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## Effect of spacing and seed soaking with GA<sub>3</sub> on growth, yield and quality of carrot

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**Abstract :** A field experiment was conducted at the Horticulture Farm, Head Department of Horticulture, Dr. Panjabrao Deshmukh Agriculture University, Akola, Maharashtra, India, during *Rabi* 2010-2011 to study effect of spacing and seed soaking with GA<sub>3</sub> on yield and quality of carrot. The treatments comprised three plant to plant spacings viz., 45cm x 5cm (S<sub>1</sub>), 45cm x 10cm (S<sub>2</sub>) and 45cm x 15cm (S<sub>3</sub>) and five levels of GA<sub>3</sub> with control i.e. control (water soaking) (G<sub>1</sub>), 20ppm (G<sub>2</sub>), 30ppm (G<sub>3</sub>), 40ppm (G<sub>4</sub>) and 50ppm (G<sub>5</sub>), were arranged in a Factorial Randomized Block Design (FRBD) with three replications. The plant height, number of branches, fresh weight of leaves, fresh weight of root, length of root, diameter of root, root shoot ratio, yield of root per plot and per hectare and TSS content of carrot roots, all were significantly influenced by GA<sub>3</sub> application. With every level of GA<sub>3</sub>, generally these characters showed favourable response. The average maximum root yield of 276.14 q/ha was recorded with the application of GA<sub>3</sub> at 50ppm concentration. The spacing effect were also found significant for all the above characters. However, maximum plant height, yield/ plot and yield per hectare were found maximum in close spacing S<sub>1</sub> whereas, number of branches, fresh weight of leaves, fresh weight of root, diameter and length of root, root : shoot ratio and TSS were recorded maximum at wider spacing (S<sub>3</sub>) and maximum length of root (20.83cm) was found at medium spacing (S<sub>2</sub>). The interactions of spacing and GA<sub>3</sub> were significant only for yield per plot and per hectare and height of plant when the closer spacing (45 x 5cm) (S<sub>1</sub>) combines with higher levels of GA<sub>3</sub> 50ppm (G<sub>5</sub>).

**Key words :** Carrot, Spacing, Gibberellic acid

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Among the root crops, carrot (*Daucus carota* L.) is a popular vegetable and in recent years has assumed greater importance being a rich source of carotene - a precursor of vitamin A. Plant population affects the plant growth, development and yield. In case of closer spacing, competition among plants is more and the development of carrot is badly affected. Similarly at wider spacing, individual plants will yield more but per hectare yield may be reduced due to low plant population. Therefore, a suitable plant population must be worked out at which average yield per hectare is maximum. Apart from so many factors, growth regulators may be an important tool for the increasing productivity as well as the quality of the produce to manifold as the role of plant growth regulators in various physiological and biochemical processes are well known. Thus, the present investigation was carried out to determine the optimum spacing with optimum concentration of GA<sub>3</sub> with a view to get maximum yield

without imparting its quality and resulting in better returns.

### RESEARCH METHODS

Field experiment was conducted during *Rabi* of 2010-2011 at Horticulture farm, Head Department of Horticulture, Dr. Panjabrao Deshmukh Agriculture University, Akola, Maharashtra, India. Three spacing; 45cm x 5 cm, 45cm x 10cm, 45cm x 15cm and five levels of GA<sub>3</sub>; 0 (Water soaking), 20ppm, 30ppm, 40ppm and 50ppm were tested in all possible combinations in a Factorial Randomized Block Design having three replications. The growth substances were applied by soaking carrot seed for 24 hrs with different combinations of GA<sub>3</sub>. The seeds were sown as per the fifteen treatment combinations. Subsequent irrigation, culture practices and plant protection measures were carried out as and when required for all plots.

Observations on various growth and yield attributes