

Development of a bahiagrass *Paspalum notatum* Flugge with increased short-day biomass

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Introduction Low herbage productivity of subtropical grasses during the short-day winter months of October through to March can place a severe burden on livestock producers in Southeastern U.S. Researchers at the University of Florida (Sinclair *et al.*, 2001) hypothesised that the decrease in forage production might result from physiological dormancy induced by short day length. A study using artificial lights to extend the day length demonstrated that maintaining the day length at 15 hr during the short-day length period increased 'Pensacola' bahiagrass *P. notatum* Flugge *saure* Parodi forage yield 122% when compared with normal photoperiod (Mislevy *et al.*, 2001). A Pensacola-derived bahiagrass population was selected for increased vegetative growth under short-day length using restricted recurrent phenotypic selection for three cycles (UF Cycle 3) to increase forage yield. Plants that comprise this population were less sensitive to short photoperiod and produced increased forage mass during the short days. The objective of this clipping study was to evaluate forage production and forage nutritive value of UF Cycle 3 compared with selected standard entries during short and long day length periods.

Materials and methods The experiment was conducted at University of Florida, Ona, FL (82° 55' W and 27° 26' N) over 2 years. The study consisted of eight entries (Table 1) in a randomised complete block with ten replications. Plots were clipped (to 7.5 cm) every 5 wk during short days and every 4 wk during long days.

Table 1 Dry biomass yield (Mg/ha) during short and long days and crude protein (CP), in vitro organic matter digestion (IVOMD g/kg), of *Paspalum* entries grown during 2002-2004

Entry	Total biomass yield		CP			IVOMD		
	Short days	Long days	Summer	Autumn	Winter	Summer	Autumn	Winter
Atra paspalum (Suerte)	7.0 a†	17.2 a	156 a	140 d	136 c	659 a	636 a	683 a
UF Cycle 3	6.9 a	15.7 b	153 a	149 c	178 b	608 b	539 c	679 ab
UF Turf	6.1 b	14.4 b	151 a	155 c	179 b	594 bc	506 d	670 ab
Tifton 7	5.0 c	14.7 b	157 a	162 b	179 b	593 bc	584 b	645 cd
Tifton 9	5.4 c	14.5 b	151 a	154 c	180 b	591 c	500 d	670 ab
Sand Mountain	3.7 d	11.0 c	154 a	164 b	181 b	595 bc	477 e	645 cd
Pensacola	3.4 d	11.7 c	155 a	173 a	190 a	573 d	456 f	660 bc
Argentine	2.4 e	11.7 c	154 a	173 a	183 ab	575 d	535 c	633 d

†Means within the column followed by the same letter (s) are not different ($P>0.05$)

Results Dry biomass yield of UF Cycle 3 during the short and long day photoperiod was 22 and 8% greater than 'Tifton 9' and 51 and 25% greater than Pensacola, respectively. Digestibility of UF Cycle 3 was 40 and 80 g/kg and 10 and 20 g/kg higher than Tifton 9 and Pensacola during October and January, respectively. Data indicated plants less sensitive to day length will produce increased above ground biomass during short days.

Conclusions Data demonstrate that UF Cycle 3 out yielded Tifton 9 and Pensacola 1.5 and 1.2 and 3.5 and 4.0 Mg/ha during the short and long day length., respectively. Forage nutritive value was generally equal or higher for UF Cycle 3 compared with standard cultivars of Tifton 9 and Pensacola.

References

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