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Effect of sulphur and zinc on yield and quality of soybean

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ABSTRACT

The results of the field experiment conducted at the Agriculture Research Station, Washim, Dr. PDKV, Akola revealed that sulphur and zinc showed the significant effect on quality and yield of soybean in vertisol. Oil and protein content in soybean grain was significantly higher at application of 30 kg S ha^{-1} in form of gypsum and 2.5 kg Zn ha^{-1} in form of zinc sulphate with fertilizer dose of 30:75:0 kg NPK ha^{-1} over control. The grain yield and straw yield also significantly increased due to same dose of sulphur and zinc. Where as oil and protein were recorded 20.01 and 39.92 per cent, respectively.

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Key words : Oil, Protein, Yield, Vertisol, Soybean, Sulphur, Zinc

INTRODUCTION

Soybean [*Glycine max* (L.) merill] a well-known oilseed and pulse crop. It is the richest and cheapest source of high quality proteins, minerals, vitamins, and fats. Soybean is called as miracle, "Golden Bean" of 21st century. Soybean is called as boon of malnourished world because of its high nutritive value mainly due to its high protein (40%) and oil (20%). Soybean is triple beneficial crop. Apart from N and P some of secondary and micronutrient are considered to be necessary in increasing grain yield of soybean. Nutrient interaction is one of the components of balanced nutrition. Oilseeds crop require more sulphur than other crop. Sulphur performs many physiological functions like cystien, methionine, chlorophyll and oil content of oilseeds crop. The increase yield of soybean is due to zinc may be attributed basically to the reason that zinc show beneficial effect in chlorophyll content and helps in formation of growth hormones and so it indirectly influence the photosynthesis and reproduction also helps in developing the enzyme and vitamins. In Vidarbha region soybean cultivated during *Kharif* and the area increasing day by day which necessiates study on nutrition of soybean with respect to secondary and micronutrients.

MATERIALS AND METHODS

The present investigation was conducted at Agriculture Research Station , Washim, Dr. PDKV, Akola during *Kharif* 2009. The experimental soil was montmorillonite, hyperthermic, family of Typic Haplusterts. The initial status of soil having pH 8.07 and Ec 0.17 dSm^{-1} which was moderately alkaline in nature and low in organic carbon (5.86 g kg^{-1}) , low in available nitrogen (153.15 kg ha^{-1}), medium in phosphorus (14.56 kg ha^{-1}), high in potassium (369.14 kg ha^{-1}) and medium in sulphur (14.62 kg ha^{-1}). Where as it was deficient in Zn (0.45 ppm) and Fe (1.51ppm) while sufficient level of Cu (0.27 ppm) and Mn (2.13 ppm). The experiment was laid out in Randomized Block Design with seven treatments and three replications applied to experimental field where treatment T_1 (control), T_2 (10 kg S ha^{-1}+ RDF), T_3 (20 kg S ha^{-1}+ RDF), T_4 (30 kg S ha^{-1}+ RDF), T_5 (2.5 kg Zn ha^{-1} +10 kg S ha^{-1}+RDF), T_6 (2.5 kg Zn ha^{-1} +20 kg S ha^{-1}+RDF), T_7 (2.5 kg Zn ha^{-1} +30 kg S

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