TITLE: VARIETY NODULATION TEST LIMA-BEAN *(Phaseolus lunatus* L.) IN SOIL UNDER DIFFERENT AGRICULTURAL USE SYSTEMS

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SUMMARY:

The legumes of *Phaseolus* genus as well as species *Phaseolus lunatus* L., perform Biological Nitrogen Fixation (BNF) in symbiotic association with *Rhizobium* bacteria genus. This research aimed to evaluate the nodulation in three varieties of fava beans in three soils, under differents systems of agricultural use, under greenhouse conditions at Embrapa Agrobiologia, Seropédica-RJ, in the first semester of 2015. Four seeds were sown directly into pots containing three liters of soil. One week after planting, carried out thinning, maintaining one plant per pot. The experiment was conducted in a randomized complete block design, with three replications, in a factorial scheme, the treatments given by the combinations between three accessions (varieties 01, 08 and 12) and three soil types (S1 = Bean Crops area, S2 = Pasture area, S3 = area under agro-ecological system). The nodulation evaluation was performed at the beginning of flowering, the plants were harvested and the roots washed. For obtain the homogeneity and normality, data were processed in $\sqrt{x}+1$ and means were compared by Tukey's test at 5% probability. There was no significant interaction for the variables number of nodules per plant and fresh and dry mass of the nodules. The number of nodules per plant among the varieties was not significant, but there was a significant difference within the soil factor. For the variable number of nodules, S3, S1 and S2, presented 136, 63 and 46 nodules per plant, respectively. For the variable fresh mass of the nodules, observing the isolated factors there is a significant difference between the soils and between the varieties. S1 and S3 stood out with higher fresh mass of the nodules, 0.97 and 1.16g per plant, respectively. S2 presented the fresh nodule mass of 0.42 g per plant. The variety 08 with 1.16 g per plant was the one that stood out with the highest fresh mass of the nodules. The fresh mass of the nodules of the varieties 01 and 12 presented 0.65 and 0.72 g per plant, respectively. For the dry mass variable of the nodules there was no significant difference within the variety factor, however there was within the soil factor, where S1, S3 and S2 with 0.14, 0.19 and 0.07g, respectively. The bean cultivation area and agroecological system area is carried out were those that presented higher nodulation, in detriment to the pasture area. And the variety that presented the highest nodulation, for the fresh mass variable of the nodules, was the variety 08.

Keywords: lima-bean, nodulation, symbiosis

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