

# Flowering production as effected by spacing and pinching in chrysanthemum cv. FLIRT

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## ABSTRACT

A field experiment was conducted to observe effect of spacing and pinching in chrysanthemum cv. Flirt at experimental farm of SKUAST – Jammu during the year 2005 and 2006. Three spacings (20×20cm<sup>2</sup>, 20×30cm<sup>2</sup> and 20×40cm<sup>2</sup>) and three stages of pinching (control, pinched at 25, 35 and 45 days after transplanting) were tried. The maximum number of buds, number of flowers, size of flowers and fresh weight of flowers at a spacing of 20×30cm<sup>2</sup> while earliest bud initiation and maximum flower yield per hectare were observed in crop planted at a spacing of 20×20cm<sup>2</sup> when pinched 25 days after transplanting.

**Key words :** *Chrysanthemum morifolium*, Spacing, Pinching, Flower production

## INTRODUCTION

Chrysanthemum is one of the most important commercial flower crop of India having varied floristic uses. The flowers are used for loose flower trade as well as for social and religious functions. The cultivars grown in Jammu region vary in yield with poor quality flowers. Among the various agro techniques, the spacing and pinching assume a significant role. Therefore, a study was undertaken to standardize optimum spacing and pinching stage for better flower production in Jammu region.

## MATERIALS AND METHODS

The experiment was carried out at experimental farm of Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu during the year 2005 and 2006.

The experiment was laid out in a split plot design having three different spacings (20×20cm<sup>2</sup>, 20×30 cm<sup>2</sup> and 20×40 cm<sup>2</sup>) as main plot treatments and pinching as sub-plot treatments (no pinching or control and pinching at 25, 35 and 45 days after transplanting). One month old rooted cuttings of Chrysanthemum cv. FLIRT were transplanted as per the treatments in the plot size of 1.20m × 1.20m. A basal dose of NPK (20g, 10g and 10g/m<sup>2</sup>) and FYM (5kg/m<sup>2</sup>) was given before transplanting. The pinching was done at 25, 35 and 45 days after transplanting and observation were recorded for number of buds/plant, days to flowering, duration of flowering (days), number of flowers/plants, size of flowers, fresh weight of flower (average of 5 flowers in grams) and flower yield (t/ha).

## RESULTS AND DISCUSSION

The results of the experiment presented in Table I

revealed that spacing and pinching effectively influenced various floral characters like the number of buds/plant, days of flowering, duration of flowering, number of flowers/plant, size of flowers, fresh weight of flowers and flower yield.

The days to bud initiation (70.38), number of buds/plant (30.74), days to flowering (97.85), duration of flowering (8.29), number of flowers/plant (25.02) were less with closer spacing of 20×20cm. This might be due to higher competition of plants for nutrients, water, space and light. The results are in conformity with the findings of Chanda and Roychoudhury (1991) in marigold.

The days to bud initiation (75.06), days to flowering and duration of flowering (10.24) was extended with late pinching (45 days after DAT). This might be due to the fact that by removing apical position, the plant enters vegetative phase and new shoots took longer time to be physiologically mature which in turn bears flowers and thus, resulted in delayed initiation of buds and longest duration of flowering. Similar results were obtained by Ubukata (1999) in Carnation.

The results indicated maximum number of buds (38.25) and flowers (34.20) in plants pinched after 25 days of transplanting (Table 1 and 2). This was due to increased number of branches per plant followed by plants pinched after 35 days of transplanting.

The average size and weight of flowers were influenced by spacing and pinching. Maximum size and weight of flower were observed under spacing (20×30cm<sup>2</sup>) followed by spacing (20×40cm<sup>2</sup>). This might be due to favourable conditions like availability of nutrients soil moisture and sun light to individual plant at wider spacing.

The pinching treatments reduced flower size and

**Table 1 : Effect of spacing and pinching on flowering in chrysanthemum cv. FLIRT**

Sr. No.	Treatment spacing (cm)	Days to bud initiation	Number of buds/plant	Days to flowering	Duration of flowering
1.	20 × 20	70.38	30.74	97.85	8.29
2.	20 × 30	76.95	35.98	97.42	8.52
3.	20 × 40	73.29	33.92	99.86	9.12
4.	CD (P = 0.05) Spacing	1.58	0.87	NS	0.29
<b>Pinching (DAT)*</b>					
1.	Control	74.22	30.82	98.10	7.62
2.	25	72.29	38.25	96.54	7.21
3.	35	74.04	36.32	97.76	9.10
4.	45	75.06	31.72	98.80	10.24
5.	Pinching CD (P = 0.05)	1.42	2.73	1.11	0.35
6.	Spacing × pinching	NS	NS	NS	NS

NS-Non significant

**Table 2 : Effect of spacing and pinching on flower production in chrysanthemum cv. FLIRT**

Sr. No.	Treatment spacing (cm)	Number of flowers/plant	Size of flower (cm)	Fresh weight of flower (g)	Flower yield t/ha.
1.	20 × 20	25.02	7.03	3.20	22.95
2.	20 × 30	30.97	7.30	3.61	18.40
3.	20 × 40	22.58	7.23	3.50	12.47
4.	CD (P = 0.05)	1.13	NS	NS	0.21
<b>Pinching (DAT)*</b>					
1.	Control	24.27	7.29	3.78	16.35
2.	25	34.20	6.68	3.30	20.28
3.	35	31.06	6.78	3.51	18.55
4.	45	26.47	6.90	3.59	16.49
5.	CD (P = 0.05) Pinching	2.69	0.27	0.25	0.18
6.	Spacing × pinching	NS	NS	NS	NS

\*DAT = Days after transplanting

NS-Non significant

weight as compared with no pinching. Minimum size (6.68) and fresh weight (3.30) were reported in plants pinched at 25 days after transplanting. This might be attributed to sharing of energy by the developing side branches. Similar results were obtained by Patel and Arora (1983) in chrysanthemum.

The spacing and pinching influenced yield characters like number of flowers and yield per plant which were more with wider spacing of 20×30cm<sup>2</sup>, 20×40cm<sup>2</sup>. However, flower yield/ha was observed maximum (22.95) with closer spacing (20×20cm<sup>2</sup>) as compared to wider spacing because of higher plant population.

The maximum number of flowers (34.20) and flower yield per hectare (20.28) were recorded in plants which were pinched after 25 days of transplanting. This was due to increased number of branches per plant. The results were in conformity with findings of Gowda and Jayanti (1986) in Chrysanthemum.

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