

Stockpiling Bermudagrass for Fall Grazing

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Introduction

Producing and/or purchasing hay to feed livestock through the winter represents a substantial expense. In Georgia, bermudagrass can be **stockpiled** (allowed to accumulate) in pastures and hay fields from August through early October and grazed later in the fall and early winter. This **deferred grazing** (grazing after forage has been allowed to accumulate) of stockpiled forage can be an effective method for reducing winter feed costs. This factsheet details the expectations, requirements, and steps in stockpiling and utilizing bermudagrass.

Researchers have determined after many years of experiments in Georgia and other states in the southeastern U.S. that stockpiling bermudagrass is a cost-effective strategy to provide winter forage needs (Figures 1 and 2). Economic analyses have consistently shown that stockpiled bermudagrass can be fed for 33-60% of the cost of making and feeding bermudagrass hay made from the same farm (Lalman et al., 2000).



Figure 1. Stockpiled 'Tifton-85' bermudagrass on Thanksgiving weekend 2004 in a study at the Southwest Georgia Research and Education Center near Plains, GA. Note that the light colored strip on the right has been grazed for 3 days and the cattle on the left have just been allocated a new strip. In this study, the utilization of bermudagrass was calculated to be 74% (daily intake = 2.23% of body weight).

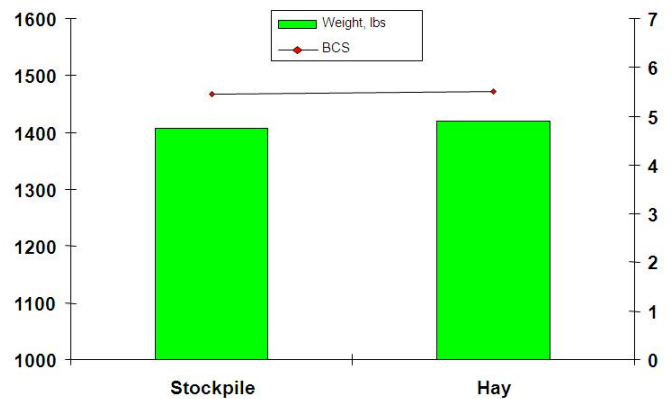


Figure 2. Dry cows grazing stockpiled 'Tifton-85' bermudagrass maintained their body weight and body condition score (BCS) just as well as those fed hay in 2004 (study referenced in Figure 1). On average, each cow in the hay treatment was fed 1786 lbs of hay during the 70-day trial, as opposed to no hay in the stockpiled treatment.

The forage quality of stockpiled bermudagrass can also be fairly good, too. When the proper management practices are followed (as described herein), 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% (Figure 3). Animals with higher energy requirements can be provided stockpiled bermudagrass, but will require energy and protein supplementation.

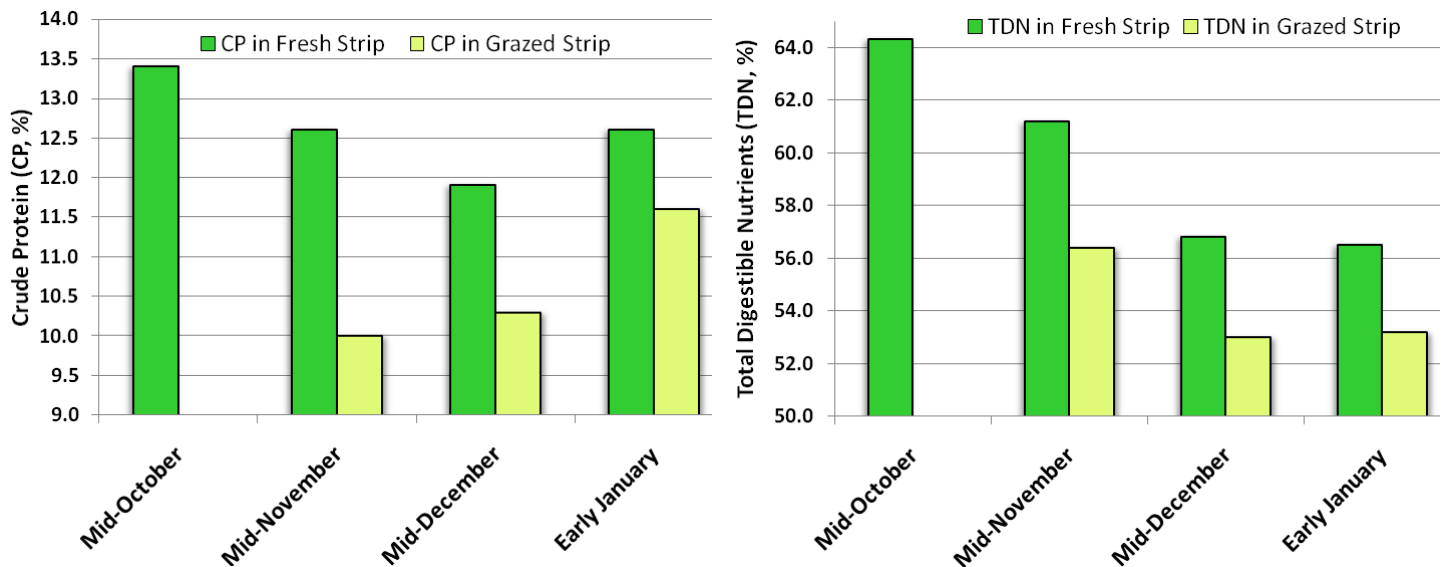


Figure 3. The CP and TDN content of fresh and grazed strips of stockpiled bermudagrass during the fall and early winter (Coblentz et al., 1999).

Expectations and Requirements

It is difficult to give a “rule-of-thumb” as to the number of grazing days that can be expected from an acre of stockpiled bermudagrass. Year-to-year variability in weather means an “average” number of grazing days may not be indicative of the true number of grazing days in any given year. Thus, the manager should consider best-case, worst-case, and average scenarios.

Furthermore, differences in the efficiencies of various grazing management systems need to be considered. The common practice of allowing animals to have continuous access to very large pastures (**continuous stocking**) is a very inefficient grazing system. Studies have shown that only 30-40% of the forage that is produced will be consumed by the animal when pastures are continuously stocked. Simply by rotating animals between four or more subdivided areas, or paddocks, within a pasture (**rotational stocking**) can improve that forage use efficiency to 50-60%.

However, the best strategy for rationing out the stockpiled bermudagrass is a grazing method referred to as **frontal grazing**. In this method, a single electric fence (wire or tape) is moved forward every 1-3 days. The distance this hot wire is moved forward is based on how much forage and area is needed during the 1-3 days in which the strip will be allocated to the cattle. This can improve grazing efficiency to a point where 65-75% of the forage that is available will be consumed. Frontal grazing can be fairly cost effective. It requires an electric fence charger, a single span of electric fence, and an appropriate number of “tread-in” or “pig-tail” fence posts. A water source and mineral feeder in the field to be grazed is also a requirement, but the frontal grazing pattern can be situated such that the “front” is moving away from the water source and mineral feeder (i.e., the cattle always have free access to water and mineral).

Allocating a Strip of Stockpiled Forage

In order to allocate enough forage in the strip, it is important to understand how much forage is available. This can be roughly estimated by measuring the forage with a grazing or yard stick and multiplying the inches of standing forage by the values in Table 1.

Table 1. Range in forage available (lbs/acre) per inch of a thin, good, or thick stand of bermudagrass.

STAND RATING		
Thin	Good	Thick
--- (dry lbs/acre/inch) ---		
80-200	250-400	450-600

By using an estimate of the amount of stockpiled forage available and considering the relative efficiency of their grazing system, a producer can use the following calculation to estimate the number of days an acre of stockpiled tall fescue can carry an individual animal:

$$\frac{\text{Grazing Days}}{\text{Acre}} = \frac{(\text{Total Available Forage} \times \text{Grazing Efficiency})}{(\text{Average Body Wt} \times \text{Daily Dry Matter Intake, \% of b.w.})}$$

Example: $\frac{33 \text{ days}}{\text{acre}} = \frac{(2000 \text{ lbs/acre} \times 40\%)}{(1200 \text{ lbs/cow} \times 2\%/\text{day})}$

This equation was used to generate the data in Table 2, which provides a more detailed look at the approximate grazing days for dry beef cows given different levels of available forage and grazing intensity. In practice, the manager should adjust the number of grazing days to the amount of stockpiled forage that is available.

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

Available Forage (dry lbs/acre)	Continuous	Moderate Rotational	Strip Grazing
	Stocking	Stocking	
	----- (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).

Risks Associated with Stockpiling Bermudagrass

As with all agricultural practices, there are some risks associated with stockpiling bermudagrass that should be recognized. If abnormally dry weather in the late summer and fall dramatically reduces the forage growth and/or an early frost occurs, there may not be enough bermudagrass growth for stockpiling.

Another potential risk is from the other extreme in weather conditions. If warm temperatures and abnormally wet weather occur in November and December, the stockpiled forage may become lodged and there may be excessive mold growth in the thatch. Moldy thatch in bermudagrass has been linked to liver damage and photosensitization in the cattle via an unknown agent. This is less likely to occur in higher yielding bermudagrass varieties (i.e. improved hybrids) or hybrids that are more coarse-leaved and allow better air circulation within the canopy (e.g., ‘Tifton-85’). Historically, the few reported incidences of this issue have occurred when common bermudagrass varieties were stockpiled and/or the bermudagrass was not clipped or grazed to the recommended 1 – 2 inch height prior to stockpiling.

In either case, it is a good practice to check climatic forecasts before committing to a reliance on stockpiled bermudagrass. Climatologists from UGA participate in 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/>).

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.

Summary

When there is adequate rainfall in the late summer and fall, removing animals from bermudagrass pastures or hayfields and fertilizing it with up to 75 lbs of N/acre will allow forage growth to stockpile for late fall and winter grazing. Utilization of stockpiled bermudagrass, particularly when grazing is well-managed (i.e., with rotational or frontal grazing methods), can be a cost-effective management strategy because it extends the grazing season and minimizes winter hay feeding. This is a strategy that is highly recommended to producers who utilize bermudagrass in their forage system.

References

- Coblentz, W., K. Coffey, G. Davis, and J. Turner. 1999. Evaluation of stockpiled bermudagrass after hay and pasture summer management. Arkansas Animal Science Department Report Research Series 464:43-45.
- Lalman, D.L., C.M. Taliaferro, F.M. Epplin, C.R. Johnson, and J.S. Wheeler. 2000. Review: Grazing stockpiled bermudagrass as an alternative to feeding harvested forage. Proceedings of the American Society of Animal Sciences. Available online at <http://www.asas.org/symposia/0621.pdf>. (Verified 11 June 2009).

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