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Research Article

Influence of FYM, compost and rock phosphate with PSB on soil nutrient (NPK) balance under organic cultivation of chickpea (*Cicer arietinum* L.) grown in vertisol

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Summary

A field experiment was conducted for two consecutive years to study the influence of FYM, compost and rock phosphate with PSB on soil nutrient balance under organic cultivation of chickpea (*Cicer arietinum L.*) grown in vertisol at Agricultural Research Station, Annigeri, UAS, Dharwad, Karnataka during *Rabi* season of 2009-10 and 20010-11. The experiment was laid out in RCBD with three replications. There were nine treatment combinations consisting of two organic manures *viz.,* compost and FYM with four levels of rock phosphate(50, 100, 150 and 200 kg ha^{-1}) and an absolute control treatment for comparison. Soil nutrient balances were worked for major nutrients (NPK) taking the initial soil status, nutrient addition, crop uptake and nutrient left in the soil after harvest. The higher negative N balance was recorded with organic manures applied with higher level of rock phosphate and minimum negative nutrient balance was recorded with absolute control.

Key words : Nutrient management, Compost, FYM, Rock phosphate, Nutrient balance, Chickpea

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Introduction

The success of sustainable organic agriculture is very much dependent upon the availability of cheap and good quality organic manures (Sailaja Kumari and Ushakumari, 2002). Among the sources of available organic manures, FYM and compost is a potential source due to the presence of readily available plant nutrients, growth enhancing substances, and a number of beneficial microorganisms like nitrogen fixing, P solubilising and cellulose decomposing organisms. Since a number of microorganisms are in close association with organic manures, with rock phosphate may enhance multiplication of beneficial and the P solubilising organisms present and are expected to react with rock phosphate and convert the insoluble phosphate to plant available forms. Such manure will have an added advantage inorganic crop production. The present day agriculture clearly demonstrates the imbalance between nutrient inputs and outputs and organically managed systems highlight the difficulties that are involved in maintaining agronomically acceptable concentrations of nutrients.

Chickpea is an important *Rabi* pulse crop of Karnataka, its productivity is remained low because of several biotic and abiotic constraints. Among abiotic constraints, imbalance use of nutrients is major one. Although, chickpea is a