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Sheep Production Guide

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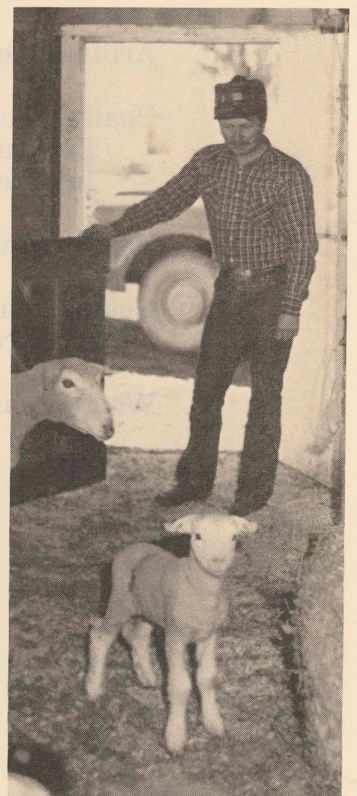
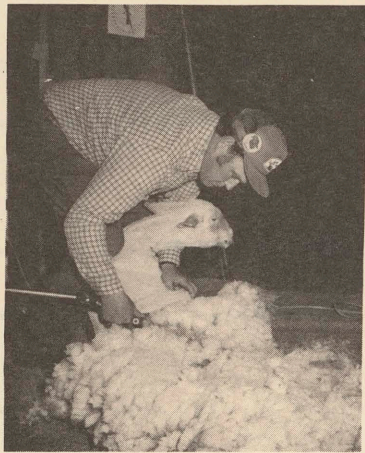
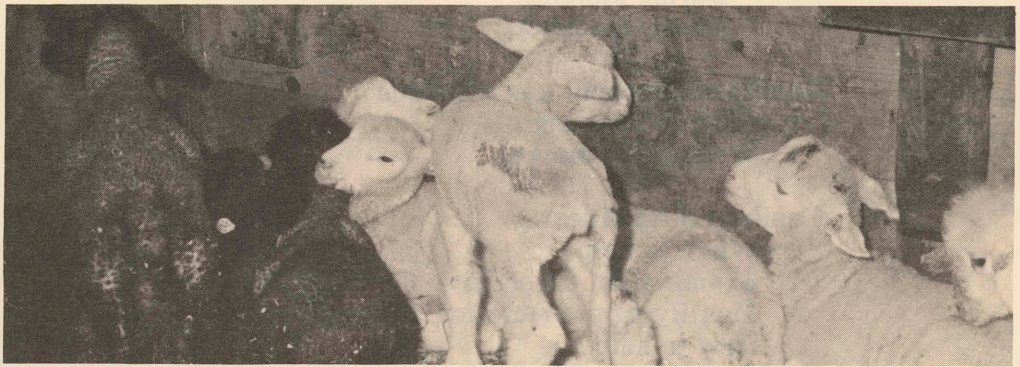
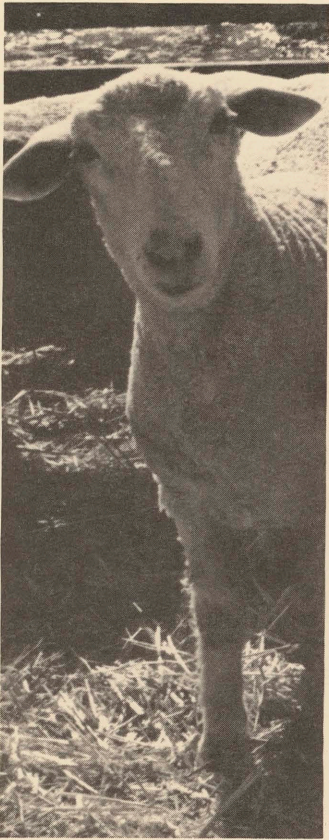
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SHEEP PRODUCTION GUIDE



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SHEEP PRODUCTION GUIDE

J.M. Thompson and L.F. Bush
Extension sheep specialists

A sheep enterprise can be ranch size, or it can fit into a few acres. It can be a full-time occupation; it is well suited for diversified and part-time farmers; it also can be expertly handled by the wife or younger members of the farm family.

Sheep make a profit when the enterprise is well managed. Two hundred pounds of red meat can be produced in 100 to 120 days from each ewe unit, if current breeding, nutrition, and management ideas are applied.

Increasing productivity of the ewe flock should be the goal of every sheep producer. The costs for labor, feed, and equipment are nearly the same whether a ewe produces one or two lambs. The potential exists for a 180% lamb crop. That should be your goal, no matter how many ewes you have.

This guide presents an outline of various management practices to reach that goal.

SHEEP CALENDAR

The highlight of a sheep producer's year is lambing time. The production cycle starts 6 months earlier. Dates listed are management guidelines for early (January-February) lambing. Simply adjust them forward or backward to fit your specific situation or location.

TARGET DATES, EARLY LAMBING

Breeding Dates: August 20 to September 24
Lambing Dates: January 14 to February 18
Early Lambs Weaned: March 15
All Lambs Weaned: April 1
All Lambs Marketed: July 15

MANAGEMENT BY MONTH FOR EARLY LAMBING

JULY

1. Purchase rams no later than 45-60 days before start of breeding season.
2. Drench ewes and rams for internal parasites.
3. Shear rams in early July.
4. Tag ewes.
5. Trim feet.
6. Provide a cool environment for rams.
7. Use stubble fields for grazing the ewe flock.

AUGUST

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1. Begin flushing ewes 2 to 3 weeks before breeding season and continue through the breeding season.
 2. Consider using a teaser ram. Turn him in with ewe flock 2 weeks before start of breeding season.
 3. Start breeding August 20.
 4. Vaccinate replacement ewes for vibrio and soremouth if needed.
 5. Use marker on rams; change color every 17 days.
 6. If weather is hot, run rams with ewes at night and remove during the day. Keep rams in cool environment during the day.
 7. Use three rams per 100 ewes.
 8. Observe breeding activity of rams; remove boss rams; rotate rams.
-

SEPTEMBER

1. Continue breeding until September 24.
 2. Remove rams from ewe flock at end of 34-day breeding season.
-

OCTOBER

1. Run ewes on harvested corn fields if they are available. CAUTION: Check amount of corn left in field first; too much might result in dead ewes from over-consumption.
 2. Graze ewes on alfalfa after plant growth has stopped and use other crop residues if available.
-

NOVEMBER

1. Vaccinate all ewes for vibrio; replacement ewes will be receiving second shot. Replacement ewes should receive first vaccination for Type C and D enterotoxemia at this time.
 2. Drench ewes and rams for internal parasites.
-

DECEMBER

1. Shear ewes or crutch ewes if you don't shear before lambing. (See item 8 under "managing ewes during gestation" for crutching details.)
 2. Weigh fleeces and record weights.
 3. Prepare the lambing quarters, check supplies and equipment.
 4. Begin gradual increase of energy level in the ewe feed.
 5. Continually check condition of ewes. If they are thin, increase level of grain.
 6. Vaccinate all ewes for Type C and D enterotoxemia (second vaccination for replacement ewes).
-

JANUARY

1. Watch ewes for ketosis (pregnancy disease).
 2. Continue to increase energy level for ewes.
 3. Separate close-up ewes from rest of flock.
 4. Watch for ewes to lamb.
 5. Place ewes that lamb in jugs or lambing pens for 3 days. Use supplemental heat if cold. **Do not overuse heat lamps.**
 6. When the lambs are born, remember the **"three ips"**:
 - a. **Clip** the navel to about 1½ inch in length.
 - b. **Dip** the navel in 7% tincture of iodine.
 - c. **Strip** the teat of the ewe to remove the wax plug.
 7. See that the lambs are up and nursing shortly after birth to get colostrum.
 8. Ear tag or identify lambs by some means; record birth date, sex, and type of birth.
 9. Separate ewes with twins from those with singles as they leave the jugs.
 10. Castrate and dock lambs at 3 to 7 days of age.
 11. Vaccinate lambs for soremouth if disease has been a problem in your flock.
 12. Prepare creep area and offer lambs an 18-20% protein creep ration.
 13. Watch lambs for signs of pneumonia and scours.
-

FEBRUARY

1. Continue lambing.
 2. Creep feed lambs a 16% protein ration that includes antibiotics.
 3. At 3 weeks, vaccinate lambs with first injection for overeating disease (Type D enterotoxemia).
 4. Castrate and dock lambs.
-

MARCH

1. Complete lambing.
 2. Give lambs second injection for enterotoxemia at 7 weeks of age.
 3. Continue to creep feed lambs; separate lambs by age if possible.
-

APRIL

1. Wean lambs at 70 days of age; weigh lambs and record weaning weights.
 2. One week prior to weaning, do not feed grain to ewes and reduce quantity and quality of hay.
 3. Reduce amount of feed to ewes after weaning lambs.
 4. Continue weaned lambs on a growing finishing ration.
 5. Drench ewes and rams before putting them on pasture.
-

MAY

1. Feed lambs in drylot.
 2. Pasture ewes on clean pasture if possible.
 3. Market lambs when they reach 110 to 120 pounds.
-

JUNE

1. Market lambs.
 2. Cull ewes and market barren producers. Use your records.
 3. Purchase replacement ewes and rams (if needed).
-

SELECTING YOUR OWN CALENDAR

You can choose either early (December-March) or late (starting in late March) lambing. Your choice depends on which of the advantages listed below makes the most sense to you in your specific operation and location.

ADVANTAGES OF EARLY LAMBING

1. Labor requirements for lambing come at a slack time in respect to other farm enterprises.
2. Lambs gain more rapidly.
3. Hot weather and internal parasites are not a major problem in lamb performance.
4. Lambs are usually sold on a higher market.
5. Lambs are usually fed in drylot until marketed.

ADVANTAGES OF LATE LAMBING

1. Building and equipment requirements are less.
2. Feed costs are usually lower.
3. Number of lambs born per ewe may be increased.
4. Weather conditions usually result in higher survival rates for lambs.
5. Late lambing makes maximum use of pastures, and lambs may be marketed directly off pasture without feeding grain.

PRODUCTION RECORDS

The goal of every sheep producer should be to increase productivity of the ewe flock. Without accurate records you will find it difficult, if not impossible, to know how the ewes are producing.

1. Production records are used to:
 - a. evaluate productivity of the ewe flock.
 - b. identify top producing ewes so their lambs can be kept for replacements.
 - c. cull poor producers.
 - d. evaluate ram performance.
 - e. show difference in gaining ability of lambs.
 - f. improve quantity and quality of wool.
 - g. supplement visual appraisal.
2. Start by keeping minimal records, and then build and add as your needs grow.
3. Permanently identify all ewes and lambs with ear tags.

4. Record dates—breeding, birth, weaning, shearing, etc.
5. Weigh lambs at birth, if possible. Record type of birth, whether raised as twin or single; and if the lamb dies, record the date and reason.
6. Weigh lambs again at weaning.
7. Weigh and record fleece weights at shearing.
8. Include a “remarks” column on your sheet. Memories are short; it’s also easier to spot trouble and head it off if periodic review of your jotted notes starts showing consistent clues.
9. Find the **adjusted weaning weight** of each lamb. Age of lamb, age of dam, type of birth, type of rearing all influence this “performance rating.”

Lamb performance to weaning is important because you want to know the effects of the ewe on the lamb’s growth.

A production testing program is **not** a contest. Its purpose is to locate the best producing ewes and rams in each flock. They are “keepers.” Culling the poor performers and breeding the “keepers” will genetically improve the flock.

An unadjusted weaning weight is misleading. Probably the lamb that reaches expected weight in fewer days really is better than one that took 10 days longer. But that doesn’t tell the whole story. A mature ewe usually produces lambs that perform better. So if the laggard lamb was from a younger ewe, the unadjusted weight could be masking a dam with high potential. You might cull this ewe from the flock, losing the opportunity for exceptional lambs from her in the future, because the unadjusted weight of her lambs at weaning didn’t compare to lambs from older ewes.

10. To adjust weaning weight for age of the lamb, first subtract birth weight from actual weight at weaning, and then divide by actual age (in days) of the lamb when weight was taken. This gives the rate of gain made by the lamb from birth to weaning. The rate of gain is multiplied by the standard age (age to which adjustment is made, which may be from 70 to 90 days). Then add the birth weight which gives the adjusted weight for age.

Example:

weaning weight at 75 days is 80 lb;
 birth weight is 9.0 lb;
 $80 \text{ lb} - 9.0 \text{ lb} = 71 \text{ lb}$ gain from birth to weaning;
 $71 \text{ lb} / 75 \text{ days} = 0.95 \text{ lb}$ gain per day;
 $0.95 \times 70 \text{ days} = 66.5 + 9.0 = 75.5 \text{ lb}$ adjusted weaning weight.

If the range in age of the lambs is large, it is best to divide them into two groups for weighing.

Multiply the adjusted (for age) weaning weight by the appropriate adjustment factor (Table 1). All weights are adjusted on the basis of a single ewe lamb from a mature ewe.

11. Yearling weights are seldom taken but can be a very important part of your selection program if you are raising replacements.
12. Other records you may find it helpful to keep are:
 - a. Percentage of ewes exposed to rams that actually lamb.
 - b. Percentage of ewes that settle during the first two heat cycles.

Table 1. Recommended adjustment factors.

	Age of dam (years)		
	3 to 6	2 or over 6	1
EWE LAMB			
single	1.00	1.09	1.22
twin—raised as twin	1.11	1.20	1.33
twin—raised as single	1.05	1.14	1.28
triplet—raised as triplet	1.22	1.33	1.46
triplet—raised as twin	1.17	1.28	1.42
triplet—raised as single	1.11	1.21	1.36
WETHER			
single	0.97	1.06	1.19
twin—raised as twin	1.08	1.17	1.30
twin—raised as single	1.02	1.11	1.25
triplet—raised as triplet	1.19	1.30	1.43
triplet—raised as twin	1.14	1.25	1.39
triplet—raised as single	1.08	1.18	1.33
RAM LAMB			
single	0.89	0.98	1.11
twin—raised as twin	1.00	1.09	1.22
twin—raised as single	0.94	1.03	1.17
triplet—raised as triplet	1.11	1.22	1.35
triplet—raised as twin	1.06	1.17	1.31
triplet—raised as single	1.00	1.10	1.25

- c. Number or percent of lambs born per ewe exposed.
- d. Number or percent of lambs born per ewe lambing.
- e. Number or percent of lambs weaned per ewe exposed.
- f. Number or percent of lambs weaned per ewe lambing.
- g. Percentage of mortality from birth to weaning.

13. Keep good records and you will know where you need to improve. Good records will help you set future goals.

FLOCK MANAGEMENT

SELECTING BREEDING SHEEP

There is no room for snap judgments when selecting breeding sheep. Next year's lamb crop depends on your choices now. Take the time and the gas to drive around and look at prospects. Always keep your improvement plan in mind; pick only rams and ewes that will put you farther along toward that goal.

The ram contributes 80-90% of the genetic improvement to the flock. A good ram does not cost, it **pays**. An outstanding sire cannot be purchased for market price, and you can't expect outstanding lambs from a scrub ram.

Keep the following in mind as you look over prospects:

1. Each new ram and ewe should have been born and raised as a twin from a highly productive ewe that has consistently produced and raised twins or triplets.
2. Select rams and ewes for growth and rapid gain. They should have at least a 60-day adjusted weight of 55 lb.
3. Ask for production records on the flock and performance information on the individuals selected. Get all the information you can on performance of the sire and dam and the flock of which they are a part—more than just placings and winnings at various shows.
4. Check ewes and ram for soundness in feet, legs, and mouth.
5. Select sexually aggressive rams.

6. Scrotal circumference is probably the best indicator of fertility. Average scrotal circumference at 5-7 months is 30-32 centimeters. Testicles should be well formed and developed.
7. If ewes have had lambs, check the udders for soundness. They should be soft and pliable and free of lumps.
8. Because wool contributes to the income from a sheep enterprise, don't overlook it when making your choices. Select heavy shearing sheep that have a dense, uniform fleece free of dark fibers.
10. If the weather is hot during the breeding season, turn the rams in with the ewes at night and keep them in cool quarters during the day. This allows you the opportunity to provide supplemental feed, if necessary.
11. You can raise ram efficiency by using a rotation system or by hand breeding.

For a rotational system, rotate the rams every 24 hours. Place one ram or group of rams with the ewes for one day (or night). Replace males with another ram or group while you rest and feed the first ones. Two aggressive rams can be used on 100 ewes.

For hand breeding, place the ewe in heat with the ram for breeding one time and then remove her. Repeat this twice in 24 hours while the ewe is still in heat. A vigorous, well cared for ram may breed about five ewes per day on this system.

MANAGING RAMS

1. A new ram purchase should be made well before the anticipated start of the breeding season. A newly purchased ram should not be turned in with ewes immediately upon arrival on the farm. Wait a minimum of 2 to 3 weeks until he becomes accustomed to his new environment.
2. Shear rams 6 to 8 weeks before the start of the breeding season.
3. Scrotal circumference should be measured 2 months before the start of the breeding season and at start of breeding season. If the second measurement is 5 or more centimeters smaller than the first, the ram may be infertile.
4. Keep the ram's feet trimmed—check and trim at least 30 days prior to the start of breeding season. A lame ram will not get the job done.
5. Keep rams as cool as possible by providing shade or cool quarters.
6. Maintain the rams in good condition, but do not allow them to become excessively fat. Poor nutrition can result in lower fertility and loss of vigor and aggressiveness.
7. During breeding season, rams should be fed about 1 lb of grain per day. If rams are thin going into breeding, increase the grain to 1½ lb.
8. Keep rams separate from the ewes except during the breeding season.
9. Use one yearling ram per 35 ewes. A well-grown ram lamb should not be used on more than 15 ewes.
12. Consider using a marking system to check on ram performance and identify when ewes are bred so expected lambing dates can be determined.

A marking harness containing a crayon may be used, or a coloring material may be mixed with oil or grease and a small amount applied each day to the brisket of the ram. The color should be changed every 17 days, using the lightest colors first.

If no marking system is used, remember to record the date rams were turned in with the ewes so that you will be able to know when the first lambs should be expected.

13. Determine how long a breeding season you want and then remove the rams at the end of this time. A 34-day breeding season allows all ewes to return to heat if they don't conceive. Some have the opportunity to cycle three times. A breeding season much longer in length tends to string out the lambing season, thus making management of the lambs more difficult.

MANAGING EWES

DURING BREEDING

1. Tag ewes (trim the wool around dock area) and trim feet 30 days before start of breeding. Treat ewes for internal

parasites at this time (see section on diseases).

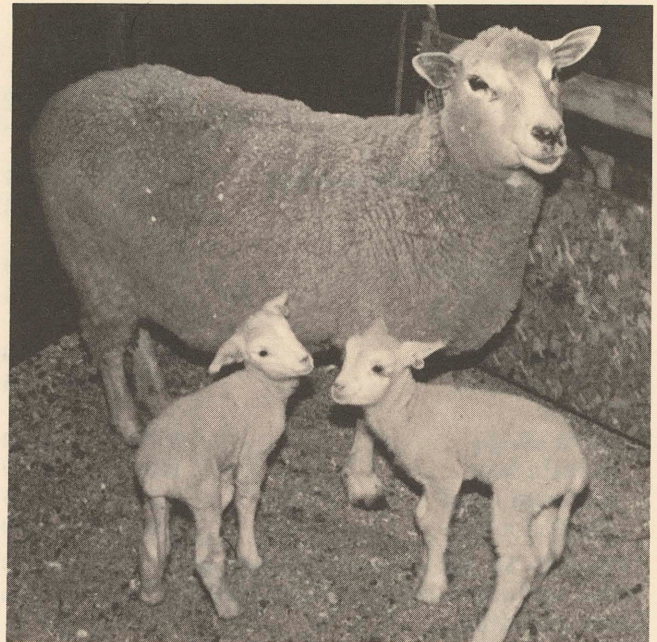
2. Ewes should not be fat at the beginning of the breeding season. Have them in moderate condition.
3. Flush ewes, starting 2 weeks before breeding and continuing through the breeding season. Improving condition through flushing may increase lambing percentage by 10-20%.

Ewes may be flushed by placing them on a rested or better quality pasture or by feeding $\frac{1}{2}$ - $\frac{3}{4}$ lb of grain (corn-oats-milo) per day. If flushing on pasture, use a grass or mixed pasture. Grazing ewes on legumes during the breeding season may delay conception.

4. To help stimulate estrus and group lambing, try using a teaser ram. Introduce him to the ewe flock about 15 to 17 days before the date you want to start the breeding season.
5. Record breeding dates if using a marking system; or record when rams are placed with the ewes, so you will know when to expect that first lamb.

DURING GESTATION

1. It is important that the ewe continue to gain slightly for about 3 weeks after conception, because proper nutrition during this time will reduce embryo mortality. The nutritional requirements of the ewe flock for the next 15 weeks of gestation are mostly for maintenance.
2. Grazing good pasture and stubble will meet the ewes' needs. Crop residues, such as in corn fields, may be used, providing there is a very limited amount of corn available. Excessive amounts of corn may cause the ewes to become too fat and cause problems (ketosis, difficult lambing) in late gestation, or even may result in death from overeating.
3. The last 4 to 6 weeks of the gestation period are critical. The fetus makes about 70% of its growth during this period and may crowd the digestive system of the ewe so that she will be unable to consume large amounts of roughage. Add concentrates to meet her increased nutritional needs.



You can get twins for the same price as a single lamb; it takes no more effort, feed, or equipment on your part, but it does take closer attention to details in your flock management. A 180% lamb crop should be your goal.

4. Inadequate nutrition during gestation may result in:
 - a. pregnancy disease (ketosis).
 - b. weak lambs at birth.
 - c. increased lamb mortality.
 - d. decreased lamb birth weights.
 - e. lower milk production.
 - f. slower lamb gains.
5. Ewes should gain from 20 to 30 lb during gestation, with most of the gain taking place the last 4 to 6 weeks.

During the last 4 to 6 weeks, start feeding about $\frac{1}{4}$ lb grain until the recommended amount is being fed (Table 2). Save and use your best quality roughage for this period.

6. Provide a mineral-salt mixture free choice. Use either iodized salt or trace mineral salt mixed with a calcium-phosphorus source such as dicalcium phosphate or bonemeal.
7. Provide sufficient feeder space for every ewe. Crowding and injury to the ewes kills lambs. Avoid narrow gates or high sills that ewes must jump over.
8. If adequate shelter is available, shear ewes 2 to 3 weeks before lambing. A

Table 2. Suggested daily rations for ewes.

Rations ¹	Ewe weights ²	
	130 lb	160 lb
Ration 1		
Alfalfa or alfalfa-brome hay	3.75	4.25
Shelled corn	.75	.75
Ration 2		
Bromegrass hay	4.00	4.50
Shelled corn	.75	.75
Ration 3		
Alfalfa haylage	6.50	7.50
Shelled corn	.75	.75
Ration 4		
Corn silage	6.75	8.50
Alfalfa hay	1.00	1.00
Soybean meal	.25	.25
Shelled corn	.50	.50

*Feeding 60 mg Aureomycin per ewe daily for 80 days, starting 6 weeks before lambing, may reduce lamb mortality.

¹Amounts listed are on an "as fed" basis.

²Weight at breeding time (average condition).

shorn ewe is more sensitive to the needs of a baby lamb, the lambs will nurse more easily, and the ewes require less barn space.

If you don't shear, crutch the ewes before lambing. Crutching means to shear around the dock, flanks, udder, and about 6 inches of belly in front of the udder.

DURING LAMBING

1. Prepare lambing quarters at least one week before you expect the first lambs to be born. Although the average gestation length is 148 days, some ewes have never been made aware of this fact and may lamb a week early.

Clean and freshly bed the lambing quarters. Make certain the area is free of drafts.

Assemble lambing pens or jugs. A good rule of thumb is to have one lambing pen for each 10 ewes in the flock.

2. Research at the University of Illinois Experiment Station at Dixon Springs shows promise in the use of lambing cubicles. The cubicles reduce mismothering and lamb stealing and decrease separation of ewes and lambs where multiple births occur.

The cubicles are 4 x 6 feet, with a 2-foot-wide entry and a 10-inch threshold to keep the lambs inside. Put the cubicles in the pens where you keep the ewes closest to lambing, and put them in the corners along the walls farthest from the shepherd's work area. If you know the favorite lambing sites in your barn, put the cubicles there.

3. The time spent with the ewe flock at lambing will be worthwhile in the long run in increased number of lambs saved. Strive to attain a lamb crop of at least 150% or better.

Separate close-up ewes from the rest of the flock. Watch ewes closely and be prepared to assist if necessary.

4. Ewes that have been in labor for more than one hour without making any progress should be examined. Thoroughly wash hands and arms and proceed gently. Do not rush, be patient. (See details in difficult lambing section.)
5. After the lambs are born, place the ewe and lambs in the lambing pen and:
 - Strip** teats to remove wax plug, make sure teat canal is open.
 - Clip** navel cord to about 1½ inches in length.
 - Dip** navel (umbilical cord) in 7% tincture of iodine.
6. Make sure each lamb nurses. It is important that lambs receive colostrum shortly after birth because it helps the lamb fight diseases.

If a lamb is too weak to nurse, use a stomach tube to give it its first intake of colostrum. Either strip out enough colostrum from the mother or use colostrum from another ewe that has just lambed if the mother is short of milk.

It is a good idea to have a supply of colostrum on hand. Freeze it in an ice cube tray for emergencies. Obtain colostrum for freezing from ewes that have lost their lambs or have delivered dead lambs. When thawing frozen colostrum, do not overheat, because this destroys the proteins which help the lamb gain disease resistance.

7. Provide supplemental heat (heat lamp) if it is very cold. Don't overuse heat lamps. You only want to get the lamb dry and off to a good start.

8. Identify lambs with an ear tag, ear notch, or tattoo, and record lambing information on your barn records.
9. After lambing, give the ewe fresh water and a small amount of hay in the jugs. No grain should be fed the first day.
After the first day, feed a small amount of grain along with the hay. Take a week to get the ewes up to their recommended level of feed.
10. Keep ewe and lambs in lambing pen approximately 3 days so the ewe is certain to claim her lambs and they become acquainted with each other. If pressed for room, leave singles in the pens for a shorter period.
11. After taking the new family from the lambing pens, combine them into small groups of 6 to 10 ewes with their lambs for a few days before forming larger groups. This is especially important for ewes with multiple births.
12. Separate ewes with multiple births from ewes with singles. This allows you to feed according to requirements.

DURING LACTATION

1. Ewes nursing twins require more protein and energy than ewes nursing singles.
2. Ewes reach peak milk production 4 weeks after lambing; milk production then begins to decrease.
3. Suggested rations for two weights of ewes nursing twins or singles are shown in Table 3.

These rations are merely suggestions; other feedstuffs may be substituted, depending upon availability. The actual amount to feed depends upon the weight and condition of the ewe.

4. After the first 60 days of lactation, reduce the amount of feed to that fed during late gestation. Because milk production is declining at this point, feeding any more will fatten the ewe—very costly feed for what you get back.
5. One week before weaning the lambs, reduce roughage levels and omit the grain portion of the ration.

The day of weaning, give no water or feed. This helps stop milk production. The

Table 3. Lactation rations.*

	Nursing twins		Nursing singles	
	130 lb	160 lb	130 lb	160 lb
Ration 1				
Alfalfa hay	4.0	4.5	4.0	4.5
Shelled corn	2.0	2.25	1.5	1.5
Ration 2				
Alfalfa-brome hay	4.0	4.5	4.0	4.5
Soybean meal	.2	.2	—	—
Shelled corn	2.0	2.25	1.5	1.5
Ration 3				
Brome hay	4.0	4.5	4.0	4.5
Soybean meal	.3	.3	.1	.1
Shelled corn	2.0	2.25	1.5	1.5
Ration 4				
Alfalfa haylage	7.0	8.0	7.0	8.0
Shelled corn	2.0	2.0	1.5	1.5
Ration 5				
Corn silage	7.5	8.5	7.5	8.5
Alfalfa hay	1.5	1.5	1.0	1.0
Soybean meal	.25	.3	.25	.25
Shelled corn	1.5	1.7	1.2	1.2

*Amounts are in pounds, on an "as fed" basis.

day after weaning, allow the ewes access to water but give no feed. For the next several days until ewes are dry, feed about 2 lb of poor quality hay. This schedule reduces problems with mastitis.

Do not put the ewes on pasture immediately after weaning.

6. To reduce stress to the lambs at weaning, it is best to remove the ewes, leaving the lambs in familiar surroundings. Take the ewes out of sight and sound to reduce the pain of parting.

LAMB MANAGEMENT AND NUTRITION

Lamb survival and performance will determine, to a large extent, the profitability of the sheep enterprise. Lamb mortality is estimated to be 15-20% from birth to weaning, with 75% of the death losses occurring in the first 2 weeks.

BIRTH TO WEANING

1. Dip navel cords of the lambs at birth with a 7% iodine solution.
2. Make sure all lambs receive an adequate intake of colostrum within a few hours of birth.

3. Eliminate possible "booby traps" which may cause injury or death to lambs. These include:
 - a. loose gates or panels that are not properly secured, which may fall on the lambs.
 - b. openings or places where lambs may stick their heads and be choked or get a leg caught and broken.
 - c. loose string or wire, which cause the lambs to become entangled.
 - d. open water tanks where the lambs might drown.
4. Dock and castrate lambs when 3 to 7 days of age. Cut tails 1½ inches from the body. Castrate all ram lambs at this time unless they are to be fed for maximum growth and marketed under 5 months of age.
5. Start creep feeding lambs at 1 week of age to provide supplemental feed during the nursing period. Early lambs (January through March) should be creep fed. You may be able to get by without creep feeding late lambs.

A mixture of 50% soybean meal and 50% rolled oats or corn is a good starter creep feed. Its taste is appealing to young lambs.

Location of the creep area is important. It should be in a dry, convenient, well bedded, and protected area close to the brood ewes. A light or heat lamp may be used at the start to coax the lambs into the creep.

Provide several openings into the creep so all lambs can get in. A 12 x 12 inch opening keeps ewes out, although if the lambs are doing their job of eating, you may have to enlarge the openings later.

Provide clean, fresh water close by.

Creep feeders should be kept clean, and, until the lambs start eating well, remove the uneaten feed daily and give it to the ewes.

The creep ration should contain 18-20% crude protein until the lambs are eating well. Decrease it to 16% at this time.

Until lambs are 6 weeks old, grain should be either coarsely cracked, rolled, or crimped. After 6 weeks, grain may be fed whole.

Adding 20 grams of an antibiotic (such as aureomycin or terramycin) per ton of ration may be beneficial.

Table 4. Some suggested creep rations.*

	Rations				
	1	2	3	4	5
Corn	1255	1145	660	660	860
Oats	—	—	640	—	425
Barley	—	—	—	640	—
Soybean meal	320	330	275	275	290
Alfalfa hay (15% CP)	400	500	400	400	400
Limestone	15	15	15	15	15
Trace mineral salt	10	10	10	10	10
% crude protein	15.6	16.0	15.6	15.6	15.6

*Amounts are in pounds, on an "as fed" basis.

If you want to formulate your own creep ration, keep in mind that **creep rations do not have to be complex to be good.**

6. Make sure lambs are vaccinated for overeating disease or enterotoxemia (see section on enterotoxemia for vaccination program).
7. The age at which you will wean lambs depends on your management system. Three months after lambing, most ewes are milking very little and the lambs' nutritional needs must be met by supplemental feed. It is usually most economical to wean at this age. Early lambs should probably be weaned earlier, at about 70 days of age.
8. If lambs are not weaned before pasture is ready, you may want to consider:
 - a. keeping ewes and lambs in drylot at night; and placing ewes on pasture during the day while lambs remain in drylot on creeps, or
 - b. keeping ewes and lambs in drylot during the day; and putting ewes on pasture and creeping lambs during the night. In either case (a or b), lambs do not go to pasture with the ewes.
9. At weaning, remove the ewes from the lambs; there is less trauma and the lambs will experience little or no loss in performance.

WEANING TO MARKET

1. Continue feeding the creep ration until lambs reach 85-90 lb. At that point, the protein content may be decreased to 13-14%.

The protein content of the ration can be decreased by approximately 1% by replacing 3 lb of soybean meal with 3 lb of corn in each 100 lb of ration or by replacing 60 lb of soybean meal with 60 lb of corn in the ton mixture as shown in Table 4.

2. Use high quality feeds, and do not change rations rapidly. Gradually blend the new ration with the old, increasing the proportion of new to old until the change is complete.

LAMBING DIFFICULTIES

Being on hand at lambing, experienced sheepmen say, is just about your most important job of the year.

There is plenty to keep one operator busy, particularly if the weather is wet or cold. And if a ewe has trouble, you need to know some of the mechanics of lamb delivery.

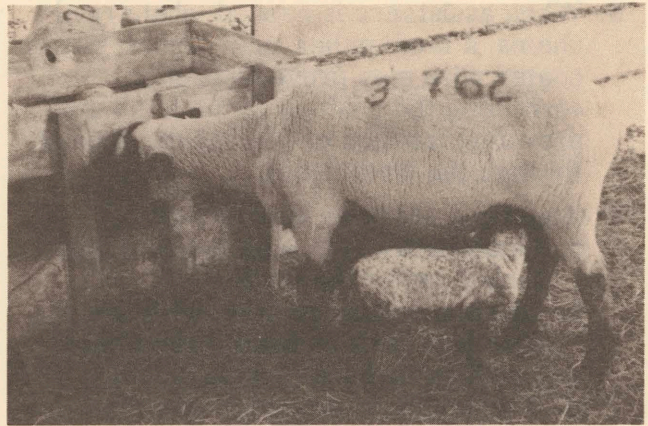
Due to lamb size, pelvic size of the ewe, or improper position of the lamb or lambs, ewes often must be given help at lambing time.

WHEN TO HELP

1. Knowing when to help the ewe is probably the most important factor in saving lambs.
2. Examine the ewe if:
 - a. She has been in the first stage of labor for 2-3 hours, and doesn't start actively straining. The first stage of labor involves cervical dilation during which time the ewe will be somewhat uneasy.
 - b. She has been in the second stage of labor for ½-1 hour with little progress. The second stage of labor occurs when the head or feet enter the vagina, which stimulates straining to expel the lamb.
 - c. The water sac or membranes have been evident for ½-1 hour with little progress.

EXAMINATION PROCEDURE

1. Confine and restrain the ewe so she can't get away.
2. Be clean. Wash off the rectal-vaginal area of the ewe as well as your hands and arms.



At one week start creep feeding early lambs. The creep ration does not have to be a complex formulation, but it must appeal to little lambs; and one of the tastiest you can put in front of them is 50% soybean meal and 50% rolled oats. Wean early lambs at about 70 days of age.

3. Lubricate hand and arm with a suitable lubricant such as a mild soap. Enter the vagina, keeping fingers close together so you don't puncture the reproductive tract. Identify the cervix and the extent of its dilation; then determine the presentation and posture of the lamb, as well as its size.

IDENTIFYING PRESENTATION AND POSTURE

1. Presentation refers to whether the lamb is coming forwards or backwards. Both of these are normal presentations, and a lamb should **not** be turned around just because it is coming backwards.
2. Posture refers to placement of the head and feet. In a forward presentation, the normal posture is for both front feet and the head to be coming in a "diving" position. In the backward presentation, the normal posture is for both hind feet to be coming together.
3. Deviations from the normal posture should be corrected before attempting to pull the lamb.
4. Locate head, if possible; or if only legs can be found, determine if they are front legs or rear legs. If you need a quick anatomy lesson to determine if you have a front or back leg, compare joint for joint up the lamb's leg while looking at the ewe's legs. Be sure that the legs that are located belong to only one lamb.

5. When assistance is needed, obstetrical chains, a lamb puller, or a smooth plastic coated wire may prove helpful in correcting the position of the lamb and providing traction or guiding the animal through the birth canal.
6. Abnormal positions may include:
 - a. Lamb backwards with the rear legs tucked under the lamb.
 - b. Lamb in frontal position with one or both legs back or head tucked back.
 - c. Lamb on its back (upside down).
 - d. Two lambs presented at one time.
 - e. Lamb at right angle to the pelvis with the side or back against the birth canal.

HOW TO HELP

1. **Leg or head is back:** If one or both legs or head is back, repel the lamb back into the uterus between contractions, and manipulate the body part into proper position. Be careful when pushing the lamb back in so that you don't rupture or tear the uterus.
2. **Head and front legs in normal position, but front legs locked against pelvis:** A steady pulling on one leg at a time will straighten the forelegs and make delivery possible.
3. **Only tail is presented:** Repel the lamb back into the uterus between contractions, grasp the rear legs, and deliver the lamb. When pulling lambs hind feet first, take care; the rib cage may lock on the pelvis of the ewe. Any jerking may cause rib and internal damage. To avoid this, swing the legs from side to side while pulling outward on the lamb.
4. **Lamb on its back (upside down):** The lamb must be rotated to the normal position before delivery is attempted.
5. **Lamb presented at right angle to the pelvis** (side or back against interior opening of birth canal): Repel lamb back to uterus, rotate lamb to normal position, then complete delivery.
6. **Two lambs (twins) presented at same time:** Determine which lamb can be delivered with the least effort. Gently push the other lamb back and make the delivery. The other lamb should also be delivered, as it is unlikely the second lamb will be in the proper position.

ASSISTANCE AFTER BIRTH

1. Any time it is necessary to help in the delivery of a lamb, the ewe should be examined for a second or third lamb.
2. After a lamb is delivered, make certain that mucus and membranes are removed from the head. Also make sure that the lamb is breathing. Applying gentle pressure to the ribs, tickling the nostrils with a piece of straw, or blowing into the mouth may help to stimulate breathing.
3. Even though extreme care and cleanliness are used in delivery, it is suggested that antibiotic boluses be placed in the uterus to prevent infection following a difficult delivery.
4. Learn from each experience. If you are not sure what you did or what happened, don't be hesitant to ask your veterinarians's advice as well as for his assistance. The best thing, of course, is to have him on hand. Failure to act promptly will result in a dead lamb at delivery. It can also result in the loss of the ewe.

ARTIFICIAL REARING OF LAMBS

For some reason or another, extra or orphaned lambs occur in nearly every flock at lambing time.

1. Extra lambs should be transferred to another ewe whenever possible. A lamb fostering or claiming pen equipped with a stanchion makes it easier. If you have three lambs in any combination of adopted or natural, leave the two closest in size to each other with the ewe, removing the odd one, whether it is the largest or smallest. Lambs not grafted to another ewe may be raised on milk replacer.

With multiple births, the weakest lamb is usually selected for artificial rearing on milk replacer, because it is less capable of competing at the udder.

2. It is important that all lambs receive colostrum. If none is available from the mother or another ewe, use colostrum from goats or cows. Having a supply of frozen colostrum available is recommended.

Frozen colostrum should be thawed and fed at room temperature. Be careful when

thawing; do not use high heat, which destroys the antibodies—the very reason for feeding colostrum.

After the lambs have received three feedings of colostrum during the first 12 to 18 hours of life, wait about 4 to 5 hours before starting them on liquid milk replacer.

3. Lambs to be raised on milk replacer should be placed in a draft free, well ventilated area. Use a heat lamp to provide supplemental heat until lambs are nursing well. A slotted or wire mesh floor may be the easiest way to keep the area clean and dry.
4. Use a milk replacer designed for lambs and follow the manufacturer's directions. It should contain 30-32% fat, 22-24% protein, and 22-25% lactose (dry matter basis).
5. Use one or the other—either warm or cold milk replacer—to train lambs to suckle on self-feeders. It is best to start lambs on the same temperature you plan to use throughout the feeding period; there is a risk of rejection if you change temperatures.

When you are feeding milk replacer free choice, use it cold to prevent over-consumption at a single feeding.

6. A trained lamb among the new orphans will help them learn to nurse. Assist the new crop every 6 hours until all are trained.
7. Lambs will consume 1 to 2 quarts of milk replacer daily, once started on self-feeders. This is equivalent to ½ to 1 lb of dry milk replacer every day.
8. Offer creep feed to lambs once they are started on the milk replacer. The feed should be very palatable and contain about 20% crude protein (see section on creep feeding under "lamb management, birth to weaning").
9. Wean at 4 to 5 weeks of age; feeding milk replacer any longer than this is costly. Before weaning, make sure lambs are eating some solid food.

Research at the U.S. Sheep Experiment Station at Dubois, ID, indicates that weaning lambs abruptly from milk at 4 to 5 weeks works better than offering a diluted milk replacer the last week.

10. All artificially reared lambs should be vaccinated for enterotoxemia early (shortly after starting on milk replacer). Lambs that do not receive any colostrum should be vaccinated immediately with clostridium Type C and D antitoxin.

■ HEALTH MANAGEMENT: PARASITES ■

Parasites, either external or internal, cause thousands of dollars in losses to the sheep industry each year. A good control program is essential.

EXTERNAL PARASITES

1. Ticks, lice, and mites can impair the performance of sheep of all ages. The animals become unthrifty. They rub and scratch because of the irritation, damaging their wool. The parasites also directly damage the wool fibers. Tick infestations will also decrease the value of pelts.
2. Sprays, dusts, and pour-ons have largely replaced dips for external parasite control. Use preparations approved and recommended for sheep. Check with your local veterinarian or county Extension agent for the latest approved insecticides.

INTERNAL PARASITES

1. Every sheep and lamb which has been on pasture is infested with internal parasites, no matter how "clean" your operation appears to be. You can not control parasites by indiscriminate use of drugs alone; you must develop a control program and practice it religiously. Do not wait until symptoms appear before acting.
2. Contamination of pasture is continuous, so develop a grazing system to break the life cycle of the parasite.

Use clean, rested pasture for lambs. Lambs are more susceptible to parasites than older sheep.

Either rotational graze or strip graze (using electric fencing). Allow 3 to 4 weeks to pass before returning to a formerly grazed pasture.

Clip pastures to promote uniform grazing.

Keep sheep off low, wet areas. Prevent leakage of water around tanks and troughs.

3. Do not feed sheep on the ground. Use feed bunks.
 4. Suggested treatment program:
 - a. About 2 weeks before going to pasture, drench with Tramisol or phenothiazine.
 - b. In early July, drench with phenothiazine-lead arsenate mix.
 - c. Before breeding, use Tramisol or Thiabendazole.
 - d. In late fall after freezing weather, again use Tramisol or Thiabendazole.
 5. Strategic treatments, planned to prevent buildup of parasites at critical times, are a very important part of a good control program. Treatment before turning on pasture, just before rotating to another pasture, or following unseasonable rainy or humid weather during warm periods are "strategic" treatments.
 6. Consider using a phenothiazine-salt mixture during the summer months:
 - 60 lb trace mineralized salt
 - 30 lb dicalcium phosphate
 - 10 lb phenothiazine
3. Sixty to 90 days after start of breeding: Vaccinate all ewes for vibrio (booster shot). Deworm all ewes and rams.
 4. Thirty days before lambing: Inject ewes with a selenium-Vitamin E combination unless feeding a selenium-Vitamin E supplement. Vaccinate pregnant ewes with: clostridium C and D toxoid, and tetanus toxoid.
 5. Lambing time: Make sure lambs nurse and receive colostrum. Vaccinate lambs for soremouth (if a problem).
 6. Thirty days after lambing: Vaccinate lambs at 30 days of age with clostridium D toxoid. Give booster shot of clostridium D 2 to 4 weeks later. Deworm ewes and rams.
 7. Two weeks before going to pasture: Deworm ewes, rams, and weaned lambs you plan to keep for breeding stock.

HEALTH MANAGEMENT: DISEASE PREVENTION PROGRAM

The goal of every shepherd should be to maintain a healthy sheep flock and minimize the incidence of disease. This goal is **not** attained by the use of a needle and a bottle of antibiotic or vaccine!

You must combine superior nutrition, timely management, and appropriate health practices into a total preventive program. Talk to your veterinarian about prevention **before** you need to call him for an accurate diagnosis once a disease occurs.

The following herd health management program is a guideline:

1. Sixty days before breeding: Deworm rams.
2. Thirty days before breeding: Vaccinate ewes (if problem is present) against vibrio (replacement ewes), chlamydia (enzootic abortion in ewes), leptospirosis, soremouth. Deworm ewes.

HEALTH MANAGEMENT: DISEASES AND ABORTIONS

DISEASES

There are many more diseases that can affect sheep than the few given here. These are common ones. If you suspect that your sheep have any of these diseases, **immediately** seek veterinary attention.

Pneumonia

1. Pneumonia is a common problem in lambs. It may be caused by specific bacteria or a combination of viruses and bacteria.
2. Stress conditions due to high humidity, drafts, insufficient colostrum, overcrowding, and unsanitary conditions in the lambing facility will predispose the animals to pneumonia.
3. Signs include fever, rapid breathing, coughing, and discharges from the eyes and nostrils.
4. Treatment involves identifying the causative agent and then using the proper antibiotic or sulfa drugs.

5. Control **in advance** is the key. This means removing the stress factors by insuring the lambing barn is properly ventilated and free of drafts, thoroughly cleaned before lambing, and maintained in a clean state throughout lambing season.
6. Other control measures include shearing ewes before lambing, adding sulfa drugs to the ewes' water, or using antibiotics in the ewes' feed prior to and after lambing until weaning.

Lamb scours

1. Scours may be caused by non-infectious or infectious agents. Humidity, nursing dirty udders, overcrowding, deep and wet manure pack, and inadequate or late colostrum intake are some of the non-infectious causes. Infectious causes may be bacterial or viral. Lamb scours often results in pneumonia.
2. Scours leads to dehydration of the lamb, causing death if untreated. A dehydrated lamb needs electrolytes if it is to recover. Use either a commercially available calf electrolyte solution or the following "homemade" electrolyte solution:
 Sure Jel (fruit pectin), 1 package
 Baking soda, 2 teaspoons
 Beef consommé, 1 can
 Table salt, 1 teaspoon
 Warm water, 2 quarts
 Give 8 to 16 ounces of the homemade solution three times daily. Or give 8 to 16 ounces of the calf electrolyte solutions (adjusting dose to lamb's size) at least three times daily.
3. Control is the key to preventing lamb scours. Provide clean, dry, well bedded pens, and make sure lambs get an early, adequate intake of colostrum. Provide adequate nutrition to pregnant ewes.

Enterotoxemia (overeating diseases)

1. Enterotoxemia is caused by toxins produced by *Clostridium perfringens* Types C and D.
2. Type C (hemorrhagic enterotoxemia) is a disease of lambs less than 10 days old. Affected lambs may die unexpectedly without any symptoms. The toxins destroy the lining of the gut wall. Postmortem

exams reveal these lesions of the intestinal tract.

3. Because treatment is not feasible, preventive measures are all that can be employed. Immunize pregnant ewes by vaccinating with Type C and D the last 30 days of pregnancy. This results in high levels of antibody in the colostrum, which should protect the lambs.
4. Type D enterotoxemia (pulpy kidney) causes sudden death in lambs usually over 30 days of age. Symptoms may include head pressing, grinding of teeth, staggering and convulsions. Generally, affected animals are found dead.
5. Treatment for Type D is seldom successful, so again, prevention is the best control. Vaccinate ewes with Type C and D 30 days prior to lambing. Then vaccinate lambs with Type D toxoid at 30 days of age, following with a booster in 2 to 4 weeks.
6. Antibiotics may also be used in the lambs' feed to help control Type D enterotoxemia.

Contagious ecthyma (soremouth)

1. Soremouth is caused by a pox virus affecting primarily the lips of sheep and lambs. It is recognized by the formation of pustules and thick crusts or scabs on the lips and mouth. The greatest damage occurs when the lamb transfers the infection to the udder and teats of the ewes.
2. It is painful to both lamb and ewe. The sores on the mouth of the lamb prevent it from nursing. The ewe, with sores on the teats and udder, will not allow the lamb to nurse. In addition, the infected ewe will develop mastitis.
3. Lambs seldom die from soremouth but become unthrifty due to lack of food. Recovery generally occurs in 2 to 3 weeks.
4. Prevention is best accomplished by using a commercially available live vaccine.
5. The soremouth virus on infected lambs **and** the live non-attenuated vaccine **can infect the shepherd**, so use extreme care and wear rubber gloves when working with infected sheep or using the vaccine.
6. There is little that can be done in the way of treatment once sheep have the disease. You can use antibiotic ointments to keep

the scabs soft and free from secondary bacterial infections.

Pregnancy disease or toxemia (ketosis)

1. This is a metabolic disease of pregnant ewes that occurs in the last 6 weeks of pregnancy. It is caused by the rapid growth of the fetus and decreased room in the ewe's digestive tract.
2. Affected ewes become sluggish and have a decreased appetite. In the later stages they appear blind, stagger, and grind their teeth.
3. Treatment is effective if initiated in the very early stages. Use an oral drench of propylene glycol.
4. Prevent pregnancy disease by supplying adequate levels of energy to ewes during the last 4 to 6 weeks of pregnancy. This generally includes supplementation with grain or other concentrate feedstuffs.

Avoid stress, sudden changes of feed, or other activities that will alter feed requirements during the last 4 to 6 weeks of gestation.

White muscle or stiff lamb disease

1. This is caused by a combined deficiency of selenium and Vitamin E, which results in a degenerative disease of the skeletal and cardiac muscles.
2. Lambs exhibit stiffness and rapid breathing. Sudden death may occur, due to heart failure. Because symptoms can resemble other diseases, an autopsy is needed to determine cause of death.
3. Prevention is effective. Use one of the following:
 - a. supplementing feeds with a selenium source.
 - b. injecting lambs with a selenium-Vitamin E source at birth and again at 30 days of age.
4. Ewes may be injected with a selenium-Vitamin E source 3 to 6 weeks before lambing to provide satisfactory levels to the unborn lambs and in the colostrum.

ABORTIONS

Several infectious organisms cause abortions.

So do hormonal imbalance, poor nutrition, toxins, noxious weeds, and physical injury.

Vibriosis

1. Vibriosis is caused by bacteria. Ewes abort in the last 3 to 4 weeks of pregnancy, or lambs born at term are dead or weak, usually dying within 24 to 48 hours.
2. The ewe contracts the disease through the mouth, so it is important when an aborted fetus is found to promptly remove it and all placental material from the area where the sheep are located. If the ewe that aborted can be identified, she should also be isolated from the flock.
3. You must act before the problem appears in your flock. A vaccine is available; when given annually, it can help prevent abortions due to vibriosis. Treatment is not very effective, but high levels of antibiotics may help curb losses.

Enzootic abortions (chlamydial abortion)

1. Ewes abort at about the same time of gestation as when they have vibrio. A positive lab diagnosis is essential to differentiate enzootic abortions from vibriosis.
2. Prevent the abortions from ever happening. A vaccine is available.
3. Antibiotics may be used after an outbreak occurs. However, by the time the disease is under control, losses can be quite high.

Toxoplasmosis

1. Toxoplasmosis is caused by a protozoan parasite, and cats are known to spread the disease. Keep them away from the sheep. Do not allow cats to defecate in feedstuffs to be used for sheep, as this is a primary means of infection.
2. Successful total control means removal of the source of infection, the cats. This may not be desirable. The disease is not transmitted from sheep to sheep.

FOOT CARE

1. Trim the feet of all sheep at least twice a year.

2. Isolate all new sheep brought into your flock.
3. Avoid making sheep travel through deep mud or manure.
4. Whenever a lame sheep is noticed, catch it and examine its feet.
5. Isolate all sheep that have any type of foot infection to avoid pasture contamination.
6. Sell those lame sheep that do not respond to treatment.

Foot rot

1. Foot rot is a highly contagious disease that can force you out of the sheep business if you don't control it. It is caused by a bacterial organism that causes lameness in sheep by invading the horny hoof and spreading throughout the horny tissue.

The organism causing foot rot requires an oxygen-deficient place for growth.

Overgrown hooves in wet, muddy areas are an excellent environment.

2. The disease is characterized by a foul smelling discharge from the infected hoof.
3. Program for control of foot rot:
 - a. Ninety percent of treatment and control is keeping hooves trimmed.
 - b. Trim feet of all sheep and run them through a footbath (see below).
 - c. Affected animals should be isolated to a hospital group.
 - d. Inspect affected sheep every 2 weeks.
 - e. Place recovered sheep in a convalescent group.
 - f. Sheep in the convalescent group that pass two clean inspections 30 days apart and are treated at the time of each inspection may be returned to the clean group. Treatment is a run through a footbath solution or an application of a topical solution with a hand aerosol sprayer of 10% zinc sulphate to each foot.
 - g. Treatment of the infected group should continue every 2 weeks. Those sheep that do not respond to treatment after 6 weeks should be culled.
4. Footbath solutions include the following. Pick one:
 - a. Formalin, 5% solution (1 part formalin to 19 parts water).
 - b. Copper sulfate, 10% solution (8 lb CuSO_4 to 10 gallons water).



Wool is 10 to 40% of your income from sheep. It is grown throughout the year, and that means it needs attention from you throughout the year, not just at shearing time. Be clean at shearing—have the ewes dry and clean, avoid excessive bedding, use the broom regularly. Pick the best shearer you can find, one who can remove the fleece in one piece with the first cut and who is gentle with pregnant ewes.

- c. Zinc sulfate, 10% solution (8 lb zinc sulphate in 10 gallons of water).

Research results indicate that zinc sulphate is the most effective for a footbath solution. Therefore it is recommended over formalin or copper sulphate.

WOOL MANAGEMENT

From 10 to 40% of your total income from sheep comes from the wool. Wool is one of the most valuable of farm products; in many cases it is the most poorly managed. A good wool clip is grown carefully throughout the entire year and is shorn and prepared for market with utmost care.

1. Quality and quantity of wool can be improved through selection of ewes and rams. Select for uniformity in grade and length of staple, density, and freedom from black and hairy fibers.
2. A well-grown wool clip can easily be spoiled at shearing. Follow the suggestions below:
 - a. Only shear when fleeces are dry.
 - b. Keep the shearing floor clean.
 - c. Remove straw and hay from the belly of the sheep before shearing.
 - d. Be very selective in hiring a sheep shearer. He should be able to remove

the fleece in one piece with a minimum of second cuts and skin cuts. He should handle the sheep carefully, especially pregnant ewes close to lambing.

- e. Remove tags, dung locks, and stained wool; and bag them with the floor sweepings.
- f. Excess chaff in the head and neck wool should be removed.
- g. Shear all black faced sheep last. Bag their wool separately.
- h. Roll fleece with skin side out. Fold head, neck, and britch wool toward center.
- i. Tie with **paper twine only**.
- j. Store in a cool, dry, and dust-free place.

- 3. After selling your wool, make sure that you keep the proper receipts to submit to your county ASCS office for wool incentive payments.
- 4. Remember: wool that is **clean** earns more **green**.

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