

SheepSense: an applied research brief

Managing Stress, Feed, and Water for Healthy Weaned Lambs

Understanding Stress and Body Weight Loss during Weaning

Sheep producers know that the weaning period is stressful for lambs, often detected by depressed immune response and a reduction in feed intake. Data from last year's University of Wyoming "Lamb-A-Year" program, which involved 100 lambs from 20 different ranches, provides valuable insights into the challenges of the post-weaning period. During the two weeks following arrival at the feedlot, lambs initially weighed around 105 to 107 pounds. Lambs exhibited fairly consistent dry matter intake (DMI), consuming about 2.4 pounds of feed per day during this period, regardless of whether they received a respiratory vaccine.

Although there was no observable decrease in feed consumption, lamb weights declined. Those fed unprocessed hay lost approximately 9.2% of their initial body weight, and lambs fed processed hay lost about 2.8%. This demonstrates that feed intake is not an accurate indicator of lamb performance, and underscores the importance of providing highquality, easily accessible feed to support recovery and subsequent growth. Understanding these dynamics can help producers implement strategies to minimize weight loss and enhance lamb performance during this critical time.

Quick Facts:

- Weaning Stress: Lambs often experience stress during weaning, affecting immune response and feed intake.
- Feed Intake vs. Weight Loss: Immediately after weaning, lambs can lose 2-12% of their body weight, commonly referred to as "shrink".
- Nutritional Needs: Weaned lambs (60-90 lbs) need 13-18% crude protein and 73-80% TDN to support growth.
- Water Needs: 60-lb lambs require 0.8-1.2 gallons of water daily, while 90-lb lambs need 1.2-2.0 gallons.
- **Mineral Supplementation:** A proper calcium-tophosphorus ratio (2:1 to 4:1) helps prevent urinary calculi. Use fresh minerals designed for sheep.



Is Your Hay Good Enough for the Stressful Post-Weaning Stage?

Encouraging lambs to consume feed and water is essential for minimizing stress after weaning. A good rule of thumb is that lambs can eat 2.5 to 3% of their body weight, though this intake will be lower if the diet consists of low-quality hay. It's important to provide enough hay that allows lambs to select the leafy portions of the forage, leaving the less digestible stems behind. Sometimes, we set the bar too high by expecting lambs to clean up the hay completely when, in reality, they should be allowed to pick out the higher-quality parts of the diet. How should hay be judged to determine if it is good enough for the stressful post-weaning stage? A laboratory feed analysis can provide useful insights.

Weaned lambs weighing between 60 to 90 pounds require approximately 0.2 to 0.33 pounds of crude protein and 1.5 to 2.25 pounds of Total Digestible Nutrients (TDN) daily to support moderate growth and development. To meet these nutritional demands, their diet should contain 13 to 18% crude protein and 73 to 80% TDN.

For example, if you feed a 70-pound lamb a low-quality meadow hay that is 8% crude protein and 50% TDN, you can calculate its nutrient intake based on the amount of hay it consumes. If the lamb consumes 2.5 pounds of this hay, it would receive 0.2 pounds of crude protein (calculated as 2.5 pounds \times 8% = 0.2 pounds) and 1.25 pounds of TDN (calculated as 2.5 pounds \times 50% = 1.25 pounds). This means the lamb's intake would meet about 61% of its crude protein requirement (0.2/0.33) and 83% of its TDN requirement (1.25/1.5).

In contrast, feeding the same lamb an alfalfa-grass hay mix with 17% crude protein and 63% TDN would provide 0.43 pounds of crude protein (2.5 pounds \times 17% = 0.43 pounds) and 1.58 pounds of TDN (2.5 pounds \times 63% = 1.58 pounds). This would meet approximately 130% of its crude protein requirement (0.43/0.33) and 105% of its TDN requirement (1.58/1.5), significantly better supporting the lamb's growth needs.

By using these simple calculations, producers can assess how well different feeds meet the nutritional requirements of newly weaned lambs based on laboratory reports of crude protein and TDN percentages.



SheepSense: an applied research brie

Managing Stress, Feed, and Water for Healthy Weaned Lambs

The Overlooked Impact of Water Quality on Sheep Health and Performance

Sometimes, the greatest challenges in receiving feeder lambs are the most easily overlooked. A clean, visible water source that is easy to maintain is critical to a smooth transition. Lambs from range operations may require training if they are unfamiliar with drinking from a trough. It's generally recommended to provide approximately 1 linear inch of trough space per lamb, although this can vary depending on location and environmental conditions. According to NRC 2007 recommendations, 60-pound lambs will consume approximately 0.8 to 1.2 gallons of water per day, while 90-pound lambs will need 1.2 to 2.0 gallons daily. Ensuring water quality through regular cleaning is relatively straightforward, but addressing water quality issues specific to different ranching environments can be more challenging.

Water quality can have a significant impact on trace-mineral status and interactions in extensive sheep production systems. For example, Petersen et al. (2015) measured the water quality of various sources, including flowing surface water, groundwater, reservoirs, and springs, over a 5-year period. They found that iron (Fe), sodium (Na), sulfates, and pH exceeded recommended quality standards for 66%, 42%, 37%, and 36% of livestock water sources, respectively. Similarly, Page et al. (2018) reported that across 20 Montana sheep operations, iron, sodium, sulfates, and pH exceeded recommended standards for 10%, 40%, 35%, and 20% of livestock water sources, respectively.

Mineral and Vitamin Supplementation

A complete vitamin and mineral package is essential post-weaning, as these nutrients are critical for immune function, digestion, and skeletal and muscle growth. Keep in mind that the late summer diet of lambs is likely deficient in many minerals and vitamins due to the declining quality of mature grasses. Calcium and phosphorous are two minerals that require special attention in lamb diets. If calcium and phosphorous are not properly balanced, urinary calculi can occur. To avoid this complication, the Ca:P ratio should be between 2:1 and 4:1. Providing a complete mineral supplement is vital.

Ensure the mineral is specifically labeled for sheep, and monitor consumption to avoid deficiencies or overconsumption. Depending on the type of supplement, target intake can vary—up to 4 ounces per head per day with a lick tub or about 0.75 ounces with granular mineral. To ensure adequate intake, make sure the mineral is fresh, not caked or weathered. Data from the 2023-2024 University of Wyoming "Lamb-A-Year" program showed that lambs exceeded the target intake on 23 out of 24 days. The variation in mineral products on the market is significant and worth further exploration. Feel free to consult a member of the UW sheep task force for additional guidance.



Conclusion

The post-weaning period is a critical time for lambs, when stress and nutritional challenges can significantly impact growth and overall health. Proper management of feed, water, and mineral supplementation is essential to minimizing weight loss and ensuring lambs thrive during this transition. By understanding the importance of highquality, easily accessible feed, clean water, and balanced mineral intake, producers can better support lamb performance and address the often-overlooked factors that contribute to successful weaning. Ongoing attention to these elements, along with consulting experts when needed, can help optimize the health and productivity of your flock.

This brief was created by UWyo Sheep Task Force

Authors:

Whit Stewart Ph.D. Associate Professor Extension Sheep Specialist

Jedidiah Hewlett, M.S. Converse County Agricultural and Natural Resources Educator

Find more resources here: **bit.ly/4brsdsC**



Sources:

Kellems, R. O., & Church, D. C. (2010). Livestock feeds and feeding. Prentice Hall.

Stewart, W. C., Scasta, J. D., Taylor, J. B., Murphy, T. W., & Julian, A. A. M. (2021). Invited Review: Mineral nutrition considerations for extensive sheep production systems. Applied Animal Science, 37(3), 256-272. https://doi.org/10.15232/aas.2020-02148

National Research Council. (2007). Nutrient requirements of small ruminants: Sheep, goats, cervids, and new world camelids. The National Academies Press. https://doi.org/10.17226/11654

Dooley, E. F., Kersh, A. J., Laverell, D. M., Mills, J. B., Scasta, J. D., Lima, P. T., Gifford, C. M., & Stewart, W. C. (2024, July 21-25). Quantifying free choice mineral intake in a lamb feedlot setting: Implications for cost of mineral supplementation [Conference abstract]. ASAS_CSAS-WSASAS Joint Annual Meeting, Alberta, Canada.

Mills, J. B., Laverell, D. M., Kersh, A. J., Dooley, E., Hernandez, J., Lima, P. T., Scasta, J. D., Hollinger, H. C. C., Gifford, C. L., & Stewart, W. C. (2024, July 21-25). Effects of feeder lamb receiving protocols on lamb performance, feed efficiency, and carcass characteristics as part of a lamb-value discovery program [Conference abstract]. ASAS_CSAS-WSASAS Joint Annual Meeting, Alberta, Canada.