

LEAF-CHLOROPHYLL LEVEL IN FORAGE ASSESSED BY DUALEX, SPAD-502 AND NITROGEN NUTRITION INDEX

NÍVEL ADEQUADO DE CLOROFILA FOLIAR EM FORRAGEIRAS AVALIADO PELO DUALEX, SPAD- 502 E ÍNDICE DE NUTRIÇÃO NITROGENADA

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The use of nitrogen in forage foment the animal production system sustainability, increases the yield, the perennial state of pastures, soil structure and agribusiness profits, allowing adjustments on the management and pastures use. The leaf nitrogen (N) concentration is directly associated to chlorophyll amount (Chl). It can be measured by different types of sensors as Dualex 4 Scientific and SPAD-502 which gives instant values corresponding to N and indirect values for nitrogen nutrition (NNI). This work aimed to estimate chlorophyll values from leaf corresponding to SPAD values associated to NNI=1.0 (which indicates the N concentration or critical N not limiting for forage development). The experimental design was a randomized block in a factorial 4 x 4 setup, with four genotypes of *Urochloa* (syn. *Brachiaria*) *U. brizantha* cv. Piatã, *U. brizantha* cv. Marandu, and two interspecific hybrids denominated H69 and H12 and four nitrogen levels (0; 75; 150 and 225 mg/dm³), provided by urea, with five replications, in pots (3.34 dm³). The soil was a Quartzipsamments containing 9% clay, 90% sand and 1% silt. The evaluations were performed on plants of 52 days after sowing. Chlorophyll amounts were determined by sampling the third medium of the leaf blade from a third of the expanded leaf, from the apical, using the Dualex 4 Scientific and Minolta SPAD 502 and NNI was calculated as the ratio between the actual N uptake (analyzed in the dry forage biomass) and the critical N uptake ($N_c = 3.6W^{0.34}$) for W corresponding to the actual forage mass. For transformation of SPAD readings into surface-based specific units of Chl (μcm^2) it was used the equation: $\text{Chl} = (99 \text{ SPAD}) / (144 - \text{SPAD})$ proposed by Cerovic et al. (2012). Data were analyzed by the mixed procedure (SAS Inst., Inc., Cary, NC) and average qualitative treatments were compared by Tukey test at 5% probability. The Chl values found to be between 13.6 to 33.1 for H69; 20.1 to 33.7 for H12; 24.0 to 44.2 for Piatã and 12.1 to 37.5 for Marandu. Without N application Piatã and H12 registered higher Chl values, visually showing better distribution of chlorophyll (more intense and uniform) than the hybrid H12 and Marandu. Chlorophyll values associated with NNI=1 (indicates that the concentration of N non-limiting) were 32.3, 32.6, 42.6 and 37.4 for H69, H12, Piatã and Marandu, respectively. The Dualex 4 scientific leaf-clip Chl meter (non-destructive measurement of leaf epidermal transmittance of UV radiation) is a precise, accurate and useful for evaluated the status nitrogen nutrition plant.

Keywords: Chlorophyll meter, tropical grasses, Dualex.

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