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Effect of plant growth regulators on growth, flower yield and quality of spider lily (*Hymenocallis speciosa* L.)

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ABSTRACT

The experiment was carried out during the year 2007-08 at Hoariculture College Nursery, B.A. College of Agriculture, Anand Agriculture University, Anand in Randomized Block Design with three replications. The data revealed that the different levels of plant growth regulators *viz.*, GA_3 and NAA increased initial plant growth and gave higher yield. While growth retardant CCC shortened plant growth and gave lower yield of spider lily but produced higher quality flowers. The treatments of GA_3 200 ppm and NAA 100 ppm were found most effective in increasing growth and yield of spider lily. Among them, application of 200 ppm GA_3 twice *i.e.* 45 and 60 days after planting was most effective and the next best treatments were NAA 100 and 200 ppm for spider lily. All the growth regulator treatments significantly increased the shelf and vase life of spider lily as compared to control. However, all the levels of CCC *i.e.* 1000, 750 and 500 ppm were found most effective in increasing shelf and vase life of flowers. Looking to the economics, the treatment of 100 ppm GA_3 was most economical and hence it can be used in spider lily cultivation to get higher flower yield with good quality.

Key words : Gibberellic acid, Spiderlity, NAA, Regulator

Spider lily belongs to the genus *Hymenocallis* of *Amaryllidaceae* family whose flowers have spider like appearance. It's white mild sweet fragrant flowers utilized in different ornamentals preparations like venies, gajras, garlands etc. Spider lily plant is hardy, free from serious pest, diseases and other physiological disorders (Yawale *et al.,* 1998).The research based information regarding effect of plant growth regulators on spider lily is scanty. Now a days the use of Gibberellic acid (GA_3), Naphthalene acetic acid (NAA) and Chlormequat (CCC) have been remarkably successful in several ornamental plants. Keeping the above facts in a view, the present investigation was carried out to know the effect of growth regulators on growth, yield and quality of spider lily.

MATERIALS AND METHODS

The experiment was carried out during the year 2007-08 at Horticulture College Nursery, B.A. College of Agriculture, Anand Agricultural University, Anand in Randomized Block Design with three replications. The treatments consists of three levels of Gibberellic acid (GA_3) *i.e.* 100, 150 and 200 ppm, three levels of Naphthalene Acetic Acid (NAA) *i.e.* 100, 200 and 300 ppm and three levels of Chlormequat (CCC) *i.e.* 500, 750 and 1000 ppm. The uniform size bulbs were dipped in fungicide Dithane M-45 @ 0.2 % (2 g lit^{-1}) for five minutes before planting. The bulbs were transplanted on February 15, 2007 at 15 cm deep and at a spacing of 60 cm × 60 cm. The growth regulators were sprayed on plants in the morning hours at 45 and 60 days after planting. A control was maintained by spraying distilled water. The observations on plant growth, yield and quality parameters were recorded and subjected to statistical analysis.

RESULTS AND DISCUSSION

The growth regulator treatments significantly influenced the plant height (cm), number of leaves per plant, leaf area (cm^2), dry weight of plant (g) and flower yield of spider lily (Table 1).

The application of gibberellic acid significantly increased the plant height, number of leaves per plant, dry weight of plant and thereby leaf area and ultimately flower yield. The effectiveness increased with increase in concentrations. Significantly the maximum plant height, number of leaves per plant, leaf area and dry weight of plant were recorded under the GA_3 200 ppm over control and it was at par with GA_3 100 and 150 ppm and NAA at 100 ppm. Use of GA_3 and NAA increased plant height, leaf area and number of leaves per plant due to their effect on stem elongation by increasing cell elongation in sub-apical meristem. The rapid growth is a result of both, more number of cells formed and increased elongation of the individual cells. The increase in dry weight of plant was because of overall promotion and luxurious vegetative growth. The increase in biomass accumulation in response to GA_3 application and increase in dry weight of plant were also observed by Maurya and Nagda (2002), Singh