The Asian Journal of Horticulture, Vol. 3 No. 2 : 238-240 (December-2008)

Effect of organic manures and inorganic fertilizers on growth and yield of onion *(Allium cepa* L.)

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Accepted : *July, 2008*

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ABSTRACT

The experiment was conducted during winter season of 2004-05 at the Krishi Vigyan Kendra, Kuthulia, Rewa to study the response of inorganic fertilizers on growth and yield of onion. The treatments comprised of seven organic and inorganic fertilizer treatments (vermicompost @ 5.0 t/ha, NADEP compost @ 15.24 t/ha, FYM @ 25 t/ha, poultry manure @ 3.28 t/ha, recommended dose of N125P60K100, Agrich @ 1.25 t/ha and a control). Amongst the organic manures and inorganic fertilizers, N125P60KI00 application proved the most beneficial for growing onion var. N-53. It yielded the maximum up to 378.61 q/ha onion bulb with the highest net return of Rs.83,071/ ha and B:C ratio 3.72. However, the second best treatment was poultry manure (3.28 t/ha).

Key words : Onion, Manures, Fertilizers, Growth, Yield, *Allium cepa* L.

Onion (*Allium cepa* L.) belongs to the family Amaryllidaceae and it is known as "Pyaj" in Hindi. It occupies very important position among spices crops grown all over the world. Onion is one of the important commercial spices grown in western, northern as well as southern part of India. The onion crop is widely consumed throughout the year as salad and culinary purpose for flavouring as spices in pickles, sauce and vegetables.

In the developing countries the escalating prices of fertilizers is hitting the small and marginal farmers. Thus, integrated nutrient management is gaining importance in the recent years. According to Mohd Rafi *et al.* (2002) recent trends in farming with organic inputs, which has a inherent claim of improvement in quality and taste of the produce.

Many commercial organizations have brought some ready made organic fertilizers into the market *viz*. Agrich, Celrich and Teracare etc. These are often enriched with bio-inoculants and micronutrients. Celrich is a bio-organic soil enricher containing 30% organic matter, 20% moisture and 45% sand and inoculated with biofertilizers like Azotobacter, Azospirillum and actinomycetes. Keeping these factors in mind, experiment on the effect of these organic manures with reduced doses of inorganic fertilizers on yield and quality of onion has been undertaken.

MATERIALS AND METHODS

The experiment was laid out in Randomized Block Design with 4 replications; each replication was divided into 28 plots. The treatments were allocated at random to different plots. The seeds of onion variety "N-53" were treated before sowing in nursery with Bavistin @ 2 g/kg. The nursery of 3 m long and 1.2 m wide and 10 cm above the ground level were prepared and were manures then treated seed was sown on 25th Oct. in line. All intercultural operations were done as and when required.

The experiment was to study the response of inorganic fertilizers on growth and yield of onion. The treatments comprised of seven organic and inorganic fertilizer treatments (vermicompost @ 5.0 t/ha, NADEP compost @ 15.24 t/ha, FYM @ 25 t/ha, poultry manure @ 3.28 t/ha, recommended dose ofN125P60KlOO, Agrich @ 1.25 t/ha and a control). The experiment was laid out in randomized block design with four replications. The onion var. N-53 was sown transplanted on 8 December, 2004 @ seed rate of 8-10 kg/ha. The crop was harvested on 6 May, 2005.

Two-month-old seedlings of uniform size were transplanted on 8.12.2004. The spacing 15 cm row to row and 10 cm plant to plant was maintained. Five plants in each plot were selected randomly for recording observations and following characters were noted for study purpose during successive stage of growth.

Fresh weight of bulb, Dry matter percentage of bulb, bulb diameter, yield per plot, yield per hectare etc. recorded periodically. The cost of cultivation of each treatment was calculated per hectare on the basis of prevailing rates of labour, fertilizer, organic manures, irrigation and other expenditure. The total income per hectare was calculated as per the average wholesale price of onion in the local market. The net profit per hectare was obtained by deducting the cost of cultivation from the total income.

RESULTS AND DISCUSSION

The plant height, number of leaves and neck girth of