



Increasing Your Lamb Crop Series

Breeding Ewe Lambs at 7-9 Months

Introduction

A well-planned ewe-lamb breeding program will increase overall flock lamb production. Breeding ewe lambs at 7 to 9 months of age is common among farm-flock and small-pasture sheep operations. However, for range-based wool-type operations, producers are more likely to wait until ewes are yearlings before breeding. This is understandable given the many variables and extensiveness of rangeland systems that make it challenging to answer the question, “Can a ewe lamb breeding program work?” We will consider several factors about ewe lamb breeding programs to help producers to answer this question.

Improve flocks by breeding 7- to 9-month-old ewes

Many assume that an extra year of production is the main benefit of breeding ewe lambs. However, this is more of a distraction from the real value, which is the “early-puberty ewe.” Consider this study that Dr. Clarence Hulet and colleagues (1969) conducted at the US Sheep Experiment Station (Sheep Station) in the 1960s. In this study, wool-type ewes that displayed standing heat as lambs weaned nearly 10% more weight of lamb over their lifetime compared with ewes that did not display heat as ewe lambs. It is very important to note that all ewes in this study lambed for the first time as 2-year-olds; no ewes were allowed to lamb as 1-year-olds. We learned from this study that an early-puberty ewe flock will have greater lifetime productivity whether or not ewes are bred as lambs or yearlings. But, where does the increased production come from? Based on the evidence, early-puberty ewes seem to be more likely to twin throughout their productive life.

What about the longevity of early-puberty ewes? Does lambing for the first time as a 1-year-old affect a ewe’s productive years in the flock? When studying the early work of Briggs (1936), Spencer et al. (1942), and Hohenboken et al. (1977), we find the culling rate among ewes greater than 5-years-old appears to be slightly higher for ewes that lambed for the first time as 1-year-olds. Is this something that we should worry about? It depends on the proportion of the flock that is older than 5 years. For range flocks, “old” ewes account for a very small percentage of the flock. Therefore, any production improvement achieved for the majority of the flock (in this case, younger ewes) would overshadow the slight negative effects found in the smaller portion of the flock.

This fact sheet builds on Dr. Dave Thomas’ (2002) “**Should we breed ewe lambs?**”, which can be accessed at www.ansci.wisc.edu/extension-new%20copy/sheep/etn_01/feb/ewelambs.doc. This is a must-read for a more in-depth and thorough evaluation of ewe-lamb breeding and management. In addition to his own discussion, Dr. Thomas highlights important pioneering recommendations for ewe-lamb breeding management of Dr. William Hohenboken and colleagues (1978).

Moving flock toward an early-puberty ewe base

Record and data management. The success of any ewe lamb breeding program is highly dependent upon tracking ewes over their lifetime. Record keeping is extremely important. Fortunately, radio frequency identification (RFID) technology, hand-held computers, and data-management systems for sheep producers are functional, simple, and most importantly, affordable. Please take time to investigate what is out there. As burdensome as data management may sound, it will be worth it, especially when transitioning from a yearling to a ewe-lamb breeding program.

Genetics. The heritability of lambing as a 1-year-old is about 0.18 (Kirschten et al., 2013). Not too great, but similar to the heritability of weaning weight and something we can progressively capitalize upon. Therefore, we must give considerable thought to the rams we are buying. Foremost, look for rams with National Sheep Improvement Program (NSIP) data. Currently, estimated breeding values (EBVs) that directly address early puberty in ewes are not available. But, there are a few EBVs that can possibly contribute. For example, number of lambs born (NLB) and scrotal circumference (SC) are estimates that focus

Continued on next page

► Moving flock toward an early-puberty ewe base (cont.)

on prolificacy and “improving reproductive performance in ewe lambs...via desirable effects on rate of sexual maturation” (Notter, 2011). For more information on EBVs, please take time to read “The NSIP EBVs” by Dave Notter, Ph.D., which can be accessed on the NSIP website (www.NSIP.org).

If it is not practical to use NSIP rams (availability is limited in the breed or area), focus on how ewes are managed in the flock where the rams originate. For example, does the flock have a ewe lamb breeding program and a high twinning rate? Also, did the ram’s dam give birth as a ewe lamb and is the ram a twin? Attention to these elements of the breeding program can help your goal of earlier lambing, more productive ewes.

An EBV that directly addresses lambing at one year of age is not far away. Recently, Kirschten et al. (2013) developed and tested a lambing percentage EBV for Sheep Station Targhee rams. When using “high-lambing-percentage” EBV rams to develop a line of Targhee ewes that are capable of lambing as 1-year-olds, Kirschten reported a 20% numerical increase in pregnant ewe lambs compared with an unselected Targhee control flock. These results indicated a reasonable value for further development of EBVs to increase lambing percentage of ewe lambs.

Although the right ram is very important, producers should not forget about the ewes in their flock. They may be close to having ewes that are capable of breeding as ewe lambs. We learned from Hulet et al. (1969) that early-puberty ewes seemed to be more likely to twin each year. So, are producers selecting for ewes that are from twin or better litters? Most likely they are. This, by no means, is a guarantee that they are selecting for early-puberty ewes, but it is one step forward in incorporating traits associated with early puberty. The most definitive way to



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identify early-puberty ewes is to expose ewe lambs to rams and focus retention efforts on those that become pregnant.

The question of the big ewe lamb.

Ewes must achieve an appropriate age and body weight to become pubertal. Therefore, human nature pushes us towards selecting for the biggest ewe lambs at weaning. However, this method does not guarantee that producers will identify ewes that will be pubertal at

7 to 9 months of age. Kirschten et al. (2015) found that age-adjusted weaning weight of Sheep Station Targhee ewe lambs only explained 3% of the phenotypic variation for lambing rate among ewes bred as ewe lambs. Furthermore, if we select the biggest ewe lamb without regard to the lamb’s actual age and type of birth, we may be biasing our selection towards lambs that were born first and/or from single births. Based on the Genetics discussion, this would be contrary to selecting the “right” ewe. It is important to focus on age-adjusted weaning weights when selecting ewe lambs, but *only when other traits associated with high-producing ewes are considered.*

Good nutrition and steady growth. Level of nutrition should be targeted towards maintaining a gain of at least 0.4 lbs./day before and throughout breeding. Thomas (2002) suggested gains of around 0.5 lbs./day. Keep in mind that breed, weight and age at weaning, and production environment influences targeted daily gain. Regardless of the circumstance, the level of nutrition, which drives gain, can have a profound effect on the number of ewe lambs that become pubertal at 7 to 9 months of age. For example, nutrition provided at levels to achieve either 0.22 or 0.42 lbs./day gain resulted in the same percentage (~45%) of Sheep Station Targhee ewe lambs that were pubertal at 8-months-old (Figure 1). However, at one month earlier, nearly twice as many ewes gaining 0.42 lbs./day were pubertal compared with ewes gaining 0.22 lbs./day. The take-home message is that adequate nutrition is essential to ensure ewes are gaining consistently before, during, and after breeding.

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Lamb Resource Center



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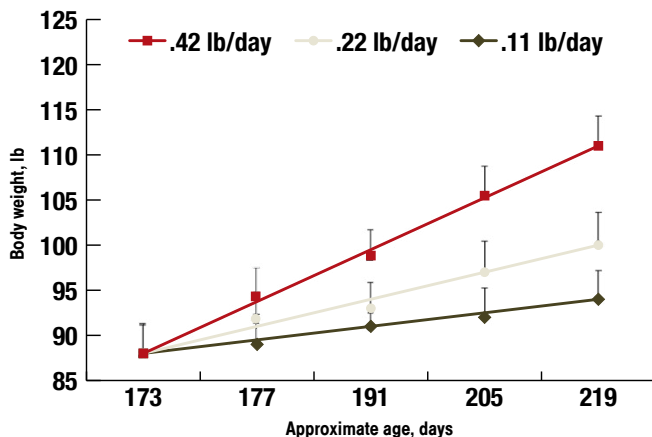
Breeding 7- to 9-month-old ewes

HIGHLIGHTS FOR CONSIDERATION

- Consider retaining more replacement ewes than usual. How many will depend on if producers are able to cull soon after breeding, which will require access to ultrasound services, or if they are culling after the first lambing at weaning. Consider retaining lambs from multiple-birth litters, from high-production dams and that have a good age-adjusted weaning weight.
- Commit to a solid growth program with sufficient nutrition to achieve steady gains of better than 0.4 lbs./day before and during breeding.
- Do not mix mature ewes with ewe lambs during breeding. Experience favors the mature ewes, which can dominate the rams' efforts. As a classic example, average fertility in Sheep Station ewe lambs mixed with mature ewes vs. ewe lambs only during breeding was 43% vs. 70% for Rambouillet, and 37% vs. 45% for Targhee, respectively.
- Maintain a steady nutrition program for ewe lambs after breeding. Whether provided as feed in a bunk or supplement on range, ewe lambs require additional nutrition to support growth and pregnancy. Milk production can be a problem in ewe lambs. Cheating on nutrition during breeding and pregnancy can result in a ewe being unable to support its offspring after lambing.
- Be ready to assist at lambing. Due to lack of experience, first-time "lambers," whether 1- or 2-year-olds, can be poor mothers. It is interesting to note that ewes that give birth at 1-year-old and successfully raise a lamb will be better mothers the next year compared to ewes who lamb first as 2-year-olds.
- Consider weaning lambs from 1-year-old ewes earlier than mature ewes. However, this may not be necessary if summer nutrition is good. At the Sheep Station, lambs are weaned from 1-year-old ewes the same time as with mature ewes.
- Consider not retaining any offspring weaned from 1-year-old ewes as replacements.

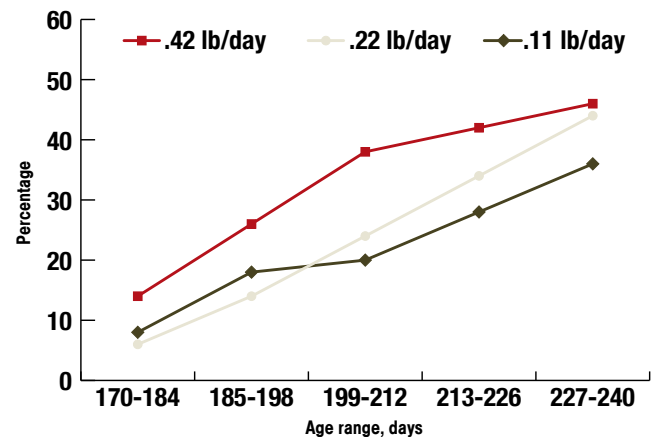
Good nutrition and steady growth

Body weight (lb) of ewes by age, rate of gain



Panel A

Cumulative percentage (%) of pubertal ewes by age, gain



Panel B

Figure 1. The data presented in Panels A and B demonstrate the importance of nutrition and gain in preparing ewe lambs for breeding. A study was conducted at the Sheep Station to establish the optimal level of nutrition needed for 45% to 50% of the Targhee ewe lamb flock to achieve puberty by 8 months of age, which corresponds with the long-term pregnancy rate in Sheep Station Targhee ewe lambs. Presented in **Panel A** (left) are three rates of gain, 0.11, 0.22, and 0.42 lbs./day, resulting from feeding three different levels of nutrition before and during breeding. Presented in **Panel B** (right), is the cumulative percentage of ewes, at the three rates of daily gain, that reached puberty at defined age ranges.

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More information

U.S. Lamb Resource Center

<http://lambresourcecenter.com/production-resources/productivity/>

National Sheep Improvement Program

<http://www.nsip.org>

U.S. Sheep Industry Roadmap

<http://lambresourcecenter.com/reports-studies/roadmap/>

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