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South Dakota Sheep Field Day Research Reports,
1967

Animal Science Reports

1967

Management Practices

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Recommended Citation

Kortan, L. J., "Management Practices" (1967). *South Dakota Sheep Field Day Research Reports, 1967*. Paper 15.
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Important traits grouped according to their relative heritability:

A. Traits with high heritability

1. Face covering
2. Staple length
3. Skin folds
4. Fiber diameter
5. Birth coat

B. Traits that appear to be moderately heritable

1. Birth weight
2. Weaning weight
3. Daily gain
4. Grease or clean fleece weight
5. Clean wool yield
6. Wool processing traits
7. Leg color
8. Milk production
9. Date of lambing
10. Resistance to parasites

C. Traits with low heritability

1. Type of birth--twinning or multiple births
2. Type or conformation
3. Condition or fatness

Wisconsin Sheep Improvement Program

Since 1950 Dr. V. L. Felts, Extension Livestock Specialist at the University of Wisconsin, has directed a Sheep Improvement Program with Wisconsin sheep producers. The number of participants have ranged from 86 to 150 with approximately 4,000 ewes annually. The results of this program are summarized in the following table. The steady improvement shown in the table cannot be attributed to improved breeding alone, but it does provide evidence that there are excellent tools of selection available.

Wisconsin Sheep Improvement Program Summary

Year	Percent of lambs that were twins	Lamb weight at 4 mo., lb.		Pound of lamb per ewe at 4 mo.	Fleece weight, lb.
		Single	Twin		
1950	52.0	63.0	58.0	83.0	8.5
1951	54.6	65.0	59.0	84.0	8.3
1952	54.6	62.0	57.0	76.0	7.9
1953	58.7	67.0	61.0	85.0	8.3
1954	52.5	67.0	60.0	82.0	8.4
1955	58.3	68.0	60.0	83.0	8.1
1956	57.5	67.3	61.0	84.9	8.2
1957	58.2	71.1	65.1	89.5	7.8
1958	59.9	73.3	67.9	95.0	7.6
1959	60.7	73.6	68.8	96.8	8.2
1960	64.8	74.5	68.2	99.5	7.9
1961	59.4	71.0	67.5	94.4	6.9
1962	59.5	75.0	71.0	99.1	8.0
1963	60.5	81.0	77.0	105.1	8.2
1964	62.0	80.0	74.0	107.0	8.5

Application of Current Knowledge

The major problem in improvement through breeding is the lack of field application of current knowledge. An example is the Wisconsin Sheep Improvement Program. While this program has been available for 16 years at no cost to the producer, less than 1% of the sheep owners participate annually. If this be the case, what percent of the producers nationally are accurately measuring production traits, considering their heritability and economic value, and combining these into an index to be used in the selection of sheep in their flock?

A Good Ram Not Half the Flock (80% to 90%)

It is often stated that the ram is half the flock. This is apparently based on the fact that the ram sires all the lambs in a one-sire flock. But consider the selection pressure that is put on good purebred rams compared with the average grade ewe. Approximately 1/3, or 33%, of the ewe lambs must be kept for replacements in order to maintain a constant number of ewes. If a 100-ewe flock produces 125 lambs, 1/2 of which would be ewes, about 33% of these, or 21, would be kept for flock replacement.

On the other hand, only 3 or 4 rams are needed to mate a 100-ewe flock.

If a producer were selecting his own replacement rams in the same-sized flock, he would need to keep only about 2 each year out of 63 male lambs. This would equal 3% of the group, and so there would be much more selection pressure on rams than on ewes (3 vs. 33%). As a result, the ram would be contributing more than 50% of the progress in improvement.

Dr. C. E. Terrill, U.S.D.A.-Sheep Research, makes these statements: "We need to emphasize the selection of rams because hereditary gains are largely made from these selections. The statement that the sire is half the flock is wrong. In terms of the gains that can be made through selection, the sire is much more than half the flock. In fact our work shows that 80-90% of the gains made in improving a trait like fleece weight came from the selection of rams and only 10-20% came from selection of the ewes."

Of the many pitfalls to good sheep management, the one most commonly occupied, aside from poor parasite control, is using a poor ram. A cheap ram can cost several hundred dollars over a two-year period in a ewe flock. He can sire lambs that will weigh 10 lbs. less apiece at market time. The lambs will lack buyer appeal, they will not fatten on grass alone, and his daughters will be poor bets, indeed, to grow into heavy-milking ewes.

One should remember that a ram is to be used 2 years, and in a ewe flock should sire a total of 100 or more lambs. With the present lamb prices, it means that he will be siring over \$2,000 worth of offspring. And remember, too, that he should be worth money when sold as a 30-year-old. A ram will depreciate approximately 25% a year, so a \$100 yearling should bring \$50-2 years later.

If a ram can put 800 to 1,000 more pounds on the lambs he sires, it is easy to figure his value on increased weight produced alone. This would be aside from increased quality and meatiness resulting in higher grade and price per pound. The progressive commercial producer in the future will tell the purebred sheep raiser, "I want a ram that ranked in the top 25% of your lamb crop, and I am willing to pay for this information."

Iowa Sire-Test Program

Supervised by Tom Wickersham - Extension Livestock Specialist

The purpose of the new group effort is to identify superior lines of breeding (regardless of the breed) that may be sired to improve the productivity and carcass merits of sheep.

Breeders bring to the testing station 5 purebred ram lambs that are a get of a single sire. There they are put on a 75-day feed test supervised by extension personnel of Iowa State University. Two, and sometimes three, of the five lambs from each test lot are subsequently slaughtered

'FACTORS INFLUENCING EWE FERTILITY'

Many factors affect the number of lambs born per ewe, as well as the ewe's ability to breed at any time during the year. These include 1) age 2) breeding and genetics 3) season of breeding 4) light-temperature 5) ability to twin 6) time of breeding during the breeding season and 7) nutrition.

Age is the biggest factor affecting the number of lambs born per ewe. with two-year-olds producing primarily singles and the biggest producing jump occurring as three's with usually some increase up to 5 or 6 years of age.

The second biggest factor is Season of Breeding. This involves those things which define season--temperature and the proportion of light to dark each day--there is no question that this pattern of light and dark is the key to the onset of the breeding season in sheep. Ewes tend to come into heat and breed as the days get shorter, not particularly as they get cooler.

What about temperature? It plays little part in the initiation of the breeding season . . . but it does play a key role. High temperatures seriously affect the egg and its development after fertility, causing death of many of the developing embryos.

Time of breeding during the breeding season affects the percentage of multiple births since the ewe tends to work up to a peak of production in the number of eggs shed at each heat period, and then tapers off toward the end of her breeding season.

How about flushing? Studies have shown increased ovulation rates and/or increased lambing rates when extra feed was provided in advance of breeding and when the ewe is not already well nourished.

WHAT AFFECTS RAM FERTILITY?

Fertile rams not only result in more of the ewes being settled early, but also result in a higher proportion of twins.

The five main factors affecting a ram's fertility are 1) physical condition, 2) heredity, 3) sex drive, 4) high temperature, and 5) epididymitis.

1) Physical Condition--Any physical factors which prevent or reduce a ram's ability to copulate will reduce the number of lambs which he will sire. Particular attention should also be given to the hoofs of the rams throughout the year.

2) Heredity--It has been observed that certain breeds of rams are more subject to summer and early fall sterility than others. Therefore, an effort should be made to select rams from highly fertile breeding groups.

3) Sex Drive--Other things being equal the ram with the high sex drive is capable of mating with and settling a large number of ewes than the ram with the low sex drive. A little time in observing individual rams after they are put in for breeding can pay important dividends.

4) High Temperature--High temperature is the real villain in the fertility picture. When the atmospheric temperature exceeds 90° F. for a period of time, especially if the humidity is high, fertility is reduced in most rams. Even low temperatures can be injurious to some rams.

5) Epididymitis--The disease, epididymitis, causes inflammation of the epididymitis (the sperm storage reservoir leading from the testicle) which usually causes sterility or reduced fertility on the affected side. In most cases the effect is localized to only one testicle allowing satisfactory fertility from the unaffected testicle.

Increasing Lamb Crops

The one trait which shows the highest relation to net income is the number of lambs weaned or marketed each year per ewe. The large lamb crop means higher incomes.

Lamb mortality studies indicate that 50-70% of the lamb death losses occur within the first 3 to 5 days after birth, and 80-90% occur during the first month. These figures indicate that the first few days are certainly critical, and that it is extremely important for each lamb to get off to a good start. These studies also indicate that the 4 main causes of lamb losses have been weak lambs, starvation, stillbirths, and pneumonia. Male lambs are reported to have a higher mortality rate than females, and twins have a higher mortality rate than singles. In many flocks a higher death loss occurs among lambs born in the last half of the lambing season than in the first half.

There is at least 1 action that each sheepman could take to increase his lamb crop which would return more than it cost.

Lamb Production Per Ewe

Lamb production in the U.S. increased from 85-90% in the 20's to 88-98% in the 1950's. However, in the 1960's the production has ranged only from 92-95% with no evidence of continuing improvement since 1955. The production values have ranged from 87-93% in the range states as compared to 104-109% in the farm states. South Dakota is 105%.

Building and Equipment

Sheep do not require expensive or elaborate buildings and equipment. Many S. D. farms and ranches have buildings that can be made suitable.

If older buildings are remodeled or in the construction of new, it pays well to plan and construct sheep buildings and equipment that will give consideration toward health and comfort of sheep, provide necessary space, require little care, and keep costs low.

Housing for ewes during lambing must be free from drafts; it must provide proper ventilation; and supply a source for heat. Lambing pens, feeders and waterers, creep area, and other labor saving equipment should be considered.

Guides to use for planning adequate space and equipment for ewes and lambs are:

HOUSING--For early lambing (not including space for feeders)

barn space--12 to 18 sq. ft. per ewe.

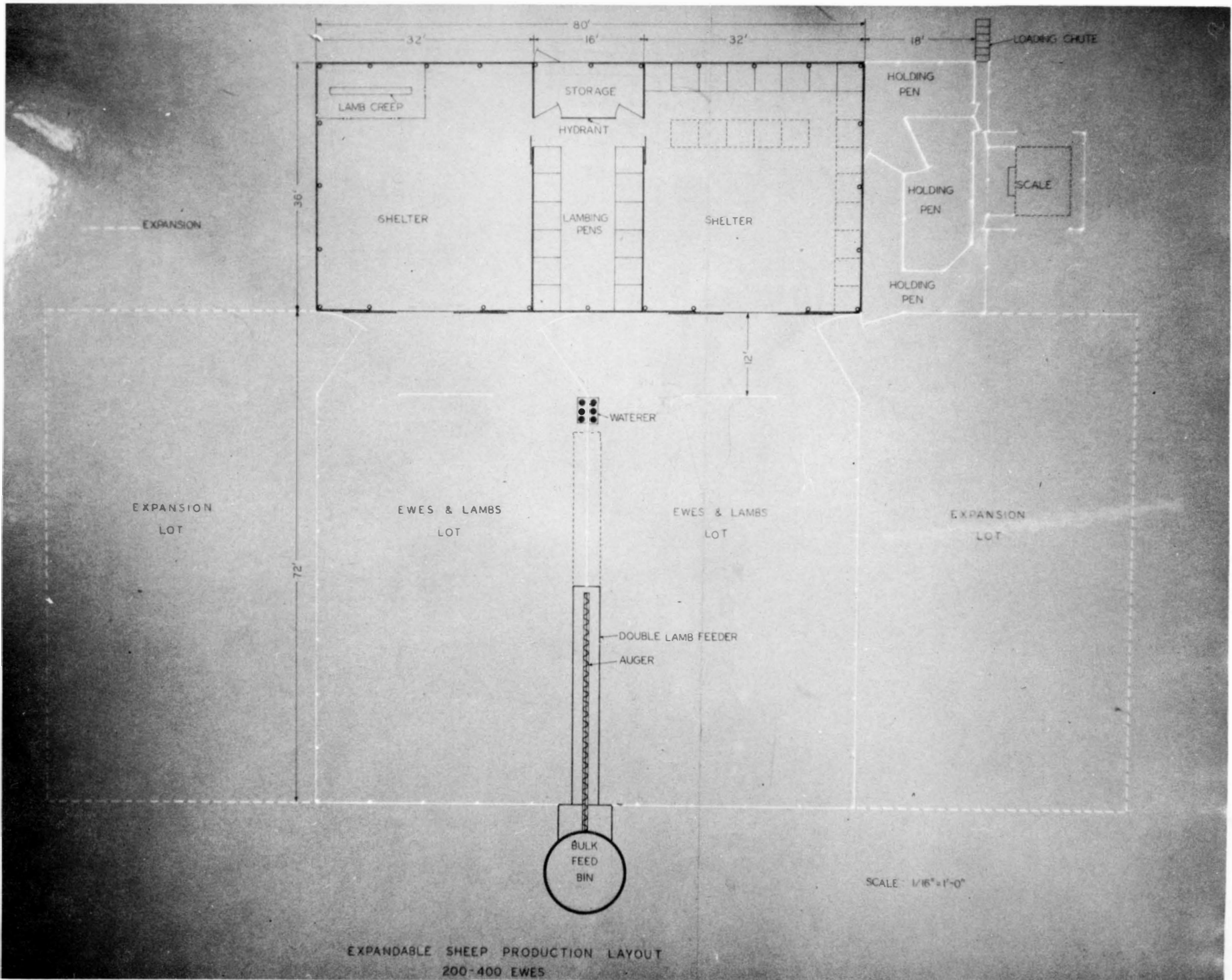
yard space--unsurfaced, 24 sq. ft. per ewe and nursing lambs.

FEEDING SPACE--Hay and grain bunks 12 to 18 linear in. per ewe. Self-feeders (grain and/or pellets) 8 to 10 sheep or lambs per foot.

WATER--Consumption 2 gallons per head. Float valve waterers--40 to 50 animals per opening. Tank waterers--10 animals per linear foot.

LAMBING PENS--Supply one 4 by 4 foot lambing pen for each 8 to 10 ewes.

The building plan on the following page might be considered for use during lambing.



Time of Selection - Ram

The early buyer has a much larger selection to choose from and has ample time to shear the ram. (Six to eight weeks prior to use and again at breeding time.)

Shearing ram - Effects of exposing rams to 90° F. Temperature for one week, Kentucky Experiment Station.

	Rectal Temperature on last day °F	Five Weeks Later	
		Sperm Motility %	Abnormality %
Controls (unheated)	102.2	85	10.0
Sheared (heated)	102.4	80	8.1
Unsheared (heated)	105.0	10	71.0

Marking Harness - Either a marking harness or other device should be used on the ram with color changed every 17 days to make sure he is settling the ewes. Most growers keep rams with ewes from 6 weeks to 2 months or longer. Do not allow ram to run with ewes except breeding season.

Number of Mating - A ram 1 year or older should be able to take care of 35 to 50 ewes. It is generally more satisfactory to keep ram penned during day, feed him hay or grain, and turn in with ewes at night. If several groups of rams are used, alternate each group of rams every 24 hours.

A safety factor is usually provided by using more rams than are absolutely essential in serving all the ewes.

How to "Hand Breed" - If hand bred, one ram can serve as many as 100 ewes. Tie a piece of heavy cloth, an "apron", to cover the belly of a "teaser" ram. Color his chest. Turn this teaser with ewe flock during day. He will paint ewes in heat. Place only painted ewes with real breeder at night.

Trim Feet - Feet are important to a ram. Trim when necessary and help correct lameness if possible. Avoid all possibilities of a ram going lame.

Feed for Ram - Ten days before breeding, feed 3/4 to 1 1/2 lbs. of corn-oat mixture and 1/10 lb. protein supplement per day. Allow to run on grass where there is plenty of shade and water.

EWES MANAGEMENT PRACTICES FOR INCREASED LAMB NUMBERS

Flushing the Ewe - Before breeding season will stimulate an increased ovulation rate under some conditions.

How to Flush - Ewes should be fairly thin and gaining in weight. Fresh green grazing alone makes good flushing feed and in several reports results are generally as good or better than when using other feeding programs. If pasture is not available $\frac{1}{2}$ to 1 lb. of grain per ewe daily while flushing for 2 weeks before breeding. Continue while ewes are being bred. Oats is a suitable grain for flushing.

Important Factors in Managing a Flock

Feeding the pregnant ewe:

F.S. 138 - Feed and Production Costs of the Ewe

Care of the Ewes and Lambs

1. Ewe ready to lamb
 - a. swelling of vulva
 - b. full udder
 - c. uneasiness of ewe
 - d. bleating
 - e. hollow between the last rib and the hip
 - f. straining

2. Lambing pen

Just before or shortly after the ewe lambs, place her in a lambing pen, 4 by 4 feet, or 4 by 6 feet for extremely large ewes.

3. Provide heat when temperature gets below freezing.

4. Treat naval cord - immerse the naval cord in tincture of iodine to help prevent infection. Do this immediately or as soon as possible after lamb is born.

5. Ewe should "clean up" lamb and lamb should nurse within 30 minutes. Check ewes that have lambed each night and morning for day or two to make sure udder is in good condition. It is important that lambs get the first milk, or colostrum, their only source of nutrients, antibodies, and laxative for 2 or 3 days.

6. Chilled lambs - placing them in a pail of warm water (as hot as the elbow can stand) will often revive them. Vigorously rub and dry lambs with cloth. Chilled lambs often become constipated or they may scour. A teaspoon of castor oil or milk of magnesia is recommended.

7. Getting ewes to own lambs:

ewes milk on lamb and ewes nose
vaseline or lard mixed with kerosene on lamb and ewes nose
household deodorizer

8. Docking and castrating lambs:

dock from a week to 10 days of age
castrate when not more than 2 weeks of age

REFER TO: SHEEP MAN'S CALENDAR FOR A MORE COMPLETE LISTING OF MANAGEMENT SUGGESTIONS

"Lamb Reviver"

A catheter tube on a little plastic bottle. The bottom end is cut out of the bottle. When a lamb comes along that is too weak to suck or gets cold or for some reason or other just doesn't seem to get fed, then it is quite easy to feed them in a very short length of time. Milk from the ewe or from another source such as a warm thermos bottle that is carried with the operator is poured into the lamb reviver. The tube is moistened and then with the lambs head on the level, the tube is inserted into mouth and you continue pushing it until it reaches the stomach which is about 10 or 12 in. away. The bottle is then lifted up into the air and milk is allowed to run into the stomach. With this method you are sure that you have fed the lamb and its surprising how many of these weak lambs you can save. During the first 4 to 6 hours, feed one ounce or less every 2 hours. If the lamb is going to revive it should do so by this time and be ready to nurse on its own.

Effect of Ration on Shrink in Creep Fed Lambs

The North Dakota Experiment Station recently reported some observations on shrink as influenced by type of ration fed. Four rations were used: 100% alfalfa pellet; 50% alfalfa and 50% barley; 25% alfalfa and 75% barley; and 100% barley. Lambs were weighed at Fargo, shipped to Sioux Falls, and reweighed (approximately 260 miles). Lambs shrank from 7.3% to 9.6%. Shrinkage was significantly less with lambs fed the all-barley ration than those in the other group. Lambs fed 75% barley and 25% alfalfa shrank less than lambs fed 50% barley and 50% alfalfa or 100% alfalfa. The shrinkage of lambs accurately reflected the grain content of the rations fed. The lambs fed high-roughage rations also graded lower. Breed had no effect on shrink.

Producing Wool

Wool is the most important of the animal fibers. It has certain qualities that make it superior to all other fibers for the production of some kinds of fabrics. It is an important source of revenue from the flock and may account for from 15% to more than 30% of the total returns from the sheep enterprise.

Advantages and Disadvantages of Early Shearing:

Like everything else, there are both advantages and disadvantages to shearing before the lambing season begins. Some of the advantages of early shearing are:

1. You can put more sheep in the same barn.
2. Your barn will stay drier and less humid when you have to put sheep in during cold weather, because the sheep won't have the thick wool to retain moisture.
3. A higher percentage of your ewes will lamb inside if they've been sheared because they notice the cold more and will want to go inside.
4. Early shearing will save you one handling. If you don't shear, ewes will have to be "crotched" and "faced" before lambing, but you can get this done with the shearing.
5. A better quality wool will be sheared, because you'll be getting it off before the spring rainy season, when mud and manure accumulate in the wool.
6. You can get the shearing job done before field work begins. That way, shearing won't compete with time you need to spend putting in your crops.

A few disadvantages are:

1. Ewes sheared now will go into the hot summer season with longer wool, which harbors moisture and stays damp longer. This enables flies to lay eggs in the damp, urine-soaked wool which hatch out into maggots. Sheep with shorter wool dry out faster, making a less advantageous place to lay eggs.
2. Long wool raises the ewe's body temperature, making her less likely to conceive during breeding season. Tests have shown that hotter temperatures the first 3-5 days after breeding result in fewer conceptions. Long wool can only increase this danger.
3. If your ewes have long wool and you don't want to shear again, you'll sometimes need to shear the wool around the genitalia before breeding season so it won't interfere with natural breeding. This usually costs 15¢ to 20¢ per ewe.

Internal Parasites

Refer to F.S.37 Common Sheep Parasites.

Lamb Feeding

Year round larger operations.

Small farm size-fall and early winter feeding operation.

Refer to Lamb Feeding Guide - EC 634