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RESPONSE OF PINCHING ON FLOWERING AND QUALITY PARAMETERS OF CHRYSANTHEMUM

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Abstract

A field experiment was carried out at Horticulture Section, College of Agriculture, Nagpur (Maharastra), India; with objective to find out suitable variety and pinching time on flowering and quality of chrysanthemum. Treatments comprising of five chrysanthemum varieties (Shubra, Heritage, Sonali Tara, Piwali Rewadi and Pandhari Rewadi) and four pinching time (No pinching, pinching at 30 DAT, pinching at 45 DAT and pinching at 30 and 45 DAT) during *kharif* season of the year 2011-12. The experimental finding revealed that among chrysanthemum varieties, Sonali tara recorded early first bud initiation, minimum days for fully opened flower and Subhra recorded early harvesting whereas variety Piwadi Revadi recorded maximum weight of flower, diameter of flower, length of pedicel, varity Sonali Tara recorde maximum vase life. Among the pinching treatments, plant pinched at no pinching treatment recorded early first bud initiation, minimum days for fully opened flower, early harvesting also recorded better quality parameters.

Key words : Chrysanthemum, varieties, pinching, flowering, quality.

Introduction

Among the flower chrysanthemum (*Chrysanthemum morifolium*) is considered as one of the important commercial flowers. It is one of the most widely cultivated garden flower ranking second in popularity next to rose and its flower is in great demand throughout the world. Chrysanthemum has tremendous popular flower around cities among the other ornamental flower. Its present day colourful varieties have arisen through indiscriminate inter varietal hybridization, spontaneous and induced mutations and selection. The regulation of flower production is an important aspects of commercial growing of chrysanthemum to meet out increasing of cut flowers for longer period which can achieved through some agrotechnique such as pinching, which help to remove the apical dominance and promote auxiliary branching and regulate the flowering and increase the quality yield (Yassin and Pappiah, 1990). Keeping this in view, the present investigation "Flowering and quality chrysanthemum as influence by pinching" was undertaken.

Materials and Methods

The field experiment was conducted at Horticulture Section, College of Agriculture, Nagpur during the year 2011-2012 during *kharif* season. The experiment was laid out in factorial randomized block design. The treatments comprised two factors, factor A comprised with five varieties *viz*. Shubra (V_1), Heritage (V_2), Sonali Tara (V_3), Piwali Rewadi (V_4) and Pandhari Rewadi (V_5) and factor B comprised with four pinching treatments viz. No pinching (P_0), pinching at 30 DAT (P_1), pinching at 45 DAT (P_2) and pinching at 30 and 45 DAT (P_3).

Thus, in all there were twenty treatments combinations.

Healthy vigorous rooted cutting with uniform height were selected for planting. Rooted cuttings were planted at 30 × 30 cm spacing. All recommended cultural operations were followed during crop growth. Pinching operation was done as per treatments. Observations like flowering and quality parameters were recorded and collected data were analyzed as per Panse and Sukhatme (1967).

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Results and Discussion

Effect of varieties on flowering parameters

The present finding revealed (table 1) that, variety Sonali Tara recorded significantly early first flower bud initiations (50.63 days), the minimum day days for fully opened flower (20.02 days) followed by the varieties and Shubra. Whereas, variety Piwali Rewadi recorded maximum days for first flower bud initiation (59.43 days) and fully opened flower (23.59 days).

Significantly early first harvesting was recorded in variety Shubhra (73.22 days), which was at par with the varieties Heritage and Sonali Tara (75.09 days), whereas, variety Pandhri Rewadi observed significantly maximum days for first harvesting (82.39 days) and flowering span (39.39 days) as compared to the other varieties.

This might be due to the difference in genetic constitution of different varieties lead to difference in days required for flower bud initiation fully opened flower, harvesting and flowering span. These results are also conformities with the results obtained by Pawar (2001) and Beniwal *et al*. (2005) in chrysanthemum.

Quality parameters

The experimental finding indicated that different chrysanthemum varieties were significantly influenced the quality parameters. Variety Piwali Rewadi recorded maximum weight of flower (3.87g), diameter of flower (5.49cm) and length of pedicel (14.43cm) as compared to the other varieties. Whereas, the minimum weight of flower (2.75 g), diameter of flower (4.02cm) and length of pedicel (9.70cm) were recorded in variety Heritage. Variety Sonali Tara recorded maximum vase life of flowers (11.49 days), which was at par with varieties Piwali Rewadi (11.27 days) and Pandhri Rewadi. Whereas, minimum vase life flowers (10.6 days) was observed in variety Shubra.

This difference may due to the fact that, there might be variation in genetically make up of different varieties. Similar result was reported by Kulkarni and Reddy (2006) and Peddi Laxmi *et al*. (2008) in chrysanthemum.

Effect of pinching flowering parameters

Data from table 1 revealed that, control treatment (no pinching) recorded significantly early first flower bud

Table 1 : Flowering and quality parameters of chrysanthemum varieties as influenced by pinching.

Treatment	First flower bud imitation (days)	Days required for opening of flower (days)	Days to first harvesting (days)	Total flowering span (days)	Weight of flower (g)	Diameter of flower (cm)	Length of pedicel	Vase life (days)
Varieties (V)								
Shubra	52.27	20.86	73.22	35.68	2.88	4.46	10.6	10.60
Heritage	51.09	20.82	74.39	37.00	2.75	4.02	9.70	10.15
Sonali Tara	50.63	20.02	75.09	37.22	3.12	4.93	11.56	11.49
Piwali Rewadi	59.43	23.59	80.89	38.87	3.62	4.95	14.43	11.27
Pandhri Rewadi	55.80	22.39	82.39	39.39	3.87	5.49	12.74	11.22
F test	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
S.E(m)±	0.45	0.68	2.42	0.90	0.13	0.14	0.22	0.32
CD at 5%	1.28	1.96	6.94	2.59	0.37	0.42	0.65	0.92
Pinching (P)								
No pinching	45.32	18.25	72.17	30.16	3.51	5.34	12.91	10.08
Pinching at 30 DAT	52.89	20.47	75.75	35.56	3.32	5.20	12.25	11.66
Pinching at 45 DAT	56.69	22.83	78.45	40.73	3.13	4.33	11.31	11.05
Pinching at 30 and 45 DAT	60.48	24.59	82.41	44.08	3.03	4.21	10.75	11.00
F test	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
S.E(m)±	0.40	0.61	2.17	0.81	0.11	0.13	0.20	0.28
CD at 5%	1.15	1.75	6.21	2.32	0.33	0.37	0.58	0.82
Interaction V×P								
F test	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**
S.E(m)±	0.90	1.37	4.85	1.81	0.26	0.29	0.45	0.64
CD at 5 %	—	—	—	—	—	—	—	—

initiations (45.32 days), the minimum day days for fully opened flower (18.25 days) and early first harvesting (72.17 days) followed by single pinching at 30 days after planting and pinching at 45 days after transplanting. Whereas, late flower bud initiation (60.48 days), maximum days for fully opened flower (24.59 days) and late first harvesting (82.41 days) was recorded in double pinching at 30 and 45 days after planting.

Significantly maximum duration of flowering was noticed in treatment pinching at 30 and 45 days after planting (44.08 days) and minimum duration of flowering was recorded in no pinching treatment (30.16 days).

The delay in initiation of first flower bud was due to pinching treatments by the removal of apical portion of main stem which took more time to develop side shoots and also late physiological maturity of shoots emerged after pinching the plant. These results are in accordance with Srivastava *et al*. (2002), Khandelwal *et al*. (2003) in marigold and Shinde *et al*. (2010) in chrysanthemum.

Quality parameters

The experimental finding indicated that pinching treatments were significantly influenced the quality parameters. No pinching treatment recorded maximum weight of flower (3.51 g), diameter of flower (5.34 cm) and length of pedicel (12.91 cm) as compared to the pinching treatment. Whereas, minimum weight of flower (3.03 g), diameter of flower (4. 21 cm) and length of pedicel (10.75 cm) were recorded in treatment double pinching at 30 and 45 days after planting. Maximum vase life was recorded in the treatment pinching at 30 days after planting treatment (11.66 days). This might be due to limited vegetative growth, which might have favored to develop larger sized flowers. Similar result was obtained by Khandelwal *et al*. (2003) in marigold and Rakesh *et al*. (2005) in chrysanthemum.

Interaction effect

Interaction effect of varieties and pinching were found non-significant in respect of all flowering as well as quality parameters.

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