In Situ Crude Protein and Dry Matter Disappearance of Stockpiled Limpograss

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INTRODUCTION

Forage shortfall during winter increases production costs for beef cattle enterprises in the southern USA. An alternative to hay or haylage is stockpiling forage for fall or winter use. Limpograss [*Hemarthria altissima* (Poir.) Stapf et C.E. Hubb.] is the best available species for stockpiling in Florida because it is productive and maintains greater digestibility than other warm-season grass species at advanced stages of maturity. 'Floralta' limpograss is the dominant cultivar, but recent breeding efforts have resulted in the development of several limpograss hybrids that may have potential for use in Florida. There is need for evaluation of these hybrids under stockpiling management. The objective of this study was to assess under stockpiling management the two limpograss hybrids that were recently selected for cultivar release and compare them with the current industry standard, Floralta.

MATERIAL AND METHODS

The experiment was conducted in Gainesville, FL from August to November 2012. Treatments were the factorial arrangement of two new hybrid cultivars (Gibtuck and Kenhy) and Floralta stockpiled for 8, 12, or 16 wk in a randomized complete block design with three replicates. Plots (1.5 × 1.5 m) were clipped to a 20-cm stubble and fertilized with 100 kg N ha^{-1} on 1 Aug. 2012. After harvest and drying, samples of each treatment were placed in polyester bags incubated in two steers (*Bos* sp.) for 0, 3, 6, 9, 12, 24, 48, and 72 h, and disappearance of dry matter (DM) and crude protein (CP) were fitted using the non-linear model proposed by Ørskov and McDonald (1979). The DM and CP fractions were described as A, rapidly degradable; B, potentially degradable; and C, undegradable.

RESULTS

There was no difference in DM Fraction A among cultivars (Table 1); however, Kenhy had greater Fraction B (600 g kg^{-1}) than Gibtuck (580 g kg^{-1}), which was greater than Floralta (540 g kg^{-1}). Kenhy and Gibtuck had lesser Fraction C than Floralta (250 vs. 300 g kg^{-1}). Forage harvested at 8 wk of regrowth had the greatest DM Fraction B and least Fraction C; however, there was no difference between 12 and 16 wk (Table 2).

Crude protein Fractions A (450 g kg^{-1}) and C (350 g kg^{-1}) were similar among cultivars but Fraction B was greater for Kenhy and Gibtuck than Floralta (240 vs. 180 g kg^{-1}; Table 1). Crude protein Fraction A was greater at 8 and 12 wk of regrowth than at 16 wk (500 vs. 420 g kg^{-1}; Table 2). Forage harvested at 8 wk had the greatest CP Fraction B (250 g kg^{-1}) and there was no difference between 12 and 16 wk (170 g kg^{-1}). Crude protein Fraction C was least at 8 wk (240 g kg^{-1}) followed by 12 and 16 wk (350 and 390 g kg^{-1}).

CONCLUSIONS

The new limpograss cultivars presented superior CP and DM disappearance when compared with the industry standard, Floralta, which could positively impact animal performance. Longer stockpiling regrowth periods may enhance herbage accumulation, but they decreased DM and CP disappearance.

Table 1. Limpograss cultivar effects on dry matter (DM) and crude protein (CP) ruminal disappearance fractions

	Limpograss cultivar				
DM fractions† (g kg^{-1})	Floralta	Gibtuck	Kenhy	*P* value	SE
A	160a	150a	150a	0.40	10
B	540c‡	580b	600a	0.01	20
C	300a	260b	250b	≤ 0.01	
CP fractions (g kg^{-1})					
A	505a	480a	455a	0.38	30
B	160b	220a	245a	0.04	20
C	335a	300a	300a	0.11	20

† A = readily degradable, B = potentially degradable, and C = undegradable
‡ Means within rows followed by the same letters are not different (*P* ≤ 0.05)

Table 2. Limpograss regrowth interval effects on dry matter (DM) and crude protein (CP) ruminal disappearance fractions

	Regrowth interval (wk)				
DM Fractions† (g kg^{-1})	8	12	16	*P* value	SE
A	150a‡	150a	160a	0.39	13
B	610a	555b	560b	≤ 0.01	15
C	240b	300a	280a	≤ 0.01	10
CP Fractions (g kg^{-1})					
A	510a	500a	420b	0.04	25
B	250a	150b	180b	0.02	30
C	240c	350b	390a	≤ 0.01	17

† A = readily degradable, B = potentially degradable, and C = undegradable
‡ Means within rows followed by the same letters are not different (*P* ≤ 0.05)