

Introduction

Warm-season perennial grasses, including bahiagrass (*Paspalum notatum*), bermudagrass (*Cynodon dactylon*), brachiariagrass (*Urochloa* spp.), and limpograss (*Hemarthria altissima*), are the primary forages used by beef cattle producers in Florida. However, forage production typically declines in the fall, increasing reliance on costly supplemental feed. Late-season fertilization may extend forage availability and reduce winter feeding costs, but fertilizer inputs are expensive, and plant responses can be limited. This study **evaluated the effects of late-season fertilization on forage production and nutritive value of four warm-season perennial grasses and compared the economic value of the forage produced with supplemental feed.**

Materials & Methods

- **Location:** Range Cattle REC, Ona, FL (2024-2025)
- **Design:** Split-plot in RCBD (4 replicates)
- **Main plots:** Four forage species (bahiagrass, limpograss, bermudagrass, brachiariagrass)
- **Subplots:** Three fertilization dates (23 Aug, 23 Sept, 23 Oct)
- **Fertilization rate:** 50 kg N ha⁻¹
- **Harvest:** 8 weeks after fertilization
- **Economic analysis:** Cost kg⁻¹ of digestible DM calculated using forage yield, digestibility, fertilizer cost, and supplement benchmarks

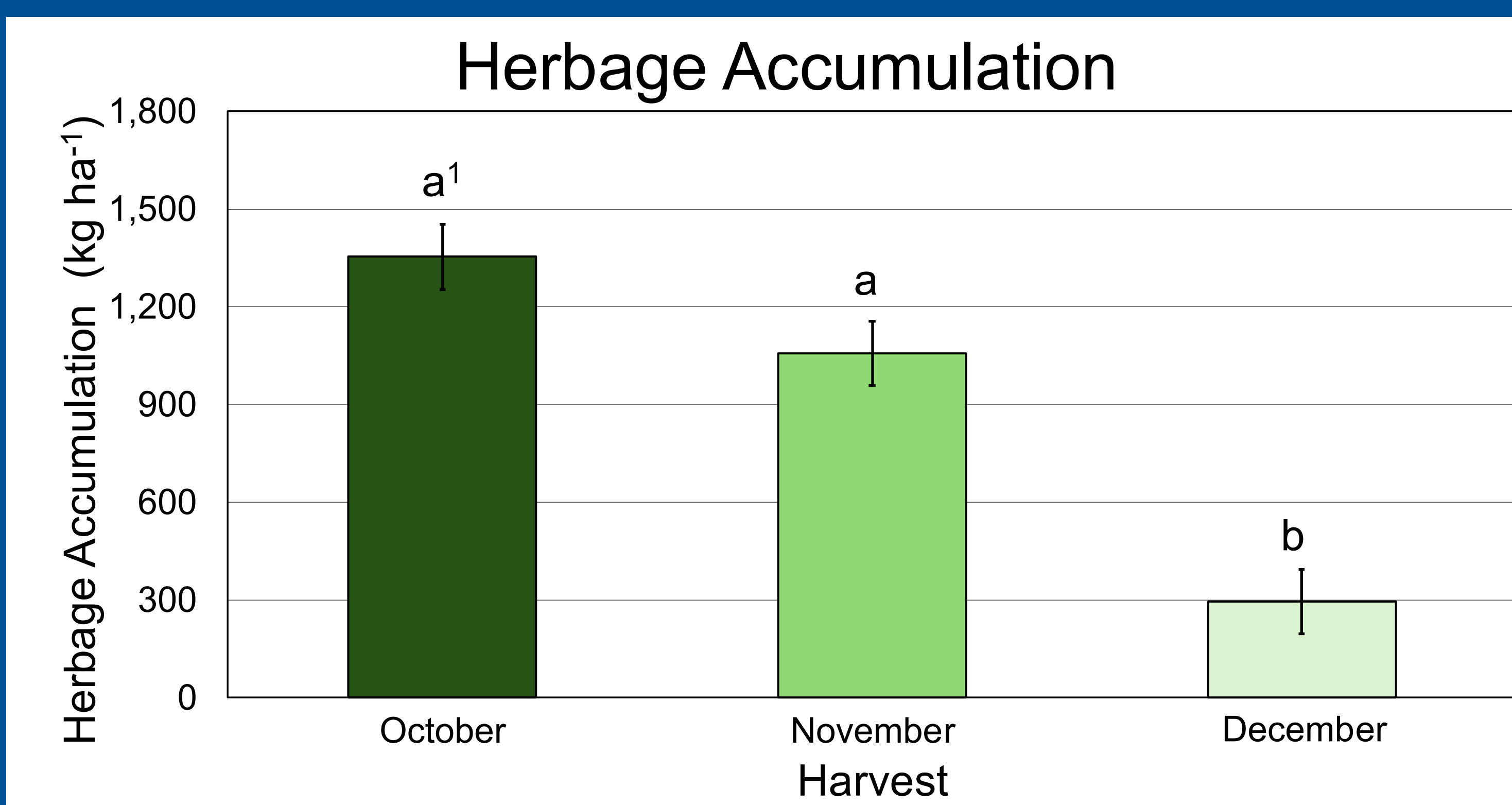


Figure 1. Herbage accumulation of warm-season forages harvested after 3 different fertilization dates after an 8-week regrowth interval. ¹Bars followed by the same lower-case letter when present are not significantly different between harvest dates ($p < 0.05$).

Table 1. Average leaf proportion (%) and digestibility (%) of four warm-season grass species fertilized on three different dates and harvested after an 8-week regrowth interval over two years.

Species	Leaf Proportion (%)	Digestibility (%)
Bahiagrass	26 ab	47 bc
Bermudagrass	16 b	44 c
Brachiariagrass	29 a	54 a
Limpograss	20 b	50 ab
SE	3	2

¹Means followed by the same lower-case letter within column are not different ($p < 0.05$).

Table 2. Leaf proportion (%) and digestibility (%) of four warm-season grass species fertilized on three different dates and harvested after an 8-week regrowth interval over two years.

Harvest	Leaf Proportion (%)			Digestibility (g kg ⁻¹)		
	2024	2025	p-value	2024	2025	p-value
October	34 a	33 a	NS	450 b	480 a	NS
November	26 ab	20 b	NS	500 ab	450 a	NS
December	22 b	2 c	<0.001	560 a	480 a	0.015
SE	2			40		

¹Means followed by the same lower-case letter within column are not different ($p < 0.05$).

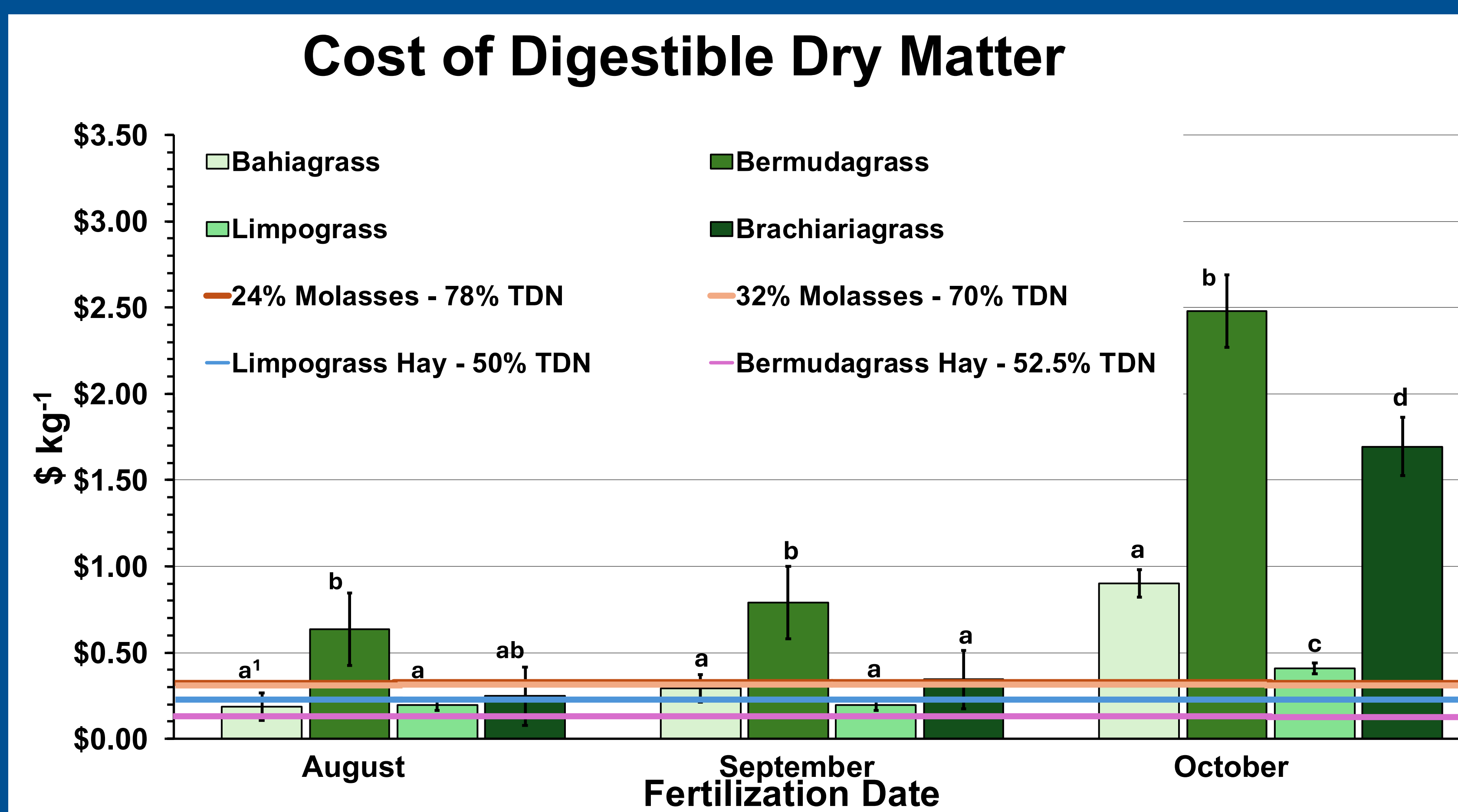


Figure 2. Cost of digestible dry matter of four warm-season grasses and four supplements compared over three months. ¹Bars followed by the same lower-case letter when present are not significantly different between different harvest dates ($p < 0.05$).

Results

- Herbage accumulation differed among harvests with harvest 1 and 2 producing 359% and 258% more forage than harvest 3 (Figure 1).
- Leaf proportion differed among species, with brachiariagrass having the greatest leaf proportion, 45-81%, greater than limpograss and bermudagrass but not different from bahiagrass (Table 1).
- Leaf proportion declined across harvests in both years, decreasing by approximately 35% from Harvest 1 to Harvest 3 in Year 1 and 94% in Year 2. In Year 1, this decline was accompanied by a 24% increase in digestibility, whereas in Year 2 digestibility did not differ among harvests (Table 2).
- Limpograss provided the greatest economic return per unit of digestible dry matter, making it the most cost-effective forage option under these conditions (Figure 2).

Conclusions

- Fertilizer application by late August provided forage availability for early fall grazing, while **delayed fertilization consistently reduced production.**
- **Limpograss was the most economical forage tested.**
- **Bermudagrass showed limited responsiveness** to late-season fertilization and was consistently the least economical species evaluated.
- **Early-season fertilization produced forage comparable to purchased supplements in cost-effectiveness,** suggesting that strategic fertilization can reduce reliance on supplemental feed.