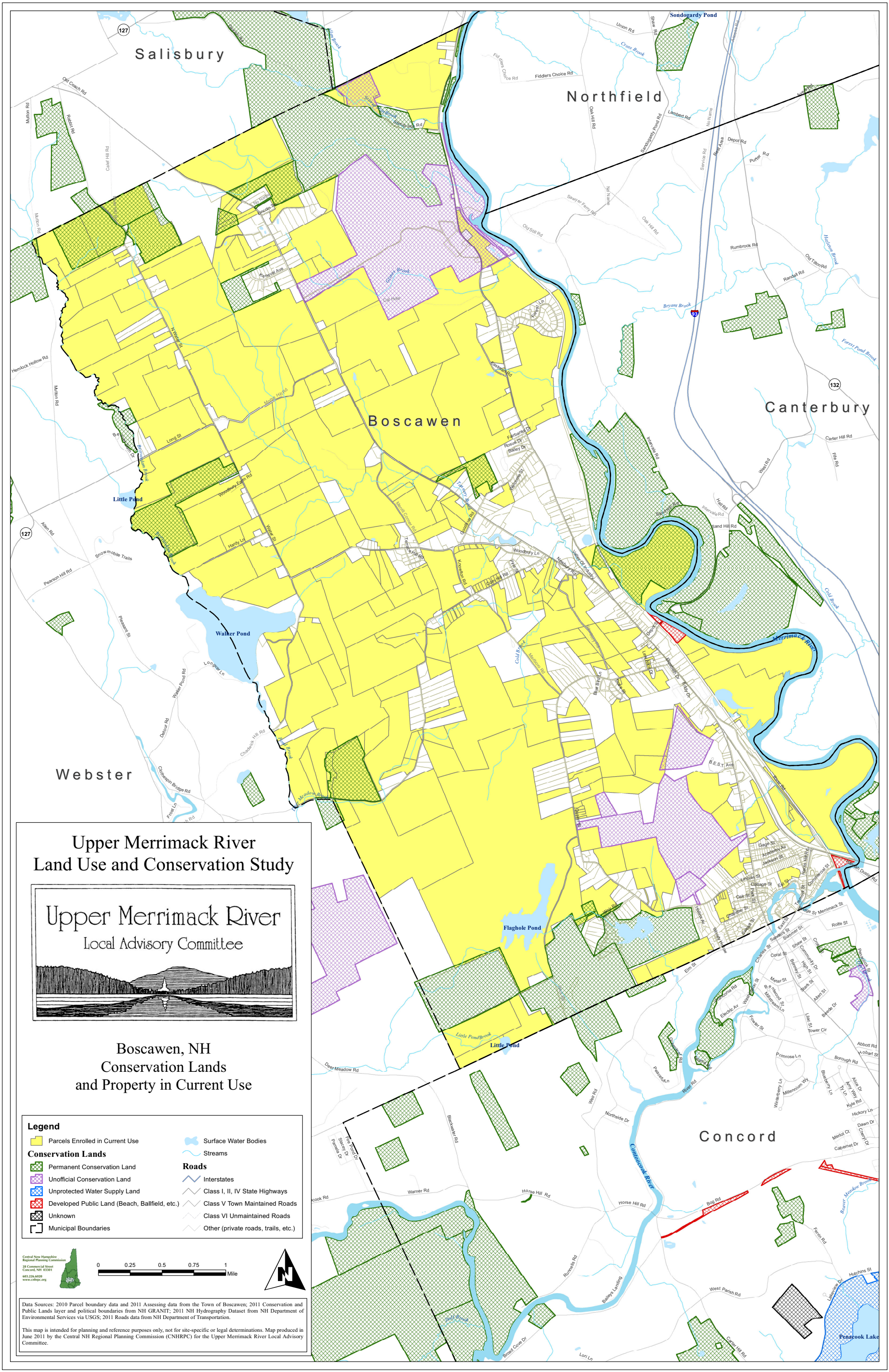


Phone  
603 798-4419

Fax  
603 798-4263

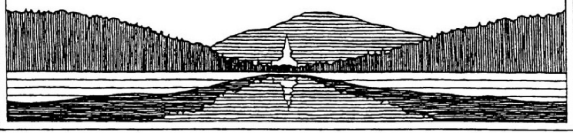
www.avitarassociates.com  
TerraMap@avitarassociates.com





## Upper Merrimack River Land Use and Conservation Study

Upper Merrimack River  
Local Advisory Committee



Boscawen, NH  
Conservation Lands  
and Property in Current Use

### Legend

- |  |                                     |
|--|-------------------------------------|
| Parcels Enrolled in Current Use                | Surface Water Bodies                |
| <b>Conservation Lands</b>                      | Streams                             |
| Permanent Conservation Land                    | <b>Roads</b>                        |
| Unofficial Conservation Land                   | Interstates                         |
| Unprotected Water Supply Land                  | Class I, II, IV State Highways      |
| Developed Public Land (Beach, Ballfield, etc.) | Class V Town Maintained Roads       |
| Unknown  | Class VI Unmaintained Roads         |
| Municipal Boundaries                           | Other (private roads, trails, etc.) |

Central New Hampshire  
Regional Planning Commission  
28 Commercial Street  
Concord, NH 03301  
603.226.6020  
www.cnhrpc.org

0 0.25 0.5 0.75 1  
Mile



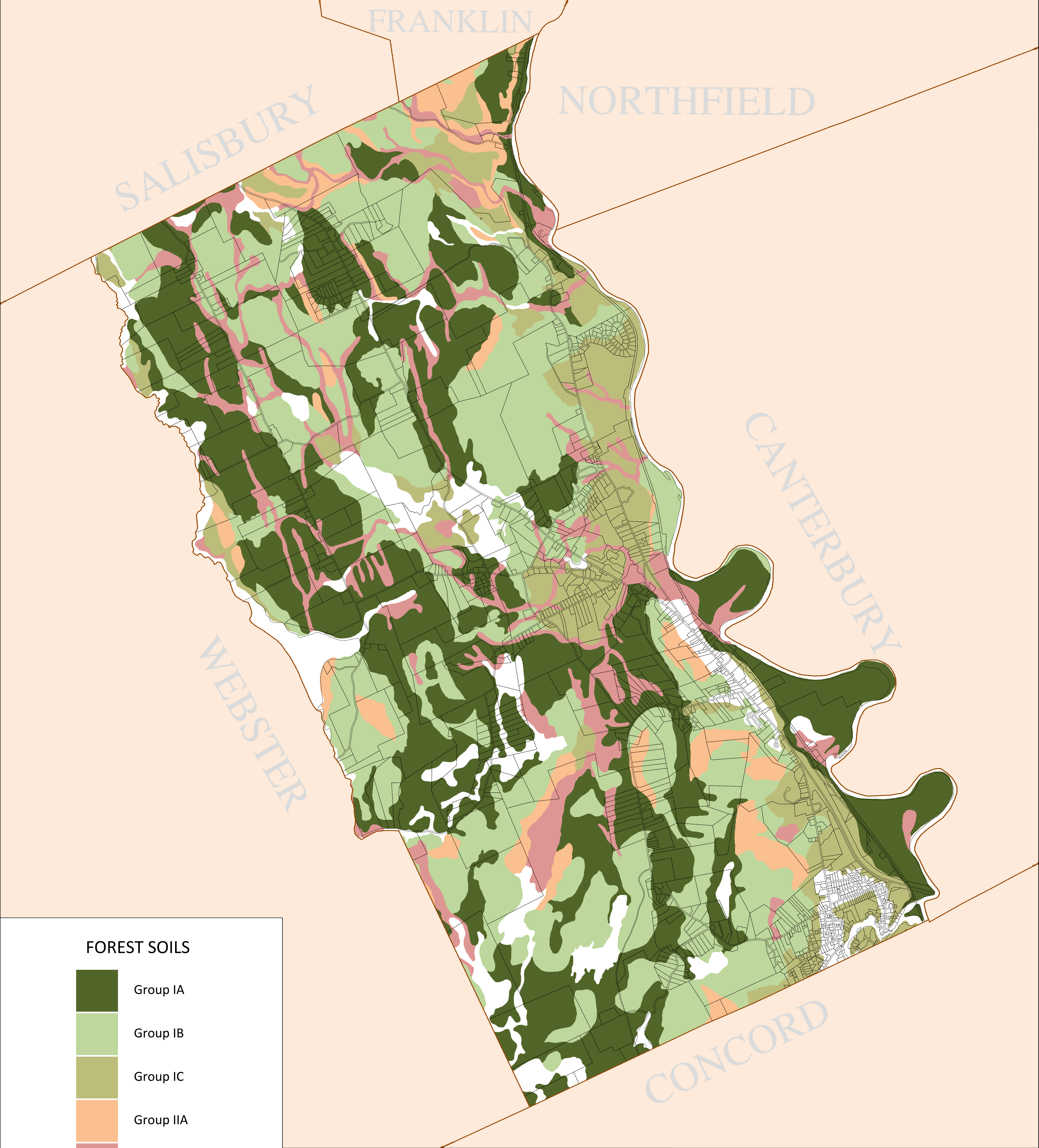
Data Sources: 2010 Parcel boundary data and 2011 Assessing data from the Town of Boscawen; 2011 Conservation and Public Lands layer and political boundaries from NH GRANIT; 2011 NH Hydrography Dataset from NH Department of Environmental Services via USGS; 2011 Roads data from NH Department of Transportation.

This map is intended for planning and reference purposes only, not for site-specific or legal determinations. Map produced in June 2011 by the Central NH Regional Planning Commission (CNRPC) for the Upper Merrimack River Local Advisory Committee.



BOSCAWEN  
NEW HAMPSHIRE

FOREST SOIL MAP



FOREST SOILS

Group IA

Group IB

Group IC

Group IIA

Group IIB

NC

SOURCE OF INFORMATION

SOIL INFORMATION WAS OBTAINED FROM GRANIT UNHLEDU AND OVERLAYED ONTO PARCEL MAP WHICH WAS CREATED BY CARTOGRAPHIC ASSOCIATES. THE PARCELS WERE THEN CORRECTED USING ORTHOPHOTOGRAPHY AND RECENT SURVEYS.

SCALE

36"x48" = 1":1,200'

600 0 1200 2400 3600 6000 8400

● = MILE MARKER

N

W

E

S

MAP ORIENTATION:  
NAD83F - NEW HAMPSHIRE STATE PLAN COORDINATE  
SYSTEM, FEET

Terra-Map

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