

Yield, yield attributes and oil content of soybean as influenced by INM in soybean-maize cropping system

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ABSTRACT

The Field experiment was conducted to study the effect of different organic and inorganic sources of nitrogen on yield and yield attributes of soybean in soybean-maize cropping system. Higher soybean yields 13.3 q/ha and 12.50 q/ha were obtained with the application of 75% of recommended dose of nitrogen and 100% recommended dose of PK through inorganic fertilizers +25% of recommended dose of nitrogen is through vermicompost+ during *kharif* 2002-03 and 2003-04, respectively. Effective nodules and oil content was not significantly influenced by different treatments.

Key words : Vermicompost, Poultry manure, Farmyard manure, Soybean, INM.

INTRODUCTION

Soybean [*Glycine max* (L.)] is gaining importance as a remunerative crop in black soils of Northern telangana zone in Andhra Pradesh of India. Use of organic manures in conjunction with inorganic fertilizers was proved to be useful in sustaining crop yields without deteriorating the quality of soil. Keeping in view the significance of organic manures in maintaining the soil health and soybean as a remunerative crop to cotton in black soils, a study was proposed on the effect of integrated use of organic and inorganic sources of nitrogen on yield and yield attributes of soybean in soybean-maize cropping system.

MATERIALS AND METHODS

The experiment was carried out at Department of Soil Science, Regional Agricultural Research Station, Jagtial during *kharif* and *rabi* seasons of 2002-03 and 2003-04. The soil was red sandy loam in texture, medium in organic carbon (0.5%), low in available N (119.82 kg/ha), high in available P₂O₅ (48.06 kg/ha), fairly rich in available K₂O (242.20 kg/ha) with neutral in reaction (pH 7.38) and non saline (EC=0.101 ds/m). All the cultural practices were followed as per the schedule. The experiment was laid out in a Randomized Block Design (RBD) comprising of 8 treatments where in 50% and 25% recommended dose of nitrogen was supplied through different organic manures and replicated thrice. In case of RDF, nitrogen was applied in two splits in the form of urea while entire doses of P and K were applied as basal in the form of single super phosphate and murate of potash, respectively. Soil samples were collected

before sowing and after harvest of crop. After harvesting of soybean crop seed samples were analyzed for oil content with standard procedures.

RESULTS AND DISCUSSION

Seed yield:

The results revealed that seed yield of soybean was significantly highest with the application of organic manures and inorganic fertilizers in combination, over control and RDF (Table 1). An increase of yield 0.97 q/ha was recorded in RDF over control during the year 2002-03 and 0.91 q/ha during the year 2003-04. These results are in accordance with the results of Tejada *et al.* (2005). Different organic manures which supplied 50 per cent of recommended dose of nitrogen were given an increased yield of 0.52, 0.89, 0.71 q/ha during 2002-03 and 0.91, 0.49, 0.84, 0.67 q/ha during 2003-04 with FYM, VC and PM, respectively over control, but decreased yield of 0.45, 0.08, 0.26 q/ha during 2002-03 and 0.42, 0.07, 0.24 q/ha during 2003-04 over RDF. These results are in accordance with the results of Antonio *et al.* (1988). This can be attributed as urea is rapidly transformed into ammonium by a soil enzyme, which in turn is nitrified to nitrate by bacteria. This process is fast in warm soil but is very slow at soil temperatures colder than 50° F. Nitrate cannot be retained by the soil and is prone to leaching. However, organic manures which supplied 25 per cent of recommended dose of nitrogen were given an increased yield of 1.34, 4.76, 1.44 q/ha during 2002-03 and 1.26, 4.48, 1.36 q/ha during 2003-04 with FYM, VC and PM, respectively over control, and 0.37, 3.79, 0.47 q/ha during 2002-03 and 0.35, 3.57, 0.45 q/ha during 2003-04 over

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