

TIMELY INFORMATION

Agriculture & Natural Resources



Supplementing stored forages in beef cattle systems

1) What are some of the key supplementation considerations I need to be thinking about going into the winter?

- Know the nutrient requirements of your cow herd. Nutritional requirements increase at the time of calving. It is important to adjust the feeding program to meet these requirements. Refer to ANR-0060 Nutrient Requirements of Beef Cattle for more information (www.alabamabeefsystems.com).
- Consider the forage base in the diet – Know the quality of the hay that you are feeding. Estimate the number of hay feeding days, and extend the grazing season where possible to reduce the need to provide stored feeds.
- Evaluate and compare supplemental nutrient sources – If supplemental feed is needed, evaluate the feed on a cost per pound of nutrient basis, not solely cost per ton of feed.

2) How do I determine the quality of my hay?

A forage analysis will provide information on relative forage quality (RFQ), % total digestible nutrients (TDN), and % crude protein (CP) in the feedstuff. When using stored forages such as hay, baleage, or silage, a forage test is recommended to determine if additional supplementation is needed outside of providing hay to meet the animal's nutrient requirements. Without knowing the quality of stored forage, it is simply a guess as to how much additional supplement should be fed or if any is needed at all. In forage-based production systems in Alabama, energy is commonly considered to be more limiting than protein in beef cattle diets.

2) How do I interpret a forage analysis?

There are several key factors to look at on a forage analysis report

- **Relative forage quality (RFQ)** – A single-value index that estimates the quality of a forage based on 1) expected animal intake and 2) nutritional value of the forage. The index scale ranges from 0 to ≥ 250 . In general, forages within the range of 100 to 115 will meet the needs of a dry, pregnant brood cow, whereas a lactating animal will require an RFQ of ≥ 120 . The RFQ index is designed to provide an estimate of quality, but additional information such as TDN and CP are needed to provide ration formulations for supplementation programs.
- **Dry matter (DM)** – This is the amount of feed without moisture. Animal nutrient requirements are based on a dry matter basis.
- **Total digestible nutrients (TDN)** – The amount of digestible fiber, protein, fat, and carbohydrates in a forage or feed. Determines the pounds of TDN in a given feedstuff.
- **Crude protein (CP)** – Crude protein is an estimate of the amount of nitrogen in a feed multiplied by 6.25. This number can be used to determine the pounds of protein in a given feedstuff.

3) How do I determine if my hay will meet the nutrient requirements of my cow herd?

ALABAMA A&M AND AUBURN UNIVERSITIES, AND TUSKEGEE UNIVERSITY, COUNTY GOVERNING BODIES AND USDA COOPERATING

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The simplest way to determine if hay alone is sufficient is to compare the nutrient requirements of the class of livestock being fed to the amount of nutrients provided in the hay. In Table 1, notice that the hay samples that require supplementation do not provide the same amount of TDN and CP required by the animal. Once the quality of hay is known, contact your Animal Science and Forage Regional Extension Agent to help determine an appropriate feed source to supplement your hay.

Table 1. Matching animal nutrient requirements with differing hay quality.

			4-wk regrowth Coastal bermudagrass hay (62% TDN, 12% CP)	8-wk regrowth Coastal bermudagrass hay (52% TDN, 8% CP)
Stage of Production	TDN Required (% in diet needed per day)	CP Required (% in diet needed per day)	Supplement Needed?	
Dry Pregnant	48	7	No	No
Peak Lactation (0 to 90 days after calving)	60	12	No	Yes
Late Lactation	55	9	No	Yes

4) What other factors should I think about when feeding hay this winter?

- **Dry matter vs. as-fed basis** – Brood cows will consume between 2.0 and 2.5% of their body weight per day in dry matter. This is an estimate of a forage or feed without moisture. In order to estimate how much to provide your animals per day, we want to express this number on an as-fed basis, or the amount of forage/feed with moisture. For example, let’s assume that a 1,200 pound brood cow will consume 2.5% of her body weight per day in dry matter of moderate quality bermudagrass hay (average 85% DM, 15% moisture). This is about 30 pounds of forage dry matter. On an as-fed basis, we must correct for the amount of moisture in the feed (example: 30 lb dry matter ÷ 0.85 DM = 35 lb hay fed per day as-fed).
- **Storage and feeding loss** – Storage and feeding losses can decrease the efficiency of your hay feeding system significantly. Store hay in a barn, or outside with bales end-to-end oriented in a north/south direction with good air flow to reduce dry matter and nutrient loss. Use an improved feeding method such as a ring or cradle to reduce hay waste. On average, feeding losses account for about a 20% loss in dry matter.

5) What are some potential supplementation strategies?

The table below illustrates some supplementation considerations with changing qualities of hay for different stages of animal production.

Table 1. Supplementing a 1,200-lb brood cow with varying qualities of hay.

	Hay Quality (% TDN and % CP in hay)			
	47% TDN, 6% CP	52% TDN, 8% CP	55% TDN, 10% CP	60% TDN, 12% CP
Feed Ingredient	-----Pounds/head/day-----			
50:50 Soyhulls/Corn gluten feed				
Dry, pregnant (48 % TDN, 7% CP)	2	0	0	0
Peak lactation, open (until 90 days after calving, 60% TDN, 12% CP)	NA†	11	8	0
Late lactation, bred back (55% TDN, 9% CP)	9	2	0	0
Whole Cottonseed				
Dry, pregnant (48 % TDN, 7% CP)	2	0	0	0
Peak lactation, open (until 90 days after calving, 60% TDN, 12% CP)	NA†	8	5	0
Late lactation, bred back (55% TDN, 9% CP)	6	3	0	0
Corn‡				
Dry, pregnant (48 % TDN, 7% CP)	2 lb corn	0	0	0
Peak lactation, open (until 90 days after calving, 60% TDN, 12% CP)	NA†	7 lb corn + 3 lb cottonseed meal	5 lb corn + 2 lb cottonseed meal	0
Late lactation, bred back (55% TDN, 9% CP)	6 lb corn + 2 lb cottonseed meal	5 lb corn	0	0

†NA – Not applicable. The amount of supplement required exceeds the recommended feeding level for a given feed source.

‡Requires additional protein supplementation in some scenarios. Cottonseed meal (90% DM, 78% TDN, 46% CP) was used as the additional source of protein in this formulation.