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DATE: July 3, 2012
COUNTY: Hancock

FORAGE AND FEED TEST RESULTS

Sample #	J.H.C.					
Lab Number	95698					
Sample Type	Tall Fescue/Orchardgrass/ Timothy					
Moisture (%)	11.22					
Dry Matter (%)	88.78					
	DM BASIS	AS-FED BASIS	DM BASIS	AS-FED BASIS	DM BASIS	AS-FED BASIS
Protein (%)	11.98	10.64				
Fat (%)	2.68	2.38				
Fiber-ADF (%)	39.99	35.50				
Fiber-NDF (%)	65.89	58.50				
Calcium (%)	0.38	0.34				
Phosphorus (%)	0.21	0.19				
Magnesium (%)	0.18	0.16				
Potassium (%)	1.99	1.77				
Sulfur (%)	0.21	0.19				
Manganese (ppm)	135	120				
Copper (ppm)	7	7				
Zinc (ppm)	21	19				
TDN	57	50				
NEl (MCal/lb)	0.58	0.51				
NEm (MCal/lb)	0.55	0.49				
NEg (MCal/lb)	0.29	0.26				
RFV	82					
Nitrates (ppm)		110				

This hay supplies 2.08 Mcal/kg Digestible Energy (DE). Fed at 2% body weight, this hay is adequate in energy and protein for horses under light work. All others will require supplementation based on growth and body condition needs.

Cattle Feeding Guidelines for forages with nitrates present

Nitrate Level (ppm)	Comments and recommendations based on dry matter intake
0 – 4400	Generally safe to feed.
4400 – 6600	Safe for non-pregnant animals. Limit to 50% of diet for pregnant animals.

6600 – 8800	Limit to 50% of diet.
8800 – 10,540	Limit to 35 – 40% of diet. Avoid feeding to pregnant animals.
10,540 – 17,600	Limit to 25% of diet. Avoid feeding to pregnant animals.
Over 17,600	Do not feed.

For more information, please visit us on the web at http://soilplantandpest.utk.edu. If you have any questions with regard to the above information, contact your local Extension Agent.

Obtaining Useful Information from a Forage Test Report

The information from a forage test report can be very useful if properly understood and applied. The following questions and answers were developed to help understand forage test results.

What is TDN (Total Digestible Nutrients)?

TDN is a reasonable estimate of the energy value of hay or feed, generally expressed in percentages or pounds. The TDN of a high quality hay is over 55% while poor quality hay is below 50% (dry matter basis, see below). Cows being fed poor quality hay will almost always need supplemental concentrate feed, while cows being fed hay over 55% TDN may need little or no supplementation. Thin cows, first-calf cows, replacement heifers and growing calves may need additional supplementation even with good hay.

What is "crude protein (CP)?"

A relatively accurate estimate of protein value of feed based on a laboratory analysis for nitrogen (N). Research has shown that percentage N x 6.25 is a workable estimate of feed protein even though it is not precisely protein percentage; hence, the term "crude."

Hay testing below 8% CP would be of poor quality and would generally require protein supplementation. A hay between 8 - 11% CP (dry matter basis, see below) may need supplementing, particularly with high producing cows, replacement heifers, first-calf cows and stockers. A hay over 11 - 12% CP often contains legumes and may not need significant protein supplementation.

Are there other estimates of energy?

Yes, the energy value of feed can be accurately expressed in calories. The caloric systems are typically expressed as:

D.E. (Digestible Energy) - The energy of the feed consumed minus the energy lost in feces.

M.E. (Metabolizable Energy)- The energy of the feed consumed minus energy lost in feces, urine and gases.

N.E. (Net Energy) - The portion of energy actually used for maintenance (NEm) or production (NEp). The Net Energy for Production (NEp) is often named to reflect the type of production, such as Net Energy for gain (NE g) for growing cattle.

What is Acid-Detergent Fiber (ADF) and Neutral Detergent Fiber (NDF)?

An accurate estimate of structural plant fibers percentage, ADF is also an indicator of forage quality (in general, the higher the fiber, the lower the energy of the hay). Neutral detergent fiber is an estimate of more readily digestible fibers, and is useful in predicting intake.

Of what practical use is moisture analysis?

Several uses are possible. One is to report feed evaluation on either "As Fed" or "Dry Matter" basis (see next question). Another is to evaluate forage management practices; for example, most producers prefer to roll hay at moisture levels below 20 percent. Conversely, some producers may be concerned that their hay is over 20 percent moisture, which could lead to molding and deterioration (at least) or barn fires (at worst).

Why are results expressed on both "As-Fed" and "Dry Matter" basis?

"As Fed" is the way the animals eat it and the way the feeds are weighed. However, feeds are highly variable in moisture. This "water weight" has little practical effect on nutrient utilization but makes comparative evaluation of feed nutrient value very difficult. Objective comparison of feeds should be done on a "dry matter" basis or "same moisture" basis. Since nutrient requirement tables are generally presented on a "dry matter" basis, many people prefer to balance rations using feed analysis figures expressed on a dry matter basis, then correcting to "As Fed" basis as a final calculation.

Rations can be balanced using "As Fed" or "Dry Matter" basis figures, but errors can occur if calculations are done without carefully accounting for moisture correction.

What is Relative Feed Value (RFV)?

An “index” number, based on a formula that takes both digestibility and consumption into account, which makes it useful for estimating the relative ability of a forage to deliver nutrients to an animal.

Warren Gill, Former Professor, University of Tennessee Animal Science Department