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Apparent digestibility of four elephant grass genotypes

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The need for forage yield and quality improvement is, among the main technical limitations in national husbandry, one of the major challenges for researchers to obtain forage cultivars to meet herd nutritional requirement. We assessed sheep digestibility using total feces collection technique aiming to evaluate new elephant grass varieties. We used four elephant grass genotypes developed in National Center for Milk Cattle Research (CNPGL – Milk Cattle EMBRAPA), G1: CNPGL 91-11-2, regular height, up to 3 meters and green; G2: CNPGL 96-27-2, regular height, up to 3 meters and purple; G3: CNPGL 96-24-1, regular height, up to 3 meters and green; and G4: CNPGL 00-1-3 intermediate height, up to 2 meters and green. The experiment was carried out in the Unit of Small Ruminant Metabolic Studies in Belém, PA, Brazil. Twenty woolless Santa Inês sheeps with an average weight of 20.84 ± 3.65 kg were housed into individual wooden metabolic cages fitted with drinker, salt lick and feeder. The animals were randomly distributed into four treatments, five animals by each, in a totally randomized statistical design. Grass was harvested approximately 55 days after standardization cutting and supplied to animals twice a day, at 8 a.m. and 4 p.m. during 19 days, in which 14 days for handling, diet, environment adaptation and 5 days to collect remained forage and feces. Dry matter (DM), crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF) and non-fibrous carbohydrate (NFC) were evaluated from collected samples to assess digestibility calculation. Data were subjected to variance analysis and means compared by "t" test at 5% probability. G3 genotype dry matter presented greater digestibility, which was 64.35% ($P<0.05$), and the other treatments obtained 56.88; 56.92 and 58.66% for G1, G2 and G4 genotypes, respectively. The highest value of G3 can be explained for the lowest DM intake ($P<0.05$) by sheeps fed with this forage, which was 394 g dia^{-1}, against 505; 504 and 465 g dia^{-1} by G1, G2 and G4, respectively. In addition, there was greater proportion of dead material and lower leaf: stem ratio for G3. Less DM intake of G3 might have caused increase in diet retention time inside rumen; thus, extending its exposure time to microorganisms and enhancing digestibility. This less intake also helped nutrient digestibility for G1, G2, G3 and G4 of crude protein (79.4; 78.3; 86.8 and 82.6%) ($P<0.05$); neutral detergent fiber (54.5; 53.7; 64.4 and 55.1%) ($P<0.05$); acid detergent fiber (25.2; 29.2; 45.8 and 25.1%) ($P<0.05$); NFC (74.6; 82.9; 78.2 and 75.2%) ($P<0.05$), respectively. However, the major DM digestibility was observed in G3 genotype (11% higher than G1), it was not enough to compensate lower intake (22% related to G1). Based on results, G1 (CNPGL 91-11-2), G2 (CNPGL 96-27-3) and G4 (CNPGL 00-1-3) genotypes revealed to be more promising as ruminant feed bulky. Nevertheless, new studies must be performed at varied conditions, especially at different plant ages and cutting heights for each genotype.

Keywords: forage, *Pennisetum purpureum*, productivity, ruminants, sheep