PHOSPHORUS AND ZINC CONTENTS OF BEAN LEAF INFLUENCED BY CROP RESIDUES IN NO TILL - SYSTEM[1]

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Agricultural systems refer to the use of a certain area with several crops in succession or rotation, inserting an area utilization by using succession and rotation of plant species intercalated objecting grain and or organic matter productions in different soil management forms and inputs (Silva 1998).

The universe, constituted by several species of plants with specific characteristics, besides the different forms of possible soil management to be accomplished, makes the system analysis of an agricultural system more complex than of an isolated crop. This complex one has as objective the optimization of land use.

In the last two years, objective to increase growing demands for foods, the research, is focused on agricultural systems, has been contemplated enough, above all in areas with irrigation facility, technique that makes possible the most intensive land use. In general those researches evaluate crop rotations, soil management crop rotations and fertilization (Pöttker & Roman, 1998; Klepker & Anghinoni 1995; Silveira et al 1994).

This research was carried out with the objective to know the effects of corn, rice, sorghum, soybean and brachiaria residues, on P and Zn concentrations of bean leaf harvested in areas cultivated with common bean, cultivar Pérola, under 45, 90, 135 and 180 kg/ha de N. applied 45 days after planting, in no-till system.

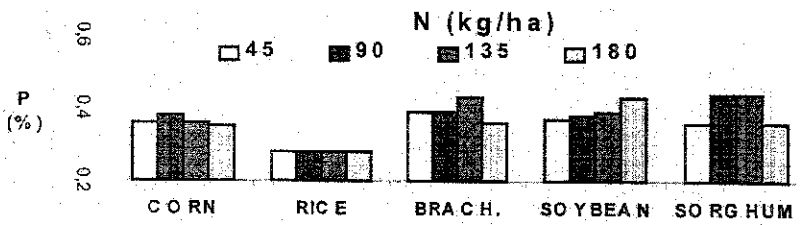

Figure 1. P content of dry bean leaf cultivated on crop residue.

In general, the nitrogen fertilization, mainly in no till system, constitutes an important factor for increasing productivity. The nitrogen recommendation for irrigated bean crop vary form 40 to 120 kg/ha of N, while the crop absorb for its complete development amount equivalent two times these values. The basic fertilization of 150 kg/ha of 8:20:20 ($N:P_2O_5:K_2O$) formulation was applied at planting. Plants were

irrigated with aspersion irrigation system. Leaf samples were collected at bean flowering growth stage, dried in over during 72 hours at temperature about 65° and 70°C, grind and analyzed.

The phosphorus concentration in leaf of common bean is presented in Figure 1. The lowest concentration of phosphorus in the leaf bean was observed in bean cultivated on rice residue. In Brazil, decrease in yield has been observed when crops are cultivated year after year in the same area. According to plant nutrition philosophy, the crop residue can contain excessive concentration of toxic elements and sometimes low concentration of essential plant nutrients. According to these results, very low phosphorus concentrations can be observed in rice crop residue.

Zinc concentration in bean leaf is presented in Figure 2. Lower concentrations of zinc were observed in bean leaf when the crop was cultivated on rice residue. Based on the Zinc importance for bean production and the low zinc concentration found in savanna soils, the low productions generally observed after first year planting can be sponsored to the low

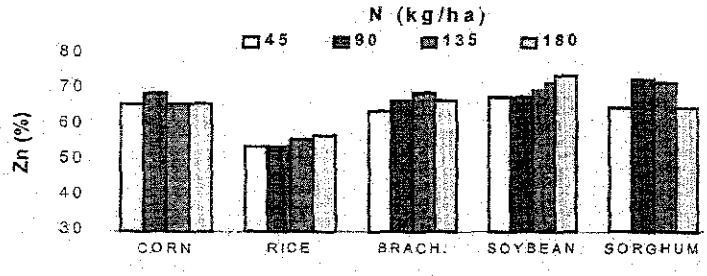

Figure 2. Zn content of dry bean leaf cultivated on rice crop residue.

concentrations of nutrients observed in any crop residues. Tisdall et al (1985) recommend to alternate groups of system crops that present differentiated root systems whose functions are to recycle nutrients of the deepest layers for the superficial soil layers and to care deeply the plant nutrition in relation to the lack of nutrients by using balanced nutrient formulation different from traditional ones to maintain top productions forever avoiding economic disturbance in agricultural activities.

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