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Ewe Flock: Opportunity for Supplemental Income
Michigan State University
Cooperative Extension Service
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November 1981
6 pages

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EWEE FLOCK:

Opportunity for Supplemental Income

BY GRAYDON BLANK

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Where do sheep fit into a farm program?

A FLOCK OF SHEEP can earn added income to persons with limited land area, buildings, equipment and capital. Sheep are a good part-time farm enterprise, and desirable for persons who wish to add to their retirement income. Older persons can care for sheep more easily than for beef or dairy cattle. Families with children will find sheep interesting and exciting for the whole family as well as profitable. Even the youngest member of a family can have a responsible part in a sheep enterprise.

Sheep market roughage and pasture efficiently. Existing farm buildings are usually adequate. With good management, lambs can reach the choice market grade directly off pasture. However, young lambs also use grain very efficiently and will reach choice market grade at a younger age when fed grain than when maintained only on pasture. Sheep produce two products, lamb and wool. Both can be marketed readily in any size quantity.

Some Questions and Information You Should Carefully Consider

1. **Could you learn to like sheep?** As a small farm animal, they are not hard to handle, but can be stubborn and difficult to drive or move. They require patience and kindness and will follow better than they can be driven. You have to pay careful, prompt attention to simple management practices—for example, the control of internal parasites according to a definite schedule, or serious problems will result.

2. Do you have these facilities?

- Good woven wire fence between you and your neighbor and along road right-of-ways. (Electric fencing may be used within your own property if properly constructed, and sheep are trained to it when they are in short fleece.)
- Water available at all times.
- Approximately 12 square feet of barn or shed floor space per ewe.
- Gates or hurdles to use as lambing pens and for yarding sheep when treating for internal parasites.

3. **Will your flock be safe from dogs or predatory animals?** Losses from dogs allowed to run at large can be serious. Coyotes and bear can also be a serious problem.

4. **How many ewes should you have?** This will depend on the kind and amount of hay and pasture you have, your previous experience with sheep, and the time you have. Known as a one-ram flock, a unit of 40 ewes is large enough to deserve your attention. You can, of course, start with fewer and share a ram with a neighbor providing you both have healthy flocks.

Requirements for a unit of 40 ewes (yearly except buildings, equipment and ram).

- 10 tons of legume hay
- 3,000 lbs. of grain
- 10 acres of good pasture or 20 acres of fair pasture or 40 acres of cut-over pasture.
- 1 ram (can be used 5 to 6 years)
- 60 feet of feed rack space
- 500 square feet of floor space in a shed or shelter (if lambs are born in May, no shelter, only a wind-break is needed).
- One 2 oz. drenching syringe
- 1 salt box
- 500 pounds of trace mineralized salt
- 1 pair of pruning shears to trim feet
- 1 pair of good hand sheep shears for trimming wool around eyes and rear quarters
- 12 light-weight, hinged gates, 4 foot long and 30 inches high, for lambing pens
- two 250 watt heat lamps and heavy duty extension cord
- 2—3-foot by 8-foot gates to aid in sorting and handling

How to Select Ewes

Examine the mouth and the udder. There are no front teeth on the top jaw. There are eight lower, or incisor, teeth on the lower jaw, and these must meet the pad of the upper jaw squarely. A lamb has eight small teeth until one year old. Each year after that, one pair of lamb teeth is replaced by two larger permanent teeth. At four years old, all lamb teeth have been replaced with permanent teeth. After four years of age, it is not possible to tell accurately the age of the sheep by its teeth.

The udder should be soft and pliable, free from lumps, and the halves equally developed. The teats should be

well-developed and free of any mechanical injury, such as from shearing. The teat should be of normal size, soft, and free of any growths.

Do not buy ewes or a ram from a flock which has lame animals. Lame animals indicate the possible presence of contagious footrot, the most difficult of all diseases to eradicate. Also, do not select animals from flocks with dull, harsh wool or running eyes or nose.

Breed or Type to Select

Grade or crossbred ewes mated to a purebred ram make an excellent combination for a commercial ewe flock. Livestock marketing agencies can help locate breeding ewes. Ewes may also be available from flocks in the neighborhood.

There are nearly 20 breeds of registered sheep. However, if you plan to sell rams to commercial sheep raisers, your choice narrows down to those breeds in demand by potential buyers. Suffolk and Hampshire rams are most in demand. Both are large and grow rapidly. The lambs are noted for their good carcass qualities. When rams of these breeds are used on ewes of other breeds or crosses, hybrid vigor results. Market lamb buyers prefer lambs sired by these breeds.

The Corriedale, Columbia, Targhee, Rambouillet and Dorset breeds are referred to as "ewe" breeds. The Corriedale, Columbia, Targhee and Rambouillet breeds are also known as "wool" breeds because they produce excellent quality and quantity of wool. Dorsets are more noted for meat than wool, but they are best known for their ability to breed in the spring for fall lambing. The Rambouillet also has a long breeding season.

Feeding

Mature sheep do not require complicated diets. Legume hay (alfalfa or red clover) is the principal roughage. If cut at an early stage and cured with no loss of leaves, it can make up the entire ration for mature sheep except for one month before and six weeks after lambing when farm grains need to be included in the ration. If the hay contains a high percentage of grasses (timothy, brome or quack grass), or was cut in mature stage, or leaves were lost in curing, it will be necessary to add a protein supplement.

Farm grains (corn, oats, wheat, barley) will supply the energy needed when mature sheep cannot get an adequate supply from roughage alone. You need not grind farm grains for sheep. Corn and oats are most commonly used. Adding 1/3 wheat to the grain ration for ewes has generally proved helpful in the preventing "white muscle disease" in young lambs.

If a protein supplement is needed, soybean meal is generally the most economical and readily available source. Molasses added to the grain mixture will make it more palatable and reduce feed dust. Usually 1 pound of molasses per 100 pounds of grain ration is adequate. Larger amounts increase the cost without increasing the benefit.

Complete sheep feeds are available, usually in pelleted form. If you must buy all of your feed supply, consider a complete feed rather than buying hay, grain and supplement separately.

Salt and Minerals. Salt is very important. It should be fed "free choice" in a small box. Calcium and phosphorus can also be fed free choice as dicalcium phosphate or steamed bone meal, generally available at farm elevators.

Antibiotics should be included in the ration for lambs. They help to keep lambs healthy but can never take the place of good management and regular feeding practices. Antibiotics are available at farm elevators in the form of crumbles which usually contain 2 grams of antibiotic per pound. Two grams of antibiotic is the correct amount to add to 100 pounds of grain ration. Therefore, one pound of crumbles containing 2 grams of antibiotic per pound should be mixed with each 100 pounds of grain ration.

Water

Sheep and lambs will drink about 1 quart of water for each pound of air-dry feed they eat. Ewes eating 4 pounds of hay per day will drink about 1 gallon of water daily. The need for water increases during late gestation and when the ewes are nursing lambs. For greatest production during these periods, ewes must have an unlimited water supply available. Lambs being creep fed should also have a readily available source of clean water.

Suggestions on the amount of hay and grain to feed are given in the sections of this bulletin covering care before and during lambing and creep feeding.

Always follow a regular feeding schedule. Keep feed troughs, hay racks and water containers clean. **Caution:** Ewe and ram lambs kept for breeding purposes need special attention during the first winter. They are still growing, and if forced to compete with older sheep for their feed, they will not develop their fullest potential. They should be fed separately from the older sheep.

Care Before Breeding

Most sheep are seasonal breeders. They do not come into estrus (heat) until the hours of daylight begin to decrease. Usually they will not breed until August and reach their peak of breeding activity in October and November. Activity usually ceases after February 1. Dorsets and breeds and crosses of Merino and Rambouillet origin may also breed in the spring.

The estrus cycle, once it begins, occurs approximately every 17 days and lasts for approximately 24 to 28 hours.

Ewes should be gaining in flesh at breeding time. The practice of conditioning ewes before they are bred is commonly called "flushing," which can be done by turning the ewes to good pasture. Rye or rape pasture is excellent. Green, growing grass pasture or alfalfa-brome grass pasture are excellent for flushing. Avoid red clover, ladino clover, bird's-foot trefoil or pure stands of alfalfa. The flushing period for thin ewes should begin 30 days before breeding. Fifteen days is usually sufficient for ewes in average condition.

If good pasture is not available, ewes may be flushed by feeding 1/2 pound of grain per head daily. Corn, oats or a mixture of the two can be used.

The beginning of the flushing period is a good time to check mouths and udders to see if any ewes should be culled. Also shear off the tags or locks of wool around the dock to increase the ewe's chance to be bred and to conceive at the first service from the ram.

The condition and treatment of the ram is very important for a successful lamb crop. High body temperature may cause sterility in a ram. Keep the ram cool, beginning at least 30 days before and during the breeding season. If you plan to breed ewes in July, August or early September, shear the ram 30 days before he is to be used and provide shade for him. The ram should be in good condition but not fat. A pound of grain per day for the ram is recommended if he is to breed 30 or more ewes. **Warning:** Rams that have been on a show circuit during the summer are not likely to be fertile until late in the fall.

Keep the ram in a cool area and away from the flock during the day if breeding occurs during hot weather. Good ventilation and an electric fan will help to keep him cool. Turn the ram with the ewes only at night. Use a marking harness, or paint the ram's brisket with a paste made from heavy lubricating oil and paint pigments such as powder used in tinting concrete (usually available at redi-mix concrete plants). Change the color of the pigment or the crayon in the marking harness every 14 days. Start with the lighter colors and change to darker colors. By this method, it is possible to record breeding dates and determine the approximate lambing dates and also check the ram's fertility. A mature ram can be used on 35 to 40 ewes. Well-grown ram lambs of most breeds can be used on 15 to 20 ewes.

Care of the Ewe From Breeding to Lambing

After the ewe is bred, she can continue on pasture as long as it is available. Rye sown in August makes an excellent late fall and early spring pasture. Begin feeding hay when the pasture is used up or covered with snow. Three to 4 pounds of alfalfa or clover hay per ewe daily is adequate until 6 weeks before lambing. At this time, it is necessary to start feeding grain. By using breeding dates, it is possible to sort the ewes into an early and a late lambing group. This will conserve grain and not have late lambing ewes get too fat. One half to 1 pound of farm grains—equal parts by weight of corn and oats or corn, oats and wheat—per head daily will be necessary to prevent pregnancy disease. (See Extension Bulletin E-681, A Dozen Ways to Save Lambs.)

Allow the ewes to exercise outside each day. Feeding one meal of hay out-of-doors will encourage the ewes to walk outside each day.

Don't forget to supply water. In winter, keep it from freezing.

Care of Ewe During Lambing Time

Shearing ewes before lambing makes it easier to observe their condition and the approaching lambing time. It provides a much cleaner udder for the lamb and makes it easier for the lambs to nurse immediately. Shearing also discourages the ewe from wandering outside to have her lamb.

If shearing is not possible before lambing, be sure to "crutch out" the ewe, shearing the wool from the flank, udder and dock area.

Check the breeding dates of your ewes. Seventy five percent of the ewes will lamb between 145 and 149 days after breeding. The period can vary, however, from 141 to 155 days. If you turned the ram with your ewes and did not see each of them bred, begin checking them and be ready for lambs 140 days from the date the ram was turned in with them.

As a ewe nears lambing time, her middle becomes larger and her udder increases in size. She will appear to sink in front of the hips, and she will have milk in the udder immediately before lambing. She may not eat all of the feed given her; and as parturition approaches, she becomes more restless.

Lambing Pens and Heat Lamps

Put the ewe in the lambing pen when she goes into labor or just after she has lambed. With adequate space during the act of lambing, she will be less fretful. Lambing pens should be 4 to 5 feet square, depending upon the size of the ewes. They can be made by placing together two hinged hurdles. Set them against the walls of the sheep barn or down the center of the barn. Use of the lambing pen prevents other sheep from trampling the newborn lamb, eliminates the possibility of the lamb wandering away and becoming chilled, and also lessens the possibility of a lamb being disowned, especially in the case of twins. There should be only 2 to 3 inches of space between the three lower boards to prevent lambs from crawling from one pen to another.

In extremely cold weather, or if lambs are weak, hang a heat lamp over a corner of the lambing pens. Block off the corner so that the ewe cannot get under the lamp. Make certain the lamp is safely and securely fastened to prevent danger of fire. Electric wiring must be heavy enough to carry the high voltage. Once the lamb is dried off and nursing satisfactorily, however, continued use of artificial heat may only lead to pneumonia and other respiratory troubles.

Care After Lambing

Generally, a ewe will not have any difficulty in lambing. However, the good sheepman watches his flock carefully at lambing time. If a ewe does have difficulty, call an experienced sheepman or veterinarian. You will soon learn how to render the necessary assistance.

Keep the ewe and lamb together in the lambing pen for 2 to 3 days until you are certain the lambs are nursing properly. Ewes may not eat until several hours after their lambs are born. Provide the ewe a pail of warmed water and some hay after lambing. Start the ewe back on feed with a small amount of grain and good quality hay. At the end of three days, she should be getting 1 pound of grain and all the hay she will eat. If she has twins or triplets, gradually increase the amount of grain to 1 1/2 to 2 pounds per day.

Care of the Lambs

First, remove any mucous from the lamb's nostrils and start the lamb breathing. Dip the lamb's navel in a 7% solution of iodine to prevent later infections. This must be done at birth to be most effective. Check the lamb's eyelids to be sure they are "turned out." "Turned in" eyelids will cause the eye to water and become very sore. Usually, you can put the eyelid in proper position by pressing on the skin below the eye with your thumb and rubbing it gently. If this does not keep it in position, a stitch may be taken with a cotton thread and a needle to hold the eyelid open.

Lambs should nurse within one hour after birth. Check the ewe's udder to see if she has milk by milking a few drops with the thumb and forefinger. It is very important that lambs get some of the first milk (colostrum) given by the ewe. It contains antibodies which help protect the lamb from diseases.

It is very important that lambs get warm milk before they become chilled. If the ewe should not have milk, obtain milk from another ewe and give it to the lamb. Use a lamb nipple, sometimes called a duckbill nipple, and a bottle for this purpose. Always try to leave the lamb with the ewe, even if it needs supplemental feeding, as the ewe may come to her milk later. If you separate the ewe and lamb for even a short time, the ewe may not want to own the lamb later.

Creep Feeding

Lambs start eating as early as 10 days to 2 weeks of age. Research has shown that nursing lambs make very efficient use of hay and grain provided in a creep. This is an area constructed so that only the lambs can get in. Lambs like corn and soybean meal. They like oats, but because it is high in fiber, they will not gain as rapidly when the creep ration contains a large amount of oats. They like legume hay, too. The following is an example of a creep ration:

90 lbs. cracked corn
10 lbs. soybean meal
3 lbs. trace mineral salt*
2 grams of antibiotic** (Aureomycin or Terramycin)

*This amount of salt aids in preventing urinary calculi (kidney stones) in the male. To be effective, an adequate supply of drinking water must be available at all times.

**This can be added as crumbles, which usually carry 2 grams of antibiotic per pound; therefore, requiring 1 pound per 100 pounds of creep ration; or a more concentrated form known as Aurofac 10 or TM 10 may be added, in which case only 2 pounds per 1,000 of creep ration is needed.

Early (January to March) lambs should be creep fed. April and May lambs usually not. Grain them after weaning.

If only two or three lambs are being creep fed, it may be best to buy a commercial lamb pellet or even a commercial rabbit pellet.

Place the creep in a favorable location where it is light and warm. A heat lamp or light over the creep will help attract lambs to the creep area. It must be a large enough space to accommodate the lambs, and the slats or rollers

should be spaced far enough apart to let the larger lambs enter freely. The feeds must be kept clean and fresh and the feeder convenient for the lambs to use. **Place good quality legume hay in the creep area, preferably in a rack hanging over it. Replace daily and give the unused hay to the ewes.** Adequate intake of roughage is important as an aid in preventing overeating disease—even when an antibiotic is included in the creep mix.

Raising Orphan Lambs

Even under the very best care and management, every sheep raiser may have one or more orphan or disowned lambs. First, attempt to get another ewe to adopt the lamb. Pick a good milker. This may be a ewe which very recently lost her lamb or one that is raising a single. In the latter case, select a ewe whose lamb is about the same age as the orphan. A ewe identifies her lamb by its distinctive odor. This odor can sometimes be successfully camouflaged by spraying a household deodorant on the ewe's head and on the orphan lamb. If the foster mother has recently lost a lamb, skin the lamb and tie the pelt around the orphan lamb. In some cases, the ewe may have to be held for the first nursing.

Commercial lamb milk replacers have been developed that give excellent results when fed to orphaned or extra lambs. They have been designed especially for lambs and to be fed cold rather than warm. This makes it possible to use a nursing pail or pan to keep the milk before the lamb at all times. This has eliminated the need for frequent feedings and reduces scours resulting from lambs overeating. A special nipple is used along with a plastic tube. The nipple is placed at the top of the pail rather than at the bottom.

Milk replacers designed for calves will not give good results.

The following are several management practices to follow to increase chances of success.

1. The lamb must first have colostrum from the ewe for survival. If none is available from the mother, provide colostrum from another ewe or from a supply frozen in preparation for the lambing season. Colostrum milk from a cow can be used as a supplement.

2. Place lambs in a warm, enclosed area with other lambs on milk replacer.

3. The lambs should not be able to see or hear their mothers when weaned onto a milk replacer nurser.

4. Lambs require assistance several times a day until they learn to nurse from the replacer container. A special training nipple with a valve to keep the nipple full is available. Sufficient milk replacer must be available so the lamb receives it every time it nurses.

5. Avoid placing very young lambs in the same pen with other lambs that may deprive them of adequate milk replacer.

6. Keep the pen clean and dry.

7. Provide a creep feed, choice quality hay, and water so that the lambs will learn to eat solid foods, so they may be weaned from the milk replacer in four to six weeks.

Dock and Castrate

Dock and castrate the lambs by the time they are 7 to 10 days old, when there is less shock, less bleeding and the operations are much easier to perform.

Docked lambs stay cleaner, are less likely to be attacked by the blow fly maggot, and will be more attractive at market time. Use an emasculator or burdizzo clamps. Avoid using a sharp knife, as there will be more bleeding.

Place the emasculator or burdizzo clamps lightly on the tail about 1 1/2 inches from the lamb's body and push gently toward the body. (When the tail is removed, this skin will slide back to normal position and cover the severed tail bone.) Put pressure on the handles of the instrument until the tail is severed. If you use the burdizzo clamp, it is necessary to cut through the skin to remove the tail completely. Hold either instrument lightly for a brief time to help prevent excessive bleeding. Apply 7% tincture of iodine liberally to the stub of the tail. Burdizzo clamps can also be used for castrating. Lambs should be checked about one month later to "reclamp" any testicles missed earlier. A sharp knife or a single-edge razor blade may also be used for castrating.

Have someone hold the lamb in position for docking. In this position, the lamb is easily controlled. Take the end of the scrotum between the thumb and finger of your left hand and pull away from testicles. Cut off the lower half of the scrotum. Both testicles will protrude. Push back the membrane covering one testicle, grasp the cord at the upper end of the testicle and draw it out with the testicle. Remove the second testicle in the same way. Apply 7% tincture of iodine to the wound.

Caution: The elastrator or rubber band is used by some flock owners in both docking and castrating. However, serious losses may result from tetanus with this method, especially in docking. If the elastrator is used in docking, apply the rubber band before the lamb is a week old. Cut off the tail just below the band two or three days after it is applied, and apply tincture of iodine liberally to the remaining stub.

When docking or castrating in warm weather, blow flies may be a problem. To prevent damage from the maggot stage of this insect, apply a fly repellent liberally to all wounds. Repellents are available from veterinarians, livestock supply houses, some drug stores and farm elevators. One treatment is usually effective for a week. Check all lambs at the end of the first week after docking or castrating, and make a second application of the fly repellent.

If tetanus is a problem on your farm, use a tetanus antitoxin at the time of docking and castrating. Vaccination of the ewe flock may also be advisable.

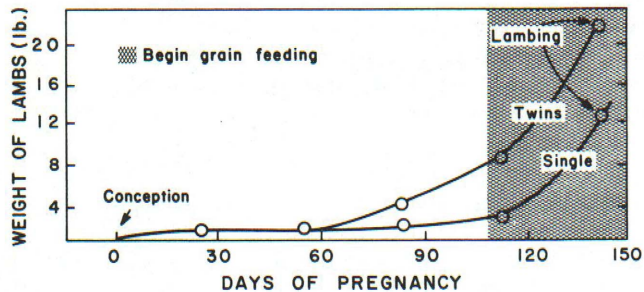
Keeping Sheap Healthy

Proper feeding, management and sanitation are the best methods for keeping sheap healthy. Check again the sections of this bulletin on feeds and feeding procedures, care of the ewe from breeding to lambing, care of the ewe during lambing, and care of the lambs. Also read Ex-

tension Bulletin E-681 — *A Dozen Ways to Save Lambs* and E-487 — *Enterotoxemia—Overeating Disease of Sheep and Lambs*.

The four most common sheep diseases affecting the breeding flock are pregnancy disease, white muscle or stiff lamb, overeating disease, and pneumonia or respiratory problems. The first three are related to feeds and feeding procedures, while only the last one is caused by an infection.

Pregnancy Disease can occur during the month before lambing, caused by inadequate energy from feed consumed. The nutrition demands of pregnancy are greatest during this period (see graph below) and are especially heavy for ewes carrying twins or triplets. Besides, ewes carrying twins and triplets do not have room in their abdominal cavity to hold a lot of feed; therefore, they often cannot eat enough feed to meet the needs.



Early symptoms of pregnancy disease are: ewes appear sluggish, fail to come to feed rack or trough readily, exhibit an unsteady gait, and finally go down and into a coma.

Feeding pregnant ewes grain one month to six weeks before lambing is the best way to prevent this disease. (See *Care of Ewe From Breeding to Lambing*, page 3.)

Adequate feed rack and trough space are extremely important, for all ewes must have an equal chance to eat.

Sort out older ewes and younger, timid ewes from the main flock and feed them separately until they have lambed. If this is not done, the more timid ewes are often the first to develop pregnancy disease. Once symptoms develop, the most successful treatment is propylene glycol, using a drenching syringe. Give the ewe 1 ounce 2 or 3 times per day. A cupful of molasses or corn syrup diluted with an equal amount of warm water may also be helpful, if done at the first sign of the disease. Prevention by proper feeding and no sudden changes in their normal routine are much preferred.

White Muscle Disease

Also known as "stiff lamb" disease, this is a nutritional deficiency disease resulting from a deficiency of the mineral selenium and/or Vitamin E. Both elements are essential. Affected lambs become stiff or lame in one or more legs. A lamb may die suddenly when heart or diaphragm muscles are affected. If the deficiency is present at birth, these symptoms, or even death, may occur very soon.

An injectable product containing both selenium and Vitamin E is available from veterinarians. It can be administered to the ewes 6 weeks before lambing as a preventative measure and also given as a routine

treatment to all lambs a few days after birth. Lambs already affected may also benefit from the treatment, but prevention of the deficiency is the best procedure. **Caution:** Selenium is very toxic. Use it according to directions. Be sure to use the product designated for the age and weight of sheep to be treated. Read and follow directions carefully.

Overeating Disease or Enterotoxemia

Suckling lambs and lambs eating a creep ration may die suddenly from this disease. Vaccination for the ewe flock is the most effective way of preventing losses in suckling lambs. It is the only way to prevent losses from overeating in lambs nursing ewes on lush pasture.

Antibiotics may be added to the creep ration at the rate of 2 grams of actual antibiotic per 100 pounds. (See Creep Feeding on page 4.) This will aid in preventing losses from overeating, pneumonia and certain other infections. Antibiotics are not a substitute for vaccinating lambs that are to be creep fed. The first vaccination should be given when the lambs are 7 to 10 days of age, with a booster dose of vaccine approximately 2 weeks later. *Clostridium perfringens* Type D toxoid is the type of vaccination material recommended. For further details, obtain a copy of the Michigan State University Extension Bulletin E-487, entitled "Overeating Disease of Sheep and Lambs."

Respiratory Problems

Pneumonia and similar infections can be serious problems. Prevention is more successful than treatment. Avoid housing sheep too closely so that the barn or shed becomes damp and smelly. A cold barn is much more healthy for sheep and lambs than a tightly closed barn with high humidity. Prevent drafts from blowing over the sheep, especially the young lambs. If heat lamps are necessary, use them only long enough to get the young lambs started. Be certain the lamb is getting milk.

If lambs or ewes show signs of rapid breathing and appear listless and "droopy," injectable antibiotics may help, if given in time. Consult your veterinarian for the type and dosage of antibiotic to use. Continue the treatment for at least 5 days rather than rely on a single injection.

Time to Wean Lambs

Lambs born before March 15 and fed on adequate creep ration can be weaned by May 15. Keep market lambs on the creep ration until sold. Those kept for breeding may be turned to pasture after weaning, provided you follow a well-planned internal parasite control program.

Lambs born after March 1 can be turned to pasture with the ewes. They also need a well-planned internal parasite control program. If good pasture is available, it is not necessary to wean the lambs until ready for market or slaughter at about 4 to 5 months of age. If the pasture is poor, wean the lambs at 3 to 3 1/2 months of age. After weaning, drench them for internal parasites and start them on a grain ration of corn, or corn and oats. If better pasture is available, provide it along with the grain. If

only poor pasture is available, give the lambs legume hay in addition to the grain. Begin with 1/4 pound of grain per head and gradually work up to a maximum of 2 pounds per head daily. Follow this procedure until ready for slaughter. Lambs kept for breeding purposes can be fed one half this amount of grain.

Internal and External Parasites

Worms are a serious, damaging pest of sheep which may cause death. Young lambs are especially susceptible. The common stomach worm causes the most problems, but nodular worms and tapeworms can also be serious.

There are a number of safe and effective materials to control these parasites. Giving sheep a medicine for worms is called drenching. The first step in controlling most of these internal parasites is to feed phenothiazine (a worming material) each day in the salt. Mix 1 pound of phenothiazine with 10 pounds of trace-mineralized salt and keep it before the flock at all times in a salt box that protects the mixture from the weather. Small flock owners will usually find it more convenient to buy a commercial phenothiazine and salt mixture from a farm elevator or feed store.

Drenching at critical times is also necessary. The materials to use, the time to use them and how to drench are described fully in Extension Bulletin 479, *Controlling Internal Parasites of Sheep*. Get a copy at your county cooperative extension service office.

Sheep also may become infected with two kinds of external parasites—lice and ticks (keds). When sheep rub a great deal and the fleece looks rough and stringy, lice are very likely present. There are two kinds of lice—biting or chewing and blood sucking. They can be seen if the wool is parted in areas near where the wool shows sheep have been rubbing and the skin is examined closely.

Sheep ticks are wingless flies about 1/4 inch long. They are brown and easily seen. They spend their entire life on the sheep but crawl readily from ewes to lambs and other sheep whenever the animals are in close contact. Large numbers of ticks cause serious damage, especially to young lambs, by sucking blood. Shearing ewes before they lamb helps to control ticks because they do not survive easily on a freshly shorn sheep. Both lice and ticks can be controlled by dipping, spraying or dusting. Two treatments exactly 14 days apart are necessary for lice. The second treatment kills the young lice that hatch from eggs present at the first treatment.

Materials and procedures are described in Extension Bulletin E-836, *Controlling Insects and Mites in Sheep and Goats*, available from the county cooperative extension service.

Additional Bulletins Available from County Offices:

Extension Bulletin E-681 — *A Dozen Ways to Save Lambs*; Extension Bulletin 479 — *Controlling Internal Parasites of Sheep*; Extension Bulletin 487 — *Enterotoxemia—Overeating Disease of Sheep*; Extension Bulletin 407—*Contagious Foot Rot in Sheep*; Extension Bulletin E-836 — *Controlling Insects and Mites in Sheep and Goats*; Sheep Handbook (Housing and Equipment) — Available from Plan Service Office, Department of Agricultural Engineering, Michigan State University, East Lansing, Michigan 48824 at a cost of \$1.00.

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