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Carole H. Knight, Editor

THE UNIVERSITY OF GEORGIA COOPERATIVE EXTENSION

Features in this issue!

Questions about Stockpiling Bermudagrass for Fall Grazing

Jeremy M. Kichler
UGA Cooperative Extension – Macon County CEC

Feeding hay in the winter time is a very expensive proposition. An often overlooked and underutilized production practice is stockpiling bermudagrass hayfields or pastures in the late summer and early fall and then graze it in the late fall or early winter. Research not only in Georgia but in other states have shown that stockpiled bermudagrass can be a cost effective strategy to provide winter forage needs but can be fed for 33 to 60% of the costs of making and feeding bermudagrass hay. Let's discuss some aspects of this strategy.

What type of forage quality can we expect out of stockpiled bermudagrass?
The forage quality of stockpiled bermudagrass can be fairly good. When the proper management practices are followed, it is anticipated that the stockpiled forage will have adequate quality for maintaining weight and body condition on non-lactating grazing animals with little (if any) supplementation. Research has shown that crude protein (CP) levels are generally 8-12% (depending on N fertilization) and total digestible nutrients (TDN) start at 55-60% at the beginning of the grazing period and end at 51-54%. Animals with higher energy requirements can be provided stockpiled bermudagrass, but will require energy and protein supplementation.

What type grazing system do I need use if I stockpile bermudagrass?
Continuous stocking is a very inefficient grazing system. Studies have shown that only 30 to 40% of the forage produced will be consumed when using a continuous stocking system. If producers use a rotational stocking system then forage use efficiency goes up to 50 to 60%. Frontal grazing is the best strategy for a stockpiling system. Grazing efficiency can increase to 65 to 75% when frontal grazing is used correctly.

How many grazing days can we expect from stockpiled bermudagrass?

That all depends! Factors such as stocking rate, grazing efficiency, and management can affect this. The table below shows the approximate number of days that one cow (1200 lbs) can graze stockpiled forage at various levels of forage yield and different grazing management techniques.

Table 2. Approximate number of days that one cow (1200 lbs) can graze an acre containing 1500, 2000, and 2500 dry lbs/acre of stockpiled forage when using continuous stocking, moderate rotational stocking, or strip grazing management.

Available Forage	Continuous Stocking	Moderate Rotational Stocking	Strip Grazing
(dry lbs/acre)	---------- (cow-days/acre) ----------		
1500	19-25	31-38	41-47
2000	25-33	42-50	54-63
2500	31-42	52-63	68-78

Assumptions: 1200 lb dry cow; intake of stockpiled forage = 2.0% of body weight; grazing efficiency: 30-40% for continuous stocking; 50-60% for moderate rotational stocking (5-6 paddocks); and 65-75% for strip grazing (the allowance of strips that are rationed to the animals based on need and forage availability).

Are there any risks associated with stockpiling bermudagrass?

There are always risks associated with everything we do. If we have dry weather in the late summer and fall, or an early frost then that can reduce forage growth. This could result in not enough growth to stockpile. If warm temperatures and wet weather occurs in November and December then we could run into lodging issues and mold growth in thatch. So it may be wise to check long range weather forcasts before trying to stockpile forages. Some websites with this information includes the Southeast Climate Consortium, which produces the forecasts available from www.agroclimate.org. These forecasts are tailored to agricultural interests in the Southeast and include a section of "Forage & Livestock." Additional long-range forecasts can be found on the National Weather Service's Climate Prediction Center (http://www.cpc.ncep.noaa.gov/).

You talked me into to stockpiling bermudagrass. How do I do it?

Here are the recommended steps for stockpiling bermudagrass in Georgia.

About 6 – 8 weeks prior to the first anticipated frost: (August 25 – September 5: Mountain/Limestone Valley, September 5-15: Piedmont, September 20-30: Upper Coastal Plain; September 20 – October 5: Lower Coastal Plain)

1. Closely graze or clip (to a stubble height of 1-2 in.) the bermudagrass pasture or hayfield that is to be stockpiled.
2. Remove livestock from the area and allow them to graze other pastures.
3. Apply up to 75 lbs of N per acre (ammonium nitrate is recommended). Preferably, apply the fertilizer immediately prior to predicted rainfall events. - If a volatile source of N (e.g., urea-based, animal waste) is to be used or fall rainfall is predicted to be below average, consider limiting N application rates to less than 60 lbs of N per acre. - Providing less than 50 lbs of N per acre will result in insufficient bermudagrass growth for stockpiling and substantially lower crude protein (CP) content.

After the first frost (or no sooner than 7-10 days prior to the first frost):

1. Measure the amount of stockpiled forage available (i.e., clip and weigh, rising plate meter, or grazing stick).

2. Obtain a clipped sample for forage quality analysis.
3. Allow livestock to strip graze the stockpiled bermudagrass to make the most efficient use of the available forage.
4. Supplement with grain or by-products based on a ration balanced to the quality of the available forage and the needs of the animal class (Note: non-lactating brood animals will likely need little or no supplementation).
5. Obtain additional clipped samples from the stockpiled forage as needed for forage quality analysis so that supplementation can be altered and animal productivity maintained.

Making Forage Test Easy Reading

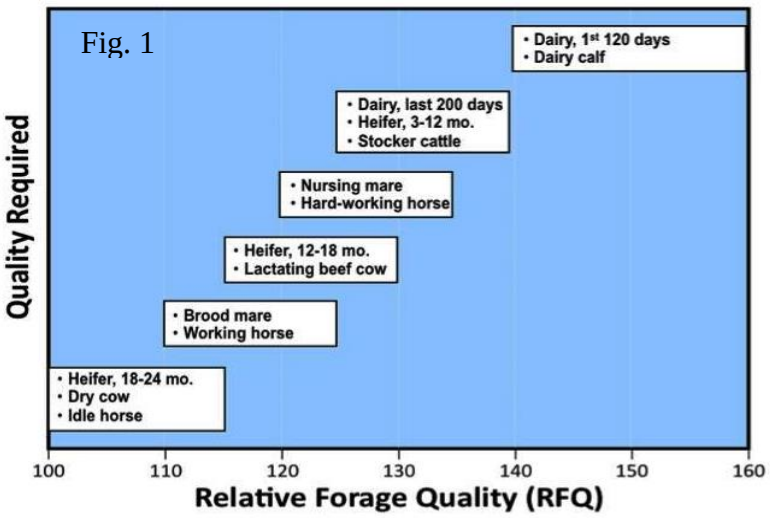
Ricky Josey
UGA Cooperative Extension – Franklin County CEC

This year's record rains have caused different problems for hay producers than the droughts of years past. Unlike recent years, forage quality, not quantity will be the big issue in meeting the nutritional needs of livestock. But how do you measure forage quality?

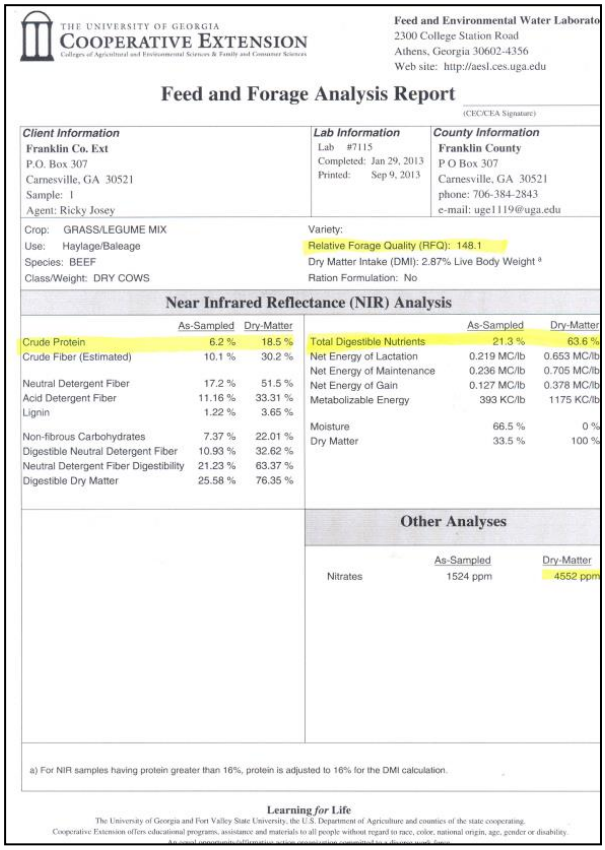
We can get some indication of forage quality through visual observation. The presences or absences of seed heads, color, odor, and leafiness can be visual indicators of quality, but a hay test is the only method to know for sure the nutritional content.

A forage report can be rather intimidating with its many numbers and terminology. To make things simpler, focus on the values in the "Dry Matter" column. Using dry matter basis allows comparing several hay samples on equal footing.

The first number that you should consider is the Relative Forage Quality (RFQ). RFQ is based on digestible energy and dry matter intake. It is also the best way to compare several hay lots on equal footing, regardless of forage species. The RFQ index has a reference point of 100, which is equivalent to full bloom alfalfa. Ranges of RFQ value are used to indicate which classes of livestock a particular hay lot could be used to satisfy the nutritional needs. Using Fig. 1, you can see that an RFQ of 105 would satisfy the requirements of a dry brood cow, but would need to be supplemented in order to meet those of those of a lactating cow.



Adapted from Undersander et al., 2011



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Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

Feed and Environmental Water Laborato
2300 College Station Road
Athens, Georgia 30602-4356
Web site: http://aesl.ces.uga.edu

Feed and Forage Analysis Report

(CEC/CEA Signature)

Client Information	Lab Information	County Information
Franklin Co. Ext P.O. Box 307 Carnesville, GA 30521 Sample: 1 Agent: Ricky Josey	Lab #7115 Completed: Jan 29, 2013 Printed: Sep 9, 2013	Franklin County P O Box 307 Carnesville, GA 30521 phone: 706-384-2843 e-mail: uge1119@uga.edu

Crop: GRASS/LEGUME MIX
Use: Haylage/Baleage
Species: BEEF
Class/Weight: DRY COWS

Variety:
Relative Forage Quality (RFQ): 148.1
Dry Matter Intake (DMI): 2.87% Live Body Weight [a]
Ration Formulation: No

Near Infrared Reflectance (NIR) Analysis

	As-Sampled	Dry-Matter
Crude Protein	6.2 %	18.5 %
Crude Fiber (Estimated)	10.1 %	30.2 %
Neutral Detergent Fiber	17.2 %	51.5 %
Acid Detergent Fiber	11.16 %	33.31 %
Lignin	1.22 %	3.65 %
Non-fibrous Carbohydrates	7.37 %	22.01 %
Digestible Neutral Detergent Fiber	10.93 %	32.62 %
Neutral Detergent Fiber Digestibility	21.23 %	63.37 %
Digestible Dry Matter	25.58 %	76.35 %

	As-Sampled	Dry-Matter
Total Digestible Nutrients	21.3 %	63.6 %
Net Energy of Lactation	0.219 MC/lb	0.653 MC/lb
Net Energy of Maintenance	0.236 MC/lb	0.705 MC/lb
Net Energy of Gain	0.127 MC/lb	0.378 MC/lb
Metabolizable Energy	393 KC/lb	1175 KC/lb
Moisture	66.5 %	0 %
Dry Matter	33.5 %	100 %

Other Analyses

	As-Sampled	Dry-Matter
Nitrates	1524 ppm	4552 ppm

a) For NIR samples having protein greater than 16%, protein is adjusted to 16% for the DMI calculation.

Learning *for* Life
The University of Georgia and Fort Valley State University, the U.S. Department of Agriculture and counties of the state cooperating.
Cooperative Extension offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, gender or disability.

Another important number on the forage test is the TDN or total digestible nutrient. TDN is a common measure of energy in feeds. The energy needs of cattle vary with stage of production, size, and expected performance, and is more likely than protein to be deficient in forage based diets. A TDN of 57-58% would likely satisfy the energy requirements of lactating beef cattle.

Traditionally, crude protein (CP) has been looked at as the most important indicator of hay quality. Crude protein is an important nutrient, however the requirements by most classes of livestock are typically easy to meet. Most of our forages, when fertilized according to soil sample recommendations, should give us adequate crude protein. Another consideration is that CP does not tell anything about the form of nitrogen. Nitrogen in crude protein can be bound and unavailable or it can be in harmful nitrates. Crude protein also tells very little about the energy content of forage. Dry cows need only about 8% CP, while those lactating require 12-13%. I believe the reason protein has been used so much to compare hay quality is because it traditionally is one of the most expensive nutrients to purchase. It's the first thing we look at when reading a feed tag and we pay the most for the bag containing the highest protein. Crude protein of forages is important, but animal are going to eat to meet their energy needs which comes back to how much can and will be eaten and how digestible it is.

Nitrate levels are also given on a forage analysis in parts per million (PPM). We have all heard horror stories of cattle deaths due to high nitrate hay. However, other losses from nitrate include lowered milk production, abortions, and breeding problems. The publication Nitrate Toxicity goes into more detail on nitrates and how to safely feed forages with various levels of nitrates. Nitrate levels of 5000 PPM are considered safe for beef cattle.

Yes, there is a lot of information on a forage analysis, but that shouldn't keep producers from utilizing this important tool. Visual observation can only give an indication of hay quality, but only sending in a well taken sample can tell you the nutritional content. Then you can use the information to balance the requirements of your livestock efficiently and safely. If you need more information on this or other forage topics, check out the Georgia Forages website www.georgiaforages.com and ask your county extension agent for assistance if needed. The TV commercials for AT&T might say it best…It' not complicated.

Short on hay? Consider Planting Cool Season Grasses and Winter Annuals for improved Forage Quality

Bobby Smith
UGA Cooperative Extension - ANR- NE District Program Development Coordinator

Fall is the season for overseeding Bermuda grass and Bahia grass, establishing clover in existing tall fescue, or replacing existing tall fescue fields with nontoxic varieties. Small grains, annual ryegrass, tall fescue, annual clovers, perennial clovers and alfalfa are normally planted beginning in October throughout the southeastern US. This article will provide an overview of various fall forage species which will improve your forage quality during the fall and winter months.

Grass Species:

Yield data for many varieties of rye, wheat, oats and ryegrass are available at the Georgia Statewide Variety Testing Program homepage (http://www.swvt.uga.edu/) under small grains.
Copies of this testing data should also be available at your local county extension office.

Rye is probably the most popular small grain for winter annual pastures in Georgia. It is the earliest maturing and most cold-hardy small grain species. Seedlings are more drought and heat tolerant than wheat or oats and fall forage production is superior to wheat. Rye has generally matured and is ready to till by mid to late April in the Coastal Plain. This early maturity makes rye an excellent winter forage on cropland that will be planted to corn next spring. A minimum of two bushels of rye should be planted per acre.

Wheat is another popular small grain for winter forage production. Seed can be cheaper than rye, but this varies from year to year. Wheat is also a cold hardy species and is later maturing than rye; however, wheat produces less fall forage than rye or oats. Peanut and cotton fields can be planted in wheat without interfering with spring planting. At least two bushels of wheat should be planted per acre.

Oats are also an option for winter grazing. Oats are highly palatable, but are the least cold tolerant of the winter annuals. Stands can be thinned or lost in cold weather which can limit the productivity of oats in northern areas of the state. Risk of forage losses from winter kill can be minimized by mixing oats with more cold hardy small grains like wheat or rye. Oats are similar to wheat in maturity. Four bushels of oats should be planted per acre.

Annual ryegrass is the latest maturing of the winter annual grasses and can be grazed until early June in some areas of the state with favorable moisture. This late spring production results in excellent overall forage yield, but can delay greenup of Bermuda grass. If spring ryegrass growth is not managed, Bermuda grass stands can be severely thinned from shading. Ryegrass may generate a small amount of forage in late fall when planted on clean-tilled land, but this production is extremely dependent on favorable rainfall and temperature. Ryegrass can be damaged in cold weather, and cold tolerance varies among varieties. Many varieties of ryegrass are commercially available. Select an improved variety with good disease resistance. Twenty to thirty pounds of ryegrass should be no-till planted or broadcast per acre.

Tall fescue is a perennial cool season forage adapted from the Middle Piedmont to the Mountains of Georgia. This species produces the majority of forage during fall and spring months. Unfortunately, a large proportion of existing tall fescue is infected with a toxic fungus which is invisible to the naked eye. This fungus allows the plant to persist under heavy grazing but severely decreases animal reproduction rate and gain. Removing the fungus improves animal performance but shortens tall fescue stand life. MaxQ is a revolutionary tall fescue variety that is infected with a *nontoxic* fungus. This fungus provides plant persistence of an endophyte infected variety with animal performance of fungus-free tall fescue. More information on novel endophyte-infected tall fescue is available in the publications section of www.georgiaforages.com. Twenty to twenty-five pounds of tall fescue should be planted per acre.

Legumes:

Crimson clover is probably the most frequently utilized cool season annual legume in Georgia. It has excellent seedling vigor and good tolerance of soil acidity, but does not grow well in poorly drained soils. Crimson clover produces more early spring forage than arrowleaf clover, and varieties differ markedly in their

distribution of forage production. Recommended seeding rate is twenty to thirty pounds per acre. Crimson clover is an excellent species to overseed into warm season sods but offers little when overseeded in tall fescue.

Arrowleaf clover is later maturing winter annual than crimson and produces the majority of its forage from mid to late spring. Like crimson clover, this species is best utilized in combination with warm season pastures. Acidic and poorly drained soils greatly decrease arrowleaf clover yields. Arrowleaf clover produces a large proportion of hard seeds and is generally a dependable reseeder. Keep arrowleaf clover pastures grazed to 2-4". This may help to reduce foliar diseases. Recommended seeding rate for arrowleaf clover is five to ten pounds per acre.

Red clover has excellent potential for decreasing fescue toxicosis and improving forage distribution. Red clover persists for one to two years in tall fescue, and produces excellent quality forage into June or even July in favorable years. Red clover also has better seedling vigor than white clover, so it establishes more rapidly and dependably than white clover. Red clover should be rotationally grazed for optimum persistence. Eight pounds of red clover should be planted per acre.

White clover is an excellent species for poorly drained soils or continuously grazed pastures. White clover can be no-till drilled into tall fescue at ¼" to ½" depth or can be broadcast seeded into tall fescue in early spring. For more information on white clover establishment and management visit your county extension office or go to the publications section of www.georgiaforages.com. Two to three pounds of white clover should be planted per acre.

Alfalfa is a forage crop that persists well in middle and north Georgia when planted in monocultures; however, this species is less persistent in mixtures with tall fescue or Bermuda grass, but new research has shown that over-seeding into established Bermuda grass pastures has significantly improved forage quality. Small areas of alfalfa can be established for creep grazing or for wildlife food plots. Larger grazing areas can provide high quality forage for growing replacement heifers. Alfalfa requires good soil drainage, pH, P and K. Select a variety with a good disease resistance and grazing tolerance. Twenty to twenty-five pounds of alfalfa should be planted per acre.

Summary

Establishing and managing cool season forages during fall and winter months can decrease hay needs and improve overall forage quality and animal performance. Consider establishing one of the above forages on your farm to capitalize on these advantages!

For more information on any forage topic, contact a member of the UGA Forage Team or visit www.georgiaforages.com.