

EFFECT OF THE INTERACTION BETWEEN AZOTOBACTER INOCULATION; ORGANIC AND MINERAL FERTILIZATION ON TOMATO; (*Lycopersicon esculentum* Mill.).

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ABSTRACT

A pot experiment was conducted at El-Mansoura laboratory of plant nutrition; Agric. Res. Center, during the low seasons of 2008 and 2009 In order to evaluate the effects of Azotobacter inoculation with and without organic and mineral fertilization on yield and chemical composition of tomato plants.

A factorial experiment in the form of complete randomized block design with three replicates has been used. NPK fertilizers were added at the 0,50,75 and 100% of the recommended dose for tomato crop once with inoculation by Azotobacter and the other without inoculation. All treatments were investigated in the presence and absence of organic manure (FYM) giving a total of 16 treatments. Results revealed that inoculation of tomato seedlings with Azotobacter sp. in combination with the rates of NPK fertilizers either with or without FYM significantly gave higher magnitudes of plant growth, yield and its component and chemical composition parameters than the uninoculated treatments. Raising NPK applied levels to 100% of the RD gave insignificant difference during both seasons. In addition, stimulation effect was happened due to using FYM combined with the same rates of NPK fertilization either in the presence or absence of Azotobacter inoculation but the rates of increases over the control treatment were more pronounced during both seasons. The intermediate levels of NPK; 50%+Azotobacter+FYM, seemed adequate and was associated with the highest mean values for the previously mentioned traits.

INTRODUCTION

Fertilizer applications have a major role in growth, yield and chemical composition of tomato plants. In the management of tomato crop the application of fertilizers have a major role for germination and growth. Although these fertilizers contribute a lot in fulfilling the nutrient requirement of vegetable crops but their regular, excessive and unbalanced use may lead to health and ecological hazards, depletion of physiochemical properties of the soil and ultimately poor crop yields. The problems of nutrient drain from the soil are becoming so acute that it is beyond the capacity of any single fertilizer to accept the challenge of appropriate nutrient supply. (Mahato *et al.*; 2009)

These fertilizers not only affect the soil but also influence the characteristics and the product of the crop. Fertility of the soil increases due to the continuous use of the fertilizers but it also reduces the crop productivity. The main reason of reduction in crop productivity is due to soil