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Effect of Intercropping Between Corn (*Zea mays*) and Peanut (*Arachis hypogaea*) with Arbuscular Mycorrhizal (AMF) on the Yield and Forage Mineral Content

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Abstract: The study aimed to analyze the cropping pattern of intercropping between maize plants and peanut with arbuscular mycorrhizal fungi inoculated on yield and mineral content of forage. Field experiments used a split plot design with main plots were intercropping patterns (TS) consist of three kinds: TS 1:1, TS 1:2 and TS 2:1. The subplots were the single AMF inoculation consisted of four kinds: m_1 (*Glomus etunicatum*), m_2 (*Glomus manihotis*), m_3 (*Gigaspora margarita*) and m_4 (*Acaulospora* sp). The experiment was replicated three times, then the number of plots were 36. Agronomic parameters measured were fresh weight of corn crop and fresh weight of baby corn residues, calcium content of corn plant and of baby corn residues, calcium content of peanut plant, phosphorus content of corn plant with baby corn residues and phosphorus content of peanut plants. The experimental results showed that: (1) The effect of the interaction did not occur between the cropping patterns of intercropping system with a single AMF inoculation on yield and forage minerals. (2) The content of Ca (calcium) and P (phosphorus) of corn crop with baby corn residues on the cropping pattern of intercropping system with FMA inoculated were the same, Ca on TS 1:1 (0.51%), TS 1:2 (0.57%) and TS 2:1 (0.47%) and the content of P (phosphorus) in the TS 1:1 (0.14%), TS 1:2 (0.15%) and TS 2:1 (0.14%). (3) The content of Ca (calcium) of peanut plants at planting pattern of intercropping systems with FMA inoculated at TS 1:2 (1.65%) and 2:1 (1.76%) were higher than at TS 1:1 (1.45%), while the content of P (phosphorus) were similarly at TS 1:1 (0.162%), TS 1:2 (0.184%) and TS 2:1 (0.169%). (4) The fresh weight of corn crops together with baby corn residues on the cropping pattern of intercropping system with FMA inoculated were equals; TS 1:1 (36.36 tones/ha/harvest), TS 1:2 (32.75 tones/ha/harvest) and TS 2:1 (35.66 tones/ha/harvest). The peanut plant fresh weights were not significantly different among TS 1:1 (3.99 tones/ha/harvest), TS 1:2 (6.70 tones/ha/harvest) and TS 2:1 (2.30 tones/ha/harvest). Providing a single AMF inoculation has no effect on fresh weight, Ca and P of groundnut and of maize crops together with baby corn residues.

Key words: Intercropping row, AMF, forage

INTRODUCTION

Forage generally consists of grasses (Gramineae) and legumes (Leguminoseae) as basic requirement of ruminants and are needed in large quantities. The feed availability generally depend on local farming systems. Feed crops planted in single system and continuously have low performance and need to be improved to increase the benefit value. Forage results of corn plant and peanuts plant can be used for ruminants because of the high content of fiber and palatable. This is an important ruminant feed when the grass is insufficient, especially in the dry season.

Cropping pattern row intercropping system can improve the productivity of agricultural land and crops if the types of plants that are combined in this system do not compete each other in terms of sunshine, taking water and nutrients. Another advantage gained from intercropping planting patterns are ability to provide the balance of nutrients, as control of weeds, maintain soil fertility, prevent erosion and prevent the tendency of increase in pests and reduce the risk of harvest crop failure.

In a system of sustainable agriculture and low 'input', the role of micro-organisms mycorrhizae in maintaining soil fertility and biocontrol of soil pathogens is important rather than conventional agriculture that has been limited by higher 'input' of 'Agrochemical'. Provision of artificial fertilizer (chemical fertilizer) can cause environmental pollution. A deeper understanding of the interaction between mycorrhizal with other microorganisms is necessary to develop a sustainable management of soil fertility and crop yields. The presence of other microorganisms such as Rhizobium can provide benefits for mycorrhizal because Rhizobium inoculant can help mycorrhizal propagules in the phosphorus deficiency soil. Intercropping also can help

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