




Stockpiling Perennial Grasses




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MSPFSC

Stockpiling Forages

- Most livestock producers are aware that pasture harvested by the cow is cheaper than forage which is harvested, stored and then removed from storage and fed to the cow.
- Some studies show that pastured forage costs about 1 to 1½ cents per pound of dry matter (DM) in the cow with most of the manure applied back on the pasture.
- Stored forage costs about 4 to 5 cents per pound of DM plus the cost of storage, feeding and manure hauling.




Stockpiling

- Stockpiling
 - Method used to extend the grazing season and reduce additional expenses.
- Hay Bailing:
 - ~\$25/bale for a 4x5 round bale
 - Production cost ~\$20-25/bale
- Daily hay feeding costs: \$1.20 to \$1.50/head

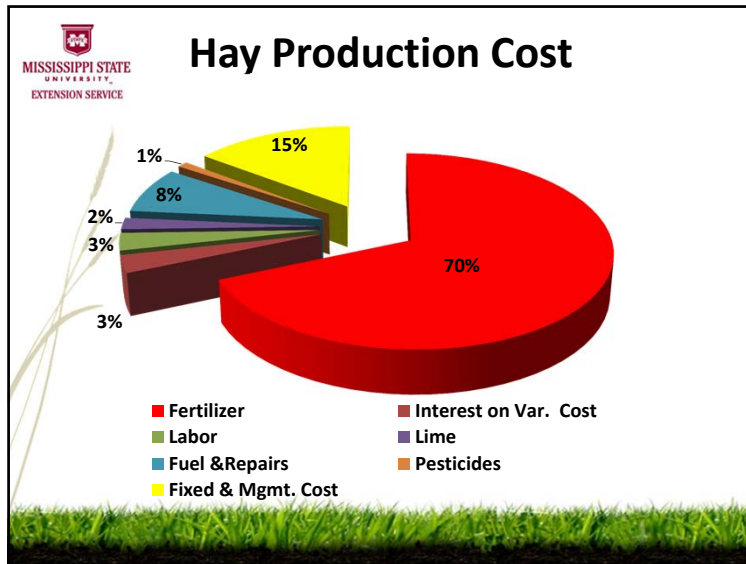




Risky business?

- There are three primary factors in stockpiling success:
 - Fall moisture
 - Fall nitrogen availability
 - Winter weather conditions
- When you make hay for winter feeding
 - You have the greater cost of mechanical harvest
 - Somewhat less weather risk
 - Risk of improper cutting interval and potential losses for improper store conditions.



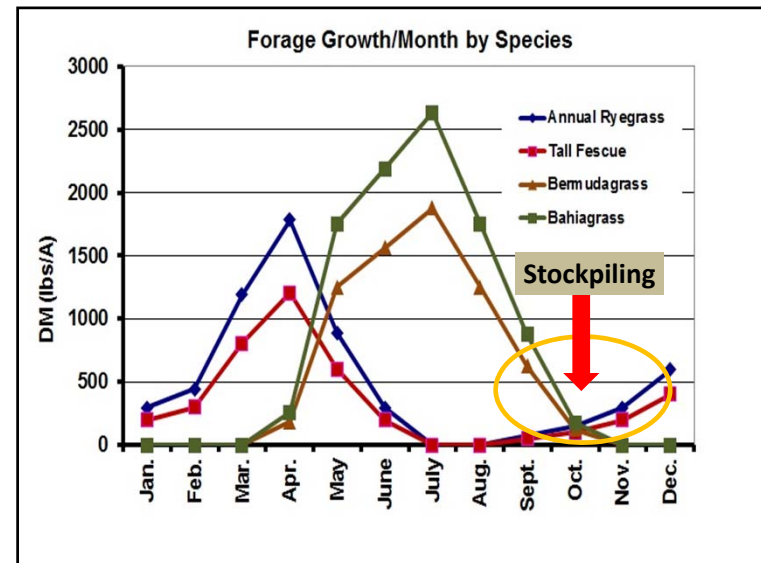



Cattle Feeding Cost

- In Mississippi, annual production cost per cow could range from \$400.00 to \$650.00
 - Winter feeding cost per cow representing 50 to 80% of the total annual cost.
- A three year study (2003-06) conducted in Arkansas indicated that **stockpiling bermudagrass can provide an average savings of \$20.14 per animal unit when compared to feeding hay** (Univ. of Arkansas, 2007).


Typical Growing Season in MS


- Our typical pasture growing season consists of 4 months of slow growth (December, January, August, September), 5 months of rapid growth (February, March, April, May, June, July), and 2 months of no growth (October, November).





Stockpiling


- What is necessary for successful stockpiling?
 - Plans should be made by Aug. 1
 - Stockpiling warm- and cool-season grasses should start mid-August to early September provided that there is adequate moisture and the appropriate fertility program.
 - This will give grasses the opportunity to grow for two months before going dormant in mid- to late October.





Four Factors for Success


- Four essential factors:
 - Creating forage growth.
 - Nutritive value of the forage.
 - Animal nutritional requirements.
 - Method of utilizing the stockpiled forage.
- Use these factors to measure that your expectations do not exceed the reality of what's going to happen once you start using that deferred pasture.





Stockpiling Requirements

- Graze pastures to a 3" stubble height or harvest the final cutting of hay approximately 8 weeks prior to the first estimated frost.
- Mowing the existing biomass is used as the last resort.
 - Not recommended because it places a thatch on top of the grass which delays new growth.




Fertilization for Stockpiling


- Nitrogen application should be between 50 and 60 lbs of N per acre when stockpiling pure or mixed warm-season grasses (no legumes present) to produce the required forage quantity and nutritive value.
 - Waiting until late September to apply N can reduce yield potential by 60 to 80%.
- Phosphorous and potassium should be applied based on soil test recommendations.



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Fertilization


- Applying nitrogen too early may encourage the growth of late summer emerging weeds and subsequently reduce the production of tall fescue.
- Applying nitrogen too late will reduce the quantity of forage, which is stockpiled.
 - Early to mid-September is optimum time to apply nitrogen to tall fescue
 - Late August to early September best time for bahia and bermudagrass



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Which Species Are Suitable for Stockpiling?

- **Warm-season grasses**
 - Bahiagrass
 - Bermudagrass
- **Cool-season grass**
 - Tall Fescue
 - More uniform distribution of growth over the season.
 - It accumulates biomass well in late summer and fall, and its stiff, waxy leaves seem to hold up better than average over the winter.

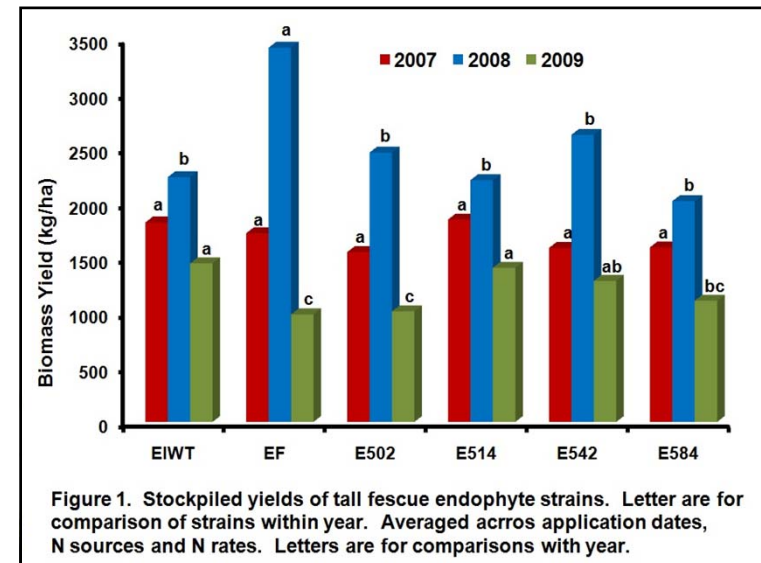


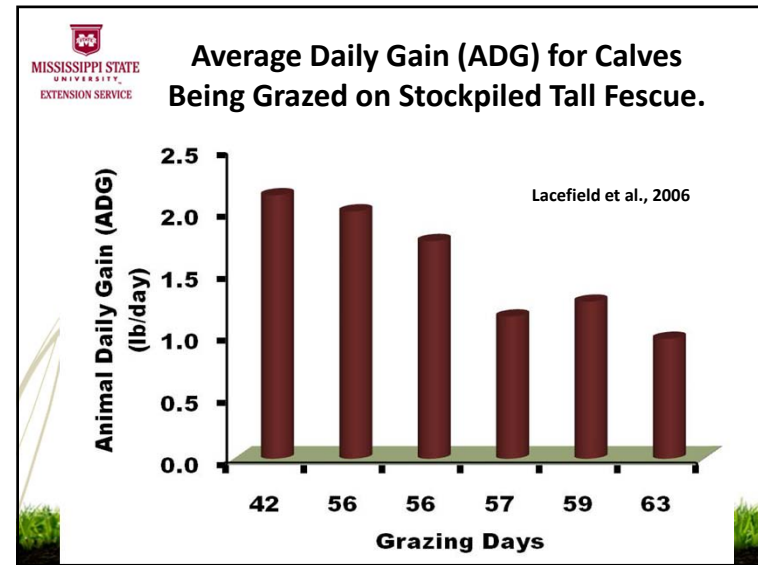
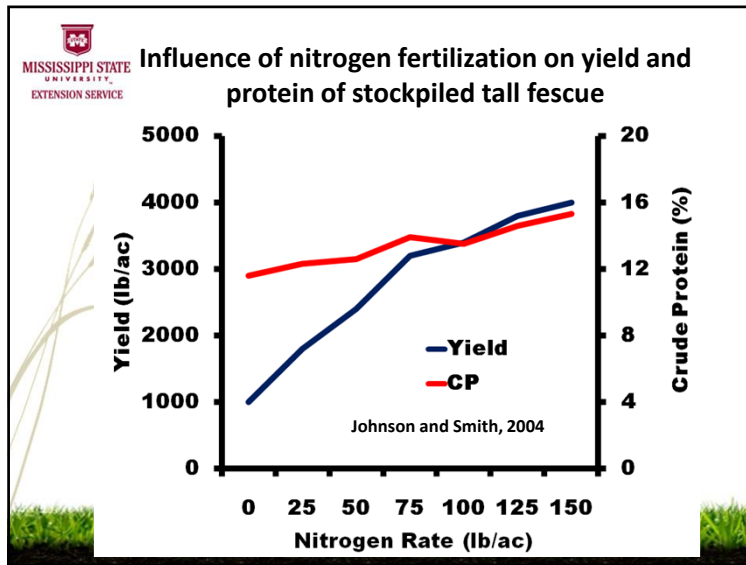
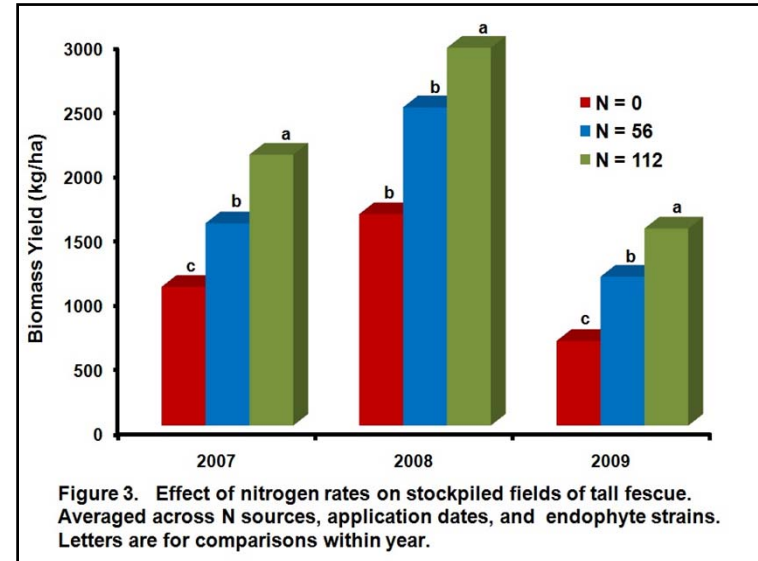
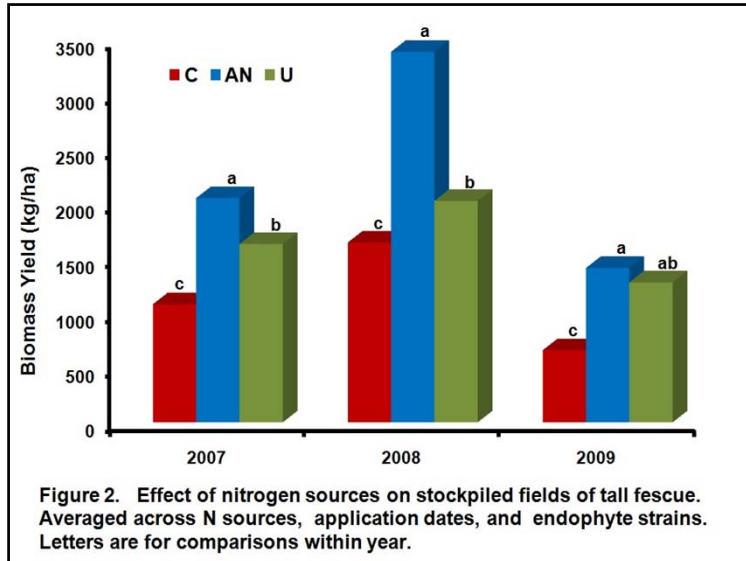
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Stockpiling Yield Potential

- With proper fertilization and depending on rainfall, 2,000 to 3,000 lbs of DM per acre could be stockpiled by November.







Yield Potential and Quality

Table 1. Biomass Production and forage quality of warm-season perennial grasses from November to February.

Biomass Accumulation (Nov. – Feb.)	Yield	Crude Protein	ADF
	lb/ac	%	
Bahiagrass			
Tifton 9	588.5	13.6	35.8
Pensacola	458.1	13.9	35.0
Bermudagrass			
Coastal	666.2	11.6	33.0
Common	725.1	–	34.1
Cheyenne	761.7	14.0	32.4
Giant	714.4	–	38.2
Tifton 85	1068.9	12.5	37.4
Wrangler	513.5	–	30.7

Source: Evers et al., 2004.

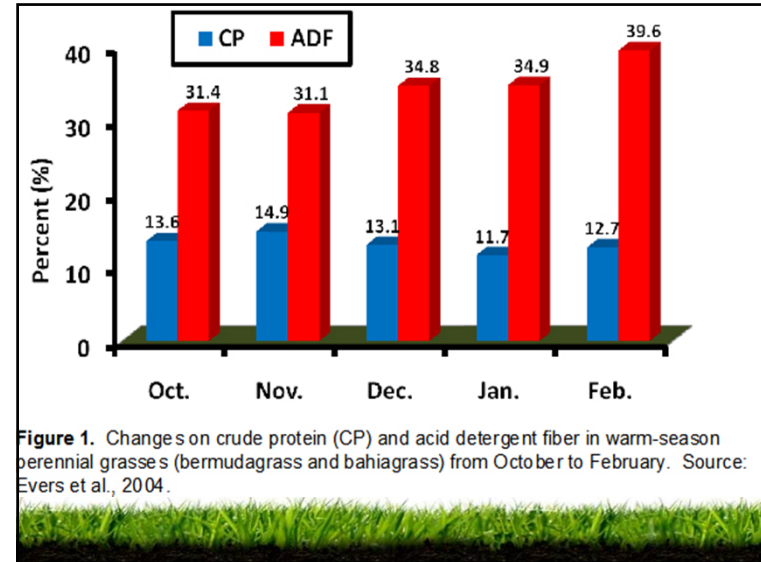


Figure 1. Changes on crude protein (CP) and acid detergent fiber in warm-season perennial grasses (bermudagrass and bahiagrass) from October to February. Source: Evers et al., 2004.

Availability of Stockpiled Bermudagrass after Summer Hay and Pasture Management

Sampling Date	Forage Availability	
	Ungrazed	Grazed
	lb/ac	
Hay		
October 17	6,571	-
November 14	9,316	4,118
December 13	6,644	1,541
January 9	6,444	2,307
Pasture		
October 17	2,741	-
November 14	3,974	1,825
December 13	3,663	1,808
January 9	3,644	1,168

Scarborough et al., 2001

CP of Stockpiled Bermudagrass after Summer Hay and Pasture Production

	Harvest Date			
	Oct. 17	Nov. 14	Dec. 12	Jan. 9
	%			
Hay				
Ungrazed	13.4	12.6	11.9	12.5
Grazed	-	10.0	10.3	11.5
Pasture				
Ungrazed	13.3	12.5	13.1	12.1
Grazed	-	11.8	11.2	10.1

Scarborough et al., 2001



Assessing Forage Growth

- Make a quick visual assessment of how tall and thick the forage growth is.
 - Allows to estimate the length of the grazing period.



How Many Days of Grazing?

$$\text{Days} = \frac{\text{total forage (lbs/ac)} \times \# \text{ acres} \times \% \text{ grazing efficiency}}{\text{avg. animal wt.} \times \text{intake rate (\% body weight)} \times \# \text{ animals}}$$




Calculating Carrying Capacity

- That means that a mature cow (1000 lbs) with a 2.6% of the body weight requirement will need 26lbs of dry matter (DM) per day.
- If a producer is planning to utilize 65% of the stockpiled forage for 60 days to maintain a 50 cow herd, 80,000 lbs DM are required by the animals.
- At a 2,000 lb DM per acre production, 40 acres are required for stockpiling to graze 50 cows from November through the end of January with minimal hay required (0.8 acres/cow).




Grazing Management

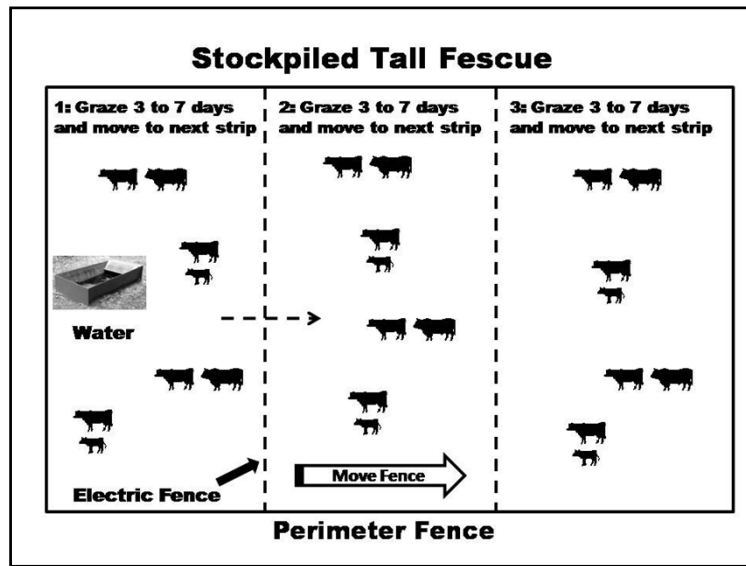
- Strip grazing is the recommended method to obtain a better return.
 - If grazing is not controlled, much forage will be wasted because cattle will select the leafy material the first 4 to 6 weeks.
- The goal is to efficiently harvest the forage by manipulating access so that they will graze down only the top 2/3 of the grass which is primarily leaf.
 - Leave the bottom one-third of the grass, which is mostly low-quality stem.


 **Subdividing Pastures**

- Proper pasture layout is essential for easy pasture management.
 - Utilize large paddocks than can be easily subdivided.
- When pastures are ready to graze, the cattle should be given an area they can harvest in 12 hours to 3 days, depending on type of livestock and production goals.

 **Grazing Management**

- Use a single-strand electric fence to partition the available forage in the paddocks allowing the cows to harvest 65% of the standing forage.
- Always begin grazing the area close to water to avoid wasting forage due to animal trampling.
 - When properly grazed, stockpiled WSG could provide 45 to 60 days for grazing.



 **Grazing Management**

- Strip grazing may allow to make most out of the stockpiled forage.
 - Remember that with stockpiling forage the primary target is animal performance not just utilization.
 - How much animals get to eat and the quality of it.
 - There is no re-growth of bermudagrass after grazing in the fall/winter.
 - Once you force the animals to eat the bottom 1/3 of the forage, the nutritive value is low.
 - The longer they stay in that area, the less positive animal performance will be obtained.



Grazing Management

- It is important that free choice minerals are supplemented during the grazing period and their body condition is closely monitored.
- Observe the manure consistency in the animals to determine if protein deficiency might be an issue.



1: 6-8% Crude Protein, 53-67% TDN Photo: Matt Mattox

This manure appears as firm fecal balls. Feeding a straw-based diet or dehydration could contribute to this score. Cows with a digestive blockage may exhibit this score.





2: 9-11% Crude Protein, 60-70% TDN Photo: Matt Mattox

This manure is thicker and stacks up over 2 inches. Dry cows and older heifers may have this type of manure. (This may reflect that low-quality forages are fed and/or a shortage of protein.) Adding more grain or protein or improving forage quality can lower this manure score.





3: 12-15% Crude Protein, 62-74% TDN Photo: Matt Mattox

This is the optimal score. The manure has a porridge-like appearance, will stack up 1.5 to 2 inches, have several concentric rings, a small depression or dimple in the middle, make a plopping sound when it hits concrete floors, and it will stick to the toe of your shoe.


4: 16-19% Crude Protein, 66-74% TDN Photo: Matt Mattox

This manure appears runny and does not form a distinct pile. It will measure less than one inch in height and splatters when it hits the ground or concrete. Cows on lush pasture may have this manure score. Low fiber or a lack of functional fiber can also lead to this manure score.

5: 20-28% Crude Protein, 68-84% TDN Photo: Matt Mattox

This manure is very liquid with the consistency of pea soup. The manure may actually “arc” from the cow. Excess protein or starch, too much mineral or lack of fiber can lead to this score. Excess urea in the hindgut can create an osmotic gradient, drawing water in the manure. Cows with diarrhea will be in this category.



Make It Work for You

- Investing the time in planning stockpiled forage use for winter grazing can positively impact an operation’s bottom line.
- Stockpiling is a great opportunity to:
 - Buffer your operation.
 - Manage forage and animals.
 - Reduce some of the hay dependence.
 - Reduce cost associated with hay.