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## Influence of Nitrogen in the Anatomical Characteristics and Yield of Tropical Grasses

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**Presenter Information**

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## Influence of Nitrogen in the Anatomical characteristics and yield of tropical grasses

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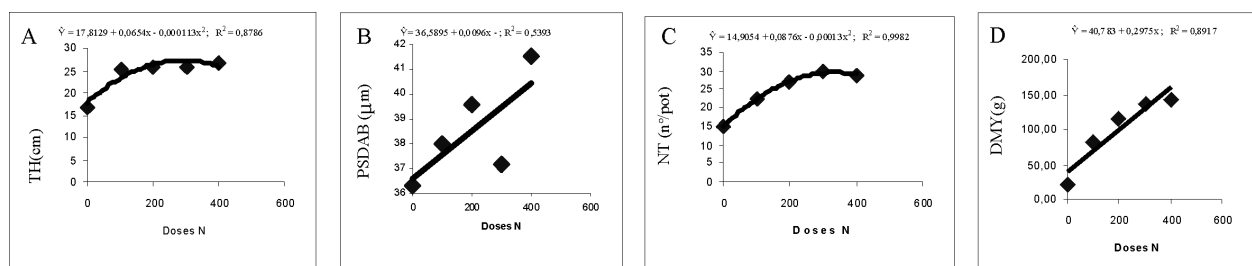
E-mail: tavaresmedeiros@bol.com.br

**Key words:** *Brachiaria brizantha*, stomatal density, tiller density

**Introduction** The genus *Brachiaria* occupies the largest area of sowing pastures in Brazil. Therefore, the knowledge of its quantitative anatomy complements studies as regards its nutritive value. The action of rumen microorganisms on the different plant tissues stresses the importance of its identification and quantification. The major pathway of invasion by rumen microorganisms is constituted by leaf epidermis lesion, although the access by stomata is of great importance in the colonization (Cheng et al., 1984). In this work, it was aimed to evaluate the anatomical characteristics stomatal density (stomata per mm<sup>2</sup>) in the adaxial (SDAD) and abaxial (SDAB) epidermis; polar stomatal diameters (in μm) in the adaxial (PSDAD) and abaxial (PSDAB) epidermis; equatorial stomatal diameters (in μm) in the adaxial (ESDAD) and abaxial (ESDAB) epidermis, and the agronomical characteristics tiller height and number of tillers (NT) and dry matter yield per pot (DMY).

**Materials and methods** The trial was conducted in a greenhouse of the Soil Science Department and Plant Anatomy Laboratory of the Biology Department of the Federal University of Lavras (UFLA), situated at the geographic coordinates 21°14'S and 40°00' W, at an average altitude of 918.84 m above sea level in the town of Lavras, Minas Gerais, Brazil, over the period of October to December, 2006. The trial consisted of a factorial arrangement 5×2×2 [five doses of nitrogen (N) × two cultivars × two cutting ages], that is, doses of N, 0, 100, 200, 300 and 400 mg/dm<sup>3</sup> of soil; cultivars Marandu and Vitória of *Brachiaria brizantha* and the cutting ages 45 and 65 days after sowing. The randomized block design with four replicates was utilized.

**Results** Influence of the interaction cultivar × dose of N and cultivar × age on the tillers' height was found, being cv. Vitória reaching the greatest height as compared with cv. Marandu, at 65 days of age; on the other hand, it was observed quadratic effect of the doses of N, with maximum height of 27.28 cm at the dose of N of 289.38 mg/dm<sup>3</sup> (Figure 1A). The values of SDAD were greater in cv. Marandu, at the ages of 45 and 65 days, whilst the values of SDAB of the same cultivar were also greater and independent of cutting ages. The values of PSDAD were higher in cv. Vitória at 45 days of age. There was a linear effect of N on the values of PSDAB on the interaction dose of N × age, the greatest diameters being obtained in cv. Vitória (Figure 1B). The values of ESDAD were greater for cv. Vitória, whereas for those of ESDAB there was an effect of the interaction cultivar × age, obtaining the greatest diameters of cv. Vitória at 65 days of age. There was a quadratic effect of N on NT per pot, recording the maximum number of tillers of 29.67 at the dose of N of 336.92 mg/dm<sup>3</sup> (Figure 1C). For DMY per pot, there was an interaction of cultivar × age, being the cv. Vitória reached the greatest values of DMY at 65 days and it responded linearly to the doses of N (Figure 1D).



**Figure 1** Tiller height (TH) (A), polar stomatal diameter in the abaxial epidermis (PSDAB) (B), number of tillers (NT) per pot (C) and dry matter yield (DMY) as related to the doses of N.

**Conclusions** The higher stomatal density and lower stomatal diameters at the leaf surface of the cv. Marandu enhance good conditions for gas changes in relation to cv. Vitória, however the latter yielded more DM than cv. Marandu at the age of 65 days.

### References

Cheng, K. J.; Fay, J. P.; Howart, R. E. Electron microscopy of bacteria involved in the digestion of plant cell walls. *Animal Feed Science and Technology*, v. 10, p. 93-120. 1984.