



Research Article

Influence of *Rhizobium* seed inoculation, nitrogen and phosphorus levels on growth, seed yield and quality of cowpea cv. PUSA PHALGUNI

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Abstract : A field experiment was conducted during the summer season of 2005 at Agricultural Experimental Station, Paria to study the influence of *Rhizobium* seed inoculation and nitrogen and phosphorus levels on cowpea (*Vigna unguiculata* Walp). Combined application of 20 kg N/ha + 40 kg P₂O₅/ha with seed inoculation significantly increased growth, seed yield and quality of cowpea.

Key Words : *Rhizobium*, Cowpea, Nitrogen, Phosphorus, Seed yield and quality

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INTRODUCTION

Cowpea (*Vigna unguiculata* Walp) is an important leguminous vegetable crop grown in summer as well as *Kharif* season in Gujarat for its long green tender pods and also for seeds.

It is nutritive vegetable, which supplies protein, phosphorus and vitamins like A, B and C (Smartt, 1976). Being a nutritious vegetable, it plays an important role in maintaining soil fertility. But, average productivity of the crop is far below the yield levels recorded at research stations. Major hurdles in increasing the productivity are poor soil in which crop is grown and improper fertilization. Hence, there is need for increasing crop productivity by improving soil fertility. In addition to nitrogen which is fixed in the soil from the atmosphere by the crop specific *Rhizobium* found in

root nodules of this crop. Phosphorus is another important element which inter-alia enhances the nitrogen fixation capacity of the crop. In addition to biologically fixed nitrogen, crop also required N through fertilization to meet its initial requirement. Information on the combined effect of fertilizer nutrient and seed inoculation with *Rhizobium* culture in affecting the productivity of the crop is meagre. In light of above, the present investigation was conducted.

EXPERIMENTAL METHODS

A field experiment was conducted in summer season of 2005 at Agricultural Experimental Station, Paria. The soil was clayey in texture having pH 8.15 and available N, P₂O₅ 235.2 kg and 41.65 kg/ha, respectively. The treatment comprised of three levels of nitrogen viz., 0, 10 and 20 kg N/ha. Three levels of phosphorus i.e. 0, 20 and 40 kg/ha with and without *Rhizobium* seed inoculation. Full dose of phosphorus and half dose of N were applied at the time of sowing along with FYM @ 15 q/ha and remaining half dose of N was applied at 30 DAS. The experiment was laid out in Randomized Block Design with three replications. Seeds of cowpea 'Pusa Phalguni' were treated with *Rhizobium* culture

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