What is the feed value of fall fertilized forage in Florida?

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The nutrition of the cowherd in the fall months is critical to maintain adequate body condition score for the subsequent calving and breeding season. However, due to reduced forage production in the fall, producers often rely on supplemental feed to meet the nutritional needs of the cow's nutritional requirements.

Warm-season perennial grasses are the dominant forages used by beef cattle producers in Florida. The main warm-season perennial grass species cultivated are bahiagrass, bermudagrass, and limpograss, and the majority of the forage production occurs during the spring and summer months due to greater temperature, daylength, and rainfall. However, there are some intrinsic differences among these species that affect the seasonality of forage production and nutritive value. Bahiagrass and bermudagrass are more sensitive to daylength and temperature and less productive than limpograss in the fall and winter months. In addition, limpograss usually has greater digestibility than bahiagrass and bermudagrass. New warm-season perennial species and cultivars, such as brachiariagrasses, have been explored as potential forage species for beef cattle production in South Florida. Research conducted at the UF/IFAS Range Cattle Research and Education Center in Ona reported that 'Camello' brachiariagrass had greater forage production and nutritive value than Jiggs bermudagrass in South and North Central Florida.

Fertilization is a management practice that has potential to offset the limited forage production of warm-season perennial grasses in the fall months. However, fertilization is one of the most-costly inputs in cow-calf production systems. Over the last 10 years, the significant increase in fertilizer cost has led producers to decrease fertilizer applications in grazing systems, and consequently decreased productivity of beef cattle production systems. Due to differences in seasonal production among species, timing of fall fertilization may also be an important factor to optimize nutrient use efficiency of warm-season perennial grass species.

A research project, funded by the Florida Cattle Enhancement Board, has been conducted in Ona to assess the fall fertilization effects on warm-season grass species. Treatments are four forage species (bahiagrass, limpograss, bermudagrass, and brachiariagrass) and four fertilization treatment dates (August 23rd, September 23rd, and October 23rd). The cultivars selected for each species were 'Argentine' bahiagrass, 'Gibtuck' limpograss, 'Mislevy' bermudagrass, and 'Camello' brachiariagrass. The fertilization level was 50 lb nitrogen (N)/acre and the source of N

fertilizer, ammonium nitrate. Plots were staged to 7 inches and harvested with 8 weeks regrowth interval.

When fertilized on August 23rd, bermudagrass had the least forage production and there was no difference among bahiagrass, limpograss, and brachiariagrass (Table 1). When fertilized on September 23rd, there was no difference among bahiagrass, bermudagrass, and limpograss; however, brachiariagrass had greater forage production than the other species. Brachiariagrass had the greatest forage production when fertilized on October 23rd, followed by limpograss, bahiagrass, and bermudagrass had the least forage production. As expected, forage production in all species decreased when fertilization date was delayed from August 23rd to October 23rd.

Table 1. Forage production of four warm-season grass species fertilized on three different dates and harvested after 8 weeks regrowth interval.

Forage Species	Fertilization date		
	August 23rd	September 23rd	October 23rd
		----------lb DM/acre----------	
Bahiagrass	1,600a[1]	1,000b	400c
Bermudagrass	780b	1,000b	250d
Limpograss	1,500a	1,000b	620b
Brachiariagrass	1,400a	2,300a	1,100a
SE		50	

[1]Means followed by the same lower-case letter within column are not different ($P > 0.05$)

The digestibility of the forage species was inversely correlated with the forage production and was the least when fertilized on August 23rd, and the greatest on October 23rd (Table 2). Brachiariagrass had the greatest digestibility at all fertilization dates. On plots fertilized on September 23rd and October 23rd, limpograss had less digestibility than brachiariagrass but greater than bahiagrass and bermudagrass.

Table 2. Digestibility of four warm-season grass species fertilized on three different dates and harvested after 8 weeks regrowth interval.

Forage Species	Fertilization date		
	August 23rd	September 23rd	October 23rd
		Digestibility (%)	
Bahiagrass	38c[1]	44c	50c
Bermudagrass	42b	42c	46d
Limpograss	42b	50b	61b
Brachiariagrass	56a	61a	69a
SE		2	

[1]Means followed by the same lower-case letter within column are not different ($P > 0.05$)

The value of the digestible dry matter produced ($/acre, Figure 1) was calculated based on forage production and digestibility of the different treatments, using $ 0.10/lb of digestible dry matter. This value was calculated based on the digestible DM equivalent in a ton of corn silage with 35% dry matter, 70% digestibility, and $ 90/ton.

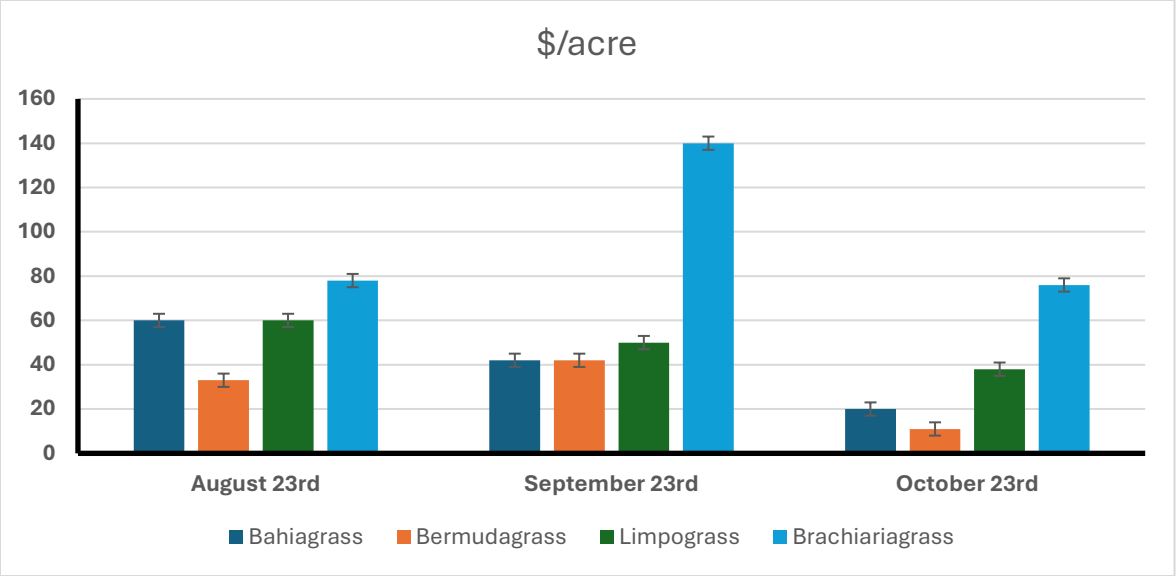

Figure 1. Estimated value of digestible energy produced by four warm-season grass species fertilized on three different dates.

It was observed that there was a decrease in the estimated value of the digestible energy produced in all forage species when fertilization was delayed from August 23rd to October 23rd. Brachiariagrass had the greatest production and value of digestible dry matter, primarily due to a combination of greater forage production and digestibility. Limpograss was the second most efficient digestible dry matter producer when fertilized in September23rd and October 23rd. Bahiagrass is known for its sensitivity to daylength and as expected, there was a linear decrease in forage production from August 23rd to October 23rd, which negatively impacted its digestible dry matter production value. There was an unexpected relatively limited forage production and nutritive value in bermudagrass in this trial and the reasons for the fact are unknown. The research trial will be repeated in 2025 and data reported as it becomes available.

In conclusion, bahiagrass pastures should be fertilized no later than late August to be grazed or harvested in early fall, but it is important to mention that the forage may have limited digestibility, and supplementation may be needed to meet the cow's nutritional requirements. Limpograss and brachiariagrass can be fertilized in late September or October; however, delaying the fertilization to October would decrease lbs/DM per acre.

Additionally, it is important to remember limpograss and brachiariagrass's differences. Limpograss is adapted to poorly drained soils, while brachiariagrass must be cultivated in well drained soils. Due to greater digestibility, brachiariagrass can be grazed by animals with greater nutrient requirements, such as replacement heifers, while limpograss can be grazed by mature cows with less requirements.

If you have any questions about forage management in Florida, please contact Joe Vendramini, at jv@ufl.edu or 863-735-1314.

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Upcoming Events

Ona Highlight – 'Heat Stress in Pregnant Beef Cows' – April 15, 11:00 – 11:45 a.m. with Dr. Philipe Moriel. Visit our website calendar to register for the Zoom or call us to attend in person: 863-735-1001.

UF/IFAS Range Cattle REC Field Day – April 17, 8:00 a.m. – 3:00 p.m. Learn about faculty and student research, visit field sites, and enjoy a steak lunch. Register by April 15th to attend, fee $30: https://rcrec-2025-fd.eventbrite.com. Questions, call us at 863-735-1001.

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UF/IFAS Range Cattle REC - 3401 Experiment Station Rd., Ona - http://rcrec-ona.ifas.ufl.edu/