



INTERACTION EFFECT OF PHOSPHORUS, FYM AND PSB ON GROWTH AND SEED YIELD OF COWPEA (*VIGNA UNGUICULATA*) CV. PUSA KOMAL

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ABSTRACT: The present investigation was carried out during *Kharif* season of 2014-2015 at Jabalpur, Madhya Pradesh. The experimental material for the present investigation was comprised of 16 treatments combination of phosphorus (P), phosphate solubilizing bacteria (PSB) and farm yard manure (FYM). It is resulted that the cowpea variety Pusa Komal responded well in terms of growth, seed yield and attributing characters, among the interaction of P x FYM, application of 75.0 P₂O₅ kg/ha + 5.0 t FYM/ha (P₃F₁) was exhibited significantly maximum growth viz., plant height, number of branches plant⁻¹, number of clusters plant⁻¹, days to 50% flowering, days to first picking, yield attributes i.e. number of pods per cluster and number of pods plant⁻¹ and seed yields plant⁻¹, plot⁻¹ and ha⁻¹ as compare to other treatment combinations. Seed inoculation of 0.5kg PSB/ha was recorded significantly maximum growth and seed yields i.e. plant⁻¹, plot⁻¹ and ha⁻¹ of cowpea as compare to other treatment combinations. Combined application of 75.0 P₂O₅ kg/ha + 5.0 t FYM/ha + 0.5kg PSB/ha (P₃F₁B₁) was noted significantly maximum growth and seed yields i.e. plant⁻¹, plot⁻¹ and ha⁻¹ of cowpea as compare to other treatment combinations. It is revealed from the data obtained that the treatment combination of P₃F₁B₁ (75.0 P₂O₅ kg/ha + 5.0t FYM/ha + 0.5kg PSB/ha) gave significantly maximum 14.74 q/ha seed yield, Rs. 265320/ha gross return and net return of Rs. 232876/ha with benefit cost ratio of Rs. 8.18 was obtained in cowpea variety Pusa Komal.

Key words: Cowpea, Pusa Komal, Phosphorus, FYM, PSB, Growth, Seed yield

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Cowpea (*Vigna unguiculata* L.) belongs to family Leguminosae, sub-family papilionaceae

and its native place is central Africa. Cowpea is grown for seed, vegetable, fodder and green manuring. For human consumption they are largely used as green vegetable, when pods are tender and as seed either whole, dal or flour. It is a cheap source of protein for human and livestock nutrition. It is also rich nutritive value with contains moisture (85g), Protein (3.0g), minerals (1.0g), fibers (2.0g), carbohydrates (8.0g), calcium (72 mg), phosphorus (59 mg), iron (2.0 mg), thiamine (0.07 mg), riboflavin (0.09 mg) and vitamin C (14 mg) per 100 g edible portion. Among the different pulses grown in the world, cowpea is grown in 14.13 million hectare with production of 4.51 ('000 MT) and the productivity of 387.45 kg ha⁻¹ (Anonymous 2013). In India, the cowpea is grown in an area of about 3.91 million hectare with a production of 2.22 ('000 MT) having a productivity of 564.15 kg seed ha⁻¹ and in Madhya Pradesh its covering area and production is very minor (Shivnanda, 2005).

Phosphorus is the most needed elements for cowpea seed production in many tropical soils and

increase to cowpea seed yield because it is reported to stimulate growth, initiate nodule formation as well as influence the efficiency of the Rhizobium-legume symbiosis (Haruna and Aliyu, 2011). Phosphorus is also required in large quantities in young cells such as shoot and root tips where metabolism is high and cell division is rapid. It also aids in flower initiation, seed and fruit development (Nyoki et al. 2013). The use of organic manures, which play a major role in producing the good quality and higher yield in cowpea per unit area. Biofertilizers holds a vast potential for supply of major plant nutrients like nitrogen and phosphorus more economically. However, biofertilizers if supplement with the chemical fertilizer they can reduce the need of chemical fertilizers by 25-50%. The integrated use of chemical fertilizers, organic manures and biofertilizers hold great promise in securing high level of crop productivity, improve seed quality and also to protect soil health from deterioration and pollution hazards. However, systematic study needed to develop package of practice for adoption of integrated nutrient management under agro-ecosystem of Madhya Pradesh. Keeping in view the above facts, it is imperative to carry out the present investigation on cowpea.