Phosphorus supply to the soil by a compost of poultry manure

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**INTRODUCTION**

Phosphorus (P) is one of the essential nutrients for plants. Its availability for crops depends on the soil parent material and the organic or inorganic fertilizers applications. The poultry manure compost is an important source of organic matter (OM) and essential nutrients as nitrogen (N) and P, which can be used as an organic fertilizer for intensive productions as floriculture.

**OBJECTIVE**

The aim of this work was to evaluate the effect of a compost produced from poultry manure on the availability of P on the soil and the sunflower production under greenhouse.

**MATERIALS AND METHODS**

The study was carried out in a greenhouse where two planting beds were prepared in order to grow sunflowers. Different doses of compost were applied mixing it with the soil in the first centimeters of deeps before the sunflower plantation. Doses in the first flower bed were 1: 0 liters (lt)/m², 2: 8 lt/m², 3: 16 lt/m² and 4: 30 lt/m², whereas the doses in the second flower bed were 1: 0 liters (lt)/m², 3: 30 lt/m², 4: 60 lt/m² and 5: 90 lt/m². Inorganic fertilizers were not applied. In order to analyze P soil concentration, soil samples were taken at the plantation and the harvest and it was measured by the method of Bray and Kurtz I. The sunflower biomass production was also measured at harvest.

**RESULTS**

Phosphorus soil concentration was increased when compost dose increased (figure 1). In the first planting bed, in spite of the high P concentration before the compost applied (152 mg.kg⁻¹), it was observed a significant difference (α>0.01) between the treatment without compost and the one with the lowest dose. In the same flower bed it could be observed an increment of 250 mg.kg⁻¹ in P concentration with the highest dose. In the second planting bed, where the higher doses of compost were applied, it could be seen a difference of almost 400 mg.kg⁻¹ of P concentration between the treatment without compost and the rest. It was no significant difference in P concentration in soil among the higher doses of compost. Finally, in regard to the sunflower growth, an increment of aboveground biomass was observed in the treatment with the higher dose (figure 2). Thus it could be conclude that the application of compost increased P concentration in soil improving soil fertility.

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**Imagine 1:** Sunflower production under greenhouse

**Figure 1:** Compost effect on phosphorus availability in soil

**Figure 2:** Dry matter production of sunflower with different doses of compost. Different letters determine significant differences.