

Research Article

## Influence of phosphorus and sulphur on yield and nutrient uptake by summer cluster bean grown on typic ustochrept of Anand

■ R.P. KARCHE, M.R. DALWADI, J.C. PATEL, V.P. GAIKWAD AND D.B. PANCHAL

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MEMBERS OF RESEARCH FORUM :

**Corresponding author :**

**D.B. Panchal**, Department of Agricultural Chemistry and Soil Science, B.A. College of Agriculture, Anand Agricultural University, ANAND (GUJARAT) INDIA  
Email: db3panchal@yahoo.co.in

**Co-authors :**

**J.C. PATEL, V.P. GAIKWAD AND M.R. DALWADI**, Department of Agricultural Chemistry and Soil Science, B.A. College of Agriculture, Anand Agricultural University, ANAND (GUJARAT) INDIA

**R.P. KARCHE**, B.A. College of Agriculture, Anand Agricultural University, ANAND (GUJARAT) INDIA

### Summary

Experiment was conducted for the summer season of 2009 at the College Agronomy Farm, B.A. College of Agriculture, Anand Gujarat in order to find out the effect of phosphorus and sulphur on cluster bean, three levels of phosphorus and sulphur (0, 20 and 40 kg P<sub>2</sub>O<sub>5</sub> and S ha<sup>-1</sup>) were applied. The yield of cluster bean (beed and stover) and nutrient uptake were influenced by the rate of phosphorus and sulphur. Application of 40 kg P<sub>2</sub>O<sub>5</sub> and S ha<sup>-1</sup> gave significantly higher yield and nutrient uptake (N, P, K and S) by cluster bean.

**Key words :** Yield, Nutrient uptake, Cluster bean, Phosphorus, Sulphur

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## Introduction

Cluster bean, called guar is a draught-tolerant annual legume belongs to the family Leguminosae and sub-family Papilionaceae. It has soil enriching properties. Root nodules contain nitrogen fixing bacteria and crop residue when ploughed under, improves the yield of succeeding crops. Cluster bean is a good soil restorative crop which can fix about 40 per cent N in the soil. The primary importance of guar is considered to be the commercial value of its seed gum (galactomannan gum) which is used in sizing textiles and paper as a stickner 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 taking more atmospheric N. It also improves the crop quality and resistance to disease. In general S requirement is slightly less than P. It 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.

## Resources and Research Methods

A field experiment was conducted during 2009-2010 at College Agronomy Farm, B.A. College of Agriculture, Anand Agricultural University, Anand, Gujarat. The soil was alluvial in origin loamy sand in texture, locally known as Goradhu.

The soil had low salinity (EC-0.22 d sm<sup>-1</sup>) and moderately alkaline reaction (pH 7.9). The soil can be considered as low in organic carbon (203 g kg<sup>-1</sup>), available N (185.7 kg<sup>-1</sup>), sulphur (7.23 ppm) and medium in available P<sub>2</sub>O<sub>5</sub> (42.89kg ha<sup>-1</sup>) and K<sub>2</sub>O(209.5 kg ha<sup>-1</sup>). Sowing of clusterbean variety G-1 was done in the second week of February by applying the three levels of phosphorus and sulphur (0, 20 and 40 kg P<sub>2</sub>O<sub>5</sub> and