



Effect of plant density and nitrogen levels on growth and yield of onion seed crop (*Allium cepa* L.)

D.S. KAR, M.K. AGRAWAL AND A.B. DAS

ABSTRACT

Field experiment was conducted to study the effect of plant density and nitrogen levels on growth and yield of onion seed crop. The experiment consisted of twelve treatment combinations of three spacing (20cm,30cm,40cm) with four levels of nitrogen (0, 100,150,200 kg/ha) and was laid out in Randomized Block Design. The spacing of 20 cm within the row gave better result in respect of plant height, number of leaves, number of umbel per plant and seed yield per hectare. On the other hand large spacing 40 cm produced large size umbel but less number of umbel per plant. Nitrogen at 200 kg per hectare increased the plant height, average length of leaf sheath, seed yield per umbel, no. of umbel per plant and seed yield per hectare. The spacing of 20 cm within row and fertilizing at 200kg/ha gave good result in growth and yield performance for onion seed crop.

KEY WORDS : Plant density, Nutritional requirement, Onion seed crop

Kar, D.S., Agrawal, M.K. and Das, A.B. (2010). Effect of plant density and nitrogen levels on growth and yield of onion seed crop (*Allium cepa*), *Internat. J. Forestry and Crop Improv.*, 1 (2) : 120-122.

INTRODUCTION

Onion is a major bulbous crop among the cultivated crops and it is of global importance. Although onion is grown commercially for bulbs in most of the region of the country, but its seed production is limited only to some regions. The reason for lower productivity of onion in India could be attributed to the limited availability of quality seed and lack of developments of hybrids in onion is major limiting factors among the others. If the area is increased under seed production, the farmer might be able to get excellent quality seed in cheaper rates. The yielding capacity and quality of seed crop is influenced by a number of factors. Amongst all factors some factors like bulb size, spacing and nutritional requirement is most important. The seed yield / plant increased considerably with increasing bulb spacing but the yield per hectare was greatest at the closet spacing (Chaturvedi, 1996). A closer spacing of 30 cm within rows gives higher yield of seed than when the bulbs were planted at 45 cm.

MATERIALS AND METHODS

A field experiment was conducted at Department of Horticulture, College of Agriculture, Allahabad University, to study the effect of plant density and Nitrogen level on growth and yield of onion seed crop in 1998-1999. The experiment was laid out in Randomized Block Design with four replications. The treatments consisted of three spacing (S₁=45 x 20 cm, S₂= 45 x 30 cm, S₃=45 x 45 cm) and four nitrogen levels T₀=control, T₁=100 kg /ha T₂=150 kg /ha, T₃=200 kg/ha with constant dose of 100 kg P₂O₅ and 100 kg K₂O per hectare. The total quantity of phosphorus and potash along with the half quantity of nitrogen were applied as basal dose, rest half of nitrogen was applied as top dressing. The fertilizer was applied uniformly to all the plots of each of size 1.5 x 1.5 mt. Observation on growth parameter *viz.*, duration from sowing to bud initiation, height of plant, number of leaf sheath /plant, seed yield per umbel, number of umbel per plant and seed yield per hectare had been taken.

RESULTS AND DISCUSSION

The seed yielding potentiality of onion plants showed a better variation against the plant population level *i.e.* spacing within the row .The closet spacing of 20 cm apart yielded maximum yield of 705.31 kg/ ha seed where as the yield received when the plants were spaced at 30 cm (632.54 kg /ha) and 40 cm (634.34kg/ha) within the row

Correspondence to:

A.B. DAS, O.U.A.T., Krishi Vigyan Kendra, JAJPUR (ORISSA) INDIA
Email : ip_bbsr@rediffmail.com

Authors' affiliations:

D.S. KAR, O.U.A.T., Krishi Vigyan Kendra, JAJPUR (ORISSA) INDIA

M.K. AGARWAL, Department of Agriculture, D.M.S.R.I., AJMER (RAJASHTAN) INDIA