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OKLAHOMA FORAGES NEWSLETTER

OSU OKLAHOMA COOPERATIVE EXTENSION SERVICE

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We welcome contributions and suggestions. Comments about and contributions to the Oklahoma Forages Newsletter and/or our web sites are welcome and should be submitted to john.caddel@okstate.edu or daren.redfearn@okstate.edu

Everyone interested in forages is welcome to receive and contribute to the Oklahoma Forages Newsletter.

How Valuable is Your Hay?

As we approach the end of the summer, it is time to make plans for winter feeding. This year, there has been ample rainfall which has resulted in an enormous amount of forage production and hay of varying quality. Some of that hay has high quality and some hay would have had high forage quality, but it was rained on during the curing process. Finally, there will be some hay available that will have low quality due to it being overly mature as a result of postponed hay harvest schedule. This situation is the opposite of last year's situation when there was little hay produced in the southern Great Plains, which resulted in depletion of hay supplies.

A survey conducted by the Oklahoma Cooperative Extension Service indicated that approximately 25% of forage-livestock producers purchase at least some hay every year, whereas an additional 50% reported purchasing hay on a less frequent basis. In spite of three fourths of Oklahoma forage-livestock producers frequently purchasing hay, only 16% report using forage and hay testing to determine the nutritional quality of hay produced on-farm or hay purchased off-farm. Based on the conditions this summer, there are several issues that should be addressed, but the key factor to be considered is hay quality. More often than not, low quality hay sells for the same price as high quality hay because a lack of awareness of the importance of quality. The major difference is that the low quality usually requires additional protein and/or energy supplementation which adds increased costs.

Is it better to purchase and feed a low quality hay or high quality hay?

To answer this question, we need two key pieces of information. The easiest piece of information to obtain is the animal nutritional needs. Nutrient requirements are not consistent for all classes of livestock, so we need some knowledge of their body weight and stage of production. For more information on nutrient requirements of beef cattle, please see OSU Extension Circular 974 (Nutrient Requirements of Beef Cattle). (http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1921/E-974web.pdf). The second piece of information is the forage test results. At a minimum, it is important to know the crude protein (CP) and total digestible nutrient (TDN) values for hay supplies.

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During the winter hay feeding period, a general rule of thumb is that it will take about 1000 pounds of hay to feed a mature cow for 30 days (33 pounds of hay per day), assuming none is wasted. The following examples can be used to help understand the relationship between forage quality and stage of production.

Example #1. In a 1000-pound bale of bermudagrass hay with 5.0% CP and 45% TDN, there are 50 pounds of CP and 450 pounds of TDN. An 1100-pound mature cow in the middle third of pregnancy requires 1.4 pounds of CP and 9.7 pounds of TDN each day. From a couple of simple calculations (Table 1), we can determine that the CP requirement for this animal is 42 pounds and the TDN requirement is 291 pounds for 30 days. We can quickly determine that this hay should be adequate to maintain the 1100-pound mature cow in the middle third of pregnancy if her daily hay consumption is at least 28 pounds.

Table 1. Relationship of the nutrients provided by bermudagrass hay and the comparison of nutrients requirements by animals during different stages of production.

Nutrients provided [1]		Monthly nutrients required [2]			
		Middle 1/3 gestation		90 days post-calving	
CP	TDN	CP	TDN	CP	TDN
50 lbs	450 lbs	42 lbs	291 lbs	87 lbs	504 lbs

[1] Nutrients provided by 1000-pound bale of bermudagrass hay with a forage quality analysis of 5% crude protein (CP) and 45% total digestible nutrients (TDN).
[2] Nutrients required per month by an 1100-pound beef cow during the middle 1/3 gestation and during the first 90 days post-calving.

What happens when the nutritional requirements of an animal change?

Example #2. The nutrient requirements for this same 1100-pound cow the first 90 days after calving will require 2.9 pounds of CP and 16.8 pounds of TDN each day. Our quick calculations show that this hay is now deficient in both protein and energy for this animal when she is in a different stage of production (Table 1). Assuming she consumes 33 pounds of hay per day, both her protein and energy requirements will be deficient. Generally, it is difficult to make animals consume more than about 33 pounds per day of low quality hay. In this instance, both additional protein and energy will need to be provided to meet the nutritional requirements of this animal.

What is the result of purchasing and feeding supplement to an animal if it is not needed?

To summarize the key points, it is important to know the quantity of nutrients being supplied and the nutrient requirements of the animal. Then supplement any deficiencies that exist. It would require about 6 pounds/day of a 20% CP supplement to meet the 37 pound CP deficiency of an animal during the first 90 days after calving if she were consuming bermudagrass hay containing 5% CP and 45% TDN. This amount of supplement would also meet the TDN deficiency. At a cost of $200 per ton for the supplement, the cost of supplementation of an animal during the middle 1/3 of gestation would cost $16.20 per cow per month. In this example, over-supplementing a 50-cow herd for 90 days would result in unnecessary feed cost of $2430.

Most forage quality analyses cost $10 to 20 per sample. It is difficult to assign an economic advantage to forage quality testing. However, the cost to determine if additional protein or energy feeding is needed would be recovered in feed cost savings or improved animal performance. Greater profit potential is the primary reason livestock producers need to know the quality of the forages they are feeding. It is also beneficial to determine the nutrient composition and expected potential animal performance from the forage. After forage quality has been determined, specific rations can be formulated and balanced for specific classes of livestock according to the nutritional requirements and desired performance for that class of livestock.

Forage quality requires proper sampling and interpretation to be of value. A forage analysis is the only way to determine whether or not additional supplementation is required. Also, feeding a large portion of hay for an extended period without a forage test should not occur due to the expense of providing supplemental feeds. For more information contact your county extension educator; OSU Extension Fact Sheets PSS-2589 (Collecting Forage Samples for Analysis); PSS-2117 (Forage Quality Interpretations) and The Soil, Water and Forage Analytical Lab. at http://www.soiltesting.okstate.edu/ .

Daren D. Redfearn
Extension Forage & Pasture Management
Oklahoma State University

CONTRIBUTIONS WANTED

Do you have a comment about some aspect of forage production that you would like to share?
Do you have a question about some aspect of forage production?
Have you read something that helped your forage production and want to share it with the readers of Oklahoma Forages Newsletter?

Send comments, questions, or articles you have seen and want to share to Daren Redfearn **daren.redfearn@okstate.edu** To remain anonymous, just let us know.

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