



## Effect of phosphorus and sulphur on growth and yield of summer soybean

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**Abstract :** A field experiment was conducted during summer season of 2010 at the Instructional Farm, Department of Agronomy, College of Agriculture, Junagadh Agricultural University, Junagadh to Effect of phosphorus and sulphur on growth and yield of summer soybean. Result of the experiment revealed that an application of phosphours @ 60 kg ha<sup>-1</sup> recorded significantly higher plant height (49.56 cm), branch/plant (5.83), plant spread (36.78 cm), pods/plant (58.78), seed/pod (3.04), test weight (149.22 g), seed yield (2675 kg ha<sup>-1</sup>), and stover yield (2980 kg ha<sup>-1</sup>) over control. Similarly sulphur levels also recorded significant effect in increasing all these growth and yield attributes. The highest seed yield (2882 kg ha<sup>-1</sup>) stover (2940 kg ha<sup>-1</sup>) was obtained under the application @ 30kg ha<sup>-1</sup> followed by application of sulphur 15 kg ha<sup>-1</sup>. The interaction effect between phosphorus and sulphur were observed significant in respects seed yield and stover yield Significantly highest seed yield (3104 kg ha<sup>-1</sup>) and stover yield (3408 kg ha<sup>-1</sup>) was observed with combined application of 75 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> + 30 kg S ha<sup>-1</sup> (P<sub>3</sub>S<sub>2</sub>).

**Key Words :** Growth, Yield, Soybean, Phosphorus, Sulphur

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### INTRODUCTION

Soybean [*Glycine max* (L.) Merrill] is considered to be a miracle crop because of its dual qualities viz., high protein content and oil. It has high yield potential, wide adaptability, and short duration, very high nutritional value, having a vast multiplicity of uses as food and industrial products. Moreover, being a legume, the crop fix large amount of atmospheric nitrogen in soil. Therefore, soybean crop is known as Golden Bean, Miracle Crop, Wonder Crop and Gold of Soil. From nutritional point of view soybean contains 43.2 per cent protein and 20.0 per cent edible oil. Soybean protein is also rich in valuable amino acid lysine (5%) which is deficient in most of the cereals. In addition, it contains good amount of minerals, salts and vitamins (thiamine and riboflavin) and its sprouting grains contain considerable amount of vitamin C. Soybean contains less starch, thus, it is good for diabetic patients.

Symbiotically soybean fixes 125-150 kg N ha<sup>-1</sup>. Therefore, it not only maintains the soil fertility by fixing the atmospheric nitrogen, but also reduces nitrogen requirement of plants.

Phosphorus is a key element in process of photosynthesis, root nodulation and for growth, yield and quality. It is known to be associated with several vital functions in the plant body such as utilization of sugar and starch, photosynthesis, nucleus formation, cell division, fat and albumin formation, cell organization and transfer of the heredity. The availability of phosphorus from soil to plants depends on the equilibrium adjustment around the root zone.

It plays an important role in carbohydrate metabolism and formation of chlorophyll, glycosides, oils and many other compounds that are involved in N-fixation and photosynthesis of plants. It lowers the HCN content of certain crops, promotes nodulation in legumes and produces heavier grains of oilseeds. Sulphur improves carbohydrate metabolism and formation of

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