

Effect of phospho manures and fertilizer on the growth, yield and quality of soybean in *kharif* season

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ABSTRACT

An experiment was laid out in a Randomized Block Design (RBD) with three replications during the *kharif* season. There were seven treatments of an application of 60kg P₂O₅/ha. Through different sources of phospho manures, viz. Phospho FYM, phospho compost, phospho vermicompost, phospho poultry manure, phospho press mud, phospho city compost and chemical fertilizer *i.e.* single super phosphate (SSP). The gross and net plot sizes were 2.70 x 13.50 m², respectively. Among the phospho manure and fertilizer treatments, the treatments of an application of 60kg.P₂O₅/ha.through phospho press mud to soybean showed superiority in increasing growth characters and was significantly superior over all the treatments in increasing the yield contributing characters, grain and straw yield per ha. The maximum grain yield of 31.46q/ha.and straw yield of 57.33q/ha.was obtained due to phospho press mud treatments. A next treatment in order in respect of this character was an application of 60kg.P₂O₅/ha.through phospho city compost. In general all the quality parameters were favourably influenced due to above treatments finally soil fertility was also improved in respect of phosphorus content of soil after harvest.

Key words : Phospho Manures, Soybean, P₂O₅, *kharif*.

INTRODUCTION

Pulses are mainly used in the human diet to meet the demand of human dietary needs regarding proteins and carbohydrates. Soybean is an important pulse and oilseed crop of the world which is grown in *kharif* season in the Indian climatic conditions.

Soybean is used in manufacturing of soaps, paints, rubber, lubricants, explosive, glycerin and antibiotics. Soybean oil cake is highly useful for poultry as a feed. Variety of products can be prepared from soybean such as soya milk, powder, biscuits etc.from soybean protein. Besides, soybean being leguminous crop also helps in improving the fertility. Soybean would play an important role in cropping system in the 21st century. Soybean is also called as "Golden Bean". India ranks fifth in soybean production.

Soybean is heavy nutrient feeder and considered to be an exhaustive crop. Recommended dose in soybean is 30-60-30 kg.NPK per ha.respectively.Its phosphorus requirements is comparatively more. Phosphorus is one of the essential plant nutrients required for root development, tillering, metabolic processes, nodulation, flowering and fruiting, thereby increase rapidly vigorous growth of plants and finally helps in seed formation. Besides helping the early maturity, phosphorus acts as a store-house of energy (ATP) by plants.

In Maharashtra state, major soils are of calcareous type with medium black soils. In these soils phosphorus fixation is commonly experienced. In these soils deficiency of phosphorus mainly occurs when the available phosphorus to a plant such as primary of thiosulphate (H₂PO₄) and secondary (HPO₄) is not retained when added through phosphate fertilizers. Many times phosphate gets chemically in these soils and becomes unavailable to plants. Study is narrated on the use of phosphorus through phospho manures in comparison with single super phosphate to soybean in *kharif*.

Sable *et al.* (1997) developed, a 'Pune method of preparing phospho manures'. After going through the results obtained through this method, it is seen that it is possible to prepare phosphorus manures containing 6.5 to 8.5 % P₂O₅. These phospho manures would definitely replace the present phosphatic fertilizers.

MATERIALS AND METHODS

The field experiment was laid out in the Agriculture College Farm, Pune.The soil of the experimental field was medium black in colour, clay in texture with very high in total nitrogen and available K₂O content. It was slightly alkaline in reaction (ph 7.8). The soil was more than 1.0 meter in depth. A composite soil sample was taken from randomly selected spots from 0-60 cm. Soil sample was

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