

Selecting Quality Hay...

It Shouldn't be a Game of Chance!

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An important aspect in feeding livestock as cheaply as possible while obtaining good production is to have hay of sufficient quality! Having hay of sufficient quality means that the hay meets the livestock needs with little supplemental feeding of energy and protein. Hay testing is necessary to determine the amount of supplemental protein and energy that is required, saving you the producer money.

What is Hay Quality?

Forage quality is a direct measurement of essential nutrient content and availability to the consuming animal. Three things define forage quality: an animal's ability to consume (intake), digest (digestibility), and assimilate (availability) essential nutrients contained within the feed. Forage quality means an animal can obtain a greater portion of their daily nutrient needs from forage. Energy, protein, minerals and vitamins are all essential nutrients required by livestock.

As you know, not all forages have the same nutrient content and availability to the animal. Forages can span a wide range of quality within any given forage species and, several factors can influence forage quality. Because of this, hay from the same farm and field can vary significantly within a year or between years. Do not assume that hay purchased from the same producer, year after year, is the same quality forage each time.

The main point to forage quality is the ability of the fed forage to meet a given animal's nutrient requirements. If forage nutrient content is limiting, then additional supplements will need to be fed, or production and health will be compromised. If forage quality is sufficiently poor relative to animal requirements, the amount of supplements necessary may exceed practical feeding practices and cost more money in the long run.

What affects Hay Quality?

Cool season annual grasses and legumes are high in CP and TDN. Perennial grasses are lower in quality but adequate to a wide range of livestock species (depending on animal production level). Bermudagrass is typically the highest quality hay grass in our area. What factors affect the quality of hay produced from bermudagrass? Nitrogen fertilization improves the crude protein but the two most important factors in determining quality is grass maturity at harvest and how the hay is stored.

Coastal bermudagrass cut at 4-week intervals will have CP 10-12% and TDN 58-62%. Waiting to cut at 8-week intervals can decrease the CP% and TDN% significantly. Remember as the grass ages, lignin content increases and the forage becomes less digestible and crude protein declines. This occurs within the cutting interval as well as for the season. For example, the 1st cutting will be “better” than the last (in the fall).

Quantity of hay is not just a cost issue; quality of hay is, too. Feeding poor quality hay results in poor livestock performance and eventually reduced returns. The hay harvested in Florida varies widely in quality. Hays tested at forage testing laboratories can range from as low as 5.8 percent to 19.0 percent crude protein and from 41 percent to 66 percent total digestible nutrients (TDN), a simple measure of energy content of the forage. Date of harvest or stage of maturity at harvest determines hay quality. In other words, hay quality is under the control of the producer.

To determine the feeding value of hay, it is necessary that it be tested. Typically, hays that test less than 8 percent crude protein are poor quality, while hays with TDN value below 50 percent are poor quality. Hays of these nutrient levels should be supplemented (depending upon the nutrient requirements needed for production level), and that increases cost of feeding. However, if hay is fed that does not meet the animal’s nutrient need, a greater cost will be incurred due to losses resulting from inadequate nutrition.

No matter the specie of animal you are trying to feed hay, testing for quality will save you money! Meeting the nutrient requirements of your animal is key to the success of your operation. Weaning weights, reproductive performance like improved calving percentages all add to your bottom line! For those with horses you can save money by feeding less purchased feed and improve your horse’s health by knowing the quality of hay that you are purchasing. So, don’t play the game of chance “quality”, test your forage and KNOW your forage quality!

Tables 1 - 3: Excerpts from Bermudagrass Production in Florida, Y.C. Newman, et. al. #SS-AGR-60

Table 1.
Estimates of crude protein, dry matter yield, and nitrogen removal for bermudagrass harvested every six weeks.

Applied N (lb/acre) ²	Crude Protein (%)	Optimum Season		Dry season	
		Dry Matter (tons/acre)	N Removal (lb/acre)	Dry Matter (tons/acre)	N Removal (lb/acre)
100	9.2	5.0	150	2.5	75
200	11.0	7.0	250	3.5	125
300	12.2	8.8	340	4.4	170

Table 2.

Effect of cutting intervals on dry matter intake, digestibility, and daily gain per animal of Coastal bermudagrass hay (Georgia).

Cutting Interval (weeks)	Dry Matter Intake (lb/day)	Forage Digestibility (%)	Average Daily Gain (lb)
4	11.8	55	1.2
8	9.3	53	0.9
13	9.5	45	0.0

Table 3.

Effect of maturity on crude protein (CP) and total digestible nutrients (TDN) on a dry matter basis.

Weeks of Regrowth	CP	TDN
2	16.0	56.3
4	13.6	57.1
6	9.0	52.6
8	7.5	47.9
10	8.3	46.1

Table 4. Taken from Comparison of Hay or Round Bale Silage as a Means to Conserve Forage. M. Hersom, et.al., #AN266

Table 4.

Estimated forage storage loss for different storage methods.

Storage method	Estimated % loss
Bare ground with no cover	28
On gravel with no cover	24
Bare ground under tarp	13
On gravel under tarp	9
Under roof with no sides	8
Inside building	5
Bare ground with plastic wrap (round bale silage)	5

Below is a list of forage testing laboratory's:

University of Florida, Forage Extension Laboratory, Range Cattle REC
3401 Experiment Station, Ona FL 33865

Phone: 863-735-1314 | Fax: 863-735-1930

<http://rerce-ona.ifas.ufl.edu/agronomy/forage-extension-laboratory.shtml>

Dairy One Forage Lab

730 Warren Road, Ithaca, NY 14850

Ph: 800-344-2697 • Fax: 607-257-1350, email: forage@dairyone.com

<http://dairyone.com/general-resources/forms/>

Waters Agricultural Labs, Inc.

257 Newton Highway, P.O. Box 382, Camilla, GA 31730-0382

(229) 336-7216 Fax (229) 336-7967

<https://watersag.com/sample-submittal-forms/sample-submittal-forms-georgia/>

University of Georgia, Ag & Environmental Services Laboratories, Feed & Environmental Water Laboratory

2300 College Station Rd, Athens GA 30602-4356

<http://aesl.ces.uga.edu/forms/default.asp>