

INTRODUCTION

Virginia is the largest sheep producing state in the eastern United States. There are approximately 68,000 breeding-age ewes in Virginia, and Virginia producers raise 85,000 market lambs a year. Sheep play a key role in utilizing the vast amount of pasture forage available throughout Virginia. Sheep are the most efficient converters of grass to a choice meat product of all the livestock species. Over 90 % of a ewe's yearly energy requirement comes from forage.

Sheep are used to produce both meat and wool. Wool makes up approximately 10 % of a sheep producer's income, while market lamb production accounts for the rest. A variety of methods are used for finishing lambs in Virginia. Most lambs are weaned at about 80 days of age and fed to market weight on grass, grain, or a combination of both. This project book will deal mainly with finishing lambs on a complete concentrate ration, whereby the lambs are kept in a small lot and are not using grass as a form of feed.

The market lamb project has many advantages to offer the 4-H'er. Some of these are listed below:

Even the youngest 4-H'ers can physically handle lambs from the time they get them until the lambs are finished for market.

The lamb project requires the least amount of investment of all the 4-H livestock projects. Only a limited amount of equipment and space is needed for the project. Most projects can be completed for \$150 or less, including the price of the feeder lamb.

The project is short-term in nature, usually requiring 80 days or less for completion.

4-H'ers participating in this project will learn the responsibilities associated with the day-to-day care of their lambs and will gain a better understanding of the management practices that go along with lamb production. They should begin by studying Figure 1 to learn the parts of a sheep and the names of those parts.

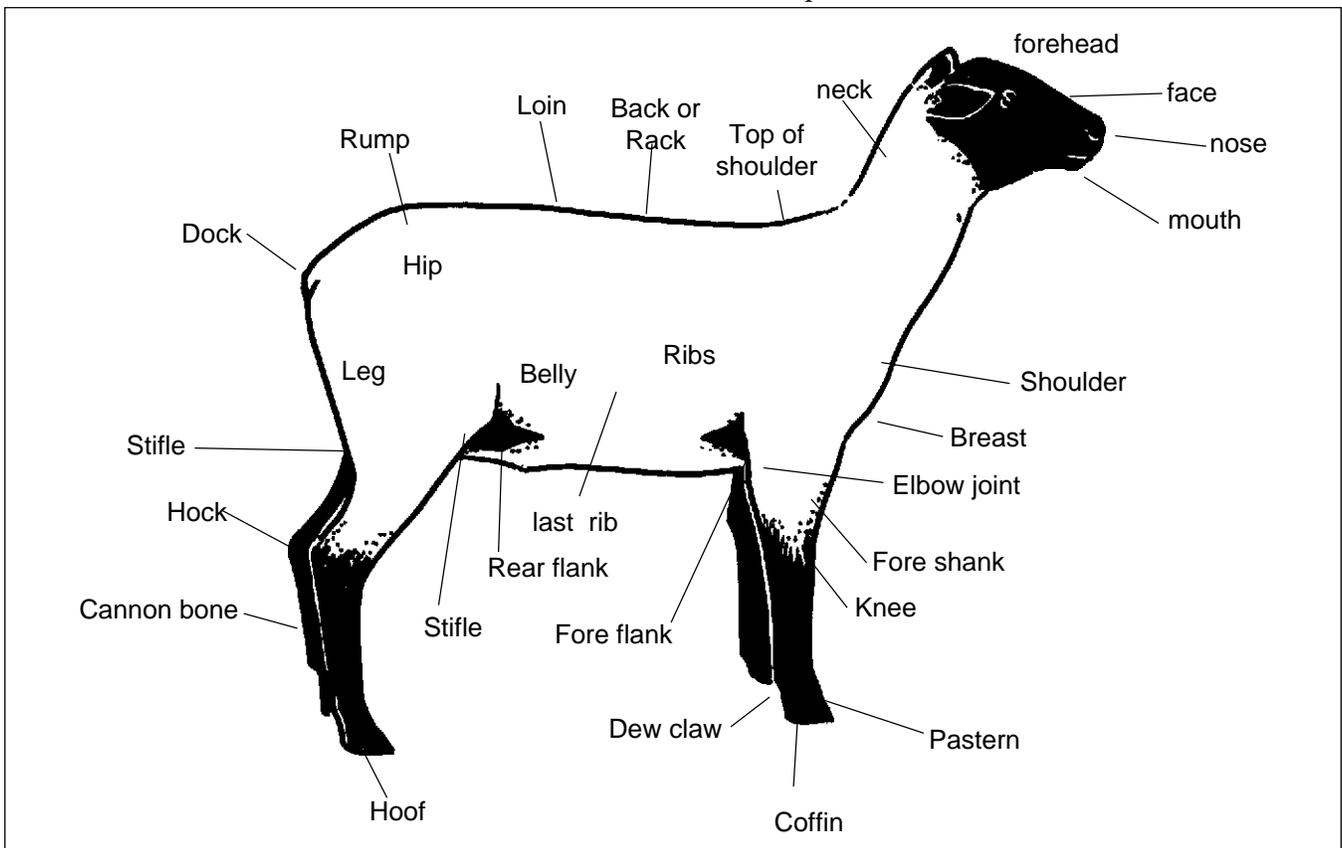


Figure 1. The parts of a sheep

PROJECT CALENDAR

Day 1 -

Acclimate your lambs to their new surroundings.
Treat for internal parasites.
Vaccinate for *Clostridium perfringens* C & D (commonly called overeating disease).
Provide plenty of fresh water and a free-choice supply of good quality hay (2 to 3 pounds per lamb).
Feed your lambs 1/4 pound of your complete lamb ration per animal.

Day 2 to 13 -

Begin feeding your lambs twice each day—once in the morning and once in the afternoon. Always feed them at the same time every day.
Increase the amount of the complete lamb ration you are feeding by 1/4 pound every day until your lambs are on full feed. That amount should be between 2.5 and 3.5 pounds per day. Once on full feed, cut the amount of hay you're feeding back to 1/2 to 1 pound a day.
As your lambs become heavier, you will have to increase the amount of complete feed you are feeding. However, don't increase the amount of hay.

Day 14 -

Re-vaccinate your lambs for overeating disease.

Four Weeks Before the Show -

Begin training your lambs to lead by halter.
Once they are broken to the halter, practice setting your lambs up so that their feet stand squarely under their bodies.
Check the weights of your lambs. If you don't have a set of livestock scales, use your bathroom scales. Weigh yourself and record your weight. Then pick up your lamb and step on the scales and record that weight. The difference between your weight and the second weight is the weight of the lamb.

One Week Before the Show -

Shear your lambs.

Three Days Before the Show -

Wash your lambs thoroughly with a mild soap solution. Dish washing liquid works well. Be sure to rinse all the soap out to prevent skin irritation.

Use a pair of hand shears to smooth out any shear marks left by the electric shears.

One Day Before the Show -

Wash your lambs again.
You will only need to spot clean the lambs on the day of the show. Make sure you get the lamb dry because the judge doesn't like to handle a wet lamb.

SELECTION

The feeder lambs you select for your project may be either ewe or wether (castrated male) lambs. Check to make sure any male lambs you are considering getting have been properly castrated. Most 4-H show rules prohibit the showing of ram lambs. Your lambs may be purebred or crossbred. Most lamb classes are divided by weight rather than by breed. Due to the hybrid vigor caused by crossbreeding, crossbred lambs will usually grow faster and more efficiently than purebred lambs. It is best to feed at least two lambs at a time rather than just one.

You should consider three factors when selecting your project lambs: 1) degree of muscle, 2) frame size, and 3) weight.

One of the first things the judge evaluates in the show ring is the degree of muscle the lamb shows through the leg. Your lambs should carry the same amount of thickness from the top of the leg down through the bottom of the leg. Light-muscled lambs will taper-off from the top of the leg down. The shape of the leg, as you stand behind a light-muscled lamb, will look like an ice-cream cone. While heavy-muscled lambs stand out wide behind, light muscled lambs stand with their rear legs close together. See Figure 2.



Figure 2. Light-muscled lambs (right) are flat through the leg and stand with their rear legs close together. Heavy-muscled lambs (left) are thicker through the center of the leg and stand wider behind.

Frame size determines final weight. Lower-set, shorter-sided, smaller-framed lambs finish at lighter weights than taller, stretchier, larger-framed lambs. Depending upon frame size, lambs could weigh from 90 to 140 pounds when finished. Lambs finishing at weights ranging from 110 to 125 pounds are most acceptable. Therefore, you should try to select lambs that are average in frame size rather than the extremes on either end of the scale. Frame size is correlated to breed. In general, Suffolk-cross lambs will finish heavier than Hampshire-cross lambs; Hampshire-cross lambs will finish heavier than Dorset-cross lambs.

At the same time you consider frame size, take into account the weight of the lambs. Depending upon the length of your project, some of the lambs may be too light or too heavy to use. Most lambs will gain an average of 1/2 pound per day. Determine the number of days you will be feeding, then calculate the pounds of gain to expect from your lambs. For example, if you feed for 60 days, your lambs should gain 30 pounds. By estimating the finished weight of the lambs, you can subtract back to the proper weight of the lambs you should purchase. Table 1 demonstrates the relationship between days until the show, purchase weight, and final weight for lambs gaining 1/2 pound per day.

TABLE 1

Days Until the Show	Purchase Weight	Final Weight
100	50	100
	65	115
	80	130
80	50	90
	65	105
	80	120
60	50	80 (too light)
	65	95
	80	110

Your goal is to produce an ideally finished lamb by the date of your show. That amount of finish should fall between 0.15 and 0.25 inch of fat over the back and ribs. You can estimate the finish on your lambs by pressing your hand down the lamb's top. If the backbone is prominent, your lamb hasn't finished yet. If the backbone is hard to feel, your lamb probably has too much finish. A moderate degree of fat cover over the back should be your goal.

FACILITIES AND EQUIPMENT

Often, the lamb project is referred to as a backyard project because of the small amount of space needed. Each lamb requires approximately 15 square feet of space. Therefore, a pen 10 feet by 10 feet would be large enough for six lambs. Shade should be provided during the summer months to prevent poor lamb gains due to the heat. Lambs should always be kept in an area where there will be some air movement.

You should not feed your lambs on the ground. Instead, you should use a feed pan or trough. Provide 12 inches of trough space per lamb. Fresh water should be available at all times. If watering from a bucket or tub, be sure to change the water frequently.

When you take your lambs to show, you will need the following equipment: water bucket, feed pan, a container for your feed, stiff brush, curry comb, and trimming shears. A small show box works well for storing your equipment when not in use. Some people use a fitting (blocking) stand that restrains your lamb while you are working on it. However, this is not essential, especially if you have a helper to hold your lambs while you work on them.

HEALTH

Upon acquiring your lambs, you should treat them for internal parasites and overeating disease. Since livestock medication is packaged for treating a number of animals at one time, try to go together with several fellow project members to share the cost.

Stomach and intestinal roundworms are the most harmful internal parasites that affect your lamb. If left untreated, the lambs will have poorer average daily gains and will require more feed per pound of gain. Dewormers are available as a drench (liquid given orally), a bolus (a big pill), or as injectable products. For small projects, the bolus or injectable is probably the most practical. When using the bolus, be sure the lamb swallows it rather than coughing it back on to the ground. One treatment of dewormer should be sufficient for the entire length of the project.

Overeating disease in lambs occurs most frequently in cases where lambs are fed high grain rations that promote high average daily gains or where the type of feed they are receiving is changed drastically. Under these conditions, bacteria that normally live in the lamb's intestines begin multiplying at abnormal rates and produce a toxic substance that kills the lambs. The disease gives no warning by way of symptoms and cannot be treated. Therefore, prevention through vaccination must be practiced. The vaccine for overeating disease is to protect against specific bacteria, *Clostridium perfringens*, Types C and D. Lambs should be vaccinated twice - once on the day you get them and then again two weeks later. The

equipment needed is illustrated in figure 4. This should be done even if they have been vaccinated on the farm where you purchased the lambs. The vaccine is given subcutaneously, which means between the skin and the muscle. A good place to vaccinate the lamb is underneath the front leg. Since the vaccine requires several days to take effect, be sure to slowly place your lambs on full feed rather than immediately giving them all they can eat.



Figure 3. A minimum amount of equipment is needed for proper health care. Shown are a balling gun for giving boluses, a disposable syringe and needle, and a bottle of vaccine containing *Clostridium perfringens*, types C and D.

A condition commonly called water belly can occur in your lambs when the calcium-to-phosphorous ratio in your feed becomes close to one-to-one. When this occurs, kidney stones are formed, and these block the ability of the lamb to urinate. The ratio should be at least two parts calcium to one part phosphorous. Although ewe lambs form kidney stones too, the condition will almost solely occur in wether lambs. Unless the condition is immediately recognized, and the lamb treated by a veterinarian, death usually occurs. Water belly can be prevented by adding 1 % limestone to the ration or by using a vitamin and mineral premix made for feeding lambs. A mixture of 50 % feed-grade limestone and 50 % white salt that is available to the lambs at all times will prevent this condition. Commercial feeds that can be purchased for feeding lambs are supposed to maintain the proper levels of calcium and phosphorous.

FEEDING

Feed will be the most expensive investment you make in your project. Therefore, care must be taken to make sure your ration is properly balanced with the energy, protein, minerals, and vitamins that will allow your lambs to grow as quickly and efficiently as possible. Your feeding decisions should be made before purchasing your lambs so that you know the type and amount of feed you will require. Plan on your lamb consuming an average of 3.5 pounds of feed per day. Three options for rations to feed your lambs are:

1. Purchase a complete feed from your local feed mill. This feed should be formulated for growing and finishing lambs. It is usually cheaper to purchase a complete feed than it is to buy the separate ingredients and mix them yourself. Most complete feeds are pelleted, which makes for easy storage and handling. Lambs will usually eat more of a pelleted feed and have higher average daily gains.
2. Prepare your own ration by mixing grain with a pelleted protein, vitamin, and mineral supplement. It is possible to mix whole grain such as corn, oats, or barley with a pelleted protein supplement that includes the needed vitamins and minerals. It is not necessary to grind the grain; this saves the grinding cost. The proper proportion of grain and supplement can then be mixed at the time of feeding.
3. Prepare your own ration by mixing grain with soybean meal and adding a vitamin and mineral premix. This option requires the most time and effort. However, it is the most flexible in terms of using any number of ingredients you desire in your ration. It is necessary to partially grind your grain in order to prevent the soybean meal and vitamin and mineral premix from sifting to the bottom of your storage container or feeding trough.

No matter which type of ration you settle on, it will be necessary to feed hay to your lambs each day. A lamb's digestive system requires some hay in order to function properly. A good quality hay such as alfalfa or an orchardgrass-clover mixture should be fed. One pound of hay per day will be sufficient.

Whether mixing your own feed or buying a complete feed, you need to know how each component of the feed contributes to your lamb's growth.

Energy Component

This feed group makes up the largest portion of the ration. Corn is the most widely used energy feed in Virginia. Other energy sources include barley, oats, and wheat. Higher energy diets allow animals to gain weight faster.

Protein Component

This feed group is essential for the growth of muscle in your lamb. Protein is made up of amino-acid building blocks. The growing lamb requires certain amino acids that are supplied by this protein component. The most common source of protein for lambs in Virginia is soybean meal. The most expensive component of the feed on a per pound basis is protein. As your lamb grows, its protein requirements decrease. So keep the following data in mind when making your feed purchases.

Lamb Weight	Protein Requirements
15-30 lbs	18% Protein
30-65 lbs	16% Protein
65 lbs plus	14% Protein

Vitamins and Minerals

There are many vitamins and minerals your lamb requires for bone growth and essential body functions. To attempt to buy these individual ingredients to add to your ration is impractical. Fortunately there are vitamin and mineral premixes available that are already balanced for lambs, and these may be purchased to add to your ration. Check with your feed dealer or Extension agent to be sure your calcium to phosphorous ratio is great enough to prevent water belly.

Feed Additives

The feeding of certain antibiotics has been shown to improve rate of gain and feed efficiency and gives some protection against overeating disease. Care must be used to see that these products are thoroughly mixed with the feed. The normal feeding rate is around 20 grams to the ton. Commercial feeds containing antibiotics are available for your purchase.

Coccidiosis can be a devastating problem with lambs. It is caused by a protozoa, which is an internal parasite. Coccidia are not controlled with dewormers. However, two feed additives—Lasalocid (common name Bovatec) and Monensin (common name Rumensin)—do control Coccidia. Many lamb feeds and supplements contain these products.

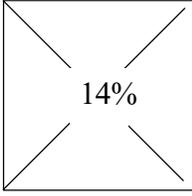
Balancing A Lamb Ration

Since corn will probably be the main energy ingredient of your ration, the ration must be balanced for protein because corn is low in protein. After balancing the ration for protein, the level of energy will still be at a desirable level. A recommended level of vitamin and mineral premix is then added to make your ration complete.

Let's balance a ration using corn and two different sources of protein. One source of protein will be soybean meal which is 48% protein and will require that vitamins and minerals be added. The other source of protein will be a 40% pelleted protein supplement that already has the vitamins and minerals added.

We will assume that the lambs weigh 65 pounds, and that we want 14% protein in our ration. The method for determining the proper pounds of each ingredient in the ration is calculated using a Pierson Square:

Using soybean meal:

Corn protein	9%	34
		
Soybean meal protein	48%	5
		Total 39

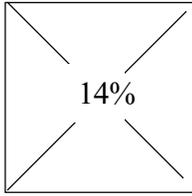
Take the difference between 9% and 14% and put it in the lower right hand corner. Take the difference between 48% and 14% and put it in the upper right hand corner. Add the two right hand values together and then divide the total into the two individual values and multiply by 100:

$$34/39 \times 100 = 87 \text{ lbs corn}$$

$$5/39 \times 100 = 13 \text{ lbs soybean meal}$$

The resulting values are the pounds of each ingredient in 100 pounds of feed. Remember that you have to add vitamin and mineral premix to your ration.

Using Pelleted Protein Supplement with Vitamins and Minerals:

Corn protein	9%	26
		
Supplement Protein	40%	5
		Total 31

$$26/31 \times 100 = 84 \text{ lbs Corn}$$

$$5/31 \times 100 = 16 \text{ lbs Protein Supplement}$$

There will be no need to add vitamins and minerals to this ration.

PREPARING YOUR LAMBS FOR SHOW

Begin preparing your lambs four weeks before the show. Break your lambs to lead by halter. Halter broken lambs are easier to show. Although not the case 20 years ago, it is perfectly acceptable to have haltered lambs in the show ring today. Cotton rope halters are very easy and inexpensive to make (see Figure 5). Ask your 4-H Extension agent or volunteer leader about making halters for your lambs.

One week before the show, completely shear your lambs. Locate someone in your county or general area to shear your lambs if you don't know how. It works best if your 4-H club can bring all their lambs to one location for shearing. You should plan on paying the shearer a predetermined charge for each lamb shorn.

Three days before the show, wash your lambs thoroughly with a mild soap solution. Dish washing liquid works fine. After your lambs have dried,



Figure 5. A lamb halter can be made from 6 feet of 1/4-inch cotton rope. A loop is made in one end of the rope and secured with hog rings. Another loop is made 6 inches from the first and secured with hog rings. The rope is then threaded through the loops as shown. The halter is put on the lamb so the long end of the rope comes under the lamb's jaw and on the left side of the lamb's head.

use a pair of hand shears or scissors to smooth out any shear marks left from the electric shears. The day before the show, wash your lambs again and place them in a pen bedded with straw or cover them with a show blanket to reduce their chances of getting dirty. You will need only to spot clean your lambs on the day of the show. Some of the equipment you will need for fitting your lamb is shown in Figure 6.



Figure 6. Very few pieces of fitting equipment are needed to properly prepare a lamb for show. Shown are foot-trimming shears, a curry comb, and a stiff bristle (rice root) brush.

SHOWING YOUR LAMB

Practice the following directions until you know them by heart. If you do, you should have no trouble in the show ring - showing your lamb will be fun and a rewarding experience.

1. Enter the show ring promptly when your class is called. Line up the way the judge or ring assistant instructs you.
2. When you stop your lamb, set your lamb squarely on all four feet and legs by using your left hand under the chin of the lamb to restrain it and using your right hand to reach under the lamb and set the feet. (Figure A.)



Figure A. Showmen positioned on left of lamb by shoulder. Note how feet are properly placed. Place opposite rear leg by reaching underneath lamb.

3. When showing your lamb for a rear view, you should be positioned to the left hand side of the lamb, beside its left shoulder, facing its rear, and kneeling.
4. Always watch the judge.
5. If the judge circles to the front of the lambs, you should move to the front of the lamb at the same time the judge passes so that he/she can get the full side view of the lamb. Do not cross the front to the right side of the lamb.
6. If the judge asks you to move your lamb from a rear-view position to another place in line, move the lamb forward and then return in a clockwise fashion through the hole you vacated and to the position in class the judge indicates.
7. When the judge handles your lamb, place your left knee in the lamb's chest and press backward to brace it. Younger exhibitors can stand up in front of their lamb. (Figure B)

8. Always be courteous in the show ring.

9. Never:

- a. move to the right hand side of your lamb;
- b. turn your lamb in a counter-clockwise fashion;
- c. pet your lamb;
- d. place your hand on the top of the lamb or around its neck;
- e. tug on the halter if the lamb doesn't want to lead.



Figure B. Place knee in lamb's brisket when judge handles your lamb. As judge moves to front, showmen move to front of lamb to avoid being between lamb and judge.

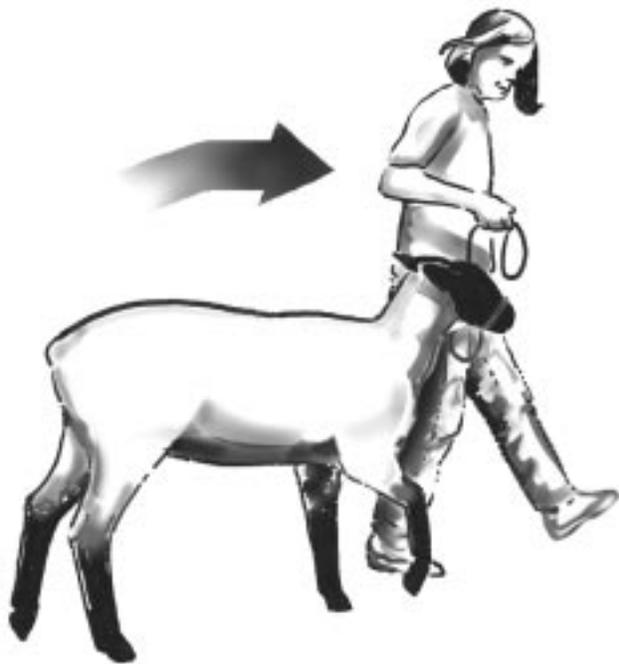


Figure C. To change positions, lead lamb ahead and turn to the right or away from you.



Figure D. Bring lamb back through its original position. Judge will direct you to the new position.



Figure E. Lambs properly set for a side view. Note that the feet are set up under the corners of the body, not stretched out.

GLOSSARY

Average Daily Gain - abbreviated ADG. Computed from: (Ending Weight - Beginning Weight), Divided by number of days from beginning to end

Ewe - a female sheep of any age.

Feed Efficiency - Pounds of feed required per pound of gain. Computed from: (Total Feed consumed by animal), Divided by pounds gained by animal

Fleece - the wool coat of a sheep

Lamb - A young sheep. May be combined with other terms, such as ram lamb or ewe lamb.

Ram - a male sheep.

Wether - a male sheep that has been castrated before developing any secondary sex characteristics.

REFERENCES

The Merck Veterinary Manual. Published by Merck & Co., Inc. , Rahway, New Jersey

The Sheepman's Production Handbook. Available from the Sheep Industry Development Program Inc., 200 Clayton Street, Denver, CO 80206.

Sheep Handbook of Housing and Equipment (MWPS-3) - A collection of plans and background information concerning sheep buildings and facilities and management equipment. Available from Midwest Plan Service, Iowa State University, Ames, IA 50010.

Virginia Cooperative Extension Publications:

410-010 - Virginia Lamb Feeding Budget

410-011 - Virginia Spring Lambing Budget

410-012 - Virginia Winter Lambing Budget

410-013 - Virginia Fall Lambing Budget

410-024 - Finishing Lambs with Whole Grain

410-025 - Sheep Production in Virginia

410-027 - Control of Internal Parasites in Sheep

410-028 - Control, Treatment & Elimination of

Foot Rot from Sheep

410-029 - Profitable Sheep Production Through
Spring Lambing

410-089 - Ewe Flock Guide

410-365 - Sheep Management Schedule

410-366 - Sheep Grazing Management

410-851 - Adding Sheep to Cattle for Increased
Profits

410-853 - Feeding Sheep

410-902 - Profit From Large Lamb Crops

400-461 - Implants to Stimulate the Growth of
Beef Cattle & Sheep

380-122 - 4-H Livestock Record Book

380-121 - Beef-Swine-Sheep Advanced 4-H
Livestock Record Book

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VIRGINIA 4-H

MARKET LAMB PROJECT GUIDE



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HOW TO USE THIS GUIDE

This Virginia 4-H Market Lamb Project Guide is a source of instructions for conducting the Market Lamb 4-H Project. The records for this project should be kept in a separate Livestock Record Book or Advanced Livestock Record Book. These record books can be obtained from your local 4-H Extension Agent or 4-H Leader.

One copy of this guide is all that you will need in your 4-H market lamb career. However, you will need a new Livestock Record Book each year. All of these publications are three-hole punched and can be kept together in a three-ring notebook.

You are encouraged to find additional information on sheep production on your own. Some additional references are listed in the back of this guide. There is always more to learn about sheep production, and these sources of information will be of tremendous value if you want to dig deeper in the area of sheep management and production.

ACTIVITIES FOR YOUR CLUB

- A livestock judging school
- A tour to see fellow club members' market lambs and facilities.
- A visit to a grocery store to study the different cuts of lamb and the way they are sold.
- A visit to a sheep farm.
- A visit to a sale where lambs are sold.
- A trip to a sheep show.

SUBJECTS FOR DEMONSTRATIONS

- Discuss the different breeds of sheep.
- Vaccination programs for sheep.
- How to select the proper feeder lamb.
- How to prepare inexpensive lamb project facilities.
- How to prepare a balanced ration for lambs.
- How to control internal parasites of lambs.
- How to prepare a market lamb for show.
- How to make a rope halter for lambs.
- How to show your lamb.

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