

RVICE  
UNIVERSITY OF MINNESOTA

# Save That Lamb

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Photo by Mindy Desens, The Land,  
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Is your goal a 200% lamb crop? Shoot high and strive to achieve! It is possible. We have the tools and the genetics and the breeding to harvest a 200% lamb crop. However only a few have done this in the whole U.S.A.

We must be realistic. The Minnesota average is only slightly more than 140%, i.e., 140 lambs that reach market age per 100 ewes exposed to the ram. Let's begin by determining what your percent (%) lamb crop is. How many ewes did you turn in for breeding last year and how many lambs reached maturity, i.e., market age. That's your percent lamb crop. Let's assume that yours is average, 140%, and that you are going to achieve a 150% this next year. If we consider that lamb mortality can vary from 3-26%, and in some instances much higher (one state reporting 10-36%), it should become immediately apparent that there is much room for improvement. We have also been informed that a major portion of this loss (70-80%) occurs during the critical first 2 weeks of life. Thus, if we are to improve our % lamb crop this is where we have the greatest opportunity. We need to concentrate our efforts on saving the newborn lamb and helping it through those first two weeks of life. If we can do that we can improve our lamb crop considerably. The discussion that follows will concentrate on health management practices that we can employ to raise more lambs successfully.

It is now fast approaching the lambing season, and for some of you it is already here. In our discussion we are going to assume that you have the desired genetics. Your breeding flock has been immunized for Vibrio, enterotoxemia, tetanus, and sore mouth, if indicated and that your flock has been properly cared for, including nutrition.

## Management Practices - 4-6 Weeks Prior to Lambing

One of the major problems in late gestation is adequate nutrition for the ewe. The fetus makes 35% of its growth during the last month of pregnancy and if there is more than 1 fetus you can understand what a drain this is on the metabolism of the ewe. Not only is it a drain on her system, this "overcrowding" of the abdominal cavity with one or more fetuses reduces her capacity to consume bulky food products such as hay in sufficient quantities to maintain her total energy needs. We, therefore, need to start adding grain (corn) to the ration, 1/4 to 1/2 pound/day the first week, and thereafter increase gradually to 1 pound/day. If you are not feeding a good quality alfalfa hay, you should also start adding approximately 1/10# of soy bean oil meal, or other protein supplement, per head, per day to provide the additional protein requirements of late pregnancy. Trace mineralized salt and phosphorus should also be provided. An ample supply of water, heated if necessary, should be readily available at all times. Pregnant ewes may consume as much as 2-3 gallons of water per day.

## Care of the Ewe - Last 4-6 Weeks of Gestation

### Pregnancy Disease (Pregnancy Toxemia)

Care of the ewe during the last 4-6 weeks of gestation is critical to support the growth and development of the lamb. Good healthy lambs, weighing 7-11 pounds are stronger and have a much better chance for survival than lambs weighing less than 7 pounds. Keeping the ewe in good condition so that she will produce good colostrum milk and care for her lambs, also protects against pregnancy disease.

The flock needs to be observed closely during late pregnancy for possible early signs of pregnancy disease. Affected ewes will be observed to be lagging behind the flock, appear sluggish, fail to eat and drink, exhibit an unsteady gait, stand uneasy and finally go down, and into a coma.

If observed early in the course of the disease ewes can be treated by giving orally, 2 ounces of propylene glycol, 3-4 X daily, or a combination of glucose intravenously and propylene glycol. Good nursing care, including water and finely ground alfalfa hay administered by stomach tube should be given to increase the energy intake and help to maintain her until she recovers. Electrolyte solutions prescribed for calves can also be given.

It is usually ewes that are carrying 2 or more lambs that develop pregnancy disease. If it is sufficiently late in pregnancy your veterinarian may choose to perform a caesarean section to remove the lambs to aid in the recovery. If this is done early and followed up with good nursing care the ewe has a good chance to recover and care for her lamb(s). If the pregnancy is 140 or more days, the problem is diagnosed early and the ewe is in good shape, a veterinarian may choose to use corticosteroids to induce lambing within 48 hours. This decision would have to be made early as there are also hazards in using corticosteroids. Severely depressed animals would most likely not be able to withstand the challenge.

The prevention of pregnancy disease is the best approach. Good quality alfalfa hay, free choice, 1# of corn per ewe, per day the last 4-6 weeks of pregnancy will do much to reduce the incidence of pregnancy disease.

It may also be advisable to separate the flock, i.e., older and first-lamb ewes separated from the rest of the flock to reduce competition at the feed and water troughs.

### Preparation for Lambing

#### Vaccinations

Preparation for lambing includes vaccinations. The second shot for enterotoxemia, "C" and "D", or 4-way bacterin including "C" - "D", black leg and malignant edema; vitamin A, D, E and Selenium/Vitamin E should be given at this time.

## Shearing the Flock

The flock should be sheared and treated for external parasites. Shearing the ewe before lambing provides a much cleaner udder, saves space in the lambing shed and reduces sweating and moisture in the building, thereby reducing the possibility of pneumonia. It also provides a much more sanitary environment for the newborn lamb and makes it easier for them to nurse. The newly born ewe can also be much more easily observed and thus given better care at time of lambing. Shearing also increases their metabolism and thus they will eat better, decreasing the change of pregnancy disease. Specific advantages of pre-lamb shearing are:

1. Ewes more agile and less space required
2. Less likely to overlay lambs
3. Easier for lamb(s) to suckle
4. Ewe will seek shelter and take lambs with her
5. Lower humidity in barn
6. Ewes metabolism increases therefore needs more feed
7. Lambing ewes more easily detected
8. Probably better wool quality
9. Easier to treat effectively for ectoparasite control
10. Give enterotoxemia shots at same time

There are some precautions that should be observed in pre-lamb shearing. These precautions are:

1. Clean environment necessary - plastic sheet
2. Have some shelter available especially if weather is unpredictable
3. Do not shear wet sheep
4. Avoid long periods off feed
5. Avoid overcrowding -- suffocation
6. Have shearer(s) disinfect their cutters
7. Always shear young sheep first if possible
8. Treat wounds with antiseptic/antibiotic powders
9. Treat for ectoparasites if required
10. Don't use 'plastic' twine. It may get into the wool

## Facilities

Preparation for lambing should also include the facilities. The lambing shed should be of adequate size, approximately 12'-15' square feet per ewe; well ventilated; bedded and dry. There should be adequate feeding and watering space, with provision for heating the water to keep it from freezing and to increase consumption. Provision should be made so that the flock can be grouped according to stage of pregnancy, separating the ewes due to lamb within a few days from those that will be lambing later. Your facilities should also include lambing pens, (4'-5' in size) approximately 1 pen for every 10-15 ewes. The lower boards on the lambing pens should be spaced so that the lambs can't crawl through, or get their limbs caught resulting in injury. The lambing shed should also have a small group pen to accommodate 4-5 ewes and their lambs after they leave the jugs and a larger group pen for ewes and older lambs. In this larger group pen there should also be a creep pen for creep feeding lambs.

## Care of the Flock at Lambing Time

No other time used to care for sheep will pay greater dividends than that spent with the flock at lambing time. You have a major portion of your investment in the lamb at this time, reportedly approximately 62%. It is a critical time for the ewe, and a much more critical time for the young lamb. Seventy to 80% of our lamb losses occur during the first 2 weeks of life. If you have a large flock, 100 ewes or more, it would be well if someone could be in attendance 24 hours/day during the peak lambing season. In small flocks, periodic checks every 2-3 hours by family members, or others familiar with sheep should be adequate. Competent, experienced and conscientious help can make the difference between a successful lamb crop and failure. You can save many lambs by giving them that immediate, early attention that is so badly needed. Little things like removing the placenta from a lamb's face so that it can breathe, or mucous from its lungs will save many otherwise strong, healthy lambs.

## Lambing Equipment for the Lambing Barn

Before the lambing season begins, the following equipment should be placed in a medicine chest or cabinet in the lambing barn:

1. A clean plastic pail
2. Suitable disinfectant
3. A good lubricant - KY jelly
4. Several pair of plastic surgical gloves or sleeves
5. Uterine boluses for ewes
6. Syringe, needle, pair of scissors, penicillin, BO-SE, mild topical ointment
7. Tincture of Iodine
8. Clean suture material or clamps for clamping navels
9. Clean suture material and needle for correcting entropion of the eye
10. Marking paint, ear tags and tagger
11. Docking and castrating instruments
12. Several clean towels
13. Bottle and nipple
14. Stomach tube feeder - a human catheter works well for this purpose

## Signs of Lambing

The ewe that is getting ready to lamb frequently separates from the flock, she may not eat, the teats and udder appear distended, the vulva is swollen, a hollow appearance may be observed in front of the hips. The ewe becomes restless, will be observed to be getting up and lying down, finally the water bag is observed and breaks. The ewe then usually lies down and proceeds to "lamb".

If it is a normal birth you should see the front legs and nose or head of the lamb and within a few minutes (10-15) you should have a new lamb on the ground.

If 30 minutes to an hour have passed, the ewe appears to be laboring excessively and no progress is being made, it is time to call a veterinarian, or if you have some skills and expertise in this area, proceed to examine to determine if there is a problem and what should be done.

Always remember however, that good hygiene pays dividends. Procure a bucket of good clean, warm water, soap, disinfectant, a good lubricant and towels. Wash your hands and arms and wash the vulva and surrounding area, apply a good lubricant and proceed to carefully examine the reproductive tract to determine positioning of the lamb. If it is a normal birth, both front legs (toes up) and the head will be presented. If you feel the legs but no head, it means that the head has been reflected back and will have to be corrected before the lamb can be delivered. This means that the lamb will have to be repelled in order to retrieve the head and bring it up into place. If the head is coming, but one or more of the front legs is "missing", this again means that the lamb will have to be repelled slightly and with well lubricated hands or gloves proceed carefully to retrieve the "missing" limb. Once the head and limbs are in position for delivery, the rest of the lambing process is usually rather uneventful.

If one encounters both hind legs and a tail, this is considered a normal posterior presentation. It is usually more difficult, but is considered normal. It is also harder on the ewe and quite frequently the lamb has aspirated fluids before the birth process has been completed. On the other hand you may encounter the tail, but no legs (a true breech). This again is more difficult and harder on both the ewe and the lamb as frequently they have been laboring for extended periods of time without being noticed. Again the lamb must be repelled and by carefully slipping your clean, well-lubricated hand down along side of the lamb the rear limbs can be retrieved, one at a time.

Always remember that good hygiene, lubrication and much gentleness and care are important when attempting to assist a ewe in lambing.

In correcting abnormal positions, it is helpful to change positions of the ewe from side to side and keep the hind quarters somewhat elevated to reduce abdominal pressure and make for much more room in the pelvis.

If you are inexperienced, or encounter a problem of which you are unsure, it is suggested that you seek professional help. Call your veterinarian so that assistance can be given early.

The ewe should lamb in the group pen with other ewes that have been sorted and close-up to lambing. As soon as possible after lambing the ewe and her lamb(s) should be moved to a separate pen (jug).

#### Care of the Lamb

As soon as the lamb is born, and in fact, as soon as the head is exposed, one should check to see that placental membranes and mucous are not covering the nose, preventing the lamb from breathing. If it has been a difficult delivery, or a posterior presentation it is suggested that the lamb be held up by the back legs and either shaken or swung to clear mucous from the air passages. One should also rub briskly with a clean cloth to stimulate circulation, breathing and thus warm the lamb.

#### Feeding the Lamb

The lamb should nurse within the first half-hour. If not, check the ewe to be sure that she has milk and that both teats are open. Assist the lamb to nurse if necessary. The first colostrum is very necessary to the health of the lamb.

It is almost "magic". It contains the necessary minerals, vitamins, glucose, other food substances and most importantly antibodies to protect the young lamb against disease. Without this "magic," most lambs will not survive. If the lamb is not nursing, it is suggested that you hand feed colostrum via a bottle or stomach tube.

### Care of the Lamb

#### The Navel (Umbilicus)

The umbilical cord should be dipped in a solution of tincture of iodine. As an extra precautionary measure, after dipping the umbilicus it would be ideal to take the extra time to apply an umbilical clamp, or tie with a clean suture.

#### Chilling or Hypothermia

Observe that the lamb is nursing, if not, determine why? Has the lamb become chilled and cold? If so, it should be rubbed down, dried and placed under a heat lamp. The heat lamp should be at least 2 feet from the floor and safe from the standpoint of being accidentally broken, causing a fire.

Another way of handling a severely chilled lamb is to immerse the lamb up to its head in warm water (100-110 F). After 10-15 minutes remove the lamb from the water, dry thoroughly, return to its mother and assist it to nurse. Most lambs will then make an uneventful recovery. If necessary continue warming with a heat lamp until completely dry, however, do not overheat.

#### Identification of Ewe and Lamb(s)

The ewe and lamb(s) should be identified. A wool branding paint is ideal for temporary identification. Ear tags are recommended for more permanent identification.

#### Record Keeping

An adequate record system should be established to record pertinent information such as identification of ewe and lamb(s); number of lambs born; sex; weight of lambs and other useful information.

#### Lamb Starvation

These are usually lambs that after 2-3 days, are observed to be very thin, weak, and are not nursing, or have given up. We need to investigate, is it the lamb or the ewe that is responsible? The first thing to do is to check the ewe, is she milking; does she have a mastitis problem; are her teats open; has she claimed the lamb, or is she refusing it and possibly in addition to starving the lamb, has also injured it? Whatever the apparent cause, the lamb needs to be fed immediately. Either milk colostrum from the lamb's mother, collect early colostrum milk from another ewe, or you may use colostrum milk which you have pooled for such emergencies. Check the lamb of course, does he have a temperature (102.5-104.5 is normal)? Is the lamb scouring, does he have a swollen umbilicus, or swollen joints, suggesting navel ill, or is he breathing heavy and irregularly suggestive of injury or pneumonia. We must determine the cause and treat accordingly.

## Docking and Castration

After the lamb is a few days old, nursing normally and doing well, it should be docked and castrated. Care should be exercised so as not to crowd the lambs if they are in a group pen and they should be handled carefully to avoid injury. Any of the traditional instruments are acceptable. Good hygiene practices should be exercised and a topical antiseptic solution or powder should be applied to open wounds, as in docking the tail, or open (knife) castration. Elastrator and rubber bands have been used successfully for both docking and castration. I personally do not recommend the use of elastrator bands because of their frequent association with tetanus (lock-jaw) in lambs.

## Orphan or Bottle Fed Lambs

We need to be prepared to care for the orphan lamb, the lamb that is not being cared for by the mother, or lambs from a ewe that is not milking satisfactorily. The earlier the problem is detected and appropriate action taken to feed and care for the lamb, the greater the chances of survival. The lamb needs colostrum milk and it needs to be fed on a regular schedule. We can obtain colostrum milk from its mother; another ewe that is lambing or has just lambed; colostrum milk from a cow that has just calved or use from that "bank" of colostrum milk that you have frozen for just such an emergency. If lambs, that have become orphans for whatever reason, have received an adequate amount of colostrum milk they can be switched over to cow's milk or a quality milk replacer and will do quite well. Newborn lambs need to be fed frequently and on schedule, preferably 3-4 ounces, 5-6 times daily. After a lamb is 10-12 days of age you can increase the quantity of milk per feeding, feed them only 3-4 times per day and encourage them to eat a good quality creep feed.

Bottles and nipples, nursettes or other equipment used to feed lambs must be kept scrupulously clean to prevent disease.

The grafting of lambs on to another ewe that has a single, or has just lost a lamb is another method used to raise orphan lambs. It is suggested that you graft the stronger lamb, as the ewe will normally take care of the smaller one. The stronger lamb will be more aggressive increasing the likelihood of success in a new environment. Weak lambs are not good candidates for grafting.

## Lamb Health

The first two weeks of a lamb's life is critical. Good nursing care and close observation to be sure that the lamb remains healthy is a primary consideration. Health problems to be discussed include the following:

### White Muscle Disease (WMD)

White Muscle Disease is a frequent problem in many sheep operations. It is thought to be caused by a dietary deficiency of Selenium and Vitamin E, or both in the ewe.

The young lamb, if affected at birth, usually does not get up to nurse and dies of starvation in 2-3 days. If the disease strikes later, one will observe lambs that appear lame in one or more legs, many appear stiff, unable to move, become flaccid and go down. If the heart muscle is involved we usually see sudden death.

Lambs that die should be posted by your veterinarian to confirm that it is White Muscle Disease so that treatment can be prescribed accordingly. If it is White Muscle Disease, injections of Selenium and Vitamin E in aqueous solutions such as BO-SER or L-SER at the rate of .25 mg/Selenium/lb should be given immediately. Follow-up injections may be given at 10-14 day intervals. New-born lambs in flocks experiencing WMD should be treated immediately.

The best approach, however, is to inject the pregnant ewe with Selenium/Vitamin E 4-8 weeks before lambing or feed pellets containing 5 mg of Selenium and 350 IU of Vitamin E according to prescribed feeding schedule on the package.

### Scours

One of the most serious disease problems of young lambs is scours. It is frequently caused by Esherichia coli, a bacterial organism producing a severe scours. A common source of infection is the environment, soiled wool tags near the udder, contaminated udders, poor sanitation, overcrowding and lack of bedding. Early signs of scours include the following: a fever, weakness, standing humped up and soiling of the wool in the tail area. A diagnosis is usually made on the basis of clinical signs, however, your veterinarian may want to do a fecal culture and sensitivity tests to be sure of the causative organism and to determine the choice of drug for treatment. The tetracyclines or sulfa drugs are the usual drugs of choice in treating early scours in lambs. If the lamb has become dehydrated, sunken eyes, cold limbs and muzzle it will be necessary to give an electrolyte solution to prevent further dehydration and death. Any of the commercial calf electrolyte solutions are acceptable, such as Life-GuardR or Scour-Gard. A recommended "homemade" electrolyte solution can be easily prepared, is economical and is also effective. It consists of the following:

R

Sure-Jel (Fruit pectin)	1 package
Baking soda	2 teaspoonsful
Beef consomme	1 can
Table salt	1 teaspoonful
Warm water	2 quarts

Give orally to lambs - 1-2 cups/3X daily. Smaller doses given more frequently may be indicated in weak, debilitated lambs.

Finally, the importance of having your veterinarian do a necropsy of all, or at least several of lambs that die to confirm your diagnosis is stressed. In this way unnecessary drug treatments may be avoided and simple changes in management made to correct the problem.

### Pneumonia in Lambs

Pneumonia has frequently been reported as the major cause of lamb deaths during the time they are in the lambing shed. It is usually caused by one of the pasteurilla organisms. Poor ventilation, overcrowding of facilities and extremes in high and low temperatures contribute to the incidence of the disease. If there is inadequate ventilation there is a build-up of moisture and ammonia from fecal decay and urine causing irritation of the trachea and lungs. This increases their susceptibility to disease organisms in the environment, thus resulting in illness.



## Clinical Signs

The most obvious signs of pneumonia are labored breathing, coughing, nasal discharge, listlessness, failure to eat and high temperatures.

## Diagnosis and Treatment

A diagnosis can usually be made from observing the usual clinical signs. However, one should also do a postmortem of dead lambs to confirm typical lesions in the lungs and respiratory tract. Culture and sensitivity tests to identify the specific organism and choice of drugs for treatment is also indicated.

Preferred drugs include penicillin, the tetracyclines and sulfa drugs. Success in treatment depends upon starting early and treating sufficiently long to get results. Some veterinarians report that the early use of injectable oxytetracycline at 5 mg per pound of body weight for 3-5 days has given good results.

## Enterotoxemia

Enterotoxemia is a common disease of young lambs. It is caused by a toxin, produced by the organism, Clostridium perfringens types "C" or "D". C. perfringens organisms may exist as normal inhabitants of the natural gut flora of many ruminants. Under conditions of stress such as an excess of a nutritious diet, irregular feeding, insufficient bunk space or the sudden feeding of heavy concentrates results in a rapid increase in numbers of the Cl. perfringens organisms in the intestinal tract of the lamb. As these organisms die, they release a powerful toxin which can cause disease and usually death of the animal. There are two types of the Cl. perfringens organisms which affect lambs at rather specific ages as described below:

### 1. Cl. perfringens - type C

#### Clinical Signs:

This bacteria causes a hemorrhagic enteritis (bloody scours) in young lambs from 2 days to 2-3 weeks of age. It is frequently seen in single lambs on heavy milking ewes. It has a sudden onset and high mortality (up to 35-40%). It is frequently difficult to differentiate from perfringens type D.

#### Treatment

When treating an outbreak of the disease, it is advisable to use clostridium antiserum. Antiserum gives immediate protection, but it protects for only 2-3 weeks. The antiserum is bivalent so protects against both "C" and "D" clostridial organisms.

### 2. Cl. perfringens - type D

This is usually a disease of recently weaned, or feedlot lambs. The incidence is greatest when on a high energy diet.

## Clinical Signs

The first sign is usually a dead lamb, which has not previously been observed ill. Affected lambs lie on their side, head drawn back, grinding of teeth, in convulsions, and frothing at the mouth. Diarrhea is seldom observed. Mortality of affected lambs may approach 100%.

## Treatment

The lamb showing clinical symptoms is usually beyond repair. One can give antiserum and broad spectrum antibiotics, however, don't expect much by way of results. Affected lambs usually die. The important thing is to treat the flock:

1. Reduce concentrate intake, increase the amount of roughage.
2. Vaccinate all lambs with C and D toxoid, twice, 2 weeks apart.
3. Add broad spectrum antibiotics to the feed for 7-10 days at the level of 20 grams/ton of feed.

## Prevention

1. Vaccinate the breeding flock, using a "C"- "D" toxoid. Sheep that have never been vaccinated should have 2 injections during the gestation, 4-6 weeks apart. The last injection should be 2-3 weeks prior to lambing. An annual injection 2-3 weeks prior to lambing is sufficient for ewes that have been previously immunized. Lambs born of ewes that have been vaccinated will have protection for 4-6 weeks. This means that lambs 3-5 weeks of age should be vaccinated giving 2 injections of "C"- "D" toxoid, 2-3 weeks apart.

## Tetanus

Tetanus (lock-jaw) is caused by Clostridium tetani. It is a soil borne organism which forms highly resistant spores which can survive in the soil for years. Cl. tetani organisms are often found in horse manure. Sheep and horses should not be pastured or housed together. The organism usually gains entrance to the body through some form of wound, such as castration, docking, ear tagging, shearing, puncture wounds or navel. Rubber elastrator bands used in castration and docking of lambs are frequently responsible for tetanus in lambs. Once Clostridium tetani organisms gain entrance to the body via an injury or wound, they release powerful toxins which affect the central nervous system of animals.

## Clinical Signs

The first clinical sign is frequently a dead lamb. Affected lambs are usually stiff; exhibit a "saw-horse" stance; are hyperexcitable, go into convulsions easily; may have a rigid jaw--unable to open the mouth and have a temperature of 106-110 F.

## Treatment

Treatment is rarely successful. The mortality rate among affected lambs is 80-85%.

1. Tetanus antitoxins may be given at the rate of 40,000 I.U./100# body weight, or 400 I.U./lb body weight. Tetanus antitoxin are expensive! Massive doses of penicillin may also be given. Tranquilizers and general anesthetics have also been given to reduce hyperexcitability.
2. Place in a darkened, quiet room.
3. Drain, clean wounds and treat with an appropriate antibiotic or sulfa powder.
4. The healthy flock should be immunized with tetanus toxoid and given 1500-3000 I.U. of tetanus antitoxin.

## Prevention

1. Strict sanitation during castration and docking is a must. Use sterile equipment and sterilize at intervals during the surgical process. Use "oxidizing" disinfectants such as iodine or chlorine.
2. Rubber elastrators are convenient to use, however, their "crushing" effect on tissues produces a wound environment conducive to the growth of tetanus organisms.
3. Vaccinate the breeding flock using a tetanus toxoid.
  - a. Ewe lambs should receive 2 shots, one prior to breeding and one about midgestation.
  - b. Adult flocks that have been previously immunized - one shot at about midgestation.

## Navel Ill

This disease is sporadic in nature, however, a high incidence may be seen on some farms. Streptococcus, Staphylococcus, Corynebacterium and other organisms are the most common pathogens involved. They usually gain entrance to the body via the umbilicus causing a septicemia (generalized infection), a polyarthrititis (swollen joints), or an endocarditis, involving the heart. The organism is found in the environment. Thus care of the navel of the newborn lamb is very important.

## Clinical Signs

1. The incubation period is 2-3 days. The lamb becomes lame, there is a hot painful swelling in one or more joints and an accumulation of pus.
2. The lamb is dull, listless and not eating.

3. High temperatures are observed at the peak of infection. Whereas, late in the course of the infection, the temperature may drop, the lamb becomes toxic and dies.

### Treatment

1. Penicillin in large doses early in the course of the disease may give good results.
2. If the disease is advanced it may be necessary to lance infected joints to drain fluids (pus) from joints and treat the wound with tincture of iodine.

### Prevention

1. Using tincture of iodine to treat navels at time of birth along with good sanitation at lambing time will usually eliminate the problem.
2. Dipping the navels in iodine and then clamping with navel clips is rapidly becoming a recommended practice.

### Sore Mouth (Contagious Ecthyma)

This disease is caused by a pox virus that affects primarily the lips, mucous membranes of the mouth, nose and feet of the lamb and teats, udder and vulva of the ewe.

### Clinical Signs

Initially small, red pox like lesions are observed. Later vesicles (blisters) form, which soon rupture discharging a yellow fluid exudate that is loaded with the pox virus. Later in the course of the disease dark scabs will form over coalesced vesicles. The healing process is slow. The course of the disease is 3-4 weeks. The lamb becomes thin, starvation and pneumonia are frequently complicating factors.

### Treatment

1. There is no specific treatment for the disease.
2. Symptomatic treatment includes treating the scabs and lesions with a mild ointment or Vaseline to keep the scabs soft so that the tissue will heal. Vaseline in a 3% phenol solution has been recommended as one treatment.
3. Good nursing to keep the lamb nourished until it recovers is important.
4. Penicillin will help combat secondary infection.

### Prevention

1. Vaccinations

Vaccination against contagious ecthyma is recommended on infected premises; "show" flocks and in feed lot animals if it has been a problem on your farm or

if purchased lambs are of mixed origin, increasing the chances of introducing it to the flock.

#### A. Breeding Flock

Vaccinate the breeding flock 3-4 weeks in advance of the breeding season if vaccination is indicated. Vaccinate in non-wooled areas of the tail or ear.

- B. Lambs - on infected premises, or in fact of an outbreak Newborn lambs should be vaccinated immediately if the flock is going through an outbreak. If it is a flock on an infected premises, where the breeding flock has been vaccinated before breeding, it is recommended that lambs be vaccinated at about 1 month of age and given a booster 2-3 months later. Vaccinate ewe lambs again 1 month before breeding.

One inoculation for ewes, or mature lambs usually conveys life-time immunity.

The vaccine is a live, non-attenuated vaccine. Exercise great care in handling it (wear rubber gloves). Also wear rubber gloves when handling affected animals as the virus is transmissible to humans.

#### Coccidiosis

Coccidiosis is caused by several species of coccidia organisms. It is a protozoan parasite that has a complex life cycle. It affects the lining of the intestinal tract of sheep and other species of animals. It usually affects lambs over 1 month of age that are being raised in dirty, unsanitary conditions. Wet, damp, muddy lots and manure build-up propagates the growth of the organism and contributes to spread of the disease.

#### Clinical Signs

Affected lambs become dull, listless, have a severe mucoid, greenish/yellow diarrhea that later becomes blood-tinged and as the disease progresses changes to tarry, bloody diarrhea.

#### Treatment

1. Sulfamethazine ("Sulmet"<sup>R</sup>)

Drench sick animals with a prepared solution so that the initial dose will be 1-1/2 grain per lb. body weight, followed by 1/2 the dose for the next 3 days. Skip 3 days and repeat treatment for 2 days.

2. 7.5 grain triple sulfa tablets can also be used to treat lambs at the rate of 1 grain per lb. body weight/day.

#### Prevention

1. Clean environment and sanitation.
2. Feeding off the ground in bunk or racks and watering equipment that does not become contaminated with fecal material.

3. Rotate pastures.
4. In infected flocks, pre-treatment of ewes 3-4 weeks in advance of lambing helps to reduce the level of infection.
5. Research indicates that Rumensin at 15 grams per ton of feed is effective. However, this drug has not been approved for sheep.

### Salmonella

Salmonella infections usually appear in the form of an acute enteric disease. Although it may manifest itself as a peracute septicemia, with sudden deaths, or as a chronic intestinal infection. The most likely cause of the disease in sheep is Salmonella typhimurium or Salmonella dublin. The primary source of infection is an infected animal or bird which contaminates the environment, including feed and water sources. Outbreaks have been seen in feeder lambs following purchase through stockyards or transport in contaminated vehicles. Animals recovering from Salmonella can remain carriers for 60-70 days.

### Clinical Signs

1. The acute enteric form is most common. The clinical signs include:
  - a. High temperatures 104-106 F
  - b. Severe, watery diarrhea and straining
  - c. The feces contains mucous, shreds of mucous membranes, has a severe putrid odor and may contain casts of the intestinal tract.
  - d. The animal does not eat, but may exhibit an unusual thirst.
  - e. It becomes dehydrated, loses condition, goes down and dies in a few days.
  - f. Abortion can occur in pregnant ewes.

### Diagnosis

1. Clinical signs
2. Fecal cultures to confirm diagnosis
3. Sample feed, water, stalls and environment to confirm the presence of infection.
4. Necropsy of dead animal(s) and culture

### Treatment

1. Broad spectrum antibiotics at high dosage levels and sulfamethazine.
2. Neomycin
3. Chloramphenicol is effective - but not approved in food producing animals.
4. Electrolytes to combat the severe dehydration.

## Prevention

1. Isolation of all new herd additions as well as animals that have been on the "show circuit".
2. Isolation of sick animals.
3. Sanitation and cleaning of feeding and watering equipment.

## Parasites

### 1. External Parasites

Shearing the breeding flock prior to lambing and immediately treating them for external parasites helps to control sheep ticks and lice in the lamb. Any of the approved sprays or dips are recommended.

### 2. Internal Parasites

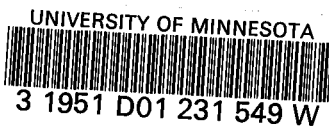
- A. Ewes should be wormed prior to breeding, before lambing and again before going to pasture.
- B. Lambs should be wormed before going to pasture, or into the feedlot. Ewe lambs should be wormed prior to breeding.

It is suggested that a broad spectrum wormer, levamisole or similar wormer be a part of your treatment regime. Phenothiazine suspensions, products containing lead arsenate should also be included. It is recommended that you alternate wormers to avoid "resistance" and also to get a broad spectrum coverage of parasites, to include gastrointestinal and tapeworms.

- C. Liver Flukes - In addition to the usual gastrointestinal parasites of sheep, we also have liver flukes, parasites which live in the liver and do considerable damage. There are two primary species of liver flukes in sheep, Fasciola Hepatica and Fascioloides Magna. Fascioloides Magna is the species most prevalent in Minnesota. Until recently we have not had a drug that could be safely used to treat liver flukes. On December 8, 1982 the anthelmintic drug Albendazole was cleared for investigational use by the Minnesota Board of Animal Health. Licensed veterinarians can obtain this drug for field trial testing to measure the efficacy of the drug under field conditions.

Since the snail is a necessary intermediate host in the life cycle of the liver fluke we offer these recommendations to reduce the level of infection in affected pastures:

- i. Do not graze wet, low lying pastures and sloughs.
- ii. If you must graze low lying pastures, treat the area with a 0.5% solution of copper sulfate. Spray at the rate of 137 gallons of the mixture per acre, or use 20 pounds of finely ground copper sulfate (mixed with sand to facilitate distribution) per acre.



## Summary

There are other health/management problems of lambs and of adult sheep. In this report we have directed our attention to ways of saving the young lamb. It appears that it is here where there is room for greatest improvement, particularly during the first two weeks of life. If we concentrate our efforts on the following we can save many lambs:

1. Proper care and management of the ewe, particularly during the last 4-6 weeks of gestation.
2. Care of the flock at lambing time.
3. The importance of having sufficient help, particularly during the peak lambing season.
4. Close observation of the ewe at lambing time.
5. Immediate care of the newborn lamb.
6. Care of lambs that need special attention such as lambs experiencing hypothermia, orphan lambs, starving lambs and sick lambs.
7. Identification of ewe and lambs.
8. Close observation of signs of disease.
9. Docking and castration of lambs at the appropriate time.

## Conclusion

If you encounter what appears to be a health problem, take time to analyze the situation. If the lamb is thin, weak and not eating, is it because the ewe is not milking, has mastitis, does not claim the lamb? Or, is it because the lamb is sick, scouring, breathing heavy as in pneumonia, an injury, or recent history of docking and castration? What are the clinical signs that you see? Is it a problem of a single lamb, or is it a problem of the flock?

Your keen observation and analysis of the situation can help you to decide what the problem is, or help in relating the circumstances to your veterinarian so that he can make a diagnosis and advise as to what the treatment should be.

And finally, sheep raising can be fun and profitable. Saving that extra lamb, or 2 lambs, makes it more fun--and more profitable!

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