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Effect of biofertilizer and gibberellic acid on yield contributing character of onion

H.S. WAGHMODE, R.S. PATIL AND B.S. PANDURE*
Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

ABSTRACT

The present investigation was undertaken during *Rabi* season of 2005-06 at Mahatma Phula Krishi vidyapeeth, Rahuri, with a view to study the effect of combined use of biofertilizer and gibberellic acid on seed production of onion cv Phula Samarth. The yield attributing character such as number and seed weight per umbel and per bulb and seed yield per hactare were significantly increased at higher concentration of gibberellic acid (100 ppm)The yield attributing character such as number and seed weight per umbel and per bulb and seed yield per hectare were significantly higher at lower dose of biofertilizer B_2 (*i.e.*6 kg/ha *Azospirillum* + PSB and 10 kg /ha VAM) while number of flower stalk per bulb increased at higher doses of biofertilizer, G_3 (*i.e.* 12kg/ha *Azospirillum* + PSB and 20 kg /ha VAM). Thus by considering over all performance, it could be concluded that application of gibberellic acid (100ppm) along with biofertilizer *Azospirillium* + PSB 6 kg/ha and VAM @ 10kg/ha was effective in increasing seed yield of onion.

Key words : Onion, Biofertilizer, Gibberellic acid, VAM, *Azospirrillum*

INTRODUCTION

Onion (*Allium* cepa L) is bulbs, biennial herb belonging to family *Alliaceae* and genus *Allium* which is consumed all over the world throughout the year. Onion is good source of vit. A, B and C, protein, phosphorus, calcium, ascorbic acid, etc. medicinally, it has been found that onion promotes appetite, use full against malaria, night blindness, for lowering blood pressure and against dog bites (Perane, 2001). In India, Maharashtra, Andhra Pradesh, Assam, Bihar, Gujrat, Punjab, Karnataka, and Tamilnadu, Orissa, Uttar Pradesh are major onion growing states. At present, Maharashtra is a leading state in onion production having an area 1.21 lakh ha. 14.23 lakh metric tones production (Anonymous, 2005)

The yield of onion seed largely depends upon many factors such as time of planting of mother bulb, plant population per unit area, size of mother bulb, storage temperature of mother bulb, and mean day length and tempreture, pollinating agent, fertilization, irrigation, cultural practices and time of harvesting also affect seed yield quality. Seed yield is also variable factor in onion. Apart from inconsistent seed yield, genetic purity and purity and low viability are other consistent in onion seed production. The present range of seed yield is 2.5 to 10.0 q/ha. This wields range observed due to variable environmental factors and lack of agro techniques. The increasing tempreture during flowering is the major cause which affects seed production in onion due to flower parameters like number of flower per stalk, number of seed and seed weight per umbel. In onion bulb crop agro techniques have been standardized however, meagre research work has been done on use of growth substance as a foliar spray to increase seed production and quality of onion seed. Loper and Waller (1982) showed that GA_3 as foliar spray treatment at higher rate significantly increases bolting and yield.

MATERIALS AND METHODS

The good quality bulb of onion variety Phula Samarth were obtained from the Vegetable Breeder, Mahatma Phule Krishi Vidyapeeth, Rahuri (M.S.). The soil of experimental plot was medium black and well drained with uniform well leveled topography. Design of experiment was FRBD, replications with 3, plot size gross 306x3.3=11.88 sqm, Net 1.8x2.5m=4.5 sqm, Spacing 90x20cm, Season *Rabi*, 2005-06. The recommended dose of fertilizer 100:50:50kg NPK/ha. was applied. 50 per cent N and total dose of P and K was applied as basal dose, while remaining 50 per cent N was top dressed at the time of second earthning *i.e.* 50 days after plantation. Stock solution of GA_3 was prepared with distilled water and then required concentrations for spraying were prepared. In spraying treatments the appropriate concentrations were prepared and spraying was done uniformly on plant in the respective plot. Care was taken to see that all leaves, umbel were sprayed properly. A 50 and 100 ppm were sprayed at initiation of flower stalk *i.e.* 50 days after planting.

RESULTS AND DISCUSSION

Effect of gibbrerllic acid on number of flower stalk per bulb was statistically non-significant. However, the treatment G_3 (100 ppm) recorded the maximum (7.5) number of flower stalk (Table 1). The number of flower stalk per bulb were significantly influenced by different levels of biofertilizer doses. The treatment B_3 had more number of flower stalk (8.2) than B_1 (5.0) and was at par

* Author for correspondence.