

PASTURED PROTEIN

Ecological, Humane and Healthy Meat
from the Hudson Valley



GLYNWOOD
CULTIVATING A VIBRANT HUDSON VALLEY

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PROJECT TEAM

GLYNWOOD

Glynwood is an agricultural nonprofit organization based in Cold Spring, New York. Our mission is to ensure the Hudson Valley is a region defined by food, where farming thrives. We work to advance regenerative agriculture that benefits the natural environment, energizes local economies, enhances human health and strengthens rural communities. glynwood.org

LOCAL ECONOMIES PROJECT

Local Economies Project's mission is to build an equitable and ecologically resilient food system in the Hudson Valley – one that meets the economic and social needs of our communities while working in harmony with natural systems. Towards this mission, the organization develops programs, provides grant funding and acts as a convener in the regional food and farm economy. localeconomiesproject.org

KAREN KARP & PARTNERS

Established in 1990, Karen Karp & Partners is a consultancy based in New York City, working nationally, that solves complex problems to improve the value of food enterprises. Founder Karen Karp has curated a bi-coastal team of professionals with expertise in hospitality, sustainability, culinary arts, education, agriculture, urban planning, policy, specialty food retail, research and event planning and facilitation. A national network brings further talent to the challenges clients present: economic analysis, finance and real estate, branding and design, agriculture economics, and journalism. kkandp.com

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PREFACE

As we gain greater awareness of how industrial, inhumane and overly mechanized meat production negatively affects our health and our environment, there is increasing demand from consumers for meat that is superior in quality and produced with high regard to animal welfare and ecological systems. This requires a significant paradigm shift away from commodity meat toward livestock practices that steward or even restore natural systems, sustain rural communities, support human health and treat animals with respect.

Competing economically with “industrial meat” while upholding these values is challenging. More sustainable models of meat production are labor intensive, require more farmland and follow nature’s lead, instead of relying on chemical and pharmaceutical inputs to enhance production. Therefore, we need to better understand how to make these regenerative systems as efficient and resilient as possible in order to grow a market that consumers are increasingly demanding.

That is why Glynwood, an agricultural nonprofit with a mission to ensure food and farming thrive in the Hudson Valley, commissioned this study: To help identify, analyze and recommend solutions that could help bolster such a system in the Hudson Valley, a region we feel is extremely well-suited to sustainable meat production. We are tremendously grateful for the support of our colleagues at the Local Economies Project, who share our vision of a region distinguished by a regenerative food system, for providing critical funding to carry out this work.

We commissioned Karen Karp & Partners, who have a wealth of experience conducting similar studies across the country, to undertake the heavy lifting of inquiry and analysis focusing on four enterprises: beef, pork, lamb and goat. Forty producers spanning a sixteen-county Hudson Valley region who are raising one or more species of livestock were interviewed about their production methods, operational challenges and marketing. Interviews and conversations with participants in the agriculture sector provided additional information on existing programs that support livestock production, needed resources and a greater context for understanding how to grow and support sustainable meat production in the Hudson Valley.

In addition, a diverse group of advisors from several parts of the Hudson Valley in this sector were critical in shaping our report and findings. In Part Two, we provide recommendations and strategies that serve as a roadmap toward a robust and responsible meat-producing region.

We are confident this work will help further many collective efforts to take advantage of the Hudson Valley’s unique assets and showcase for the country a system that is healthy for us, for the animals we raise, and for the communities and environments in which we live and work.

Sincerely,
Kathleen Finlay, President, Glynwood

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INTRODUCTION

Context

Industrial Meat

Most meat consumed in the United States is the result of industrial farm animal production that emerged in the second half of the twentieth century with the development of new technologies for breeding, feeding, raising and processing animals that accelerate and increase production. Some of the technological innovations that led to these increases include the development of feeds with synthetic additives, such as non-medicinal antibiotics and hormones to aid in rapid weight gain.¹ The trend of growing more animals in less space, with less labor, has continued.

With more animals, farms can achieve greater economies of scale and lower costs per unit. This is attributable to several factors, including the surplus of corn and soybeans in the United States in the late 1990s and 2000s (making feed cheaper) and weak regulation, which allowed farmers to expand their operations without taking environmental factors into account.² Much of the corn and soybeans used in animal feed is produced from seed that is genetically modified (GMOs),³ which includes technology to resist disease and herbicides.

Industrial farm technologies produce meat that is cheaper for consumers (by raising more animals more quickly), but creates negative impacts and risks associated with these methods. These are wide ranging, spanning from the environment to human health to animal welfare to economic vulnerability.

In 2008, the Pew Commission on Industrial Farm Animal Production (IFAP) published a comprehensive report on the effects of large-scale industrial livestock agriculture.

Highlights from that study:

PUBLIC HEALTH

- The widespread IFAP practice of using antibiotics to promote growth, as well as prevent disease, in all species of livestock contributes to antibiotic resistance in the environment, which poses a significant public health threat. This was confirmed in a World Health Organization report on infectious diseases, which attributed food as a major source of drug-resistant bacteria. According to the Union of Concerned Scientists, antibiotic use in animals for livestock production accounts for approximately 70% of all antibiotic use in the United States.
- IFAP creates additional health risks for people proximal to its production, including workers in and neighbors near these facilities. These vulnerable groups tend to experience higher levels of asthma and other respiratory illnesses. Workers can also act as “bridging agents” that spread animal-borne diseases to surrounding communities.
- IFAP can also impact the health of populations far from these facilities through air and groundwater pollution, as well as contaminated consumer meat products.

ENVIRONMENT

- The high volume of animal waste produced in IFAP facilities often far exceeds the capacity of the land to absorb it. Excessive local accumulation of animal waste, which carries antibiotics, hormones, pesticides and heavy metals, can contaminate surrounding bodies of surface water, groundwater and soil with excess nutrients (leading to the depletion of oxygen in a body of water, i.e., eutrophication) and pathogens.
- IFAP facilities also contribute to localized air quality problems that result from the release of various toxic gases, particulates and bioaerosols.
- IFAP requires a tremendous use of natural resources:
 - Large amounts of water, originating from finite groundwater sources, are used for irrigation of feed crops and cleaning infrastructure.
 - Greenhouse gas emissions from livestock operations account for approximately 18% of all anthropogenic emissions.⁴ Methane and nitrous oxide are potent greenhouse gases that are naturally produced by ruminants (cud-chewing animals such as cattle) during digestion and from manure if not properly managed (which is difficult to do when accumulated in massive amounts).
 - Large inputs of fossil fuels, industrial fertilizers and synthetic chemicals make IFAP very energy intensive. The ratio of energy from fossil fuel inputs to energy produced from food can be up to 35:1 for meat products produced via IFAP.

ANIMAL WELFARE

- Industrial livestock production typically confines animals to small spaces, which can severely restrict natural movement and behaviors.
- In addition to increased growth, a secondary goal of animal confinement is to reduce exposure to diseases. Yet the stress these conditions induce in animals can actually increase susceptibility to disease and make them more likely to be disease vectors, ultimately posing a threat to human health.

Ecological, Humane, Healthy Meat

The antithesis to industrial meat production can be found on farms that work in alignment with nature, are appropriately scaled to the surrounding ecology and landscape, engage with their local communities and utilize innovative and holistic systems. Strengthening and supporting this type of production can enhance farm viability, build soil fertility, improve animal welfare and increase consumer access to healthy meat.

A growing number of journalists, academics and agricultural professionals are raising awareness for “good meat.” Their work, referenced below, is broadening our understanding of the benefits of meat production that emphasizes responsible land stewardship, animal welfare, human health and community well-being.

ENVIRONMENT

- Well-managed grazing animals can play a vital role in the complex cycle of improving soil health by increasing its organic carbon and fertility.⁵ Intensive adaptive rotational grazing (see Glossary) can be managed holistically to achieve soil that has been adequately aerated, fertilized and rested for optimal soil health and carbon sequestration.⁶
- Earth’s grasslands, which are the evolutionary diet of grazing livestock, require little to no inputs of herbicide, pesticide or fertilizers.⁷ These grasses develop deep root systems that reduce loss of water and nitrogen while staving erosion, and are powerful carbon sequestration sinks, removing carbon from the atmosphere and storing it in the soil for improved biologic functionality. Well-managed livestock grazing, coupled with other sustainable agricultural practices, can help restore functionality to grasslands.⁸
- Pastured animals are in essence eating locally; operations are minimally mechanized and require little in fossil fuel inputs.
- Intensive rotational grazing can help improve and support pasture polyculture, and even have an impact on the surrounding ecosystems by attracting other grass-dependent species, particularly birds.⁹ A well-managed operation can help maintain biodiversity in the form of the animals’ gut microflora, dung beetles, worms, small tunneling mammals, varied deep-rooted perennial grasses and mycorrhizal fungi. Acting in concert, these organisms can dramatically improve soil health and carbon sequestration capacity.¹⁰
- Multi-species rotational grazing offers many additional benefits, including production of more food per acre, a reduction in weeds and brush, and the promotion of grass growth. Carrying capacity and pasture productivity are improved, and losses through predation can be diminished. A multi-species grazing system can also help reduce animal illness caused by naturally-occurring plant toxins and species-specific parasites, as one animal can consume what is harmful to another.¹¹

HUMAN HEALTH

- Beef from cattle raised entirely on grass is lower in unhealthy fats and higher in omega-3 fatty acids (good for cardiovascular health) than conventionally raised beef. Grassfed beef also has lower levels of dietary cholesterol, higher levels of vitamins A and E, and about twice the level of conjugated linoleic acid (CLA), which may have cancer-fighting properties and help lower the risk of diabetes.¹²
- Pastured livestock eating a healthy diet of grasses require minimal antibiotic treatment, and therefore contribute negligibly, if at all, to concerns surrounding dangerous drug resistance from antibiotics entering human food supplies through exposed meat products.¹³
- As stated on page 8, industrial meat operations create exposure among handlers and nearby communities to dangerous air and water pollutants linked to birth defects, thyroid malfunction and various forms of cancer; elevated instances of respiratory illness or distress; increased tendency to suffer negative mood states; and the possibility of hydrogen sulfide-related neuropsychiatric abnormalities.¹⁴ These conditions are not associated with farmers with pastured livestock operations, nor with their neighbors.
- Cattle raised on pasture essentially do not harbor *E. coli* O157, a virulent foodborne pathogen linked to feedlot animals fed a diet containing grain. *E. coli* O157 is thought to have evolved in the feedlot environment where cow rumens are acidified by a high-grain diet, leading to acid-resistance in the pathogen which can then survive in the human gut after contaminated beef products have been digested.¹⁵
- Goats are small ruminants that are well-suited to a region of pasture. Goat meat is lower in fat, calories and cholesterol than all other animal protein, chicken included,¹⁶ presenting a healthy red-meat alternative to beef.

ANIMAL WELFARE

- Raising animals on pasture eliminates most of the animal health ailments associated with industrial farming operations, and greatly reduces the use of antibiotics to prevent or treat these conditions.¹⁷
- Animals raised on pasture are in their natural environment, where they have access to a healthy, balanced and natural diet. They have clean air and water, living space and enough room to move freely, and a lack of stress that heavy farm equipment may cause.

MYCORRHIZAL FUNGI

Arbuscular mycorrhizal symbiosis is the mutually beneficial relationship between the roots of most flowering plants and certain types of fungi. The fungi in the soil form extensive networks of filaments which envelop and insert themselves into plant roots, establishing a two-way nutrient exchange. From the plant host, the fungi receive valuable carbon upon which they depend for survival. In return, plants receive nitrogen and other nutrients that the fungi have extracted from the surrounding soil. In addition to supporting healthy plant life, mycorrhizal fungi are vital to the reduction of atmospheric greenhouse gas pollution by synthesizing glomalin, a sticky carbon-based substance present in healthy soil that is essential to the process of carbon sequestration. Simply put, robust arbuscular mycorrhizal systems take carbon that plants have pulled from the atmosphere and bank it in the soil. Well-managed grazing of pastures and grasslands contributes to improved soil health which leads to enhanced mycorrhizal fungal presence, glomalin production, and ultimately, greater carbon sequestration potential.

Meat in Our Diet

That the Hudson Valley can be an exemplary region for production of ecological, humane and healthy meat is not an argument for copious consumption of meat. Overconsumption of meat can indeed have negative health impacts, and limiting the intake of red meat is recommended.¹⁸ The values expressed in this report around meat production are intended to support healthy consumption: high-quality, pasture-based meats in moderation.

While not essential, animal protein in moderation is a good source of important nutrients in the human diet, including protein, carotenoids (antioxidants), omegas, iron and vitamin E.¹⁹ Humanely raised meat has demonstrated health benefits in comparison to conventionally raised meat, namely, lower levels of saturated fats and cholesterol and higher levels of omega-3 fatty acids, conjugated linoleic acid (CLA) and vitamins A and E.²⁰ “Nose to tail” consumption (fat, organs and bones, in addition to primal and subprimal cuts), delivers the nutritive benefits of those animal parts, and makes full use of an animal that was raised for food.

Pastured high-quality meat costs more than industrial meat, for many of the reasons described in this report. The price of “good meat” is an accurate reflection of its value, and the premium price is necessary to absorb costs associated with its production. By contrast, industrial meat prices are deceptively low, given economies of scale, the role of farm subsidies, and the resultant environmental and public health costs that are hidden from the price tag. For people whose diet typically includes a lot of meat, smaller quantities of higher priced pastured and locally produced meat is a reasonable alternative.

Snapshot: Meat Production in the Hudson Valley

REGIONAL TERRAIN AND FARMLAND

The Hudson Valley is a fertile and agriculturally productive region that has long been a source of food for local residents and in New York City. For purposes of this study, sixteen counties were included to encompass an expansive view of the region (see map on page 14).

The Hudson Valley presents both assets and challenges to the livestock farmer. Precipitation is generally considered ample throughout the Hudson Valley, especially relative to other meat-producing regions of the country where access to water can be a tremendous challenge.

In contrast, the shorter growing season of the region, a function of both its northern latitude as well as the higher elevation of some areas, is a challenge for its farmers. Farmers consider soil quality to be highly variable in the region, and soil improvement is often a primary driver for farmers working on marginal soils.

The Hudson Valley's proximity to New York City, with its robust market demand for regional food, creates opportunities that are distinct from most agricultural regions elsewhere in the country. However, bedroom and weekend retreat communities have driven farmland prices higher than what is affordable for farmers to purchase or lease. In counties closer to the city where economic development and zoning policies have favored development over agriculture, farmers are finding themselves isolated from their farming community and surrounded by higher density residential development.²¹

Delaware and Washington counties have the highest inventories of cattle in the region; when accounting for county land area, Washington, Albany and Saratoga counties have the highest cattle density.²² In these western and northern counties, land prices are lower and resources available to farmers are greater, including access to veterinary care, feed, equipment and technical assistance.

Not surprisingly, animal inventory and number of operations are lowest in Westchester, Rockland and Putnam counties. Orange County, also in the south, is revered for its “Black Dirt,” highly fertile muck land that is not suitable for development, but is good for producing high-value crops, rather than pasture.

KEY RESEARCH FINDINGS

Research on the current state of meat production in the Hudson Valley is more thoroughly detailed in Part Three. Below is a snapshot of regional meat production:

Hudson Valley livestock operations tend to be small and most frequently managed by a single farmer-owner and immediate family, with occasional bartered or paid services; few producers who were interviewed hire any full-time staff, those who did had significantly larger and diversified operations that included crops and/or slaughter facilities for poultry or livestock.

At the time they were interviewed, most producers were farming more than one animal species on a combination of leased land and land they owned. All producers were raising ruminants on pasture, with variations in grazing methods and grain supplementation. Pigs were typically fed a purchased, commercial grain mix, and some were given a variety of supplements and allowed to forage. Most producers were engaged in vertically and horizontally integrated operations and more than two-thirds (67%) had another source of off-farm income. Those who considered themselves economically viable (18%) were among the larger and diversified operations, in terms of both animals and related farming operations.

Nearly all producers needed to book slaughter appointments in advance, sometimes by up to a year. Some producers traveled four hours to use a slaughterhouse that met their needs for quality and types of services offered. Slaughterhouses typically serve a large number of small producers who require services on a very seasonal basis. While there appears to be sufficient overall capacity for slaughter services in the Hudson Valley as a whole, processors face challenges of inconsistent throughput (and seasonal bottlenecks), and producers desire greater range and quality of processing service.

Producers also face challenges in sales, marketing and distribution. Business planning was reported as a challenge, with a lack of awareness about or access to planning tools, or time to use them efficiently. Producers are concerned about prices relative to production costs; farmers need to set a high price to absorb the costs of raising and slaughtering animals.



Opportunity

Hudson Valley Meat

Market demand is growing for high-quality pastured meat, as evidenced by these recent analyses of the grassfed beef market:

According to recent research, the grassfed beef market has grown dramatically in the past fifteen years. In 1998, there were around 100 serious grassfed beef producers in the United States; today there are almost 4,000. During the same time period, sales of domestically produced grassfed beef have grown from around \$5 million to over \$500 million, with an additional \$2.5 billion imported. Grassfed currently represents 7.2% of the market share, and the market itself is growing, by some estimates, at an annual rate of 25 to 30%. Large processors like JBS are buying grassfed operations, and national chain restaurants like Carl's Jr., Hardee's and Outback Steakhouse are offering grassfed burgers on the menu. With such high demand, cheaper imported and feedlot-style grassfed beef is competing with product from domestic and pasture-raised operations.²³

Food Business News reports that grassfed beef is expected to comprise 30 to 40% of the total beef market sector within the next 10 years.²⁴ The same article describes a major national retail supplier of grassfed beef expanding from processing twelve head of grassfed beef per month in 2005 to now processing 200 head per week, resulting in their search for a certified organic plant on the East Coast to meet increasing demand in this region.

The Hudson Valley is an ideal place for meat production that is ecological, humane and healthy. The landscape of the region is appropriate for pasture-based methods and farming here is dominated by independently owned small and mid-size operations. Consumer demand for high-quality pasture-raised meats — beef, as well as pork, lamb and goat — is growing and unmet in the region. This presents a powerful opportunity for Hudson Valley livestock farmers, particularly with close proximity to strong market opportunities in New York City.²⁵

Increased knowledge, stronger networks, improved systems and new investment are needed to support the stability and growth of pasture-based, humane, healthy meat production in the region.

This project was intended to respond to the need for information on the challenges and opportunities of regional meat producers and to enable suggestions that could help existing operations grow and increasingly use sustainable practices, while informing new enterprises and improving the value chain.

What follows in the next section are goals and strategies for creating a desired future for regional meat production, the cornerstones of which are:

Production

Pg 18

Vision: Hudson Valley meat production that is ecological, humane and profitable.

Processing

Pg 22

Vision: Hudson Valley meat processing services that are economically viable, consistently high quality and responsive to producers' needs.

Marketing

Pg 28

Vision: Hudson Valley meat, known for its high quality, is widely available to consumers.

Business

Pg 32

Vision: Hudson Valley livestock farmers have strong business acumen, access to affordable land and farms that are diversified and economically viable.

2

RECOMMENDATIONS

Production

“We grow good grass” is a statement often used to describe the Hudson Valley’s suitability to raising livestock on pasture. In fact, much of the terrain is only suited for growing grass, rather than crops. As such, ruminant animals are elemental to farmers generating income from this type of land. An excellent region for meat production that emphasizes healthy land and animals, the Hudson Valley holds great potential to fulfill a growing demand for ecologically and humanely raised meat.

The interviews conducted as part of this report revealed that Hudson Valley meat producers want to steward and improve land with ecological practices that produce high-quality pastured meat. To support them and to increase this type of livestock production, key goals include expanding rotational grazing practices, extending the grazing season and increasing the supply of quality stored forage and non-GMO grain. These methods must also be economically viable for farm businesses (see more on page 32).

VISION

Hudson Valley meat production that is ecological, humane and profitable.

GOAL: Expand the practice of multi-species livestock rotation.

Multi-species rotational grazing is an approach to pasture management that successively rotates species through pastures, allowing “off” pasture to “rest” and regenerate between rotations. Different animal species prefer different grasses and plants, therefore productivity and land-carrying capacity can be maximized to effectively accommodate a greater number of animals per acre.

Rotational grazing increases soil health by spurring deeper root growth and fertilizing with manure. With careful management, this approach can help reduce parasites, keep animals healthier and minimize the need for medication. Parasite reduction is particularly valuable for sheep and goats, as these species are especially prone to a variety of parasitic conditions. There are also economic benefits to raising additional animals on the same acreage: farmers can increase revenue while stewarding the land.

Despite much that has been written on the benefits of multi-species rotational grazing and a stated desire by a number of producers to employ it, less than half of respondents who have diversified livestock operations were engaged in the practice.

Grassfed²⁶ beef producers are eager to learn more about rotational grazing and ways to improve soil fertility. They look to a number of sources near and far for information and support. Conferences like Cornell Cooperative Extension’s annual Winter Green-Up provide much needed information to ruminant producers, but anecdotal stories of year-round grazing told by experts from other regions do not always resonate or seem realistic to many Hudson Valley producers. Cornell Cooperative Extension in Albany is doing research at the Valatie Research Farm on grazing winter triticale during the fall and spring to extend the grazing season on both ends, and then harvesting it for hay or baleage. They are also growing a dwarf variety of BMR sorghum sudan that is harvested as a winter crop, according to Tom Gallagher, CCE Albany.

Many respondents describe local support as willing and available, but less knowledgeable than renowned national experts such as Allan Savory, Joel Salatin or Troy Bishopp (all three were mentioned repeatedly as sources of inspiration and support). Holistic Management International™ (see Glossary), provides research and resources pertinent to the concerns of producers for animal and soil health, as do grazing publications. Producers also rely on colleagues and select conferences for information, but want a reliable “go-to” source for up-to-date scientific and practical advice on feed in the Hudson Valley.

STRATEGIES

- Provide information, training and technical assistance in implementing best practices for multi-species rotational grazing;
- Create a “go-to” resource for meat producers with advice and consultation on farm diversification and techniques for feed and grazing that are suitable to the Hudson Valley.

GOAL: Extend the grazing season, improve stored forage quality and advance methods to finish grassfed animals throughout the year.

GRAZING:

Regional beef and sheep producers are grazing animals on pasture for as long as the weather permits. When pasture is not available in the winter, most producers feed their ruminants a variety of stored forage, including dry hay, silage, haylage and baleage (see Glossary). A few farms supplement with grain throughout the year.

Not all pasture is equal; types and quantity of grasses have an impact on the quality of meat and the carrying capacity of the land. Careful management of pastures results in continued weight gain, higher quality meat and, for some producers, a longer grazing season (maintaining animals on pasture longer into winter and starting them on pasture earlier in spring). These methods focus on rotational grazing practices that maximize soil health and pasture growth. Improved knowledge can help more producers enhance their pasture for better quality and a longer grazing season and, in turn, increase economic viability.

STORED FORAGE:

The challenges of extending the grazing season and overwintering animals emerged as critical issues for Hudson Valley meat producers. Regional farmers most often want to harvest their animals before the winter to avoid winter weight loss and the cost of stored forage. As a result, local slaughterhouses face bottlenecks in the fall and supplies of pastured meat are inconsistent the rest of the year. Likewise, producers receive only seasonal income. Achieving consistently high-quality meat through grazing practices and winter feed, increasing fertility and carrying capacity of the land, and finishing animals throughout the year can help producers achieve both quality and economic sustainability.

Winter weight loss need not be inevitable. Experienced producers and processors outside of the Hudson Valley believe that feeding high-quality stored forage in winter yields consistently high-grade carcasses.²⁷ Increasing the supply of good quality stored forage would be a benefit to regional meat producers. However, there are costs in producing this forage. While it may not be viable for many individual farms to produce their own high-quality stored forage, there could be opportunities for new enterprises to produce and sell quality stored forage to other farms. (In this former dairy region, there is likely to be latent knowledge and infrastructure that could be tapped for stored forage production.) Further exploration of this concept is recommended.

STRATEGIES

- Provide producers with evidence-based information and training on best practices for increasing soil fertility while achieving farm profitability, including:
 - Specific grass varieties for grazing and stored forage that are ideal for this region's climate;
 - Region-specific methods that will keep ruminants on pasture longer;
 - Improving cattle weight gain in winter on an all-grass diet.
- Support techniques and entrepreneurship to produce affordable high quality stored forage.

GOAL: Increase supplies of local/non-GMO/organic grain feed for pigs and poultry.

Pigs are not ruminants and therefore get very little of their diet from foraged grasses. The primary diet for pigs in the Hudson Valley is commercial grain grown in the Midwest.²⁸ A number of producers supplement grain fed to pigs with other edibles, such as whey and spent grains from brewers and distillers.

There are very few commercial feed grain producers in the Hudson Valley region, and in the Northeast. Some farmers are buying feed that is grown in the Midwest but milled locally in order to obtain a “fresher” product. Whatever feed is used, it is the costliest expense in raising pigs in this region.

Hudson Valley farmers committed to sustainability are seeking other sources of grain feed because the majority of commercial grain is grown conventionally (i.e., not organically) in the Midwest. Its production is reliant on inputs of chemical fertilizer and pesticides and likely includes genetically modified (GMO) species, requiring significant energy to be transported.

Pork and poultry producers are looking for local, non-GMO, pesticide-free and, ideally, organic feeds. However, they are concerned that such feed is too expensive to support a price for meat they believe their customers would pay (in some cases, choosing organic local grain doubled feed costs). Hudson Valley certified organic meat producers (three were interviewed) grow their own feed, finding it less expensive to do so – and they claim it is the only viable way for their operation to be certified organic. That said, producing feed is an additional skill set that requires appropriate land and equipment and grain handling facilities, which may not be realistic or available to many smaller scale producers in this region.

Individual pork producers have received mixed responses when asking local commercial feed growers to convert to a non-GMO product. Some growers were disinterested; another had agreed to transition but had not yet indicated whether prices would increase. One notable new non-GMO feed grain grower, Stone House Grain, is in transition to organic production and offering a variety of feed blends produced without the use of synthetic fertilizers, pesticides, herbicides or GMOs.

This unmet demand for non-GMO feed suggests the potential for new grain growing operations. Local feed growers could transition, but they must be able to recoup investment costs associated with business changes and innovation. Requests from a single customer for specific services would be insufficient to justify investment, and growers need to know that producers are willing to pay for their product. By organizing and collectively demonstrating their demand for product that is sustainably and locally produced,²⁹ livestock producers can influence and encourage the supply of desired feed grain.

STRATEGIES

- Organize meat producers to collectively demonstrate demand for local non-GMO/organic grain and other collaborations, such as groups purchasing specialty grains together;
- Conduct a feasibility assessment of demand and production of local non-GMO/organic grain by existing and/or emerging businesses;
- Provide technical assistance and funding to businesses seeking to grow non-GMO/organic feed grains;
- Support efforts to bring non-GMO/organic grain to Hudson Valley farmers.

Processing

Limited access to meat processing services has long been cited as a barrier to increasing production in the Hudson Valley. The question of capacity is not simply an issue of the number of slaughterhouses, it is a problem of seasonal demand, underutilized capacity at existing slaughterhouses and quality of services.

The USDA's Economic Research Service has evaluated the availability of processing facilities for local meat production. It was found that, while access to USDA inspected facilities is limited in some parts of the country, broadly speaking, facilities are within reach of most farmers who need them. Responses for this report³⁰ show that this is likely the case in the Hudson Valley, but certain areas are underserved due to distance from a processor and/or lack of desired quality of processing services.

Existing operators need support to maximize their capacity, expand their range of services and help producers to process animals throughout the year.

VISION

Hudson Valley meat processing services that are economically viable, consistently high quality and responsive to producers' needs.

GOAL: Manage seasonal demand for slaughter services.

Many of the responding processors are not operating at full capacity year-round. Most are operating at capacity during the fall, when the majority of producers in the region are finishing their animals. Interviews with Hudson Valley producers and processors are consistent with USDA data for New York State, showing a strong overall trend toward fall slaughter with a spike in spring for lamb.

Seasonal demand for slaughter causes bottlenecks at slaughterhouses in fall and leads to excess capacity at other times of the year. Producers do need to plan well ahead for fall slaughter (with some slaughterhouses requiring appointments to be booked a full year in advance for cattle and as soon as a pig or lamb is born), but overall capacity is perceived to be an issue because of this seasonality in processing.

It is not practical for processors to operate with such great variability in the demand for their services. Processors report that, without consistent year-round business, it is difficult to find, train and retain employees. Slaughter and processing is difficult work that requires skill and knowledge; it is not work that lends itself to seasonal employment by unskilled workers. Processors cannot expand facilities just to accommodate greater numbers of fall slaughter. However, a number of processors in the region may be able to take some steps to increase their capacity (see Part Three: Expanded Research, page 63).

Processors will achieve true capacity only when the demand for their services is evenly distributed throughout the year. Demand for year-round slaughter would result from production strategies that extend the grazing season and support animals' winter weight maintenance/gain, such as pasture management and improved stored forage (as discussed on page 18). Working with producers to help them achieve a feeding program that is more compatible with year-round slaughter would also regulate farm income and meat supply.

Aggregation and coordination of producers and their slaughter bookings are strategies that have had some success. Examples include the Northeast Livestock Processing Service Company (NELPSC), which helps producers find processing slots.³¹ Similarly, Adirondack Grazers is a cooperative working with a number of producers, allowing for regular slaughter schedules and streamlining the process for processors who deal with one entity, rather than multiple individual farmers. This type of coordination between producers and processors could benefit both groups

STRATEGIES

- See Part Two: Production for strategies to finish grassfed animals throughout the year and support more consistent slaughterhouse throughput;
- Coordinate producers in forming a group that could coordinate/share slaughter dates to provide constancy to processors, such as a trade association, group purchasing organization, producer co-operative or buying club.

GOAL: Help processors increase capacity, quality and range of services.

PROCESSING SERVICES

The physical presence of a USDA slaughterhouse does not tell the full story about its ability to meet producer needs. Slaughterhouses offer a variety of services³² in addition to slaughter, including: hanging carcasses, butchering for wholesale or retail cuts, packaging and labeling for retail, and other processing including smoking meat and making sausage.

Processors with a full range of services are located in northern points of the region, and most producers travel long distances (more than two hours) to access the services and quality desired. Producers are also looking for slaughterhouses that satisfy Animal Welfare Approved (AWA) and USDA Certified Organic requirements. Certified organic slaughter service is limited, with only five of the 13 operations in or near the Hudson Valley offering organic slaughter and processing. AWA certified slaughter (including lamb) is also limited, with producers in southeastern points of the region lacking convenient access to services.

Processors who do not offer the full range of services desired by producers, or whose work is perceived as lower quality, are in less demand and therefore may not be operating at capacity. Processors with excess capacity would benefit from understanding why producers are not using their services so that they can make adjustments to meet producers' needs and fulfill capacity of their operation. Regional capacity overall could be maximized if a consistently high level of quality were achieved across all processors serving the region.

Strategies to coordinate producer demand would help processors recognize opportunities for improvement in quality and the services they offer. Slaughterhouses need to recoup costs associated with business changes and innovation; assurance is therefore needed that any new investment will be popular and profitable. Requests from individual customers alone would be insufficient to justify investment.

Models that would strengthen producer market power include trade associations and group purchasing organizations. The latter may be able to gain member commitment for use of specific processing services or demonstrate sufficient interest to warrant processor investment in new services. Such an organization may also be able to book regular slaughterhouse dates on behalf of its members and coordinate member scheduling, allowing greater opportunity for smaller sized producers. The market power of this group may also influence the quality of cutting, because it becomes an important collective customer with large buying power.

A NEW SERVICE IN

DEVELOPMENT IS THE

“LIVESTOCK SCHEDULER,”

an online platform that allows farmers to book available slaughter dates from any participating processors well in advance to secure needed slots. Slaughter fees are paid in advance, which improves cash flow on the processing side and allows slots to be traded/resold online. In addition to allowing for more flexible scheduling for farmers, one goal of the service is to allow processors to adjust their pricing according to demand and, therefore, incentivize growers to adjust feeding/breeding cycles to take advantage of adjusted prices and availability of processors. Costs for the service have yet to be worked out, but the most likely scenario, according to project lead Joan Snyder, is a suggested low level subscription rate for the slaughter and processing businesses. As more funding is secured, the platform will expand to consider shared transport and distribution.

PROCESSOR INFRASTRUCTURE

Some slaughterhouses have additional capacity for slaughter but lack the hanging and processing space, particularly during times they are operating at capacity. Just as the Center for Agricultural Development and Entrepreneurship (CADE) assisted Larry's Custom Meat in Otsego County with infrastructure expansion, more of this type of work is needed to help processors in the Hudson Valley. Expanding infrastructure and operations in this way would increase volume of production, improve quality and broaden the range of services offered.

LABOR AT PROCESSORS

All processors are operating single shifts and none are regularly operating overtime. There are some operating at or near full capacity on a single shift that might have the demand and ability to operate a second shift as a way to increase capacity. They choose not to because of the cost of overtime for USDA inspectors, a lack of hanging space for additional animals, difficulty finding and training labor, and simply not wanting to stress their operation beyond a single shift.

Operating a second shift would require additional time from USDA inspectors. To make a second shift feasible for processors, it would be necessary to work with USDA's Food Safety and Inspection Service (FSIS)³³ to accommodate additional USDA inspection services without increasing costs. As the demand for meat processing grows, operations that might expand to a second shift would need support in finding trained labor as well as having sufficient infrastructure for additional carcasses and products.

STRATEGIES

- Provide funding and technical assistance to processors to increase range of services, expand facilities and improve quality;
- Survey producers' needs in detail for desired types and quality of services, communicate results to encourage processors to add service areas, innovate and maintain high quality;
- Facilitate communication between producers and processors to address issues of quality and range of services;
- Work with FSIS to provide inspections during a potential second shift, and assist processors in implementing a second shift as appropriate.

GOAL: Increase the production of specialty meat products.

There is growing demand for specialty meat products such as pâtés, terrines, stocks and cured products (generally called charcuterie and salumi). These products carry a premium retail price, but are not currently made by regional processors. Producers are limited to the offerings of processors, and those who wish to take advantage of the growing market for specialty products have few options: outsource production to distant processors, or invest in creating their own value-added production facility.

SPECIALTY PROCESSING FOR THE HUDSON VALLEY REGION

Existing slaughter and processing facilities have limited ability to produce specialty products. What they do make, such as sausages, follow only a small number of recipes, thus preventing producers from being differentiated by distinctive products. Other custom and specialty value-added products are not currently offered by Hudson Valley slaughterhouses and they have not demonstrated an interest in expanding to do so. A producer group, as described above, may be able to convey to processors that there is opportunity in the demand for specialty products, but existing processors need support in expanding their range of recipes and services to support that demand.

This presents an opening for a new type of USDA-inspected facility that could produce specialty value-added meat products such as sausages, pâtés, terrines, stocks and cured meats. One of the advantages of making these types of products is that they can utilize the whole animal, making use of fat, organs, bones and other parts that are often discarded or otherwise have little market value. Many of these value-added products are typically pork-based, but there is also a market for specialty products from beef, goat and lamb.

Such a facility could provide a shared infrastructure for producers and entrepreneurs seeking to make specialty products from Hudson Valley meat that are not made by slaughterhouses, while also serving as an incubator for value-added businesses focused on locally produced meat.²⁴ Specialty meat products must be processed in an inspected facility, necessitating a significant capital investment to establish. Staff of such a new operation would benefit from training in skills that will deliver a high level of quality and efficiency.

One structure could house a collective of expert, specialized businesses offering services such as: aging, custom processing, smoking, specialized sausages, no-nitrate products, charcuterie (including cured meats) and pet food, while also serving as a hub for further distribution — perhaps advantageously situated in or near New York City. Such a specialized facility would remove only a small percentage of processing from existing slaughterhouses, but any exploration of such a start-up should include an assessment of market demand and its impact on existing processors.

GLYNWOOD HOSTED A WEEK-LONG “MASTER CLASS” in 2015 for a group of regional farmers, processors and value-added entrepreneurs. Expert charcutier François Vecchio instructed participants in classic butchery and charcuterie techniques, utilizing two pigs and one goat, making use of all parts of the animals (including head, skin, feet, fat, etc.). The goal was to provide these producers with training while creating cohesion and collaboration amongst this group of leaders in regional value-added meat production. The experience confirmed that there is strong potential for this type of production in the region, with growing market demand, but it is a process that requires special skills and training. There are also regulatory and infrastructure requirements that can be difficult for small producers to meet. Workshop participants expressed a willingness to work together to support the growth of high-quality charcuterie production in the region, and a desire for more hands-on experience and training.

INDIVIDUAL / ON-FARM SPECIALTY PROCESSING

Currently, farms that wish to sell products made from their meat (such as sausages and smoked products) are reliant on the services of slaughterhouses, as described on page 26. Processing fees can be costly to farmers (the typical charge for processing a one-pound pack of hot dogs is \$6.00) and there are no options other than existing recipes used by the processors.

In some cases, it can be profitable for farmers to create their own value-added facility. Producers with an interest in curing and cooking can build some of these facilities, gaining higher utilization rates from carcasses and making charcuterie, pâtés, terrines and other specialty items for which higher retail prices can be realized.

One Hudson Valley pork producer who was interviewed is focusing on building an on-farm kitchen to produce products including fresh sausage, paté, stock and salumi. The impetus was in large part to mitigate risk. Their primary sales channel had been selling whole pigs to restaurants, leaving them vulnerable when restaurant orders are inconsistent. Producing their own specialty products helps them diversify their business and gives some economic sustainability, helps them garner more profit by making use of the whole animal (they found that they only received 65% of the pig after processing elsewhere) and helps them to distinguish and market their farm and its products.

Similarly, another farm in the region found that they could reduce processing costs and garner more profit by building their own cut-and-wrap processing facility on the farm. They receive whole carcasses from a USDA slaughterhouse, then use their on-farm facility to butcher retail cuts or create products such as sausage. Products are then sold onsite in their farm store or butcher shop.

There are, however, challenges to on-farm processing including: regulatory requirements, infrastructure costs, education and financing. Producers seeking to do on-farm processing will need support with business planning, culinary training, and funding for infrastructure investments.

STRATEGIES

- Provide technical assistance and funding to entrepreneurs who wish to create individual processing enterprises: assist with regulatory compliance, infrastructure needs, processing skills and business planning;
- Conduct a feasibility study for a specialty meat processing facility to serve the region, including an assessment of demand for services and products, potential users and operational needs;
- Support training and education in specialty meat products to processors, farmers, entrepreneurs and culinary professionals;
- Expand the market for value-added products by building a reputation of quality for Hudson Valley meat (discussed further on page 29).

Marketing

As a region so well suited for agricultural methods resulting in high-quality meat, a reputation of quality should be established for Hudson Valley meat products. Success and expansion of the region's meat sector will depend on consumer understanding that the price of meat reflects its value. Strong, ongoing consumer demand will allow producers to market their meat at prices that uphold their viability while absorbing high costs of production. This depends on consistent and authentic high-quality meat products from regional producers and processors, as previously discussed.

VISION

Hudson Valley meat, known for its high quality, is widely available to consumers.

GOAL: Increase marketing and distribution services.

Hudson Valley producers focus on direct sales because this brings the highest return. Selling through “middlemen” often means receiving a lower price, and producers feel their profit margins are already too tight. Interviews also revealed that a number of producers are skeptical of interacting with for-profit companies that could provide marketing and distribution services, preferring to conduct their own sales directly to consumers.

However, the majority of producers reported feeling burdened by the job of marketing and selling their products; they spend significant time and resources on selling directly to consumers. In addition to the effort required for direct sales, the processing and packaging of their products for retail sales increases production expenses.

This dependency on direct sales limits the reach and availability of regional meat to more consumers. With a strong demand in this region for locally raised sustainable meat, particularly in New York City, there is great opportunity to increase overall sales of Hudson Valley meat, but to do so will require expanded marketing and distribution services. These services can afford producers a regular source of income while removing the burden of sales, marketing and distribution – all of which can be particularly challenging for producers interested in the New York City market.

Producers need service from sales and distribution companies that are aligned with their values and the needs of their farms. Interviews showed that Hudson Valley producers are values-driven, and therefore unlikely to enter into a sales and distribution agreement with an unknown entity or a company that doesn’t clearly align with their values. Successful marketing and distribution services will be those that have a clearly demonstrated mission or structure that is shared with producers’ values. Interviews suggested that existing successful enterprises could be better supported to expand their service, and new enterprises should be developed. Any new approach at shared risk and reward models must be developed with or by producers in order to consider farmers’ needs and establish trust.

STRATEGY

- Increase the marketing and distribution of regional meat by supporting existing services and new values-based businesses with access to capital, technical assistance and increased connections between producers and market opportunities.

GOAL: Build a reputation of quality for Hudson Valley meat.

Producers believe that the Hudson Valley has consumer marketing caché. There is interest in building awareness for the higher quality and value of regional meat as a strategy to expand the sector and support prices that sustain farmers. To accomplish this, it is necessary to further engage and educate consumers and wholesale buyers by promoting the distinctive and positive attributes of Hudson Valley meat.

A labeling program that gives a mark of quality to Hudson Valley products does not yet exist; labeling programs are difficult to implement and administer, particularly when producers do not uniformly follow specific practices. Indeed, with a trend toward indicating the provenance of food as a selling point with retailers and restaurants, a labeling program based on standards may not be an essential marketing tactic.

It would be appropriate to coordinate a general effort to build a reputation of quality for regional meat. Relevant models exist in the beverage industry: California wine’s reputation for quality was developed through general marketing of the region as a premium wine region where producers share a commitment to quality and collaboration. In the Hudson Valley, Glynwood’s “Cider Week” engages retailers and restaurants in featuring regional hard cider, which has resulted in an expanded consumer market and awareness for hard cider that has helped producers. These approaches allow for product differentiation while emphasizing regionality as a unifying framework, collectively distinguishing a regional product. Such an approach would be helpful in the Hudson Valley, where meat producers do not all follow the same practices, particularly with respect to finishing (grass vs. grain) or certifications (AWA, organic, etc.).

A regional educational campaign would focus more on qualities of the region, such as pasture, while allowing for some diversity in production methods.³⁵ Consumers and commercial buyers alike should be educated about the varied aspects of Hudson Valley meat production. Producers, distributors and organizations can collaborate on peer-to-peer producer events, tastings, networking efforts, and other activities that connect producers with chefs, butchers, consumers and food journalists.

Educational components of such promotional outreach should address the fact that pastured meat raised in the Hudson Valley costs more than commodity meat; messaging should emphasize diet and health. For example, “less meat, better meat” is a phrase increasingly used to suggest that Americans should consume less meat overall, opting instead for smaller portions of healthier, ecologically raised animal proteins.

Such a regional meat campaign could also promote “nose to tail” consumption and develop appreciation for products that more fully utilize animals, such as offal and charcuterie. Species such as lamb and goat also deserve more promotion since they are well-suited to Hudson Valley farming.

STRATEGIES

- Create campaigns and events that involve meat producers, chefs, journalists, buyers, etc., to promote the quality and value of Hudson Valley meat, as well as underappreciated species (goat and lamb) and less-used meat products (off-cuts, charcuterie and offal);
- Create targeted educational programs for consumers and professionals that include lectures, pasture walks, cooking demonstrations and tastings that highlight Hudson Valley meat, explain methods and cost, develop understanding and appreciation, and increase market demand at prices that are sustainable for farmers.

GOAL: Increase butchery skills.

Increased sales of whole carcasses could achieve two potential benefits: alleviate some of the pressure on producers to conduct direct sales of retail cuts, while also potentially increasing slaughterhouse capacity by shifting some butchering to restaurants and retailers. However, sales of whole animals requires that buyers have the ability to handle whole, half and quarter carcasses. To expand the market for whole animal sales, it is necessary to increase the butchery skills of culinary professionals in restaurants, grocery stores and butcher shops. There is growing national interest in the craft of butchery, as evidenced in classes at culinary schools and specialized butcher shops, as well as wide media coverage of butchers and their techniques.

There are some butchery programs available in the region, notably SUNY Cobleskill, but there remains a need for educational opportunities to serve students and working professionals. Wholesale buyers could be supported with education to develop their knowledge and skills to economize purchases of animals in wholes, halves and quarters. Teaching should focus on how to fully utilize a carcass for maximum revenue in retail, restaurants and food service programs. Schools, meat wholesalers and nonprofit organizations could offer this education, with participation from producers and distributors who can supply whole animal carcasses.

At the consumer level, “meat collectives” are emerging nationally and would be an appropriate model for outreach and education in the Hudson Valley. These are community groups that facilitate purchasing from local meat producers and teach butchery skills to consumers. The Meat Collective Alliance assists in creating these groups and works toward sustainable, equitable, responsible meat production and consumption by developing meat education programs. These efforts raise awareness and educate, but are less specifically focused on economic development.

Charcuterie skills and production should also be a component of butchery education. Charcuterie has long been a technique that ensures all parts of an animal are used efficiently. In addition to increased specialty production among processors and farmers, there is a need for butchers and chefs to increase the production and availability of charcuterie products. This would ensure maximum utilization of meat animals, while increasing appreciation for a wider range of meat products.

Efforts to promote the value of Hudson Valley meat, as described above, will help to support prices that will allow producers to achieve economic viability while selling wholesale. However, more information and education is needed to determine viable prices that will make it possible for wholesale buyers to purchase whole animals while upholding the economic viability of farms.

STRATEGIES

- Provide butchery training workshops for chefs and restaurateurs that include hands-on training, plus skills to run a profitable whole animal program;
- Support butchery education programs at culinary schools, trade schools and colleges, and through independent courses;
- Provide funding and technical assistance for schools to include whole animal butchery classes;
- Develop and share economic models for restaurants and retailers to purchase and utilize whole animals at prices that are viable for farmers.

Business

Economic sustainability emerged as the most important factor to producers; most believe that their livelihood and farms are tenuous. The ability to farm profitably is essential to long-term viability of Hudson Valley meat producers. In addition to business skills and acumen, the high cost of labor and land are factors that strongly affect the business of livestock farming in this region. Greater resources, consultation and supportive services are necessary to assist farmers in achieving financial sustainability.

Producers who were interviewed expressed concern that they are not able to charge enough to cover their costs. The price of regional meat is already perceived to be high, although this is in comparison to commodity meat. So, there is speculation as to whether there is sufficient demand to scale production at current prices. More information is needed to understand the demand for meat at prices that will allow for the sustained economic viability of Hudson Valley farms, in addition to strategies that would lower costs for producing high-quality meat.

VISION

Hudson Valley Livestock farmers have strong business acumen, access to affordable land and farms that are diversified and economically viable.

GOAL: Offer training in business planning & financial tools.

Many of the responding producers reported a lack of expertise in business planning, sales and marketing. Producers do not seem to use or have access to financial tools suited to business planning for pasture-based, multi-species livestock production in the Hudson Valley. They spoke with precision about specific costs for their operations, yet the majority of them did not know how much it costs to raise an animal.

Farmers interested in expanding or modifying their operations said that they did not have an economic model to use as a baseline, nor the resources to create a model. They are, however, interested in resources to aid the profitability of grass-based, multi-species production. “Information overload” and lack of time to review / adapt available tools may be part of the problem.

A first step in achieving profitability is to track and evaluate income and expenses related to farm operations, using a model that takes into account the various necessities of the enterprise, including barter, off-farm labor for principals, family labor, etc. Some financial planning tools are available through Holistic Management International™ training courses or Cornell University’s FINPACK, a financial analysis package that helps farm managers evaluate their financial situation and make informed planning decisions.

Although these and other financial tools exist, it is unclear whether producers understand how to use them, whether the tools are applicable for their diverse farm operations or if they have the time to do financial analysis. It is also unclear if a model profit and loss (P&L) statement for meat producers in this region is widely available, with baseline budgets for different types of pasture-based enterprises, including multi-species intensive rotational grazing. There is a need for a trusted organization to collect and/or create viable business models suited to livestock production in this region, and to provide farmers with advice and support for production changes to achieve economic viability.

STRATEGIES

- Collect and/or create financial models for profitable livestock operations, focusing on the unique qualities of Hudson Valley meat production, including rotational grazing with one or more species and integration of diversified business enterprises;
- Collect and/or create a business planning toolkit for farm businesses based on the unique needs of Hudson Valley producers. Provide training in customized use of this toolkit and ensure its accessibility to farmers and farming groups;
- Provide business planning assistance directly to individual livestock farmers to help them navigate appropriate planning tools and make efficient use of them.

GOAL: Support farm enterprise diversification.

The unpredictable nature of farming can make it a risky business. Reliance on a single farm enterprise or species increases risk and reduces resiliency. Therefore, diversification is an essential strategy for Hudson Valley farms.

Most regional farms demonstrate a great deal of creativity in combining multiple enterprises, including multi-species production, breeding and genetic businesses;³⁶ crop production and value-added production.

Vertically integrated farms are breeding their own animals, selling young stock, finishing animals, and are engaged in all aspects of sales, marketing and distribution. Several responding beef producers who are raising Black Angus and Red Devon are breeding their cattle, choosing to sell or raise calves for beef based on demand and market prices.

Horizontally integrated businesses include crop production (vegetables or grain), on-farm poultry slaughter (with New York State exemption), and on-farm retail stores. One beef producer alternates their pastureland with growing distiller's grains, finding a strong market for buckwheat with the upsurge of local distilleries in the Hudson Valley. The income from these grains is part of a business plan that is helping the farm to become profitable. Combining crops and livestock also has environmental advantages: rotations of legumes and pasture can build soil fertility while discouraging pests (rotations disrupt the reproductive cycles of pests).

Value-added production is a strong opportunity for meat enterprise diversification, as previously discussed on page 25, but few farms are directly engaged in value-added production.

Producers need more information about the benefits of farm diversification, and a stronger understanding of different scenarios and whether there are reliable markets. There is a need for an organization to demonstrate, teach and create models for farm diversification that help both the environment and the bottom line.

STRATEGIES

- Demonstrate, teach and create models for farm diversification that help both the environment and farms' bottom line;
- Conduct outreach to farms to support enterprise diversification in species, crops, genetics and value added products;
- Support farmers' knowledge and expansion into new areas of production with education, market research, and funding in the form of grants and loans.

GOAL: Support land link programs for livestock farmers.

Land in the Hudson Valley is expensive. New farmers cannot usually afford to purchase land, and income from livestock farming can rarely support a mortgage for a large land purchase.

Leasing land at low or no cost, often from second homeowners, has become commonplace for Hudson Valley livestock producers: nearly all of responding producers are leasing at least half of their land. These arrangements are often without a signed agreement and without a real understanding of the needs and expectations from both landowner and farmer, which can lead to a mismatch in expectations. Setting expectations up front and incorporating key terms into leases is critical for long-term success.

Expansion can also be difficult because land that is contiguous or nearby to existing operations is not always available. Non-contiguous parcels present challenges for livestock producers who must move animals from one parcel to another (by truck or by old-fashioned cattle drive).

There are at least eight organizations in the Hudson Valley with programs to match landowners with farmers seeking land, but they are neither tailored to livestock nor widely known. The lack of awareness of these programs was underscored by comments from several farmers, suggesting that one outcome from this study could be the creation of just such a land link organization. While these programs can help to clarify and formalize leasing relationships, resources may need to be adjusted (e.g. model leases) to be better suited to livestock enterprises.

A survey of farm link programs in the Northeast concluded that listing services are their most sought-after and utilized resources,³⁷ although listing services alone were found to be insufficient to facilitate a successful transaction. Both landowners and land-seekers need additional support to make sustainable decisions related to land access and use. To that end, personalized advising services and education programs explaining lease terms and potential pitfalls are resources that the report recommended be funded and expanded.³⁸

Ultimately, the long-term viability of livestock operations relying on low or no-cost land leases is questionable. Farmers need long-term secure land access, either through reduced-cost land or greater access to capital. Conservation easements and long-term affordability strategies are necessary to facilitate land access and need to be supported on a policy level. Scenic Hudson's farmland conservation transactions alone have put more than \$40 million into farmers' hands and have made it possible for a number of farmers to gain access to land they otherwise could not afford. These programs are an important part of the economic viability equation for Hudson Valley farmers.

STRATEGIES

- Support land link organizations with staff and funding to:
 - Conduct outreach to producers and landowners, that will result in resources tailored to livestock producers and landowners who will lease to grazers and stored forage producers;
 - Market and promote land link programs to landowners and farmers, both new and existing.

GOAL: Sponsor internship programs for livestock farms and create an online platform for farm internships.

Hudson Valley meat producers are, in very large part, operating their farms with labor from family members and part-time or occasional help. The cost of family and friends' labor is typically excluded when assessing the costs of production and analyzing overall economic viability. Producers are working long hours and are engaged in a wide variety of work because their business models do not allow for hiring additional help.³⁹ When considering expansion that would require hiring non-family employees, producers indicated great hesitation about their ability to pay those salaries.

Internships can be a source of low-cost labor if they also provide meaningful training. However, many producers expressed concern about compliance with laws that require interns be paid or receive academic credit (they know that unpaid internships are not legal and their integrity on this topic is admirable). They report that the process of finding interns is too decentralized and time-consuming.

A sponsored internship program coordinated by a nonprofit or academic entity could support producers with on-farm help while providing work experience for the next generation of farmers. Creating an online listings platform (like Idealist or Good Food Jobs) focused on livestock farming training, internships and jobs would also streamline the process for producers and interns alike.

STRATEGIES

- Create sponsored internship programs for livestock farms with training plans, funding and connections to nonprofit and academic institutions;
 - Work with agriculture schools to create credit-based, hands-on learning experiences that offer training of the next generation of livestock producers while supporting the needs of Hudson Valley producers.
-

GOAL: Create livestock farmer network and information exchanges.

Producers in this study repeatedly emphasized the desire for more knowledge and information relevant to farming in the Hudson Valley. There is a need for an entity with a mission and commitment to Hudson Valley farm viability and sustainable production to create a networking and information hub for Hudson Valley meat producers so they may access information, share knowledge and learn together.

Livestock farmers are looking for a trusted, centralized resource where they can get aggregated information and peer networking on topics that include: scientific and dietary information about grass-based livestock production, including high quality stored forage and grain supplementation; legal, sponsored and academic internship programs; trucking and distribution resources; marketing tips; and funding sources and labor resources. No such physical or virtual hub exists.

As a group, meat producers are eager to learn from each other and from those who have knowledge specific to the Hudson Valley but they often have skepticism about institutions offering advice. Therefore, it is recommended that a farmer-driven network⁴⁰ be created, in which participating farmers have leadership, with support from a regional organization that can provide coordination of people and resources. Using best practices in other regions⁴¹ as a reference, a farmer-to-farmer network in the Hudson Valley could provide a focus on specific issues, tools and resources for meat producers.

STRATEGIES

- Coordinate a farmer-driven network for learning and sharing of resources, including online materials as well as in-person education and networking events;
- Create a virtual hub with aggregated resources for regional meat producers, including:
 - Land link programs and conservation programs
 - Region-specific pasture management and grazing studies and methodologies
 - Scientific and dietary information about grass-based livestock production, including high-quality stored forage and grain supplementation;
- Facilitate high-quality forage production techniques and funding sources including:
 - Internship listings
 - Trucking and distribution resources and opportunities
 - Marketing tips
 - Labor resources.

3

EXPANDED RESEARCH

Research Methodology **Pg 40**

Industry Overview **Pg 43**

- Operations
- Land
- Labor and Services
- Certifications
- Economic Viability

Production **Pg 50**

Methods / Challenges per Species:

- Beef
- Pork
- Lamb
- Goat

Slaughter & Processing **Pg 58**

- Current Slaughter / Processing Capacity
- Cost of Services

Sales & Marketing **Pg 68**

Research Methodology

Karen Karp & Partners combined primary source data drawn from first-person interviews with secondary research to create a picture of the evolution and current state of meat production in the Hudson Valley.

The research team completed 40 interviews with meat producers in a region broadly defined by 16 counties in the Hudson Valley – from Westchester County in the south, extending north through Washington County, and Delaware County to the west. Interviews were conducted with five USDA slaughterhouses serving these producers, and additional data was obtained about other slaughterhouses in the region. Twenty-one interviews were conducted with members of the agriculture sector, i.e., professionals who support Hudson Valley producers. Additional conversations were held with members of this report’s Advisory Committee (page 3) and others in the Hudson Valley.

Primary Research

FARMERS INTERVIEWED

Karen Karp & Partners, together with Glynwood and LEP, sought to identify a diverse sampling of farmers to interview. An initial list of meat producers was created in collaboration with Glynwood and other colleagues. The following people sent out information about the project, along with requests for participation: Tom Gallagher, Mike Baker and Tatiana Stanton, Extension Associates at Cornell University; Sarah Teale of Adirondack Grazers; Kathleen Harris of Northeast Livestock Processing Service Company (NELPSC); and Glynwood.

The team sought interviews from farms of all sizes, and farmers of all experience levels and ages, with an eye for diversity of production methods and farm operations. Beginning and smaller livestock enterprises were included to better understand the challenges faced by new entrants and the role of small producers in the supply chain. Where gaps were found, additional input was sought from the Advisory Committee, all of whom made interview recommendations to help achieve the goal of representing a broad cross-section of meat producers in the region. Some of the Hudson Valley's largest producers and breeders were approached for interviews but were not interested enough to participate.

The map on page 42 shows the location of farms and slaughterhouses that took part in interviews, referred to in this section as respondents. A complete list of farms per production sector and slaughterhouses interviewed is located in the Appendix.

SLAUGHTERHOUSES INTERVIEWED

The goal of this research was to understand challenges faced by producers with respect to slaughter and processing of animals, and to quantify the current slaughter capacity in the region. To that end, Karp Resources identified USDA slaughterhouses in the region outlined in this report and added additional slaughterhouses identified in farmer interviews.

Five slaughterhouses were selected for in-depth interviews; others were contacted by email and telephone. Not all agreed to participate, and only a few were willing to provide information about animal throughput and slaughterhouse capacity. Where possible, additional information about range and scope of services was obtained from processors' websites and from information gleaned from interviews with farmers and agricultural professionals. A lack of information has made quantifying capacity and throughput impossible. Therefore, this research provides a more qualitative picture of capacity, alongside challenges and opportunities relating to slaughter and processing, with recommendations on how to strengthen and support this sector.

AGRICULTURE SECTOR INTERVIEWS

Interviews were conducted with agricultural professionals who provide support to producers in the Hudson Valley, in an effort to understand existing and planned services to meat producers, perceived gaps in offerings and perceptions about the need for slaughterhouse and processing services in this region. A total of 21 interviews were conducted to provide context and sector-grounding information that complemented producer interviews. A complete list of interviewees is included in the Appendix.

ADVISORY COMMITTEE

Glynwood, with support from Karen Karp & Partners and LEP, assembled an advisory committee to support the project work. In addition to providing assistance with interview subjects as detailed above, Karen Karp & Partners

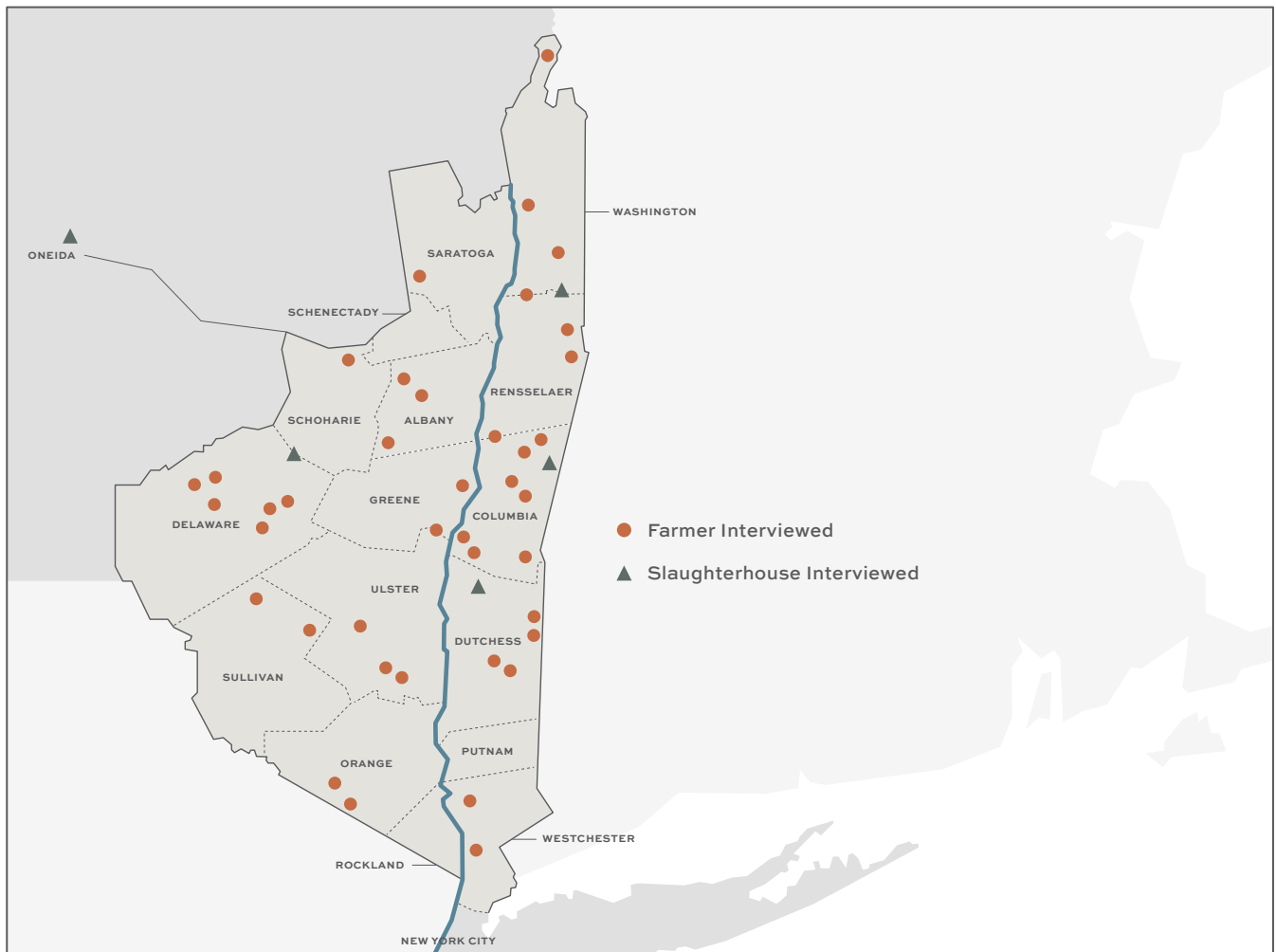
presented initial research findings at a meeting of the Advisory Committee and facilitated a dialogue with its members to elicit their suggestions for further research and recommendations based on early findings. Members of the Advisory Committee also responded to the initial findings and were of assistance thereafter on an as-needed basis, providing additional information and feedback.

Secondary Research

Secondary research was conducted in order to provide the most comprehensive and up-to-date data on challenges and opportunities for achieving profitability or expansion of sustainable meat production in the Hudson Valley.

Original data reviewed included the USDA 2012 Census of Agriculture, soil and watershed maps, historical lists of USDA approved slaughterhouses and current lists from the Food Safety and Inspection Service (“FSIS”).

Research on meat production, slaughter and processing in the Northeast Region and nationally, in addition to the Hudson Valley, was reviewed and has been used to inform this report. The results of secondary research are incorporated into Part Two: Recommendations. A Bibliography and Glossary are included in the Appendices (page 81).



Industry Overview

Operations

The majority of producers interviewed for this report were raising more than one animal species. Eleven beef producers were not raising any other livestock; two were raising poultry. Four were raising sheep without other livestock or poultry. None raised pork only, but one raised pork and poultry only. Only one producer was raising only goats. In sum, 14 producers were raising a single species.

Less than half of the producers with multiple species were engaged in a multi-species rotation system,⁴² despite much that has been written on the benefits of this practice. Of those who were, the most common species were cattle and sheep. Just over half of producers who are raising poultry included poultry in the rotation. Only one producer we interviewed included pigs in a multi-species rotation. A number of producers expressed the desire to engage in the practice, giving reasons of increasing soil fertility and reducing parasites.

The primary reasons producers did not practice rotational grazing are size and scale of operations. Small-scale producers managing operations with little outside labor chose animals and practices that were manageable without additional labor. Multi-species rotational grazing makes the most sense when the scale of livestock species is well matched. For example, it would be inefficient and not particularly beneficial to have a herd of large beef followed by a small number of chickens. Similarly, rotating beef and sheep sequentially requires that the animals be well matched for grazing the same parcel of land, at the same pace.

Producers focusing on economic viability of beef operations lacked time and resources to invest in the

Fig 1: OPERATIONS BY SPECIES

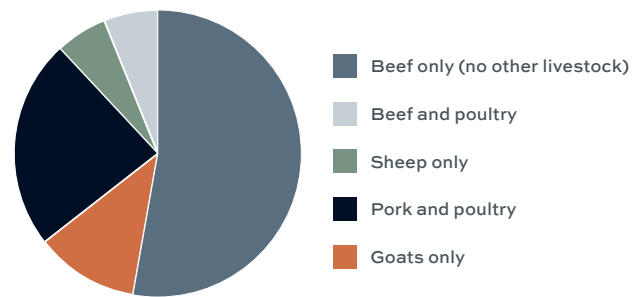
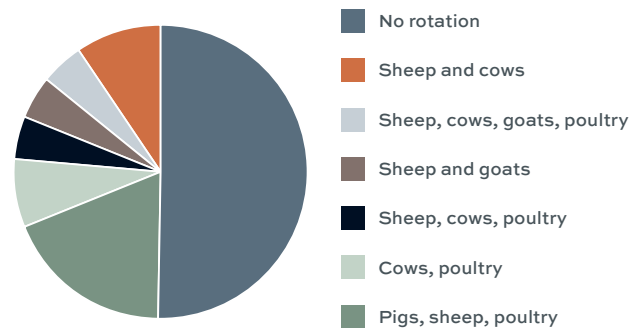


Fig 2: OPERATIONS BY ROTATION



scale of poultry operations that would be necessary to match their herd size. In addition, producers tended to work with species that they know and like; adding new livestock poses learning challenges, infrastructure demands and may simply be an animal for whom they have no natural affinity. Producers with additional help tended to gravitate toward livestock in which someone had particular experience or interest, e.g., a change in labor could just as easily lead to a change in production sectors.

In addition to diversification in species, some producers engaged in both vertically and horizontally integrated operations. Eight percent of respondents in this report had agricultural incomes from businesses that were vertically integrated (e.g., meat processing) or horizontally integrated (e.g., crops). Many were breeding their own animals, selling young stock, finishing animals and engaged in all aspects of sales, marketing and distribution. Horizontally integrated businesses included additional agricultural sectors. The most common were crops (vegetables or grain), poultry slaughter (New York State) and on-farm retail stores. Less common diversification included dairy production, bakeries, commercial compost and making furniture. One producer was alternating hay and pastureland with cultivating distiller's grains, finding it good for the soil and a profitable product, given the rise of local craft distilleries.

Land

Producers included in this report farmed between 14 and 1,800 acres, with the average producer working on a total of 470 acres and a median of 250 acres. Acreage typically included pastureland, hayfields, woodland, buildings and, in some cases, land designated for crops or other livestock not being raised for meat, such as horses. Land in the Hudson Valley is expensive; new entrants often cannot afford to purchase land, and income from farming is often not sufficient to support a mortgage for a large land purchase.

Leasing land at low or no cost has become commonplace for these livestock producers; nearly all of them are leasing half of the land they operate in addition to land they own. Three producers were part of nonprofit organizations, two were farming on land leased with an option to purchase from a previous farmer, one was farming land owned by another entity on behalf of the farmer (but took no profits), and another was a bicentennial farm.⁴³ A few had placed their land into conservation trusts. Finding land available for lease with proximity to existing operations that is suitable for grazing is challenging. Non-contiguous parcels present challenges for livestock producers who must move animals from one parcel to another by truck or an old-fashioned cattle drive.

There are multiple organizations in the Hudson Valley working to link landowners with farmers seeking land, but the farmers in this report had little knowledge of these programs. Several farmers suggested that one outcome from this study could be the creation of a land link organization, which underscores the lack of awareness for programs that do provide leasing support.⁴⁴

A notable land resource is the Hudson Valley Farmlink Network, a project of the American Farmland Trust that provides listings of land available for sale and lease, along with profiles of farmers seeking land, educational events and organizational information. Fifteen organizations, including Glynwood, are members of Hudson Valley Farmlink Network. Those that provide matching services include Catskills FarmLink, Columbia County Land Conservancy, Dutchess Land Conservancy, New York FarmLink, Saratoga PLAN and Westchester Land Trust. Current efforts to promote awareness of the matching service to both landowners and land seekers are limited in their impact. Hudson Valley Farmlink noted that mostly self-selecting interested parties attend their information sessions; getting the word out to a broader network of farm seekers and landowners is needed. This kind of greater outreach is often impossible for organizations that are underfunded and lack the necessary resources.

A recent study of farm link programs in the Northeast concluded that listing services are the most sought-after and utilized resources provided by these organizations.⁴⁵ However, listing services alone were found to be insufficient to facilitate a successful transaction. Both landowners and land seekers need additional support to prepare for land access and land use and make sustainable decisions. To that end, personalized advising services and educational programs that explain key lease terms and potential pitfalls are resources that need to be funded and expanded.⁴⁶

Farm link programs are designed for agricultural land use, in general. Respondents were unable to cite land-related resources that are geared specifically towards livestock production (either for farmers or landowners who could lease to grazers and stored forage producers). In leasing arrangements, lack of understanding can lead to a mismatch in expectations on the part of the landowner and lessee. For example, one producer arrived at a leased hayfield only to find that the landowner had recently mowed it. Setting expectations and incorporating key terms into leases is critical for long-term success.

A related question is whether producers are able to achieve long-term business viability without land ownership. Farmers often need to make infrastructure investments, such as fencing and water, in order to begin using a land parcel, as well as investments to improve soil fertility in order to maximize grazing. When the lease ends, such investments (which could then allow for increased grazing on the same parcel) might not be recouped, even while the producer would bear the expense of finding and farming new land. If new land is found, it may not support the same number of animals per acre. If new land can't be found or isn't available, the producer would need to reduce herd size, either phasing out over several years or possibly selling unfinished animals at a financial loss. Therefore, when leasing land, investment in soil and growing the herd adds risk and insecurity to an already tenuous economic scenario.

Labor and Services

Hudson Valley livestock operations tend to be small, most frequently managed by a single farmer-owner with immediate family as “staff” and occasionally bartered or paid services. The cost of family and friends’ labor is typically excluded when they talk about the costs of raising an animal and their overall economic viability. Few respondents hired any full-time staff; those who did had significantly larger and diversified operations that included crops and slaughter facilities for poultry or livestock.

Several producers indicated that they are reluctant to commit to paying a salary to anyone when they are barely supporting their own families. Some producers would like interns but think the process for finding them is decentralized and too time-consuming. Others are concerned that it is only legal to have interns if they are paid or receive college credit, and some lack suitable housing for an intern. Labor appears to be one constraint in producers’ willingness to increase the scale of their operations, i.e., not wanting to grow beyond what can be supported without the need for full-time staff.

Depending on location within the Hudson Valley, producers found different levels of agricultural services and farmer networks. Not surprisingly, farmers located in areas with few other operations described challenges accessing livestock services, including veterinary services, equipment sales and service, and they have few colleagues with whom to share information and support.

Throughout the Hudson Valley, producers said that Cornell Cooperative Extension provided assistance to livestock producers but they expressed a range of opinions about Cornell: Most producers believed that Cornell was too focused on conventional practices and knew little about rotational grazing; others were concerned that Cornell

is influenced by corporate interests. A minority group spoke positively about Cornell's assistance with grazing plans and educational services, including its annual Winter Green-Up Grazing Conference. Graziers relied on two publications, *Stockman Grass Farmer* and *On Pasture*, to learn about grazing practices. Overall, there was a desire for more expert knowledge and assistance relating to grazing practices and pasture management.

Producers spoke most often of the desire for access to capital in the form of low/no interest loans and grants. While many respondents would benefit from financial and business planning assistance, few took advantage of services available to them. One issue raised by both producers and support organizations is the variety of operations and the lack of a suitable model P&L statement, or model farm plans. Producers emphasized that each piece of land was different and there is no "one size fits all."

A number of government and nonprofit organizations provide a range of general services to a diverse group of Hudson Valley farmers. Organizations focusing on livestock in New York State are primarily involved in dairy and, for the most part, lack specific services tailored to meat production. Those that do, such as Cornell, tend to focus on conventional practices and may not offer assistance on rotational grazing practices. Therefore, producers often hire experts from outside the region to provide grazing and pasture advice (such as Troy Bishopp⁴⁷). Producers would like a resource that can distill and disseminate research on pasture-based livestock production, and they feel there is a visible gap in knowledge and services.

Certifications

Most producers did not have any certifications for their meat. Of the 40 producers, seven were certified Animal Welfare Approved (AWA), three had organic certification, and one was American Grassfed certified. Two producers were previously AWA certified but gave up the certification, finding it conferred no market benefit. Three were interested in AWA certification, but did not pursue it because they found the requirements too stringent in the areas of tail docking for sheep and castration methods. These producers strongly believed that tail docking was necessary for certain breeds of wool sheep in order to prevent disease, and that some prohibited castration methods were more humane than the approved methods. One AWA certified producer had similar concerns about tail docking and found the AWA was willing to work with him to create an exception for his farm. Not all producers found it practical or desirable to meet AWA requirements. There are 21 livestock farms in the region outlined in this report with AWA certification.

Four producers were interested in USDA Organic certification but could not complete the requirements due to: lack of access to organic slaughter facilities (2), proximity to a GMO crop without a land buffer (1), and use of antibiotics for common mastitis (1). None of the respondents used antibiotics as growth stimulants. Certified organic producers had particular challenges finding animals and organic feed to buy, and most resorted to breeding their own animals and growing all of their feed.

Two producers were interested in American Grassfed certification and one was interested in exploring Certified Naturally Grown.⁴⁸ Other certifications that are common in other parts of the country (such as Food Alliance in the Northwest) were not mentioned.

Economic Viability

The ability of Hudson Valley meat producers to earn a living is not assured. Producers and other agricultural professionals, such as technical assistance providers, share jokes like “Do you know how to make a small fortune farming? Start with a big one.” But the high cost, high risk and low margin of meat production is a serious concern and must be a key part of any discussion about increasing production in the region. Researchers did not ask for specific income and expense information from producers, but asked if they are economically viable, what that means to them and if they have plans for how they would achieve that goal.

The small-scale nature of many meat producers in the Hudson Valley is sometimes viewed as “hobby” or “gentleman” farming. Neither accurately describes the respondents in this report, all of whom are operating as commercial enterprises. As indicated above, these meat producers range from those with a long family history in some form of regional agriculture, to career changers and those with young families. Only one of the farms we interviewed could be considered a so-called gentleman’s farm — its manager is operating the farm (at a loss) for an aging owner. Still, they are concerned with making the farm a profitable enterprise that could survive beyond the owner.

Despite the commercial nature of these farms, 67% of respondents relied on other resources, such as a working spouse, retirement income, savings or another unrelated business. Eighteen percent (18%), most of which have diversified and larger operations, report earning a modest living from meat production. Another 8% were nonprofit organizations with diverse but related revenue streams, including other areas of agriculture, education, commercial compost, food service and retail.

SCALE

Would increasing production, on scale, be required for a farm to make a profit? One grassfed meat producer who purchases hay said, “It takes the same amount of labor to raise 10 cows as it does 100 cows.” If herd size can be increased without adding labor cost, then profit grows. If scaling up requires paying additional labor, it changes the break-even equation dramatically. Several beef producers talked about a “sweet spot” of between 200 and 300 cattle to achieve profitability. Some producers had already achieved that scale and are among those that described themselves as economically viable.

The majority of respondents did not express an interest in scaling up, and several are focusing on scaling down as they move toward retirement. Those who are not interested in growing are focused on improving existing operations. Those who are not profitable, though not expressly stated, may not have felt able to take on debt to expand infrastructure and operations when they are not yet profitable. Many are supported by other income and felt no pressure to grow. Others, farming out of passion, had no desire to scale up and participate in other markets.

Eleven producers expressed an interest in increasing their livestock production; seven of them have two or more species in production. They range from the very small new farmers seeking to grow their operations, to larger established operations that want to achieve economies of scale or add a new specific species (and in a few cases, reduce numbers for a different species). Specific barriers to expansion cited included: high price of land (2); expense of paid labor (2); a clear market opportunity (1); and lack of access to slaughter/processing services (1). Of these producers, two saw themselves as economically viable, one is not viable and the remaining nine believe they are approaching economic viability and expansion could help them achieve it.

Understanding the number of animals that can be raised on the land, while meeting the quality standards of the producers in the area, is important to determining best practices to support producer economic viability and also the potential for the expansion of the sector here. A number of variables in farm operations make this determination challenging, including: diversified operations may have multi-species rotational grazing but not on all parcels of land; producers may estimate land for grazing but may also have animals graze on hay fields during certain times of the season; there are different stocking rates and animal densities at different times of the year; pasture land may produce greater or lesser quantities and quality of pasture depending upon soil fertility; and producers are in various stages of increasing herd size or modifying operations to accommodate new or different species or farm operations on the land.

Despite these challenges, certain generalizations can be made. Producers report that ideal ratios for cattle-to-land is two acres per animal. Producers with pasture dedicated exclusively to cattle are stocking at a rate ranging from 0.6 acre to 4.2 acres per animal. Median to mean ratio hovers around 1.5 acres; less than that expressed as ideal by producers.

For sheep, producers expressed an ideal ratio of five per acre or 0.2 acres/sheep. One producer identified seven goats to an acre as a good animal-to-land ratio. Producers with exclusively sheep, or sheep and goats together, on pastureland utilized between 0.2 and 2.3 acres per animal, with the high being a new farmer building her flock at the median of 0.35 acres per animal.

A small sample of multispecies grazers (potentially including cattle, sheep, goats and poultry) utilized between 0.2 and 2.2 acres per animal, with the median and mean near to 1.0. The variations in operations makes it difficult to draw conclusions about economic and land sustainability, however a common practice for multispecies rotators included mob grazing or holistic management practices that included frequent rotations of higher numbers of animals, resulting in increased soil fertility and more productive grasses. These practices indicate a potential for higher income per acre.

Achieving some economies of scale would help Hudson Valley producers but there is a widespread belief that, despite operating in a niche market, the price of Hudson Valley meat is constrained by the artificially low prices of commodity meat. Producers serving both the wholesale market and those selling retail at markets articulated this belief.

Prices for commodity meats are artificially low for a number of reasons, including federal policies supporting grain production, and lack of regulation protecting animals, farm workers and the environment. The farming practices among Hudson Valley livestock producers exists in sharp contrast to commodity production, and continued education about these values, and resultant quality, will help consumers understand the price for local meat. Continued efforts by those engaged in policy work will help to shift externalities back to the producers, such as costs of production not currently paid by large processors, unsubsidized cost of feed and the societal costs of worker healthcare and the environment.

PROFITABILITY

While respondents all understood the cost of specific inputs and what they gross on sales of a specific animal, only a small percentage have a P&L (Profit and Loss statement) and track expenses. Fewer still consider their own or their family's labor as an expense. Very few know what it financially costs to raise an animal.

Some producers follow holistic management practices that focus on strong grazing and soil fertility plans, with an emphasis on farm profitability and, in particular, understanding where to reduce costs.

DIVERSIFICATION

Diversification in both animal production and farm operations was a strategy employed both by producers who considered themselves to be economically viable and those struggling to achieve viability. Areas of diversification varied depending upon the suitability and availability of land, and the interest, knowledge and ability of the producer.

Other complementary areas of diversification included: genetic businesses where beef producers take advantage of high calf prices and can choose to sell more animals as breeding stock than for meat (or vice-versa); crop production, including commercial hay production, feed crops and/or grains for distillation (cited as good for the soil and rotating with livestock); and fruit and vegetable crops where waste is fed to pigs. High investment areas of diversification seen among respondents included commercial composting, poultry processing and state-approved livestock slaughterhouse operations. These larger related operations contributed significantly to producers' assessment of economic viability.

Profitability is a goal for producers, but not the primary reason they had chosen to raise livestock. Hudson Valley producers frequently spoke about the desire to live a lifestyle that involves animal production. This lifestyle choice is based on an ideology that defines Hudson Valley producers and their farming methods. This might also explain all or some of the reticence to scaling up, as well as the complexity of entering a supply chain focused on New York City.

The ability of small meat producers to operate a profitable business is not unique to the Hudson Valley. A survey of niche meat processors in North Carolina completed in 2013 asked beef, pork and chicken producers about their economic viability.⁴⁹ About half of the respondents said they are making a small or comfortable profit on their niche meat operations, while the other half said they are not, or barely breaking-even. Those reporting a 'small profit' said only 11% of their household income is derived from their meat operation; those making a 'comfortable profit' reported that 20% of their household income is from meat production.

That survey looked at profitability by species and found that there are no significant differences in profitability per species. The survey did show that operation size (measured by value of the meat harvested in the prior year) is related to greater profitability. This is true regardless of whether the producer was selling direct or wholesale. It is not as clear whether certifications, such as Animal Welfare Approved (AWA) made a difference; larger producers are more likely to report profitability but also more likely to hold certifications. The survey did not analyze results based on farm diversification. As with Hudson Valley producers, the survey found that North Carolina producers are interested in being profitable, saving for retirement and leaving off-farm jobs, but they also have non-monetary measures of success.

Scaling up and diversifying could increase economic opportunities and the potential for long-term viability of niche meat producers. One way to develop this theory would be to engage a small number of producers, across a spectrum of farm size and animals (diversified and not), to participate in an experiment. This would include agreement to share the detail of their operations, finances, markets and practices, over the course of multiple years, with a researcher who specializes or is knowledgeable in this sector. An economic sustainability case study could then be created for this region in real-time.

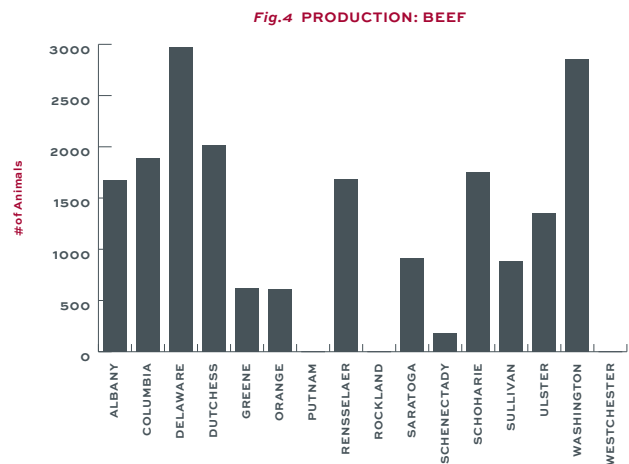
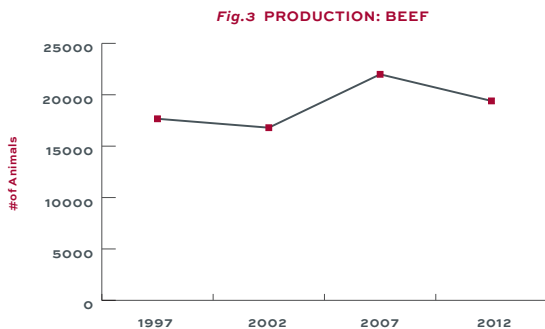
Production

Beef

Seventy-five percent (75%) of respondents raise cattle. Eleven of them also raise sheep, six raise goat, and seventeen raise pigs. Thirteen are also raising poultry (egg layers or meat birds).

Animal inventory ranged from 20 to as many as 500. Fourteen respondents had over 100 head of cattle. The average number of cattle on farms included in this report was 138; the median was 110. The average producer slaughtered 40 cattle per year; the median was 24.

According to the 2012 Agriculture Census, 19,402 beef cattle are being raised in the 16 counties covered in this report. This is an overall increase from 1997 to 2012, but nearly a 12% decrease from a high of 21,989 in 2007. Within this area, beef cattle inventory is highest in Washington County and Delaware County, followed by Dutchess, Columbia, Schoharie and Rensselaer counties.



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

BREEDS

A variety of breeds were raised for meat. Several producers raising Black Angus also have a genetics (breeding) operation. Black Angus are perceived to be less docile than other breeds, but, as one producer explained, Black Angus commands a premium at auction and for calves. Producers do not appear to be selecting breeds for any consumer preference.

Hereford, Hereford crosses, and Red Devon are also raised by producers in this study, along with less common breeds like Murray Grey and British White. Red Devon is viewed as a breed that has physical characteristics typical of last century's beef cattle and perhaps more likely to gain weight well on grass. According to a researcher at Cornell University, there is no definitive research supporting the idea that particular breeds are better suited for grass, but body shape and size may in fact support this idea.⁵⁰ A study of grassfed beef production in Iowa stated that smaller framed cattle were recommended for grass feeding compared with medium-frame cattle that are used in conventional operations.⁵¹ In that study, the smaller frame led to lower production costs relating to feed, but also lower finished weights and income overall.⁵² Hudson Valley producers are looking for animals that are easy to handle and a body size and shape that are suitable for grass feeding.

PRODUCTION METHODS

Feeding practices vary among Hudson Valley producers for beef animals. All respondents are concerned with the health and welfare of their animals and the health of the soil in their pasture and hayfields. All of them are grazing beef on pasture for as long as the weather permits. For most, feed in the form of stored forage (hay, haylage and baleage) are started only when grass is no longer growing and animals require supplemental nutrition, although a few producers supplement with grain throughout the year. Some of them are making extra efforts to extend the grazing season as long as possible by looking at soil fertility, types of grasses growing and rotational grazing practices that maximize pasture growth. Twenty-five producers are rotationally grazing between three times per day to every five weeks, depending on pasture condition and feed supplementation. Rotations of one week or less are most common, again, depending upon pasture conditions.

Grass-finished beef are typically finished between 24 and 30 months of age, and producers aim to slaughter in the fall in order minimize winter feed costs and slower weight gain associated with colder weather. Other reasons producers may not want to slaughter in the winter include lack of access to retail opportunities, such as winter farmers' markets, and the cost of infrastructure necessary to store frozen product. Producers are also concerned about allowing the animals to reach the age of 30 months, as regulations require the backbone to be removed beginning at that age to minimize risk of bovine spongiform encephalopathy (BSE) in humans, thus limiting the availability of desirable cuts and their associated monetary value.

Grassfed beef producers look to a number of sources near and far for information and support. Many of the producers we spoke with describe local support as willing and available but not as knowledgeable as renowned national experts such as Joel Salatin and Troy Bishopp, both of whom were mentioned repeatedly as sources of inspiration and support. Holistic Management International also provides research and resources pertinent to the concerns of producers for animal and soil health, as do grazing publications.

Nine out of 30 beef producers include grain as part of their feed program. Some are grain finishing while a few are feeding grain or corn silage throughout the year as a feed supplement. One producer, not characterized as grain feeding in these numbers, is following holistic management practices, allowing his grasses to go to seed as part of a pasture restoration program. He suggested that as a result, his cattle are also getting some grain in the form of grass seed.

For these producers, grain is a supplemental feed and not the primary diet for the cow. These producers believe that the grain is necessary to achieve cattle weights and to provide consistently high-quality beef that meets consumer expectations for taste. These producers are not alone in this belief; Cornell University researchers, along with at least one New York City retail butcher specializing in local meat, believe there is a role for grain in the diets of Hudson Valley cattle.

Producers feeding an all-forage diet are concerned with the growth, weight and quality in fat of their animals. They noted that simply turning a cow out onto pasture is not sufficient to ensure meat quality. Poor quality pastures will not provide sufficient nutrients or allow for adequate weight gain. These producers believe that the reputation of their products is threatened by poor quality of some 100% grassfed beef. Similarly, slaughterhouses note inconsistent quality in carcasses and are able to identify, by name, producers who provide a 100% grassfed product that is consistently high in quality.

A few producers have decided that growing hay and hay products is not economical for them and choose to purchase stored forage. One concern with this approach is the difficulty in finding high quality forages for winter feeds, and there are similar issues of quality for those growing their own stored forages.

SPECIFIC CHALLENGES

Beef producers spend a great deal of time or expense making or purchasing stored forages. Those who are making their own require the land and equipment to grow and harvest it. Those purchasing stored forage have a significant out-of-pocket expense. Stored forage quality varies and beef cattle need high-quality stored forage to be finished or to maintain weight during the winter. It is not a given that ruminants lose weight during the winter, nor that quality cannot be achieved by eating stored grasses in the winter.

A small number of beef producers feed corn silage they produce themselves and/or grain, which is typically purchased. These producers are not exclusively feeding corn silage and/or grain to their animals (or livestock), but using it as a supplement. These producers feel strongly that supplementation is necessary for beef to gain or maintain weight during the winter.

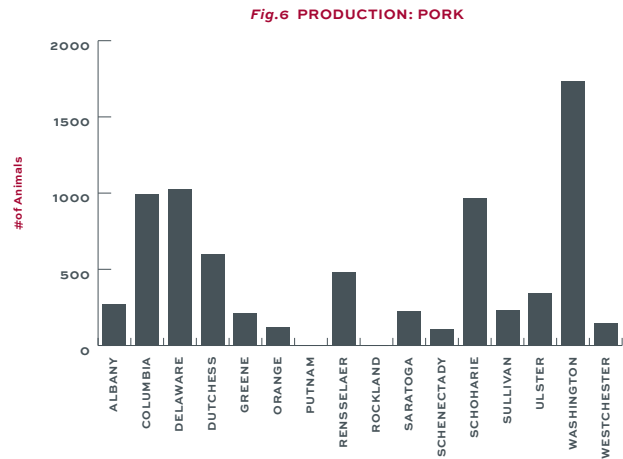
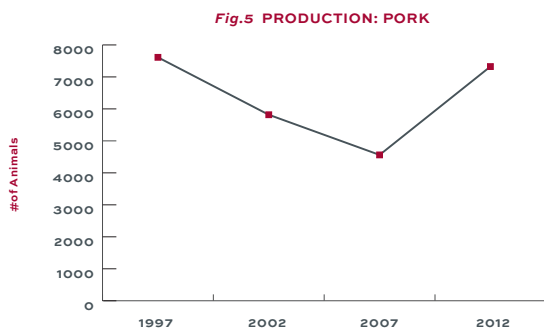
The issue of winter weight gain emerged as a critical challenge for Hudson Valley beef production. Slaughterhouse bottlenecks in the fall are significant, in part, due to producers wanting to bring in their animals before the winter to avoid both weight loss and the cost of stored forage. Meeting the challenge of wintering beef cattle could significantly help to alleviate the fall slaughterhouse bottleneck. Producers are looking for assistance with region-specific grazing plans from a reliable source that is consistent with their beliefs about animal agriculture.

Pork

Twenty-one respondents were raising pigs, but none were doing so exclusively. Seventeen were also raising beef (81%), 13 were also raising sheep, and 14 were also raising poultry.

Some farms have as few as four pigs and others as many as 350 pigs on-farm at one time. A typical pork producer raised and slaughtered at least 35 pigs per year. In contrast to grassfed beef, which is slaughtered between 24 to 30 months, pigs are typically slaughtered under one year of age.

According to the 2012 Agriculture Census, pig production in this sixteen-county area increased by 61% from 2007 to 2012, rebounding to levels not seen since 1997. The 2012 pig inventory for the region was 7,324. The majority of pigs are in Washington County, with a single producer in this group accountable for a significant part of that production. Schoharie, Columbia and Delaware counties also contribute to pig production in the region.



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

BREEDS

Most producers in the Hudson Valley are raising heritage breed pigs, finding high consumer demand for these specialized breeds. However, finding breeders for heritage breeds was identified as a challenge for several producers, and only a few producers breed their own pigs due to the high risk involved in farrowing.

PRODUCTION METHODS

Most respondents raise their hogs outdoors, providing them with access to pasture, rooting space and shelter. In diversified operations, pigs are not typically in a rotation with any other animals but instead rotate through land designated specifically for them, often selected because it is not suitable for crops or ideal for pasture. Pigs like wooded areas and producers may rotate them through woodland, where available.

Pigs vary significantly from beef in dietary needs: pigs are not ruminants and get very little of their diet from foraged grasses. The primary diet for pigs in the Hudson Valley is commercial feed comprised primarily of soy and corn grown in the Midwest. Some producers source grain that is milled locally when ordered, believing it to be fresher than commercial feed shipped from afar. These producers feel good about supporting local growers and having “a story” to tell consumers. A few producers purchase locally grown grains (typically corn) and pay a premium for it. A few grow their own grains. Many producers are interested in non-GMO or organic feed but find it prohibitively expensive and they do not believe there is a sufficient consumer market to support higher prices that would allow for this increased expense. Respondents who were certified organic grow their own feed, finding it less expensive and the only viable way to be organic. Although these producers receive a small price premium over locally raised pork at market, they do not believe that it is sufficient to cover the cost of buying certified organic feed.

A number of producers supplement hog diet with discarded foods. Whey, as a byproduct of cheese making, is a common supplement, along with the occasional unsalable cheese. Producers also feed vegetable scraps, either from their own vegetable production or picked up at the end of the day at farmers markets. A few are feeding spent brewer’s or distiller’s grains. One integrated operation provides their pigs with whey, cheese, vegetable scraps and day-old bread from their retail bakery. However, finding and transporting supplemental feed takes time and resources and not all farms are able to work out suitable arrangements.

Two pork producers are raising pigs on silvopasture.⁵³ One producer described clearing land beneath the tree canopy and planting turnips and sugar beets as supplemental feed for pigs. The pigs eat all of the plant including the stem and root. Any roots that are not eaten then rot and aerate the ground, providing relief from the hard trampling of the soil caused by the pigs. On this farm, some fruit trees and acorns from oak trees provide additional forage in the woods. A similar system was piloted at Glynwood, where sunflowers were planted in conjunction with turnips. The pigs ate all parts of the sunflowers and rooted up the turnips. However, the cost-benefit analysis of these types of strategies is not fully understood as part of the economic picture of raising pigs in the Hudson Valley.

SPECIFIC CHALLENGES

Pork producers are dependent on purchased feed throughout the year. There are few producers of grain feed in the region and most of them are producing a GMO product. Producers are looking for local, non-GMO, pesticide-free and, ideally, organic feeds. Feed of this quality is typically considered too expensive because it will require producers to raise the price of their pork beyond what they believe consumers would pay.

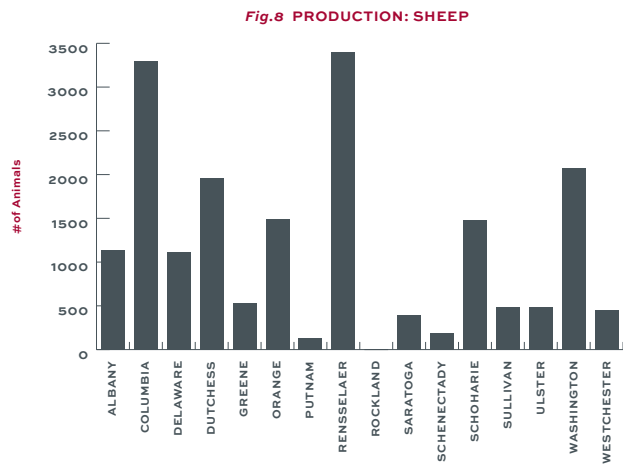
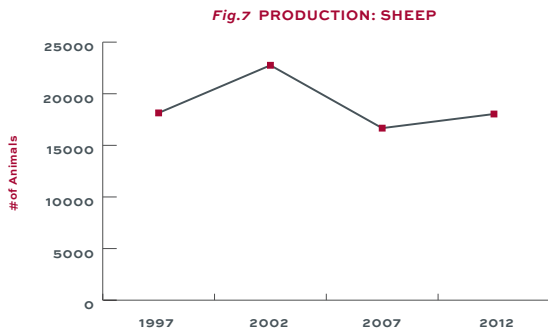
One economically viable pork producer very clearly articulated that he was not a sustainable operation, because he used feed that was not grown sustainably and was transported from the Midwest. He could not be economically viable if he used anything else. Pork producers have asked local grain producers if they would convert to a non-GMO product because very little is grown in the region, with mixed response. Several producers reported that grain growers were not interested; another reported that the grower had agreed to transition, but had not yet indicated whether prices would increase.

One pork producer feeds a commercial grain mix but has a unique rotation on highly maintained silvopasture and supplemental feed. The use of silvopasture is not limited to pigs. Other livestock may be beneficially rotated on silvopasture, which may provide shade from heat and shelter from inclement weather. A recent study by Cornell looked at opportunities for silvopasturing in the Northeast and recommended that livestock producers consider silvopasture for cattle, pigs, sheep and goats.⁵⁴ Many producers in the Hudson Valley have acreage in woodland and could potentially increase the size of herds and flocks if this land was utilized.

Sheep

Sixteen of 40 respondents are raising sheep. The number of sheep slaughtered ranged from zero to 300, with a middle range of 35 to 75. Almost all producers are raising one or more additional species for meat, including cattle, pork, goat and poultry.

According to the 2012 Agriculture Census, sheep production, like pig, has seen a surge from 2007 to 2012, albeit a more modest 8%. Again, 2012 inventory is consistent with 1997 inventory. Rensselaer and Columbia counties account for the majority of sheep and lamb inventory in the region, with some inventory in Dutchess and Washington counties.



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

BREEDS

A few producers are raising dual-purpose breeds (meat and wool) and none of the producers are utilizing sheep’s milk. Hair sheep breeds are believed to be easier to handle than wool breeds. Popular hair breeds include Katahdin and Dorper. Katahdin are a smaller breed, believed to gain well on grass and are reputedly very good for breeding. Wool breeds include Romney, Icelandic, Hampshire and Dorset. One producer was raising Herdwyc sheep, a wool breed from England prized for wool and able to withstand cold climates.

WOOL

One producer said that it cost more to produce the wool than could be earned from it, while two others are raising wool breeds because they have an interest in fiber and have not yet quantified the return on the investment. A third has found profit in selling pelts, where the wool alone was not profitable. Wool breeds are prone to fly-strike maggots and these producers believe tail docking is the most humane way to prevent the infection. Tail docking is prohibited by AWA, however.

PRODUCTION METHODS

All respondents are grazing their sheep and supplementing with hay in the winter. Three are supplementing with grain, but two plan to stop grain supplementation, whereas the third regularly supplements about 20% of the sheep's diet with brewer's grain.

All sheep are in some form of rotation, varying from daily to weekly. Those producers who are raising both sheep and cattle are nearly evenly split on whether the species are rotated sequentially or if they are rotated on completely separate parcels. One producer explained that managing a multi-species rotation was more labor intensive, and he lacked the necessary labor.

Producers can time their lambing cycle (and thus their time to slaughter) based on market needs, but some choose to breed so that they are wintering few animals, reasoning that they are 100% grassfed operations. However, other 100% grassfed operations pay for stored forage and bring animals to slaughter and market weekly.

SPECIFIC CHALLENGES

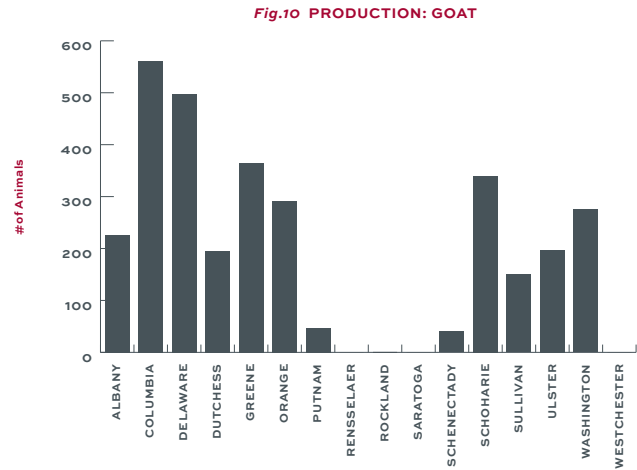
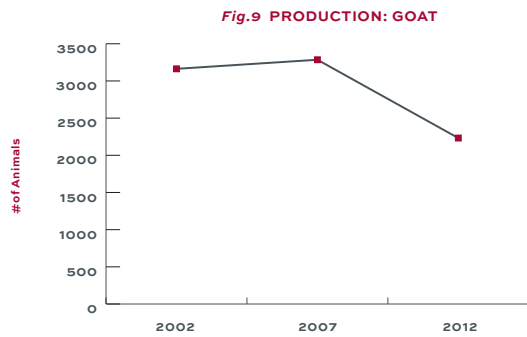
Fencing is a challenge for producers who report that sheep will go under many fences. Predators are another challenge and some producers keep guard animals (dogs or alpacas), or they bring sheep in at night. Sheep are susceptible to fly-strike, and practices commonly used to prevent this potentially deadly condition are inconsistent with AWA certification.

Goat

Eight of 40 respondents were raising goats. Inventory ranged from seven to 250 goats. Those who were serious about their goat operations were raising between 50 and 250 goats. Most goat producers were also raising sheep, many had beef, and a few had poultry.

Agriculture census data is only available for goats in 2002, 2007 and 2012. Unlike other meat livestock sectors, goat production in this area did not see a resurgence from 2002 to 2012, and instead has been steadily declining. In 2012 there were a total of 2,232 goats in the study area. Goat inventory is highest in Columbia and Delaware counties, with nearly half of the inventory split between them.

Producers were very specific when they talked about goats, expressing a clear preference for either goats or sheep. Others brought goats onto the property for specific purposes, to get into woodland and move toward pasture, or to improve soil fertility.



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

BREEDS

Goat producers are raising primarily Boer and Kiko breeds, with one producer raising cashmere goats and selling the kids for meat.

PRODUCTION METHODS

Goats were raised on pasture and often fed a commercial mixed feed; one producer uses a Nutrina stock feed and another uses a doe feed that is designed to meet specific levels of protein during pregnancy and lactation.

SPECIFIC CHALLENGES

Producers find that goats are susceptible to internal parasites. They also face challenges covering costs of operations, even simply the cost of feed. A survey in 2006 by Tatiana Stanton at Cornell Animal Science Department found that nine ‘new’ producers were unable to cover feed costs for their goat operations.⁵⁵ Goat producers are typically selling whole live animals and not participating in the more common retail and wholesale trade because demand is not believed to be exist.

Slaughter & Processing

Access to slaughter services has long been cited as a barrier to increasing meat production and growing the sector in the Hudson Valley. In 2013, the *Hudson Valley Food Hubs Initiative: Research Findings and Recommendations* included results of interviews with twelve Hudson Valley meat producers and concluded that, with five federally inspected slaughterhouses in the “core” Hudson Valley counties and an additional five in the adjacent counties, insufficient processing capacity remained a key barrier to growing the industry.⁵⁶

In New York State, meat sold at wholesale or retail must be slaughtered at a federally inspected plant. The USDA issues a “grant of inspection” (rather than a license) to facilities that meet federal regulations.⁵⁷ New York State-licensed facilities are used to slaughter animals for meat as a service to the animal’s owner, and cannot be made for sale. This is considered “custom exempt.” Producers in this study are engaged in wholesale and/or retail sale and require slaughter facilities that operate under a USDA grant of inspection. For that reason, the discussion of slaughter and processing services in this report is constrained to USDA inspected facilities.

Hudson Valley producers cite the need to book slaughter appointments at federally inspected facilities well in advance, as evidenced by a lack of slaughterhouse capacity. Organizations working to support farming and local food production want to know if sufficient slaughter and processing resources exist to support growth in the Hudson Valley of this sector. Interviews with processors and farmers for this report show that there is still capacity for service to Hudson Valley producers, but certain areas are underserved (due to distance to a processor, proximity to a processor that is operating at capacity or a lack of needed services in their vicinity). The practice of slaughtering in the fall creates a lack of seasonal capacity, yet leads to excess capacity at other times of the year.

There have been at least three studies since 2000 that looked specifically at the capacity for livestock processing in the region. The Hudson Valley Livestock Marketing Task Force’s Feasibility Study (conducted by Shepstone Management Company in 2000) attempted to

quantify capacity, utilizing USDA directories and operator interviews. That report found 23 large animal slaughterhouses within a 75-mile radius of Hudson, NY (Columbia County). Most were very small operations with no plans to expand due to limited space, facilities or interest, and no generational succession plans. Of the 23, just four were considered large operations, three were recently closed or planning to close, seven reported they could take some amount of new business/animals, and just one reported plans for expansion. The report's analysis concluded that despite this characterization, there is "significant unused slaughtering and fabrication capacity" in the region but that most of it is located at the periphery of the report's geographic area of focus: "It is not especially convenient, though it is accessible."⁵⁸

In 2004, research on the Hudson-Mohawk region included interviews with 31 USDA certified meat processors across New York State. Of these, 50% indicated that they did have space for additional custom processing.⁵⁹ Only 6% said they had no additional capacity; 42% said that additional capacity would depend on several factors (though the study did not identify those factors). Just 20% of respondents indicated that their business was currently growing or that they wanted to expand. Processors in this study detailed marked differences from week to week in how many animals they slaughter: for cattle, five cows was a slow week, while 375 represented the high end of demand for services. The range was even more dramatic for hogs and lamb, with five animals being the low end for both species and the high being 600 pigs and/or 500 goats.⁶⁰

A 2011 paper on assessing slaughter capacity in New England did not include New York, but addresses a region of similar geographic scale, as well as a slaughter and processing industry similar to that of New York. Seeking to quantitatively demonstrate the lack of processing services that producers so often decry, the paper found that, in 2009, just 38.5% of New England slaughter capacity was utilized, due to two key factors: the seasonal nature of the business (with substantial "slow" seasons) and a lack of a dependable, willing and trained labor force (48% of processors said that difficulty finding good labor was their key challenge.) This labor shortage, as reported, constrains facilities from running at higher capacity year-round because workers are high in demand, low in supply, and expensive and difficult to train. Many slaughter facilities keep staff small because they must employ them year-round, despite the notable slow-downs. Anecdotally, one survey respondent told researchers that he was paying his processing crew to paint his house to avoid seasonal lay-offs, recruitment and training.⁶¹

Despite this low utilization number (38.5%), the New England assessment concludes that in the long term, additional processing capacity will be needed to support growth in the livestock

industry. Notably, the research did not include spatial analysis to indicate whether existing infrastructure is located in a way that makes utilization reasonable or cost-effective for New England producers.

The New England assessment also goes into some detail about the difficulties involved in measuring slaughter capacity, noting that, to gauge capacity, researchers must merge state, federal and private data, e.g., comparing USDA and state reports on actual animals slaughtered with facilities' self-reporting on daily slaughter capacity. Researchers also noted that data on processing (in a slaughterhouse or beyond) is not gathered at the federal or state level. Therefore, assumptions must be made about how much of the meat that is slaughtered in the region is also further processed there.⁶²

Despite the difficulties in measuring slaughter capacity, these prior studies all found that there was insufficient capacity for slaughter and processing during the fall season. The Food Hubs Initiative report described producers' difficulty scheduling slaughter slots in the fall season. The 2004 Mohawk-Hudson research noted the same seasonal capacity pressures, from both producer and processor perspectives.

The most detailed data on slaughterhouse scheduling, from processors' perspective, came from the New England capacity assessment: 68% of respondents said they had "adequate" demand for their services year round; 18% had more demand than they could meet all year; and 9% had insufficient business for most of the year. In an open-ended question, 30% said that the seasonality of the industry (or efforts to keep business consistent year-round) is their greatest challenge. There is excessive demand in the late summer and early fall because of producers' incentive not to keep and/or manage large herds over the winter, which also coincides with the prime direct-to-consumer marketing season. Between one-quarter and one-third of facilities required six to twelve months advance notice for a slaughter slot between July and December, while more than 80% of facilities could take new customers with less than one month's notice between January and June.⁶³

Narrowing in on the Hudson Valley (but with data now sixteen years old), the Hudson Valley Livestock Marketing Task Force found 23 slaughterhouses within a 75-mile radius of Hudson, NY. At the time of the study's publication, one was closing down and two were rumored to be shutting down operations. Of those that were operational, 17 offered slaughter, processing and boning; one offered slaughter and processing; two offered just slaughter; one offered no commercial services at all.⁶⁴

Across reports, while building new infrastructure is discussed as one solution to the capacity problem, more often reports conclude that efforts should be focused on increased coordination, organization and communication among producers (particularly those of small scale) and between producers and processors to make the best use of existing infrastructural capacities — particularly in the winter, spring and early summer, when most are underutilized. Rather than building from the ground up, the Hudson-Mohawk research proposed leasing existing facilities’ “second shift,” or creating a partnering entity that would invest in the cold storage, labor or training to create additional capacity in the times of greatest demand.

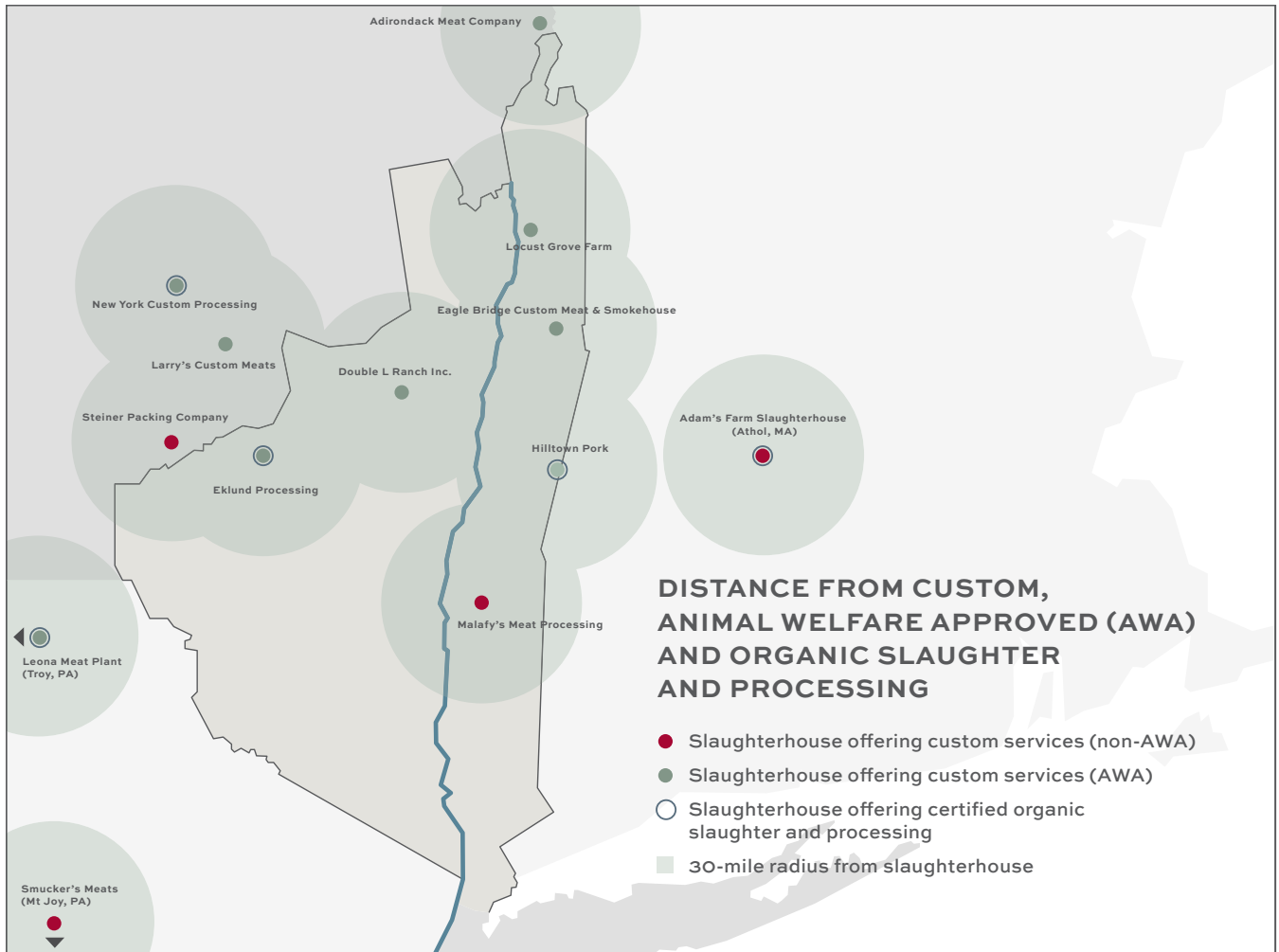


Fig.11

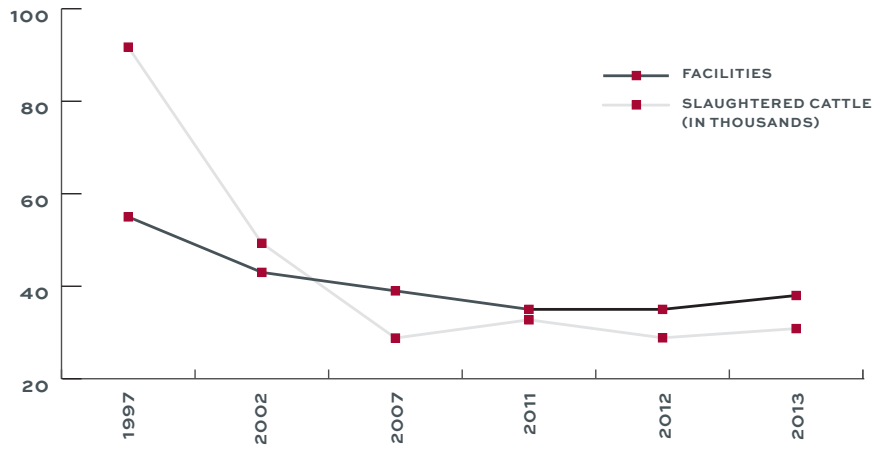


Fig.12

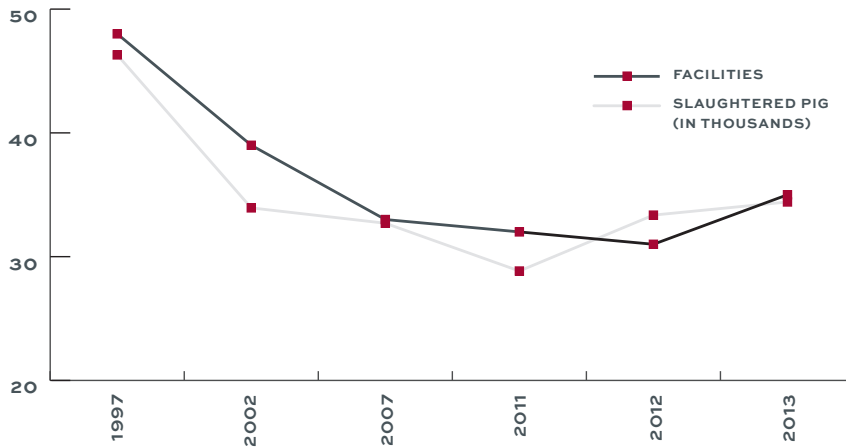
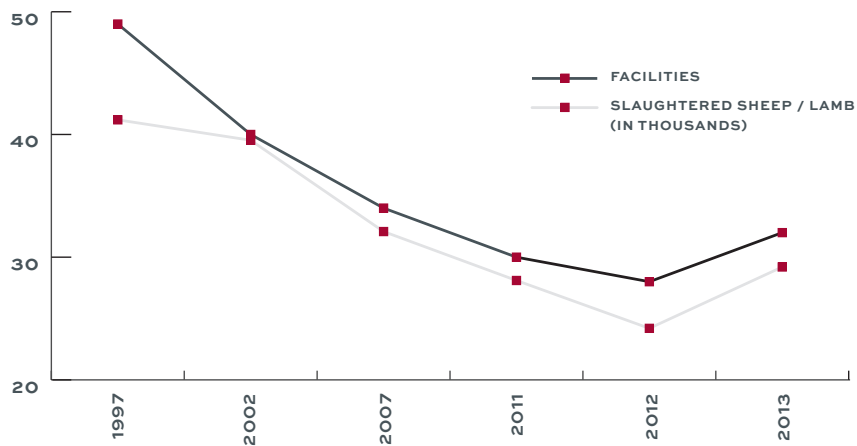


Fig.13



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

CURRENT SLAUGHTER AND PROCESSING CAPACITY

Qualitative interviews were conducted with five slaughter and processing facilities serving Hudson Valley producers. Additional processors were contacted to gain information on capacity and throughput. Not all processors were willing to speak with the research team, about whom additional, anecdotal information was gained via third parties who reported their experience and conversations with those processors.

In addition to the lack of cooperation from processors, as indicated in earlier studies, there are significant challenges in the collection and analysis of data relating to slaughter capacity and comparing it to animal inventory in the region in order to quantify current slaughter and processing capacity.⁶⁵ Accordingly, this report focuses primarily on qualitative information collected from interviews in order to identify recommendations that relate to slaughter and processing services. Data for USDA slaughterhouses in New York State, along with the number of slaughters by species, is illustrative but not conclusive for the region.

From 1997 to 2007 the number of USDA inspected slaughterhouses in New York State steadily declined, with a corresponding decrease in the numbers of animals slaughtered. Figures 11-13 (page 62) show USDA approved slaughterhouses in New York State from 1997 to 2013 by animal approved to slaughter, illustrating an uptick in licensed facilities. Alongside the number of facilities is the number of animals slaughtered in the state, in thousands.

These numbers show that the number of facilities correlates to the number of animals slaughtered, presumably reflecting corrections in supply and demand. As the number of beef cattle slaughtered increased in 2011, the number of USDA facilities in the state slightly increased by 2013, potentially indicating a response to market demand for slaughter services. Similarly, there appears to be a market response to the need for hog slaughtering services in the last few years. A steady increase in the number of sheep and lamb slaughtered appears to be in process of market correction. That the number of processing plants appears to respond to supply and demand for slaughter services is particularly interesting, given the high cost of infrastructure and regulatory context in which these facilities operate.

There are limitations to this data: it does not show geographic distribution within the state (geographic market), nor narrower (and more accurate) markets for specific processing services, or animals moving in and out of New York State. Data specific to Hudson Valley counties is not easily accessible. Additional data was sought to compare the Hudson Valley's animal inventory per county to the number of processors serving those producers, but FSIS was unable to provide historical listings of approved slaughterhouses.

The map on page 61 shows USDA slaughter/processors in the study area, as well as USDA slaughter/processors outside the study area used by producers we interviewed – a total of 13 operations. Producers indicate traveling great distances (up to four hours) to reach a slaughter/processing operation that meets their needs. Understanding that producers will be traveling with trailers on small country roads with lower speed limits, we have chosen to represent a thirty-mile radius surrounding each processor, estimating approximately one hour travel distance.⁶⁶

Capacity for slaughter has varied since the Shepstone study (see page 58), with overall capacity increasing. Consistent with the USDA data for New York State, the Hudson Valley gained additional capacity in the late 2000s. In 2010, the Northeast Livestock Processing Service Company abandoned plans to build a processing plant, citing a 12,300 beef equivalent increase in regional slaughter capacity as a result of four slaughter/processing facilities receiving USDA approval: Eagle Bridge, New York Custom Processing, Larry's Custom Meats and Local Infrastructure for Local Agriculture's (LILA) moveable slaughterhouse that was active at the time. Since then,

Fig.14

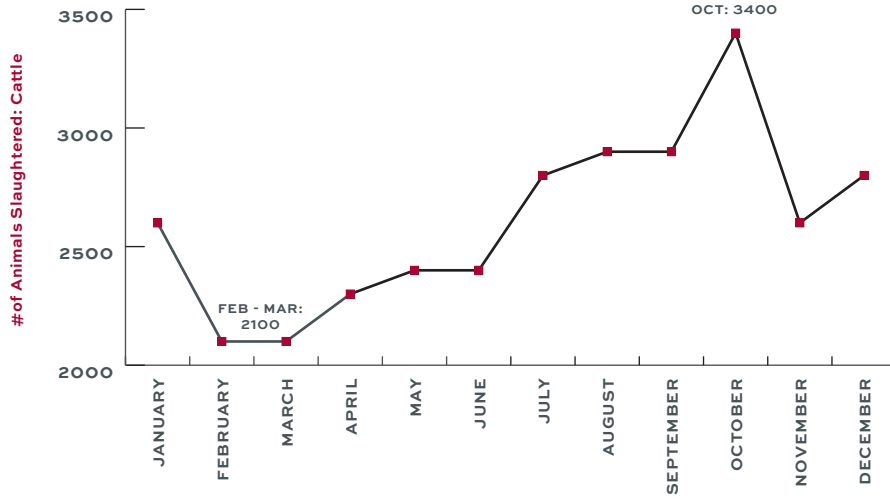


Fig.15



Fig.16



Source: 2012 Census of Agriculture, USDA, National Agricultural Statistics Service.

Eklund has opened and Malafy's has obtained USDA approval, adding 4,264 beef equivalent and 2,080 additional pork to the regional capacity for USDA slaughter in New York State. There are currently eight USDA slaughterhouses in the study area, and there are discussions for new facilities in Sullivan and Westchester counties and conversations in Dutchess County.⁶⁷

Despite these recent additions, some slaughterhouses within the study area are operating at capacity and require booking appointments as far as one year in advance, particularly for summer and autumn dates. Some can accommodate appointments within a few weeks at all times but the busy autumn season. All operators have the ability to operate a second shift or open on weekends but do not have the desire to do so. Some could expand slaughter operations but lack additional hanging space and/or time to process those animals.

Processors face challenges in their operations, including the high cost of entry, seasonal fluctuations in demand and a shortage of skilled labor. Because they need highly skilled workers, hiring additional labor for busy seasons is not an option for the processors. They must instead train and maintain staff all year. The need to support full-time, year-round staff leads to a need to operate at or near capacity for as much of the year as possible. Staffing for busy times without the ability to evenly spread demand is not financially viable for slaughterhouse operators. As a result, a variety of business models have evolved in the region.⁶⁸

As shown in Figures 14-16 (page 64), USDA data for New York State slaughter is consistent with qualitative interviews with producers and processors. Cattle slaughter is 62% higher in the fall than the low point in the winter, and pig slaughter is 70% higher. Lamb is somewhat different, with a large spike in the spring, but otherwise experiences a 43% drop off from the median slaughter of 4,150 animals/month. Small-sized Hudson Valley processors may feel extremes greater than the state numbers, with few large producers slaughtering animals on a monthly schedule. It's expected that these larger operations use regular monthly slaughter dates as compared to smaller processors.

Slaughterhouses in the Hudson Valley have a variety of business models that help to regulate the demand for their services. Some are owned and operated by a producer and serve only to process his or her animals. Others process their own animals and accept custom work to even out supply. Yet another model is a USDA conversion and expansion from a New York State custom deer processing facility that is now accepting USDA custom work, to the extent that it does not interfere with deer season.⁶⁹

The mere presence of a USDA slaughterhouse and quantifications of its throughput and capacity for slaughter does not tell the full story about producers' need for services. Not all slaughterhouses offer the same processing services and the majority of producers look to the slaughterhouse to provide a variety of services in addition to slaughtering.

Prior studies discuss slaughter and processing as commodity services, simply noting that there are a range of business models, services and quality. The distinct services offered are not simply value-added, but constitute separate markets. Looking at slaughterhouses as offering a commodity service fails to show supply and demand for specific markets and does not address whether there is sufficient competition in each market area to foster high quality services, innovation and price competition.

Producers selling at retail require a range of services relating to retail cutting, so-called "value added processing," which includes packaging and labeling that is not needed by producers selling animals as whole, half or quarter at wholesale. Producers selling retail, e.g., at their own farm store, at farmers markets or through a local retail outlet,

typically require a full range of services, including those services that further process the animal into retail cuts, sausages (fresh or cooked), smoked products, shingle wrapped bacon (pork producers) and patties (beef producers). They also require retail packaging including Cryovac® packaging for all cuts (including cuts with bones), labels showing weights, farm name and logo. These services are not interchangeable or substitutable. If one processor offers the needed service, a price increase of five or ten percent will not prompt the producer to switch to a processor who does not offer that service. Based on this analysis, the market is not as broad as ‘slaughter services.’⁷⁰ The market for slaughter and processing services is at least as narrow as wholesale and retail services, but is conceivably even narrower, with producers unable to switch processors despite significant price increases because a specific service, such as logo labeling, is required.

Gaps in slaughter and processing services appear by region, with Sullivan, Orange, Putnam and Westchester counties lacking any nearby USDA slaughterhouses that offer additional processing services. Processors offering full-service retail processing – which we have defined in this report as including vacuum packaging, labeled weights, slaughter of all four species addressed in this study (beef, pork, lamb and goat) and smoked pork products – are limited to the northern reaches of the Hudson Valley, forcing producers in southern counties to choose between long distances or less service. Slaughterhouses offering certified organic slaughter are the most limited, with only five of 13 operations offering organic slaughter and processing. AWA certified slaughter services as well as lamb slaughter are also limited, with the southeastern parts of the region lacking convenient access to services.

Similarly, quality of services can place service providers in different market segments. Respondent farmers cited specific quality concerns in their decision to use or switch from a given slaughterhouse; some will drive hours to find a processor who meets their quality requirements and are willing to pay a significant premium.⁷¹ This problem is not new: in 2000, The Hudson Valley Livestock Marketing Task Force report noted that, of the 23 Hudson Valley processors, six were reputed to do high-quality work (note: this was recorded anecdotally and not systematically⁷²). In addition to scheduling challenges, farmers interviewed in the Food Hubs Initiative report noted frequent quality issues with processors’ finished product, such as cuts’ appearance and final weight, both of which negatively impact pricing.

Using narrower market definitions, some markets need additional processing services or improvement in quality of processing. The lack of competition for services and the large number of small customers gives processors little incentive to improve the quality of their services or invest in additional service areas.

COST OF SERVICES

Pricing of slaughter and processing services varies across the region.

Processing charges vary from 50 to 90 cents per pound, depending upon the slaughterhouse. Additional charges are for packaging and labeling, and value-added services such as sausage and smoking. Hides are typically retained and sold by the processor as part of the ‘kill fee.’ Producers wishing to retain their hides may do so for an additional fee. Producers will typically indicate on their cut sheet if they have a desire to retain specific offal, e.g., liver, kidneys or heart, and other parts such as the tongue and trotters (from pork). Remaining products, such as tripe, intestines, stomach, rumen, bone and blood, are picked up by a rendering facility, sometimes either paying the processor for it or charging them for removal service, depending upon market fluctuations in the value of rendering products.

Commodity producers profit from the “drop credit,” the price received by the processor from a rendering company for the hide, blood, bone, head and organs. These parts have significant value, estimated to be between \$30 and \$120, depending on the market for the product. Large processors in the Midwest clean and aggregate product for pet food or for international markets where products such as cow lips and tripe are valued. Potential markets for such parts, such as pet food and international sales, could provide increased income to producers and processors.

Small processors, like those serving Hudson Valley meat producers, reported that they do not have cost-effective methods for cleaning these parts.⁷³ Plans for Hazard Analysis Critical Control Point (HACCP), a management system for addressing food safety, are required for all work at the facility – particularly for anything relating to cow heads, which carry special risks related to the transmission of bovine spongiform encephalopathy (BSE). Labor costs for cleaning small quantities of tripe and intestine are higher than resale values. Rendering facilities serving processors in the Hudson Valley area vary by whether they charge the processor to remove rendering or pay the processor, based on fluctuations in those markets. As of 2012, fourteen cattle plants constituted the majority of the U.S. slaughter market, twelve for hogs and four for sheep and lamb. These companies also serve as retailers or brand-name wholesalers. Most small plants process less than \$10,000 worth of beef, while a large plant can process up to \$1 million.⁷⁴ This contrast underscores limitations on small producers to aggregate and market meat parts.

A better understanding of these processes and markets is needed in order to determine how a niche meat sector can contribute profitably to these markets.

Producers cite the high cost of processing as a significant challenge to economic viability. Processing costs can be nearly one-third of the production cost for beef, not including producer labor. Several producers indicated that they believe the processors are overcharging, while others said they don’t think “processors are getting rich.” Regardless of processors’ income, the research shows that processing pushes the cost of retail cuts to the point where producers believe they cannot charge higher prices and fear that market opportunities are limited.⁷⁵

Sales & Marketing

Hudson Valley meat producers sell their products through a variety of channels. Beef and pork are sold directly to consumers on-farm, through CSA membership (consumer supported agriculture), at farmers' markets, and wholesale direct in quarters, halves or retail packages. Beef is also sold through producer cooperatives⁷⁶ and both beef and pork are sold through distributors and wholesalers.

Producers are selling live lamb to individual distributors who sell directly to consumers for religious holidays. Some of these are slaughtered at slaughterhouses in Queens and marketed specifically to Muslim communities seeking Halal meat.⁷⁷ Slaughtered lambs are sold direct to consumers and restaurants whole and in halves, and in retail packages.

The market for goat meat is not as developed as other meat sectors. Unlike beef and pork, most producers interviewed were selling goats live, either directly to consumers or to individuals and companies who either resell into unspecified ethnic markets or slaughter and sell to their own customers. Producers identified different ethnic groups, including Mexican, Italian and Greek, who consistently buy live goats. Producers did not specifically identify the Muslim market as an outlet for their animals. One producer reported that a colleague selling at a Greenmarket in New York City has no problem selling goat meat. Producers believe that there is potential for a high-end market if properly developed by chefs. Producers also believe there is economic potential for goats, with the ability to raise seven goats on a single acre that can produce twelve kids, which can be sold within six months for \$1,000. More understanding about the demand and markets for goat meat is required in order to support these producers.

Selling live animals at auction was viewed as a last resort, used primarily for culled animals, and resulted in a significant loss on investment. Few producers we spoke with were selling directly to institutions.

Sales, marketing and distribution often fall outside a producer’s expertise and interest, and takes considerable amounts of time. Wholesale opportunities could support these producers.

Several wholesale channels allow producers to sell their whole animal to a member-based cooperative, or a Hudson Valley-based distributor, for a set rate per pound based on hanging weight. The work to find buyers, handle orders, schedule slaughter appointments, pick up meat from slaughterhouses and deliver it to wholesale clients is all taken care of by the co-op or distributor. This model transfers many operational and logistical components that are challenging to producers to a third party. Aggregation provides market power with slaughterhouse and transportation services, and allows sufficient quantity to meet larger buyers’ needs. Producers participating in these arrangements do not all believe that the price paid per pound is sufficient to cover the cost of production. Downward pricing pressure from commodity meat and larger grass-based cooperatives outside of the region is believed to constrain the price that buyers are willing to spend.

FOUR MODELS IN THE HUDSON VALLEY

1. Member-based marketing cooperative

Adirondack Grazers buys beef from members at a set price based on the hanging weight. The organization books appointments for slaughter and handles all aspects of sales, marketing and distribution. Restaurants, butcher shops, grocery stores and specialty retail markets buy wholesale. Members do not pay fees to the cooperative; the price paid to each member via charges to the buyer covers the cost of the coop’s operations.

2. For-profit food distribution company

Hudson Valley Harvest focuses on foods produced within the region. Meat is sold under the Hudson Valley Harvest label, which also includes the name of the individual farm. Like Adirondack Grazers, the company purchases meat based on the hanging weight and is responsible for sales and distribution.

3. Farm and food distributor

Lucky Dog (Delaware County) sells regional products into New York City, including meat. Unlike Hudson Valley Harvest, it does not take ownership of the product but merely acts as a distributor – charging the producer a fee for the distribution services.

4. Aggregator/Broker

Slope Farms, owned and operated by Ken and Linda Jaffe (Delaware County), aggregates product from multiple producers in order to access larger markets. They function as brokers, paying their producers a contracted price set as a percentage over USDA commodity pricing. They work with 14 producers in surrounding counties, with the majority of the product – all under the “Slope Farms” label – marketed wholesale to NYC retail, butcher shops and restaurants.

Although less common, some farms are successfully selling wholesale direct, some selling live animals and some selling whole, halves or quarters after slaughter. One goat producer sells a significant portion of his goats to Heritage Foods USA each year as part of its “No Goat Left Behind” promotion.⁷⁸ A lamb producer indicated that most of his production was purchased by just a few buyers who, he believed, were re-selling to New York City

retail markets. In both of these examples, the buyer is purchasing live animals, scheduling slaughter and all other aspects of distribution and sale. These buyers are purchasing from a range of producers and have regular slaughter appointments. The producer may take a lower price on a live animal but save on slaughter, sales, marketing and distribution expenses. The “middleman” has more market power to schedule slaughter appointments and provide customers with consistent supply.

Several farms have direct relationships with restaurants and are selling slaughtered animals (whole, half or quarters) wholesale direct. These restaurants have chefs who know how to further break down the animal and have menus that allow them to use all of the parts of the animal and/or utilize the animals only as menu specials, in order to manage differences in the number of each part of the animal. Having a commitment from a chef or restaurant group can help a producer commit to regular slaughter dates and scale-up production to meet the purchaser’s requirements, but also comes with risk that the purchaser changes their mind and the animal no longer has a confirmed market.

Several producers who considered themselves to be close to economic viability are selling to regional meat CSAs or CSAs in New York City. This allows the producer to garner retail prices, but they also pay significantly higher processing costs involved in retail cutting and packaging. They are also storing frozen meat, packing meat for the CSA, and making deliveries.

On-farm retail sales have similar costs to CSAs (minus the costs of delivery.) Some producers sell to consumers who wish to buy in bulk at prices close to wholesale, preparing high-volume mixed boxes for sale, ensuring sale of the whole animal and minimizing retail traffic. Other farm stores operate more like small markets, offering a variety of products made on nearby farms for sale along with its own production. Sales of meat this way are of lower volume per transaction and more akin to farmers’ market sales.

Many producers were not interested in participating in farmers’ markets, stating that the time commitment is too great. These producers are more likely to participate in on-farm retail sales and a CSA. The CSA commitment ameliorates much of the risk associated with farmers’ market trade and eliminates the time commitment required to attend markets.

A few producers are purchasing live animals from other local producers and, in order to achieve and support higher volume sales, finding a profitable margin acting as the aggregator and middleman for sales, marketing and distribution.

Endnotes

- 1 Commission on Industrial Farm Animal Production. "Putting Meat on the Table: Industrial Farm Animal Production in America," Pew Charitable Trusts and Johns Hopkins Bloomberg School of Public Health, April 2008, 5.
- 2 Ibid, 6-7.
- 3 Genetically modified organisms (GMOs) can be defined as organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination. The technology is often called "modern biotechnology" or "gene technology", sometimes also "recombinant DNA technology" or "genetic engineering". It allows selected individual genes to be transferred from one organism into another, also between non-related species. World Health Organization, "Frequently Asked Questions: Food Technology," accessed June 2016.
http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/
- 4 Reported as 14.5% in 2007 by the FAO. Food and Agriculture Organization of the United Nations. "Tackling Climate Change Through Livestock: A Global Assessment Of Emissions And Mitigation Opportunities," 2013, 15.
- 5 Nicolette Hahn Niman. *Defending Beef: The Case for Sustainable Meat Production*. Chelsea Green Publishing, October 31, 2014, 38-40.
- 6 Carbon sequestration is thought to be the mechanism with the greatest mitigation potential for GHG emissions generated by the agricultural sector. See Glossary for a definition.
- 7 Jerry D. Glover, Cindy M. Cox and John P. Fitzgerald. "Future Farming: A Return to Roots?: Large-scale agriculture would become more sustainable if major crop plants lived for years and built deep root systems." *Scientific American*, 2007.
- 8 Niman, 25-28, 30.
- 9 Brian DeVore. "Making Diversity Pay Its Own Way." Land Stewardship Project online blog, July 14, 2013.
<http://landstewardshipproject.org/posts/476>
- 10 Allan Savory. "Restoring the Climate Through Capture and Storage of Soil Carbon Through Holistic Planned Grazing." Savory Institute, 2013.
<http://savory.global/assets/docs/evidence-papers/restoring-the-climate.pdf>
- 11 Linda Coffey. "Benefits of Multispecies Grazing," *Appropriate Technology Transfer for Rural Areas (ATTRA)*, National Center for Appropriate Technology, June 2001.
- 12 Cynthia A. Daley, Amber Abbott, Patrick S. Doyle, Glenn A. Nader and Stephanie Larson. "A Review of Fatty Acid Profiles and Antioxidant Content in Grass-fed and Grain-fed Beef." *Nutrition Journal*, 2010.
- 13 J.B. Russell, F. Diez-Gonzalez, and G.N. Jarvis, "Potential Effect on Cattle Diets and the Transmission of Pathogenic Escherichia Coli to Humans" *Microbes & Infections*, 2000, 45-53.
- 14 Kip Wiley, Nick Vucinich, John Miller, and Max Vanzi. "Confined Animal Facilities in California." Senate Office of Research, California State Senate, November 2004, 18-20.
- 15 Dan Imhoff. *The CAFO Reader: The Tragedy of Industrial Animal Factories*. Watershed Media, 2010, 70-71.
- 16 Julio E. Correa. "Nutritive Value of Goat Meat." Alabama Cooperative Extension System, Alabama A&M and Auburn Universities, June 2011.
- 17 Doug Hamilton. Interview with Michael Pollan. "Modern Meat." *Frontline*, episode 2017, April 18, 2002.
- 18 "IARC Monographs evaluate consumption of red meat and processed meat." Press release issued by International Agency for Research on Cancer, World Health Organization, October 2015.
- 19 Jo Robinson. *Pasture Perfect*, Vashon Island Press, 2004, pages 37-40.
- 20 Cynthia A. Daley., Amber Abbott, Patrick S Doyle, Glenn A Nader, Stephanie Larson. "A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef," *Nutrition Journal*, BioMed Central Ltd. , 2010.
- 21 Efforts to preserve Hudson Valley farmland against tides of development have been undertaken by organizations including Open Space Institute, Scenic Hudson, American Farmland Trust, county land trusts and others.
- 22 USDA 2012 Census of Agriculture.
- 23 Dr. Allen Williams, email message to authors, June 22, 2016.
- 24 Larry Aylward. "Graze Craze: The Market for Grass-Fed Beef." *Food Business News*, April 15, 2015.
- 25 Sarah Brannen. "Hudson Valley Food Hubs Initiative: Research Findings and Recommendations." *Local Economies Project*, New World Foundation. April 2013, p. 55.
- 26 As defined by the American Grassfed Association, grassfed means that animals live on pasture, consume a natural forage diet, and do not receive hormone or antibiotic treatments. The USDA, in a standard published for comment in 2006, defined "grassfed" to mean animals that consume a diet only of grasses and grass silage.
- 27 Interview with John-Mark Hack, Marksbury Farm, October 21, 2014.
- 28 Poultry are also typically fed a commercial grain mix and although poultry were not a focus of this study, the discussion of sustainable grain production in this section applies equally to poultry feed.
- 29 Demonstration of producer demand is a topic explored more in Part Two: Recommendations, page 17.

- 30 This report focuses on qualitative information provided during in-depth interviews with producers and processors, to reach recommendations that relate to slaughter and processing services. Data for USDA slaughterhouses in New York State, along with the number of slaughters by species is included as illustrative but not conclusive for the region. This is discussed further in Part Three: Expanded Research, page 63.
- 31 Shepstone Management Company, Hudson Valley Livestock Marketing Task Force, Meat Processing Facility Feasibility Study. 2000. Executive Summary, page 5.
- 32 See Figure 16, Part Three: Expanded Research page 64.
- 33 FSIS is the public health agency within the United States Department of Agriculture. It is responsible for ensuring that the nation's commercial supply of meat, poultry and eggs is safe and properly labeled and packaged. FSIS enforces the Federal Meat Inspection Act by granting approval for slaughterhouses to operate, overseeing slaughter operations including carcass-by-carcass inspection and ensuring proper sanitation procedures are followed.
- 34 Empire State Development has been pursuing the development of this type of facility in Schoharie County.
- 35 Some producers expressed concern that not all Hudson Valley beef producers are raising animals at the same quality level. Efforts to build the reputation of Hudson Valley meat can work in tandem with producer-focused education programs that can help to consistently achieve high-quality carcasses.
- 36 Genetics operations breed and select purebred or registered cattle for specific attributes, earning income by selling well-bred animals to other farms. Several genetics operations in the Hudson Valley are focused on selecting cattle for grazing.
- 37 Leslie Pillen and Claire Hinrichs. Land Link Programs in the Northeast US: A Program Assessment and Lessons Learned, Pennsylvania State University College, February 2014. See Part Two: Expanded Research Findings for more details on this assessment.
- 38 Ibid.
- 39 A suggestion from the advisory committee is to create a refundable tax credit for hiring full-time livestock labor, and/or a workforce incentive program.
- 40 Melissa Matthewson, Melissa Fery and Maud Powell. "Creating Farmer Networks, A Toolkit for Promoting Vibrant Farm Communities," Pacific Northwest Extension Publication (Oregon State University, University of Idaho and Washington State University), 2013.
- 41 Center for Integrated Agricultural Systems. "Farmer-to-Farmer Networks: Effective Grass-Roots Sharing (Research brief #23)." <http://www.cias.wisc.edu/farmer-to-farmer-networks-effective-grass-roots-sharing/>, posted October 1996.
- 42 See Glossary.
- 43 See Glossary.
- 44 Local assessors should be aware of land link programs so that they may refer landowners seeking an ag assessment to existing resources.
- 45 Leslie Pillen and Claire Hinrichs. "Land Link Programs in the Northeast US: A Program Assessment and Lessons Learned," Pennsylvania State University College, February 2014.
- 46 Ibid.
- 47 "Troy Bishopp, aka "The Grass Whisperer" is an accomplished professional grazier of 27 years, a grasslands advocate, and a voice for grassfed livestock producers to the media, restaurateurs and legislators." From website, <http://thegrasswhisperer.com/>, accessed June 23, 2016.
- 48 Certified Naturally Grown is a "Participatory Guarantee System". PGS have existed for decades, but in recent years they have gained recognition for the valuable role they play in the organic movement by including small-scale farmers in organic guarantee systems. PGS provide an important alternative to third-party certification programs. Accessed June 2016 from Certified Naturally Grown website.
- 49 "North Carolina Niche Meat Producers: Survey 2013." NC Choices, Center For Environmental Farming Systems, 2013.
- 50 Michael J. Baker, PAS, PhD, Cornell University, Beef Cattle Extension Specialist, Telephone Interview, September 2014.
- 51 Nicolas Acevedo, John Lawrence and Margaret Smith, "Organic, Natural and Grass-Fed Beef: Profitability and Constraints to Production in the Midwestern U.S.," Iowa State University, August 2006.
- 52 Ibid.
- 53 See Glossary.
- 54 Brett Chedzoy and Peter Smallidge, "Silvopasturing in the Northeast: An Introduction to Opportunities and Strategies for Integrating Woodland in Private Woodlands," CCE Natural Resources Publications, Cornell University, March 2011.
- 55 Tatiana Stanton, "#4: Observations on Income and Expense Balance Sheets for 18 Meat Goat Farms," from Fact Sheet Series on Meat Goat Herd Management Practices, 2006.
- 56 "Hudson Valley Food Hubs Initiative: Research Findings and Recommendations." Local Economies Project, New World Foundation. April 2013.
- 57 Federal regulations for slaughter are found in Title 9 of the Code of Federal Regulations, entitled "Animals and Animal Products." http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title09/9tab_02.tpl.
- 58 Shepstone Management Company. "Hudson Valley Livestock Marketing Task Force, Meat Processing Facility Feasibility Study." 2000, Chapter 3.0: Inventory of Existing Facilities, 3-7.

- 59 “Development of a Company to Increase Livestock Processing and Assist Producer’s Marketing Efforts in The Hudson-Mohawk Region of New York.” Food & Livestock Planning, Inc., August 2004.
- 60 “NY Meat Plant Analysis, Upper Hudson-Lower Mohawk Region Feasibility Study.” Food & Livestock Planning, Inc., January 2004.
- 61 Chelsea Bardot Lewis and Christian J. Peters. “A Capacity Assessment of New England’s large animal slaughter facilities as relative to meat production for the regional food system.” Renewable Agriculture and Food Systems, Cambridge University Press, 2011.
- 62 Ibid.
- 63 Ibid.
- 64 Shepstone Management Company. “Hudson Valley Livestock Marketing Task Force, Meat Processing Facility Feasibility Study.” 2000, Chapter 3.0 Inventory of Existing Facilities, 3-7.
- 65 Utilization of existing infrastructure for slaughter is often estimated using USDA slaughter data, available only at the state or multi-state region level; one study used census animal inventory to estimate slaughter. These methods seem unreliable here because the study area is small (compared to the state as a whole) and there is significant border crossing (producers leaving the region for slaughter, or slaughterhouses servicing farmers from outside the region). As a result, we do not believe that that county animal inventories or statewide data is a reliable indicator for the number of animals that are slaughtered in the region.
- 66 A study focused on producers in the Pioneer Valley of Western Massachusetts found that producers were travelling for nearly two hours, over 73.8 miles, to their slaughterhouse of choice (including Eastern New York). Dickenson, Ellen, Spirit Joseph and Jonathan Ward. “Confronting Challenges in the Local Meat Industry: Focus on the Pioneer Valley of Western Massachusetts,” Community Involved in Sustaining Agriculture (CISA), Summer 2013.
- 67 The Sullivan County IDA is in the process of building a plant that will be USDA inspected and once completed will look for an operator. Hemlock Hill Farm, in Westchester County, will be renovating their New York State facility to become USDA inspected.
- 68 An excellent discussion of the low margins and challenges faced by processors is provided in Lauren Gwin, Arion Thiboumery and Richard Stillman’s “Local Meat and Poultry Processing, The Importance of Business Commitments for Long-Term Viability,” USDA Economic Research Report No. (ERR-150), June 2013.
- 69 See *ibid.* discussing the importance of anchor customers. In the 2004 Hudson Valley/Mohawk research, of 31 NY-based meat processors, 30% did custom processing only, 16% purchased animals and processed and sold the meat only, and 54% did both. There are three USDA processors in the sixteen county study area that do not accept any custom work.
- 70 One way of defining the relevant market for services is taken from antitrust analysis. The United States Department of Justice and Federal Trade Commission ask if, a hypothetical monopolist in a narrowly defined market were to impose a small but significant and non-transitory price increase (often posited at 5-10%), there are alternative sellers that would be attractive enough such that the hypothetical monopolist would face a reduction in sales large enough that the price increase would not prove profitable. If the answer is yes, the market definition is too narrow and is broadened until there are no alternative sellers that would be sufficiently attractive. United States Department of Justice and Federal Trade Commission Horizontal Merger Guidelines issued April 2, 1992, revised April 8, 1997, accessed October 16, 2014. http://www.justice.gov/atr/public/guidelines/horiz_book/11.html.
- 71 Similar to product market definition, the geographic market for services can be defined by cross price elasticity of demand. As long as producers are switching service providers in response to small but significant and non-transitory price increases, the geographic market can be expanded to include those providers. While producers in this study are traveling long distances to their processor choice (some as far as four hours each way), producer anecdotes about switching firms has more to do with quality and type of services offered than cost of services or costs of traveling. There is insufficient information at this time to define the relevant geographic market for slaughter and processing services.
- 72 Shepstone Management Company. “Hudson Valley Livestock Marketing Task Force, Meat Processing Facility Feasibility Study.” 2000, Chapter 3.0 Inventory of Existing Facilities, 3.1 Table 3.1.1 Regional USDA Slaughter Facilities (Non-poultry), Part 1 & 2.
- 73 Interview with Hudson Valley slaughterhouse, 2014.
- 74 Rachel J Johnson, Daniel L. Marti, and Lauren Gwin. “Slaughter and Processing Options and Issues for Locally Sourced Meat,” LDP-M-216-01, U.S. Department of Agriculture, Economic Research Service, June 2012, 10.
- 75 Demand for Hudson Valley meat was not part of this study. One producer wanted to understand the size of the market for local meat at current prices and whether there was sufficient demand at those prices to warrant additional production. Any demand study should test price elasticity in different markets.
- 76 Producers at smaller farms join forces “as a way to increase their bargaining power, achieve greater economies of scale and improve profitability without necessarily losing control over their individual businesses.” “The Pros and Cons of Producer Cooperatives,” Beef Central, August 2015.
- 77 Anne Barnard, 2009. “Meeting, then Eating, the Goat.” New York Times, May 24, sec. A13.
- 78 No Goat Left Behind was started to address the growing problem facing New England goat dairies. The project has since developed into a celebration of all goat breeds including meat breeds, with the goal of increasing overall goat consumption in the US. Accessed June 23, 2016, from HeritageFoodsUSA.com <http://www.heritagefoodsusa.com/ventures.php>.

Glossary

Access to pasture

As a requirement of the National Organics Program (NOP), livestock farms and ranches must use pasture-based systems where animals are not confined and are actively grazing pasture during the grazing season.

Ag Census

The United States Department of Agriculture (USDA) Census of Agriculture, a comprehensive study of U.S. agriculture conducted every five years. Provides data by state and county for farm and ranch operations.

Agriculture of the Middle (AOTM)

This term is used to encompass a spectrum of farms and ranches that are declining because they are too small to be served well by commodity markets and too large to be served well by direct markets. Most AOTM farms are characterized by: (1) their size; (2) their business organization; and (3) the production and marketing strategies they adopt to remain viable. A range of educational and support resources can be found here: <http://www.agofthemiddle.org>

American Humane Certified

Farm animal welfare certification from American Humane Association. As of November 2016, nine meat producers are listed as certified on the association's website. <http://www.humaneheartland.org/>

Animal Welfare Approved

Farm animal welfare certification program. Requires animals to be raised on pasture or range; prohibits dual production; awards approval only to family farmers; charges no fees to participating farmers; incorporates the most comprehensive standards for high welfare farming. <http://www.animalwelfareapproved.org>.

Antibiotic free

Antibiotic free refers to animals raised without the use of antibiotics. While the USDA does not allow use of the label "antibiotic free" on meat products, the USDA does allow the claims "no antibiotics administered" or "raised without antibiotics." Since the mid 1940s, antibiotics have been routinely mixed into many livestock feed products to promote growth and prevent sickness. This practice is referred to as non-therapeutic or sub-therapeutic antibiotic use. The phrase "raised without sub-therapeutic antibiotics" distinguishes between non/sub-therapeutic antibiotic use and therapeutic use, or using antibiotics only when needed to cure illness or infection. No organization or government entity certifies any of these claims.

Baleage

Also known as round bale silage (also baylage, balage). Forage baled at higher moisture content than dry hay and stored in sealed plastic wrap, encouraging fermentation. Shorter curing time from cutting to baling reduces potential degradation to forage due to wet weather conditions; potentially higher feed quality compared with dried forages.

Centennial/Bicentennial Farm

Farms in continuous operation on the same land by the same family for 100 years or more (centennial), or 200 years or more (bicentennial).

BSE

Bovine spongiform encephalopathy, commonly known as mad cow disease. In the United States, bovines slaughtered for meat are assessed for age and if 30 months or older require removal of the spinal cord.

Certification

Certification is a verification of a claim made by a food producer such as a farmer, processor, or manufacturer. A certifying agency sets and enforces standards on food and production processes to ensure that claims and labels are legitimate and meaningful. Certifications can focus on social, environmental or economic sustainability objectives; some certifications set standards that combine these categories, while others focus on one category. Certifications may be second party, in which a company verifies a producer's claim, or third party, in which an independent organization sets standards for certification. Third party certifiers are considered the most objective and thus credible certifiers. The London-based International Social and Environmental Accreditation and Labeling Alliance (ISEAL) is an international association of leading standard-setting and conformity assessment organizations that focus on social and environmental issues, and works as a clearinghouse of sorts for global certification programs.

B Corp

In 2012, New York State legislation authorizing B Corps (benefit corporations) formed for a general public benefit, defined as “a positive material impact on society and the environment, taken as a whole, assessed against a third party standard, from the business and operations of a benefit corporation.” Several third party certifiers currently serve this purpose, including the nonprofit B Lab, the Global Reporting Initiative, GreenSeal, Underwriters Laboratories, the International Organization for Standardization and Green America.

Carbon sequestration

According to the United States Environmental Protection Agency (EPA): Carbon dioxide (CO₂) capture and sequestration (CCS) is a set of technologies that can greatly reduce CO₂ emissions from new and existing coal- and gas-fired power plants and large industrial sources. CCS is a three-step process that includes: capture of CO₂ from power plants or industrial processes; transport of the captured and compressed CO₂ (usually in pipelines); and underground injection and geologic sequestration (also referred to as storage) of the CO₂ into deep underground rock formations.

Certified Humane

A certification program for farm animals. Standards are unique to each animal; beef cattle, dairy cows, chickens, pigs, turkeys, as well as standards for slaughter of cattle and pigs.

<http://certifiedhumane.org/>

Cooperative

A cooperative is a business organized to provide benefits to its members. It is typically owned and operated by members and exists to create benefits for its members as opposed to profit for shareholders. In New York State the cooperative corporation law supports for-profit cooperative corporations formed to support food and agriculture enterprises.

Cow-calf operation

A method of raising beef cattle in which a permanent herd of cows is kept by a farmer or rancher to produce calves for later sale. Cattle from a cow-calf operation may be sold after they have been weaned to be matured elsewhere, such as at a feedlot, or may be raised to near-slaughter weight and sold at the age of 1–2 years.

Cryovac®

A brand and method of packaging that removes air and seals food products and typically used in meat processing applications. Type and thickness of packaging varies. Not all packaging can support sealing of bone-in meat products. Specialty bone guard patches or denser packaging is required to package bone-in products. Other plastic packaging with the same or similar qualities exists under various names.

CSA (Community Supported Agriculture)

This is a direct-marketing model wherein farmers offer a certain number of “shares” to consumers. Typically the share consists of a box of product offered on a regular basis (weekly or monthly). Interested consumers purchase a share (aka a “membership” or a “subscription”) and in return receive a box at a regular designated time. Meat CSAs are becoming more popular and often coordinate with produce CSAs.

Custom slaughter

A slaughter facility that does not have a state or federal inspector on duty, which means that the meats from these facilities are not considered state – or federally – inspected meats.

Cut and Wrap

Further processing of carcass halves or quarters into desired cuts (primals, subprimals, or retail) and packaging (paper wrap, Cryovac®) as specified.

Direct marketing

A farm marketing approach that involves selling farm-produced products directly to consumers (referred to as “retail direct marketing”) or business customers (referred to as “wholesale direct marketing”), rather than selling through a broker, wholesaler, distributor, or retail outlet, etc. Examples of retail direct marketing include farmers’ markets, farm stands, and Community Supported Agriculture ventures. Wholesale direct marketing examples include wholesale farmers’ markets or direct sales to restaurants, grocery stores, etc.

Distributor/Wholesaler

An individual or company that either or both aggregates (collects) various quantities of different food products—fresh, manufactured or finished products—and ships these to other companies in the food sector. Distribution includes truck, rail, sea and air transport. Wholesalers may own warehouses, but not ship or distribute product. Distributors and Wholesalers are both “middlemen” in the food chain—adding a range of value to the product (i.e. transforming the products from raw to finished) or none at all beyond aggregation, cold storage (refrigeration), and transportation of these from one entity in the food chain to another.

Diversified farm

A farm which produces a variety of products rather than a single crop or animal. Diversified farms may include multiple animal species and/or crops, raised separately or in rotation. Diversified farming is often cited for providing ecological benefits, by more closely mimicking natural systems, and economic benefits, by allowing multiple sources of income.

Drop credit

The price received by the processor for the hide, blood, bone, head and organs.

Family farms

The following USDA definitions are widely accepted by most of the industry: “Family farms” are not operated by a hired manager and not owned by an outside corporation. “Small farms” are those with less than \$250,000 in annual gross receipts and on which management and labor are provided by the farm family. Mid-scale farms, sometimes referred to as “Agriculture of the Middle” are farms that are too small to compete in bulk commodity markets and too large to efficiently market products directly to consumers (see above). None of these terms are currently certified.

Feeder cattle

Steers (castrated males) or heifers (females) mature enough to be placed in a feedlot where they are fattened prior to slaughter. Feeder calves are less than 1 year old; feeder yearlings are between 1 and 2 years old. Both are often produced in a cow-calf operation.

Feedlot

A confined area where animals are fed. Large feedlots are called Concentrated Animal Feeding Operations (CAFO). The USDA studies small feedlots with fewer than 1,000 head of cattle and large feedlots with more than 1,000 head. About half of small feedlots raise their own cattle, and the other half are purchased at auction or direct sale.

Finishing operation

An operation that specializes in raising livestock to harvest weight, referred to as “finishing.” Finishing operations are a segment of the industrial meat production system. Small-scale producers in the Hudson Valley do not generally use finishing operations.

Food Alliance

Certification program for agricultural operations, food processors and distributors. The program aims to protect, conserve and enhance soil, water, wildlife habitat and biodiversity; conserve energy, reduce and recycle waste; reduce use of pesticides and other toxic or hazardous materials; maintain transparent and traceable supply chains; support safe and fair working conditions; guarantee food product integrity, with no genetically engineered or artificial ingredients; ensure healthy, humane animal treatment; and ensure continual improvement of practices. <http://foodalliance.org/>

Food hub

A business or organization that coordinates and manages aggregation, storage, processing, distribution and/or marketing of source-verified, regionally produced foods. Some food hubs provide information online and are aggregation sites for, typically, regional agriculture and food products.

Food Safety Inspection Service (FSIS)

FSIS is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged. An FSIS inspector is on site during slaughter, permitting the product to be sold and transported across state borders.

Forage

Forage is plant material (mainly plant leaves and stems) eaten by grazing livestock. Historically, the term forage has meant only plants eaten by the animals directly as pasture, crop residue, or immature cereal crops, but it is also used more loosely to include similar plants cut for fodder and carried to the animals, especially as hay or silage.

Free range

While the terms "free range" and "free roaming" imply that animals raised for meat or eggs are not caged and are free to roam, the USDA defines free-range poultry as that which has had access to the outdoors; the degree and quality of access are not specified. The term's use on beef and eggs is undefined and unregulated. For poultry, meat and eggs, the terms "pasture-raised" and "grassfed" suggest that an animal was raised by grass grazing. More commonly, animals are fattened on grain in feedlots or concentrated animal feeding operations (CAFOs).

GAP (Good Agricultural Practice)

This refers to a set of criteria that are commonly accepted by both government organizations (Farm Bureau, State Departments of Agriculture, e.g.) and companies that purchase food, as on-farm processes that result in safely grown, picked, and handled foods. GAP can be applicable and is relevant across all product types, and across various certifications (organic, sustainable, e.g.), none of which replace GAP as a way to verify that food that is grown and handled safely. There are costs associated with attaining GAP certification, and these costs are typically borne by the producer (farmers in most cases). GAP certification is often experienced as a barrier-to-entry for regional agriculture producers to sell into wholesale or other established supply chains (institutional feeding companies and retail, e.g.), due to both cost and rigor (or perceived rigor) of the GAP certification.

Genetically Modified Organism (GMO)

A Genetically Modified Organism (GMO) is a plant or animal altered by genetic engineering, in which biologists transfer genetic traits across and between plant and animal species. While it is legal for farmers in many countries (including the U.S. and Argentina) to grow GMO crops for human and animal consumption, other countries (Japan and many European nations) have banned the growing and importing of GMOs until more is known about their safety and environmental impacts. Labeling products that include GMOs is not required in the U.S. The terms GMO-free or non-GMO mean that the product contains no genetically modified ingredients. While no agency certifies this claim, food that is certified organic cannot contain GMOs.

Grading

Produce, meat and other agriculture products are frequently assigned a grade to help convey certain qualities, such as size, color, and sugar content. Such certifications are recognized by wholesale buyers and consumers in the marketplace. For meat, the USDA grades Prime (highest) and Choice (second tier) are most familiar in the marketplace. For beef, Prime grade is produced from young, well-fed beef cattle. It has abundant marbling and is generally sold in restaurants and hotels. Choice grade is high quality, but has less marbling than Prime. Select grade is very uniform in quality and normally leaner than the higher grades. It is fairly tender, but, because it has less marbling, it may lack some of the juiciness and flavor of the higher grades. Standard and Commercial grades are frequently sold as ungraded or as "store brand" meat. Utility, Cutter, and Canner grades are seldom, if ever, sold at retail but are used instead to make ground beef and processed products. USDA specifications detail requirements for grading evaluation marbling and firmness in relation to carcass maturity. Full details for cattle and other livestock are published by the USDA.

Grain

A general term referring to grain-based feed for livestock, typically a mix of corn and soy.

Grain-finished

The practice of raising livestock to harvest weight on a diet of grain.

Grass-finished

The practice of excluding all grain from a ruminant's diet, raising livestock to harvest weight on a diet of grass and forage.

Grassfed, Grass-fed

As defined by the American Grassfed Association, this term refers to animals that live on pasture, consume a natural forage diet, and do not receive hormone or antibiotic treatments. The USDA, in a standard published for comment in 2006, has defined “grassfed” to only mean animals that consume a diet of grasses and silage. The USDA standard does not prohibit confinement, or hormone and antibiotic treatments. Suppliers should be clear which standard they claim to meet. There is currently no independent verification of this claim under either standard. Note that “grassfed” claims are sometimes qualified with supplemental “grain finished” claims.

HACCP

Hazard Analysis and Critical Control Points is a self-regulated process and claim that companies all along the food chain—from farm to processor to wholesaler to institutional food service kitchen or restaurant—may elect to undertake as a measure of sanitation, food safety and health standards achieved at their place of business. Many contracts between buyers and food producers require HACCP certification. This is particularly true of the institutional food service and retail sectors; and HACCP certification is nearly ubiquitously for meat, dairy and fish handlers and processors.

Hay

Grasses or legumes that have been cut, dried and stored for feeding livestock. Hay is used both as a supplement to pasture during summer months, and as winter feed.

Haylage

The fermented product of a process similar to silage but using any harvested legume or grass used for making hay.

Heritage breeds

According to the American Livestock Conservancy, heritage breeds are traditional livestock breeds carefully selected and bred over time to develop traits that make them well-adapted to a local environment. Traditional, historic breeds retain essential attributes for survival and self-sufficiency – fertility, foraging ability, longevity, maternal instincts, ability to mate naturally, and resistance to diseases and parasites. <http://www.livestockconservancy.org/index.php/heritage>

Holistic Management™

A “whole farm” decision making framework that assists farmers and others in establishing a long-term goal, a detailed financial plan, a biological plan for the landscape and a monitoring program to assess progress toward the goal. Holistic Management™ helps managers to ask the right questions and guides them in setting priorities. In holistic financial planning, profit is planned at the beginning of the year. www.holisticmanagement.org and <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=296>

Hormone free

Also seen as “no hormones administered”, or “no synthetic hormones”, these are labels that imply that an animal was raised without the use of artificial growth hormones. The most commonly used hormones in production are Recombinant Bovine Growth Hormone (rBGH) and Recombinant Bovine Somatotropin (rBST), which promote animal growth and increase milk production. As the USDA prohibits hormone administration for pigs or poultry, a hormone free label on those products does not differentiate that product. While the USDA can hold companies accountable for making a hormone free claim on beef and dairy products, no independent agency certifies it.

Livestock

A broad term used to describe domesticated animals raised for agricultural purposes, which may or may not include poultry.

Mob grazing

A method of managed intensive rotational grazing, mob grazing packs animals in high density on small paddocks, which are rotated frequently (often daily). The practice is intended to mimic the grazing patterns of wild herding ruminants, and is cited for providing soil improvement benefits.

Natural

The USDA describes natural poultry and meat products as those that are minimally processed and do not contain artificial or synthetic colors, flavors, preservatives, or ingredients. No official definition or standards exist for this term, except in the categories of meat and poultry. No organization certifies this claim.

Organic

Food that is labeled organic in the United States must be certified by a USDA accredited agency, whether it was grown domestically or imported. USDA organic standards dictate that organic foods be grown without most synthetic fertilizers and pesticides, sewage sludge, genetically modified seeds, or irradiation. Feed for organic meat and poultry is grown organically and does not contain animal byproducts. Animals raised for organic food products must have access to the outdoors, including pasture for ruminants, and cannot be treated with hormones or antibiotics. The USDA offers different logos and claims for processed foods, depending on the percentage of organic ingredients included. Internationally, the International Federation of Organic Agriculture Movements (IFOAM)—a United Nations Food and Agriculture Organization accredited organization— seeks to promote organic production and increase international uniformity in organic standards.

Paper wrap

A more traditional method of wrapping cuts of meat with butcher paper. This method has largely been supplanted by plastic or Cryovac®, but some processors still exclusively offer paper wrap.

Pastured or pasture-raised

This claim suggests that an animal was raised outdoors on pasture, and implies that it ate primarily grasses and other naturally occurring foods commonly found in pastures. In fact, feeding practices may vary, and pasture-raised animals may have grain in their diet. There is typically no independent verification of claims using the word “pasture.” The USDA does not have an official definition of “pasture-raised”. (See also “Grassfed” above.)

Patty maker

Meat processing equipment that weighs and shapes ground meat into equally portioned hamburger patties.

Polyculture

As it pertains to agriculture, the practice of raising many species of plants together, as opposed to “monoculture,” or large crops of a single species. Polyculture, which includes intercropping, companion planting, multi-cropping, alley cropping, crop rotation and beneficial weeds, has proven that crops planted adjacent to other varieties are more resistant to microorganisms and disease.

Portion cutting

A slaughterhouse process that cuts subprimals into fixed-weight steaks, roasts and other retail cuts.

Primal

The largest and most basic cuts of meat from a carcass.

Processing

Butchering carcasses into different cuts and grinding; further processing usually refers to sausages and smoking. The use of the term can also include slaughter, through finished product.

Rotational grazing

Under rotational grazing, only one portion of pasture is grazed at time while the remainder of the pasture “rests.” To accomplish this, pastures are subdivided into smaller areas (“paddocks”) and livestock are moved from one paddock to another. Resting grazed paddocks allows forage plants to renew energy reserves, rebuild vigor, deepen their root system, and give long-term maximum production.

Ruminants

Animal species with a four-compartment stomach, including a rumen, which allows the digestion of grasses and other plants. Ruminants include cattle, sheep, and goats, but do not include pigs. Because their natural diet is grass-based, a grain-free diet is considered by some to be the most biologically appropriate for ruminants, hence the popularity of grass-fed beef, lamb and goat.

Shingle pack

Bacon packaging that layers bacon like shingles.

Silage

Silage is fermented, high-moisture stored feed that can be fed to ruminants. It is fermented and stored in a process called ensilage, ensiling or silaging, and is usually made from grass crops, including maize, sorghum or other cereals, using the entire green plant (not just the grain). Silage can be made from many field crops, and special terms may be used depending on type (oatlage for oats, haylage for alfalfa, e.g.)

Silage, corn silage

Silage from corn; utilizes the entire plant.

Silvopasture

The practice of combining forestry and pasture. Integration of trees into pasture systems can provide shelter for animals, reduce erosion, and improve soil health.

Slaughter

The killing and/or butchering (stunning, skinning, eviscerating and cleaning) of an animal, especially for food.

Small farms

Farms with less than \$250,000 in annual gross receipts and on which management and labor are provided by the farm family.

Subprimal

Secondary cuts of meat, cut from primals but larger than portion cuts. Examples include the chuck blade and the tenderloin.

Sustainability

According to “Our Common Future,” a 1987 publication of the World Commission on Environment and Development, in ecology, sustainability refers to how biological systems remain diverse and productive. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. In more general terms, sustainability is the endurance of systems and processes. The organizing principle for sustainability is sustainable development, which includes the four interconnected domains: ecology, economics, politics and culture.

Sustainable agriculture

Sustainable agriculture integrates productive agriculture, biodiversity conservation, animal welfare and human development. The USDA defines sustainable agriculture as “an integrated system of plant and animal production” that satisfies human food and fiber needs, enhances environmental quality and natural resources, sustains the economic viability of farm operations, and enhances farmers’ and society as a whole’s quality of life.

Sustainable food system

A system that produces enough food to nourish people affordably, nutritionally, and safely while sustaining or enhancing the economic, environmental, and social systems in which the food system is embedded. Many definitions of a “sustainable food system” emphasize a particular sector (“local”) or exclude another (corporate or “global”).

Value-added processing

Further processing from meat that involves one or more post processing steps including grinding, casing, smoking, cooking, drying in order to produce ham, bacon, sausage, jerky and other products. Includes portion cutting.

APPENDICES

Appendix A: Interviews

FARMS INTERVIEWED AND PRODUCTION SECTORS

	COUNTY	BEEF	SHEEP	GOAT	PORK
Kinderhook Farm	Columbia	Y	Y	N	Y
Hawthorne Valley Farm	Columbia	Y	N	N	Y
Herondale Farm	Columbia	Y	Y	N	Y
Meili Farm	Dutchess	Y	N	N	Y
McEnroe Farm	Dutchess	Y	Y	N	Y
Walbridge Farm	Dutchess	Y	N	N	Y
Kezialain Farm	Orange	Y	N	N	N
Moveable Beast	Ulster	Y	N	N	N
Tilldale Farm	Rensselaer	Y	N	N	Y
Heather Ridge Farm	Albany	Y	Y	Y	Y
Flying Pigs Farm	Washington	N	N	N	Y
Helder-Herdwyck Farm	Albany	N	Y	N	Y
Elihu Farm	Rensselaer	N	Y	Y	N
Harrier Fields Farm	Rensselaer	Y	N	N	N
Argyle Angus	Washington	Y	N	N	N
Black Queen Angus Farm, LLC	Rensselaer	Y	Y	Y	N
Gordon Farms	Albany	Y	N	N	N
Hemlock Hill Farm	Westchester	Y	Y	N	Y
Donnandale Farm	Saratoga	Y	N	N	Y
Arcadian Pastures	Schoharie	Y	Y	N	Y
Slope Farms	Delaware	Y	N	N	N
Full Moon Farm	Ulster	Y	Y	Y	Y
Evans & Evans Farm	Delaware	N	Y	N	N
Pathfinder Farms LLC	Greene	Y	N	N	N
Karl Family Farms	Ulster	Y	Y	Y	Y
Fieldstone Farms	Delaware	Y	N	N	N
Snowdance Farm	Sullivan	Y	Y	Y	Y
Thunder View Farms	Sullivan	Y	N	N	N
Sunny Acres Farm	Greene	N	N	Y	N
Shepherd's Way	Columbia	N	Y	N	N
Stone Barns Center	Westchester	Y	Y	N	Y
Greenane Farms	Delaware	Y	N	N	Y
Mountain Range Farms	Columbia	Y	N	Y	N
Lowland Farm	Orange	Y	N	N	Y
Raven & Boar	Columbia	N	Y	N	Y
Ridge Field Farm	Dutchess	Y	N	N	N
The Green Shepherd Farm	Delaware	N	Y	N	N
Garden of Eden Farm	Delaware	Y	N	N	N
Gansvoort Farm	Columbia	N	Y	N	N
Maple Grove Farm	Washington	N	Y	N	Y

SLAUGHTERHOUSE | FULL INTERVIEW

SLAUGHTERHOUSE	TOWN	COUNTY
Eagle Bridge Custom Meat & Smokehouse	Eagle Bridge, NY	Rensselaer County
Hilltown Pork	Canaan, NY	Columbia County
Malafy's Meat Processing	Red Hook, NY	Dutchess County
Eklund Processing	Argyle, NY	Washington County
NY Custom Processing	Bridgewater, NY	Oneid County

AG SECTOR INTERVIEWS

Center for Agricultural Development and Entrepreneurship (CADE) – Rebecca Morgan
 Watershed Agricultural Council – Beth McKellips
 Adirondack Grazers – Sarah Teale
 Empire Livestock Marketing – Harold Renwick
 Jordan Energy – Bill Jordan
 Farm Credit East – Blane Allen and Tom Cosgrove
 Northeast Sustainable Agriculture Working Group (NESAWG) – Ruth Katz and Kathy Ruhf
 Certified Angus Beef – Chip Wallenchek
 Cornell Cooperative Extension (CCE) Dutchess County – Jen Fimbel
 Cornell Cooperative Extension (CCE) – Small Ruminants – Tatiana Stanton
 Northeast Livestock Processing Service Company – Kathleen Harris
 Cornell University – Mike Baker
 Hudson Valley Harvest – Paul Alward
 Hudson Valley AgriBusiness Development Corporation (HVADC) – Todd Erling
 Baker & Mackenzie – Lee Van Voorhees, Esq.
 New York State Department of Agriculture & Markets – Jackie Czub and Kevin King
 Hudson Valley Farm Link Network – Tim Biello
 Marksbury Farm – John-Mark Hack
 Adelphi University – Professor Maggie Gray
 Green America – Jessie Deelo
 Dickson's Farm Stand – Jake Dickson

Appendix B: Bibliography

SCOPE: GENERAL AND NATIONAL FINDINGS

Animal Welfare Institute. “Animal Welfare Standards: A Comparison of Industry Guidelines and Independent Labels.” Animal Welfare Institute, April 2012.

Animal Welfare Institute. “Label Confusion: How “Humane” and “Sustainable” Claims on Meat Packages Deceive Consumers.” Animal Welfare Institute, May 2014.

Barlow, John, Jana Kraft, Joe Roman, Jimmy Aruzamen, Melissa Bainbridge, Guy Choiniere, Emily Golf, Robert Mugabe, and Juan Alvez. “Biodiversity and Livestock Wellbeing.” University of Vermont, Center for Sustainable Agriculture, 2016.

Basset, Anna and Andrew Gunther. *The Grassfed Primer: Your Guide to the Benefits of Grassfed Beef*. A Greener World, 2015.

Capper, Judith L. “Is the Grass Always Greener? Comparing the Environmental Impact of Conventional, Natural and Grass-Fed Beef Production Systems.” *Animals*, 2012.

Matsumoto, Nancy. “The Grassfed Burger Gap.” Civil Eats, 2016.
<http://civileats.com/2016/06/14/the-grassfed-burger-gap/>

Coffey, Linda. “Benefits of Multispecies Grazing.” Appropriate Technology Transfer for Rural Areas (ATTRA), National Center for Appropriate Technology, June 2001.

Daley, Cynthia A., Amber Abbott, Patrick S. Doyle, Glenn A. Nader, and Stephanie Larson. “A Review of Fatty Acid Profiles and Antioxidant Content in Grass-fed and Grain-fed Beef.” *Nutrition Journal*, BioMed Central Ltd., 2010.

Food & Water Watch. “Where’s the Local Beef? Rebuilding Small-Scale Meat Processing Infrastructure.” Food & Water Watch, June 2009.

Glover, Jerry D., Cindy M. Cox, and John P. Fitzgerald. “Future Farming: A Return to Roots?: Large-scale agriculture would become more sustainable if major crop plants lived for years and built deep root systems.” *Scientific American*, 2007.

Gwin, Lauren, and Arion Thiboumery. “Beyond the farmer and the butcher: Institutional entrepreneurship and local meat.” *Journal of Agriculture, Food Systems, and Community Development*, 2014.

Gwin, Lauren, and Arion Thiboumery. “From Convenience to Commitment: Securing the Long-Term Viability of Local Meat and Poultry Processing.” Niche Meat Processor Assistance Network, Oregon State University, June 2013.

Gwin, Lauren, Arion Thiboumery, and Richard Stillman. “Local Meat and Poultry Processing: The Importance of Business Commitments for Long-Term Viability.” ERR-150, U.S. Department of Agriculture, Economic Research Service, June 2013.

Imhoff, Dan. *The CAFO Reader: The Tragedy of Industrial Animal Factories*. Watershed Media, 2010.

Johnson, Rachel J. “Livestock, Dairy, and Poultry Outlook.” LDP-M-221, U.S. Department of Agriculture, Economic Research Service, November 2012.

Johnson, Rachel J., Daniel L. Marti, and Lauren Gwin. “Slaughter and Processing Options and Issues for Locally Sourced Meat.” LDP-M-216-01, U.S. Department of Agriculture, Economic Research Service, June 2012.

Khafipour, E., S. Li, H.m. Tun, H. Derakhshani, S. Moossavi, and J.c. Plaizier. “Effects of Grain Feeding on Microbiota in the Digestive Tract of Cattle.” *Animal Frontiers*, April 2016.

Lyson, Thomas A., Robert J. Torres. "Scale of Agricultural Production, Civic Engagement, and Community Welfare." *Social Forces*, Oxford University Press/University of North Carolina Chapel Hill, 2001.

Mathews, Kenneth. "Livestock, Dairy, and Poultry Outlook." LDP-M-238, U.S. Department of Agriculture, Economic Research Service, April 2014.

Nagaraja, T.g., and Kelly F. Lechtenberg. "Liver Abscesses in Feedlot Cattle." *Veterinary Clinics of North America: Food Animal Practice*, Elsevier Inc., 2007.

National Restaurant Association. "What's Hot in 2015? Discover New Menu Trends." What's Hot Culinary Forecast, published December 3, 2014. Accessed June 2016.

<<http://www.restaurant.org/News-Research/News/What-s-Hot-in-2015-culinary-forecast-predicts-top>>.

Niman, Nicolette Hahn. *Defending Beef: The Case for Sustainable Meat Production*. Chelsea Green Publishing, October 31, 2014.

Pew Commission on Industrial Farm Animal Production. "Putting Meat on the Table: Industrial Farm Animal Production in America." The Pew Charitable Trusts and Johns Hopkins Bloomberg School of Public Health, 2008.

Pillen, Leslie and Claire Hinrichs. "Land Link Programs in the Northeast US: A Program Assessment and Lessons Learned." Pennsylvania State University, February 2014.

Robinson, Jo. *Pasture Perfect*, Vashon Island Press, 2004.

Russell, J.B., F. Diez-Gonzalez, and G.N. Jarvis, "Potential Effect on Cattle Diets and the Transmission of Pathogenic Escherichia Coli to Humans" *Microbes & Infections*, 2000.

Savory, Allan. The Savory Institute © 2013.

Joseph, Jamus, Francisco Molinar, Dee Galt, Raul Valdez and Jerry Holechek. "Short Duration Grazing Research in Africa." *Society for Range Management, Rangelands*, August 2002, volume 24 (4), 9-12.

SPINS. "SPINS Trendwatch: Consciously Raised Meat & Dairy." Published July, 31, 2014

Undersander, Dan, Beth Albert, Dennis Cosgrove, Dennis Johnson and Paul Peterson. "Pastures for profit: A guide to rotational grazing." Cooperative Extension Publishing, University of Wisconsin-Extension, 2002.

United States Department of Agriculture (USDA), Economic Research Service (ERS). "Certified organic livestock. Data on cows, pigs, sheep, chickens and other poultry, by State, 1997 and 2000-11." Accessed June 2016.

<http://www.ers.usda.gov/data-products/organic-production.aspx>

Wiley, Kip, Nick Vucinich, John Miller, and Max Vanzi. "Confined Animal Facilities in California." Senate Office of Research, California State Senate, November 2004.

SCOPE: MODELS AND FINDINGS FROM OTHER REGIONS

Nicolas Acevedo, John Lawrence, Margaret Smith. "Organic, Natural and Grass-Fed Beef: Profitability and Constraints to Production in the Midwestern U.S." Iowa State University, August 2006.

American Farmland Trust, Conservation Law Foundation, Northeast Sustainable Agriculture Working Group. "New England Food Policy: Building a Sustainable Food System." AFT, CLF, NESAWG, March 2014.

- Barry, Judith and Rich Pirog. "Supplying Local and Regional Markets: Challenges and Solutions for the Michigan-based Meat and Livestock Value Chains." Center for Regional Food Systems, June 2013.
- Center for Environmental Farming Systems. "North Carolina Niche Meat Producers: Survey 2013." NC Choices, 2013.
- Chism, J.W., and R.A. Levins. "Farm Spending and Local Selling: How Do They Match Up?" Minnesota Agricultural Economist, 1994.
- Community Involved in Sustaining Agriculture (CISA). "Demand and Options for Local Meat Processing: Finding the way from pasture to market in the CT River Valley." CISA, June 2008.
- Community Involved in Sustaining Agriculture (CISA). "Demand Study: Assessing volume and attributes of farmer demand for slaughter and meat processing services in Massachusetts." CISA, June 2008.
- Devlin, Kirsten. "Local Foods Offer Tangible Economic Benefits in Some Regions." Penn State News, Penn State University, February 3, 2014.
- Dickenson, Ellen, Spirit Joseph, and Jonathan Ward. "Confronting Challenges in the Local Meat Industry: Focus on the Pioneer Valley of Western Massachusetts." CISA, Summer 2013.
- Fuller, Sam. "Vermont Meat Processing Inventory Overview." 2010.
- GardenShare. "Processing Facilities for Local Meat & Poultry: Feasibility Study." Gardenshare, July 10, 2012.
- Joannides, Jan. "Research in Support of a Stronger Local Meat Industry." Minnesota Institute for Sustainable Agriculture, Presentation, 2012.
- Lewis, Chelsea Bardot and Christian J. Peters. "A capacity assessment of New England's large animal slaughter facilities as relative to meat production for the regional food system." *Renewable Agriculture and Food Systems*, Cambridge University Press, 2011.
- Local Food Research Center. "Large Animal Meat Processing Feasibility in Western North Carolina." Appalachian Sustainable Agriculture Project, 2012.
- Local Food Research Center. "Regional Large-Animal Meat Processing Plants: Summary of Economic Viability." Appalachian Sustainable Agriculture Project, 2012.
- Matthewson, Melissa, Melissa Fery and Maud Powell, "Creating Farmer Networks, A Toolkit for Promoting Vibrant Farm Communities." *Pacific Northwest Extension Publication*, February 2013.
- New England Farmers Union. "Growing Local and Regional Meat, Poultry and Fish Production in New England." New England Farmers Union, 2013.
- Schahczenski, Jeff. "Final Report: Natural Livestock Feasibility Study." County of Inyo, CA, February 2009.
- Sleeping Lion Associates. "Slaughterhouse Feasibility Report." April 2005.
- Simon, Marion. "Marketing Meat Goats, the Basic System." eXtension, Kentucky State University Cooperative Extension Program, November 2013.
- Solaiman, Sandra G. PhD, PAS. "Assessment of the Meat Goat Industry and Future Outlook for U.S. Small Farms." Tuskegee University, August 2007.
- Swenson, Dave. "Exploring Small-Scale Meat Processing Expansions in Iowa." Leopold Center for Sustainable Agriculture, April 2011.
- Swensen, D. "Economic Impact of a Diversified Small Farming Operation in Woodbury County." Department of Economics, Iowa State University, 2009.

UW-Madison, Center for Integrated Agricultural Systems. “Farmer-to-Farmer networks: effective grass-roots sharing (Research brief #23).” October 1996.

Wilson, Rose, Charlene Anderson, Louise H. Calderwood and Kate Rumley. “New England Beef-to-Institution Marketing Study.” October 4, 2011.

Winrock International. “Expanding Grass-Based Animal Agriculture in the Midwest: The Pasture Project.” The Wallace Center, 2012. Scope: Hudson Valley and New York

SCOPE: HUDSON VALLEY AND NEW YORK

American Farmland Trust. Agricultural Economic Development for the Hudson Valley: Technical Report and Recommendations. American Farmland Trust, 2004.

American Farmland Trust. At a Crossroads: Agricultural Economic Development in the Hudson Valley. American Farmland Trust, 2004.

American Farmland Trust. Planning for Agriculture in New York: A Toolkit for Towns and Counties. American Farmland Trust, 2011.

American Farmland Trust, Farming in Dutchess County: A Profile of the Future, American Farmland Trust, July 1987.

Baker, Michael J., Matthew LeRoux, Todd Schmit, and Gordana Jacimovski. “Factors Affecting the Price for Feeder Cattle in New York.” Cornell University, January 31, 2013.

Chedzoy, Brett and Peter Smallidge. “Silvopasturing in the Northeast, An Introduction to Opportunities and Strategies for Integrating Woodland in Private Woodlands.” *CCE Natural Resources*, March 2011.

Conard, Michael and Kubi Ackerman. Regionalizing the Food System for Public Health and Sustainability. Presentation at NESAWG Conference, Albany, NY, November 17, 2010.

Food & Livestock Planning, Inc. “Development of a Company to Increase Livestock Processing and Assist Producer’s Marketing Efforts in the Hudson-Mohawk Region of New York.” August 2004.

Food & Livestock Planning, Inc. “New York Meat Plant Analysis (Upper Hudson-Lower Mohawk Valley Region) Feasibility Study.” January 2004.

Gray, Margaret with Emma Kreyche. “The Hudson Valley Farmworker Report: Understanding the Needs and Aspirations of a Voiceless Population.” Bard College, 2007.

Glynwood Center Inc. “The State of Agriculture in the Hudson Valley.” 2010.

Local Economies Project, The New World Foundation. “Hudson Valley Food Hubs Initiative: Research Findings and Recommendations.” LEP, New World Foundation, April 2013.

Peters, Christian J., Jennifer L. Wilkins, and Gary W. Fick. “Testing a complete-diet model for estimating the land resource requirements of food consumption and agricultural carrying capacity: The New York State example.” *Renewable Agriculture and Food Systems*: 22(2); 145–153, 2007.

Peters, Christian J., Nelson L. Bills, Arthur J. Lembo, Jennifer L. Wilkins, and Gary W. Fick. “Mapping potential foodsheds in New York State: A spatial model for evaluating the capacity to localize food production.” *Renewable Agriculture and Food Systems*: 24(1); 72–84, 2009.

Peters, Christian J., Nelson L. Bills, Arthur J. Lembo, Jennifer L. Wilkins, and Gary W. Fick. Mapping potential foodsheds in New York State by food group: An approach for prioritizing which foods to grow locally. *Renewable Agriculture and Food Systems*: 27(2); 125–137, 2011.

Shepstone Management Company, Hudson Valley Livestock Marketing Task Force Meat Processing Feasibility Study, 2000.

Stanton, Tatiana, Fact Sheet Series on Meat Goat Herd Management Practices, Observations on Income and Expense Balance Sheets for 18 Meat Goat Farms, 2006.

Urban Design Lab at the Earth Institute. "Modeling Production, Processing and Distribution Infrastructure for a Resilient Regional Food System." Urban Design Lab at the Earth Institute, Columbia University, 2011.

USDA 2012 Census of Agriculture. <http://www.agcensus.usda.gov/>

Weaber, Andy, Presentation: Beef Operation Size and Profitability, August 2012