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Effect of nitrogen, phosphorus and potash on growth, yield and quality of onion (*Allium cepa* L.) raised from onion sets

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ABSTRACT

A field experiment was conducted during *Kharif* season of 2004-05 and 2005-06, to study the effect of nitrogen, phosphorus and potassium application raised from onion sets on growth, yield and quality characters. In a trial with cv. AGRI found Dark Red, different levels of nitrogen, phosphorus and potassium significantly affected the growth characters of onion, but yield characters was found non-significantly except total yield. The application of nitrogen significantly increased total yield of onion. Application of 150kg N + 80kg P_2O_5 + 80 kg K_2O per ha. was most appropriate combination of nutrients with respect to growth and yield of the rainy season onion crops raised from seedlings.

Key words : Variability, Heritability, Genetic advance, Line × tester, Okra.

INTRODUCTION

Rainy season onion crop is raised mostly from seedling, instead of onion set. The crop raised from seedling require 150-165 days, while from onion set takes 105-145 days. The crop from onion set is successfully grown in Gujarat and Maharashtra states and its cultivation under North India is limited to Alwar, Bharatpur in Rajasthan. Therefore, an investigation was carried out to determine the requirement of nitrogen, phosphorus and potassium of rainy season onion raised from onion set at district Farrukhabad.

Lack of adequate nutrients supply is one of the main factors which limits the yield of bulb onions. The nitrogen application was almost universally reported to have increased the growth and yield of onion in India. The recommendation for the rainy season crop for nitrogen application varies from 50 to 200 kg/ha (Purewal and Dargan, 1962, Chopra and Kanwar, 1966).

MATERIALS AND METHODS

Investigations was carried out at Krishi Vidgyan Kendra, Farrukhabad with the cv. AGRI found Dark Red during 2004-2005 and 2005-2006. The soil of experimental site was sandy loam having uniform fertility level. The soil analysis report indicated that it had a pH of 8.1, available organic carbon 0.31 per cent, nitrogen 136.8 kg/ha phosphorus 19.36 kg/ha and potassium 230.68 kg/ha with sandy loam texture. Three levels of nitrogen (50, 100 and 150 kg/ha), two levels of phosphorus (40 and 80 kg/ha) and two levels of potassium (50 and 100 kg/ha), 12 treatments combinations were laid out in Randomized Block Design with three replications. The source of nitrogen, phosphorus and potassium was urea, single super phosphate and muriate of potash, respectively. Half of the nitrogen and full doses of phosphorus and potassium were broadcasted and mixed in soil before planting. The remaining half of nitrogen was applied in two split doses, one month and two month after transplanting. The uniform onion sets were transplanted in 1.5 x 1.0 m plots during the II[nd] week of July. The crop was harvested during the month of December. The data were recorded on growth, yield and quality characters and analysed statistically as suggested

RESULTS AND DISCUSSION

The effect of nitrogen, phosphorus and potassium on different characters is presented in Table 1.

Effect of nitrogen:

The effect of nitrogen, phosphorus and potassium on different characters is presented in Table 1. The differences among the treatments were found significant except T.S.S. of bulb. The data indicates that the plant height, leaves per plant, fresh weight of plant and bulb as well as dry weight of plant and bulb increased linearly with increasing levels of nitrogen and age of the plant. The diameter of bulb was not affected by different levels of nitrogen. The reason perhaps for significant increase in the above growth characters due to increasing levels of nitrogen might be because of more vegetative growth, more chlorophyll formation and thus more carbohydrate formation in onion plants. Similar results have also been reported by Nandpuri *et al.* (1968), Singh and Kumar (1969). The higher levels of nitrogen reduced the T.S.S.

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