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Effect of phosphorus and sulphur on growth and yield of pigeon pea (*Cajanus cajan*)

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ABSTRACT : A field experiment was conducted to study the effect of phosphorus and sulphur fertilization on growth and yield of pigeonpea during the *Kharif* season of 2005 and 2006. Eight treatments were studies in split plot design with four replications. The treatment combinations were derived from five levels of phosphorus (0, PSB, 40, 40+PSB, 80 kg P /ha) and three levels of sulphur (0,30,60 kg S /ha). Application of 80 kg P_2O_5 and 60 kg k_2O significantly increased plant height. Branches/plant, seeds/ pod and yield over the control and 40 kg P_2O_5 +PSB+60kg K_2O during both the years. The result indicated a significant increase in grain yield (16.66 q/ha) and straw yield (50.16 q/ha) of pigeonpea after 80 kg P_2O_5 and 60 kg k_2O .The increase in grain and straw yield was 34 and 16 per cent as compared to higher over control. Maximum number of pods/plant, maximum number of seed/plant was also observed as compared to control.

Key Words : Pigeonpea, Phosphorus, Sulphur, PSB

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Its actual place of origin is very controversial as some people believe it to originate in India while others say that pigeonpea was found in the wild estate in Africa in regions of upper Nile and the coastal districts of Angola. From Africa it spread to other parts of the world and India. Australian people grow it for fodder and vegetable purposes. Now it is being grown in Africa, America, Australia, Hawaii, Ceylon, Netherland, Malaya, East and west Indies, India, Ando-China, Pakistan etc.

In India pigeonpea is mostly grown in the states U.P., M.P., Maharashtra, Bihar and Andhra Pradesh, Punjab, Haryana, West Bengal, Assam, Orissa, Rajasthan, H.P., Gujarat, Jammu and Kashmir, Karnataka, Tamil Nadu, Kerala etc. However, the major area is restricted to north India states. Pegionpea is grown as annual but Tur varieties grow like perennial plants. The plants are bushy, densely branched having a height of about 150cm. to 300cm. depending upon type and management practices.

Pigeonpea is an important grain legume crop of rainfed agriculture in the semi arid, tropics. Legumes are rich source of protein for common masses especially vegetarian. Both grain and stalk of legumes contain good amount of protein and minerals, which are essential for the growth, and development of human and animal body (Anonymous,2004). The crop has wide variation in their morphological character, root system and nutrient requirement therefore possess differential capability to utilized plant nutrient from different soil layers resulting in better use efficiency of the applied nutrient and residual fertility (Singh *at al.*, 2005). The adequate supply of phosphorus to legume is more important than that of nitrogen because it has beneficial effect on nodulation, growth and yield.

Presently is being required as fourth major nutrient .S, which is mostly applied to oilseed and pulses, has been found to benefit much physiological process in plant.

RESEARCH **P**ROCEDURE

The experiment was conducted during the *Kharif* season 2005 and 2006 at the research farm of J.V. College Baraut (Baghpat), U.P. Baraut (20.6° N, 77.17° E and at altitude of 226.6 m above mean sea-level). The soil was sandy clay loam with pH7.52, organic carbon 0.55 per cent, available N 238.28 kg/ha, available P 17.21 kg/ha and available k 246.56 kg/ha. The average rainfall during crop season was 750 mm. The average sunshine hours was 6.7 and average humidity 74.35 per cent. The experiment was laid out in split plot design with 4 replications,