*J. Hortl. Sci.*
**Vol. 8(2):276-277, 2013**

*Short communication*

# Effect of plant growth regulators on growth and yield of daisy (*Aster amellus* L.) cv. Dwarf Pink

**Y.C. Raveendra, A.M. Shirol[1] and B.S. Kulkarni**
Department of Floriculture and Landscape Architecture
K.R.C. College of Horticulture, Arabhavi
University of Horticultural Sciences, Bagalkot -587 102, India
E-mail: amshirol08@gmail.com

## ABSTRACT

**An experiment was carried out to improve plant stature in daisy (*Aster amellus* L.) cv. Dwarf Pink using various growth regulators. Among the various growth promoters and their combinations tested, gibberellic acid (150ppm) and brassinosteroid (0.5ppm) application produced maximum vegetative growth, spike yield and vase-life. It is concluded that a combination of gibberellic acid (150ppm) and BR (0.5ppm) is helpful improving growth and quality in daisy cv. Dwarf Pink.**

**Key words:** *Aster amellus* L., brassinosteroid, gibberellic acid, naphthalene acetic acid

Daisy (*Aster amellus* L.) is an important annual ornamental crop grown for its attractive, coloured cut-flowers used as fillers in the preparation of bouquets, or, in vases for decoration, etc. Cultivar Dwarf Pink is a dwarf statured plant (15 to 20cm height), with very attractive pink coloured flowers.

Brassinosteroids (BR) are a novel group of growth promoting steroidal lactones termed brassinolide isolated from the pollen of rape (*Brassica napus*) and identified as the sixth group of phytohormones (Mitchell *et al*., 1970). BR was found to evoke a characteristic biological activity termed as 'brassin activity' that includes elongation, curvature, swelling and splitting of the treated internode in bean second internode bioassay. This was later attributed to the ability of BR to induce cell enlargement and cell multiplication (Workleyand Mitchell, 1971). Several workers reported that plant stature, yield and quality of a crop could be either increased or decreased by application of synthetic plant growth regulators (Mitchell *et al*, 1970; Talukdar and Paswan, 1998; Dias, 1998, and Kulkarni, 2003). Cost of these growth promoters is very high and these are used in the concentration range of 50 to 500ppm, or more. Compared to other growth hormones (auxins, gibberellins, cytokinins, ethylene and abscisic acid), brassinosteroids are effective at relatively lower concentrations. Literature on effect of growth promoters and brassinosteroids on growth and yield in daisy is very limited. The present investigation was carried out to test the effect of growth regulators on growth, yield and vase-life in daisy (*Aster amellus* L.) cv. Dwarf Pink.

The study was carried out at Kittur Rani Channamma College of Horticulture, Arabhavi, University of Horticultural Sciences, Bagalkot, during June - December, 2011. The experiment was laid out in Randomized Completely Block Design with three replications. The treatments comprised of two concentrations of gibberellic acid (150 and 200ppm), brassinosteroids (0.5 and 0.75ppm) and naphthalene acetic acid (150 and 200ppm) and a combination of gibberellic acid (150ppm) with brassinosteroids (0.5ppm); gibberellic acid (150ppm) with naphthalene acetic acid (150ppm); naphthalene acetic acid (150ppm) with brassinosteroid (0.5ppm) and Control (water spray). The plot size was 2.1 x 1.8m. The suckers were planted at 30cm x 30cm spacing in each plot accommodating 42 plants. Plant growth promoters were sprayed twice in each cropping season, viz., 20 and 50 days after planting, 80 and 110 days after planting and 140 and 170 days after planting in the first, second and third cropping seasons (70, 120 and 180 days after planting), respectively. Five plants were selected randomly for recording observations on growth, yield and other parameters.

Growth, yield and flowering varied significantly with application of brassinosteroids and a combination of other

[1]AICRP (TF), K.R.C. College of Horticulture, Arabhavi- 591 218, Karnataka, India

**Table 1.Effect of growth promoters on vegetative growth, flowering and yield parameters in daisy (*Aster amellus* L.) cv. Dwarf Pink (three seasons' pooled data)**

| Treatment | Plant height (cm) | Number of suckers/ plant | Number of leaves/ plant | Plant spread (cm) | | Internode length (cm) | Leaf area ($cm^2$) | Days to first flowering | Days to 50% flowering | Number of spikes/ plant | Vase life (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | E-W | N-S | | | | | | |
| $G_1$ | 24.46 | 3.26 | 63.37 | 21.68 | 21.96 | 1.71 | 482.34 | 47.61 | 56.98 | 4.71 | 4.22 |
| $G_2$ | 31.13 | 4.78 | 68.79 | 23.99 | 25.18 | 2.05 | 649.40 | 46.22 | 56.90 | 5.25 | 4.78 |
| $G_3$ | 24.42 | 3.62 | 66.34 | 20.39 | 21.20 | 1.63 | 513.03 | 48.33 | 58.22 | 3.57 | 3.45 |
| $G_4$ | 23.02 | 3.53 | 66.94 | 20.31 | 21.78 | 1.75 | 507.16 | 48.00 | 58.67 | 4.71 | 3.56 |
| $G_5$ | 24.57 | 3.12 | 63.71 | 18.93 | 19.26 | 1.74 | 415.26 | 48.56 | 60.67 | 4.50 | 3.56 |
| $G_6$ | 24.65 | 4.05 | 61.21 | 19.37 | 19.61 | 1.71 | 448.85 | 48.89 | 61.45 | 4.17 | 4.22 |
| $G_7$ | 34.68 | 5.46 | 74.31 | 27.69 | 25.48 | 2.36 | 896.43 | 45.33 | 54.33 | 6.27 | 5.44 |
| $G_8$ | 23.46 | 3.60 | 63.40 | 19.97 | 18.35 | 1.53 | 400.51 | 48.11 | 60.44 | 4.49 | 3.89 |
| $G_9$ | 24.70 | 4.10 | 63.71 | 19.34 | 19.54 | 1.70 | 432.30 | 48.95 | 60.11 | 4.96 | 3.66 |
| $G_{10}$ | 22.37 | 2.61 | 56.99 | 17.64 | 18.16 | 1.13 | 279.39 | 50.44 | 62.06 | 4.22 | 3.35 |
| S. Em± | 2.44 | - | 1.59 | - | - | 0.19 | 33.21 | 0.41 | 0.83 | 0.50 | 0.31 |
| CD=*0.05* | 7.25 | NS | 4.72 | NS | NS | 0.57 | 98.66 | 1.22 | 2.47 | 1.50 | 0.92 |

$G_1$- $GA_3$ (150ppm), $G_2$- $GA_3$ (200ppm), $G_3$- BR (0.5ppm), $G_4$ - BR (0.75ppm), $G_5$ - NAA (150ppm), $G_6$ - NAA (200ppm), $G_7$ - $GA_3$ (150ppm) + BR (0.5ppm), $G_8$ - $GA_3$ (150ppm) + NAA (150ppm), $G_9$ - NAA (150ppm) + BR (0.5ppm) and $G_{10}$- Control (water spray)

growth promoters (Table 1). Plants spayed with a combination of BR (0.5ppm) and GA (150ppm) produced significantly high plant height (34.68cm), number of leaves (74.31), internodal length (2.36cm) leaf area (896.43$cm^2$), number of flower spikes per plant (6.27) vase-life (5.44 days) and days to first flower and 50 percent flowering (45.33 and 54.33 days, respectively), followed by plants sprayed with GA 200 ppm were found on par for plant height (31.13cm), intermodal length (2.05cm), number of flowering spikes (5.25), vase-life (4.78 days) and days to first flower (46.22 days). This variation in growth, flowering and yield parameters may be due to production of better vegetative growth and a higher photosynthetic area that helps synthesis of metabolites owing to application of growth promoters (Kulkarni, 2003). These results are in conformity with findings of Dias (1998) in rose using brassinosteroids and by Talukdar and Paswan (1995) in chrysanthemum using gibberellic acid.

It can thus be concluded that spraying a combination of gibberellic acid and brassinosteroids is helpful for improving the vegetative growth, yield and quality in daisy (*Aster amellus* L.) cv. Dwarf Pink.

## REFERENCES


Dalal, S.R., Karale, G.D. and Kalkame, M. 2009 Effect of growth regulators on growth, yield and quality of chrysanthemum under nethouse conditions. *The Asian J. Hort.,* **4**:161-163

Dias, S.M.F. 1998. Effect of growth regulators on growth and flowering of roses and post-harvest physiology of cut roses. Ph.D. thesis, Univ. Agril. Sci., Dharwad, Karnataka, India

Kulkarni, B.S. 2003. Evaluation of varieties and effect of planting date and growth regulators on performance of chrysanthemum (*Dendranthema indicum*) Ph.D. thesis, Univ. Agril. Sci., Dharwad, Karnataka, India

Mandava, N.B. 1988. Plant growth promoting brassinosteroids. *Ann. Rev. Pl. Physiol. Pl. Mol. Biol.,* **39**:23-52

Mitchell, J.W., Mandava, N.B., Worley, J.F., Plimmer, J.R. and Smith, M.V. 1970. Brassins: a new family of plant hormones from rape pollen. *Nature,* **225**:1065-1066

Talukdar, M.C. and Paswan, L. 1995. Effect of plant growth regulators on growth and flowering of chrysanthemum (*Dendranthema grandiflora* Tzvelev.) cv. Rajkumari. *J. Agril. Sci. Soc.,* North East India., **8**:145-149

Talukdar, M.C. and Paswan, L. 1998. Effect of $GA_3$ and CCC on growth and flowering of standard chrysanthemums. *J. Orn. Hort.,* **1**:11-16

Workley, J.K. and Mitchell, J.W. 1971 Growth responses induced by brassins (fatty plant hormones) in bean plants. *J. Amer. Soc. Hortl. Sci.,* **96**:270-27


*(MS Received 10 September 2012, Revised 08 November 2013, Accepted 20 November 2013)*