

## Impact Of The Starter Doses Of Nitrogen On Nodulation, Yield And Yield Attribution Of Chickpea Under Irrigated Conditions

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### ABSTRACT

A field experiment was conducted in the rabi season of 2003-2004 at research farm of institute of Agriculture sciences, Bundelkand University, Jhansi to study the impact of starter doses of nitrogen on nodulation and yield attributes of different varieties of chick pea under irrigated condition. Nine treatment combinations (3 varieties K-850, Radhey, and Avarodhi And three levels of nitrogen 0, 15 and 30 Kg/hector) were tested in split plot design with five replication. Results revealed that the application of 30 Kg N/ha produced highest nodules/plant except at 30 DAS of growth. The No. of nodules increased up to 60 DAS and there after it decreased at 90 and 120 DAS Yield attributes character such as No. of pods/plant. No. of seeds/plant, 100 Seed weight and harvest index were also influenced significantly by nitrogen application and these were highest in the crop fertilized with 30 Kg N/ha. Protein content in seed was affected significantly by nitrogen application though it was highest in the treatment receiving 30 Kg N/ha. and lowest in control plots. Among the three genotype K-850 proved better than Radhey and Avarodhi in terms of seed yield varieties Radhey proved better in terms of harvest index in relation to nitrogen application.

**Key words:** Nitrogen, Starter Doses, Nodulation, Yield, Yield Attribution, Chickpea.

### INTRODUCTION

Grain legumes, which are generally known as pulses are the chief source of dietary protein in India. Being well equipped with the unique property of fertility respiration, they have been considered be the backbone of Indian agriculture. Among the pulses chickpea (*Cicer arintinum* L.) is the third most important legume in the world, which is grown in all most all the contents except-Antarectica Chickpea is used for human consumption as well as for feeding to animals. It is eaten either whole fried or boiled in the from of spilt pulses. Gram flour in used for the preparation of various types of preparations.

Nitrogen requirement of pulses is low. Starter dose of nitrogen @ 10-12 Kg N/hectare depending upon the pulse crop is used to meet nitrogen requirement at initial stages. This nitrogen sufficient to support the plant growth until the plant it self fixes the atmospheric nitrogen through the symbiotic activities of the root nodule bacterium rhizobium. In view of the increased cost of nitrogenous fertilizers, this will be worthwhile if this start dose nitrogen in substituted by any other easily and quickly degradable biomass or organic manure. Thus, there is considerable importance of crop-weather relationship the present study entitled "impact of the starter doses of nitrogen on nodulation, yield and yield attributes of chickpea under irrigated conditions" was there fore, conducted during rabi season

2003-2004 with the nitrogen doses and three varieties.

### MATERIALS AND METHODS

A field experimental trial was conducted during rabi season 2003-2004 at research farm of Institute of agriculture sciences bundelkhand university Jhansi under irrigated conditions geographically, Jhansi is located at 26-28 N latitude 80-24 E longitude and 257 meters above sea level. The climate is semi-arid, subtropical with an average rainfall of 800 mm. The soil of experimental plot was sandy loam in texture, low in organic carbon, low in available nitrogen phosphorus and potassium with slightly saline soil reaction.

The experiment was laid out in a plot design with five replication three chick pea varieties K-850, Radhey and Avarodhi were obtained from IIPR, Kalyanpur Kanpur and the treated seeds were sown in plots on Nov. 19, 2003. Starter doses of nitrogen @ 0 kg, 15 kg, and 30 kg N/ hectare was applied through urea (46 % N) and 40 kg P<sub>2</sub>O<sub>5</sub> was applied through SSP (16% P<sub>2</sub>O<sub>5</sub>) as basal dose. The germination of the varieties started on 28-Nov. 2003 and irrigation was given on 16-Dec. 2003. Inter cultural operations like weeding, hoeing etc. Were done manually throughout the experimental period as and when needed since there was no infestation of any insect-pest and diseases, no plant protection measures were taken. The