

EFFECT OF BIOFERTILIZERS, RHIZOBIUM & PHOSPHATE IN COMBINATION OF DIFFERENT LEVEL OF Ca, Mg & S ON THE PRODUCTIVITY OF CHICKPEA (*CICER ARIETINUM* L.) CULTIVAR AVRODHI

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Abstract: A field experiment was conducted in Bareilly, Uttar Pradesh, India, during the 2006-07 rabi season to study the effect of biofertilizer (*Rhizobium* & *Phosphate*) in combination of different level Ca, Mg & S on the productivity of chickpea (*Cicer arietinum*) cultivar "Avrodhi". Experimental units were arranged in split-split plot based on randomized complete blocks with three replication. The treatments consisted of nitrogen, phosphorus, potassium (N: P: K 20:60:30 Kg/ha), calcium/magnesium & sulphur (Ca, Mg & S 38Kg/ha) and seed inoculation with *Rhizobium* or Phosphate solubilizing bacteria (PSB), both *Rhizobium* and PSB, or uninoculated control. The results revealed that application of N: P: K 20:60:30 Kg/ha + Ca, Mg & S 38Kg/ha + dual inoculation with *Bradyrhizobium japonicum* and *Pseudomonas striata* (200 gm/ha) significantly increased the growth characters (Plant height, no of nodules, nodules dry weight & dry matter accumulation) of chickpea. The increase dry matter accumulation gm/plant (16.64). Height of plant cm (45.78), no of nodules/plant (35.18), nodules dry weight gm/plant (90.47).

Keywords: *Cicer arietinum*, *Rhizobium*, productivity

REFERENCES

- Dass, Anchal, (2008)** Effect of agronomic factors on nutrient content and uptake, dry mater accumulation and yield of chickpea (*Cicer arietinum* L.) on form conditions. International-Journal-of-Agricultural-Sciences, **4**(1); 83-87.
- Ahmed, M.K.A.; Afifi, M.H.; Mohamed, M.F. (2003)** Effect of biofertilizers, chemical and organic fertilizers on growth, yield and quality of some leguminous crops, Egypton-Journal-of-Agronomy. **25**: 45-52.
- Beck, D.P.; Munns, D.N. (1985)** Effect of calcium on the phosphorus nutrition of *Rhizobium* Meliloti. Journal-Soil-Sciences-society-of-America (USA). (Mar.-Apr. 1985). V **49**(2) P. 334-337.
- Bahadur, M.M.; Ashafzaman, M.; Kabir, M.A.; Chowdhury, M.F.; Majumder, O.A.N. (2002)** Response of chickpea (*Cicer arietinum* L.) varieties of different levels of phosphorus. Crop-Research-Hisar, **23**(2); 293-299.
- Choudhary, P.D.; jat, R.S.; Sharma, H.S. (2003)** Interaction effect of phosphorus, sulphur and PSB inoculation on growth, yield and nutrient uptake of wheat. Annals-of-Agriculture-Research. **24**(1) ; 12-16
- Dutta, Dhananjay; Bandyopadhyay, Protit. (2009)** Performance of chickpea (*Cicer arietinum* L.) to application of phosphorus and bio-fertilizer in laterite soil. Archives-of-Agronomy-and-Soil-Science. **55**(2); 147-155.
- Dhage, S.J.; Kachhave, K.G. (2008)** Effect of dual inoculation of *Rhizobium* and PSB on Soybean. Journal-of-Maharashtra-Agricultural-Universities. **33**(2) ; 209-211.
- Farah, Nosheen; Nosheen, Shafique, (2006)** Effect of phosphorus application on the growth and nodulation of inoculated chickpea (*Cicer arietinum* L). Pakistan Journal-of-Agricultural-Research. **19**(4) : 65-69
- Kantwa, S.R.; Meena, N.L. (2002)** Effect of irrigation, phosphorus and PSB on growth and yield of mustard. Annals-of-Agricultural-Research. **23**(3): 456-460.
- Khatkar, Rahul; Abraham, T.; Joseph, S.A. (2007)** Effect of biofertilizers and sulphur levels on growth and yield of black gram (*vigna mango* L.) Legume,-Research. **30**(3) : 233-234
- Rudresh, D.L, Shivaprakash, M.K., Prasad, R.D. (2005)** Effect of cobined application of *Rhizobium*, Phosphate solubilizing bacterium and Trichoderma spp. on growth, nutrient uptake and yield of chickpea (*Cicer arietinum* L.) Appl-Soil Ecol **28** : 139-146.
- Tanwar, S.P.S.; Sharma, G.L.; Chahar, M.S. (2002)** Effect of phosphorus and biofertilizers on the growth and productivity of black gram (*Vigna mungo* L). Annals-of-Agricultural-Research. **23**(3) : 491-493
- Wani, P.A., Khan, M.S., Zaidi, A. (2007)** synergistic effects of the inoculation with nitrogen-fixing and Phosphate-solubilizing rhizobacteria on the performance of field-grown chickpea. Journal plant Nutrition Soil Science **170**(2): 283-287.