

Effect of biofertilizer and gibberellic acid on growth and yield of onion

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ABSTRACT

The present investigation was undertaken during *Rabi* season of 2005-06 at Mahatma Phula Krishi vidyapeeth, Rahuri, with a view to work out combined use of biofertilizer and gibberellic acid on seed production of onion cv. PHULASAMARTH. Result revealed that application of gibberellic acid 50 ppm significantly reduced of number of days for the sprouting, 50 per cent flowering, days for seed harvesting and plant height of flower stalk. Per cent stalk bending was also observed maximum under application of GA 50 ppm. Application of biofertilier (12 kg/ha *Azospirillum* + PSB and 20 kg/ha VAM) significantly improved growth contributing characters such as number of leaves per plant days for bulb sprouting and seed harvesting. Thus by considering over all performance, it is concluded that application of gibberellic acid (100 ppm) along with biofertilizer (*Azospirillum* + PSB 6 kg/ha and VAM @ 10kg/ha) was effective in increasing yield.

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Onion (*Allium cepa* L) is bulbous, biennial herb belonging to family *Alliaceae* and genus *Allium* which is consumed all over the world throughout the year. Promotes appetite, use full against malaria, night blindness, for lowering blood pressure and against dog bites (Perane, 2001). India is the second largest producer of onion next to China. Accounting for 20 per cent of world area and 10 per cent of world production. The area is about 5.93 lakh hectares with 75.16 lakh metric tones bulb production. 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 and 14.23 lakh metric tones production (Anonymous, 2005)

In Maharashtra, onion grow throughout the year in *Kharif*, late *Kharif* (*rangda*), *Rabi* and late *Rabi* (summer) season. Nasik district alone accounts to more than 30% of stats production (Singhal, 2003). About 70% of total onion exported from India is from Maharashtra state. 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, mean day length and temperature, 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 10.0q/ha. This yields range observed due to variable environmental factors and lack of agro techniques. The

increasing temperature 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 carried out in onion seed production. Hence, the present investigation was planned and conducted during *Rabi* season of 2005-06.

MATERIALS AND METHODS

The good quality bulb of onion variety Phula Samarth were obtained from the Vegetable Breeder MPKV Rahuri. The soil of experimental plot was medium black and well drained with uniform well leveled topography design of experiment Factorial Randomized Block Design, replication 3, plot size gross 306x3.3=11.88 sq. m, net 1.8 x 2.5m= 4.5 sq.m., spacing 90 x 20 cm, 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 earthing *i.e.* 50 days after plantation. Stock solution of GA was prepared with distilled water and then required concentrations for spraying were prepared. In spraying treatments the appropriate concentrations were prepared and sprayed 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

Data presented in Tabal 1 revealed that biofertilizer