

## Bromatological composition of *Brachiaria humidicola* cv. BRS at different harvest ages

M.L.L. Costa<sup>1</sup>, I.F. Silva<sup>1</sup>, M.S. Santos<sup>1</sup>, V.A. Avelar<sup>1</sup>, L.M. Souza<sup>1</sup>, G.R. Moreira<sup>2</sup>

<sup>1</sup>Federal University of Paraíba, Areia, Paraíba, 58397-000, Brazil, <sup>2</sup>Federal Rural University of Pernambuco, Recife, Pernambuco, 52171-900, Brazil, Email: [lindomarcia@cca.ufpb.br](mailto:lindomarcia@cca.ufpb.br)

**Introduction** A product resulting from a selection process that took 18 years, coordinated by Embrapa Gado de Corte (Embrapa Beef Cattle), *Brachiaria humidicola* cv. BRS Tupi was selected based on productivity, vigor, seed production, support ability, and animal performance. When compared to *B. humidicola* cv. Comum, this cultivar has stoloniferous growth and forms bushes, with longer and denser runners, more intense tillering, longer and narrower leaf blades, short rhizomes and streaked leaf sheaths, yellow anthers, dark red stigmas, and visible pilosity in its spikelets. Its average size can reach vegetative height of 50 to 75 cm (Barbosa, 2012). The goal of this study was to evaluate the bromatological composition of *Brachiaria humidicola* cv. BRS Tupi at different harvest ages.

**Materials and Methods** The trial was carried out in a greenhouse in the Department of Soils of the Center of Agrarian Sciences of the Federal University of Paraíba, Campus Areia. The forage *B. humidicola* cv. Tupi was planted in 0.071 m<sup>2</sup> vases with light sandy loam. Soil acidity was amended and, after eight days, the seeds were planted in the vases with four holes with five seeds each, taking into account that the cultivar's germination rate is 50%. Twenty days after the plants broke soil, they were pruned and fertilized for their establishment and four plants were left in each vase. Seven days later, they were pruned for uniformity at 10 cm above the soil. Watering was controlled daily by weighing the vases and the soil was kept at 100% field capacity. The treatments consisted of harvesting the forage at 14, 28, 42, and 56 days. Dry matter, crude protein, mineral matter, neutral detergent fiber (NDF), acid detergent fiber (ADF), and lignin contents were determined. The study used a completely randomized design with four treatments (harvest ages of 14, 28, 42, and 56 days) and five repetitions. Tukey's test (P<0.05) and regression equations were used.

**Results and Discussion** The dry matter data fit a linear equation  $Y=15.49+0.25x$  ( $R^2= 0.98$ ) as expected since the dry matter productivity increased as the plants grew older. However, these results did not match those by Costa et al. (2011), who evaluated *B. humidicola* cv. BRS Tupi between 14 and 42 days of growth and found a quadratic behavior in the dry matter yield with the maximum value estimated at 39.1 days. The mineral matter data fit a linear regression  $Y=7.54 - 0.05x$  ( $R^2= 0.87$ ), which showed lower mineral matter content as the plants were older at harvest. The crude protein data fit the quadratic regression equation  $Y=0.012x^2 - 1.2317x + 37.84$  ( $R^2= 0.99$ ), in which the lowest point was recorded at 51 days of age. The high crude protein contents found at 14 days are related to the initial vegetative growth stage of the forage. According to Van Soest (1994), the reduction in cell content and consequent reduction in the crude protein content in the forages take place as they grow older. The data of the fiber fractions (NDF and ADF) and lignin did not fit the regression equations (Table 1). An increase (P<0.05) was found in the NDF fraction as the plants grew more mature. This result was expected due to the increase of the cell wall components. The ADF levels also increased (P<0.05) between 14 days and the other harvest ages and no difference was found after 28 days of harvest. The lignin levels were lower (P<0.05) at 14 days when compared to the other harvest ages. The high values found for the other harvest

ages reduce the forage's nutritional value. According to Van Soest (1994), the close physical association between lignin and cell wall polysaccharides are the main factors limiting the access of the microbial enzymes to this substrate, which will reduce the digestibility of structural carbohydrates and thus lower the forage's nutritional value.

**Conclusions** According to the bromatological composition evaluation, *Brachiaria humidicola* cv. BRS Tupi, at 28 or 42 days of growth, can be used as roughage for animals.

### References

- Barbosa, R.A. *Brachiaria humidicola* BRS TUPI. 2012. Embrapa Gado de Corte. <http://www.cnpqc.embrapa.br>.
- Costa, N.L., Paulino, V.T., Moraes, A. and Magalhães, J.A. 2011. Produção de forragem, composição química e morfogênese de *Brachiaria humidicola* cv. Tupi em diferentes idades de corte. Pub. Med. Vet. Zoot. 5.
- Van Soest, P.J. 1994. Nutritional ecology of the ruminant. 2.ed. Ithaca: Cornell University Press, 446 p.

**Table 1** Fiber contents of *B. humidicola* cv. BRS Tupi at different harvest ages

Variable (%)	Harvest ages (days)				CV (%)
	14	28	42	56	
Neutral detergent fiber	61.54 c	73.00 ab	71.66 b	77.06 a	3.19
Acid detergent fiber	28.87 b	40.88 a	40.15 a	42.50 a	3.64
Lignin	3.17 b	5.05 a	5.12 a	5.43 a	9.62

Different letters in the line differ by Tukey's test (P<0.05).

CV= coefficient of variation