



Article history:

Received : 12.05.2011

Revised : 03.09.2011

Accepted : 10.10.2011

Effect of plant growth regulators on growth, flowering and yield of African marigold (*Tagetes erecta* L.) cv. PUSA NARANGIGAINDA

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Abstract : The present investigation was conducted at Horticulture Research Farm, Department of Horticulture, Choudhary Charan Singh University, Meerut, during the year 2007-2008. The experiment was laid out in Randomized Block Design, consisted of 9 treatments with control. Two growth regulators namely gibberellic acid (GA₃) and cycocel (CCC) were taken. There were four levels of GA₃, i.e. 200 ppm, 250ppm, 300ppm and 350 ppm and four levels of cycocel, i.e. 1200ppm, 1600ppm, 2000 ppm and 2400 ppm along with one control (water spray), were taken for both the growth regulators. Gibberellic acid application at 350 ppm was found most effective as it gave highest flower yield per plant, maximum fresh weight per flower and highest number of flowers per plant and earlier flower bud initiation and flowering and also increased number of leaves as well as with maximum height of the plant. Cycocel application at 2400 ppm was found most effective as it gave highest number of leaves per plant and maximum number of main branches per plant. Application of cycocel 2000 ppm was also beneficial as it gave 28.71 per cent more flower yield (i.e. 229.68g/plant) as compared to control (i.e. 178.44g/plant) with increasing number of flowers per plant without affecting initiation of flower bud and commencement of flowering. Thus the present investigation clearly indicates that the application of gibberellic acid at 350 ppm was best treatment in all respects as it enhanced vegetative growth and flower. Further, cycocel at 2000 ppm was also beneficial as it increased flower yield and reduced vegetative growth without affecting initiation of flower bud and commencement of flowering.

Key words : Marigold, Pusa Narangi Gainda, Gibberellic acid (GA₃), Cycocel, CCC

How to cite this article : Kumar, Amit, Kumar, Jitendra, Mohan, Braj, Singh, J.P., Rajbeer and Ram, Nathi (2011). Effect of plant growth regulators on growth, flowering and yield of African marigold (*Tagetes erecta* L.) cv. PUSA NARANGI GAINDA, *Asian J. Hort.*, 6 (2) : 418-422.

Ornamental plants play an important role in the development of aesthetic sense and in environment planning of urban and rural areas for overcoming pollution, social and rural forestry, wasteland development, outdoor and indoor landscaping. The flowers are used for decorating homes by all classes of people, and they express beauty and extend the love. In our country flowers are commonly used in worship in homes and temples. Flowers also adorn the hair of women, particularly in South India and flowers are important for their economic uses, such as for cut blooms, for extraction of perfumes and other products. Marigold belongs to family Compositae (Asteraceae) a genus of dicotyledonous plants, is an important commercial annual, one of the most commonly grown flowers in India. There are two important cultivated

species of *Tagetes* i.e. *Tagetes erecta* L. which is commonly known as African marigold, which is tall in habit and *Tagetes patula* L. is commonly known as French marigold and is dwarf in habit. Marigold is one of the oldest cultivated ornamental plants, being very popular in tropical and sub-tropical countries as a garden plant for beautification. The use of plant growth substances has been found to be of great significance in the commercial cultivation of many ornamental crops. In our country, their use is very limited but in many Western countries they are creating many excitements in the field of agriculture. Gibberellic acid and cycocel are very important plant growth regulators and are widely used in agriculture and horticulture. The GA₃ regulation of growth itself is involved with both cell division and cell