LEAF AREA OF THE LEGUMES ARACHIS PINTOI, MACROTYLOMA AXILARE *AND* NEONOTONIA WEIGHTII

ÁREA FOLIAR DAS RAMIFICAÇÕES DAS LEGUMINOSAS AMENDOIM FORRAGEIRO, MACROTILOMA E SOJA-PERENE SOB CORTE

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Forage legumes have strong potential for the sustainability of the pasture productive systems. Because of their biological fixation of nitrogen, they are the main source of nitrogen from the atmosphere to the soil-plant system. This decreases the need for nitrogen fertilizers on pastures. However, in the initial phase the legume's biological fixation capacity is low and its slow establishment can compromise the development of the grass, mainly due to the competition with others species. Another detrimental characteristic for legumes in mixed pastures with grasses is the lower utilization of carbon and the slower photosynthetic rate, reducing the competition potential of legumes. The use of starter nitrogen can be a strategy for the establishment of these species. The objective of this work was to evaluate the effect of nitrogen doses on the leaf area of three legume species. The experiment was conducted in a greenhouse at the Instituto de Zootecnia in Nova Odessa, São Paulo, Brazil. The legumes were forage peanut (*Arachis pintoi* cv. Belmonte), macrotyloma (*Macrotyloma axillare* NO 279) and perennial soybean (*Neonotonia wightii* NO 2348) were submitted to three doses of nitrogen (0, 40 and 80 kg ha^{-1}), in the form of ammonium nitrate. The experiment was conducted in boxes, from December 2015 to June of 2016 (about 150 days after planting). Then the plants were cut close to the soil and the leaves were separated into main branch (considered the central branch of each plant from which the other branches grow), primary branches (derived from the main branch), secondary branches (derived from the primary branch) and tertiary branches (derived from secondary branches). The leaf area was measured corresponding to each branch with a LI0COR LI-3100 area meter. Data were subjected to analysis of variance using the PROC GLM procedure of the SAS® (Statistical Analysis System, version 9.3) package using a 5% significance level. There was interaction between the branches x species (P= <0.0001), but there was no interaction between doses x species (P= 0.7904) and doses x branches (P= 0.8538). This was obtained by macrotiloma in primary (791.13 cm^2) and secondary (674.74 cm^2) branches, followed by forage peanut also for secondary (505.60 cm^2) and primary (440.08 cm 2) branches, all of which differed from each other. For all species, the secondary branches had the best result, then the primary branches and main branches. Among the species, the perennial soy had the worst result comparing the same branches. Therefore, this species probably has less potential for competition for light in case of mixed pastures with grasses. The leaf area did not differ according to the nitrogen doses, indicating that nitrogen fertilization is not necessary because biological fixation is sufficient for the development of the plant.

Keywords: , mineral nutrition, perennial soybean, starter nitrogen,

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