

EVALUATION OF FLOCK PRODUCTION

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As sheep producers approach the start of another breeding season, they should take time to evaluate flock performance from the previous year. This will allow them to see where improvements might be made in their production calendars to improve production efficiencies. Many sheep producers have counts on their flock by month and this is the basic information that can be converted to percentages or averages to be used in the evaluation of flock production.

Some of the calculations that can be used are:

$$\text{Percent of ewes exposed that lamb} = \frac{\text{\# of ewes that lambed}}{\text{\# of ewes turned to rams}} \times 100$$

$$\text{Percent of ewes that settle on first cycle} = \frac{\text{\# of ewes lambing in 20 days}}{\text{\# of ewes turned to rams}} \times 100$$

$$\text{Percent of lamb crop born of ewes exposed} = \frac{\text{\# of lambs born}}{\text{\# of ewes turned to rams}} \times 100$$

$$\text{Percent lamb crop born of ewes lambing} = \frac{\text{\# of lambs born}}{\text{total \# of ewes lambing}} \times 100$$



$$\text{Percent of lamb mortality from birth to weaning} = \frac{\text{\# of lambs that died}}{\text{\# of lambs born}} \times 100$$

$$\text{Average weaning weight} = \frac{\text{total pounds of lamb weaned}}{\text{\# of lambs weaned}}$$

** Note: Number and pounds of lambs weaned could just as well be marketed, but in either case include replacement lambs.*

Each of these calculations has an impact on production efficiency. Let's take a look at the first calculation:

Percent of ewes exposed that lamb

If you calculate this statistic and come up with a value of 96 to 100 percent for your flock, classify this as "excellent." Be honest with yourself when making these

calculations and include the total number of ewes that were present in the block when the rams were turned with the ewes, not the number present at lambing time.

Rate your flock as “good,” if you fall in the 90 to 95 percent level and anything less than 90 percent as “poor.” If your flock falls into the low good to poor category, prebreeding and breeding management practices should be evaluated.

One of the first things to consider is your rams. What do you know with regards to their fertility and aggressiveness during breeding? Consider a complete breeding soundness examination and ELISA test for epididymitis in the rams of your flock. Research conducted at Colorado State University indicates that fewer open ewes at the end of the lambing and a smaller ram to ewe ratio is needed when highly fertile rams are used.

Rams need to be in proper body condition (not too thin, not too fat), free of parasites and sound on their feet and legs at the start of the breeding season. The ram is expected to get as many ewes bred in the early part of the breeding season, so give him every advantage to make this happen. Also, do not mix ram lambs with mature rams and expect to get good results.

Switching next to the ewe flock, make certain your ewes are also in a healthy, thrifty condition prior to and during breeding. Flushing and body condition at breeding influences number of lambs born, but it also may have an effect on embryo survival. Consider when you expose your ewe flock to the rams. Although having lambs born early in the lambing season might be beneficial it is of little value if some of the ewes in your flock are in anestrus for the majority of your breeding season. If breeding ewe lambs or yearlings for the first time, breed them separately from the older ewes. If you breed ewes to lamb at one year of age make sure they have enough

time to recover from the stress of raising lambs prior to the start of the next breeding season.

Diseases causing abortions can have an effect on the number of ewes lambing of those exposed. Do you vaccinate for vibrionic and enzootic abortions? Talk with your veterinarian to plan a preventive health program against abortion losses, as well as other health problems in your flock.

By now it is apparent that a number of factors influence the number of ewes that lamb of those exposed. Likewise, the other calculations mentioned at the start of this article respond to sound management practices to increase production efficiency.

Percent of Ewes that Settle on First Cycle

This measure of performance is determined by dividing the number of ewes lambing the first 20 days of the lambing season by the number of ewes exposed. In most cases, it is desirable to have this value as close to 100% as possible provided you have the facilities and labor to lamb that many ewes over this period of time. Provided you can handle the ewes, a value of 70% or greater would be something to aim at in this category. Achieving a high percentage of ewes that lamb over the shortest possible time span allows for more uniform and potentially heavier lambs at weaning. Also, the lambing season does not get as extended and extra labor can be justified when a high percentage of ewes lamb the first three weeks of the lambing period.

If low values are observed in this category, consider first the date that you turn the rams with the ewes. Are the ewes cycling at this time or are they still in the anestrus period? Taking advantage of the “ram effect” by the use of teaser rams prior to the start of the normal breeding season can help to overcome this problem and result in a greater percentage of ewes that

lamb the first part of the lambing season. Research has shown that a greater response to the ram effect occurs when sexually aggressive rams are selected to be used as teaser rams.

Other factors to consider when trying to improve on this measure of performance include nutrition and body condition score of the ewe flock. Ewes on a low plan of nutrition and low body condition score will begin cycling later in the season than those on higher levels of nutrition.

Finally, do not forget to consider the ram battery that you are using. Observe the rams to see if they are covering the ewes and showing any interest in the ewes. One of the best ways to determine if the rams are working and the ewes are cycling is through the use of a marking harness. By changing colors every 17 days, you are also able to determine if any ewes are returning to estrus and can alert you to any possible ram fertility problems. Also, maintain rams in a proper body condition prior to breeding and avoid fat rams.

Percent of Lamb Crop Born of Ewes Exposed and Ewes Lambing

These are two very important measures of performance and production efficiency. It is impossible to give an ideal level that a producer should aim for because there is no optimum level that is suited for every operation. What needs to be determined is the optimum level of performance that fits the resources that you have available on your farm or ranch. Once you know this, then manage to improve on this measure.

If you have a high number of open ewes at lambing, then your level of performance for the percent of lamb crop born of ewes exposed is going to be low. Therefore, efforts need to be devoted to getting this level into an acceptable range and these were discussed previously. Once you have a handle on this, the two measures (lambs

born per ewe lambing and ewe exposed) can be looked at together.

The heritability for lambing rate is low, therefore it is responsive to management. Selection based on lambing rate should still be a consideration and, if practiced for a period of time, should allow you to make some progress albeit slow. Use of breeds noted for prolificacy such as the Finn sheep will help increase percent lamb crop born. Research indicates that for every percent Finn blood that you have in your ewes you increase lambing rate by a comparable level. Thus, quarter Finn ewes increase lambing rate by 25%.

From the management standpoint there are many things to consider when trying to improve on this measure of performance. The first relates to that discussed previously with regard to when you begin the breeding season. If you expose ewes early in the breeding season for an early lamb crop you have to expect a lower lambing rate due to a lower ovulation rate at this time. Ewes naturally achieve maximum ovulation rate at the midpoint of the breeding season with lowered levels at the beginning and end. Thus, if your resources allow, switching the start of your breeding season might allow for an increased percentage of lamb crop born. In this situation consider all aspects such as price trends for lambs and feed resources before making any changes in your operation.

Flushing and body condition score at mating can increase the number of lambs born per ewe lambing and ewe exposed. Flushing can be expected to increase number of lambs born per ewe by 5 to 20%. Light weight ewes in poor body condition are more responsive to flushing than heavy ewes in good body condition. This doesn't mean that ewes should be taken down in body weight to be flushed. If this is done, lamb production will suffer due to the negative effect of low body weight at mating on the

number of lambs born. Ewes that have gradually increased in body weight from weaning to flushing and are at a 3 to 3 1/2 condition score when flushed will generally produce more lambs than ewes that have lost weight and are at a 1 1/2 to 2 condition score when flushed.

Other factors to consider include use of fertility tested rams and maintaining a preventative block health program to insure optimum rates for lambs born per ewe exposed and ewe lambing.

Percent Lamb Mortality from Birth to Weaning

This measure of performance is determined by dividing the number of lambs that died by the number of lambs born. Ideally all producers should attempt to wean every lamb that is born alive. The most critical time for the lamb is from birth to three days of age. If losses are minimized during this time, overall mortality will be markedly reduced. Ewe nutrition programs prior to lambing are important to the health and vigor of lambs at birth. Thus, having ewes in a 3.5-4.0 body condition score at lambing is the first consideration in the reduction of lamb mortality.

Spending time with the ewes at lambing is very important in saving lambs. The increased number of lambs that are saved will more than justify the time devoted to the ewe flock during the lambing season. One of the primary causes for lamb losses at birth is related to hypothermia (chilling). The young lamb's mechanism for controlling body temperature is not fully functional at birth. If the animal becomes chilled at birth, it may become too weak to suckle and eventually will die of starvation. Being on hand at lambing to insure the lambs do not become chilled and that they nurse the ewe early in life becomes key for the shepherd in preventing lamb mortality.

This points out the importance of stripping out each of the ewes teats to check for milk and making certain the lamb gets that first sip of milk. Lambs that are too weak to nurse should be given colostrum using a stomach tube feeder. Seeing that lambs get a fill of colostrum early in life is essential for minimizing death loss.

After the lambs are going, they should be watched closely for signs of disease and starvation. The largest percentage of lamb losses from birth to weaning occurs the first week of the lamb's life. Starvation is one of the leading causes of death. This may occur due to the inability of the ewe to produce sufficient milk for the number of lambs she is raising or mismothering. Mismothering can be dealt with by insuring that lambs are properly handled from the lambing pens and into mixing pens to insure proper bonding before going to large groups. If ewes do not have sufficient quantities of milk, graft the lamb to another ewe or raise as an orphan. Ewes that do not have sufficient milk production should be identified for culling, provided your nutrition program is adequate.

There are many diseases that can take their toll on the lamb crop from birth to weaning. Having a preventative disease program is the best means to keep losses at a minimum. This includes such things as vaccination programs for the ewes and lambs to minimize losses from enterotoxemia type C&D and tetanus, identifying specific problems from previous lamb crops, and remedying the situation through changes in management and health programs. It is advisable to work with your local veterinarian for a total flock health program.

Eliminate the things that might result in losses each year from the accidental category. This could be the so-called "booby trap" syndrome. Items that fall on lambs and crush them or holes that catch

heads are just a few examples of this category that take a small but unnecessary toll each year.

Average Weaning Weight

This statistic is determined by dividing the total pounds of lamb weaned by the number of lambs weaned. It could also be the pounds of lamb marketed, but in either case include replacement lambs as part of this statistic. Increasing the growth rate of lambs will allow marketing lambs at an earlier age or marketing heavier lambs at an earlier age.

A factor that has great influence on weaning weight of lambs is milk production of the ewe. Nutrition of the ewe flock during lactation becomes an important factor in average weaning weight. Providing the environment for ewes to achieve their genetic potential with regards to milk production starts with a sound nutritional program during late gestation and into lactation.

Therefore, when making flock selections for growth rate make certain that records have been adjusted for all non-genetic influences such as rearing code (singles,

twins, triplets) and age of ewe. Once adjustments are made, selection of terminal sires on the basis of growth will help to increase flock performance in this category. One thing to keep in mind when making selections of terminal sires is “not how big a ram gets, but rather how fast a ram gets big.” This is important because we need to be selecting rams that are going to sire lambs that will have a desirable yield grade and quality grade and still have a carcass that is in the correct weight category. This also needs to be done within the constraints of resources (feed) that we have available in an economical manner.

In summary, all the factors of flock productivity that I have discussed are in some way or other related. Thus, it is not totally possible to concentrate on one without having an effect on another. All factors influence the production efficiency of your operation. Ideal levels for each parameter vary from flock to flock. As a producer, carefully evaluate each statistic for your flock to find the value that is optimal for your flock based on the resources available.

Additional Resources

Body Condition Scoring of Sheep. James Thompson and Howard Meyer. Oregon State University Department of Animal Sciences. <http://oregonstate.edu/dept/animal-sciences/bcs.htm>

Flushing Ewes. Shelby Filley. Oregon State University Extension Service. <http://extension.oregonstate.edu/douglas/L&F/pdf/2007/dcclf601.pdf>

Nutrition for Lambing. Shelby Filley. Oregon State University Extension Service. <http://extension.oregonstate.edu/douglas/L&F/pdf/NutrForLambing.pdf>

Culling Ewes. Shelby Filley. Oregon State University Extension Service. <http://extension.oregonstate.edu/douglas/L&F/pdf/2007/dcclf602.pdf>

Sheep Production Guide. James Thompson and Howard Meyer. Oregon State University Department of Animal Sciences. <http://extension.oregonstate.edu/catalog/pdf/em/em8916-e.pdf>