

Research Article

Response of phosphorus and sulphur application on yield quality, nutrient content and nutrient status of soil by cluster bean grown on typic ustochrept of Anand

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Summary

Nine treatments comprised of three levels of phosphorus (P_0 , P_1 and P_2) and Sulphur (S_0 , S_1 and S_2) were tested in Factorial Randomized Block Design with four replications in field experiment conducted during summer season 2009-10. phosphorus and sulphur were applied @ 20 kg ha⁻¹ and 40 kg ha⁻¹ as DAP and gypsum, respectively. Initial available phosphorus was medium whereas an S content was low in the soil. Yield and quality parameter of cluster bean were increased by the treatments P_2 and S_2 over control. The study of nutrient content of seed revealed that application 40 kg ha⁻¹ of either phosphorus or sulphur treatments favourably influenced in comparison to their respective control. The nutrient status of soil after harvest crop was also shown highest at the rate of 40 kg ha⁻¹ either phosphorus or sulphur.

Key words : Seed yield, Quality parameter like protein and gum content, Nutrient content of seed, Nutrient status of soil

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Introduction

Cluster bean, called guar is a draught tolerant annual legume crop. In India cluster bean is grown for its green fodder and for the pods that are used food and feed. Since it is a legume, it has soil enriching properties. It is an excellent soil building crop with respect to nitrogen. Cluster bean is a good soil restorative crop which can fix about 4.0 per cent nitrogen in the soil. The primary importance of guar is considered to be the commercial value of its seed gum (galacto mannan guym) which is used in textiles and paper, as a thickner and in pill formation. Phosphorus stimulates early root development, growth, blooming and aids in seed formation when applied to legumes, it activates rhizobia and formation of root nodules. Thus, it helps in fixing more atmospheric nitrogen. It also

improves the crop quality and resistance to disease. In general, sulphur is essential for synthesis of vitamins (biotin and thiamine), S containing amino acids (cystine, cysteine and methionine) and promotes nodulation in legumes. It helps in chlorophyll formation and encourages vegetative plant growth. Cluster bean crop has high requirement of phosphorus and sulphur. The soils of Anand are light texture and availability of phosphorus and sulphur mostly in deficient to medium.

Resources and Research Methods

A field experiment was conducted at Anand during summer season of 2009-10 in factorial randomized block design on an alluvial (Ustochrept) soil testing pH 7.9 low in available nitrogen (185.7 kg ha⁻¹), medium in available phosphorus (42.89