



# Virginia 4-H Ewe Flock Project Guide

Revised by Mark Wahlberg and Scott Greiner\*

## Purpose

The ewe flock project is designed to meet the needs and goals of the 4-H member in developing characteristics of responsibility and sound decision-making. The project is also designed to acquaint 4-H members with the selection, feeding, breeding, and general care and management of a sheep flock for the production of lambs and wool. See figure 1.



Figure 1. Raising sheep can be a fun learning experience.

This project guide is designed to give the 4-Her the basic knowledge needed to begin and maintain a small ewe flock. Additional reading on the subjects covered in this guide is strongly encouraged (see Sources Of Additional Information on page 15 of this guide). A glossary is included on page containing words that will help you in understanding this guide.

## Project Requirements

Any 4-H member is eligible for this project. Members must own or care for at least one ewe. However, since sheep have strong flocking instincts (banding together, grazing together, etc.), grouping five or more sheep

together is more satisfactory. Animals used for this project may be purebred or crossbreds. The primary emphasis of this project is commercial lamb production. Production of breeding animals for sale is also possible. Although members may show some of their sheep, showing is not a requirement of the project.

4-H members should read this guide carefully and be aware of the responsibilities involved in working with livestock before deciding to take this project. Records for this project should be kept in the Advanced 4-H Livestock Record Book (VCE Publication 380-121).

## Why Take This Project?

Sheep are popular. Most areas in Virginia are well-suited for raising sheep. There are several thousand farms with sheep in the state of Virginia.

Sheep are adaptable. They can be raised much like beef cows with little or no time spent in a barn, receiving their nourishment from pasture and hay. They can also be intensively managed in barns for most of the year if land is not available or is used for other purposes.

Sheep can be profitable. Initial investment to begin a sheep enterprise is relatively low and returns on investment can come as soon as 8-9 months after breeding. Returns per hour of labor and per dollar invested can also be higher than those of the other farm animal species. Prices for lambs and for breeding stock recently have been very strong.

Sheep are pleasurable. Among farm animals, sheep are the easiest to handle. Some special care is required at certain times of the year, but they are relatively easy to move, pen, catch, hold, examine and treat. Raising sheep can be a satisfying, rewarding, and profitable experience.

\* 18 USC 707

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## Background Information

Sheep are raised to provide both food and fiber for the consumer. Meat production in the sheep industry is directed towards the production of market lambs for slaughter. Sale of lamb for meat purposes far exceeds the amount of income coming from sale of wool. Sheep that are more muscular and noted for meatier carcasses are referred to as meat-type breeds. Examples of these are the Suffolk, Hampshire and Dorset.

Fine wool breeds, such as Rambouillet and Merino, are known for their ability to produce large quantities of wool. Their wool is also much finer in texture and thus used for high quality fabrics. They may produce 3 times as much wool as the meat-type breeds. However, these sheep are not well suited for market lamb production unless ewes are bred to a meat-type ram.

Crossbred ewes that result from the mating of a meat-type ram with ewes of the fine wool breeds make good producers of both meat (market lambs) and wool. These ewes are quite hardy and have been used extensively in Virginia in the past. They are commonly referred to as "Western ewes" because they originate from the western area of the United States.

Some breeds of sheep are very seasonal in their breeding behavior. Unlike cattle and pigs, sheep cannot breed all year around. Fall is their most active breeding time, thus sheep most often have lambs in winter and spring. This seasonality of breeding influences many aspects of sheep management.

## Getting Started

You must decide why you want to raise sheep. Do you want to focus on wool or lamb production, or do you want to sell breeding stock? There are many different markets for lamb, each preferring lambs of a different weight. You should spend some time checking into these factors before purchasing your first animal.

Your ewe flock begins with the selection of good breeding stock. Choosing the right breed for your flock is important. You must consider what is available, as well as the characteristics that you desire for your flock. Ewes should have a high reproductive rate, good mothering ability, and be capable of producing fast-growing lambs. They should also be capable of a long productive life in the flock.

A good, purebred ram is important as he will contribute half of the genetic make-up of every lamb he sires. If possible, obtain a ram that has been performance tested

so that you will have a clear indication of his true value. Try to obtain a ram whose growth rate is greater than his pen mates or flock mates. If you are unable to purchase your own ram, you may be able to use your family's ram or possibly rent or share a ram from a neighbor's flock. However, the use of a ram from an outside flock may not be advisable for health reasons. Consult with your local veterinarian or Extension agent if you choose this alternative.

## Breeds of Sheep

There are more than 50 breeds of sheep. Several of the most popular in Virginia are described next. Table 1 provides information about mature size.

Dorset - Medium size, white face, either polled or horned. Long breeding season (good "out of season breeding" to produce fall lambs), excellent milking and mothering abilities. Fair growth rate, not adapted to poor feed conditions.

Finnish Landrace (Finnsheep) - Small size, moderately long and tall, fine boned. Very prolific, average three or more lambs born per ewe in improved flocks, popular in crossbred flocks. Poor muscling and growth rate. Most useful as part of the breed make-up of crossbred ewes mated to black-faced rams. Many producers have found that just 1/4 Finnsheep genetics in their commercial ewes is enough to raise twinning rate to a high level.

Hampshire - Large size, black face. Thick, deep bodies and excellent carcasses. Lambs have rapid growth rate. Short breeding season, fair in prolificacy and mothering ability.

Rambouillet - Medium size, white-faced, fine-wool breed. Rams have spiral horns and ewes are polled. Long breeding season, ewes are easy lambers. Lambs lack the muscular development of the meat-type breeds. Very rugged and hardy.

Suffolk - Large size, bare black face and legs. Long, deep bodies with heavy muscling. High in prolificacy, good mothers, and excellent milkers. Rapid growing lambs, excellent carcasses. Short breeding season, moderate flocking instinct. Black fibers in fleece may be a problem.

## Selection of Breeding Stock

The individual breed characteristics provide helpful information in selection of breed or breed cross for various production systems (fall lamb, winter lamb, spring lamb, grass finish, etc.). Once you have decided on the breed for your flock, you must carefully choose the

individual animals. Look over each animal and closely consider the following physical characteristics.

**Soundness** - This is a very important characteristic. Sheep that are not sound cannot produce at their maximum potential. The feet should be free of foot rot and legs should be squarely placed under the corners of the body. Avoid post-legged sheep (those with rear legs that are too straight when viewed from the side).

**Udders** - These should be soft, pliable and free of lumps. Lambs or yearlings that have not produced lambs yet will not have much udder development.

**Mouth** - The mouth must also be sound. Check the teeth to determine age (see Figure 2.) and to foresee possible feeding difficulties. Avoid sheep with overshot or undershot mouths (lower jaw is out of position and teeth do not properly meet the upper dental pad).

**Table 1. Mature weights of selected breeds of sheep**

Breed	Mature Weights (lbs.)	
	Rams	Ewes
Cheviot	160-200	120-150
Columbia	225-300	150-200
Dorset	175-225	130-160
Finnsheep	175-225	120-160
Hampshire	250-300	175-225
Rambouillet	200-250	140-180
Shropshire	200-250	160-180
Southdown	175-225	130-160
Suffolk	250-350	190-240

**Size** - Within the breed that you select, sheep should be large-framed, long and relatively thick-bodied. Avoid sheep that are short, dumpy, fat and coarse-looking.

**Muscling** - Sheep should stand wide apart when viewed from behind. They should be thick and full in the leg, hip, and down the top. Avoid sheep that are narrow and shallow in their muscling.

**Wool** - Wool has become a very low value product. Unless you have a special market for wool, you should not place great emphasis on this trait in selection of your breeding stock. However, good wool is characterized by sheep that have a dense uniform fleece, free of black fibers. (The black fibers that are sometimes found in the wool of black-faced sheep are undesirable in the commercial wool industry.)

In addition to their physical characteristics, you should also ask for performance records on the animals that you are considering. Twins should be chosen over singles since twinning is a heritable trait and it is more profitable for a ewe to have two lambs than a single lamb. Lambs born in the fall, in turn, may be more useful for producing fall born lambs. Growth rate is also useful as an indicator of characteristics that will be passed on to progeny. High 60-day adjusted weights show milking ability of the ewes. High 90 or 120-day weights show continued growth to that point. If possible, select a ram from a group that has been performance tested.

Once your flock is established, use these same guidelines in maintaining and enlarging your flock. Accurate production records will show which ewes need to be

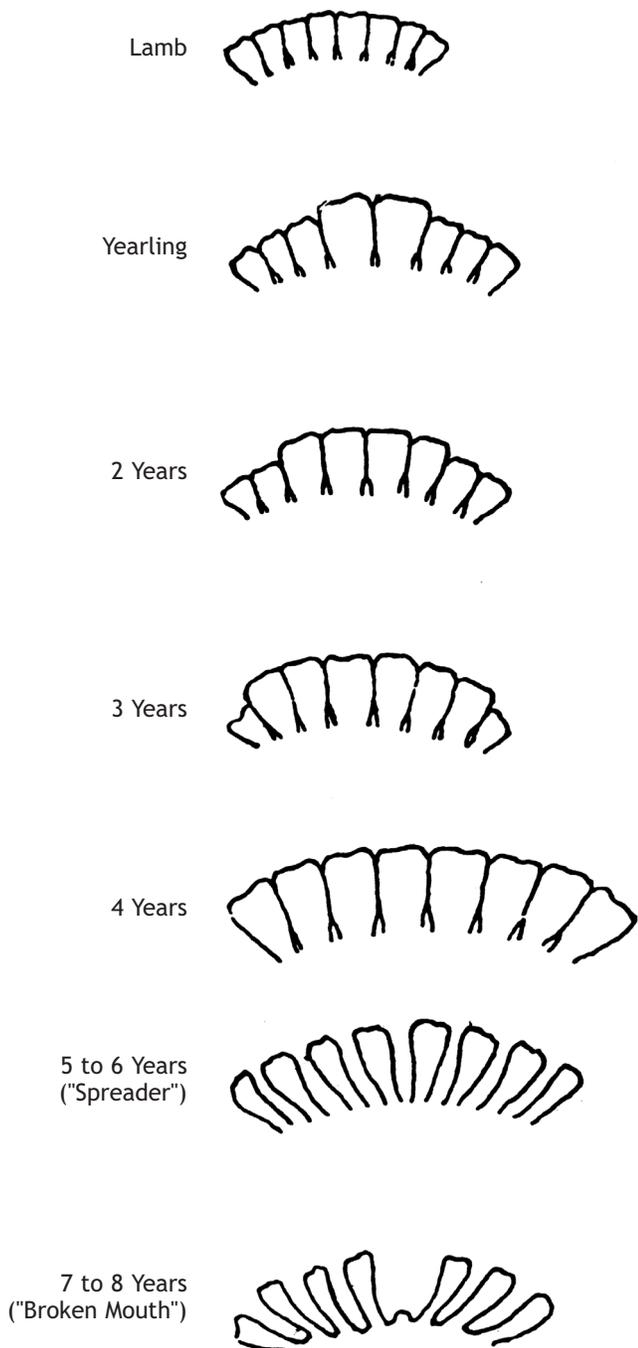


Figure 2. Check the age of sheep by examining their teeth.

culled from your flock. Replacement ewes are chosen on the basis of their performance records.

## Handling Your Flock

Sheep are timid animals and should never be roughly handled. Patience and gentleness on your part will make managing your flock a much more rewarding experience. A flock can easily be driven to and from pasture or into an enclosed area. If used to eating grain, they will usually come to you if you have a bucket of feed. When working with an individual animal, catch it by grasping it at the rear flank and placing your hand under its chin. Keep the head up. Never grasp or hold a sheep by its wool (this will cause skin bruises) or by the leg as this can be the cause of broken legs or dislocated joints.

In some instances you may need to "set-up" a sheep. This is done by first placing your legs against the sheep's side with one hand under the chin and the other hand on the hip opposite your legs. Holding the lower jaw tightly, the head is turned sharply over the shoulder while pressing down on the hip. Then lower the sheep to the ground on its rump as you step back and rest it against or between your legs. This position is used most often for shearing, trimming the hooves, or drenching.

## Facilities

### Shelter

Raising sheep does not require a high investment in buildings. Wool provides sheep with natural protection, but some form of shelter is needed at lambing time and during winter storms. A shed located on a well-drained, south slope and open to the south will provide shade during the summer and protection from rain and snow in winter. A grove of trees can also provide shade and some shelter if a building is not available. If you choose to lamb during the winter, an enclosed building where the temperature will not go below freezing should be available. This building needs to be free of dampness and drafts which could lead to losses from baby lamb pneumonia. Hog panels, which are 16 foot long sections made of welded metal rod, are very handy for sheep.

When first beginning your flock, you will need some type of moveable gates or panels for penning individual ewes with their lambs during the first few days after birth. There should be one lambing pen available for every 8 to 10 ewes and each pen should be approximately 4 to 5 feet square. These can be made of wood panels hinged together. Sections cut from hog panels can be joined with hose clamps to make a lambing pen.

The extent of your facilities will depend on the size of your flock and the resources that you have available. As your flock grows, you will need a working area for performing various management practices. Desirable features would include a well-drained area containing holding pens, sorting chute, scales, foot bath, and a loading ramp. A suitable area for shearing and wool storage will also be necessary.

### Pasture

Availability of good quality pasture is important to make your ewe flock project successful. Preferred perennial grass-legume pastures for sheep are bluegrass-white clover, orchardgrass-ladino clover, or tall fescue-ladino clover. Pastures should be maintained at 2 to 6 inches in height for best utilization by sheep. If it is available to you, winter pasture of small grain or stockpiled fescue can be beneficial in reducing purchased, harvested feed requirements.

Rotational grazing of your pastures is important for maintaining forage quality and animal performance. Small pasture areas are alternately grazed and rested. This helps maintain vigor and productivity of the pasture plants.

Fencing around the outer perimeter of your pasture (electric or woven wire) is especially important to discourage predators (see Figure 3.). Dogs or coyotes can be extremely harmful in a flock, but a properly constructed fence will reduce the possibility of this problem.

The availability of pasture for grazing will set the upper limit on the size of your flock. As you start, or begin to expand your flock, you should not exceed a total stocking rate of three ewes per acre. With additional experience you may find that a higher stocking rate will work on your farm.

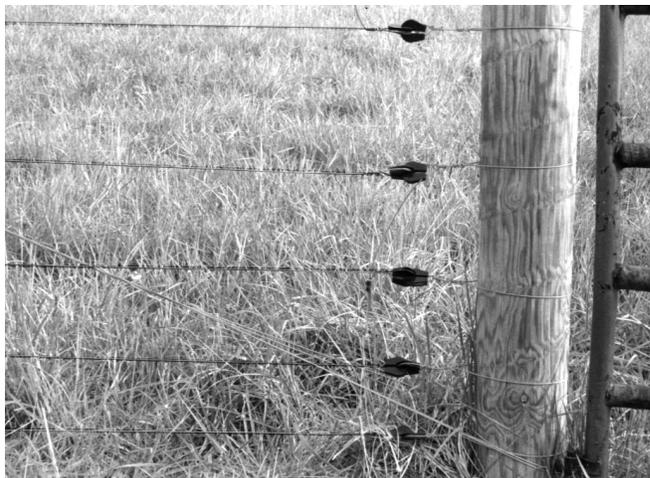


Figure 3. A five-strand electric fence around a pasture will protect a flock from predators.

## Equipment Needed

### Feeding

Feed trough/hayrack for feeding grain, hay, or silage  
length 18 to 24 in./ewe  
Water trough or buckets  
Feed pails  
Salt/Mineral feeder

### Health Management

Rectal thermometer  
Disposable hypodermic syringes and needles of various  
sizes  
Drenching syringe  
Hoof shears

### Lambing

Stomach tube  
Heat lamps  
Nursing nipples  
Docking tool  
Castrating tool  
Ear tagging tool and ear tags  
Iodine solution (7%, for navel cords of newborn lambs)

### Showing

Trimming stand  
Stiff brush  
Curry comb  
Wool card  
Trimming shears  
Show box (for equipment storage)

### Miscellaneous

Shearing equipment  
Marking chalk  
Scales (for weighing lambs and feed)  
Ram marking harness

## Feeding

Proper nutrition is essential for your ewe flock. This factor will be reflected in the lamb and wool production of your flock. Generally, good quality pasture will supply adequate amounts of energy, protein, minerals, and vitamins for much of the year. You should also provide a free-choice salt and mineral mix supplement that is formulated specifically for sheep tire mineral feeds (Figure 4). During the winter, and at times when pasture availability and quality are low, hay and perhaps grain will be needed to meet nutritional requirements.

Constant availability of fresh, clean water is an essential factor in good nutrition for your flock. For more specific information, obtain a copy of Feeding Sheep (VCE Publication 410-853) from your Extension agent.



Figure 4. A discarded tire and blocks of wood makes a good mineral feeder



Figure 5. A small pig feeder works well to dispense creep feed for lambs.

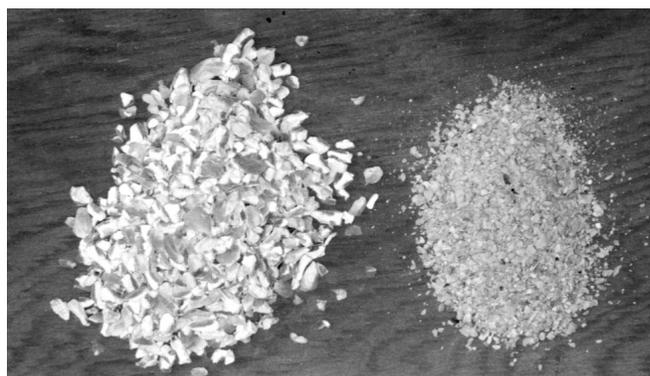


Figure 6. A mixture of cracked corn and soybean meal makes a good creep feed for lambs.

## Ewes

When feeding ewes, there are certain times when their nutrition requires special attention. Combinations of feeds to use at different times are in table 2. The three critical times are :

1. 2 weeks prior to and continuing 2 to 4 weeks into the breeding season. During this time ewes should be placed on a high quality grass pasture and supplemented daily with 1/2 to 1 lb. grain per head per day. This practice is called flushing and results in increased ovulation rates, thus a higher lambing percentage.
2. 6 weeks before and through lambing. The last 6 weeks of gestation are important because this is when most of the growth of the unborn lamb takes place. During this time your ewes should gain approximately 20 lbs. to prevent lambing paralysis and insure stronger lambs. Begin feeding 1/2 lb. grain daily 6 weeks prior to the start of lambing and increase this to 1 lb. per ewe per day 4 weeks before lambing. Hay will be needed, in addition to the grain, during the winter or when on poor pasture.
3. The first 8 weeks of lactation. To encourage milk production, feed approximately 1 3/4 lbs. of grain daily and all the legume hay and/or silage ewes will clean up. Ewes should be grouped so that ewes nursing twins get 2 lbs. grain and ewes nursing singles are fed 1 1/2 lbs. daily. Lactating ewes have a high protein requirement, so use a grain mix that is around

16% protein. After lambs are 8 weeks of age, grain feeding of ewes should be reduced or discontinued.

## Lambs

Your lambs can be ready for a creep ration as early as 2 weeks of age. For fast growth this should be a ration high in energy and the protein level should be adjusted for their size and age. Lambs like soybean meal. Some producers use a 50:50 blend of ground corn and soybean meal to start their lambs on creep feed, switching to one of the rations shown in Table 3 after a couple of weeks. If your lambs are winter-born, they should be placed on full feed after weaning, at 2 months of age, and marketed in the spring. Late winter and spring lambs can be marketed directly from pasture or from a grain feeding program in the fall and probably should not be creep-fed.

## Rams

Approximately 6 weeks prior to the breeding season, rams in thin condition should receive 2 lbs. grain per day in addition to good quality pasture. Rams in moderate condition need 1 lb. of grain per day. The objective is to have your ram (or rams) in moderate condition going into the breeding season. Throughout the breeding season, your ram may need additional grain supplementation if he is working hard and becomes thin.

During the winter, a full feed of good quality mixed hay is sufficient. Overfeeding your ram, especially with grain, could reduce his usefulness and shorten his life.

**Table 2. Pounds of feed needed per ewe at different stages of production**

Feeds	Early Gestation	Late Gestation (last 4 weeks)	Early Lactation
Alfalfa Hay		4.5	5.5
Good Mixed Hay	5	4.0	5.5
Shelled Corn		1.0	1.5
Soybean Meal		0.25	0.5

**Table 3. Creep rations for lambs**

% or lbs./100 lbs.				
Ingredient	Ration 1	Ration 2	Ration 3	Ration 4
Cracked corn	80	75	55	55
Oats or Barley		10	5	25
Soybean meal	20	10		15
Molasses		5		5
Alfalfa pellets			40	
Alfalfa hay	Free Choice	Free Choice		
Antibiotic	+	+	+	+

## **Suggested Feeds**

Pastures:

Bluegrass - white clover

Orchardgrass - ladino clover

Tall fescue - ladino clover

**Hay:**

Alfalfa

Clover

Grass-legume (mixed)

Second cutting grass hay

**Silage:** (must be free of mold)

Corn

Grass

Small grain

**Grain:**

Whole shelled corn

Barley

Oats

Grain mix designed for calf or dairy feeding, around 16% protein

## **Breeding**

### **Rams**

Performance tested rams should be used to breed your ewe flock if possible. You will also need to determine if ram numbers are sufficient to settle the number of ewes to be bred. Ram lambs can handle 20 to 25 ewes, while mature rams are capable of settling up to 50 ewes. This decision needs to be made at least 6 weeks before your scheduled breeding time so that a new ram can be brought in and determined free of disease. A breeding soundness examination of all rams should be done by a veterinarian 6 to 8 weeks prior to the start of breeding. If your flock is large enough to need more than one ram, get them used to one another by keeping them together in a small pen for 3 to 5 days about 3 weeks before breeding time. This will keep them from fighting and reduce the risk of injury.

### **Ewes**

The breeding season of your ewes will determine the lambing time of your flock. You will need to decide when is the best time for your lamb production in order to determine when to turn your ram in with the ewes. This will be limited somewhat by the fact that ewes are seasonal breeders and do not cycle year round. However, some sheep have a longer breeding season than others. The average ewe will begin to cycle (exhibit estrous) in late summer or fall and continue to come into heat every 17 days through late winter. She will stay in heat 18 to 40 hours and, if bred at the right time during this interval, will lamb approximately 145

days after breeding. (The gestation period can range from 144 to 151 days.)

Prior to the breeding season you will want to "flush" your ewes (see FEEDING section on page 6). You may also need to shear the dock area if it appears that wool may interfere with breeding. If your ram is wearing a marking harness, you will be able to see if your ewes are cycling and may possibly be able to determine approximate lambing dates. Change the color of the crayon in the marking harness every 2 weeks, starting with a light color and changing to a darker color each time.

### **Lambing**

Lambing time will be a special time for you and your flock because this is when you will begin to see the productive results of your ewe flock. This will also be the most intensive working time for you as a producer. Care of your ewes and lambs will be much more individualized, but continued good management at this time will be rewarding.

### **Ewes**

Four weeks before your expected lambing time, you need to begin checking and separating (in a large flock) ewes that are developing udders or showing signs of lambing. This is the right time to vaccinate the pregnant ewes with Clostridium C,D/T vaccine. Check these ewes that are close to lambing at least 4 times throughout the day (early morning, noon, late afternoon, and bedtime - if you are in school, try to arrange for a parent to check on your flock).

Ewes will go off by themselves to have their lambs. They will behave nervously. The first sign of lambing is often when the water bag breaks. Once this happens, let her labor for an hour or two before providing assistance. You should start to see the feet of a lamb shortly. There may be times when a ewe will need your help, but properly managed ewes will seldom need assistance. Many times you will simply find a ewe with her new lambs up and nursing.

After birth you should move the ewe and lamb (or lambs) to a lambing pen. Check the ewe's udder for milk and strip each teat to remove possible plugs. The day of lambing you can give the ewe hay and fresh water. Hold off on feeding grain until the second day. Keep the ewe and lambs in the lambing pen until they establish a strong bond and the lambs are strong and active. This may take just a day for a single lamb, but perhaps up to 2 or 3 days for twins. Ewes and lambs

can then be moved into a larger pen with other ewes and lambs of similar age. They should be carefully checked each day to make sure the lambs are still strong and successfully nursing their mothers.

## Lambs

When a lamb is born, the navel cord needs to be dipped into a 7% iodine solution to prevent the possibility of infection. It is also important to make sure that the lamb nurses within the first 30 minutes. If the ewe has no milk, help the lamb nurse another ewe that has recently lambed or give it colostrum that has been frozen. This is easily done by warming it to body temperature and giving it to the lamb with a stomach tube. Colostrum is the first milk of mammals and is important because of the antibodies and nutrients it contains. It is vitally important for the health of your lambs that they receive colostrum as soon as possible after they are born. Colostrum is of the most benefit to your lambs when received early in life (within their first 12 to 24 hours). If the lamb appears weak and chilled, hang a heat lamp about 3 feet above the bedding in a blocked off corner of the lambing pen (be aware of the danger of fire).

Ear tagging, or some other type of permanent identification, should be done soon after birth (within 6 to 12 hours). This allows for easy identification with the mother after they are moved from the lambing pen. At the time of ear tagging, record the tag number, sex, and birth weight in your record book. You will need to obtain the necessary tagging tools.

Docking and castrating at 7 to 14 days is recommended. Ewes and lambs can be assembled in groups after they are removed from their lambing pens, and the group can be processed before being turned out to a pasture or drylot

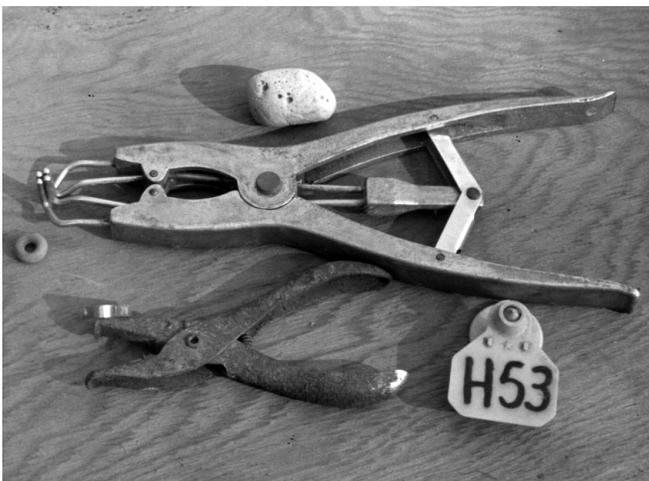


Figure 7. Shown are a few useful items for sheep management tasks. From the top are shown marking chalk, elastrator and band, metal ear tag and applicator, plastic ear tag.

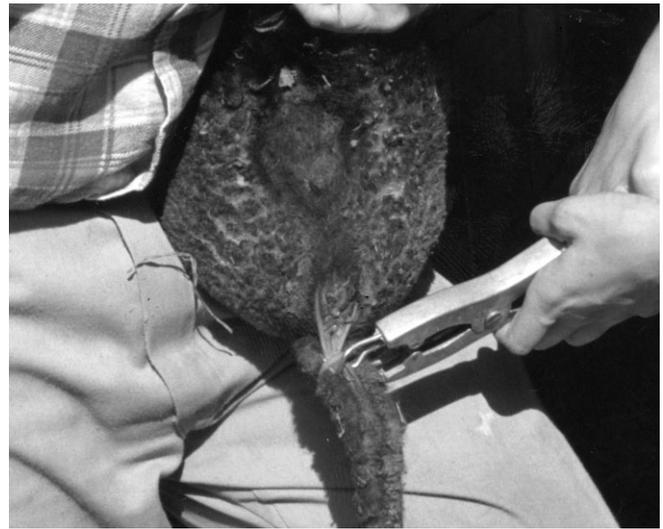


Figure 8

- A. An elastrator can be used for tail docking. Note the location of the band in relation to the folds of skin on the underside of the tail.
- B. Most injections are given subcutaneously (under the skin). Inside the front leg is a good spot for these injections.
- C. Small metal ear tags are useful for baby lamb identification

area. There are several methods of docking and castration. Some tools, such as the emasculator and the elastrator, can also be used for both tasks. After the operation, a disinfectant and fly repellent (if flies are a problem) should be applied to the open wound. This is also the recommended time to vaccinate your lambs against tetanus. This is less important if the pregnant ewes were vaccinated for tetanus 3 to 4 weeks prior to lambing. Although the elastrator (big rubber bands, Figure 8) is popular for both castration and tail docking, the risk from tetanus is high. Extra care is needed when castrating to ensure that both testicles are properly positioned below the band.

## Keeping Your Flock Healthy

A good health program is designed to keep sheep healthy and prevent any major diseases from occurring. This requires a sound feeding program along with just a few key vaccines. Normal, healthy sheep are alert, active, and have good appetites. Some of the symptoms of a sick sheep are drooping ears, glassy-eyed stares, loss of appetite, inability to move about freely, standing in a hunched position, diarrhea, and/or loss of weight and condition.

It is also important for you to have a good working relationship with a veterinarian in your area. Your veterinarian can be an excellent source of information in caring for your flock and will assist you in developing a comprehensive preventive health care program. If any of your sheep do become sick, consult your veterinarian rather than trying to treat them yourself, unless you are experienced with the treatment.

### Vaccinations

A good vaccination program is an important part of your overall flock preventive health program.

The basic vaccinations for the ewe are given at two critical times of the year. One is about 30 days pre-breeding with a combination vaccine for Vibriosis (also called Campylobacter) and Enzootic Abortion of Ewes (EAE, caused by Chlamydia). The other is 2-4 weeks before lambing with a clostridium vaccine. The minimum should include clostridium perfringens C&D and tetanus (C-D,T), and some producers use an 8-way clostridium product that contains eight different types of clostridium vaccines in one shot. This Clostridium vaccine pre-lambing is to enable the ewe to make antibodies which she puts into her milk (colostrum) to protect her newborn lamb once he nurses.

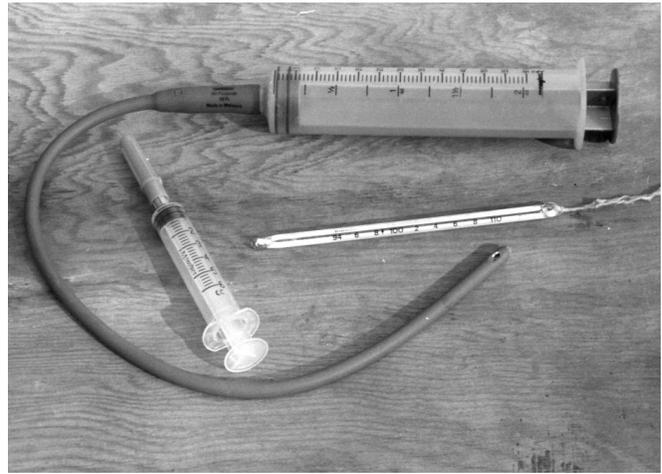


Figure 9. Shown are more useful items to keep sheep healthy. Tube feeder for baby lambs, rectal thermometer, and disposable syringe with 18 or 20 gauge needle.

Always read and follow the label directions when giving any type of vaccine or other medication. These will indicate the proper dosage to give each animal, as well as the correct method of administration. Although the label says that injections may either be subcutaneous (SQ - under the skin) or intramuscular (IM - in the muscle), the SQ route is preferred since it causes less tissue damage.

Lambs should be vaccinated prior to weaning. A two-shot series of the C-D,T vaccine should be used, the first at 2 to 3 weeks before weaning and the second 3-4 weeks after the first one. Other vaccines and health practices may be used. For suggestions on the other possible sheep immunizations, see Sheep Management Schedule (VCE Publication 410-365) and consult your local veterinarian.

### Parasite Control

Control of internal and external parasites is another management practice that stresses prevention rather than treatment. Parasites can cause heavy economic losses, but can be controlled by a combination of grazing management and treatment programs.

Sheep are more seriously affected by internal parasites (worms) than other livestock. Sheep consume the worm larvae with the pasture they eat. However, they can suffer the effects of those worms for quite a long time. Poor nutrition and lack of sanitation greatly increase the problems from worms. These parasites live inside of sheep and can damage internal organs and cause blood loss. Sheep can die from worms. External parasites, such as lice or ticks (keds), cause irritation to the skin of sheep. The rubbing and scratching due to external parasites can damage the wool, as well as reduce their performance.

External parasites can be controlled by either spraying or dipping annually. A recommended practice is to spray your flock in the spring to control ticks, lice, and flies. Treating your flock when sheep are newly shorn is more effective since the insecticide is better able to reach the skin.

Treatment for internal parasites is more involved and ideally requires several treatments throughout the year. The single most effective time to treat ewes for internal parasites is at lambing time. The ewe can be treated before moving the ewe and lamb from the lambing pen, or she can be dewormed 2 or 3 weeks prior to lambing. Lambs need to be dewormed beginning when they start grazing and every few weeks thereafter as long as they are in pasture. Ewes should also be dewormed periodically during the grazing season. For a more complete internal parasite control program see Sheep Management Schedule (VCE Publication 410-365) and VCE Publication 410-027, Control of Internal Parasites In Sheep.

The most effective worm control program involves a combination of dewormer use and management practices. For example, newly dewormed sheep should be moved to a pasture that has not been grazed by sheep since hay was harvested. Such a "clean pasture" should have few worm larvae, and thus sheep should not become reinfested with worms very quickly.

Dewormers for sheep are most commonly given as oral liquids or injectable products. Some new sheep dewormers continue to kill worms for up to several weeks after they are administered. Other dewormers have no such long-lasting effect. Consequently, read the label carefully and follow those instructions.

## Feet

Foot rot is a highly contagious, bacterial infection of sheep. Infected animals become lame and unthrifty and this, combined with the cost of treatment of the disease, makes foot rot very uneconomical for the producer. Prevention is much easier and less expensive than treatment, and through careful management you can protect your flock from this disease. Foot rot most often comes into a flock with new sheep that are infected. The foot rot-causing bacteria then infect the soil and can then move to other sheep.

Prevention starts with periodically trimming feet and running your flock through a foot bath. Spring and fall are suggested times for this management practice. Foot trimming at the time of shearing is good because it reduces the number of stressful handling situations. Trimming the feet of all of your sheep is necessary in

order to get rid of possible places where foot rot organisms might grow in the hoof. Periodic inspection is very important for controlling foot rot.

As a precaution, you should also walk your flock through a foot bath before returning them to pasture. If your facilities do not include a foot bath, a large tub or feed pan can be used. Footbath solution should be 10% zinc sulfate (8 pounds in 10 gallons of water).

Be alert for lame animals in your flock. If you see signs of foot trouble, catch and examine sheep right away and begin treatment as needed. When bringing in new sheep to your flock, trim and treat their feet, and then isolate them for several weeks until you are sure that they are also free of foot rot.

## Shearing Your Flock

At one time wool was an important source of additional income from your breeding flock. Income from sale of wool is based on the quality of the fleece and how it is cared for during shearing and prior to the time it is sold. A high quality fleece is the result of adequate nutrition and proper management of your flock throughout the year. Shearing at the correct time of year and using the proper shearing technique is also necessary for profiting the most from your wool crop.

Your entire flock needs to be shorn at least once a year. Some producers shear prior to lambing, if they have a good barn to protect the sheep from the cold. Others shear in the spring months, prior to the hot weather in which full-fleece sheep can suffer a great deal. Some shearing will need to be done at other times, such as shearing wool from the head, and around the udder and dock ("crotching") of your ewes approximately 4 weeks before lambing time. Rams should be shorn no sooner than 6 weeks before breeding time to avoid their becoming overheated during the breeding season. Overheating or running a temperature as a result of sickness can result in temporary infertility.

Shear your sheep only when their wool is dry as wet fleeces are difficult to shear and will mold in storage. Place your wool in clean wool bags and store them in a clean, dry place until selling time. Shearing needs to be done in a clean place and with the proper equipment. You can hire shearers to shear your flock or you may choose to shear your own sheep. If you decide to shear your flock yourself, ask your Extension agent or 4-H leader about attending a shearing school so you will learn the correct technique.

# Marketing Your Products

## Lambs

Most market lambs are sold when they develop a small amount of finish (fat). This will usually be when they are between 100 and 130 lbs. Some special markets exist for lambs that are sold at considerably lighter weights. The finished weight of your lambs will vary depending upon the breed. Smaller breeds may finish at 100 to 110 lbs., while some of the larger breeds will weigh up to 130 lbs without being very fat.

There are several ways for you to sell your lambs. Weekly livestock markets held locally are one possibility. You may also be able to place your lambs on consignment with a marketing pool. Your Extension agent can tell you how to get involved in this form of marketing. "Freezer lambs" may also be a way for marketing your lambs. This method would require working with an inspected meat packer for slaughtering, cutting, wrapping, and freezing. Then you could either sell the wholesale and/or retail cuts on your own or consign them to a local grocery. Finally, you may also be able to sell a few weaned lambs and have the opportunity to help another 4-Her get started on a Market Lamb Project.

## Breeding Stock

Ewes and rams produced from your sheep may be sold to other sheep producers for use in their flocks. Typically only purebred rams are sold for breeding; however, there is demand for both crossbred and purebred ewes. Rams or ewes sold for breeding must be high quality sheep. Breeding stock can be sold privately to other breeders, through consignment sales, or through special programs for either rams or ewes that involve performance testing followed by a sale. Breeding stock is not sold through weekly livestock markets. If you think you want to produce breeding



Figure 10. A ewe and her lamb get off to a good start in the lambing pen.

stock for sale, make contact with a sheep producer in that business for more information and ideas.

## Wool

Most wool in Virginia is marketed through wool pools. They occur just one time each year. Producers sign up to sell wool with their local wool pool during the winter months. Wool is then collected from the local producers on a certain day and shipped to a warehouse for grading, sorting, and eventual sale. Your Extension agent will have the information you need on dates and locations of wool pools in your area.

Some producers have found a market for wool sold directly to the consumer. Often these are naturally colored wools, or wool from sheep with the highest quality fleeces. These consumers often spin their own wool and use it to make clothing, knitted items, or crafts. It takes work to develop this market, but wool sold this way often brings fairly high prices.

## Record Keeping

Record keeping is an important part of any business. There are two types of records: (1) financial records (money) and (2) production records (dates, weights, numbers of animals, etc). Accurate records allow you to evaluate your management practices and the performance of your flock. Records should be kept from the very first day you start your flock and it is important that they be kept up-to-date. Using the Advanced 4-H Livestock Record Book (VCE Publication 380-121) will give you the basis for a good record keeping system and will be helpful if you later choose to expand your records and develop your own system. You may also want to keep a diary or journal so that you can record management practices performed throughout the year, as well as any other important information that you learn in becoming a good sheep producer.

Information should be entered in your record book as it happens in order for your records to be accurate and of most help to you in making management decisions. Each production year, you must carry-over the information from the previous year's record book for the rams and ewes in your present flock. When rams are turned in with your ewes, keep track of which ram bred which ewe. If you are using more than one ram, a marking harness with different colored chalk (worn on the ram's brisket) will identify the ram of service. Identify the sire of each lamb and record that information, also. As lambs are born, be sure to record date of birth, sex, birth weight, and type of birth (single, twin, triplet). It is important to note the type of rearing each lamb receives

if it is different from its birth status for some reason. Also, record the identification number that is given to the lamb at this time.

As your lambs grow, it is helpful to keep a record of their growth. This is done by the use of 60, 90, or 120-day weights. With a large number of lambs, it is often more convenient to weigh a group of lambs at one time and then individually adjust each lamb's weight to the same age. At weighing time, record the date weighed, age in days, and the actual weight. The actual age in days for the lambs should be fairly close to the adjusted day weight that you are planning to calculate.

Weights of lambs taken at different ages and raised in different ways cannot be fairly compared. In order to compare lambs of differing age and type of rearing, you must adjust for these factors. To calculate the adjusted-day weight, you first subtract the lamb's birth weight from the current weight. You then divide that value by the age in days at the time of weighing. This will give you the lamb's average daily gain. This number is then multiplied by 60, 90, or 120 (depending on which adjusted weight you are calculating), and then the birth weight is added back in to give you the adjusted weight. For more accurate performance comparisons, this adjusted weight is then multiplied by one of the factors in table 4 to adjust for sex of lamb, birth type, type of rearing, and age of ewe. These adjustment factors adjust all lambs to a ewe lamb basis and remove the sex effects so that ewes and lambs can be compared fairly on productivity and performance. The final number calculated is the adjusted-day weight.

In addition to weights of each lamb, you should also record the total adjusted weights of the lambs produced

by each ewe. At shearing time each year, record the fleece weight for each individual animal shorn. Finally, keep a record of the disposition of each lamb born into your flock. You will need to know if it died, was kept as a replacement, or was sold.

It is important to keep accurate financial and feeding records. Equipment and feed inventories are also important. This information is used in determining the value of your operation and calculating yearly profit or loss. It is also important for analyzing the strengths and weaknesses of your production system and for making management decisions. These records are also helpful in planning budgets for next year's operation.

Finally, good records are needed for income tax purposes. Livestock producers have an obligation to file federal and state income taxes. Proper records of all expenses and income are needed to complete these forms.

**Example:**

Find the adjusted 60-day weight of a twin-born and-reared ewe lamb from a 9-year-old ewe. The lamb weighed 16 lbs. at birth and 59 lbs. at 74 days.

Prewaning Average Daily Gain =  $(59-16)/74$ , which equals 0.581 lb/day

Age-corrected weaning weight is  $(0.581 \times 60) + 16$ , which equals 50.9 pounds.

Adjustment factor for ewe lambs out of ewes over 6 years old and born/reared as twins is 1.25, so

Adjusted 60-day weaning weight =  $50.9 \times 1.25$ , which equals 63.6 pounds

**Table 4. Multiplicative adjustment factors to correct for effects of lamb sex, ewe age, and type of birth and rearing on weaning weights.**

Type of Lamb	Ewe age	Number born, Number Raised						
		1,1	1,2	2,1	2,2	3+,1	3+,2	3+,3+
Ewe	1	1.14	1.30	1.27	1.37	1.36	1.46	1.56
	2	1.06	1.21	1.18	1.27	1.26	1.36	1.45
	3-6	1.00	1.14	1.11	1.20	1.19	1.28	1.37
	over 6	1.04	1.19	1.15	1.25	1.24	1.33	1.42
Ram	1	1.04	1.18	1.15	1.24	1.23	1.33	1.42
	2	.96	1.10	1.07	1.16	1.15	1.23	1.32
	3-6	.91	1.04	1.01	1.09	1.08	1.16	1.25
	over 6	.95	1.08	1.05	1.14	1.13	1.21	1.30
Wether	1	1.11	1.26	1.23	1.33	1.32	1.42	1.51
	2	1.03	1.21	1.14	1.23	1.22	1.32	1.41
	3-6	.97	1.11	1.08	1.16	1.15	1.24	1.33
	over 6	1.01	1.15	1.12	1.21	1.20	1.29	1.38

## Glossary

- Antibody - a protein produced by the body and carried in the blood that provides protection against specific diseases.
- Breed - a group of animals that have similar characteristics that are passed on from generation to generation.
- to cause to reproduce; to produce offspring. (bred, breeding, breeds)
- Carcass - the body of an animal that has been slaughtered.
- Castrate - to remove the testicles of a male animal.
- Commercial - produced and distributed in large quantities for use by industry.
- non purebred.
- Concentrate - an animal feed that is low in fiber and high in energy or food value.
- Crimp - the natural curliness of wool fibers.
- Crossbreed - the offspring produced from mating two or more different breeds (crossbred, crossbreeding, crossbreeds)
- Culling -the process of eliminating less productive or less desirable animals from a flock or herd. (cull, culled)
- Dock - to remove the tail of lambs. (docking, docked)
- Drench - a large dose of medicine mixed with liquid and put down the throat of an animal.
- to administer a drench. (drenching, drenched)
- Estrous Cycle - the period of time between one heat period and the next. For sheep it is 17 days.
- Estrus (Estrous) - the heat period; the time during which the female is sexually receptive to the male.
- Ewe - a female sheep, especially when full grown.
- Fiber - a slender thread of wool.
- Fleece - the coat of wool of a sheep.
- Flock - a group of sheep that are herded or managed together.
- Flushing - the practice of increasing the energy intake of ewes prior to mating, causing an increase in ovulation rate of the ewe. (flush)
- Genetic - the portion of an animal's characteristics that may be passed on to offspring. (genetics)
- Gestation - pregnancy; the time between mating (conception) and birth (parturition). For sheep it is around 147 days.
- Grade - an animal that has one or both parents that are not recorded in the registry association.
- an animal produced by crossbreeding.
  - a classification according to standards. Examples are Prime and Choice.
- Investment - time, money, or effort spent for future income or benefit.
- Lactation - the secretion of milk.
- the period between birth and weaning when the dam nurses her young.
- Lamb - a young sheep, especially one not yet weaned.
- the meat from a young sheep under 12 months of age.
- Mutton - the meat from fully grown sheep.
- Ovulation – the act of releasing one or more egg from the ovary.

Performance Record - the information collected on individual animals for specific traits such as birth weight, weaning weight, rate of gain, and yearling weights.

Performance Testing - the systematic collection of production information under controlled conditions for the comparison of individual animals.

Polled - naturally hornless.

Production Record - the information collected on the progeny of an individual animal such as birth weights, weaning weights, weaning gains, yearling weights, etc.

Progeny - offspring.

Prolific - producing offspring in large numbers. (prolificacy)

Purebred - an animal whose parents are of the same breed and are recorded in the registry association.

Ram - an uncastrated male sheep. An older ram is often referred to as a "buck."

Shear - to remove the fleece of a sheep. (shearer, shearing, shorn)

Sound - in good condition, healthy; generally refers to the feet and legs or mouth. (soundness)

Stockpiled - accumulated growth of forage for later use.

Wether - a castrated male sheep.

Wool - the dense, soft fiber forming the coat of sheep which is valued for its use in clothing.

# Sources Of Additional Information

**4-H Club Leaders**

**Extension Agents**

**Local Producers**

## **Virginia Cooperative Extension Publications:**

Publication 410-011 Virginia Spring-Lambing Budget

Publication 410-012 Virginia Winter-Lambing Budget

Publication 410-013 Virginia Fall-Lambing Budget

Publication 410-023 Profitable Artificial Rearing of Lambs

Publication 410-024 Whole Grain Diets for Finishing Lambs

Publication 410-025 Sheep Production In Virginia

Publication 410-027 Control of Internal Parasites In Sheep

Publication 410-028 Control, Treatment, and Elimination of Foot Rot From Sheep

Publication 410-029 Profitable Sheep Production Through Spring Lambing

Publication 410-030 Addressing the Consequences of Predator Damage in Livestock & Poultry

Publication 410-083 Market Lamb Project Guide

Publication 410-365 Sheep Management Schedule

Publication 410-366 Sheep Grazing Management

Publication 410-851 Adding Sheep To Cattle For Increased Profits

Publication 410-853 Feeding Sheep

## Suggested Topics For Talks Or Demonstrations

### Talks:

- How to keep production records
- Registration of purebred lambs
- Characteristics of the sheep breeds
- How to control sheep parasites
- The management of feeder lambs
- Preparation of creep rations
- Factors affecting carcass value
- Selection of replacement ewes

### Demonstrations:

- How to trim hooves for foot health
- Building creep-feeders for lambs
- Administration of dewormers to sheep
- Proper technique for giving injections
- Shearing sheep and care of the wool
- Preparing sheep for show
- How to show sheep
- Identification methods for sheep

## Organizations with Useful Information

### American Sheep Industry Association

6911 South Yosemite, Suite 200  
Englewood, CO 80112-1414

Telephone: 303-771-3500

Fax: 303-771-8200

Email: [info@sheepusa.org](mailto:info@sheepusa.org)

<http://www.sheepusa.org/>

### American Lamb Council

6911 South Yosemite Street, Suite 200  
Englewood, CO 80112-1414

(303) 771-3500

Fax (303) 771-8200

[info@lambchef.com](mailto:info@lambchef.com)

<http://www.lambchef.com/>

### VDACS Livestock Marketing Services

P.O. Box 1163  
Richmond, Va. 23218

Phone: 804.786.3935

Fax 804.371.7788

E-mail: [livestock@vdacs.state.va.us](mailto:livestock@vdacs.state.va.us)

<http://www.vdacs.state.va.us/livestock/sheep.html>

### Virginia Cooperative Extension

Information Resource Homepage:

<http://www.ext.vt.edu/resources/>

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