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Off-Season and Accelerated Lamb Production

Sheep are ideally suited to small-scale and part-time farming operations in Pennsylvania due to their adaptability and nutritional versatility. Sheep can be fed a diet high in concentrates (similar to swine) or solely a forage diet. Furthermore, marketing opportunities are plentiful in the northeastern United States. Lambs can be marketed at any age and often vary in weight from 20 to 160 pounds, depending on the time of year and market demand. This publication will focus on accelerated production practices to take advantage of both off-season and holiday markets.

About 3,600 sheep producers in Pennsylvania with a total of more than 60,000 ewes (female sheep) produce more than 80,000 lambs, worth an estimated $17 million. Although most ewes produce lambs in the spring, lambs can be born from September through May. However, an effective method for increasing revenue from a lamb production enterprise is to increase the number of lambs produced per ewe each year. With high-level management and production skills, it is possible to produce three lamb birthing cycles per ewe every two years. This technique is called accelerated lambing, which combines spring, off-season, and holiday lamb production into one enterprise. It also allows for increased efficiency in use of labor, land, equipment, and buildings.

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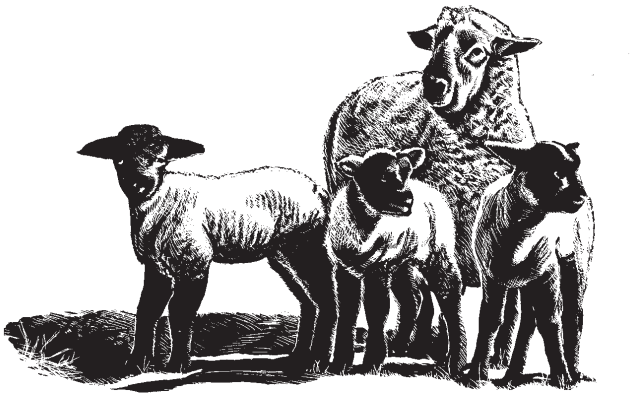

Marketing

Lambs are marketed increasingly through auctions, slaughterhouses, and brokers and niche markets, specialty stores, and direct-to-consumer sales. Regardless of market strategy, the quality of the lambs and correct size for the season has a dramatic impact on the final price received for your lambs. The ideal market weight is 110 to 160 pounds for spring and off-season lambs and 20 to 60 pounds for holiday lambs. Table 1 contains schedules for optimal breeding, lambing, and marketing times for both off-season and accelerated lamb production.

Table 1. Breeding, lambing, and marketing schedules for off-season and accelerated lamb production.

PRODUCTION METHOD	BREEDING MONTHS	LAMBING MONTHS	MARKETING MONTHS
Off-season	May–June	October–November	December–January
Accelerated			
First lambing	May–June	October–November	December–February
Second lambing	January–February	June–July	August–October
Third lambing	July–August	December–January	February–April

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Many religious and ethnic groups traditionally serve lamb for special meals. These groups are potentially a major market for lamb sales, which is important for producers to keep in mind when planning production cycles to maximize profit.

Getting Started

A variety of production and management strategies can be used in a sheep enterprise. Before starting to raise sheep and lambs, consider the size of your intended flock and the marketing plan given your desired market and land, labor, and capital resources.

The smallest production unit to consider for lamb enterprises is a flock of around 30 to 35 ewes serviced by one ram. Breeding ewes usually cost $100 to $200 per head and a good ram will probably cost at least $300. Ewes usually produce one to three lambs annually (gestation period of five months). Lambs are ready for market from weaning up to six months after birth; therefore, it is possible to receive a return on your initial investment rather quickly.

If you have little or no previous experience with sheep, starting with a few bred ewes and going through a lambing season could be a valuable experience. It may help you decide whether you want to be in the sheep business, while you develop husbandry skills, investigate markets, and test profitability. Also, you may want to investigate the Penn State Cooperative Extension Sheep Home Study Course for additional helpful information (bedford.extension.psu.edu/Agriculture/Lessons/lessonspage.htm).

It is possible to breed ewes more often than once a year when a number of factors are favorable. The ewes must be capable of breeding in the spring, fall, and winter. Adequate buildings, equipment, and feed must be available to handle ewes and lambs during the entire year. High-level management, marketing, and production skills are critical to operate spring, off-season, and holiday lamb production enterprises simultaneously.

The following are the most significant advantages of an accelerated lamb production program:

- Market prices are higher during the off-season.
- Premium prices are paid for the smaller holiday lambs.
- Holiday lambs are marketed after weaning to reduce feed costs.
- Increased market options are available.

Before deciding to use an off-season or accelerated lambing program, you should consider these important management concerns:

- Lambing rates are approximately 25 percent lower than in a spring lamb enterprise.
- Breeding is more difficult than with spring lambs.
- Lambing may interfere with the harvesting of some crops.
- Ewes must be replaced more frequently.
- Parasites and diseases must be monitored more carefully.
- Incidence of mastitis is increased and more careful monitoring is needed.
- Labor is required year-round.

Breeding and Nutrition

A well-planned reproductive management program is important to maximize profitability. Sheep are seasonal breeders and are most fertile during September, October, and November. Day length is the key environmental factor affecting reproduction in ewes. However, certain breeds of sheep seem to be less affected by day length than others. These breeds do well in an accelerated lambing program because a large percentage of their population will breed through the winter and into the spring. Crossbred ewes developed from these breeds will often breed better out of season. In addition, crossbred ewes tend to reach sexual maturity earlier. Table 2 contains a list of sheep breeds recommended for an accelerated lambing program.

Table 2. Sheep breeds available in Pennsylvania and recommended for an off-season and holiday lamb enterprise.

BREED	CLASSIFICATION	APPROXIMATE MATURE WEIGHT*
Coopworth	medium wool, meat	150
Dorset	short wool, meat	140
Finnsheep	medium wool, meat	120
Katahdin	hair, meat	135
Polypay	short wool	140
Ramboulliet	fine wool, meat	150
Romanov	black wool, meat	130
St.Croix	hair, meat	130
Targhee	medium wool, meat	150

*This weight is for ewes. Ram body weight is 1.55 to 1.75 times the ewe body weight.

Several factors must be considered when developing an accelerated lambing program. Providing ewes with proper nutrition at all stages of their life will optimize reproductive performance by reducing the age of sexual maturity and the interval between pregnancies. Ewes should be well identified and records should be maintained on their breeding activity, including which ewes are bred to which rams and the number and weight gains of the resulting lambs.

A veterinarian should check rams for fertility before they are used for breeding. During the breeding season, rams should be fitted with marking harnesses or have their chests painted so that they leave clear, visible marks on the ewes they have bred. Observe breeding tendencies carefully and cull any rams that are not effective.

During the fall when the mature flock is reproductively active, all ewes exposed for breeding should be bred in about 17 days. In a spring breeding season, it is unlikely that all exposed ewes will be bred. This is due to several factors, including lower libido and fertility of rams, as well as seasonal anestrous (lack of estrus and ovulation) in some ewes. Selecting replacement ewes from animals that breed in the spring will increase the percentage of animals in the flock that will most benefit the accelerated breeding program.

Certain management practices will induce ewes to breed out of season. One is to separate rams and ewes completely for 60 days prior to breeding. Complete separation means no contact, sight, sound, or smell for the entire isolation period. This technique increases the number of ewes bred and lambs conceived during the first week of the breeding season.

The nutritional needs of ewes should be monitored closely during the reproduction phase. Using feeds high in energy and protein approximately two weeks before breeding can increase the ovulation rate and increase the chance of multiple births. It is important to maintain good body condition throughout the gestation period and carefully monitor health during lactation. Although ewes often lose weight during lactation without affecting future lamb crops, proper body condition should be maintained at all times. Nutritional requirements are reduced following lactation.

A way to lower costs and extend the pasture season is to grow winter wheat, barley, rye, and brassicas. These crops are grown during fall, winter, and spring months and provide good pastures in the spring and fall if adequate moisture is available. There is no loss in grain yield if sheep are taken off small grain pastures mid-April. Besides quality feed, sheep require some free-choice minerals for normal growth and maintenance.

An excellent source of sheep nutrition information is the National Research Council's (NRC) booklet on recommended nutrient allowances to maintain optimal production. This information is published by the National Academy Press and can be downloaded from fermat.nap.edu/catalog/614.html.

Health Program

A thorough preventive health program, rather than a treatment plan, is strongly recommended in an accelerated lamb production system. A vaccination program to prevent diseases known to occur in your flock and local area is critical. Your local veterinarian should be consulted to help you develop a health program.

A healthy flock should be the goal of every sheep producer. A flock health program is essential, and the following considerations are critical:

- Check animals for signs of illness, external and internal parasites, and contagious diseases before buying them.
- Quarantine newly purchased animals for at least 21 days in a dry, well-ventilated area.
- Maintain clean, fresh water.
- Provide uncontaminated feeding areas.
- Trim hooves when necessary to avoid lameness problems.
- Use vaccines, antibiotics, and mineral supplements as needed.
- Identify ewes previously vaccinated for clostridium types C and D and give them a booster shot 2 to 3 weeks before lambing season begins.
- Identify ewes not vaccinated for clostridium types C and D before lambing. Vaccinate their lambs when they are 10 to 20 days old, and give them a booster injection three weeks later.

Ewes should be sheared in early spring. At that time, they also should be treated for both internal and external parasites. Internal parasites should be treated at least four times per year: once just prior to lambing, twice during pasturing, and once at breeding time. Internal parasites may also be a problem for lambs, especially during wet seasons. Lambs cannot be dewormed before six to eight weeks or 35 pounds (always consult your veterinarian prior to deworming young lambs). You should take precautions to reduce the possibility of lambs acquiring worms by always providing clean water, keeping all feed in feeders, and minimizing crowding and stress.

Docking of tails of all healthy lambs at four to seven days is generally recommended for most operations. Docked tails are more sanitary than undocked tails and provide a more desirable appearance when showing animals. However, you must understand your market because some consumers want lambs with undocked tails.

Fencing and Housing

An accelerated lamb production system requires more investment in fencing, housing, lambing, and animal-handling facilities than most other lamb enterprises. However, housing and equipment for sheep do not have to be expensive and can be very minimal. Ideally, existing barns and sheds can be adapted for sheep, or adequate shelter can be obtained for about $55 to $60 per ewe. The *Sheep Housing and Equipment Handbook* from the Midwest Plan Service is a useful reference for buildings and animal-handling facilities.

Adequate shelter for sheep can be provided by small, open sheds located on a well-drained site, preferably on a south-facing slope with shed openings facing away from prevailing winds. This type of site helps the lot to dry faster and makes it easier to maintain. Consider grading and filling low spots with shale-like material to achieve desired slopes as sheep do not tolerate mud. Locate handling facilities so sheep can be sorted easily and provided routine care with minimal effort.

Perimeter fencing for sheep must serve two primary purposes: (1) keep in the sheep, and (2) keep out potential predators. Costs vary considerably for fencing due to curves and land contours that will require additional posts. Perimeter fencing for sheep ranges from about $1.75 to $6.00 per

linear foot. High-tensile fence is most commonly used for sheep production, but woven wire and wooden fences are other alternatives. Select the best alternative for your operation based on price, longevity, maintenance, vegetation, animal pressure, and climate.

Regulations

All agricultural producers in Pennsylvania, including small-scale and part-time farms, operate under Pennsylvania's Clean Streams Law. A specific part of this law is the Nutrient Management Act, portions of which (e.g., Act 38) may pertain to you depending on the mix of enterprises you have on your farm (in particular, animal operations). Because all farms are a potential source of surface or groundwater pollution, you should contact your local Soil and Water Conservation District to determine what regulations may pertain to your operation. You should also check your local zoning regulations to make sure that your intended business activities are permitted in your location.

Risk Management

There are several risk management strategies you may want to employ for your farm. You should insure your buildings and equipment and you may also want to insure your crops as well. Insuring your farm may be accomplished by consulting your insurance agent or broker.

A price protection program for lamb producers is also available through crop insurance agents that insures against declines in slaughter lamb prices. Producers are offered coverage prices based on a statistical model that uses industry data on cutout, slaughter, weight, and pelt information to forecast cash prices at the policy end date. As policies mature, producers receive insurance payments if the cash index (a figure based on actual USDA Agricultural Marketing Service market information) is below the coverage price purchased.

You can also insure individual crops through traditional crop insurance policies and your whole-farm income through a program called AGR-Lite. To obtain AGR-Lite insurance you will need your last five years of Internal Revenue Service (IRS) Schedule F forms. If your business structure is either a C or S corporation, the necessary information can be entered into a Schedule F for crop insurance purposes. Both types of policies are federally subsidized and are available from private crop insurance agents. Contact a crop insurance agent to see which type of coverage makes the best sense for you.

For more information on agricultural business insurance, please see *Agricultural Alternatives: Agricultural Business Insurance*. More information on crop insurance can be found on the Pennsylvania Crop Insurance Education Web site (cropins.aers.psu.edu).

Sample Budgets

The sample budgets included in this publication provide examples of the costs and returns for accelerated and off-season lamb production and guidelines for initial resource requirements. Your initial resource requirements will vary if you have existing equipment or structures that may be adapted for use in your enterprise. This sample budget should help ensure that all costs and receipts are included in your calculations. Costs and returns are often difficult to estimate in budget preparation because they are numerous and variable. Therefore, think of the data in these budgets as approximations and make appropriate adjustments using "Your Estimate" column to reflect specific situations.

For More Information

A variety of publications, Web sites, and associations are available to answer questions you may have. The listing below provides a brief overview of potentially helpful resources.

American Sheep Industry Association
9785 Maroon Circle, Suite 360
Centennial, CO 80112
www.sheepusa.org

Maryland Small Ruminant Page: www.sheepandgoat.com

Northeast Sheep and Goat Marketing Program: sheepgoatmarketing.info

The Penn State Agronomy Guide. University Park, Pa.: The Pennsylvania State University. agguide.agronomy.psu.edu

Penn State Cooperative Extension Sheep Home Study Course: bedford.extension.psu.edu/Agriculture/Lessons/lessonspage.htm

Pennsylvania Forage Handbook. University Park, Pa.: Department of Agronomy, Penn State College of Agricultural Sciences.

Sheep Housing and Equipment Handbook. Ames, Iowa: Midwest Plan Service.

Virtual Livestock Library: www.ansi.okstate.edu/library

Initial Resource Requirements

- Land: 25 acre
- Labor: 10 hours x 36 head
  (1 ram and 35 ewes) = 360 hours
- Capital:
  Livestock
  $150 x 35 ewes, $5,250
  1 ram $250 – $500
  Fencing $1.75 – $6.00 per linear foot
  Hoof-trimming equipment
  Handling facilities (gates or chutes)
  Feeding and watering equipment
  Pickup and livestock trailer

Sample Accelerated Lambing Budget (two-year estimate)

Assumes lambing three times in two years with an average of 1.65 lambs born per ewe each lambing and marketing 40-pound lambs during holiday seasons.

Item	Total	Your Estimate
Receipts		
Lambs (198 lbs/ewe sold at $2.25/lb)*	$445.50	_____
Wool (including government payment)	$20.00	_____
Cull ewe and ram (15 lbs/ewe sold at $0.60/lb)**	$18.00	_____
Total receipts	$483.50	_____
Variable costs		
Feed:		
Lambs and replacements	$125.62	_____
Ewe	$134.04	_____
Health program and shearing (x2)	$13.00	_____
Marketing, supplies, miscellaneous expenses	$20.00	_____
Total variable costs	$292.66	_____
Fixed Costs		
Labor charge (10 hr/ewe)		
Ram replacement	$13.34	_____
Equipment and fence ($60/ewe over 10 years)	$12.00	_____
Building charge ($50/ewe over 10 years)	$10.00	_____
Interest charge	$21.81	_____
Land charge		
Total fixed costs	$35.34	_____
Total costs	$328.00	_____
Returns		
Returns over variable costs	$190.84	_____
Net returns	$155.50	_____

*Assumes 1.65 lambs per ewe per lambing and includes a 3 percent death loss.

**Assumes a culling rate of 10 percent per year for two years and 150 pounds per cull ewe.

Sample Holiday Lamb Budget (annual estimate)

Marketed November through May. 1.65 lambs born per ewe marketed at 40 pounds.

Item	Total	Your Estimate
Receipts		
Lambs (66 lbs/ewe sold at $2.25/lb)*	$148.50	_____
Wool (including government payment)	$10.00	_____
Cull ewe and ram (15 lbs /ewe sold at $0.60/lb)**	$9.00	_____
Total receipts	$167.50	_____
Variable costs		
Feed:		
Lambs and replacements	$10.30	_____
Ewe	$64.60	_____
Health program	$6.50	_____
Marketing, supplies, miscellaneous expenses	$10.00	_____
Total variable costs	$91.40	_____
Fixed costs		
Labor charge (8 hr/ewe)	_____	
Ram replacement	$6.67	_____
Equipment and fence ($58/ewe over 10 years)	$12.00	_____
Building charge ($50/ewe over 10 years)	$10.00	_____
Interest charge	$3.26	_____
Land charge		
Total fixed costs	$28.67	_____
Total costs	$120.07	_____
Returns		
Returns over variable costs	$76.10	_____
Net returns	$47.43	_____

*Assumes 1.65 lambs per ewe per lambing and includes a 3 percent death loss.

**Assumes a culling rate of 10 percent per year and 150 pounds per cull ewe.

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