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Commercial Pasture-based Sheep Production in Vermont: Resources for Producers & Service Providers



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TABLE OF CONTENTS

PAGE	SUBJECT
2	Project Summary
2	History and Current State
4	Farm Finances and Business Management
6	Production Systems
9	Record Keeping and Tracking
12	Land Assessment
17	Feed
19	Predator protection
22	Herding dogs
24	Marketing Strategy & Competitive Analysis
36	Why Aggregation Failed in the Past (and Why it Matters Now)
42	Feasibility Analysis
46	Recommended Producer Resources
48	Sources

PROJECT SUMMARY

Commercial sheep production is seeing a resurgence in interest in the state, with a number of producers scaling up or planning to in the near future. A new generation of farmers are exploring whether commercial sheep production is a viable potential path to earning a living through farming. Vermont has several resources to support opportunities for these producers, including abundant, high-quality seasonal grazing, generational shifts in farmland ownership, and proximity to regional markets. The purpose of this project was to assess the viability of scaled, commercial sheep production in Vermont and develop resources around production, marketing, and working budgets for producers to use. Existing resources are focused on small-scale operations or production models common in midwestern and western regions of the country that rely on access to Federal grazing lands and proximity to grain production, which do not translate well to the land base and resources available in Vermont. We chose to focus on small- and medium-scale grass-based production that is suited to the utilization of pasture and infrastructure common to similar scale dairy farms. Our project focused on meat production, as that is the most common and scalable sheep enterprise, but both fiber and dairy present opportunities for further exploration.



HISTORY & CURRENT STATE

Vermont has a long history of commercial sheep production dating back to the early 1800s when the Merino sheep was first introduced. The decades following saw an explosion of sheep production for fiber, leading to the clearing of almost the entire state for pasture. At the peak, there were 1.7 million sheep grazing the hillsides with exports of high-quality wool and breeding stock. By the 1860s, changes in transportation and international trade politics reduced the profitability of sheep farming, leading most farmers to switch to dairy farming. Dairy farming remains the primary form of agriculture in the state, utilizing the majority of the agricultural land base. Over the past 50 years, increased globalization and shifting demand have made dairy farming unprofitable, especially for small and mid sized farms, leading some farmers to explore sheep farming as an alternative.

Over the last 40-50 years, sheep production in the state has been run by part-time shepherds with backyard flocks ranging from a handful up to 100 ewes. There were a few larger commercial flocks that focused on specialized markets. A couple of attempts were made to develop a structure for aggregated marketing, but these struggled with the consistency of product flow and quality. The 2022 Census of Agriculture found just 676 farms with 17,888 sheep, with only six farms reporting over 300 animals. Today, commercial sheep production is seeing a resurgence in the state, with a new group of producers scaling up or hoping to in the near future.

With the resurgence of interest in commercial production, there are several common concerns that new producers are facing. While many of these challenges are not new, they have been exacerbated by recent trends in the overall agricultural sector. The concerns producers are facing are related to:

- **Breeding Stock:** With relatively low numbers of sheep regionally, there are limited breeds to choose from, and these have varying quality. Producers seeking larger groups of breeding animals must purchase animals from other regions or engage in the laborious and costly process of growing their flocks over time.
- **Production Support Services:** A lack of support services for commercial-scale producers, including:
 - Access to consistent veterinary services that have ovine-specific knowledge. Some areas of the state lack access to any large animal vet services at all.
 - Lack of local or regional nutritional consultation support that can tailor recommendations for supplementation for farm specific needs.
 - No Extension Specialist focused on small ruminants that can provide technical assistance, organize professional development for producers, and conduct research on Vermont-specific production concerns.
- **Farm Infrastructure:** The challenge of restoring productive capacity and adapting old dairy infrastructure. This could include pasture/hayfield rejuvenation, fencing and water system upgrades, and barn retrofits.
- **Processing:** Limited access to processing capacity, which is overwhelmed by seasonal demand.
- **Financial and market challenges** are outlined later in this document.

These challenges require both individual and systemic responses to improve the environment for producers incrementally. Some other sheep producing regions of the world have adopted sector-wide support programs that can range from collaborative producer groups ([Ontario Sheep Farmers](#)) to regulated, structured, tiered production systems ([UK Sheep Farming](#)). In England, a system of sheep production has developed over centuries to efficiently utilize the varied climates of hills, uplands, and farms. In this three-tiered system, hill farms specialize in hardy brood ewes, upland farms breed upland crosses to create more commercially productive brood ewes (known as Mules), and lowland farms utilize lush pasture resources to raise and finish terminal cross market lambs. In Ontario, with government support, a producer group provides structured producer professional development, access to favorable financing, and market access support. While this level of collaboration is unlikely for Vermont-based producers in the near future, the resources developed by these groups represent opportunities for professional development and reference points for possible production outcomes.



FARM FINANCES & BUSINESS MANAGEMENT

One of the overarching challenges of sheep farming today is the need for farmers to be business managers as well as farmers. Sheep farmers in England and New Zealand have established processing and market systems that allow farmers to primarily focus on the production elements of their operations. Lack of sector infrastructure and consistent, high-value markets require Vermont farmers to develop a broad business management skill set (including marketing, forecasting, and bookkeeping). Producers face the following list of financial challenges that require them to have the capacity to analyze and pivot.

- **Access to Capital:** High start-up cost due to land cost and start-up infrastructure. Requires debt or significant sources of additional capital.
- **Uneven Cash Flow:** Producers with an auction-based model often earn all their income at one point in the year.
- **High Processing Costs:** Processing facilities in Vermont are relatively small and inefficient, leading to high per animal expenses, especially for smaller frame animals.
- **Less Competitive Product Pricing:** To meet the cost of production, producers require high margin, direct-to-consumer price points that are not competitive with imported goods.
- **Unpredictable Input Costs:** Variable costs can fluctuate based on weather (hay storage, length of grazing season)

Producers seeking to increase the viability of their operations need to develop the financial systems to track and assess profitability. Specific recommendations for improved business management include:

- **Chart of Accounts:** Adopting a chart of accounts specific to sheep production and suited to quick analysis around fixed and variable costs.
- **Record Keeping:** Tracking input costs to understand the cost of production.
- **Key Performance Indicators:** Developing key financial goals or benchmarks to guide business development.
- **Markets:** Identifying and evaluating current and potential markets to determine which channel provides the highest return.

Producers are encouraged to access business planning support for the analysis and implementation of the improvements above. Intervale Center staff and other Vermont Farm and Forest Viability Program (<https://vhcb.org/viability/business-advising/farm-business-advising>) service providers are available to assist in this process.

Assessing Viability

A key aspect of this project was to assess the potential viability of a hypothetical commercial sheep operation using the working budget to adjust production variables. We used a recently sold farm property as the basis for developing out the details of the base farm model. A detailed accounting of the assumptions and results of that analysis can be found later in this document. The assumptions are based on breed-specific data, research-based production metrics, and real-world observations.

Current and prospective producers are encouraged to utilize the working budgets to generate their own projections and conduct their own financial analysis, as every farm is different. For simplicity, the budgets are also based on a normal annual operating cycle. However, because many farms recognize production expenses and sales income in different calendar years, we recommend developing a multi-year budget. Producers should work on a multi-year budget to develop a full analysis of the profitability of the enterprise.

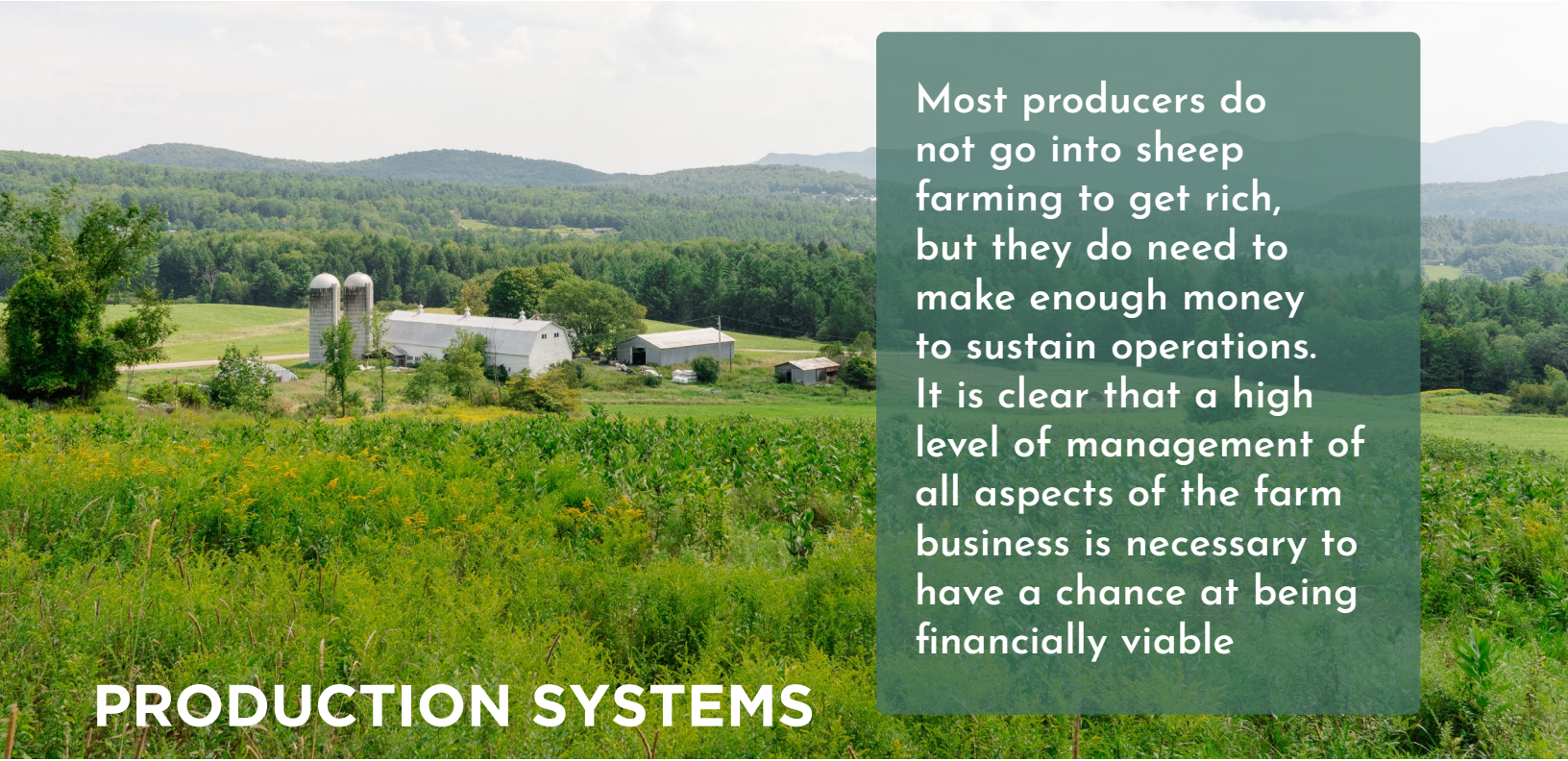
Although the initial results of the financial modeling were not encouraging, there are paths to potential profitability. Our base model, which is conservative but not unusual for production metrics for Vermont farms, had a negative net income (-\$5,169) without factoring in the debt service related to the farm purchase and the operating loan. When we increased the production metrics and market prices to reflect improved production metrics and higher market prices, the net income increased to \$76,154 before debt service.

Our analysis revealed the following impacts:

- Commercial sheep production at the scale of 400 ewes is challenging economically.
- Incremental improvements in management can yield higher profitability, usually with little to no additional expense.
- Unless production metrics and pricing improved, scaling up the operation did not yield improved profitability.
- Lambing rate can have a significant impact on overall profitability. For each 10% increase in lambing rate, the sample farm earned an additional \$5,446 in gross income with a relatively small increase in variable costs.
- Lamb weight had a significant impact on profitability, as sales are based on live weight or pounds of meat sold. In our base model, for each 10 pound increase in average live weight, the producer would increase gross income by \$10,750.
- Direct markets are not necessarily more profitable than auctions due to the relatively high cost of slaughter, which is fixed regardless of lamb weight.

- Adding income through other products or services, such as the sale of hides or contract grazing, should be considered and analyzed as a potential way to improve profitability.

Our analysis is based on a specific model, and producers may choose to structure, finance, and grow their business differently. Most producers do not go into sheep farming to get rich, but they do need to make enough money to sustain operations. It is clear that a high level of management of all aspects of the farm business is necessary to have a chance at being financially viable.



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PRODUCTION SYSTEMS

The majority of sheep producers in Vermont utilize a pasture-based system of sheep production. Their production practices range from Western-range style production (low-to-no housing and external feed inputs) to intensive accelerated lambing systems with high levels of intervention and grain supplementation. Most local producers fall in the middle of that spectrum with a mixture of rotational grazing and management levels that align with production and quality of life goals.

Vermont's climate is favorable to high-quality seasonal grazing resources for a well-managed sheep farm. A well-managed, pasture-based system can improve profitability, but it must be balanced with other production constraints. A productive pasture-based system will:

- Maximize the pasture resource through a thoughtfully planned and executed grazing plan.
- Extend the grazing system and reduce the costs of supplemental grain or stored forage.
- Improve the quality and productivity of the pastures over time, increasing farm carrying capacity and improving the environment.

Pasture-based systems can also present challenges that can profoundly impact the productivity and viability of sheep operations. The following challenges are very common, especially on farms that are just starting out:

- **Parasites:** Internal parasites are persistent and often devastating.
- **Nutritional Deficiencies:** Meeting the nutritional needs of ewes and lambs can be challenging, especially during flushing and lambing periods. Climate change has led to more frequent and persistent wet weather, making it increasingly difficult to produce high-quality hay.
- **Seasonality:** Seasonal production cycle leads to a glut of lambs in the fall. This leads to lower auction prices and processing bottlenecks.

Determining a production system

Pasture-based producers have a number of production system options that should be carefully considered to maximize financial returns and meet quality of life goals. As with any agricultural product, market access and price point need to be at the top of the list, as these will help determine many decisions about how production systems are developed.

Scale

Scale on a grass-based farm is primarily determined by the land base and infrastructure of the farm. The first consideration should be the amount of pastures available to maintain a productive rotation while avoiding parasite issues. It is often more economical to purchase hay or pay for custom harvest, which means the winter feed does not necessarily need to come from the property. The infrastructure and configuration of the pastures can also create limitations regarding the number of ewes based on lambing requirements.

Infrastructure

Most properties available for sheep production include historical dairy infrastructure, including barns and fencing. Some of this infrastructure can be adapted to sheep production at a fraction of the cost of building new structures. Producers must carefully weigh the utility of modified buildings and their implications for efficiency and animal health.

Animal handling systems are another area in which producers need to weigh the costs and benefits. A well-designed and functional handling system, such as the Sydell Spindoctor, can cost between \$10,000 and 20,000, but can have a significant impact on producer efficiency and safety. Having access to a corral and handling system makes flock management tasks much less onerous and dangerous, meaning producers are more likely to do them on a regular and timely basis.

Lambing

Most Vermont producers choose to lamb once a year, usually in the spring, which allows them to utilize productive summer pastures for lactating ewes and maximizes lamb growth. Increasing the frequency of lambing to include once more in the fall, or multiple times per year (STAR system),

generally requires higher levels of management, more infrastructure, and more external feed inputs. These models also require the selection of a breed that has the capacity for aseasonal breeding. For most producers, the primary concern is the timing of lambing, which dictates whether their flock lambs in the barn or on pasture.

Lambing rate is one of the key considerations in the viability of an operation. While genetics plays an important role in lambing rate and mothering ability, good nutrition plays an essential role in achieving the highest rate attainable. Body condition scoring can be utilized to make management decisions around pasture nutrition and the potential need to adjust grazing or even supplement with hay or grain if necessary. An increased body condition score from 2 to 3 can lead to greater lamb survival, higher weaning weights, and decreased ewe mortality. Pasture-based operations should pay close attention to ewe nutritional requirements during flushing and breeding to ensure their conception rates are as high as possible.

Confinement lambing

Some producers opt to lamb as early as January in a barn, while others wait for slightly more favorable temperatures in March and April. Confinement lambing has several benefits, including the ability to monitor and record production data, the capacity to identify and correct health and nutritional issues promptly, the ability to improve lamb mortality, and higher growth rates. The downsides of confinement lambing are less favorable weather, increased labor demands, and the need for more developed infrastructure.

Confinement spring lambing allows producers to time ewe lactation and lamb growth to the spring pasture flush. Early spring lambing also allows for a longer growth period for the lambs, potentially increasing sale weights. Some producers also choose to supplement lambs with a creep feeder, which can be especially impactful in flocks with higher lambing rates where it can be difficult for ewes to meet the nutritional needs of multiple lambs on just hay.

Pasture-based lambing

Pasture-based lambing usually occurs in May and June, once conditions are favorable enough not to risk high lamb mortality. Pasture-based lambing practices vary based on the scale of the flock, configuration of the land base, and the management level of the producer. Producers tend to choose pasture lambing because it requires a lower level of labor and takes place during much more favorable weather.

One of the primary determining factors of a pasture-based system is the availability of suitable, contiguous pastures to allow for grazing rotation long enough to last through lambing. Because ewes with new lambs are challenging to move, lambing pastures must be close enough to allow for easy transition. If producers do not have access to enough contiguous pasture, they may need to break the flock into groups, requiring more labor.

Some producers utilize a practice known as drift lambing. In drift lambing, the producer continues a regular pasture rotation with daily moves, but ewes who are in labor or who have recently lambed are allowed to remain in the prior days' pasture to give birth and bond with their lambs.

Access to the primary flock's pasture remains open and once the ewe and lambs have bonded, they can rejoin the main flock. Drift lambing allows producers to continue a regular pasture rotation while ensuring that ewes have time to give birth and that guardian animals can protect the whole flock.

Pasture-based lambing has a number of challenges that can impact the viability of a sheep operation. Lambing on pasture creates a dynamic environment that makes tracking and recordkeeping much more difficult. Routine health activities such as tail banding and castration can be difficult as they must be done before lambs become too mobile and risk interrupting the ewe-lamb bond. More complex tracking concerning identifying ewe-lamb relations, lamb sex, and lamb characteristics can be challenging to gather, making genetic selection and breeding decisions much less accurate.



RECORD KEEPING & TRACKING

Production tracking varies from little tracking to complex, dedicated sheep specific software. For most producers, the type of records they keep will be based on a combination of their capacity to collect data and the perceived value of that data for making decisions. A simple spreadsheet with a paper-based tracking sheet in the barn or lambing box is often sufficient as long as the producer is diligent about maintaining their records.

Basic metrics

- Number of ewes
- Number of lambs born per ewe
- Lamb mortality
- Ewe mortality
- Hay/feed consumption (flock/group level)
- Health data (vaccinations, treatments)
- Sire

Additional useful metrics:

- Ewe weight
- Lamb weaning weight
- Lamb ship or slaughter weight
- Carcass weight and yield
- FAMCHA data (parasite resistance)

The National Sheep Improvement Program offers a framework for genetic selection and improvement that requires intensive tracking and recordkeeping. For most producers, the time and effort required do not justify the potential impacts on the operation, unless the producer plans to sell breeding stock. The NSIP offers the potential to purchase rams or breeding stock with traits selected for flock improvement.

RFID technology requires that animals be tagged, and there is a sufficient handling system to scan them efficiently. RFID tags are marginally more expensive than regular tags, and readers cost \$800-\$2000. The readers come with various software, ranging from relatively simple data tracking software to subscription-based online options. RFID technology has been widely adopted by cattle producers, and it could be an opportunity for larger sheep producers to improve their recordkeeping.

Flock Health and Selection

One of the steps to improved profitability is through the process of genetic selection. Producers must select the hierarchy of traits they think will improve their flock's overall health and productivity, and then develop the tracking system that will allow for informed selection decisions. Producers may prioritize specific attributes for flock health (parasite resistance, hoof health) or quality of life (lambing without assistance), but overall economic considerations should be prioritized. While the NSIP offers a framework for tracking and decision making, most producers will select just a handful of attributes to make selection decisions.

Selection for flock health is only useful if the sheep purchased to start the flock are healthy to begin with. There are resources at the end of this document concerning the particular health concerns to look for when purchasing a flock, but there are a couple of general rules for sourcing genetics for production in Vermont. Producers should look to purchase animals from established flocks that are managed with similar desired production traits and in a similar production environment. Animals that have been selected for confinement style systems with heavy grain supplementation are probably not a good fit for a pasture-based system. Two areas of significant interest for Vermont producers are parasite resistance (*Haemonchus contortus* being the most detrimental) and hoof health. Both of these health concerns can be improved with selection, but ideally, any purchased ewes would have already been selected for performance in these areas. Selection for production metrics is instrumental to the overall improvement in flock efficiency and,

therefore, profitability. Many of the tracking metrics described above have a straightforward correlation with profitability. In order for an enterprise to progress in terms of profitability, the metrics can be combined and refined to make informed decisions about replacement ewe selection. An example of this would be to track pounds of lamb weaned per ewe, which shows the productivity of that particular animal. When this metric is combined with the weight of the ewe, it provides an additional data point for the efficiency of that ewe, as smaller ewes have proportionally lower maintenance costs. If this data point is tracked over a number of ewes, it can give a very good indication of whether that ewe's genetics should be retained for future breeding stock.

Another example of an area for improved flock productivity is around ewe longevity. A ewe does not usually reach full productivity until her second lambing, so it is in the best interests of the producer to maximize the lifespan of their most productive ewes. Culling decisions should be based on production metrics, and tracking the causes of premature culling can lead to the identification of environmental factors that may be impacting ewe longevity. Addressing these environmental concerns can improve profitability through decreased replacement rates and a more efficient flock overall.

Genetics

The availability of high-quality sheep genetics can be a challenge for Vermont producers hoping to scale up. There are limited options for genetics locally, with most farms historically managing small flocks of Dorsets or commercial wool crosses. Producers who plan to scale up can grow their flock over time or purchase in larger batches of breeding ewes from other parts of the country. Sourcing animals from other regions can be challenging due to differences in production systems, health concerns, and the cost of long-distance trucking.

Most commercial, grass-based sheep producers in the region raise currently hair sheep, primarily Katahdins. This is representative of a national shift toward hair breeds, as they eliminate the expense of shearing and getting rid of wool. Katahdins tend to be small to mid-sized and are perceived to have some natural resistance to parasites, which has been improved with breeding. Dorpers are a larger hair breed that some farmers have chosen due to their larger and higher-yielding lambs.

While hair breeds are relatively common, other meat and dual purpose breeds may also be a good fit for production in Vermont. Western and midwestern producers tend to favor larger framed breeds such as Polypay, Columbia and Rambouillet, which have larger lambs and potentially higher lambing rates. These sheep are usually coming from farms or ranches with different environments and management systems which would need careful consideration before being imported into Vermont. Historic European breeds such as Dorsets, North Country Cheviots and Border Leicesters may be a better fit for the climate and production systems of Vermont farms. They usually have medium frame size, thrive on pasture and can have decent wool quality, which may present additional market opportunities.

Producers in other areas commonly use terminal sires for improved meat lamb attributes. By breeding a portion of the flock to a dedicated ram of a different breed, producers can increase

lamb size, vigor and carcass quality. Texels and Suffolks are two breeds commonly used as terminal sires due to their frame and carcass characteristics. Using a terminal sire requires having the records in place to know which ewes offspring will be kept for replacements and running separate breeding groups, but the potential economic returns can justify increased management costs.



It is critical to make sure the land base and its capacity to provide pasture and stored forages match animal numbers and the level of production. Here in the Northeast, where the grazing season tends to be relatively wet and moist compared to other regions, managing and preventing internal sheep parasites will also be a significant factor in determining the farm's ideal stocking rate

LAND ASSESSMENT

Land assessment lies at the heart of determining the carrying capacity or stocking rate of a grass-based sheep operation. Step one is a thorough assessment of the land base and farm resources. It is critical to make sure the land base and its capacity to provide pasture and stored forages match animal numbers and the level of production. Here in the Northeast, where the grazing season tends to be relatively wet and moist compared to other regions, managing and preventing internal sheep parasites will also be a significant factor in determining the farm's ideal stocking rate. Each farm has unique characteristics that will determine what type of business and scale of operation is the best fit.

Asking a series of questions and making sure they are the right questions is a good place to start. First, look at the overall production systems and farm management goals of the proposed business to see how that impacts acreage needs and carrying capacity. Then take a detailed look at the acreage, soils, yield, and quality of the land and assess existing and needed infrastructure for grazing.

Production and management system questions:

- What if you graze all the land and buy the forages?
- What if you want to make all of your own hay?
- How would dry matter demand from hay and pasture change if the flock was supplemented with grain vs 100% grass-fed?
- Do you plan to use a planned grazing system with short periods of occupation and variable regrowth periods between grazings (more labor and more fence needed) or an extensive grazing system with fewer paddocks and less intensive moves (will result in less productive pastures and potentially more management of weeds)?
- What is your plan for the prevention of internal parasites?
- Does your market require you to be certified organic?
- Does your farm business plan require a specific flock size in order to be financially feasible?
- Do you plan to overwinter the flock for some or all of the nongrazing season, and if so, how will you protect unfrozen saturated soils from compaction damage?

Questions for assessing acreage and forage productivity:

- How many total acres are there?
- How many acres of tillable cropland have good soils?
- How many acres of hay land or good quality pasture?
- What are the soils like overall on the farm, and can yield and quality be improved to increase the stocking rate?
- Will there be a significant expense in bringing in fertility and seed to renovate poor forage stands?
- How many acres of less productive pasture?
 - Could the poor pastures be improved, or are they too wet/rocky/steep for significant improvements?
- How many acres are available for hay production, and how much of that could also be grazed after first or second cut to lengthen the grazing season?
- How much of the land is seasonally wet or very rough/rocky?
- How much of the open grazeable land is contiguous, or will you need to move the flock using a trailer or herding dogs crossing/using traveled roads to graze some areas?
- Is there additional close-by or contiguous land that could be rented to add more acres of pasture or forage harvest?
- Will some land be used to produce bedding for winter housing?

Questions for assessing pasture infrastructure:

- Where is there functional electric fencing, and is it designed to keep predators out or just to keep sheep in?
- Are there water lines to supply drinking water in pastures?
- Is the water supply adequate, and does it provide sufficient flow in the dry part of the grazing season?
- Is the water quality good (tested)?

- Are there pastures or crop/hayfields that are difficult to access due to roads, rivers, or other land features?
- Is there adequate winter housing or a heavy use area so that livestock do not have access to pastures when soils are excessively wet during the grazing season or during winter?

Overstocking the farm with too many sheep usually results in pastures that suffer from overgrazing damage. Overgrazing damage occurs when animals are returned to the paddock before plants have had time to fully regrow or are left in the paddock for too long. Once overgrazing damage occurs, the land will produce less quality forage, problems with weeds will be more severe, the grazing season will be shorter, and the farm will require more purchased feed to support the same flock size.

The initial process of assessing the existing land base and infrastructure then leads into the financial planning process. Asking the right questions and staying open to considering a completely different opportunity for the farm are important.

Wetlands

When assessing an existing farm, it is important to clearly identify areas of pasture or cropland that are seasonally wet, poorly drained, or may be actual wetlands. In some cases, it may be possible to improve existing ditching or drainage to prevent seasonal flooding or standing water. However, water quality regulations may prohibit the installation of new tile and ditching. Be sure to get an up-to-date map of the farm's soil types and where hydric soils and wetlands are located. These can be found online, or check with local NRCS or soil conservation staff.

If a hay field or pasture has standing water in it at some periods each year, this will severely limit what can grow there. Standing water, unlike flowing water, will rapidly deplete the oxygen available to plant roots. The majority of improved forage species will not tolerate oxygen-depleted conditions, and they will be replaced by wetland species, such as rushes and sedges. These wetland areas will never become productive pasture areas, so effort and investment should instead be made to improve pastures with soils that have a more productive potential.

Grazing

Grazing practices need to align with the producer's production goals. There are many grazing resources available, such as books and classes, and we have linked to a few in the grazing section of the appendix.

A well-designed grazing system will allow the grazing by the livestock to improve the pastures over time. These types of systems will have higher quality and productivity, and with management of pre grazing heights and post grazing residual, can also be part of the parasite prevention plan.

Good grazing systems utilize relatively short periods of occupation to allow control of the post grazing residual (plant material left behind after grazing) and prevent re-grazing of plants as they regrow. These well managed systems also have variable regrowth periods between grazing, always allowing the perennial pasture plants to be fully recovered before being grazed again.

Overall, if the choice is made to have an intensively managed grazing system where the flock is moved multiple times per day or every 1 to 3 days, pasture quality and productivity will be higher. However, this will require additional labor, particularly for a large flock using an electric net fence, and this can be a lot of rolls of net fence to move. E-fence systems could be used to decrease labor for interior subdivision fences; however, at this time, some of the systems are not yet set up to work for small ruminants, and some have a limit on the number of collars, which would limit flock size or at least group size. Lack of cell phone service may limit functionality, and if there is any risk of predators in the area (including the neighbor's dogs), a perimeter fence to keep predators out may be necessary, even if interior paddocks are done with E fencing.

Excess pasture and hay production

Typically pastures grow quickly in the spring, and cool season perennials produce the majority of their yield in the early part of the growing season. Then as weather is hotter and dryer, pasture growth rates slow. For example, paddocks may regrow as quickly as 21 to 28 days in the spring, but may take 35 to 45 days or longer later in the season. This means that in the spring, a smaller acreage can provide the required pasture forage to the flock. If this is combined with a spring lambing flock so the dry matter demand of the flock is lowest in spring, and much higher later in the summer when the lambs are larger and consuming more pasture, there can be a significant miss-match of forage growth and flock forage needs.

For farms making their own hay, this seasonal oversupply of forage is managed by taking a first cut of hay from some of the fields, and then once those fields fully regrow, they can be added into the grazing rotation. This allows the forage quality to be higher by preventing the accumulation of over mature forages with a lot of stem and poor digestibility. The cost to own equipment to make hay may not be reasonable for the farm, so having haying done by a custom operator may be a much better option if that service is available in the area.

For farms that either don't have access to the equipment, or have a land base that is not suited to driving over it with haying equipment, managing the spring forage surplus will need to be done with just livestock.

Wetlands

When assessing an existing farm, or a new farm, it is important to clearly identify areas of pasture or cropland which are seasonally wet, poorly drained, or may be actual wetlands. In some cases, it may be possible to improve existing ditching or drainage to prevent seasonal flooding or standing water. However, water quality regulations may prohibit installation of new tile and ditching. Be sure to get an up to date map of the farms soil types, and where hydric soils and wetlands are located. These can be found online, or check with local NRCS or soil conservation staff.

If a hay field or pasture has standing water in it at some periods each year, this will severely limit what can grow there. Standing water, unlike flowing water, will rapidly deplete oxygen available to plant roots. The majority of improved forage species will not tolerate oxygen-depleted conditions, and they will be replaced by wetland species such as rushes and sedges. These wetland areas will never become productive pasture areas, so effort and investment should instead be made in improving pastures with soils that have a more productive potential.

Internal Sheep Parasites

Small ruminants are more susceptible to health problems than cattle, and the majority of infection occurs on pasture. A farm which is overstocked which also has poor grazing management will develop more serious parasite issues faster than an understocked farm. However, in the moist northeast climate, all farms are likely to have parasites and will need a prevention and treatment plan.

FAMACHA training will provide information on how to know when to treat, what to treat with and which animals to treat as well as information on the life cycle of the parasites. An understanding of parasite life cycle and when/where sheep are most likely to be infected can be used to build a grazing plan which will minimize infection. Monitoring the flock with fecal egg counts, body condition scoring, weight gain/growth rate monitoring, manure observation and FAMACHA scoring is critical for prevention and knowing when and who to treat.

Managing pastures so that livestock don't graze the lower 2 to 4 inches of the plants will greatly reduce the number of infective larvae consumed by the flock. Managing the grazing rotation so that the flock is not returned to areas that are most heavily infected is another strategy that can be used. However, in the cool moist northeast climate, parasites can remain infective in the pastures for many months, so managing for "clean" pastures that don't contain infective parasites can be difficult. Taking a cut of hay off the pasture, or grazing it with cattle to extend the amount of time before the sheep return to graze the pasture can reduce the number of sheep parasites (but not eliminate them all!). Longer recovery periods can also be used, but may result in over mature forages which are lower in digestibility, protein and energy.

Organic Production

What to think about if you want to be a certified organic sheep producer:

- Flock health must be managed without prohibited synthetic medications, such as dewormers, so a prevention plan will be essential.
- Young stock are most susceptible to internal parasites, which can be picked up by animals grazing pastures that are grazed shorter than two to four inches in height.
- Organic standards require that all animals get at least 30% of their dry matter intake from pasture during the grazing season once they are six months old.
- All pasture, grain, and stored forages fed (purchased or made on-farm) must be certified organic.
- Are you sure your market requires certified animals?

PARASITE MANAGEMENT CAN BE EXTREMELY DIFFICULT FOR A CERTIFIED ORGANIC SMALL RUMINANT FLOCK ON PASTURE.

- In order to be labeled as organic, meat must be processed in a certified facility.
- Flock records must be kept, and animals must each be identified individually. The

slaughterhouse will also need to be certified organic in order to label the beef as organic.

- Non-organic animals cannot be transitioned to organic and sold as organic meat. Only lambs born from mothers managed organically for the last 1/3 of their gestation can be certified organic.



FEED

Sheep require protein, energy, fiber, minerals, vitamins, and water. To get enough of these, they need the right amount of daily dry matter intake from forages, in addition to access to clean drinking water and some sort of mineral supplement. The exact balance and amounts of nutrients an animal needs depend on its age, size, stage of gestation, rate of growth, amount of milk it may be producing, and its environment.

Forage quality depends on the type of plant, the time of year, and the stage of plant maturity. Testing stored forages and pastures is the best way to be sure they are able to meet the nutrient needs of the flock.

Monitoring livestock performance and wellbeing is also an essential part of assuring their nutritional needs are being met. Monitoring may include taking live weights of growing animals, body condition scoring, watching for rumen fill, observing manure (manure scoring), and general observation of health and behavior.

Forage quality depends on the type of plant, the time of year, and the stage of plant maturity. As plants mature and grasses produce flowers and seeds and more stemmy material, they produce more non-digestible fiber, and contain less energy and protein.

Testing stored forages and pastures is the best way to be sure they are able to meet the nutrient needs of the herd. Forage samples must be based on a representative sample of the feed. For a round bale sample, samples should be taken from multiple bales. For pasture, a hand grab sample from an area about to be grazed must be taken carefully, to be sure that only the types and portions of plants that sheep will actually graze will be sampled. Basic NIR testing should be adequate for most needs, however if detail on the mineral content is needed, then wet chemistry should be requested. Be sure to ask the lab to include fiber digestibility in the test (NDFD30 for example) so you can get good information on energy content. In fermented feeds, make sure the lab sends you VFAs (lactic, acetic and butyric acids) so you can see if the bales fermented correctly. Take some time to learn how to read the forage tests, and don't just rely on the calculated values such as RFQ, TND or NEm which don't give the full picture of how the flock will perform on the forages.

Once you know what the nutritional needs of each group of sheep are, and what the nutrient content of the pasture and stored forages are, you will have much better information to understand if your grazing plan and your winter feeding plan are on track to succeed.

Northeast pastures are typically a mix of cool season perennial grasses and legumes with some forbs mixed in. When reasonably well managed, pasture can provide all the energy and protein needs during the grazing season. A high quality hay which has been harvested on time (not over mature), and stored correctly may also be able to meet all the flocks energy and protein requirements. Forage testing is the only way to know if the nutrient content will meet the production goals however!

Pasture or stored forages will NOT provide all the mineral needs for the flock. A well balanced mineral mix needs to be based on forage tests and local soils. For example, in the northeast region, soils are low in selenium, so that must be included in any mineral or salt mixture. Working with your vet or a nutritionist and forage tests will allow the most precise mineral mix to be developed, however several companies make well balanced small ruminant mineral mixtures.

If grain is going to be fed, it is critical to make sure that it is based on what is lacking in the forages. For example, feeding a high protein grain or alfalfa pellet when the flock is on lush high protein pasture will create health problems and poor productivity, but feeding a high energy grain with pasture may improve productivity. Improving pasture and stored forage quality to eliminate the need for grain will lower the farms feed costs and improve farm financial viability.

Monitoring livestock performance and wellbeing is also an essential part of assuring their

nutritional needs are being met. Monitoring may include taking live weights of growing animals, tracking hanging weights or grades, body condition scoring animals, watching for rumen fill, observing manure (manure scoring), and general observation of health and behavior. It is important to note that poor growth rates may be caused by poor nutrition, or they may actually be a result of internal parasites. Monitoring for internal parasites AND forage testing is essential when troubleshooting poor growth rates in lambs.



PREDATOR PROTECTION

In large-scale sheep farming, predator control is a significant concern. Predators such as coyotes, coydogs, and stray dogs can cause substantial losses to flocks, leading to financial strain. Livestock Guardian Dogs (LGDs) offer a natural, effective solution to this issue. These dogs are bred specifically to protect livestock, and when integrated properly, they can significantly reduce predator-related losses, providing both peace of mind and long-term savings.

Before implementing LGDs on your farm, it's essential to understand the costs, training requirements, and management strategies necessary to make the dogs an asset to your operation. Below, we'll explore the best practices for raising LGDs, how to maximize their effectiveness, and the financial considerations of using LGDs.

Selecting the Right Breed

Selecting the right LGD breed is essential to ensuring the dog's effectiveness on your farm. Each breed has traits suited for various climates, predator types, flock sizes, and propensity to guard and stay with the flock vs. seeking out and engaging with predators. However, more important than breed and specific characteristics is that your dog comes from good working lines.

- **Great Pyrenees:** Known for their gentle temperament and independence, these dogs are ideal for larger pastures. However, they may require extra training to maintain a

strong guarding focus.

- **Anatolian Shepherd:** These dogs are protective, agile, and heat-tolerant, making them well-suited for farms in warmer climates and challenging environments.
- **Maremma Sheepdog:** This breed is particularly effective in sheep operations as they form strong bonds with their flock, making them a perfect choice for close-knit groups of sheep.
- **Kangal:** Known for their endurance and territorial nature, these dogs are excellent for defending against larger predators and have high stamina.
- **Akbash:** Fast, alert, and highly adaptable, Akbash dogs excel in mixed-terrain environments, making them ideal for more dynamic farming setups.

Raising and Training an LGD

Raising an LGD requires patience and commitment. Early socialization with livestock is critical, and puppies should be introduced to sheep as early as possible. Key practices include:

- **Socialization:** Allow the puppy to grow up alongside livestock to develop its protective instincts.
- **Human Interaction:** Minimize human bonding to ensure the dog stays focused on its role as a guardian.
- **Training Timeline:** By one year of age, the LGD should be capable of working full-time with your flock.

Common training mistakes to avoid include over-socializing the dog with humans or rushing its exposure to livestock. Gradual, consistent training will ensure the dog matures into a reliable guardian.

Integrating the LGD with Your Flock

Introducing an LGD to your flock should be done slowly. Start by placing the dog in a small pen within the flock's environment and allow supervised interactions. As the dog matures, it can transition from supervised exposure to full-time guarding.

Watch for any signs of behavioral issues, such as over-aggression or fearfulness. Early intervention will help prevent problems down the road and ensure the dog remains focused on its duties.

Long-Term Management of LGDs

As LGDs age, their effectiveness may decrease, and it's important to replace older dogs (8-10 years old) when necessary. Maintaining harmony between multiple dogs is key to maximizing their protection. Regularly monitor each dog's performance to ensure they are still fulfilling their role effectively.

When replacing an aging dog, a smooth transition process will help integrate a new dog into the flock without disruption.

Safety Considerations

When incorporating LGDs into large-scale sheep operations, safety is a key consideration for both animals and humans. LGDs are instinctively protective and may perceive unfamiliar people, vehicles, or dogs as threats to their flock, potentially leading to aggressive behavior if not properly socialized. It's important that these dogs are well-trained from an early age to differentiate between real dangers and routine farm activity. Fencing should be secure to prevent the dogs from roaming beyond designated areas, especially in operations near public land or neighboring properties. Additionally, clear signage can help alert visitors or workers to the presence of guardian dogs, promoting awareness and preventing accidental confrontations.

New Fencing Technology and LGDs

The use of virtual fencing for livestock has become increasingly popular in Scandinavia and Europe and is now being adopted in the United States. Without the physical barrier of electric fencing, incorporating LGDs for sheep protection will become even more critical.

Initial and Ongoing Costs

Initial Purchase Price: An LGD puppy typically costs between \$500 and \$1,500, depending on breed and breeder. It's crucial to select a dog from a reputable breeder who specializes in livestock guarding and raises puppies with livestock to ensure they have strong guardian instincts.

Annual Costs: The ongoing costs of maintaining an LGD, which include food, veterinary care, and preventive health measures, are as follows:

- **Food:** \$750 annually for high-quality kibble supplemented with raw food.
- **Veterinary Care:** \$350 annually for vaccinations, check-ups, and deworming.
- **Flea/Tick/Heartworm Prevention:** \$150 per year.

This results in a capped annual cost of \$1,250 for each dog.

Economic Analysis: Is an LGD Worth the Investment?

Break-Even Analysis: To determine the cost-effectiveness of an LGD, we need to compare the costs to the value of livestock saved.

- **First-Year Total Costs:** \$1,500–\$3,000 (initial purchase + annual costs).
- **Sheep Saved to Offset First-Year Costs:**
 - **Lambs (\$200 each):** 8–15 lambs saved.
 - **Ewes/Rams (\$350 each):** 5–10 ewes saved.

Ongoing Costs After Year 1:

- **Annual Costs:** \$1,250.
- **Sheep Saved to Offset Annual Costs:**
 - **Lambs (\$200 each):** 5–12 lambs saved annually.
 - **Ewes/Rams (\$350 each):** 3–7 ewes saved annually.

A single LGD can quickly pay for itself within its first year, especially in areas with moderate to high predator pressure.

Lifetime Costs:

- **Low Estimate (8 years):** \$10,500.
- **High Estimate (10 years):** \$14,000.

Sheep Saved Over an LGD's Lifetime:

- **Lambs (\$200 each):** 40-120 lambs (\$8,000-\$24,000).
- **Ewes/Rams (\$350 each):** 24-70 ewes (\$8,400-\$24,500).

Given these estimates, an LGD will generally pay for itself multiple times during its lifetime. Even under conservative assumptions, it's clear that LGDs are an excellent investment, particularly in regions with significant predator threats.



In an era where labor shortages and rising wages challenge farm profitability, a well-trained Border Collie can streamline operations, improve animal welfare, and maximize grazing efficiency, particularly on hill farms and in agroforestry systems where precise movement is key.

HERDING DOGS

Border Collies are an invaluable asset for commercial sheep operations in New England, offering unmatched efficiency in moving and managing flocks while significantly reducing labor costs. Their intelligence, agility, and natural herding instincts make them ideal for tasks such as rotating sheep between paddocks, sorting animals for vaccinations, and gathering scattered flocks. Although other herding dogs are used, it is generally accepted that Border Collies are the predominant herding dogs used on working farms around the world, and this will thus be the focus of this overview. In an era where labor shortages and rising wages challenge farm profitability, a well-

trained Border Collie can streamline operations, improve animal welfare, and maximize grazing efficiency, particularly on hill farms and in agroforestry systems where precise movement is key.

Initial Investment & Cost Considerations

Initial and Ongoing Costs

- **Initial Purchase Price:** The upfront cost of a Border Collie depends on its training level. A registered puppy from proven working lines typically costs between \$850 and \$1,500, while a "started" (partially trained) or fully trained adult dog ranges from \$4,000 to \$7,000. Although this initial investment may seem high, the long-term savings in labor make it a cost-effective choice.
- **Annual Costs:** The ongoing costs of maintaining an LGD, which include food, veterinary care, and preventive health measures, are as follows:
 - **Food:** \$500 annually for high-quality kibble supplemented with raw food.
 - **Veterinary Care:** \$350 annually for vaccinations, check-ups, and deworming.
 - **Flea/Tick/Heartworm Prevention:** \$150 per year.

This results in a capped **annual cost of \$1,000** for each dog.

Over an 8- to 10-year working life, a Border Collie participating in 400 herding events costs roughly \$15 per event, including upkeep. For large-scale sheep operations, this expense is minimal compared to the cost of hiring additional labor. In fact, Border Collies are far more economical than alternatives like setting up net fencing or using multiple ATVs, which can cost as much as \$55 to \$95 per event.

Beyond cost savings, Border Collies play a vital role in daily farm operations. They assist with penning and sorting animals, shearing, and countless other tasks. Their versatility extends beyond sheep, as they can also herd cattle, goats, pigs, and even chickens. While Border Collies are not livestock guardian breeds, their presence among livestock can help deter predators, adding another layer of value to their role on the farm.

Training a Border Collie for Farm Work

Successful training begins with basic obedience (stay, come, down, etc.) and establishing trust and bonding between the handler and the dog. Early exposure to sheep in a controlled setting, such as a 50-foot round pen, is crucial. Training should progress gradually, reinforcing commands while ensuring the dog remains calm and responsive.

For those without access to sheep, ducks serve as an excellent training alternative. Breeds like Indian Runner, Welsh Harlequin, and Khaki Campbell exhibit strong flocking instincts and mimic sheep behavior. Ducks are inexpensive, reach training readiness in four months, and are less intimidating for young dogs. However, they lack the physical resistance of sheep, so transitioning to livestock is necessary for advanced training.

Determining the Number of Dogs Needed

The size of the flock and terrain dictate how many dogs are necessary:

- **1-2 Border Collies per 100 sheep** is a general rule.
- **Hilly or brushy land and/or herding sheep on roadways** may require additional dogs due to increased gathering difficulty.
- **Flighty or range-bred sheep** demand more dog power than docile, farm-raised flocks.
- For flocks of **500+ sheep**, dogs should work in shifts to prevent exhaustion, and multiple dogs may be deployed simultaneously for large-scale movements.

Health & Maintenance of Working Dogs

A high-energy working dog requires proper nutrition, conditioning, and veterinary care. Although health issues are rare, dogs can have hip dysplasia, eye problems (such as Collie Eye Anomaly), and injuries from rough terrain. Preventative care, joint supplements, and structured rest periods are essential for longevity.



MARKETING STRATEGY & COMPETITIVE ANALYSIS

This section is not a pitch deck. It's not a how-to guide for direct marketing, nor is it technical assistance dressed up as research. Instead, it's a distillation of two years of conversations with producers, processors, buyers, service providers and researchers. It's a curated collection of insights that were offered freely, often ending with "You really need to talk to..."- that formed a network of overlapping themes, confirmations, and real-time learnings.

There are not yet enough commercial lamb producers operating at a comparable scale in Vermont to make sweeping statements, so instead, this attempts to examine useful reference points (data, strategies and patterns) meant to support the ongoing work of producers, deepen peer-to-peer exchange, and invite stakeholders to examine more closely how market forces shape viability.

Commercial, pasture-based sheep production reflects Vermont's agricultural strengths, resource base, and access to high-value regional markets. While lamb remains a relatively niche protein nationally- nearly 40% of Americans have never consumed it and many associate it with special occasions- shifting consumer values suggest new opportunity. Nutrition, animal welfare, and local sourcing are now front-of-mind for buyers in the Northeast. Pasture-based lamb, raised with care and transparency, is well-suited to meet these expectations.

That said, success won't come from scale alone; it will require precision. Marketing isn't just about packaging a product; it's about alignment. Vermont producers must ensure their flock management, genetics, timing, pricing, and customer communication are all tailored to the specific needs of their chosen market segment.

And that's no small task- the math of farming is only getting harder. Today's farmers are not only livestock specialists, but they are also business owners who must practice active attention. Attention to their animals, to changing weather, to policy shifts, pricing signals, and market dynamics. A static marketing plan is insufficient. The work now requires agility, experimentation, and sometimes the willingness to try unfamiliar tools or partnerships that initially seem out of reach.

Market Segments

There is no single "right" market channel for producers. Each producer must assess their production methods, infrastructure, labor availability, and marketing capacity to determine which market channels are most viable. Understanding these tradeoffs and committing to one or two focused strategies will lead to stronger outcomes than trying to serve all markets at once. Farms looking to grow should consider starting by defining their personal and operational capacity; from there, they can reverse-engineer a market strategy.

Each of the market channels requires *different tools, timelines, and commitments*. Producers must consider not just what they are raising, but how they are equipped to sell it. Those without consistent freezer space or realistic access to a USDA-inspected processing facility may find custom-exempt, direct sales the best strategy, or elect to sell their lambs live. In comparison, those with access to reliable processing and packaging (along with marketing capacity) may find higher returns in selling directly to local groceries, co-ops, or restaurants.

There is no single "right" market channel for producers. Each producer must assess their production methods, infrastructure, labor availability, and marketing capacity to determine which market channels are most viable.

MARKET SEGMENT	COMMON EXAMPLES	ADVANTAGES	CHALLENGES
DIRECT-TO-CONSUMER	Farmers markets, on-farm sales, online orders, CSA (Consumer Supported Agriculture) models	Highest price point per pound, full control over branding and customer relationships, strong storytelling ability for branding local meat	Labor-intensive, requires cold storage, cut/packaging capacity, and customer-facing time & skills
DIRECT-TO-RETAIL	Local restaurants, grocery stores, and co-ops	Steady volume potential, better prices than with distribution, lots of local visibility	Requires consistent cut specs, packaging, and delivery
DIRECT-TO-DISTRIBUTORS	Larger-volume sales to food hubs or institutional buyers	Reach and scalability, offloads individual marketing tasks	Lowest margins, high standards for quality, consistency, packaging and timeliness
LIVE ANIMAL SALES	Public auctions [New Holland Sheep and Goat Auction in New Holland, PA a regional standard]]	No processing or packaging requirements	Highly variable pricing and buyer interest

Understanding Meat Yields

When estimating how much packaged meat a lamb will yield, it's important to understand the step-by-step reduction from **live weight** to **retail cuts**. After harvest, inedible parts such as the pelt, feet, and organs are removed, leaving a hot carcass: typically about 52–54% of live weight for conventionally fed, shorn lambs ([Lamb Yields](#)). A 100-pound lamb at a 54% dressing percentage would yield a 54-pound hot carcass. During chilling, moisture loss (or “shrink”) reduces this weight by 2–5%, resulting in a chilled carcass weight of approximately 52 pounds. Finally, fabrication into retail cuts further reduces weight depending on trimming preferences and cut style. Boneless, closely trimmed cuts may yield as little as 43–50%, while bone-in cuts can yield 65–75% of the carcass weight. In this example, a well-finished 100-pound lamb could yield roughly 36–39 pounds of packaged retail cuts: an essential calculation when setting pricing, managing customer expectations, and selecting processing specs.

Understanding USDA Lamb Grading

Lamb carcasses are graded on two criteria: quality grade and yield grade, both of which offer standardized benchmarks used across national markets ([USDA Agricultural Marketing Services](#)). Even if formal grading is not used, aligning with these benchmarks strengthens producer communication and supports better pricing decisions.

Quality Grade evaluates the predicted eating experience: specifically tenderness, juiciness, and flavor. Grades are determined based on lean color, firmness, texture, and flank streaking (a proxy for intramuscular fat), alongside carcass conformation and maturity. Most lambs that get graded in USDA-inspected plants fall into Prime or Choice- the two highest categories.

Yield Grade (ranging from 1 to 5) predicts the amount of closely trimmed, boneless retail cuts from the leg, loin, rack, and shoulder. It is calculated based on external fat depth at the 12th rib. Lower numbers indicate leaner carcasses with higher meat yield. Grades 2 and 3 are typically the most desirable; Grades 4 and 5 receive price deductions due to excess fat and waste.

While grading is voluntary and rarely used in Vermont's current slaughter environment, it remains the language of national pricing reports and wholesale specs. Many premium buyers reference "Choice, Yield 2-3" when setting expectations...even if the product isn't formally graded.

Knowing how your lambs would grade (e.g., based on finish, carcass weight, fat cover) enables you to:

- Have working variables that allow you to track consistency across slaughter groups
- Adjust feeding or genetics, geared toward higher-yielding carcasses
- Benchmark pricing more accurately against USDA market reports
- Position your product with buyers who are used to buying product with industry-aligned specs

Even without participating in formal grading, producers can use these metrics to tighten quality control and price with more precision.

Why Lamb?

Flavor-wise, lamb is rich, complex, and increasingly appreciated by chefs and home cooks alike. While pork and beef often rely on seasoning or marbling to carry flavor, well-finished lamb delivers bold character, even in lean cuts. Grass-finished lamb in particular offers a mild, sweet flavor profile- especially when harvested at the appropriate age and weight.

Unlike highly processed or grain-heavy proteins, lamb offers a clean-eating option rooted in pasture-based systems. It appeals to athletes, parents, aging populations and health-conscious eaters alike; and while the price point may not allow it to be a nightly staple for households- it's a protein worth savoring, and supporting.

A 3 oz. serving of American lamb delivers:

- **Over 100% of your DV (Daily Value) of Vitamin B12** (vs. 68% in beef and 38% in pork)
- **41% of your DV of Zinc**
- **Substantial levels of Selenium, Iron, and Vitamin B6**
- **23 grams of protein:** nearly half of daily needs
- **More digestible fats:** with a higher ratio of monounsaturated (“heart-healthy”) fat than beef

As costs rise across the meat sector, Vermont pasture-raised lamb offers something different: a product that justifies its price point through nutritional value, land stewardship, and taste. With proper positioning, it can move from a once-a-year indulgence to an aligned purchase for customers who care what’s on their plate- and where it came from.

Pricing Snapshot

Imported lamb- especially from Australia and New Zealand- continues to dominate retail shelves, often at lower prices due to vertically integrated supply chains and highly efficient processing infrastructure. In contrast, local pricing can vary significantly, underscoring the importance of knowing your costs and ensuring your pricing accurately reflects your production efficiency.

These estimated retail and producer prices reflect typical cut values in direct-to-consumer and small-scale retail markets in Vermont and neighboring states, and illustrate both the range within local pricing and the steep imported competition.

CUT / PRODUCT	VERMONT RETAIL PRICE (PER LB)	AVG. ESTIMATED INCOME TO VERMONT FARMER (PER LB)	NATIONAL / IMPORTED PRICE	NATIONAL / IMPORTED ORIGIN	SALES CONTEXT	NOTES
WHOLE LAMB	\$7.00 - \$11.00	\$6.30			Direct-to-consumer	
CHOPS	\$12.00 - \$18.00	\$10.50	\$11.99	New Zealand	Hannaford Shelf Retail	Premium cut, high visual appeal
CHOPS			\$13.99	United States	Shaws Shelf Retail	
GROUND	\$9.00 - \$15.00	\$8.40	\$10.99	Australia	Shaws Shelf Retail	Popular entry product, often sold frozen
GROUND ORGANIC			\$14.99	USA	Natural Foods Store - Premium product	

CUT / PRODUCT	VERMONT RETAIL PRICE (PER LB)	AVG. ESTIMATED INCOME TO VERMONT FARMER (PER LB)	NATIONAL / IMPORTED PRICE	NATIONAL / IMPORTED ORIGIN	SALES CONTEXT	NOTES
SAUSAGE	\$18.00	\$7.15			Farmers markets	Often sold at markets, strong shelf appeal
SHANK	\$10.00 - \$13.00	\$7.15			Local Retail/ Direct	Common in value packs or stew bundles
LEG (BONE-IN)	\$13.00 - \$15.00	\$9.75			Local Retail/ Direct	High end roast or steak
LEG (BONELESS)	\$15.00 - \$16.00		\$7.99	Australia	Hannaford Shelf Retail	
SHOULDER (CHOPS OR ROAST)	\$10.00 - \$14.50	\$8.78	\$6.99	Australia	Hannaford Shelf Retail	May be bone-in or boneless
STEW / KABOB	\$14.00 - \$15.00	\$9.75			Stew packs, frozen	Definitions vary (trim vs. kabob meat)
RIBS / RACK	\$13.00 - \$17.00	\$11.05			Specialty retail	Includes specialty preps like frenched racks
NECK ROAST / SLICES	\$10.00					
ORGANS (HEARTS, KIDNEY, LIVER)	\$5.00					

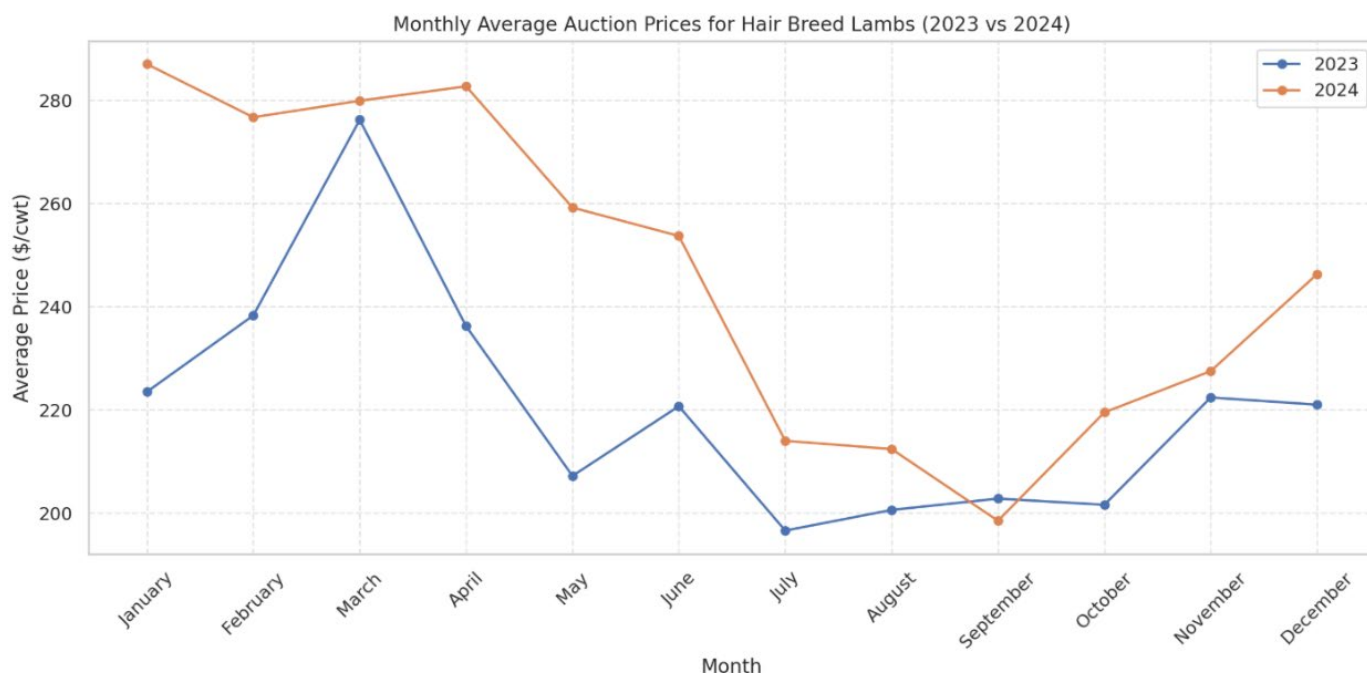
Live Animal Sales

Understanding Auction Pricing Trends: What Vermont Producers Should Know

For producers marketing live lambs- whether by choice or necessity- auctions remain a vital outlet. The New Holland Sheep and Goat Auction in Pennsylvania is widely regarded by Vermont shepherds as the Northeast's pricing benchmark due to its consistent reporting and regional

relevance. The goal is to support producers in understanding when and why prices **rise or fall**, and how strategic timing can improve revenue per head.

- **Note:** Auction prices are reported per hundredweight (cwt). To estimate the per-pound price, divide by 100. (E.g., \$240.00/cwt = \$2.40/lb)



This analysis draws on 2023-2024 sales data from the USDA's ([Agricultural Marketing Services](#)). Data was filtered specifically for Hair Breed sheep for relevance. These sales offer a useful reference point for Vermont producers without direct USDA-inspected processing access or who regularly use live animal sales. Even basic awareness of seasonal cycles can shape critical management decisions.

Four guiding questions:

- What are the average monthly price trends?
- How much variation is there between years, and are the annual pricing “curves” consistent?
- Does auction volume (number of head sold) significantly influence price?
- Do religious or cultural holidays create demand-driven price spikes?

Holiday timing was aligned using the [Cornell Cooperative Extension Sheep & Goat Ethnic Holiday Calendar](#) and cross-referenced with auction price patterns.

Explore the Data Yourself: Interactive Tool

To support this study, an interactive Tableau dashboard was created by Dr. Yonggang “Tim” Lu, Harold Alfond Associate Professor of Business Analytics at the Maine Business School, University of Maine. This tool visualizes USDA auction data and allows producers to explore how pricing

trends intersect with volume, month, year, and dressing estimates.

[Tableau Public: Auction Pricing Visualization Tool](#)

Helpful Tips for Using the Dashboard

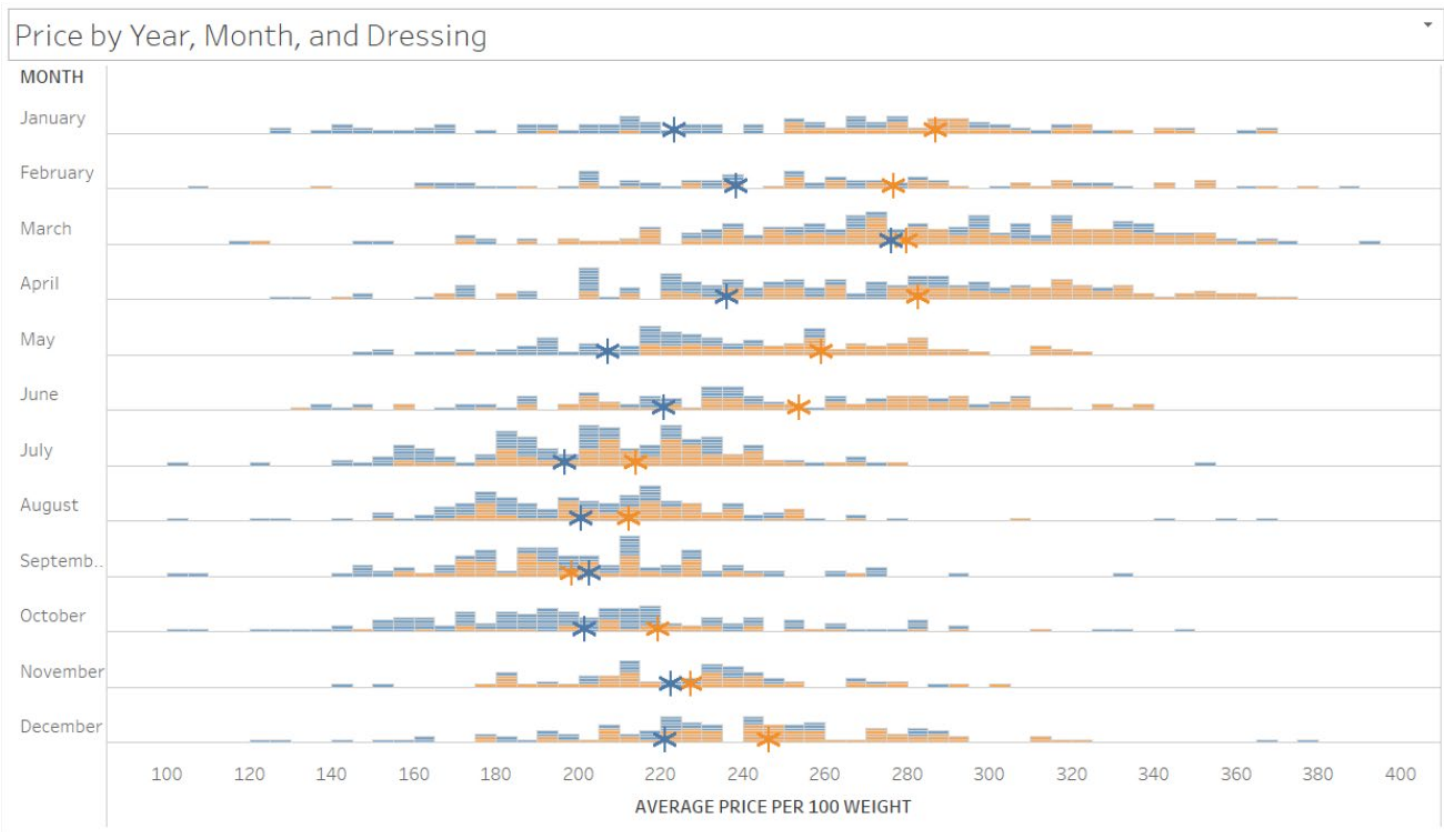
Sheet 1: Monthly Pricing and Volume Trends

- Use dropdown filters to select year(s), and months of interest
- Hover over dots to view average price and number of animals sold
- Compare seasonal price curves across 2023 and 2024

Sheet 2: Price by Dressing Estimate

- Filter by dressing category to evaluate how carcass quality relates to price
- Combine month, year, and dressing filters to identify ideal sale windows
- Use this sheet to assess value-add from better-finished animals

Four Key Insights from Sheet 1:

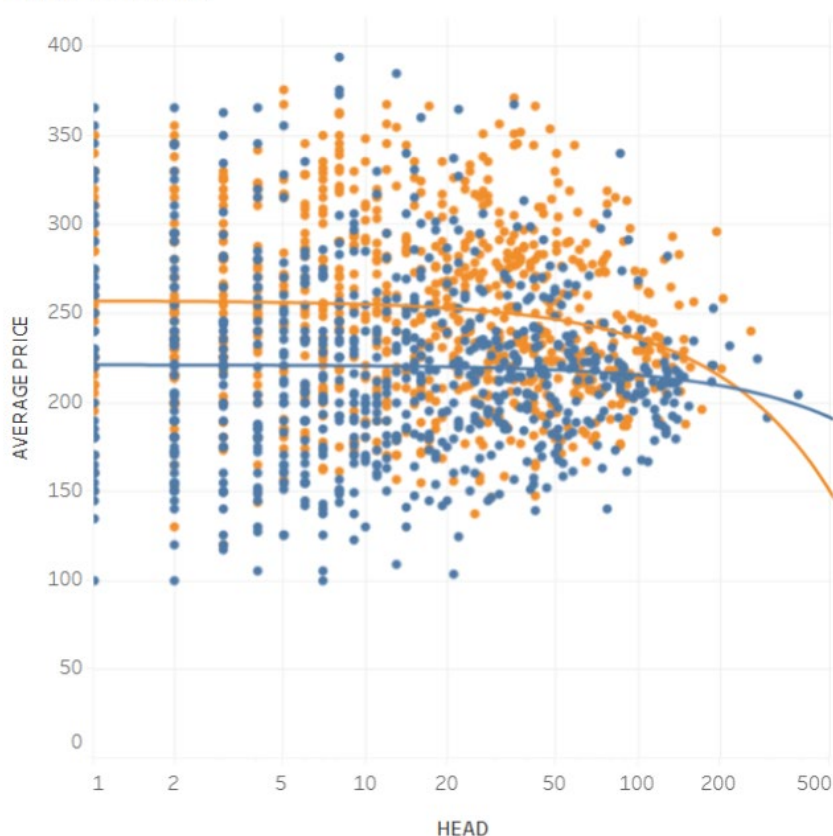


- 1. Seasonal Highs in March:** Prices peaked in March across both years (\$276.2 in 2023; \$279.9 in 2024), aligning with Easter and Ramadan. These months offer strong seasonal marketing windows.

2. **July-August Slump:** Average prices dipped below \$215/cwt during midsummer both years, likely due to reduced demand and/or a seasonal supply influx. Producers may want to avoid finishing lambs during this period.
3. **Holiday-Linked Spikes:** Passover (April) and Eid al-Adha (June) coincide with moderate price increases- especially when holiday timing aligns with tighter supply. Producers who time finishing around these dates may capture premiums.
4. **Year-End Rebound:** December pricing showed a late-year lift (\$221.00 in 2023; \$246.30 in 2024), suggesting that a second marketing window exists for late-born or retained lambs.

Four Key Insights from Sheet 2:

Price vs. Head



1. **Volume Affects Price-** With Exceptions: Higher head counts often correlate with slightly lower average prices. However, in high-demand months (e.g., June), prices remained stable even when volume increased- indicating strong holiday-related demand.
2. **Carcass Quality Adds Value:** Lambs rated as “Good” dressing earned consistently stronger prices than those in “Average” or “Light” categories. This effect was more pronounced in peak months.
3. **Price Floor Exists Across All Conditions:** Even on high-volume sale days, prices rarely fell below \$195/cwt. This suggests a market floor that offers planning stability, especially for budgeting or forecasting.
4. **Dressing Score Influences Depend on Season:** Outside of peak periods, dressing scores showed less direct impact on pricing. Timing and demand remain stronger pricing drivers, though quality does still matter.

U.S. Market Realities

Australia and New Zealand together account for over **70% of lamb** and mutton consumed domestically. Australian imports, in particular, have surged in volume and held a strong price

advantage, largely due to favorable exchange rates and lower production costs. While the U.S. sheep industry has contracted dramatically, **losing over 60% of its full-time producers since the early 1990s**, imports from Australia have increased by **more than 500%** during the same period. In 2023, Australia's sheepmeat exports made up 50% of the global export total and 2024 turned out to be their largest on record for lamb slaughter.

New Zealand, although a smaller player by volume, has maintained a consistent and growing presence in the U.S. market, with sheepmeat exports to the U.S. totaling nearly NZ \$592 million in 2022, or about 14% of the country's total global sheepmeat exports.

American producers and trade organizations such as R-CALF argue that this influx has deeply undercut domestic production and market stability, contributing to historically low profitability and rising dependency on foreign supply chains.

From a global standpoint, the U.S. lamb market faces competition not only in terms of cost but also in terms of infrastructure and scale. The vertically integrated meat systems in countries like Australia and the presence of global packers like JBS Foods give foreign producers strategic leverage. The net result is a global lamb market where U.S. lamb struggles to remain price-competitive despite sustained domestic demand and the potential for production growth.

National Competition

U.S. sheep production has declined steeply over the past century from a peak of over 50 million head in the 1880s to around 5 million head today. This long-term trend is the result of shrinking infrastructure, market consolidation, and a cultural shift away from lamb as a mainstream protein.

Despite national contraction, sheep production remains regionally important. More than two-thirds of U.S. sheep operations are concentrated in the **Southern Plains, Mountain, and Pacific regions**, with states like **Texas, California, Colorado, and Wyoming** leading the way. In these western states, **stock-sheep operations dominate** with grazing-based models that often rely on public Bureau of Land Management or Forest Service lands. About 30-40% of sheep in these areas graze on such government rangelands.

Two distinct business models exist in the U.S.:

- **Stock-sheep production** relies on forage and grazing systems, often with dual revenue from lambs and wool.
- **Lamb feeding operations**, especially prevalent in Colorado and California, place lambs in feedlots for grain finishing. Over 65% of U.S. lambs slaughtered go through feedlots.

Despite the small national footprint (less than 1% of total livestock receipts), lamb remains economically vital to certain regions and communities. However, producers across the board face challenges, including labor shortages, high predator losses, inconsistent access to slaughter, and competitive disadvantages in feed and processing costs.

The Effects of Imports

Rising trade tensions have elevated the issue of lamb imports to the policy arena in both the U.S. and abroad. Early this year, the United States government announced a 10% baseline tariff on Australian red meat, including lamb and mutton, citing a need to protect domestic producers. R-CALF (the largest cattle producer-only trade association- dedicated to both the U.S. cattle and sheep industries) and other American sheep producers have welcomed the move- but it has been criticized by Australian officials, who argue the tariffs violate the long-standing Australia-U.S. Free Trade Agreement (AUSFTA). Australia currently imposes no tariffs on American agricultural goods and has voiced its opposition to what it sees as politically motivated protectionism.

Meanwhile, New Zealand has also come under scrutiny. ([R-CALF](#)) USA's petition to U.S. Trade Representative Katherine Tai has called for the establishment of a phased-in tariff rate quota system over 10 years, aiming to secure 50% U.S. market share for domestic lamb. New Zealand officials, including Minister Damien O'Connor and the Ministry of Foreign Affairs and Trade, have responded by defending the legitimacy of their exports under World Trade Organization rules warning against unjustified trade restrictions.

Historically, similar action was taken in the late 1990s when the U.S. imposed tariff rate quotas on lamb from Australia and New Zealand. In July 1999, following intense lobbying, President Clinton imposed a three-year tariff on lamb imports ([BBC](#)) starting at 9% for baseline volumes and up to 40% for excess imports- while pledging \$100 million in aid to U.S. producers. The move sparked outrage in Australia, where headlines denounced it as political hypocrisy and a betrayal of free trade.



That measure was successfully overturned through a WTO dispute brought by New Zealand. The current proposals- if pursued- would likely face similar legal and diplomatic scrutiny. Domestic U.S. producers continue to advocate for stronger measures, including tariff increases and safeguard investigations under Section 201 of the Trade Act. Yet even proponents admit that such measures could increase prices for American consumers, at a time when inflation and food costs are already a top concern. As of early May 2025, tariff policy remains in flux, with reciprocal trade threats circulating and international stakeholders urging caution.

Direct Considerations for VT Farmers:

Trade policy matters- and not always in obvious ways.

- Imported lamb will likely remain cheaper, even with a 10% tariff. Currency advantages, larger-scale processing, and lower overhead keep Australian & New Zealand lamb highly competitive.
- Retail prices may shift modestly, but processor and distributor markups will likely absorb much of the difference.
- Farmers should not expect significant new pricing power as a result of these tariffs unless stronger action is taken (and upheld).

Implications for Vermont State's Agriculture & Food System Initiatives

The State of Vermont is currently pushing a more resilient, diversified, and values-driven food economy- prioritizing regional market development, farm viability, and climate-smart production. Initiatives emphasize expanding access to local protein sources, strengthening processing infrastructure, and supporting collaborative market models.

Vermont-grown lamb directly supports these goals through:

- **Diversifying local protein options** while aligning with consumer demand for pasture-raised, humane, and regionally distinct meats.
- **Utilizing underused pasture and dairy infrastructure**, helping to keep working lands in active use, and increasing the viability of small and mid-sized farms.
- **Supporting infrastructure investments** in small-ruminant processing, cold storage, and co-marketing- continually identified gaps.
- **Fostering collaborative marketing opportunities**, from regional lamb brands to shared distribution systems, building toward a more integrated and resilient supply chain.

Strategic growth of pasture-raised lamb in Vermont aligns with statewide food system priorities- and offers a tangible path to meeting them. That said, Vermont producers should not build growth strategies on hoped-for policy shifts. Instead, success depends on delivering what imports can't: **product quality & consistency, and personalized, trusted relationships** with buyers. While it's tempting to focus on what's outside your control (tariffs, grocery chains, commodity pricing), the strongest path forward lies in how you position your product, align your systems, and show up in the market today.

Halal Market Engagement: Unlocking an Underserved Channel

Recent statewide survey data confirms what many Vermont producers and food access organizations have long observed: **Halal markets represent a significant, underserved opportunity for lamb sales across New England.** Data from Vermont's 2024 Meat ([Survey](#)), along with regional demand studies, highlight the Halal market as a high-potential channel- especially during religious holidays- if producers and processors can meet required standards and build trust through relationship-based outreach.

Yet despite clear demand, Vermont producers and processors face structural barriers to entering this market. The survey identified several key gaps:

- **Lack of processor readiness:** Most facilities lack sheep-specific humane handling infrastructure, are unfamiliar with Halal-specific slaughter protocols, and do not offer dedicated scheduling or signage systems to ensure religious standards are upheld.
- **Cultural and logistical disconnects:** Many producers expressed uncertainty around how to engage Halal markets respectfully, while consumers reported difficulty locating

consistent local suppliers who understood their needs.

- **Missed value for both parties:** Processors cited limited demand from farmers as a reason not to invest in Halal capacity – while producers cited lack of processor capacity as a reason not to pursue Halal sales.

This “chicken-and-egg” dynamic has created a bottleneck in what could otherwise be a mutually beneficial value chain

To unlock the potential of Halal markets in Vermont and the region, the following targeted investments are recommended:

- **Fund translator-supported outreach and relationship-building** between Vermont producers and Muslim buyers, particularly in urban centers with high demand around religious holidays.
- **Support training for processors** in religious slaughter protocols, humane-handling compliance, and cultural competency- especially in understanding acceptable stunning methods and USDA-approved pathways to Halal compliance.
- Develop state-supported infrastructure tools, **such as co-branded scheduling platforms**, signage templates, or batch-tracking systems, that can help processors and producers coordinate reliably on Halal-compliant production runs.
- **Incentivize collaboration between producer groups and Halal certifying organizations**, to build shared understanding, reduce compliance burden, and increase trust on both sides of the transaction.

With targeted support and a proactive approach to infrastructure, Vermont can meet the needs of a culturally and religiously significant buyer group- while expanding access to locally raised, pasture-based lamb for communities that have historically been overlooked by the local food movement.



WHY AGGREGATION FAILED IN THE PAST (and Why it Matters Now)

To succeed, any future aggregation or cooperative model must be built like a business: with clear leadership, shared product standards, infrastructure access, and committed sales channels. Without these, aggregation becomes just another idea that doesn't last.

Previous & Consistent Hurdles:

Inconsistent quality remains the most cited barrier for Vermont lamb in wholesale and institutional markets. Buyers – from chefs to grocery chains – need predictable supply, carcass uniformity, and flavor they can trust. Without that, they can't build menus or fill shelf space.

There has been a significant challenge with the lack of **coordinated, consistent supply** across producers. Without shared Standard Operating Procedures (SOPs), reliable breed types, or consistent lamb finish weights and timeline, aggregators couldn't offer a dependable product to wholesale or institutional buyers.

Nearly every past model assumed demand would meet supply once lambs were ready. But without the **dedicated marketing infrastructure** to support a sales team or marketing lead (someone skilled in shepherding product through retail and wholesale systems), lambs piled up, or were sold at a loss.

In several instances, capital was invested into physical aggregation or processing space without **planning for the long-term, full-time staffing, coordination, and financial oversight** necessary to operate those facilities as businesses, not just projects.

The **fall flood of Vermont lambs** drives intense seasonal demand for processing slots. Without staggered production (diversified finishing schedules) or coordinated planning, aggregators had no room to manage inflow or maintain quality, creating major delays and missed markets. Most initiatives are launched without a robust long-term financial plan, including working capital or contingency planning. The first missed invoice, rejected order, or shipping failure sent operations into a tailspin.

What Real Investment Would Take

If Vermont wants to scale up lamb production in a coordinated way, investment is required – but not just in buildings or equipment. Success hinges on investing in infrastructure and the systems and leadership that make it work.

Two potential viable infrastructure pathways include:

1. Small Ruminant-Specific Facility

- Can be seasonal to reduce overhead, but must be planned to meet peak slaughter demand in fall.
- Requires **strong supply agreements** to secure enough lambs for efficient throughput.
- Needs a **clear off-take strategy**: cold storage, wholesale buyers, or a branded sales program.

2. Retrofitting an Existing Mixed-Use Plant

- Requires capital investment to add sheep capacity: different rail heights, HACCP protocols, and labor specialization.
- Might involve **incentives or partnerships** (e.g., public-private grant matches or anchor buyer commitments).
- Allows Vermont to **grow with demand**, but only if paired with producer and processor coordination.

Critical Requirements for Either Path:

Address Humane Handling Proactively: Humane handling should not be treated as an uncomfortable or peripheral issue- it must be addressed directly, transparently, and with investment. Sheep require species-specific equipment and trained personnel to meet USDA-inspected facility standards and humane-handling requirements outlined in HACCP protocols. Without proper infrastructure (such as appropriate stunning systems, non-slip flooring, and visual barriers) animals are more likely to slip, vocalize, or suffer ineffective stuns, which can lead to severe welfare violations. As Temple Grandin emphasizes in her ([article](#)) humane slaughter is not just about the moment of stunning but about the entire system: animal behavior, restraint, equipment, lighting, and handler training all determine whether protocols are followed effectively. In Vermont, where most facilities are built for cattle and pigs, proactive upgrades and clear training programs for sheep-specific handling will be essential. There is no room for error: repeated incidents of improper handling or failed stunning constitute noncompliance with USDA regulations, and can lead to suspension of inspection services, halting all slaughter operations until corrective actions are approved and implemented.

Investment in species-specific equipment: Equipment such as lower chilling rails, sheep-scale skinning systems, and small carcass portioning tools can significantly enhance safety, efficiency, and final product quality. Machinery must be appropriately sized and scaled to match the expected processing volume, as overall operations are closely tied to equipment speed and throughput. Additionally, long-term sustainability depends on selecting systems with manageable costs and maintenance requirements.

Development of pelt processing capacity: This can be done either on-site or in partnership with another private business. Many pelts are currently discarded or sold at a loss, due to a lack of processing availability locally, with some Vermont farmers reporting it being quicker to send pelts to Pennsylvania for processing. Developing this value-added market for sheepskins- whether through regional tanning, craft partnerships, or specialty processing- could open new income streams and reduce waste.

Dedicated Sales & Marketing Coordinator: At the heart of any successful aggregation model is a highly competent individual or team focused on business development. This role cannot be absorbed by farmers or operations staff alone. A skilled coordinator would secure off-take agreements, explore institutional sales, and cultivate higher-value market relationships across retail, foodservice, and regional distribution channels.

Production SOPs & Breeding Alignment: To reduce variation and meet market specs, producers must be willing to coordinate breed selection, feed regimens, target weights, and

finishing timelines. The model only works with a predictable product. There should be signed agreements that take effect before production begins, to ensure commitment and confidence.

Seasonal Flow Management: Most Vermont flocks lamb in spring, reaching finish weight in fall. To meet year-round demand and avoid price crashes, some farms must be incentivized to lamb in winter or early spring, while others may need to adopt backgrounding strategies (e.g., delaying feedlot entry). Grass-finishing and staggered lambing (such as the STAR system) can be part of this solution, but will require support.

Year-Round Cash Flow Planning: Whether seasonal or full-time, the enterprise will require a financial model that accounts for the mismatch between processing schedules and operating costs. It's not enough to have a business model work out mathematically on paper; the physical flow and timing of cash in and out is key.

Processing Access: Lack of USDA slaughter slots has stifled many aggregation efforts. The lamb sector remains a secondary concern for most mixed-use processors, due to lower throughput and the need for species-specific adjustments (rail height, HACCP protocols, chilling timelines, etc.).

Keeping an eye on emerging tech: From robotic shearing to smart ear tags and thermal imaging for early illness detection, new tools are beginning to reach the market that could ease labor demands and strengthen flock management. For producers focused on traceability and transparency, these upgrades may also offer a clearer edge in premium and niche markets ([In the Chute](#)).

Tailored Marketing Tools for Individual Producers: Vermont lamb producers who are committed to market alignment, brand development, and financial viability benefit by clarifying their strategy and sharpening their messaging. These tools are based on producer requests, market observation, and national meat marketing studies- and are designed to lower entry barriers for new or transitioning lamb enterprises.

Know Your Market Like a Scientist: Then Raise Lamb for It: Producing high-quality lamb doesn't mean much if it's not the kind of quality your buyer is looking for. What chefs, home cooks, or grocers value may differ: flavor, fat profile, consistency, ease of prep, or story. Get to know your market deeply and authentically. Have real conversations. Notice what sells. Then build your flock and production system to serve that demand.

Breed selection, genetics, and management practice should be chosen with intention. Are you raising lambs for whole-carcass sales in the fall, or premium cuts into the winter? Lambs born in spring and finished on pasture by early fall often develop a leaner carcass and milder flavor, appealing to many retail and restaurant buyers. Holding lambs through the winter may increase yield, but can also change the fat profile and flavor.

When you understand how carcass quality shifts over the growing cycle, you can decide what tradeoffs make sense- and speak confidently about your choices.

Create lamb-specific messaging tools: to help you speak clearly about product quality and taste. Tools like taste descriptors, cut guides, signage templates, and producer lexicons help bring lamb into the everyday language of marketing communication. Whether at the farmers market or on social media, you should feel equipped to explain why your lamb tastes the way it does, how it’s raised, and how it fits into values-based eating.

Lamb Quality

ATTRIBUTE	CHARACTERISTICS	
EATING SATISFACTION	Lamb flavor	Taste
APPEARANCE & COMPOSITION	Lean-to-fat ratio	Fresh lamb color
SIZE	Consistent cut size	Weight
ORIGIN	Local	American
PRODUCTION PRACTICES	Pasture-raised	Humanely raised
CONVENIENCE	Availability	Cut specifications

Lean quality: Assessed via flank streaking and lean color

Carcass conformation: Thickness and proportionality

Yield grade: Based on fat thickness over the ribeye

Product Descriptions + Cooking Suggestions: Tools like recipe cards, merchandising labels, and signage can help demystify lamb for unfamiliar customers, especially for entry products like ground lamb or stew cuts.

Cut Sheet Pricing Guides: Simple, visual pricing charts help communicate value across a range of lamb cuts. These tools support sales across farmers markets, specialty stores, CSA add-ons, and direct orders.

Scenario-based working budgets: Budgets that reflect cut weights, slaughter costs, and seasonal sales channels can help you evaluate tradeoffs and plan for profitability.

Digital Branding & E-commerce: Selling frozen lamb online or offering bulk custom orders (half/whole lamb) allows certain producers to reach more customers, reduce inventory pressure, and educate consumers directly. National meat sellers typically set consistent, fixed prices per cut- often with detailed descriptions and minimum/maximum weights listed- providing a clear, user-friendly model for online shoppers. Vermont producers considering e-commerce may benefit from adopting similar clarity and structure in their digital storefronts to build trust, streamline transactions, and compete effectively.

Explore Peer-to-Peer Mentorship: This can be done through Vermont's TA network. Farm-to-farm learning remains a powerful way to transfer skills. Producers with strong retail or restaurant relationships should be supported in mentoring peers in their region.

For Collective Impact & Sector Coordination

These strategies aim to reduce per-producer marketing costs, coordinate messaging, and strengthen statewide brand identity and supply chain flow.

Invest in Producer-Facing Marketing Tools: Fund toolkits that include customizable cut sheets, signage templates, brand storytelling guides, and digital selling support. These can be distributed through service providers, producer groups, or technical assistance networks.

Global Equipment Benchmarking: U.S. lamb processors- especially in the Northeast- lag far behind Australia and New Zealand in terms of lamb-specific efficiency. Vermont would benefit from a commissioned review of small-ruminant processing innovations abroad, with an emphasis on small-scale or modular equipment that would be retrofitted or imported.

Coordinated Campaigns: Launch co-branded promotions like "Vermont Lamb Week", collaborative social media pushes, or regional educational events. These efforts can boost visibility and reinforce shared brand values.

Pilot Aggregator Model with Market-Back Design: If feasible, support a time-bound pilot project for lamb aggregation or cooperative finishing- only with committed marketing outlets and technical coordination in place.

Support Year-Round Flow Models: Offer grazing and nutrition support to farmers working toward off-season finishing capacity. Develop benchmarks for managing carcass size and quality across seasons.





FEASIBILITY ANALYSIS

Grass-based commercial sheep production aligns well with the available agricultural land base in Vermont. The challenge is to develop a production and sales model that proves to be both stable and viable. For this project, we created a set of working budgets to assess the impacts of the major variables that could impact the viability of a sheep operation. Each of the variables we worked with fell within readily available breed-specific data adjusted for region-specific production constraints to create a potential range of inputs. The analysis shows how incremental shifts along the range for each variable can have profound impacts on the profitability of a sheep enterprise.

Our process was to develop a hypothetical commercial sheep farm and identify the key variables that could impact the profitability of that operation. The sample farm is based on a real property that was publicly listed for sale, and breed-specific growth and production metrics are based on publicly available sources. We developed a sample working budget with a base set of assumptions relating to the fixed costs of the farm and then adjusted the variables to determine the impacts on the short-term and long-term profitability of the farm. The assumptions are based on market research, aggregated farm data, and the best available local pricing for inputs at the time of the calculations. With each assumption, there are a number of trade-offs that are required to simplify the modeling process. Producers and service providers are encouraged to utilize the budgets and adjust the variables based on their real time data.

One major consideration in relation to the budgets is that all of the analysis for the impact of different variables was done **without the debt service** relating to the land and operating assets. This was done with consideration of the fact that producers have varying levels of access to capital, and so debt may or may not be needed for the purchase of land and start-up costs. In our model, debt service for the purchase of the farm and operating loan to purchase animals and infrastructure resulted in \$108,997 in annual payments for Principal and Interest. When this number is factored into the analysis below, it makes the economics of commercial sheep farming even more challenging.

For the majority of the analysis, we used a baseline working budget with the following set of assumptions (additional details can be found at the end of this section):

- 400 Ewes
- 140# Average Ewe Weight (Katahdin or similar)
- 70# Lamb live weight at sale

- 95% Conception
- 10% Lamb mortality
- 3% Ewe Mortality
- 20% Ewe Replacement Rate
- 210 Days on pasture
- 30 Lambs sold retail at an average price of \$11.00/#
- \$2.50/# Live weight auction price
- No additional paid labor

Base model

In the base model for our analysis, given the variables above, the gross income for the farm was \$83,307 with a net income of -\$5,169. The cost of production per pound before debt is \$3.11. When the farm mortgage and operating loan debt are factored in, the net income drops to -\$114,167.

High production model

We discuss the impact of specific variables in isolation on the profitability of the farm in the sections below. In a model where we combine the higher end of these variables, the economics of the operation improve. In our higher production model, the following variables were changed:

- Conception rate moves from 95% to 98%
- Lambing rate moves from 1.5 lambs per ewe to 2 lambs per ewe
- Lamb mortality decreases from 10% to 5%
- Lamb live weight goes from 70#s to 80#s
- Auction price goes from \$2.50/# to \$3.00/#, and retail prices increase from \$11.00/# to \$13.00/#

In this higher production model, the gross income increases to \$169,100 with a net income of \$76,154 before debt service. If the live weight of the lambs increased to 100# average, the net income increased to \$116,729, which was sufficient to cover debt service and yield a small profit.

Lambing rate

LAMBING RATE	1.2	1.3	1.4	1.6	1.8	2
LAMBS TO MARKET	328	362	396	464	532	600
GROSS INCOME	\$64,000	\$70,150	\$76,100	\$88,000	\$99,000	\$111,800
NET INCOME	-\$18,665	-\$13,219	-\$7,773	\$3,119	\$14,011	\$24,903

Lambing rate is one of the primary variables producers track. In our model, each 10% increase in lambing rate equates to an additional 34 lambs or \$5,446 in gross income. The difference between a 120% lambing rate and 180% lambing rate would be an additional \$43,568.20, taking the Net Income before debt from -\$18,665.35 to \$14,010.80.

Market and Price Point

If the entire lamb crop was sold as cuts through retail sales at an average price point of \$11.00/#, the farm would have a gross income of \$114,407.50 and a net income of -\$42,069.78.

In this scenario, processing costs were fixed at \$170 per lamb for a total processing cost of \$73,100, which has a significant impact on the net income. If the producer was able to achieve a higher average price of \$13/#, gross income would increase by \$14,674 for a net income of -\$22,504.

Shifting to a model where 50% of the lambs were sold at auction with an average price of \$2.50/# live weight, the gross income decreases to \$98,228, but the net income improves to \$6,031. If all lambs were sold at auction, the gross income would decrease to \$82,050 with a net income of \$24,402.

The variability of auction pricing is discussed in the Markets section of this document. While auction markets are not inherently predictable, baseline data shows price fluctuations from \$2.30/# to \$3.00/# and up. In our base model, where all lambs were sold at auction, each \$0.10/# increase in price equates to an additional \$3,010 in gross income. The difference between a price of \$2.30/# and \$3.00/# is \$21,070 in gross income.

Lamb Weight

LAMB LIVE WEIGHT	50	60	70	100
GROSS INCOME	\$60,550	\$71,300	\$82,050	\$114,300
NET INCOME	-\$23,827	-\$13,077	-\$2,327	\$29,923

Lamb weight is another significant variable impacting profitability. In our base model, for each 10/# increase in average live weight, the producer would increase gross income by \$10,750. In this model, with all lambs sold at auction for \$2.50/#, the live lamb weight required to break even before debt service would be 72#s. If a producer could achieve a consistent 100# live weight (without additional feed inputs), the net income of the farm would be \$29,923.

Local processing costs are generally set as a fixed cost by the slaughterhouse with little to no consideration for animal weight. In our model, the expense for processing all 430 lambs is \$73,100 a year, which could conceivably be reduced through a consistent working relationship with a processor. Because processing is essentially a fixed cost, the size of lambs is much more important. For each 10# increase in lamb live weight, the producer would experience a \$18,167 increase in gross and net income at a \$13.00/# retail price average.

Scale

Due to the marginal profitability of our sample farm, an increase in scale does not generate significantly more income. An increase from 400 to 600 ewes increases the gross income from \$84,307 to \$125,332, with a slight increase in net income from -\$5,169 to -\$4,054. The increase in scale would also create significant concerns around overgrazing and parasite issues, as recovery periods would be reduced to 30 days.

Full flock purchase vs. organic flock growth

One common dilemma new producers face is whether to purchase a full flock or purchase a smaller number of ewes and grow their flock organically. Production considerations aside, the gross and net income in each scenario are relatively similar. The model with organic growth has a lower level of debt service but requires more operating cash for custom hay production and relies on the ability to produce and sell excess hay. The full flock purchase farm has a consistent positive net income of \$43,557, while the organic growth farm gradually goes from a -\$12,059 net income to \$36,066 in Year 5. When equity adjustments are made to earnings, the organic growth farm was \$44,793 more profitable, but this does not take into account the additional cost of having the operating cash reserve to pay a custom operator.

Budget Assumptions

The following are the base assumptions for the feasibility modeling conducted using sample budgets:

Farm/land base

189 Acres available for grazing

Farm purchase price \$675,000

50/45/5 loan

FSA \$337,500 @ 3.125% 30 year term

Traditional Ag Lender (VACC) 45% \$303,750 @ 6.40% (Loan rate 5.08% with fees financed in for 6.40% effective rate)

5% down payment \$33,750

Operating loan for fencing, animal purchase, equipment and dogs.

Operating Assumptions

Production

400 ewes

210 day grazing season

Seasonal lambing-indoors in modified freestall

140# Ewe Weight

1.5 lambing percentage

Minerals

1.5 oz per ewe per day with lambs eating minerals for 3 months.

Mix is a Purina sheep mineral (3 parts), Kelp (1part) and loose salt (1 part) for a average mineral cost of \$42.60 per 50#s

Feed

Ungrazed portion of farm hayed at \$60/acre cut/rake/ted

Supplemental hay purchase

52 acres 500#/bale 2.25 tons DM per acre 4.25 bales acre \$14.12/bale cut/rake/ted

\$10 bale

\$2 Transport

\$27 bale



RECOMMENDED PRODUCER RESOURCES

Production and Genetics

[A Guide to Katahdin Hair Sheep](#)

[Measuring Productivity of the Sheep Flock](#)

[Cornell Sheep Project](#)

Grazing

[The Art and Science of Grazing](#)

Nutrition

[Basic sheep nutrition](#)

[Mineral supplementation](#)

Diseases and Parasites

[Common Diseases and Health Problems in Sheep and Goats](#)

[Managing Haemonchosis in Sheep and Goats](#)

Herding Dogs

Books and DVDs:

- Titles like Herding Dogs: Progressive Training and Barbara Sykes' Training Border Collies provide comprehensive approaches to herding techniques. Instructional DVDs such as First Steps in Border Collie Sheepdog Training offer visual guides for beginners.

Organizations:

- [Northeast Border Collie Association \(NEBCA\)](#) - Reputable breeders specializing in working lines.
- [New England Border Collie Rescue \(NEBCR\)](#) - Occasionally has trained or trainable dogs available.
- [Local herding trials and clinics](#) (found via Facebook groups like Northeast Herding Events and Info) - Great for networking with experienced handlers.

Training Resources:

- Wellscroft Farm <https://wellscroftfarm.com/>
- Does' Leap Farm <https://doesleap.com/>
- The Working Sheepdog Website. workingsheepdog.co.uk

Markets

[Recipes](#)

[Lamb Cooking Times & Temps](#)

[Lamb Yields](#)

[Holiday Calendar](#)

[USDA Agricultural Marketing Services Auction Information](#)

[NOFA's Online Marketing Resources](#)

[Vermont Small Business Development Center's Marketing Resources:](#)

[University of Vermont's Marketing Toolshed](#)

[Farmers Market Price Reporting](#)

[Cornell Retail Cuts Pricing Tool](#)

[VT Agency of Agriculture Food & Markets Marketing Resource Page](#)

Relevant Farm to Table Issue Briefs:

- [Marketing](#)
- [Direct Markets](#)
- [Major Metropolitan Markets](#)
- [Restaurants](#)
- [Distribution](#)
- [Grocers](#)
- [Consumer Demand](#)

Regularly Released [reports on lamb markets from the USDA Economic Research Service](#)
[Lamb Product Quality](#)

[Cornell University Listserv](#)

[Center for an Agricultural Economy- Forms & Resources](#)

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