

## Yield attributes, yield and economics of chickpea (*Cicer arietinum* L.) as influenced by manure, biofertilizer and DAP doses

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### ABSTRACT

A field experiment was conducted during two years, during *rabi* season of 2003-04 and 2004-05 to find out the effect of FYM and Rhizobium culture alone and in combination of both under the different doses of DAP on yield attributes, yield and economics of chickpea. Result showed that significantly higher number of seeds, pods and seed weight/plant, yield and net profit were obtained with combination of Rhizobium culture + FYM. Rhizobium culture enhanced the seed yield by 2.37 q/ha (14.86%), net profit by Rs 4176/ha (24.73%), FYM increased yield by 3.43 q/ha (21.51%) and net profit Rs 4414/ha (26.13%) and FYM + Rhizobium culture enhanced the yield by 6.15 q/ha (38.38%) and net profit by Rs 6722/ha (39.80%). Yield attributes like number of seeds/plant, number of pods/plant, seed weight / plant and 100-seed weight were increased with DAP doses significantly. The application of 120 Kg DAP/ha enhanced the seed yield by 7.46 q/ha and net profit by Rs 12141/ha (90.89%) over control.

**Key words :** Manure, FYM, Biofertilizer, Rhizobium culture, DAP doses.

### INTRODUCTION

Pulses production play an equally important role in rainfed and irrigated agriculture by improving physical, chemical and biological properties of soil and they are considered excellent crops for natural resource management, environmental security, crop diversification and consequently for viable agriculture. It is estimated that India's population will touch nearly 1.35 billion mark by 2020 A.D. and will require 30.3 million tones of pulses as against present production of 12-14 million tones. Clearly a quantum jump is required in the total production of pulses to increase the per capita availability. Chickpea contributes about 40% of the total pulses production in the country. However, India imports about 1 million tonnes of chickpea every year from other countries. Balanced and efficient fertilizer application combining inorganic fertilizers, organic manures and biofertilizers is essential for realizing higher yield and reducing cost of production in pulses.

### MATERIALS AND METHODS

A field experiment was carried out during 2003-04 and 2004-05 at Students' Instructional Farm of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur. Sixteen treatment combinations were tried in a four replicated randomized block design. The treatments were control, seed inoculation by Rhizobium culture, use

of FYM @ 10 t/ha and seed inoculation + FYM @ 10t/ha under 4 doses of DAP (@ 0, 60, 90 and 120 Kg/ha). The soil of experimental plot was sandy loam having pH 7.70, available N 150.20 Kg/ha, P<sub>2</sub>O<sub>5</sub> 18.6 Kg/ha, available potassium 368 Kg/ha. Chickpea variety KPG-59 (Uday) was sown on November 13, 2003 and December 3, 2004 at a row spacing of 40 cm and seed rate of 100 Kg/ha. As per treatment the seed was inoculated with Rhizobium culture about two hours before sowing. FYM was applied @ 10 t/ha before sowing. Full quantity of DAP doses as per treatment were basely applied in furrows. During first year crop was irrigated once and in second year two times in addition to total rainfall during crop period was 73.40 mm and 25.8 mm during first and second year, respectively.

### RESULTS AND DISCUSSION

#### *Effect of manures and biofertilizers :*

It is evident from Table 1 that the number of seeds / plant were significantly higher under FYM and Rhizobium culture treatment than remaining tested treatments during both years. Rhizobium culture and FYM were also found superior to control. On mean basis, used of FYM + Rhizobium culture improved the number of seeds/plant by 11.02, 7.49 and 3.73 over control, Rhizobium culture and FYM alone, respectively. Pods/plant were statistically higher in all the treatments than control but the highest

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