

## ROOT PRODUCTION OF THE FORAGE LEGUMES *ARACHIS PINTOI*, *MACROTYLOMA AXILARE* AND *NEONOTONIA WIGHTII* WITH STARTER NITROGEN DOSES

### PRODUÇÃO DE RAIZES DAS LEGUMINOSAS FORRAGEIRAS SOB DOSES DE NITROGÊNIO NO ESTABELECIMENTO

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Mixed pastures with legumes and grasses have been studied because of their advantages, such as increased plant diversity and especially the potential for biological nitrogen fixation of legumes, in some cases not requiring the use of nitrogen fertilization. However, in the early development of forage legumes, the nitrogen fixation process is slow or absent. In addition to the impaired fixation in the early development of legumes, tropical grasses have an advantage in carbon utilization, because they belong to the C4 group, while leguminous plants of the C3 group have reduced photosynthetic ability, making these pasture systems complex. Due to these factors, the use of starter nitrogen fertilization has been studied to meet the needs of the legume in the early stages of development, making it more competitive in the system. The objective of this work was to evaluate the potential root production of three legume species with three nitrogen treatments. The experiment was conducted in a greenhouse at the Instituto de Zootecnia in Nova Odessa, São Paulo, Brazil. The legumes forage peanut (*Arachis pintoi* cv. Belmonte), macrotyloma (*Macrotyloma axillare* NO 279) and perennial soybean (*Neonotonia wightii* NO 2348) were submitted to three nitrogen doses (0, 40 and 80 kg ha<sup>-1</sup>). The experiment was conducted in boxes, from December 2015 to June 2016 (about 150 days after planting). Then the plants were cut close to the soil, the soil was sifted to separate the root system, which after separation was packed in a paper bag and dried in a forced air oven (65 ° C) for 72 hours. The resulting dry root matter was then weighed on a precision balance. 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 no interaction between the doses x species (P= 0.8106), but there was a significant difference between species (P= <0.0001). Perennial soybean had the largest production of root dry matter at all doses. Forage peanut and macrotyloma had inferior results and did not differ from each other. The result of the dose x species interaction led to the conclusion that the use of nitrogen fertilization is not justified. Besides not contributing to root development, the use of nitrogen fertilizer can damage biological fixation activity. The perennial soybean was superior in root production compared to the other species, indicating that its root system has greater capacity to compete with grasses compared to macrotyloma and forage peanut, mainly considering soil resources.

Keyword: forage peanut, mineral nutrition, perennial soybean.

Acknowledgments: To Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP) for project funding (Process 2016/22463-0)