

## GROWTH AND NUTRIENT ASSIMILATION IN SUGARGRAZE, RED-NAPIER AND CO5 IN TROPICAL CLIMATE

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### Abstract

Sorghum and Napier hybrid cultivars exhibit better adaptation to tropical climates, offering a sustainable solution to fodder shortages during dry periods. This study investigated the growth and nutrient assimilation of Sugargraze (*Sorghum bicolor*), Red-Napier (*Pennisetum purpureum* cross), and CO5 (*P. purpureum* x *Pennisetum americanum*) grown at Diyagama Farm located in the mid country wet zone of Sri Lanka. Fodder cultivars were randomly assigned to plots (25m<sup>2</sup>) according to Randomized Complete Block Design. Sugargraze seeds and Napier stem cuttings were planted with a recommended spacing of 15 x 45 cm and 1 x 1 m within and between rows, respectively. After 12 days, Sugargraze and Napier cultivars received a recommended mixture of Urea-TSP-MOP at the rate of 125-125-100 kg/ha and 100-200-150 kg/ha, respectively. Shoot or plant density, clump or plant height, and leaf density were weekly recorded. Forages were harvested at nine weeks, and their dry matter (DM), organic matter (OM) and ash contents were determined. Subsequently, fresh matter (FM) and DM yields were estimated. At two weeks, Red-Napier and CO5 initiated shooting and reached the peak ( $p < 0.05$ ) shoot density at six (4.11 shoots/m<sup>2</sup>) and seven (5.90 shoots/m<sup>2</sup>) weeks, respectively. They achieved the peak ( $p < 0.05$ ) leaf density at eight weeks (48.15 and 76.80 leaves/m<sup>2</sup>, respectively). At harvest, Sugargraze recorded the highest ( $p < 0.05$ ) plant height, plant density, and leaf density (113.74 cm, 33.00 plants/m<sup>2</sup>, and 251.25 leaves/m<sup>2</sup>, respectively), followed by CO5 and Red-Napier. Proximate composition of fodder was different ( $p < 0.05$ ) among the cultivars. Sugargraze exhibited higher ( $p < 0.05$ ) DM and OM contents (15.44% and 90.32%, respectively) than Red-Napier (12.08% and 83.48%, respectively) and CO5 (10.55% and 82.46%, respectively). Moreover, Sugargraze recorded greater ( $p < 0.05$ ) FM and DM yields (22.08 and 3.43 MT/ha, respectively) than Red-Napier (10.92 and 1.32 MT/ha, respectively) and CO5 (15.10 and 1.60 MT/ha, respectively). Sugargraze demonstrated superior nutrient assimilation, outperforming Red-Napier and CO5 at Diyagama in the in mid country wet zone of Sri Lanka.

**Keywords:** Dry matter content, Leaf density, Organic matter content, Plant density, Yield

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