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DIAGNOSIS TOOLS USEFUL IN THE MANAGEMENT OF NITROGEN NUTRITION IN *UROCHLOA*[1]

FERRAMENTAS DIAGNÓSTICAS ÚTEIS NO MANEJO DA NUTRIÇÃO NITROGENADA EM UROCHLOA

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The N management on pasture requires methods for analyzing and predicting the need for fertilization, aiming at greater efficiency of fertilizer application, adjusting the forage requirements for biomass productivity with quality and sustainability. Nitrogen Nutrition Index (NNI) defined as the ratio between the actual N concentration and the N concentration critical, corresponding to the actual standing biomass. NNI is an indicator well connected with the physiological regulation of N concentration, but it cannot be used directly in farm conditions. Leaf N concentration has been shown to be with greenness (chlorophyll meter readings), as measured by SPAD 502, giving instantaneous values that could be used for estimating directly the N concentration and indirectly the NNI. The main of this work was to test the usefulness N concentration and SPAD to diagnose the N status of four genotypes *Urochloa*. The experimental design was a randomized block in a factorial 4 x 4, genotypes of Urochloa (*U. brizantha* cv. Piata, *U. brizantha* cv. Marandu, and two hybrids H69 and H12) and nitrogen levels (0, 75, 150 and 225 mg dm^{-3}) whose source urea, with five replications, in pots (3.34 dm^3) with Psament soil. Evaluations were performed on plants aged 52 days after sowing. Data were analyzed by the mixed procedure of SAS V. 9.2; average qualitative treatments were compared by Tukey test at 5% probability. The degrees of freedom related to N rates (quantitative treatment) were decomposed into orthogonal polynomials; to obtain the best equation fits the data. It is known that chlorophyll meter readings express indirectly the amount of chlorophyll in the plant tissue, and as nitrogen is a component of the chlorophyll molecule, the concentration of this nutrient in the tissue is positively correlated with the SPAD values, several studies have confirmed this fact . The SPAD values were found to be in the range 17.4 to 36.0 for H69, 24.2 to 36.6 for H12, 28.2 to 44.89 to Piata and 15.7 to 40.0 for Marandu. Without N application, Piatã registers higher values of SPAD, presenting visually better distribution of the chlorophyll more intense and uniform, followed by the hybrid H12, H69 and Marandu and finally, by application of 225 mg dm^{-3} N, most high SPAD values were very similar for the genotypes studied, ranging from 36.0 to 44.89. The NNI was closely associated with SPAD values: $NNI_{Piatã}$ = 0.05(SPAD – 23.31), R^2= 0.96; $NNI_{Marandu}$ = 0.024(SPAD + 2.13), R^2= 0.95; $NNIH_{69}$= 0.042(SPAD - 11.62), R^2= 0.86; NNI_{H12}= 0.040(SPAD – 10.73), R^2= 0.87. Values of NNI close to 1 indicate that the date of the determination of N concentration or N critical of plant were non-limiting N supply. Values more than 1 indicate a luxury consumption of N. Values lower than 1 indicates an N deficiency. Then the values SPAD associated to NNI=1 were 43.3, 39.5, 35.4 and 35.7 for Piatã, Marandu, H69 and H12, respectively. SPAD values arise as an adequate method to characterizing an instantaneous, approximated, estimation of N status, thus possibiliting a prompt correction of N deficiency.

Key words: Chlorophyll meter, grass, nitrogen nutrition index, SPAD