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Herbage accumulation, nutritive value and persistence of Mulato II in Florida

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Introduction

Grasses in the *Brachiaria* genus are the most widely grown forages in tropical America, occupying over 80 Mha (Boddey *et al.* 2004). Mulato II is apomictic and a vigorous, semi-erect cultivar resulting from 3 generations of crosses including original crosses between ruzigrass and signalgrass (cv. Basilisk, apomictic tetraploid). According to Peters *et al.* (2003), Mulato produced 25% more herbage mass than palisadegrass (*Brachiaria brizantha*) and koroniaviagrass (*Brachiaria humidicola*) under similar management practices. Although Mulato II shows promise as a forage in tropical regions, herbage accumulation and persistence in subtropical areas is unknown. This publication summarises results of the research with Mulato II conducted in Florida in the last 5 years.

Methods

South Florida

This experiment was conducted on Mulato II in Ona, FL (27°26' N, 82°55' W) between August and November in 2007 and 2008. Treatments were the factorial combinations of 3 stubble heights (2.5, 7.5 and 12.5 cm) and 2 harvest frequencies (2 and 4 weeks) in a randomised complete block design with 4 replicates. Plot size was 3 x 2 m with 1-m alley between plots. Samples were analysed for *in vitro* digestible organic matter (IVDOM) and crude protein (CP) concentrations.

Central Florida

The study was conducted in Gainesville, FL (29°44' N, 82°16' W) from June 2008 to June 2010. Treatments were Mulato II treated as an annual (planted in 2008 and 2009), Mulato II treated as a perennial (planted in 2008 only), Tifton 85 (*Cynodon* hybrid) (planted in 2008), and Tifleaf 3 pearl millet (*Pennisetum glaucum*) and Hayday sorghum-sudangrass (*Sorghum bicolor*) (both planted in 2008 and 2009), arranged in a randomised complete block design with 4 replicates. The annual treatment for Mulato II was included to compare the use of this grass with the annual species pearl millet and sorghum-sudangrass, while the perennial Mulato II treatment was included to compare persistence and productivity over time with Tifton 85 bermudagrass. Plots were 5 x 5 m with a 1-m alley between plots. Seeded grass was planted on June 2008 and 2009. Tifton 85 was planted vegetatively using 100 plugs per plot. In general, perennials were harvested every 5-6 weeks

throughout the summer, with slightly longer intervals during cool autumn weather. An area of 2.88 m² was harvested with a sickle-bar mower from the centre of the plot to a 10-cm stubble height. Herbage accumulation, IVDOM, and CP were determined.

North Florida

The study was conducted in Marianna, FL (30°52' N 85°11' W). Treatments were 3 forage species, Tifleaf 3 pearl millet, Hayday sorghum-sudangrass and Mulato II arranged in a completely randomised design with 3 replicates. Pastures (0.6-ha experimental units) were established on June 2008 and June 2009 in a prepared seedbed. Pastures were stocked continuously using a variable stocking rate. Two heifers (Angus crossbred) were assigned as testers to each experimental unit. Additional heifers of comparable age and weight to the testers were introduced or removed to maintain similar forage stubble height (\approx 30 cm) across experimental units. Herbage mass, nutritive value, stocking rate and average daily gains per head and per ha were evaluated.

Results

In south Florida, there was a quadratic decrease in herbage accumulation from 2.0 to 1.6 t/ha with decreasing stubble height. Conversely, herbage CP increased linearly with decreasing stubble height (from 14 to 17%), while IVDOM was virtually unaffected (66 vs 67%). Mulato II ground cover increased linearly from 74 to 87% as stubble height increased from 2.5 to 12.5 cm.

In central Florida, Hayday and Tifleaf 3 established more rapidly than Mulato II; however, Mulato II had greater herbage accumulation later in the fall. The perennial treatments (Mulato II and Tifton 85) had greater herbage accumulation overall than the annual treatments and Tifton 85 had greater ground cover than Mulato II in 2009 (73 vs 36%) and 2010 (73 vs 12%).

In north Florida, in year 1, there were no differences in herbage allowance (0.9 kg DM/kg body weight), average daily gain (0.5 kg/d) and gain/ha (168 kg) among treatments. However, in year 2, Mulato II had greater herbage allowance (2.0 vs 0.7 kg DM/kg BW) and ADG (0.78 vs 0.41 kg/d) than Tifleaf 3 and Hayday but similar gain/ha (302 kg).

Conclusions

In central and north Florida, Mulato II may behave as an

annual or biennial forage and its greater herbage accumulation and nutritive value make it a suitable alternative to Tifton 85 and warm-season annual forages. In contrast, in south Florida, Mulato II behaves as a perennial forage and displays superior nutritive value to the other species. However, forage production is reduced if it is cut frequently to short stubble heights. These management strategies should be avoided.

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