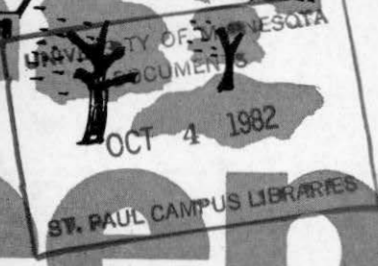


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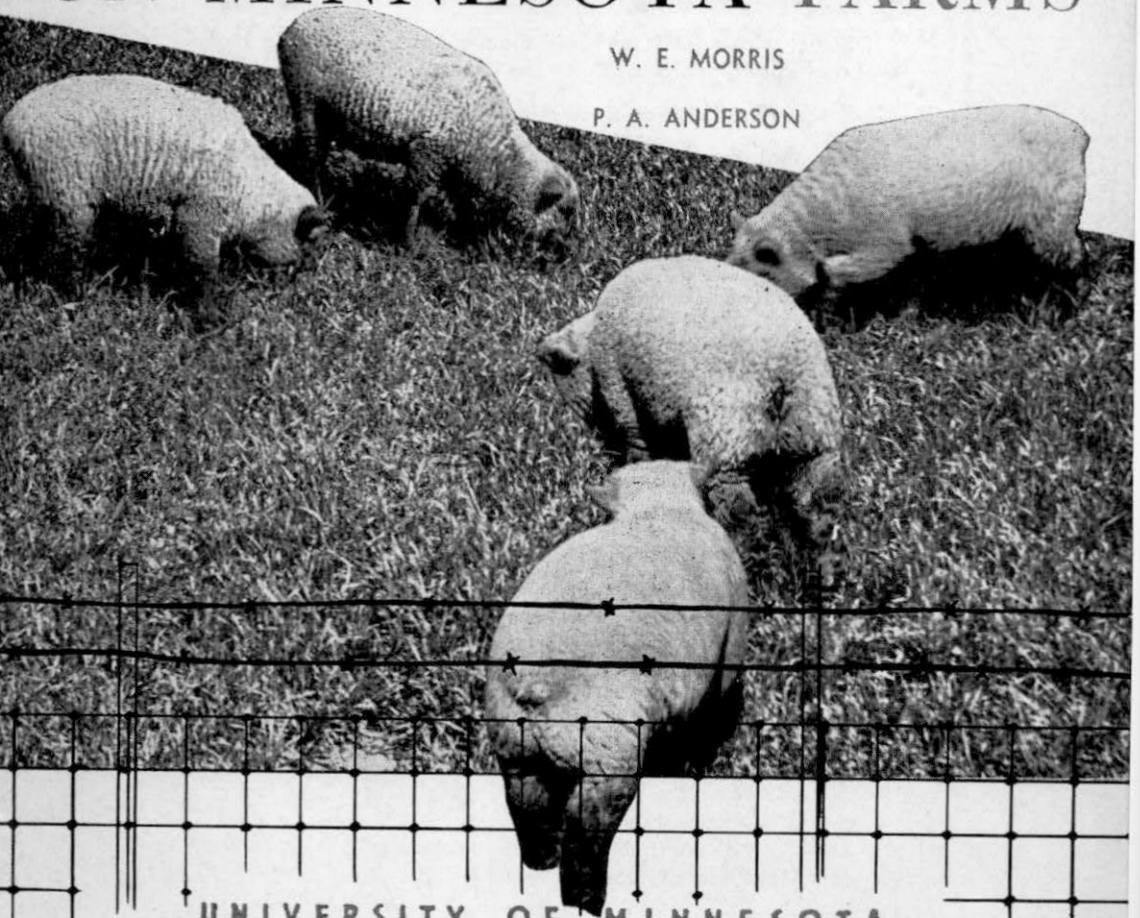


Sheep

ON MINNESOTA FARMS

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U. S. DEPARTMENT OF AGRICULTURE

RECOMMENDATIONS

Keep sheep numbers adjusted to the individual farm. Do not overstock.

Select types of ewes with mutton conformation and with good fleeces. Do not keep extremely old ewes.

Use a purebred ram.

Select winter feeds that will maintain the sheep at a high level and in addition provide for the unborn lamb.

Feed iodized salt or trace mineral salt.

See that the ewe flock gets enough exercise during the winter months.

Lambing time is the sheep raiser's harvest; keep in close contact with your flock.

Keep your lambs growing well until pasture time.

Plan your pasture program well; "grass makes cheap gains."

For thrifty lambs, use temporary pastures to assist in parasite control.

Health makes wealth—follow a definite parasite program. Keep losses at a low point.

Know your wool; shear, package, and sell it to advantage. Don't shear when sheep are wet.

Sheep on Minnesota Farms

W. E. Morris and P. A. Anderson

THERE'S ROOM for a profitable sheep business on many farms in Minnesota. Most farms can grow excellent pastures and high-quality legume roughage, making for low-cost, high-quality market sheep. Unlike other livestock, many Minnesota lambs reach market in top condition on grass with little or no grain feeding.

Sheep require relatively little labor, inexpensive equipment (except for fencing), buildings, and shelters. Today it would be profitable for many farmers to add sheep to their livestock enterprise and for others to increase the size of their flocks to use surplus feed and pasture.

There are three general plans of raising sheep in Minnesota.

1. **Keeping a farm flock** of from 25 to 100 breeding ewes, purebred or grade, as part of the livestock on the average quarter-section or half-section farm. This bulletin primarily deals with managing these flocks.

2. **Keeping all the sheep the farm will carry**, specializing in sheep as the principal enterprise. Here it is common to purchase western breeding ewes and mate them with high-quality purebred rams to produce high-quality market lambs. All lambs are sent to market; none is kept for replacement. As the original flock becomes old, it is replaced with a new band from the range. A few ewe lambs may be held back so the type of ram is doubly important.

3. **Fattening feeder lambs**—either natives or those shipped from the western range. These are bought largely on the central market or from dealers.

Caring for the Sheep

Selecting Breeding Ewes and Rams

Selecting the Ewe

To start a farm flock, you can buy ewes from (1) flocks near home, (2) commission agents at terminal markets, and (3) dealers or owners in the West.

Wherever you buy, watch for these characteristics:

Good health—Select healthy-appearing, thrifty, vigorous ewes. Avoid ewes

with colds, coughs, or diarrhea. Look for bright and oily fleeces, pink skin (not pale or dark blue), and bright red nose and eyelid linings. In the fall select animals in fair flesh or, if thin, find out why. They may be thin from lack of feed or nursing lambs.

Right age—In starting a flock, ordinarily buy ewes that have had lambs. They lamb easier and give less trouble at lambing time. Ewes two or three years old are best. Four- or five-year-

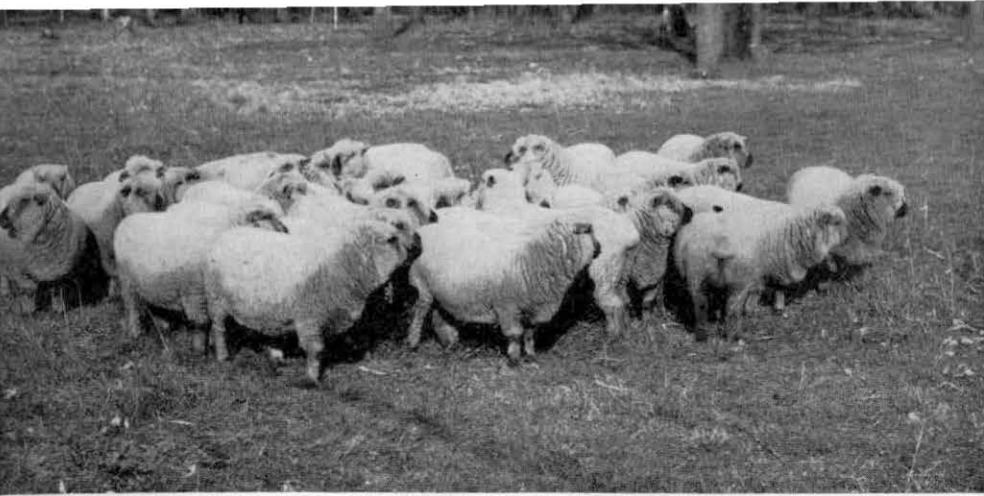


FIG. 1. Low, thick farm ewes—a good kind to select.

old ewes are also good and cost much less than younger ones. Ewes that are over five years old but have solid mouths can be useful for two or three years, but younger ewes are preferable. A few young ewes are better than many old ones.

You can tell sheep's age by the front teeth of the lower jaw. A lamb has four pairs of rather narrow temporary teeth; a yearling has a center pair of broad permanent teeth and three temporary pairs; a two-year-old has two pairs of broad permanent teeth and two temporary pairs; a three-year-old has three pairs of broad permanent teeth and one temporary pair; a four-year-old has a full mouth of permanent teeth.

After the fourth year age is hard to determine. A "solid" mouth (one in which the teeth are all sound and of uniform shape) represents ewes from five to seven years old. See figures 3 and 4.

Sound udder—Avoid ewes with injured teats, thick teats with stoppages, or teats missing. Sound udders are soft and pliable.

Good type—A ewe should show good breeding—good width and breadth of body, deep body chest, straight back, compact fleece, and marked characteristics of a recognized breed.

Good fleece—When buying many sheep at one time, you cannot always

examine fleeces carefully. But try to reject ewes with hairy, loose, open fleeces or fleeces with black or brown spots or fibers mixed with the white. Compact, uniform fleeces are musts for sheep profits.

Good condition—Ewes coming off good range or good pasture in the fall should be fleshy. This indicates health and thriftiness.

Uniformity—Uniform ewes will produce uniform lambs, and these lambs will sell better because the lot will have a more pleasing appearance.

Native or Western Ewes?

Native ewes are ewes raised on the farm. They show evidence of mutton breeding by the use of mutton rams.

If you need only a few ewes and select carefully, you can choose native ewes to good advantage. If you need a half carload or more, choose western ewes.

Range or western ewes are of two kinds—white faced and black faced.

Some sheepmen prefer only white-faced ewes because of their uniformity, hardiness, and wool character. Others favor the black-faced ewes because they are larger and have superior mutton form.

Since many western ewes come to market in the fall, the beginner then can get a good selection. Western ewes

are hardier than native ewes and are more likely to be free of parasites. Although they lack mutton conformation and are smaller than natives, they produce good market lambs when mated to good mutton rams.

Selecting the Breeding Ram

A purebred ram will sire lambs that will reach a good weight by market age. Such lambs are easier feeders, are superior in type, dress a higher percentage of carcass, and sell at a higher price.

In selecting a ram to produce market lambs, consider mutton form first. Lambs represent about two-thirds and wool about one-third of the income from sheep. Thick, blocky, fast-maturing lambs that will reach 90 to 100 pounds with the finish or degree of flesh necessary for top market prices are desirable.

Remember that wool is a second crop and that the ram eventually determines the kind of fleeces sold because the ram's daughters are held in the flock for breeding ewes. Therefore, select rams able to produce $\frac{3}{8}$ - and $\frac{1}{4}$ -blood fleeces. Mature fleeces of these grades should be at least $2\frac{1}{2}$ inches in length.

Do not select rams with fleeces that are hairy at the breech, up the thighs, and over the rump. In addition, try to avoid fleeces with black fibers and ones that are very open and thin. Uniform density is desired over the entire body. Wool covering the head should be moderate.

Care Before Breeding

Flushing the Ewes

Flushing—special feeding before breeding—puts the ewe in good condition, increases fertility, and increases

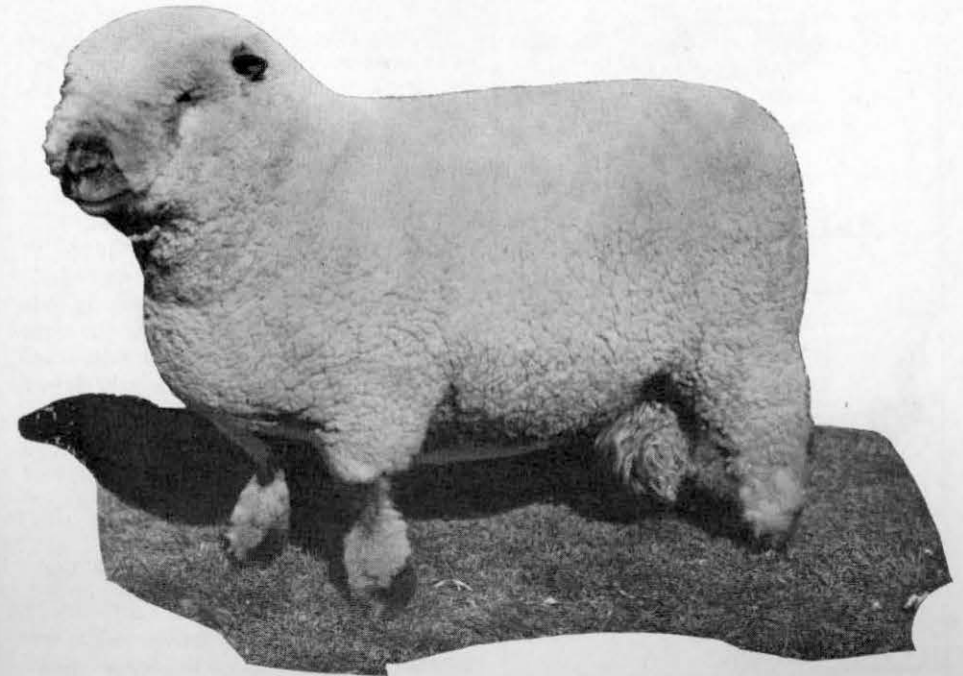


FIG. 2. This type of ram will sire good lambs.

A Sheep's Age Can Be

FIG. 3

Top: Mouth of lamb—8 small temporary teeth.
Center: Mouth of yearling—1 pair of permanent, 3 pairs of temporary teeth.
Bottom: Mouth of 2-year-old—2 pairs of permanent, 2 pairs of temporary teeth.



the possibility of twins. About three weeks before breeding, give the ewes extra-good pasture to put them in gaining condition. Often you can do this by turning them into a stubble field or on second growth of hay. You can also turn them into cornfields to eat the lower leaves and broken stalks, and in this way they make the field cleaner for husking or silage. However, do not turn any sheep into burry pastures as burs lower your wool quality.

If cornfields or hayfields aren't available, seed rape or Sudan grass for pasture. Grain at the rate of $\frac{1}{2}$ to 1 pound per day can be used when green feed is not available.

Before the breeding season tag all ewes (shear all rear parts clean) and shear excess wool from the belly of the ram.

Ewes normally come in heat in the fall. You can control spring lambing time by the time you place the ram in the flock. The interval between heat periods in ewes varies from 16 to 21 days. The period of gestation varies from 140 to 152 days, averaging 146 days. Record the dates when the ram is turned in with ewes and when removed to know when ewes will lamb.

The ram, too, needs extra care for a few weeks before breeding. It's a good practice to feed him $\frac{1}{2}$ to 1 pound of oats a day as well as good roughage.

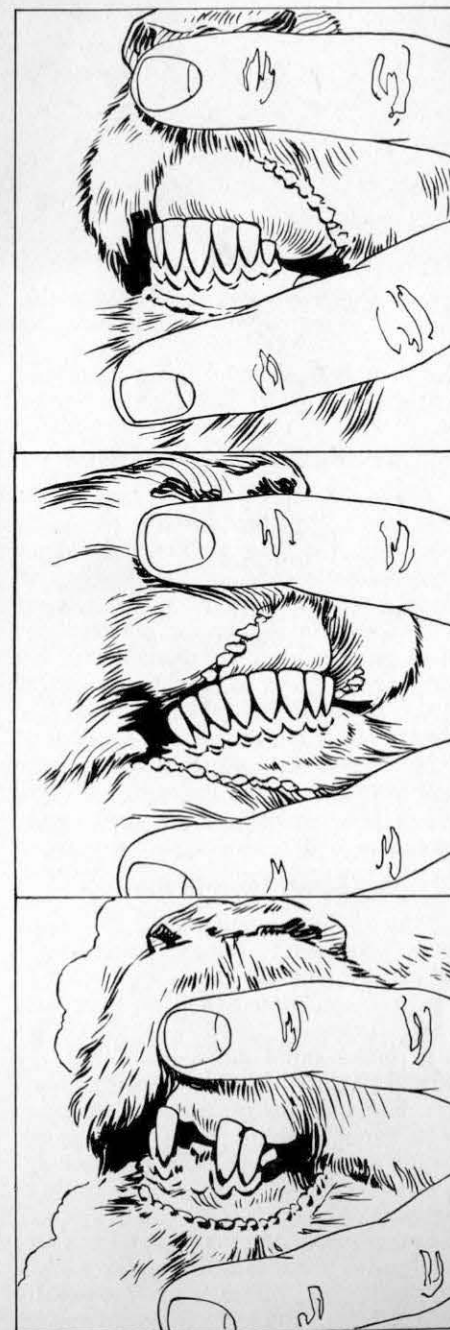
Breeding Practices

The number of ewes a ram should serve depends on the system of management. Any ram will serve more ewes if hand-coupling is practiced.

Told from Its Mouth

FIG. 4

Top: Mouth of a 3-year-old—3 pairs of permanent, 1 pair of temporary teeth.
Center: Mouth of 4-year-old—4 pairs of permanent teeth.
Bottom: A broken mouth.



Many turn the ram in with ewes during the night, taking him out in the morning for extra feed and rest. This insures his fertility.

Others with small flocks permit the ram to follow the ewes at all times. Where more than one ram is used, a good practice is to alternate the rams in the flock.

A growthy ram lamb should not serve more than 15 ewes if he is to insure a uniform lamb crop and still develop into a strong yearling. A strong, well-developed yearling may serve up to 35, and a good two-year-old or aged ram may serve 50 to 60 ewes. Much depends on the ram and the system of breeding. Owners of large flocks use three rams to 100 ewes.

Age to Start Breeding

Some well-grown early lambs will breed. Under present conditions it is well to breed them for the extra production this will bring. Breeding the ewe as a lamb so she produces a lamb as a yearling does not injure her and does increase the income for her time in the flock.

Ewes lambing at yearling age, however, are more trouble and require closer attention as they are poorer mothers, are more likely to have difficulty in lambing, and may not milk as well.

The effect of early breeding on the ewe herself is a slower growth the second year, but eventually she will recover if she is fed well. Her wool yield will not be affected, but in the long run



FIG. 5. A profitable farm flock. Good western ewes mated to purebred mutton rams produced these desirable lambs.

she will age a little faster than her mates which were not bred as lambs.

Making Sure Ewes Are Bred

Always check on the bred ewes and the ram's breeding power by using color on the ram. Mix dry orange chrome, red sienna, or lampblack with clear motor oil to a pasty consistency and smear on the breast between the forelegs. Apply fresh color every five days and a new color every 15 to 20 days. A commercial ram harness can also be used for this purpose.

Marking in this way makes it easy to find out early in the breeding season if the ram is not effective in settling the ewes.

Breeding Ewes in the Fall

Time your breeding so ewes lamb from February to June 1. Early lambs (February and March) need warmer quarters and more attention than later ones. However, when well cared for they make rapid gains until they are put on pasture and they finish for market early. Parasite troubles decrease with early lambing. Early, well-grown lambs are also more resistant to stomach worms when turned into infested pastures.

Later lambs have the advantage of having the ewes lamb on grass. Lambs dropped on grass are generally stronger, and the ewes may have more milk and are less likely to have trouble

with infections than ewes lambing early in sheds. However, lambs born late in the season must compete on the market with the big runs from the West, generally at a lower price.

Sheep producers in the Minnesota Farm Management Associations found that in flocks lambing early—by March—more lambs were saved, they were sold before large runs in the fall, and they made the most money.

With electricity available now on most farms, heat lamps can now be used to protect newborn lambs in most sheds, even in severe weather. Weather need not now prevent early lamb production.

Feeding and Caring for Pregnant Ewes

Do not have ewes too thin as winter approaches. By this time the fleece is quite long, and unless you observe the flock carefully, you may think the ewes are in better condition than they actually are. The principal feed should be a legume hay.

The flock may be wintered successfully, however, on 2 pounds of legume hay per head per day, supplemented with prairie hay, oat straw, corn stover, or some cheaper roughage. From 2 to 3 pounds of corn silage, turnips, sugar beets, or mangels per head per day increase the ration's value. Too much silage or roots, however, may result in

weak lambs. When you feed a very heavy corn silage ration, you must supplement it with protein and minerals. Hay crop silage—a valuable addition to the ration—is coming into use more and more.

If ewes go into winter in thrifty condition and are fed a legume hay, they will not require grain until a few weeks before lambing. Beginning about one month before lambing, $\frac{1}{2}$ to 1 pound of grain per head per day will make the ewes stronger and better milkers and produce stronger lambs. Grain feeding should be continued until the ewes go on pasture. Any of the following daily rations are satisfactory:

Before Lambing

- I. 1 lb. oats
3 lbs. alfalfa or clover
- II. 1 lb. oats
2 to 3 lbs. silage
2 lbs. alfalfa or clover
- III. $\frac{1}{2}$ lb. oats
 $\frac{1}{2}$ lb. corn
{ 2 lbs. alfalfa or clover hay OR
3 lbs. prairie hay

After Lambing

- I. 1 to 2 lbs. oats
2 to 3 lbs. silage
2 to 3 lbs. hay
- II. 70 parts oats
20 parts corn
10 parts bran } 1 lb.

2 lbs. hay
3 to 4 lbs. silage or roots

III. 60 parts oats
20 parts corn
10 parts bran
10 parts oil meal } 1 lb.
2 to 3 lbs. silage
2 lbs. hay

Some corn is desirable in the winter ration. It supplies the carbohydrates needed to balance fat and aids in prevention of pregnancy disease.

Exercise for Ewes

Exercise will reduce pregnancy disease, make lambing easier, and help produce strong lambs.

Place hay in racks or on the ground some distance from the barn to force the ewe to walk to her feed. Using cornfields or bundle corn as roughage during the day will also provide exercise for the ewe while she eats.

Water and Salt

Always keep clean water of moderate temperature before pregnant ewes. When a heated tank is used, 50 ewes will drink 30 to 50 gallons of water a day, even during the coldest weather.

Always feed iodized salt during pregnancy to protect unborn lambs against goiter. Feed trace mineral salt to combat goiter and supply any minerals that are deficient.

FIG. 6. Winter exercise is essential for pregnant ewes. Here ewes must walk to their hay.



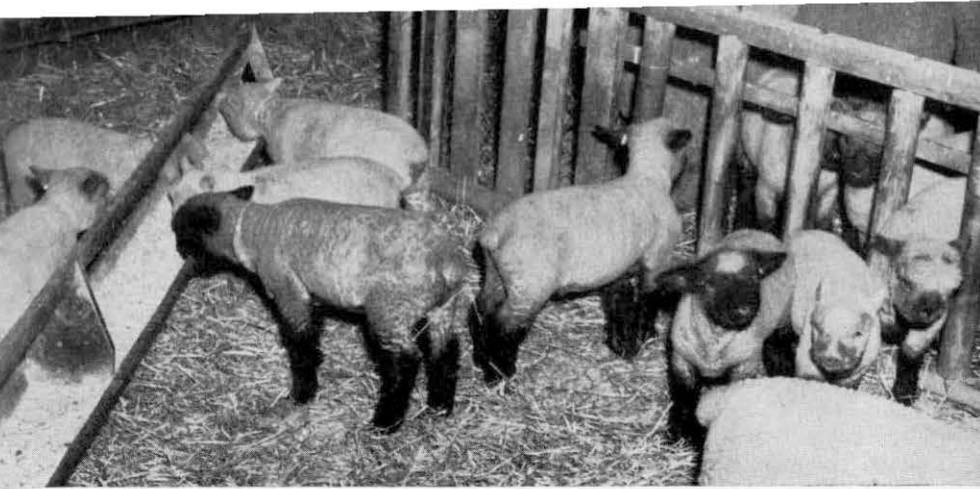


FIG. 7. A lamb creep provides the extra feed needed for fast growth of lambs.

Care at Lambing

Have ewes gaining weight as lambing time approaches. Feed a balanced ration of alfalfa or clover hay, a little silage, and grain according to condition. Silage is valuable as a succulent feed for ewes through lambing time, but use it only in small amounts. It stimulates the milk flow and improves digestion.

As lambing time approaches, watch the ewes closely. Trim the wool about the ewe's udder so lambs won't pull locks loose, swallow them, and die.

The ewe about to lamb refuses to eat, is uneasy, and isolates herself from the other sheep. Her udder is enlarged. At this time keep her by herself so she can care for her lambs properly.

Watch the ewes carefully so you can assist if necessary. Do not disturb her as long as delivery is progressing normally. Mother instinct will take care of the lambs as a rule, but you may assist weak lambs by removing mucus from their nose and mouth. Rubbing the chest vigorously with the hand assists in starting respiration, too. Let the ewe dry her lamb. Keep the ewe and lambs penned until the lambs are strong and nursing well.

Helping Weak Lambs Nurse

Help weak lambs to nurse by placing the ewe on her side or rump and then

inserting a teat in the lamb's mouth. Warm milk acts as a stimulant.

If a lamb is unable to nurse, hold it with its mouth open and force it to take some milk. This will usually develop its strength so it will feed normally. When the lamb has nursed enough, place it where the ewe cannot step on it. A strong lamb will be up and nursing soon after birth. Cut the navel cord about 4 inches from the belly and dip the stub at once in tincture of iodine to prevent infection.

Cases of delayed lambing and difficult birth are not uncommon. Normal presentation is forelegs and head first. Adjustment to the correct position may be necessary in some cases.

Care of New Lambs

After lambing give the ewe a small amount of hay (clover or alfalfa) and a little water. Avoid heavy feeding for the first few days because this may stimulate too heavy a milk flow for the lamb to take. If this happens, the ewe's udder may cake or the lamb may get too much milk and thus scour.

After the second or the third day, feed the ewe grain with some silage, gradually increasing the amounts until

she is on full feed. If the ewe has not been getting grain, feed equal parts of oats and bran. Both these feeds are especially valuable at this time. Begin with $\frac{1}{4}$ to $\frac{1}{2}$ pound daily and increase according to the condition of the ewe.

Lambs that are dropped at night and are chilled when found in the morning should be taken to a warm place and dried. If badly chilled, they may be put in a warm bath, using water heated to a temperature comfortable to the back of the hand. Rub lamb briskly while submerged in the water. A change of water may be necessary to get the lamb thoroughly warmed. As soon as it has been revived and well dried with heated cloths, return it to the mother. Warm milk at this time is a stimulant. A heat lamp will help dry the lamb and keep it comfortable.

Handling Orphan Lambs

Place the orphan lamb with a ewe that has lost her lamb or one that has only one lamb and has a good flow of milk. If this cannot be done, the orphan can be raised on a pop bottle with a large nipple and enlarged opening.

If possible, use milk from a cow that has recently freshened. Give the lamb 2 to 3 tablespoonfuls of this milk every two hours for the first two or three days. Increase the amount according to the lamb's progress. Since cow's milk is only about half as rich as ewe's milk, do not dilute it with water. Keep the milk at the temperature it is when drawn, 100°. Keep everything clean.

After the first week increase the amount of milk to 2 ounces a feeding, feeding three times a day. To save labor, start feeding lambs in a shallow pan as soon as they can drink.

Handling Disowned Lambs

If a lamb is disowned, tie the ewe so that she cannot bunt the lamb around when it tries to nurse. Smearing some of the ewe's milk on the back and hips of the lamb often helps in getting the ewe to own her lamb. Rub a little of the ewe's milk on her nose, too.

If many ewes are lambing or if the feed quarters and shelter for the flock are crowded, separate the ewes that have lambled from the others.

FIG. 8. Supplementary pastures are needed in July and August. Sudangrass may be even more desirable than the rape pictured.



Feeding Young Lambs

Provide early lambs with a creep and give them ground grain in a small trough. Also keep a small hayrack supplied with the finest and most leafy hay obtainable. This creep feeding gives early lambs a good start before the pasture season.

If ewes are lambing on grass and the feed is not too abundant, provide a small creep close to the water supply, where the lambs may receive grain. This creep will more than pay for the effort.

At first the lambs take only a small amount of grain. Feed no more than will be cleaned up daily because lambs relish only fresh, clean grain. A small amount of oilmeal (pea size) added to oats and bran makes a good ration. A small amount of corn may also be added to advantage.

Docking and Castrating

Dock all lambs when 10 to 14 days old. The long tail catches filth, may interfere with health, gives the sheep an unsightly appearance, and detracts from its selling value.

Many methods of docking are used. Pincer and rubber bands are preferred by some. One method is to cut the tail off about an inch from the body with a pair of sharp pincers or docking irons heated to red heat. Very few lambs will be lost by this method if docked young. However, docking with a hot iron is inadvisable in fly time as the burn wound heals slowly and prolongs the danger from maggots.

Castrating and docking may be done at the same time. Always castrate first and then dock.

Castrating lambs is simple. Separate all the lambs from the flock on a bright clear day and pen them so they can be caught easily with very little excitement. Have the ewes' pens clean and well bedded for the lambs after the operations.

In castrating, cut off the lower third of the scrotum, then grasp the testicles one at a time, and with the free hand pressing at the base of the scrotum, draw out each testicle until the cord breaks. No disinfectant need be poured into the scrotum as this is a sanitary package unless infection has come from the hands of the operator.

Keep the lamb quiet for a few hours after castrating.

Some sheep raisers like an elastrator with rubber bands or the pincer type of instrument which crushes the cord. The elastrator is becoming popular for both castrating and docking. There is a severe shock to the lambs for a short time but if done before fly time, this is a very satisfactory method.

These simple operations are more often neglected than any other one practice in the care of sheep. Ram lambs bring from one to two cents per pound less than wether lambs.

Summer Care

Good Grazing

Sheep will do well grazing on native prairie grass, bromegrass, bluegrass, timothy and clover, or sweetclover. They are especially adapted to annual forage crops, such as rape, small grains, and sudangrass.

Sufficient pasture for the months of July and August is frequently a serious problem, especially during dry seasons. Feeding grain may help over this slump but grain may be expensive.

Supplementary pastures at this period will pay big returns, as they can supply an abundance of feed at a time when other feed may be short. A field of rape or sudangrass available during this dry period will keep the lambs gaining rapidly instead of standing still or losing weight. This may mean earlier marketing at higher weights and better condition. About one acre will take care of 20 sheep.

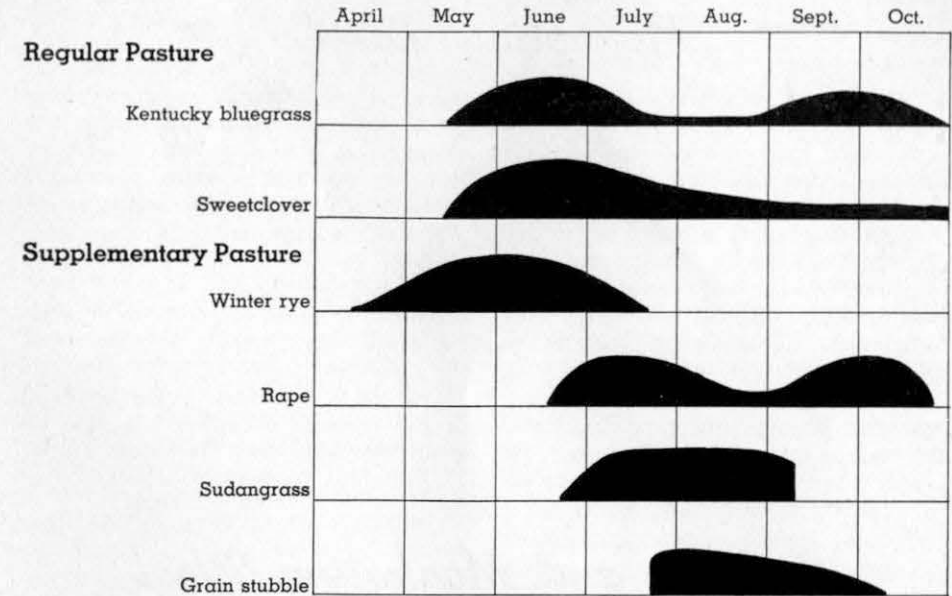


FIG. 9. Supplementary pasture to insure seasonable supply. The shaded area for the crop indicated shows the time such pasture will be available and comparative yields.

Since a change to pasture of rather luxuriant growth may cause bloat, be sure to have the sheep well filled with dry hay when the change is made. There is even more danger if the grass is wet with dew or rain. It is best to leave the sheep in only a short time the first day or two and to watch closely for any indication of trouble. Keeping hay available at all times will help protect against bloat.

By midsummer the small flock can usually be grazed in the cornfield for a short time. Here it will clean the fence rows and eat the grass and weeds and lower leaves of the corn without breaking the corn down until the other feed is gone. However, avoid turning lambs into fields with many burs since burry lambs are severely discounted at markets.

Sheep can graze over stubble and can live on the scattered bits of grass and small weeds that usually come on after the grain is cut. They can also thrive on the second growth on cutover mea-

dows providing these meadows are not bordering on sloughs or stagnant water. Sheep can also graze on a potato patch after the vines have begun to dry and over a beet or cabbage field after the crops have been harvested. They will turn every bit of edible aftermath into mutton and wool.

One mistaken idea is that sheep can graze brush lands. This is true only when there is plenty of grass growing with the brush. Sheep are not good browsers and will not do well if forced to eat leaves, buds, and small stems of brush.

Shade and Shelter

Always provide shade during hot weather while sheep are on pasture. Trees are good for this, but a movable shade is better because it provides a fresh bed ground free from parasites and muddy areas. During the cold rains of spring and fall, a shelter that will provide a dry bed free from cold drafts is particularly desirable.

Marketing Lambs

LAMBS born in March or April, sired by good-sized rams of the mutton breeds, and fed grain until the pastures are ready and then put on grass, can usually be marketed as fat lambs in July or August at weights up to 100 pounds. They may run with the ewes until marketed or be weaned when 4½ months of age and fed grain from then until marketed. This plan produces fat lambs that sell for higher prices than lambs born and marketed later.

Market lamb producers should know the degree of finish needed for top prices. Then he can sort his lambs in-

telligently, selling those that are ready for market and further fattening the others. This condition can be told by feel only. Age and size have no bearing on it; fatness determines prices.

Ewes that lamb in May or June may lamb on pasture and will require very little attention. As a rule, their lambs should be fattened on the farm in much the same way as those brought from the western range. They must be grazed on a cornfield or stubble field or put through a fattening period on grain. See Minnesota Extension Folder 37, *Fattening Lambs*, for details.

Growing and Marketing Wool

THE WOOL CLIP is an important source of income from sheep. Properly cared for, the wool should help materially in paying expenses.

Long fleece—A long fleece is desirable in any breed of sheep, although the length varies widely among breeds. Wool that is long enough to be used as combing wool will usually outsell short staple wool. Length also adds to the weight of fleece.

Combing wools must be over 2 inches long to be classified as ½ blood; 2¼ inches for ¾ blood; and 2½ inches for ¼ blood. The shorter wools are classed as clothing.

However, extreme length is opposed to fineness of fiber, so do not select for extreme length and neglect fineness of fiber.

Density in a fleece means compactness. One can judge density fairly accurately by simply looking at it but more accurately by grasping a handful of wool on the side of the sheep. If one gets a firm handful of solid, unyielding wool that springs right back

into place, the fleece is compact and heavy-shearing. Usually greater density of fleece means finer quality.

Wool tends to vary widely in length, density, and fineness on different parts of the same sheep. Usually the wool on the neck and shoulders is finer than that on the thighs. A fleece will often be good on the shoulders and sides but open and coarse on the rump and thighs. Such a fleece will be light in weight and of low grade. The uniformity of a fleece is judged by examining the fleece in at least three places—the shoulder, the side, and the thigh.

Purity of fleece means freedom from black, coarse, and hairy fibers. Fleeces containing excessive amounts of black fiber are sold as rejects.

The condition of a fleece at the time of shearing and marketing may affect the selling price even more than the quality and quantity of wool. To be in proper condition, a fleece must be uniform in strength of fiber and free from foreign matter and excessive matting. It must contain just enough oil to make

it soft and bright. A fleece that is seriously at fault in any of these requirements will be discounted. It is, therefore, important to house, care for, and feed sheep so that the fleeces will be in good condition for shearing.

Feeding for Wool Production

Liberal feeding on well-balanced rations is essential for the production of a heavy-shearing fleece and strong, healthy wool fibers. But maintaining a flock on scant pasture in summer and on low-grade nonlegume hay in winter is likely to result in a short growth of wool and weak and dead fibers.

Wool is composed largely of protein, and to produce good fleeces sheep must have enough protein in their rations. Yet protein is likely to be deficient in the rations commonly fed to sheep.

The most satisfactory and cheapest way to insure a sufficient protein supply is to feed legume hays as roughage—any of the clovers, alfalfa, or soybean hay. If these are not available, grain feeding throughout the winter is necessary. If sheep are getting nonlegume roughage they need about one pound per day of grain such as oats for satisfactory nutrition.

Many sheep breeders lose money because wool from their sheep carries too large a percentage of chaff, grain, and weed seeds. Seedy necks and backs are a detriment to a good fleece. Sheep that use hay or straw stacks for a feed rack are bound to produce a fleece with a high percentage of chaff and straw.

Feed rack space needed depends on the size of ewes; the average ewe needs 15 inches.

Simplified Shearing

The cost of an electric shearing machine is so small that a farmer with only 50 to 100 sheep to shear can afford one. Any farmer can shear sheep successfully by carefully following the manufacturer's instructions. Custom shearing, however, is more common.

May is the best month for shearing. Shear on a clean floor or canvas to keep out chaff and other foreign material. Don't shear the sheep when they are wet or when the weather is likely to turn cool.

In shearing, be careful not to cut the fleece to pieces.

Tying and Packing Wool

Remove all dung locks from the wool before rolling it up. These locks of dirty wool are usually damp and will cause the rolled up fleece to mildew—thus reducing the selling price materially.



FIG. 10. Shear when fleeces are dry on a clean floor or canvas.



FIG. 11. Prepare each fleece carefully. Tie with paper wool twine.

Place the fleece with the cut surface down, turn the sides in toward the center, and roll tightly from the breech end. Tie with medium-weight, four-ply, paper wool twine using just enough twine to hold it together. Wool twine

can usually be obtained from any agency that deals in wool. **DON'T USE BINDER TWINE.**

If wool is stored on the farm before selling or shipping, put the sacks in a clean, dry room. Do not sack wet wool.

Classifying Wool

Wool from the leading breeds of sheep may all be grouped, graded, and classified reasonably accurately as follows:

Fine Wool		
Breed	Grade	Class
American and Delaine Merino	Fine	Clothing or combing
Rambouillet	Fine and ½ blood	Clothing or combing
Medium Wool		
Southdown	½ and ⅔ blood	Clothing or combing
Shropshire	⅔ and ¼ blood	Combing
Hampshire	⅔ and ¼ blood	Combing
Oxford	¼ and low ¼ blood	Combing
Dorset	⅔ and ¼ blood	Combing
Columbia	⅔ and ¼ blood	Combing

Types and Breeds of Sheep

THERE ARE many pure breeds of sheep, and yet most sheep on farms show evidence of the mixing of two or more breeds. Only two types of sheep are of generally recognized importance in the United States—the fine-

wooled and the mutton. All purebreds of any importance in the United States belong to one of these two types.

Generally sheep of the fine-wooled types are grown on large areas of cheap land where feeds available are not

sued to the production of high-quality mutton.

Wherever feeds suitable to the finishing of lambs for market are available, the mutton type of sheep is preferred. This is because the total income per ewe from the fleece and lambs produced is greater for the mutton type than for fine-wooled sheep.

The important breeds of sheep found in Minnesota are as follows:

Mutton—Medium wool: Shropshire, Hampshire, Southdown, Oxford, Dorset, Cheviot, Suffolk, and Columbia. Long wool: Cotswold, Leicester, and Lincoln.

Wool—Fine wool: Merino, Rambouillet.

Common Ailments of Sheep

Sore eyes are common among two- to four-week-old lambs. The inflammation may be caused by the eyelid turning in or some other irritation. Uncared for, blindness will result.

Treat mild cases with a 10 per cent argyrol solution or sulfonilamide ointment or powder. In severe cases correct inturred eyelids by pulling the lid into the proper position and using adhesive tape or chewing gum tangled in the wool to hold it in place. In even more severe cases take a large needle and strong thread and stitch the eyelid to hold it correctly.

Constipation, diarrhea, and indigestion are generally the result of overeating and may be relieved by a laxative. In mild cases a dose of 2 to 4 tablespoons of castor oil, varying with the age and size of the sheep, will be helpful. For small lambs use 1 to 2 teaspoons (2 to 4 ounces) of mineral oil. In severe cases an enema with lukewarm water and castile soap may be beneficial. Also effective are 2 to 4 tablespoons of epsom salts in a pint of water, given as a drench.

Acetonemia (pregnancy paralysis) occurs just before the termination of pregnancy. Afflicted ewes usually carry twins. The cause of this condition is not definitely known. Feeding a well-balanced ration with carbohydrates (such as molasses or corn) will help prevent

this trouble. Exercise also helps. The feed and the exercise are especially important for at least the last six weeks of pregnancy.

Colds appear as a discharge from the nostrils in sheep that have been exposed to dampness, rain, or snow. At times the eyes also show a discharge. Exposure at any time will cause this condition, especially after shearing when there has been a sudden change in the weather. Give the sheep proper shelter to treat colds.

Sore mouth is a contagious disease characterized by ulcers on lips and nose. It is found in lambs; older sheep are immune. To treat, remove the scab and apply a 3 or 4 per cent solution of sheep dip or a solution of one 0/0 copper sulfate solution.

Apply local treatment, such as a bland ointment, to relieve the irritation.

When this condition appears in the flock, consult a veterinarian regarding vaccination in order to prevent the spread of the disease.

Goiter or big neck is caused by iodine deficiency and causes dead or weak lambs at birth. Examination will show swellings in the throats of these lambs.

To prevent losses from goiter, feed iodized salt to breeding ewes from the beginning of the breeding season until lambing time. Commercial iodized

feeding salt or trace mineral salt is satisfactory.

Rickets or leg weakness causes lame lambs with crooked legs that fail to support the body. Cod-liver oil promotes the deposit of lime and phosphates in the bones. Give the lambs one-third teaspoon daily. In other cases, nutritious feeds—alfalfa, clover, oats, and oil meal—often correct the condition. The condition disappears with plenty of exercise and good pasture.

Navel infection causes stiffness and swelling of hocks and knees. Lambs are dull and show little desire to nurse. Cleanliness in the lambing quarters will help prevent the trouble. Dipping the stub of the navel cord in iodine soon after birth is a good precaution.

Bloat must be treated immediately to remove the gas. One pint of newly drawn cow's milk is effective. One tablespoon of turpentine in a pint of milk or 1 to 2 teaspoons of baking soda in a half pint of milk are also good. In severe cases use a trocar or a pocket knife.

Where sheep are on pasture, dry hay will help prevent bloat. This can be provided handily by mowing strips in the pasture. These strips cure and the sheep eat this hay readily.

Parasites

Parasites are more common with sheep than with other forms of livestock. Parasites can be either external or internal. Sheep parasites cause the greatest damage to the growing lambs, and prevention is necessary for good profits. Rotate pastures and keep lambs on newly seeded pasture to eliminate many intestinal parasites.

Lice and ticks are the principal external parasites. Irritation by lice causes the sheep to rub off wool and lose weight. The tick is a blood sucker, causing irritation, loss of blood, poor nutrition, reduced vitality, and frequently a material loss of wool from rubbing.

Dip the sheep at least once a year with a standard dip or spray of DDT, rotenone, chlordane, or lindane to control lice and ticks. With DDT use 8 pounds of 50 per cent wettable powder in 100 gallons of water. Pen the sheep up in a crowded pen and thoroughly soak each sheep all over with the spray.

Custom dipping service is offered now by portable outfits at a reasonable cost and great convenience. Every sheep in the flock, including the young lambs, should be treated. If the ewe flock is infested with ticks, the lambs

are sure to become badly infested soon after the ewes are shorn. Dip these lambs by hand in a barrel if there is no way to dip the entire flock.

Handle sheep carefully while dipping. Select a bright warm day so that the sheep may be dry by night. Avoid using cold water. Use lake, cistern, or well water softened with soda ash. Use a good brand of dip and see that the job is done well.

Remember ticks found on sheep in the winter are difficult and costly to destroy. If ticks are found, use sodium fluoride, rotenone, or dusts especially prepared for this. Part the wool at intervals on the entire body and dust the powder in with a garden or hand duster.

Maggots often infect sheep during the fly season. Check the flock frequently for maggots, looking especially in wet or soiled wool. Remove the wool from the spot. Then use repellents such as Smear 62 or Smear 82 to remove the maggots and stop further infestations.

Grubs in the head are deposited by the fly in the nostrils. The grubs crawl to the frontal sinus and other cavities of the head causing irritation and a discharge from the nose similar to a cold in the head. In advanced cases there is frequent sneezing, difficult breathing, and decreased appetite.

No definite treatment is known. However, smearing the nose of the sheep with pine tar acts as a repellent to the fly.

The nodular worm, an internal parasite, is costly and often not recognized. Affected lambs make a fair growth but do not reach a top condition of flesh and this results in a low carcass yield. Since packers buy lambs on the basis of yield, the price goes down on lambs that will not dress out satisfactorily. On slaughter, badly damaged intestines sometimes covered with lumps or nod-

ules are found. Such intestines cannot be used to make surgical sutures or catgut.

Phenothiazine treatment of sheep will rid them of the nodular worm.

Stomach worms are probably first indicated by dullness and lack of thrift. Sheep may have continuous diarrhea and in some cases show a swelling under the lower jaw, called "bottle jaw." Paleness of the skin and the lining of the eyes gives further evidence. The most noticeable symptom is the lack of growth and development even when the sheep is properly fed. Stomach worms are from $\frac{1}{2}$ to $\frac{1}{4}$ inch long, are about the thickness of a fine pin, and are found in the fourth stomach.

Copper sulfate or bluestone has been a common remedy. The formula is as follows: Dissolve $\frac{1}{4}$ pound of clear blue crystals of copper sulfate in a pint of boiling water. Then add enough cold water (soft water if obtainable) to make 3 gallons. Use only porcelain, glass, or earthenware utensils because the solution corrodes all metals. This solution is sufficient for 100 adult sheep.

The dosage for lambs is one ounce for each lamb under 50 pounds and 2 ounces for lambs over this weight. For yearling sheep the dosage is 2 to 3 ounces, and for mature sheep it is 3 to 4 ounces, according to size.

The solution can best be given with a metal syringe of 2- to 4-ounce capacity, although you can use an enamel funnel with a rubber hose attached and a metal nozzle at the end. Long-necked drenching bottles have also been used. Take sheep to be treated off both feed and water 12 to 15 hours before dosing and three to four hours after treatment.

The addition of one ounce of nicotine sulfate to each gallon of copper sulfate makes the solution more efficient in combating stomach worms and tapeworms.

FIG. 12. Portable sheep dipping outfits make dipping easy at reasonable cost.

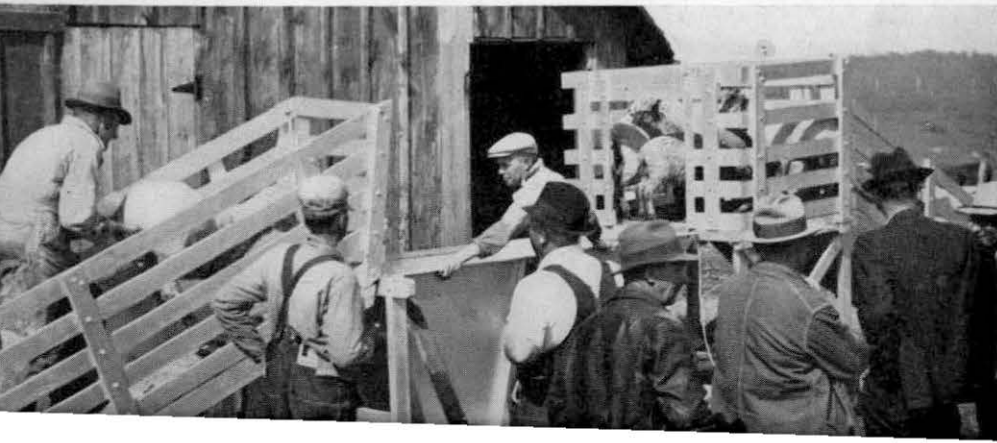




FIG. 13. Drenching sheep can be easy if your set-up is well organized.

Phenothiazine has become a popular drug for treatment of stomach worms. Though this drug is more costly than copper sulfate, phenothiazine is coming into common use because it controls nodular worms at the same time. Because worm eggs do not survive Minnesota winters on the ground outside the sheep, winter treatment rids the flock of the parasite and thus prevents infestation of the pastures in spring and summer. In this way lambs are protected against infestation.

One ounce of the drug is the dose for an adult sheep. It may be given in a drench, in a bolus, or in the feed. Make two treatments during the winter—one early and the other shortly before the sheep go to pasture. To protect against reinfestation, feed phenothiazine throughout the pasture season

with the salt, 10 pounds of phenothiazine with 90 pounds of loose salt. For further details see Minnesota Agricultural Extension Folder 147, *Livestock Pest Control*.

Mastitis is a serious disease. If it appears in the flock, check the bed ground for sanitation. Segregation of the infected ewes is necessary for treatment and prevention of spread of the disease. Provide clean quarters and protect the sheep from the weather.

Pain and inflammation of the udders can be lessened by the application of hot packs, using a handful of Epsom salt in two quarts of warm water.

Where the percentage of infected ewes is high, the service of a veterinarian can be helpful in determining the cause and control procedure.

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