Sheep Management at Oregon State University

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SHEEP MANAGEMENT AT OREGON STATE UNIVERSITY

Robert G. Klinger and William Hohenboken

This bulletin is not a "How to Raise Sheep" manual. Rather it is an explanation of the what, when and why of the sheep management program at Oregon State University's Department of Animal Science in Corvallis. Our annual cycle of operations is described in detail, followed by a discussion of general management practices and some concluding general considerations. The OSU flocks support research and teaching functions. Our goals and our program differ, therefore, from commercial operations, but we hope and believe that description of our management practices will be useful to sheep growers.

THE OSU MANAGEMENT CALENDAR

Choosing the best time for lambing is not easy. Prices for slaughter lambs generally are higher early in the season, favoring early lambing, but twinning rate frequently is lower when ewes are mated early in the breeding season. Also, feeding of early lambing ewes in late gestation and during the first part of lactation can be expensive. Often pasture is not sufficient to support them during those times. Pasture growth patterns, available feeds, expected weather, and available buildings and equipment are also factors which must be considered.

We utilize once a year lambing with maximum use throughout the year of irrigated and hill pastures, and our management program is designed specifically for that system. Ewes are mated beginning in September with February lambing and June weaning.

Five weeks prebreeding

The production year begins, in OSU flocks, about the first of August at which time the following is done.

The rams are sheared. This prevents temporary sterility due to elevated body and testicle temperatures and reduced sex drive or libido. We do not shear just before mating, because a freshly shorn sheep can suffer as much heat stress as one that is full wooled. About 6/10 inch wool regrowth is needed to insulate the ram from solar radiation.

The rams' feet are trimmed. A ram with sore feet is less likely to mount a ewe, but if his feet are trimmed properly well ahead of mating, he should be sound by the time he is needed.

The rams are dewormed. (Our internal parasite control program is discussed in greater detail later in the circular.) It does little good to deworm the ewe flock and then introduce wormy rams to reinfect them.

The rams are semen tested and their testicles are palpated for lumps which could indicate epididymitis. A consulting veterinarian can perform these services during a quarterly or monthly visit.

Once rams have been sheared, it is easier to tell if they are too fat or too thin. Feed is adjusted accordingly so they will be in shape to do the work expected of them. Leading up to mating season, they are given plenty of exercise. (See figure 1.)

Three weeks prebreeding

This is the start of flushing (providing the ewes increased nutrition to cause body weight gain and increased ovulation rate). We weigh all the ewes, for research purposes, but this isn't necessary in commercial operations. It is sufficient to weigh a random sample of approximately two dozen and mark them with chalk. The same ewes should be reweighed in two weeks. Weight changes of the sample ewes are a good estimate of average changes for the entire flock.

We supply selenium to the ewes. Much of Oregon is selenium-deficient, and reproduction is impaired in a selenium-deficient flock. Providing selenium will help to increase conception rate.

Ewes are injected subcutaneously with 250,000/37,000/25 I.U. of vitamin AD&E. Vitamin A is low in dry, mature hill pasture forage at this time, and adequate amounts of vitamins A&E are essential for proper condition of mucous membranes in the reproductive tract.

The ewes are dewormed. Nutrient absorption from the gut can be reduced by as much as 25 percent with heavy worm burdens, so deworming can effectively increase nutrient intake by a corresponding amount, even if the sheep remain on the same quality and quantity of feed.

The ewes are put onto flushing feed. We reserve sufficient pasture of good enough quality to flush and breed the flock. This is achieved by a carefully planned program of hay making, fertilization, clipping and irrigation. If good quality hill or irrigated pasture is not available, ewes may be fed approximately three pounds of good legume hay and one pound of grain. If pasture is available, however, it is generally more economical than harvested feeds.

A vasectomized teaser ram is put with the ewes. This induces an earlier beginning of estrous cycling. Since more ova are shed in later than in earlier estrous cycles, twinning rate is improved. It also tends to synchronize estrus and therefore lambing, which contributes to a more uniform lamb crop. Our use of vasectomized rams is elaborated upon under GENERAL PRACTICES.

One week prebreeding

We again deworm the ewes and rams. For most organisms, when an environment becomes severly overcrowded, the population starts dying off because of stress, lack of resources or the build-up of waste products. This is not always true with internal parasites. Instead, many larvae enter the gut wall and encyst (or "hibernate"), awaiting conditions more favorable for development and survival. Deworming often permits development of these encysted larvae. If large numbers of the quiescent larvae were present and if they were not destroyed by the initial deworming, the burden of adult parasites can be very high by two to three weeks after the earlier deworming. This second drenching will destroy most of them.

Aside from reducing competition for feed to ensure the desired flushing effect, double drenching also helps to clean up the pastures. Western Oregon winters are generally too mild to kill worm larvae on the pastures. But fortunately our hot, dry summers do the job rather nicely. When the sheep are dewormed, held in a barn or drylot for 24 hours to shed

unsterilized eggs, then put on pasture that has been without sheep for several weeks, and the operation is repeated two weeks later, you have eliminated about as many worms as you can.

We again weigh the entire ewe flock, but it would be sufficient for commercial producers to weigh only the two dozen ewes that were weighed previously. This weighing determines whether the ewes have been flushed adequately. If they are gaining at a rate that will produce an average gain of 10 pounds per head over the three week period, we consider them flushed. If they won't make the 10 pounds by the time the rams are to be turned in, we still have a week to provide increased supplemental feed. This is the reason that we use three weeks instead of the usual 14 to 17-day flushing period.

We then put the ewes on the best available pasture to continue flushing and worm control.

Start of breeding

Vasectomized rams are replaced with intact rams. The number to use per 100 ewes is about as variable as the number of sheep that a given area of pasture will support. On Western range, common practice is about three rams per 100 ewes. But remember that feed may be poor, the sheep are spread out and the ram has to travel considerable distances for both. Work in Australia and New Zealand has shown that during the normal breeding season and at high stocking rates (six ewes per acre) on open, easy country with relatively small pastures (up to 40 acres), one ram satisfactorily will service 150 to 180 ewes.

The number of rams to use depends on several variables:

Number of ewes. For 30 or fewer ewes, one semen tested, sexually active ram is enough. For more than 50 ewes, two rams are generally better, especially in case one becomes lame or infertile.

Type of pasture. For highly productive pastures not broken up by steep hills, gullies or canyons, fewer rams are needed. More rams are needed if pastures are steep, rough and unproductive.

Weather. For hot weather breeding, more rams are needed.

Age of rams. Mature rams can service more ewes than yearlings, which in turn can service more ewes than ram lambs. In addition to having lower stamina and fertility, there is evidence that ram lambs are less efficient in detecting estrus and more likely to devote too much attention to one ewe, ignoring others also in estrus.

Management practices. For hand mating or using rams only at night and allowing them to feed and rest during the day, fewer rams will be required than if they remain constantly with the ewes.

In general, the producer should use the smallest number of rams that will mate the ewes successfully. Suppose you are running five rams with 200 ewes on a 50 acre pasture. Cutting back to two rams could cut ram maintenance costs by more than one half, and you would be able to buy better rams without increasing cash outlay. Superior performance tested rams will sire superior, faster gaining and more profitable lambs.

For the first 10 days of the breeding season, we mark the rams' briskets with yellow grease. (The OSU "recipe" is plain white grease

mixed with enough yellow, red or green cement dying pigment or lamp black to provide a product with fairly intense color.) For the next two weeks, we use red grease, and for the remainder of our 40-day breeding season, we use green. The number of colors and the length of time each color is used should be fitted to the management system. Colors could as well be changed every time a third of the flock is marked rather than after a specific number of days. The objective is to allow identification of ewes as to the expected date of lambing. This will allow appropriate feeding schedules, based upon stage of gestation, and efficient movement of expectant ewes into the lambing barn, based upon predicted lambing date. And since only those ewes that are close to lambing will be in the lambing barn, fewer facilities are required and there is less crowding. Also, expensive supplemental feed can be conserved for ewes which can put it to best use. (See figure 2.)

Early fall

After the first fall rains have softened hooves, we trim all ewes' feet and start a foot bathing program. Footrot control is discussed in greater detail later in the circular.

Early winter (when the winter feeding season starts--for us about November 1)

We spray the ewes to eliminate keds (described in greater detail under GENERAL PRACTICES) and drench the ewes to control internal parasites. It doesn't make "cents" to share expensive harvested feeds with external or internal parasites. (See figure 3.)

Six weeks (at least) before the start of lambing

We tag *or* shear the ewes. There are advantages and disadvantages to both systems. Winter shearing allows physical changes of the ewes to be monitored more closely as lambing approaches; sheared ewes bring less moisture into the lambing pens and jugs; it is more sanitary for the newborn lambs; it saves the extra cost of tagging. Shorn ewes, however, require more feed to maintain their body temperature, and shelter must be available for the entire flock in case there is severe weather. We shear as many ewes as we have room to shelter. The rest are tagged, with shearing delayed until spring.

One month before lambing

Ewes are vaccinated for enterotoxemia (Clostridium perfringens Types C and D toxoid, Jensen-Salsbery Laboratories, Kansas City, MO). This stimulates antibody production so that when the lambs are born, colostrum will contain near maximum antibody levels to provide lambs with passive immunity against "overeating disease". This is particularly important for flocks in which there is high milk production from the ewes.

We separate ewes into groups based on expected time of lambing (according to raddle mark color, as discussed previously). The first group to lamb begins receiving grain or molasses to stimulate proper udder development and to prevent pregnancy toxemia. We don't, however, let the ewes get over fat; since pregnancy toxemia is a problem both in underfed and overfed ewes. If the ewes were winter sheared, their condition will be easier to judge. The second and third groups are started on grain or molasses feeding as they reach one month prelambing.

We administer selenium to all ewes at this time and again as they enter the lambing barn. This is prevention rather than treatment. Seventy percent of each lamb's birth weight will be gained in the next four weeks. If the ewe is selenium deficient, the injection given to the lamb the day it is born will be too late for maximum benefit. But if the ewe is treated now, it will contribute toward a healthy lamb at birth that won't need the first-day injection. Selenium is not stored in the ewe for more than 30 days, though, necessitating the second injection as ewes come into the lambing barn.

At lambing time

We play a radio continuously in the lambing area and it is lighted 24 hours daily. This creates a background of noise and light, so the arrival of lambing crew or visitors does not disturb the expectant ewes.

The ewe is left in the maternity pen until we are sure she is through lambing; the ewe and her lambs are then moved to a jug. Moving her between the birth of a first and second lamb could upset her maternal behavior or contribute to dystocia by moving the fetus out of position for normal delivery. Also, if she finishes giving birth before being transferred to the jug, the jugs stay drier and more sanitary.

Iodine is applied to the lamb's navel. We place a small baby food jar half full of seven percent tincture of iodine over the navel cord and then press it against the stomach. The lamb and jar are then turned upside down, and the job is done. Spraying with iodine doesn't do the job nearly as well.

The ewe's teats are stripped to make sure the waxy plugs are removed and that milk is flowing. The udder is checked to make sure it is soft and pliable. If it is hard, hot or cold, or if the milk is stringy or chunky, we start treating the ewe for mastitis. We use 10 cc penicillin/streptomycin and a sulfa bolus when the problem is discovered, then five cc of the combined antibiotic and a sulfa bolus every 24 hours for a total of five days.

Weak lambs are helped to suckle until they are satisfied, and we ensure that strong lambs know where the milk comes from.

Everyone on the lambing crew is responsible for all the above steps. When mastitis is observed, it is treated and a green chalk mark is put on the ewe's back. This ensures that while the ewe is in the jug, her lambs will be watched more closely. Then when the ewe leaves the jug, she goes to a separate pen for mastitic ewes. Each day at 4 pm, the person on watch gives each of these ewes the required medication and another chalk mark. When a ewe has five chalk marks, her treatment is over. Each ewe with mastitis gets the full treatment. They are all in one place, so they can be observed closely. Empty lambs' bellies can easily be filled, and if a ewe's milk supply is inadequate by the end of treatment, one or both of her lambs can be orphaned.

Ewes are given water but no feed for the first 12 hours after lambing. For the remainder of their time in the lambing jugs, they receive two pounds per day of a 3/8 inch 25 percent barley, 70 percent forage, 5 percent molasses pellet. The ewe needs water at this time but too much feed would only encourage excess milk flow and mastitis in the ewe and scours in the lamb. The ewe is

Figure 1. Hampshire rams sheared and in good condition for the mating season.

Figure 2. A raddle-marked ewe.

Figure 3. Fall spraying to control external parasites.

Figure 4. Crimping the lower eyelid with hemostats to treat entropion.

Figure 5. For docking, the elastrator band is placed where skin folds join the tail.

Figure 6. Lambs are paint-branded with their mother's identification number.

worked up to full feed gradually. In addition to *ad libitum* access to good quality grass/clover hay, she is given 1/4, 1/2 and 3/4 pound of grain the first, second and third days after leaving the lambing jug. After that she receives the free choice hay and 3/4 pound of grain until being turned out on pasture.

<u>After the lamb is dry and at least six hours before turning out of the jug (six to 18 hours old)</u>

The lamb is weighed (for the dam's production record and lamb's performance record) and we make sure it has been suckling.

We identify the lamb using circular metal ear tags. The first of four digits is the year code (1978=8). The other three are the lamb's individual identification. Since all our sheep are involved in teaching and research programs for which individual identification is critical, we also tattoo the ID number in both ears.

The lamb is injected subcutaneously with 250,000/37,000/25 I.U. vitamin AD&E, to aid in preventing pneumonia and white muscle disease.

We check the lamb for entropion. If it is present, we roll the affected lids out and crimp them from corner to corner with a pair of hemostats. The side by side crimps are perpendicular to the edge of the lid and about 1/4 inch long. This method is effective except in the most severe cases, in which it is necessary to cut through the eyelid. (This procedure should be demonstrated to you by someone experienced in its use.) Our crimping procedure has the advantage of being bloodless, which eliminates lids being stuck shut by dried blood. (See figure 4.)

We dock and castrate the lamb using elastrator bands for both jobs. It is fast, clean and, after about 20 minutes, painless. For castration, the lamb is placed with its back resting between the seated herdsman's legs, tail hanging over his knees. The elastrator band is opened as far as possible and placed over the scrotum (with care not to touch the scrotum as this will cause the lamb to retract the testicles). The elastrator band is pressed into the belly to force the testicles into the scrotum; the band is then allowed to contract and close.

Prior to docking, a band of iodine is placed on the underside of the tail where the folds of skin join the tail (a hand lotion squeeze bottle with flip-open, flip-shut top works well). This provides a disinfected surface where the rubber band will constrict the tail. Another important thing is the timing. If docking is done when lambs are six to 18 hours old, the lamb usually hasn't had its first bowel movement, and its tail is clean. If he has and it isn't, we clean the tail before putting the iodine on. We have never had a case of tetanus using these procedures. (See figure 5.)

The tail stub might be a little longer this way than with other procedures, but there are advantages to this. If the lamb has any tendency to prolapse, this will reduce the actual incidence of it. We also have a big dog problem, and a large number of injuries resulting from dog attacks have been chewed rectums. With slightly longer tails, there is a good chance that the tail rather than the rectum will be damaged. Not only is the tail easier to repair; it is more expendable to the sheep.

We foot trim the ewes. If they are foot-trimmed now, it probably

won't be necessary to trim again until after weaning. This saves time and reduces stress on the lambs, since they won't be separated from their mothers for foot trimming later in lactation. Usually if there is enough labor to keep the lambing going smoothly, there will be some slack time when the crew could use something like this to do.

Twenty-four hours after lambing

We move ewes and lambs out of the jugs to grouping pens after checking to see that lambs have been nursing and that both halves of the udder are being used. We also check at this time for subclinical mastitis using the California Mastitis Test (Dairy Research Products, Inc., Brunswick, MA). Mastitis is more common in sheep than most people suppose. About one in 12 ewes in the OSU flocks has slight traces of mastitis. The test is fast and economical. We milk three or four squirts of milk into the test paddle, add an equal volume of reagent, swirl until mixed, determine whether the reaction is positive or negative, and treat accordingly. To the touch, the udder of a ewe with subclinical mastitis will appear normal. But at weaning, her lamb or lambs will not be as healthy and heavy as they should have been. The next year, the ewe will likely have a clinical case of mastitis, or at least a hard spot in the udder that will lower milk production for the rest of her life.

Lambs are paint branded with their dam's identification number. Ewes with singles are paint branded on the dock while ewes with twins are left unmarked. If one of a set of twins dies, the mother can be given the paint brand indicating she now has a single lamb. Then if a sick individual, ewe or lamb, must be separated from the remainder of the flock, we know from presence or absence of a brand on the ewe how many lambs to look for. (See figure 6.)

Ewes with singles go to pens of about six ewes and their lambs; ewes with twins are grouped in pens of four. Pens are combined every 24 hours until we run out of room or until lambs are four to six days old, whichever comes first. Ideally the older ewes, yearlings and ewe lambs should be handled separately during this grouping process so younger ewes can be given more feed and attention.

As jugs are emptied, we clean them and add lime. They are then left unbedded, to promote drying, until needed for the next ewe and lambs.

Four to six days after lambing or as the barn is filled

Lambs are separated from the ewes, and ewes are footbathed and dewormed. The pastures should be clean of footrot organisms and parasite larvae at this time, so this is an attempt to rid the ewes of parasites and footrot organisms they might have picked up while in the damp lambing pens.

Problem ewes are marked for culling following weaning (bad udders, prolapses, etc.).

Lambs are vaccinated for sore mouth and enterotoxemia. Since sore mouth is transmissable to humans and since it can be contracted from contact with the vaccine, we use rubber gloves and extreme care in this operation.

Ewes and lambs are reunited and turned out to pasture.

Three to four weeks after the last ewes and lambs are back on pasture

Ewes and lambs are dewormed.

Selenium is administered to the lambs and they are given a growth stimulating implant (Ralgro, IMC Chemical Group, Inc., Terre Haute, IN). This increases gain and feed efficiency and results in a higher percentage of lambs ready for slaughter at weaning.

Lambs are given their second enterotoxemia vaccination.

The lambs are weighed. This is done for research purposes. We would not recommend it to commercial producers.

Shearing (if ewes were not sheared before lambing)

The date of shearing is somewhat arbitrary. We have chosen shearing dates to coincide with OSU sponsored shearing schools. The shorn ewes are dusted for external parasites if needed.

Weaning (at approximately 120 days of age)

The ewes are sorted from their lambs. Ewes are foot-trimmed and footbathed and put on the poorest available pasture. Once they are dried off, and until the next flushing, the ewes' job has changed from lamb producer to pasture improver.

The lambs are dewormed and tagged as needed to prevent fly strike. Even with a low parasite burden, lambs grazing lush pastures will often get wet and dirty enough to attract flies.

Lambs that are not within six weeks of marketing are sheared.

Selenium is administered to lambs now and every four weeks until they are marketed.

The lambs are weighed, for the ewe's production records and to aid in selecting replacement ewe lambs.

The lambs are marketed as they reach the appropriate weight and grade.

GENERAL PRACTICES

Internal parasite control

We alternate between two oral drench anthelmintics (Tramisol, American Cyanamid Company, Princeton, NJ and Loxon, Cooper, U.S.A., Inc., Chicago, IL) at successive dewormings for the flock. The theory behind this system is that the internal parasite populations have less opportunity to develop resistance to either drench, and each deworming should therefore be more effective. Besides drenching, according to the schedule on our MANAGEMENT CALENDAR, we add drench grade phenothiazine at a rate of one pound per 12 pounds of the 3 parts of salt to 1 part of bone meal (by weight) mix that is always available to the sheep. This suppresses egg production by the worms so that fewer larvae are deposited on the pasture to spread the infection.

External parasite control

If the sheep have external parasites, dusting after shearing (Cooper-Tox Extra, Cooper U.S.A., Inc., Chicago, IL) and spraying in the fall (CORAL, Chemagro Company, Kansas City, MO) should bring the problem under control. Once the parasites largely have been eliminated, an effective control program is to spray in the fall, skip the dusting at shearing time and the next fall spraying, dust at the next

shearing, skip the next spraying and dusting, spray the next fall, etc. Then continue this sequence for as long as external parasites are not a problem.

Footrot control

At each foot trimming, we trim quite close so that the ewe is walking on the pad of each sole and not on the hoof wall. Ewes with an active infection receive five cc of combination antibiotic intramuscularly and are marked with chalk. The entire flock is footbathed and held on dry ground or in a dry barn for 24 hours, then footbathed again and turned onto clean pasture. Chalk-marked ewes are checked in seven to 10 days and retrimmed and retreated as needed. Normally, infected sheep should be isolated; but since our experiments require that we treat all ewes equally, we do as above.

Our footbath solution is one quart of 37 percent formalin to five gallons of water and the package instruction amount of a water wetting agent (available from agricultural chemical suppliers). The sheep are run through a 16 foot trough in the cutting chute two or three times. This gives better penetration and is very little more work than just one bathing.

During the rainy season, ewes are footbathed every time they are moved to a new pasture or every 10 days, whichever comes first, but not more than twice in 10 days. During the dry season, every time we change pasture, we footbathe. Lambs are always footbathed with the ewes. Although the first time through the bath with lambs is slow, the lambs quickly learn that new grass is on the other side of the footbath. This experience with herding and with chutes and cutting gates also will make loading of lambs for transport to market much, much easier, and the ewes will work in the chute better for sorting, drenching, and other operations.

Purchased sheep

Any sheep introduced from outside the flock should be isolated for 30 days to make sure they are not coming down with a disease that will infect the remainder of the flock. This screens only for diseases to which the new arrival has recently been exposed and which have a short incubation period, such as footrot. For less obvious diseases, such as vibrio which affects the ewe only at lambing, blood samples can be collected for testing by the Veterinary Diagnostic Laboratory at Oregon State University.

Use of vasectomized teaser rams

We find teaser rams useful for several purposes. Joining one teaser per 200 ewes at the start of flushing ensures that almost all ewes are cycling when the intact rams are put in. This enables us to breed a bit earlier, have a higher incidence of twins, and have a shorter breeding and lambing season. When ewes are not teased prior to mating, the lambing season is extended but with relatively few lambs born per day during the last several days of the season. Lambing is concentrated more effectively among teased ewes, as illustrated by figure 7.

After the teasers come out of the main flock and are replaced by intact rams, they are put with the replacement ewe lambs to stimulate the onset of estrus and to allow most of them to be mated in one 17 day cycle after the main flock has been bred.

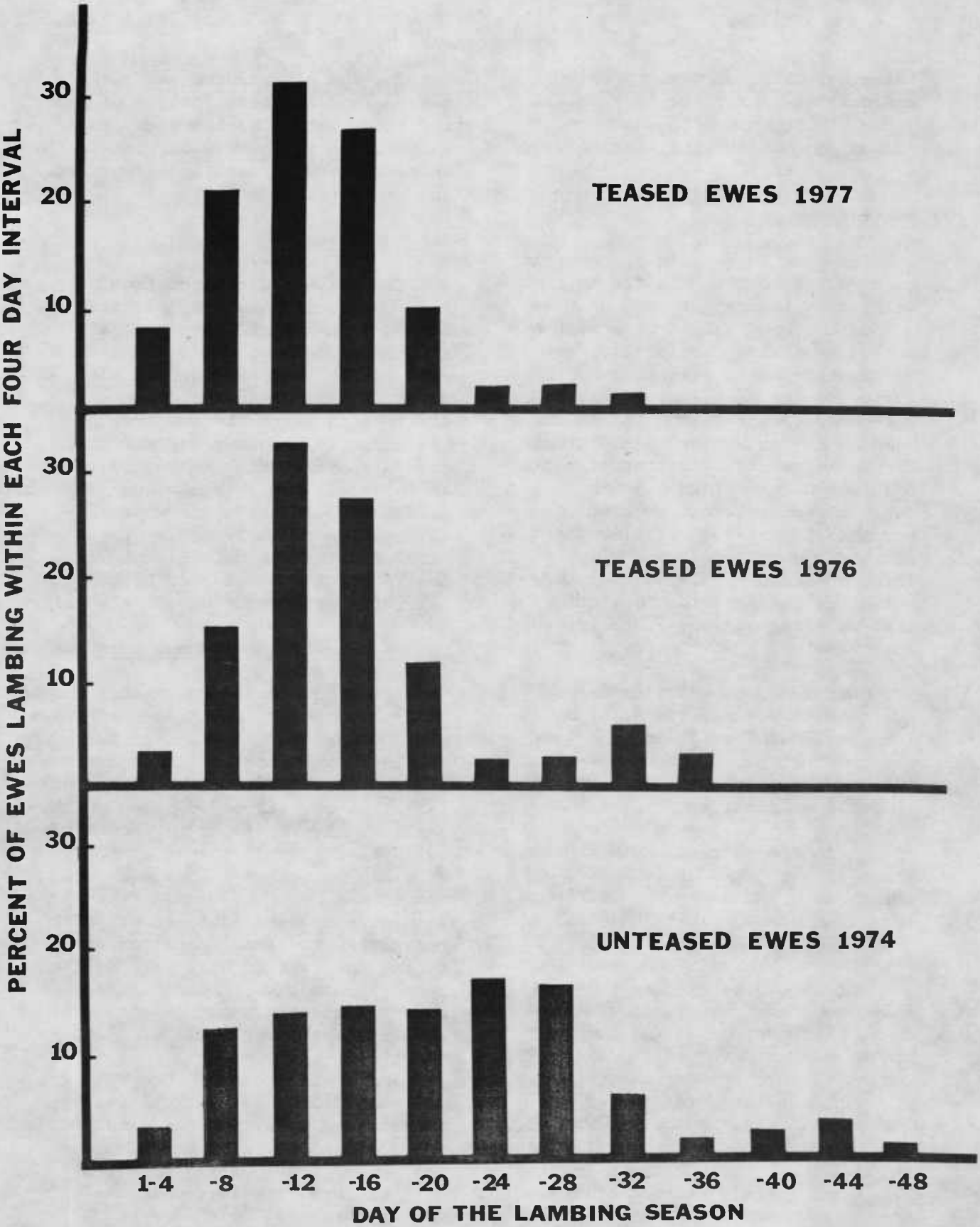

Figure 7. The effect of using vasectomized teaser rams (1976 and 1977) *vs.* not using vasectomized rams (1974) on distribution of ewes lambing within the lambing season.

We have considered running vasectomized rams marked with black grease on the brisket with the ewe flock *after* our forty day breeding season. Ewes not marked with any color and ewes marked with black grease probably would not be pregnant. They could be culled before incurring the expense of winter feed and care. Since our experimental protocol does not allow this kind of culling, we have not used this practice.

Feeding of ewes during mating and early gestation

Research at other experiment stations has shown that, if ewes are in drylot, feeding frequency can be reduced with beneficial results. Instead of daily or twice daily, ewes may be fed only twice each week. This works best with chopped hay, mixed feed, pellets or other feeds that cannot easily be sorted through and picked over by the sheep. Less frequent feeding reduces the number of chronically overweight and underweight ewes. Instead of aggressive ewes getting more than their share once or twice a day and less aggressive ewes getting less than their share, both types are allowed to eat their fill. Then they both go hungry until the next feeding. No detrimental effects to ewe health, to twinning rate, or to health and vigor of newborn lambs from feeding only twice per week during the first 12 weeks of gestation have been reported. This practice is not recommended, however, for late gestation, when there is considerable growth of the fetus, or during lactation.

Prevention and treatment of baby lamb pneumonia

Newborn lambs are injected with vitamins AD&E to reduce predisposition or susceptibility to pneumonia.

We also sacrifice a few of the first lambs contracting pneumonia. Organisms causing the disease are then cultured by the OSU Veterinary Diagnostic Laboratory. Antibiotic sensitivity tests are run on the cultures to identify which antibiotic can be used most effectively to treat future cases.

We drench affected lambs four times daily with three or four drops of a saturated solution of potassium iodide. It is an expectorant which relieves the congestion caused by pneumonia. It is not enough to kill the disease-causing organisms with the proper antibiotic if the lamb still dies from choking or drowning from excessive lung congestion. Recovery rate of lambs with pneumonia has improved markedly since we started this practice.

GENERAL CONCLUSIONS

Every sheep enterprise is different. About the only constant is the production of a very versatile animal for profit.

Each enterprise has different resources--land, labor, capital, management ability, feed source and availability, and production potential of the sheep being raised. It is the job of the manager to combine these resources into the most efficient production system possible.

What works for one enterprise may not work, or may not be needed, for another.

For most commercial operations, services of a veterinarian are too costly for the treatment of individual sick sheep. Rather, the producer should consider retaining a

veterinarian as a consultant to *maintain* flock health and to *prevent* disease problems. Before choosing a veterinarian, several should be visited. Your management system, your current flock productivity, your goals and his fee should be frankly discussed. This approach will prevent misunderstandings and will permit selection of the individual best qualified to help you achieve your goals.

A preventive health program which includes vaccination against the most prevalent and potentially devastating diseases in your area will pay handsome dividends. Be alert also, however, to new diseases and deficiencies, particularly those with potentially disastrous effects.

Keep abreast of developments. Times are changing; you probably aren't living in a camp wagon following a band of sheep through the mountains. Maybe you shouldn't manage the sheep as if they were in front of a camp wagon.

A few dead lambs that should have gone to market will pay for a lot of books. Read everything you can, but evaluate it critically. The fact that something is in print doesn't guarantee its accuracy or authenticity. Your county or state livestock extension personnel and your veterinarian can help evaluate validity of questionable statements. These are a few references that we have found especially useful.

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