

ONA REPORTS

published in

THE FLORIDA CATTLEMAN AND LIVESTOCK JOURNAL

March - 2002

Effect of maturity on quality measures of four common Florida pasture forages

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The three major factors affecting forage quality include; 1) forage specie, 2) forage maturity, and 3) fertilization. Cattle ranchers in Florida have long recognized the value of these three management inputs on the nutritional contribution of forage to their cowherd. Recently, we evaluated the effect of forage maturity on the feeding value of four forages commonly used in south Florida.

The four forages consisted of Pensacola bahiagrass, Floralta limpgrass, Tifton-85 bermudagrass, and Florona stargrass. Because both bermudagrass and stargrass belong to the Cynodon family, comparisons reported herein are often made between the Cynodons and bahiagrass or the Cynodons and limpgrass. Forages were harvested and stored as hay at two stages of maturity (approximately 4 and 10 weeks). For measures of voluntary forage intake, forages were ground and fed individually at a rate to ensure ad libitum intake. Each forage x maturity treatment was evaluated in growing steers and mature cows (n = 6/treatment). Total forage offered and refused was determined during a 14-d sample collection period, which immediately followed a 7-d adaptation period. Forage organic matter digestibility was determined in growing steers by the use of metabolism crates where forage consumption and total fecal production was assessed for 7 d.

Forage with greater maturity was associated with a lower CP concentration. At both stages of maturity, bahiagrass had a higher CP concentration compared to limpgrass. Bahiagrass tended to be less affected by the maturity-associated declines in crude protein compared to the other forages.

With the exception of limpograss, digestibility was reduced with increasing maturity. Bahiagrass had the highest digestibility compared to all other grasses. Bahiagrass was less affected by maturity than the other forages.

Independent of forage specie, average voluntary intake for mature cows and growing steers was reduced by over 23% when forage matured from 4- to 10-wk. Also independent of forage specie, growing steers tended to voluntarily consume more forage (19%) compared to mature cows. Steers and cows consumed more Cynodon forage compared to the other forages at the 4-wk maturity. However, The Cynodons also suffered the greatest loss in voluntary intake when allowed to mature to 10-wk. Again, bahiagrass was less affected by the maturity-associated declines in voluntary intake compared to the other forages

Table 1. The effect of forage specie and maturity on organic matter (OM) crude protein, OM digestibility and OM intake of four Florida pasture forages.			
Item	Forage maturity		Change
	4 week	10 week	
Crude Protein	----- % OM basis ----- -----		----- % -----
Bahiagrass	9.8	7.7	-21.4
Limpograss	7.9	4.2	-46.8
Bermudagrass	9.8	6.6	-32.7
Stargrass	9.5	6.9	-27.4
Digestibility	----- % OM basis ----- -----		----- % -----
Bahiagrass	62.4	59.0	-5.4
Limpograss	56.7	56.2	-0.9
Bermudagrass	59.8	53.1	-11.2
Stargrass	59.6	49.6	-16.8
Voluntary OM Intake	----- % Body weight - -----		----- % -----
Bahiagrass	1.84	1.64	-10.9
Limpograss	1.50	1.21	-19.3
Bermudagrass	1.92	1.47	-23.4

Stargrass	2.45	1.62	-33.9
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The semi-tropical weather and growing conditions of Florida are unique when compared to other US states. Sub-tropical weather is conducive to forage yield, but is generally associated with low nutritive value. The most common forage grass in Florida is bahiagrass (*Paspalum notatum*), covering an estimated 2.5 million acres.

Bahiagrass has a relatively low fertility requirement, is highly tolerant to overgrazing, and is easy to establish from seed. These attributes make bahiagrass a popular choice for most Florida cattlemen. One disadvantage of bahiagrass is that it becomes dormant in winter, when very little yield is realized. Therefore, cattlemen must rely on other pasture forages, stored forage, or purchased feeds to supplement the nutritional needs of the brood cowherd. The results of the current study reveal important information regarding the feeding value of four sub-tropical grasses commonly utilized in Florida. Bahiagrass is commonly considered to be of marginal quality, especially compared to the other forages reviewed in this study. Not considering dry matter yield, these results suggest that bahiagrass contains similar nutrient qualities, especially at latter stages of maturity, compared to limpograss, bermudagrass, and stargrass. It is likely that the low yield, often realized with bahiagrass, contributed to the favorable quality seen in this study. The Cynodons, evaluated in this study, are highly digestible and promote excellent voluntary intake. However, digestibility of the Cynodons, especially bermudagrass, declines rapidly with increasing maturity. This depression in digestibility is also accompanied by a large decrease in voluntary intake. Limpograss, in contrast, is typically low in crude protein but digestibility is not greatly affected by maturity.