J. Agric. Sci. Mansoura Univ., 33 (12): 8709 - 8722, 2008

EFFECT OF GYPSUM, PHOSPHOREINE AND ROCK PHOSPHATE ON GROWTH AND YIELD OF SWEET PEPPER PLANTS.

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ABSTRACT

Two field experiments were performed during the successive seasons of 2006 and 2007 at Talkha district, Dakahlia Governorate, Egypt to determine the effect of gypsum, phosphoreine and rock phosphate rates on growth, chemical composition, yield and quality of sweet pepper plants cv. California wonder.

The main results could be summarized that:

- Application of 4 ton/feddan of gypsum as soil amendments and 1 kg of phosphorein as transplants inoculation with 60 or 90 kg P_2O_5 of rock phosphate induced a significant effect on root, shoot , total dry weights, N, P and K contents of pepper plant foliage as well as N and P total uptake.
- Additions of gypsum at 4 ton/ feddan and phosphorein at 1 kg/ feddan with 60 or 90 kg P_2O_5 of rock phosphate showed a significant effect on maximizing average fruit weight, number of fruits per plant, fruit yield per plant, total yield per feddan, fruit flesh thickness, fruit dry weight and fruit TSS.
- Adding 4 ton/feddan of gypsum and 1 kg/feddan of phosphorein with 60 kg P_2O_5 of rock phosphate increased sweet pepper fruit yield by 56.22 % above control.

In general, this study demonstrated that it is possible to produce highest growth, yield and quality of pepper plants by applying rock phosphate as a cheap phosphorus source; it will be necessary to add gypsum at 4 ton/feddan and 1 kg/ feddan of phosphorein with 60 kg / P_2O_5 of rock phosphate.

INTRODUCTION

Sweet pepper (*Capsicum annuum* L.) is one of the most important widely grown vegetable crops in the world being recognized as a reach source of minerals and vitamins; it is also one of the most important vegetable crops in Egypt for local utilization and export. Phosphorus plays an important role on plant metabolism functions and is one of the essential nutrients required for plant growth and development. It has functions of a structural nature in macromolecules such as nucleic acids and of energy transfer in metabolic pathways of biosynthesis and degradation (Marschner, 1995 and Jeschke *et al.*, 1996).

The major series problem of phosphorus fertilization in Egypt is that of unavailable form of phosphorus in the alkalinity soil, for that applying phosphorus fertilizers could be converted to unavailable form for plant absorption (El-Dahtory *et al.*,1989) and therefore, most growers apply too much P fertilizer for their crops, over-fertilization leads to unnecessarily high production costs and may lead to decrease yield and quality and pose a risk to the environment, so application of natural rock phosphate is an economically sound alternative to the more expensive superphosphate (Sale and Mokwunye,1993 and Chien *et al.*, 2003). Based on the unit cost of P,