The Asian Journal of Horticulture, (June to November, 2009) Vol. 4 No. 1 : 170-172

Effect of plant growth regulators on growth and flowering of spider lily (*Hymenocallis speciosa* L.)

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Accepted : *April, 2009*

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ABSTRACT

An Investigation was carried out to know the effect of GA_3 (100,150,200 ppm), NAA (100,200,300 ppm) and Cycocel (500, 750, 1000 ppm) on growth, flowering and yield of spider lily (*Hymenocallis speciosa* L.). It can be concluded that the treatments of GA_3 200 ppm and NAA 100 ppm found most effective in increasing growth, yield and flowering characters of spider lily. Among them, application of 200 ppm GA_3 twice *i.e.* 45 and 60 days after planting has shown superiority in all vegetative, floral and yield characters *viz.*, plant height (79.92 cm), number of leaves / plant (60.33), leaf width (7.23 cm), leaf area (377.92 cm^2), dry weight of plant (0.97 kg), flower diameter (4.26 cm), days taken for first spike emergence (53.38 days), days taken for first flower emergence (61.14 days), spike length (89.62cm), number of flowers per spike(17.32), fresh flower weight (2.85g), dry flower weight (0.38g), yield (50812 flower bud bundles/hectare) and the next best treatments were NAA 100 and 200 ppm for spider lily.

Key words : GA_3 –Gibberellic acid, NAA- Naphthalene acetic acid, CCC- Cycocel, PGR-Plant growth regulators

Flower is an inseparable part of human social life. *Hymenocallis speciosa* L. is commonly called "Spider lily" because it's flowers have spider like appearance. Spider lily flowers are white in colour having mild sweet fragrant and used in different ornamental preparations, especially for colour contrast. Now a days the use of plant growth regulators became more popular to enhance the yield and quality in many horticultural crops and trees. Generally, spiderlily plants are hard in nature and easy to cultivate. Hence, research based information is scanty. Therefore, present investigation was carried out to study the effect of plant growth regulators on growth, flowering and flower yield of spider lily.

MATERIALS AND METHODS

An experiment was carried out during 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 GA_3 (100, 150 and 200 ppm), three levels of NAA (100, 200 and 300 ppm), three levels of CCC (500, 750 and 1000 ppm) and compared with control (water spray). The equal size bulbs were transplanted at 15 cm deep with a spacing of 60 cm × 60 cm. The recommended cultural practices were followed during the experimentation. The spraying was carried out twice *i.e.* 45 and 60 days after planting as per the treatments during morning hours. The data on plant growth, flowering and flower yield were recorded and statistically analyzed.

RESULTS AND DISCUSSION

The growth parameters *viz.*, fresh weight of plant at 270 DAP (kg), dry weight of plant at 270 DAP (kg), leaf width (cm) and flower diameter (cm) were significantly influenced by plant growth regulator treatments (Table 1).

The application of gibberellic acid significantly increased the fresh weight of plant, dry weight of plant, leaf width and flower diameter with increase in concentration. Significantly the maximum fresh plant weight, dry plant weight, leaf width and flower diameter were recorded under the GA_3 200 ppm treatment over control and it was at par with GA_3 100 and 150 ppm and NAA at 100 ppm treatments. Use of GA_3 and NAA increased fresh flower weight, dry flower weight leaf width and flower diameter due to their effect on stem elongation by increasing cell elongation in sub-apical meristem. Cell elongation was occured with NAA due to uptake of large quantity of water leads to enlargement of vacuole. 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 is because of overall promotion and luxurious vegetative growth. So, increase in biomass accumulation in response to GA_3 application and it reflected on increase in dry weight of plant was also observed by Ravidas *et al.*(1992), Misra *et al.*(1993), Maurya and Nagda (2002), Singh *et al.* (2003), and Khan and Tewari (2003) in different flowering plants. Application of plant growth regulators significantly increased the flower diameter might be due