



SheepSense

an applied research brief

Feeding for Fertility: Using Nutritional Flushing to Improve Range Sheep Production

Summary

Range sheep production in Wyoming is an art, often requiring ewes to perform at a high level while grazing in extremely harsh environments. Around the breeding season, when range feed resources are most variable, both the quality and quantity of available forages are limited.

This nutritional constraint coincides with a period of high physiological demand, making reproductive success particularly sensitive to dietary inputs. As a result, management practices such as flushing—providing supplemental energy to improve body condition and ovulation rates—can have a dramatic impact on conception, prolificacy, and overall flock productivity.

If we rank the nutritional priorities of a ewe, the first priority would be maintenance, followed by growth, then lactation, and finally reproduction. As sheep producers, we are asking ewes to perform the greatest of these nutritional demands during a time of the year where forage resources are the most limited. Therefore, increasing the ewe's plane of nutrition through the practice of nutritional flushing, allows the animal to receive the feed resources she needs to get pregnant, and stay pregnant.

Intake Energy

Maintenance

Growth

Lactation

Reproduction

Excess/Waste

What is Flushing?

Flushing ewes is a seasonal practice, that has been shown to increase ovulation rates, conception, and implantation rates. Increasing ovulation rates can result in an increase in the number of multiple births by 10% to 20%. At the end of the day, live lambs at weaning drives the profitability of a sheep operation, thus, increasing your lamb crop can positively impact your operation's economic viability.

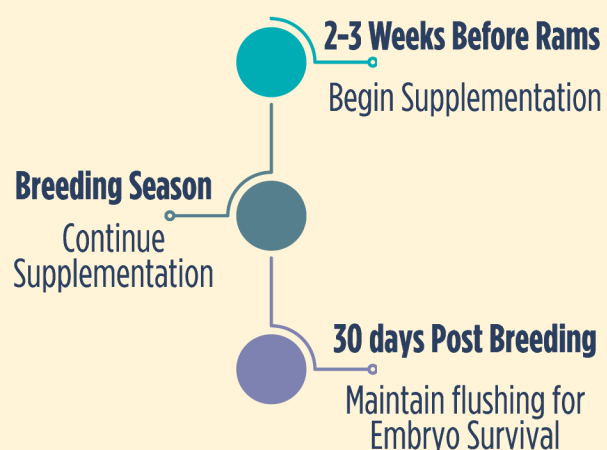


When & How to Flush?

Nutritional flushing is a temporary, short-term practice where the ewe's plane of nutrition is increased from her basal diet, typically via supplementation. It is generally recommended to begin supplementing breeding ewes two to three weeks prior to the introduction of the rams and continue for two to four weeks after the breeding season. Flushing post breeding can improve embryonic attachment to the uterine wall, reducing the number of early embryonic deaths, which typically occur in the first 30 days after conception.

Flushing can occur when the ewe's diet is supplemented with the nutrient in shortest supply, most often energy in Wyoming range systems rather than protein. While the plane of nutrition can be increased through feeding high-quality hay, grazing a higher quality pasture, or even cover-crops, the most common method for range operations in Wyoming is to supplement ewes with energy dense cereal grains, such as corn. It is generally recommended to supplement ewes with $\frac{1}{2}$ to 1 pound of grain per head per day during the flushing period. After the first month of gestation, ewes can return to a maintenance level diet until the final six weeks of pregnancy, when energy and protein needs increase to support fetal growth. For optimal breeding and gestation outcomes, nutrition should be managed to avoid sudden drops in feed quality or quantity. Consistent nutrition during mid-gestation supports proper placental development, which is critical for lamb survival and adequate birth weights.

Flushing Timeline



Body Condition Score

The ewe's body condition score at breeding plays an integral role in improving conception, and the response received from nutritional flushing. Additionally, ewes in better body condition will result in a higher twinning rate than those in poorer condition and wean more total pounds of lamb. Body condition scores of the flock should be assessed at least three weeks prior to breeding, and ewes should have a body condition score of 3.0 to 3.5 on a scale of 1 to 5. Increasing the body condition of a ewe takes time and can be very expensive. Therefore, monitoring the flock's condition early allows producers to provide adequate nutrition prior to the breeding season.

It's also important to avoid ewes becoming over conditioned. Research shows that ewes carrying excess condition at breeding and lambing often conceive and rear fewer lambs. In contrast, ewes that can gain condition between weaning and breeding tend to produce larger litters and wean more lambs. Similarly, ewes that lose less condition during pregnancy experience fewer fetal losses.

Selecting ewes that maintain their body condition throughout the production cycle can improve fertility, lamb survival, and overall flock productivity. The response to flushing is greatest in ewes with below-average to moderate body condition scores, and when ewes are being maintained on a low-quality diet. Response may also be affected by the ewe's age. Additionally, a greater flushing effect is typically seen in mature ewes, compared to ewe lambs or yearlings. Ewe lambs are typically managed to gain weight steadily through their first breeding, and thus are already nutritionally flushed, resulting in little benefit from additional energy supplementation.

Ram Care

Ram care is also critical leading up to, and during the breeding season, and rams should enter the breeding season with a body condition score of 3. Providing rams a higher plane of nutrition prior to and during the breeding season results in increased semen quality during breeding. Depending on the ewe to ram ratio and the size and type of terrain the ram must cover to breed females, rams can lose up to 25% of their body weight during a breeding season. It is recommended to utilize one ram per 30 ewes, but this number may be increased if breeding is occurring in large pastures or out on large winter range. Supplementing rams during and for a few weeks after the breeding season can help maintain body condition of the ram, ultimately improving his longevity in the flock.

Concluding Thoughts

Sheep production on Wyoming's ranges demands careful management to balance animal needs with limited forage resources. Flushing is a proven, cost-effective tool that helps ewes meet the high nutritional demands of reproduction, leading to higher ovulation, conception, and lambing rates. By strategically increasing energy intake before and during breeding, producers can improve the number of lambs born, and ultimately weaned, which directly drives flock profitability. Success; however, depends on proper timing, attention to body condition, and management of both ewes and rams leading into the breeding season. When used thoughtfully, flushing becomes more than a short-term practice; it is an investment in the long-term productivity and economic sustainability of a sheep operation.

How Flushing Works

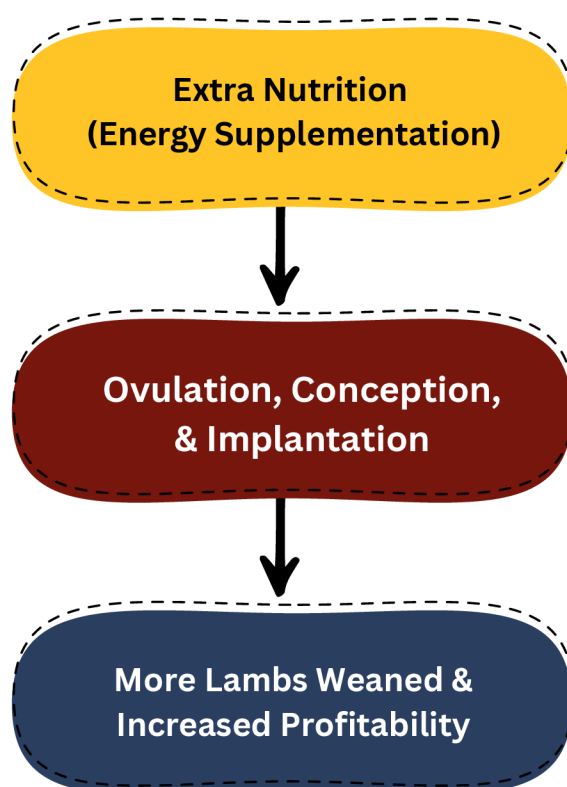


Table 1: Effect of Flushing Strategies in recent research studies

Study/ Location	Flushing Strategy	Control Lambing Rate	Flushed Lambing Rate	Relative Increase	Notes
Burritt et al., 2012 (Wyoming)	1.11 lb/hd/d grain pellet supplement for 35 d (Open Range)	~100% (Based on past docking %)	~115-120% (Estimated from Field Report)	15-20%	Commercial Range Flock; Pelleted Barley Based Supplement
Torell et al., 1972 (Western US)	4.95 lb alfalfa pellets/hd/wk for 34 d (17 pre + 17 during breeding)	101%	128% (Drylot) - 138% (Improved Pasture)	27-37%	Compared Alfalfa pellet supplement, dryly feeding, and pasture grazing
Santos et al., 2009 (Brazil)	Soybean Hulls @ 0.9% BW for 64 d (21 pre + 43 during breeding)	42%	82%	95%	Not USA, But shows strong dose effect in flushing efficiency

This brief was created by UWyo Sheep Task Force

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Sources:

Scaramuzzi, R.J., B.K. Campbell, J.A. Downing, N.R. Kendall, M. Khalid, M. Munoz-Gutierrez, and A. Somchit. 2006. A review of the effects of supplementary nutrition in the ewe on the concentrations of reproductive and metabolic hormones and the mechanisms that regulate folliculogenesis and ovulation rate. *Reprod. Nutr. Dev.* 46: 339-354. DOI: 10.1051/rnd2006016

Sheep Production Handbook. 2015, Vol. 8. American Sheep Industry Association, Inc.

Ducker, M.J. and J.S. Boyd. 1977. The effect of body size and body condition on the ovulation rate of ewes. *Animal Science*, 24, 377 - 385.

McLaren, A., N.R. Lambe, and J. Conington. 2023. Genetic associations of ewe body condition score and lamb rearing performance in extensively managed meat sheep. *Livestock Science*, ISSN: 1871-1413, Vol: 277, Page: 105336.