

Original Research Article

<https://doi.org/10.20546/ijcmas.2019.805.096>

Role of Pinching on Floral and Yield Parameters in African Marigold (*Tagetes erecta* L.) cv. Local Selection

Manoj Kundu, B.S. Beniwal, Suresh Kumar* and Rajesh Lathar

Department of Horticulture, CCS Haryana Agricultural University,
Hisar-125004 (Haryana), India

*Corresponding author

ABSTRACT

Keywords

African marigold,
Pinching, Floral
characters, Yield
parameters

Article Info

Accepted:

10 April 2019

Available Online:

10 May 2019

Field experiment was conducted during 2004-05 and 2005-06 at CCS Haryana Agricultural University, Hisar to study the optimum time of pinching for better flower production in African marigold cv. Local selection. There were six levels of pinchings i.e. No pinching, 7 DAT (days after transplanting), 14 DAT, 21 DAT, 28 DAT and 35 DAT). A uniform dose of nitrogen @ 20 g/m², phosphorus @ 10 g/m², potassium @ 10 g/m² and 10 kg FYM per plot (1.2 m x 1.2 m) was applied. For statistical analysis factorial randomized block design was used with three replications. Pinching at 28 DAT significantly improved the days to bud initiation, number of buds per plant, days to flowering, duration of flowering, stalk length. The maximum flower weight, dry flower weight, number of flowers per plant, flower yield per plant and flower yield per hectare was obtained at 28 DAT.

Introduction

Among the many flowering plants in India, marigold is one of very important ones. Its cultivation has done very well on commercial scale in northern part of India. The loose flower marketing has been practiced for worship, garland making, general decoration. Due to more urbanization and increasing aesthetic value in modern society and civilization, the demand of the loose flowers is increasing tremendously. There is a tremendous scope of improvement in agrotechnology of flower crops. A wealth of data can be generated for better understanding and better quality of flowers. There are various

factors which are responsible for higher production of marigold viz., variety, time of planting, fertilizer application, spacing, cultural practices like pinching, use of plant growth substances, irrigation etc. Therefore, the present investigation was planned and undertaken with the objective to standardize the time of pinching in African marigold.

Materials and Methods

The present investigation was carried out at the Department of Horticulture, CCS Haryana Agricultural University, Hisar, India for two years, during 2004 and 2005.

Effect of pinching in growth, flowering and yield of African marigold cv. Local selection

Treatments: Six

- T₁ : No pinching
T₂ : Pinching at 7 days after transplanting
T₃ : Pinching at 14 days after transplanting
T₄ : Pinching at 21 days after transplanting
T₅ : Pinching at 28 days after transplanting
T₆ : Pinching at 35 days after transplanting

Replications: Three

Design: Randomised Block Design (Factorial)

Plot size: 1.2 m x 1.2 m

Spacing: 40 cm x 40 cm

Cultivar: Local selection (MGH 160-8)

Fertilizer Dose: Uniform dose of FYM (10kg/plot), nitrogen (20g/m²), phosphorus (10g/m²) and potash (10g/m²) were applied as basal application

Results and Discussion

Floral parameters

Pinching of plants at different intervals proved effective in influencing the floral development in terms of days to bud initiation, number of buds, days to flowering, duration of flowering, size of flower and stalk length of flower (Table 1).

It is evident from the data that the days to bud initiation, days to flowering and duration of flowering delayed significantly with the pinching up to 28 DAT. The delay in these floral parameters due to late pinching might

be attributed to the fact that during the process of pinching physiologically mature portion of the shoot was removed and the new shoots which developed on the pinched plants took more time for initiation of reproductive phase and become physiologically mature. Similar observations have already been made in marigold by Singh and Arora (1980); Arora and Khanna (1986) and Beniwal *et al.*, (2003) in chrysanthemum. Flower diameter increased non-significantly up to 28 DAT. Stalk length increased significantly in all the pinching treatment up to 28 DAT in 2004 whereas the results were non-significant in 2005.

Yield parameters

Fresh and dry weight of flower, number of flowers, flower yield per plant and yield per hectare increased in all the pinching treatments up to 28 days after transplanting as compared to no pinching (Table 2). Pinching at 35 days after transplanting in the yield parameters a non-significant decreasing trend was observed. This significant increase up to 28 days may be due to the increased number of branches, these results are in close conformity with the findings of Singh and Arora (1980); Arora and Khanna (1986); Kumar *et al.*, (2002) and Chauhan *et al.*, (2005) in marigold. Sasi Kumar and Raghava (2002) in carnation.

Pinching is an important cultural operation in African marigold. It was observed that all the pinching treatments increased plant spread, number of branches per plant, fresh and dry weight of the plant, whereas plant height and internodal length were decreased. Most desirable growth parameters were obtained with pinching at 28 DAT.

Maximum numbers of buds per plant, duration of flowering, diameter of flower and stalk length were obtained at 28 DAT.

Table.1 Effect of pinching on floral parameters in African marigold

Treatment	Days to bud initiation		No. of buds/plant		Days to flowering		Duration of flowering		Diameter of flower (cm)		Stalk length (cm)		Yield/ha (t)	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Pinching (DAT*)														
No Pinching	34.8	37.7	58.5	63.5	47.8	51.8	52.3	56.7	5.59	5.58	6.20	6.36	19.5	22.2
7	36.6	39.2	64.9	69.6	53.4	57.3	54.9	58.9	5.73	5.86	6.34	6.42	22.7	25.6
14	37.1	39.4	70.7	75.0	54.8	58.2	58.1	61.6	5.90	5.99	6.48	6.36	23.5	26.3
21	37.9	39.7	73.1	76.7	56.6	59.4	59.6	62.5	6.10	6.04	6.56	6.88	27.7	30.6
28	39.5	40.9	77.2	80.1	60.8	63.0	65.1	67.5	6.55	6.32	6.91	6.87	31.9	34.9
35	42.3	43.5	75.1	77.1	58.5	60.0	62.6	64.3	6.22	6.13	6.93	6.82	29.1	31.5
C.D. (P=0.05)	2.4	2.5	4.6	4.9	4.2	4.4	2.9	3.1	N.S.	N.S.	0.36	N.S.	3.2	3.6

*DAT= days after transplanting

Table.2 Effect of pinching on yield parameters in African marigold

Treatment	Flower weight (g)		Dry flower weight (g)		No. of flowers/plant		Flower yield/plant (g)		Yield/ha (t)	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Pinching (DAT*)										
No Pinching	8.70	8.68	0.810	0.808	44.5	48.3	368.7	419.4	19.5	22.2
7	9.00	8.89	0.849	0.838	49.6	53.2	420.7	473.1	22.7	25.6
14	9.08	8.91	0.866	0.849	51.4	54.5	433.4	485.4	23.5	26.3
21	9.37	9.13	0.902	0.879	57.8	60.7	500.7	554.3	27.7	30.6
28	9.74	9.43	0.948	0.918	63.7	66.1	568.9	622.7	31.9	34.9
35	9.60	9.21	0.944	0.905	60.0	61.6	524.0	567.2	29.1	31.5
C.D. (P=0.05)	0.73	0.71	0.070	0.068	1.7	1.8	43.7	48.4	3.2	3.6

*DAT= days after transplanting

The diameter of flower and stalk length were not affected significantly. Days to bud initiation were significantly delayed due to pinching at 28 DAT. All the pinching treatments resulted in significant improvement in yield parameters. However, pinching the plants at 28 DAT, maximum fresh and dry weight of plant, number of flowers, flower yield per plant and yield per hectare were obtained. Maximum number of seeds per capitulum, seed yield per plant, 1000 seed weight and seed vigour were observed when the plants were pinched at 28 DAT. Results were significant only with regard to number of seeds per capitulum and seed yield per plant.

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How to cite this article:

Manoj Kundu, B.S. Beniwal, Suresh Kumar and Rajesh Lathar. 2019. Role of Pinching on Floral and Yield Parameters in African Marigold (*Tagetes erecta* L.) cv. Local Selection. *Int.J.Curr.Microbiol.App.Sci.* 8(05): 812-815. doi: <https://doi.org/10.20546/ijcmas.2019.805.096>