



GROWTH AND FLOWER YIELD OF CHRYSANTHEMUM AS INFLUENCED BY VARIETIES AND PINCHING

D. M. Salve, D. M. Panchbhai, Shalini Badge* and Vivek Satar

Horticulture Section, College of Agriculture, Nagpur - 440 001 (Maharashtra), India.

Abstract

A field experiment was carried out at Horticulture Section, College of Agriculture, Nagpur with objective to find out suitable variety and pinching time on growth and yield 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, Padari revadi recorded maximum plant height whereas Sonali Tara recorded maximum number of branches, stem diameter, spread of plant and flower yield plant⁻¹ and ha⁻¹. Among the pinching treatments, plant pinched at 30 after planting was found to be best for improving vegetative growth parameters and flower yield.

Key words : Chrysanthemum, varieties, pinching, growth.

Introduction

Chrysanthemum is one of the most versatile flower, commonly known as ‘*Glory of East*’ or ‘*Queen of East*’ or ‘*Mum*’ in U.S.A. Chrysanthemum flowers are the second most popular, the first being roses in the world having various type, size and colour. Chrysanthemum belongs to ‘*Asteraceae*’ family having more than hundred species. Its plants are perennial, dwarf to medium in height, vigorous and bear flowers of various forms and attractive colour. For production of economical yield of chrysanthemum flowers, it is necessary to plant proper varieties and applying standard culture practices like pinching so as to obtain maximum flower yield. Looking to these facts the present investigation “Response of chrysanthemum varieties to pinching for growth and yield” was carried out with objectives of to find out suitable pinching time for better loose flower production of chrysanthemum.

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 (V₁), Heritage (V₂), Sonali

Tara (V₃), Piwali Rewadi (V₄) and Pandhari Rewadi (V₅) and factor B comprised with four pinching treatments *viz.* No pinching (P₀), pinching at 30 DAT (P₁), pinching at 45 DAT (P₂) and pinching at 30 and 45 DAT (P₃). 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 × 30cm spacing. All recommended cultural operations were followed during crop growth. Pinching operation was done as per treatments. Observations like growth parameters (plant height, number of branches, stem diameter) were recorded at 90 days after planting and yield parameters were recorded at harvesting time. Collected data were statistical analyzed as per Panse and Sukhatme (1967).

Results and Discussion

Effect of varieties on growth parameters

The present finding showed table 1 that, significantly maximum height of plant was recorded in variety Pandhari Rewadi (39.2cm) however, Sonali Tara recorded maximum number of branches plant⁻¹ (25.45), stem diameter (0.74 cm), spread of plant (38.36 cm) as compared to the other varieties of chrysanthemum. Significantly maximum leaf area of the plant was recorded in varieties Pandhari Rewadi (47.82cm²) followed by the varieties Piwali Rewadi and Sonali Tara.

*Author for correspondence : Email: shalinibadge@gmail.com

Table 1 : Growth and flower yield in chrysanthemum as influenced varieties and pinching.

Treatment	Height (cm)	Branches of plant ⁻¹	Stem diameter of plants (cm)	Spread of plants (cm)	Leaf area at 50% flowering (cm ²)	No. of flowers plant ⁻¹	Flowers yield plant ⁻¹ (g)	Flowers yield ha ⁻¹ (q)
Varieties (V)								
Shubra (v ₁)	46.71	19.64	0.70	36.10	43.34	108.78	313.73	232.38
Heritage (v ₂)	39.20	24.20	0.66	34.82	41.91	104.65	295.76	219.07
Sonali Tara(v ₃)	40.35	25.45	0.74	38.36	44.09	113.58	352.55	265.52
Piwali Rewadi(v ₄)	46.15	11.98	0.69	32.79	45.70	99.55	358.38	268.53
Pandhri Rewadi(v ₅)	50.68	12.60	0.71	31.79	47.82	96.40	372.19	275.69
S.E(m)±	0.45	0.37	0.017	0.22	0.10	2.35	10.85	8.17
CD at 5 %	1.31	1.06	0.049	0.63	0.31	6.75	31.08	23.41
Pinching (P)								
No pinching (P ₀) Control	51.74	15.46	0.64	32.30	43.42	92.33	320.81	240.09
Pinching at 30 DAT (P ₁)	43.81	20.73	0.75	36.69	45.92	112.85	372.16	275.66
Pinching at 45 DAT (P ₂)	41.88	19.80	0.71	35.34	44.90	108.67	338.86	250.55
Pinching at 30 and 45 DAT (P ₃)	41.04	19.10	0.70	34.16	44.05	104.52	322.86	242.65
S.E(m)±	0.41	0.33	0.015	0.19	0.09	2.11	9.71	7.31
CD at 5 %	1.17	0.95	0.044	0.56	0.28	6.04	27.80	20.49
Interaction V×P								
S.E(m)±	0.91	0.74	0.034	0.44	0.21	4.71	21.71	16.35
CD at 5 %	—	—	—	—	—	—	—	—

Variation in growth parameters among the varieties of chrysanthemum might be due genetic makeup of the varieties has higher capacity of storing reserve food material which might have maximum growth of plant. Similar results were also reported by Laxmi *et al.* (2008) in chrysanthemum and Chavan *et al.* (2010) in aster.

Effect of varieties on flower yield

The experimental finding indicated that different chrysanthemum varieties were significantly influenced the yield parameters. Significantly maximum number of flowers plant⁻¹ was recorded in variety Sonali Tara (113.58) followed by varieties Shubra Heritage and Piwali Rewadi. Whereas, significantly minimum number of flowers plant⁻¹ was produced in variety Pandhri Rewadi (96.40). Significantly maximum flowers yield plant⁻¹ (372.19 g) and ha⁻¹ (275.69 q) was recorded in varieties Pandhri Rewadi as compared to the other varieties. Whereas, minimum yield of flowers plant⁻¹ (295.76 g) and ha⁻¹ (219.07q) was recorded in variety Heritage.

From the above results, it is indicated that, the maximum yield of flowers hectare⁻¹ might be due to differences in genetic constitution in different varieties. Similar result was reported by Kulkarni and Reddy (2006)

and Laxmi *et al.* (2008) in chrysanthemum.

Effect of pinching on growth parameters

Data from table 1 revealed that, significantly minimum plant height (40.04cm) was recorded in double pinching at 30 and 45 days after planting compared to the other pinching time and maximum plant height (51.74cm) was recorded in no pinching treatment.

Number of branches plant⁻¹ (20.73), stem diameter (0.75cm), spread of plant (36.69 cm) and leaf area plant⁻¹(45.92cm²) was recorded significantly maximum in single pinching at 30 days after transplanting compared to the other pinching treatments and minimum number of branches plant⁻¹ (15.46) stem diameter (0.64 cm), spread of plant (32.30 cm) and leaf area (43.42cm²) were recorded in the no pinching treatment. This might be due to pinching reduces the plant height and encourages the side branches due to removal of apical dominance, which might have favored in increasing the stem diameter, primary branches, spread of plant. These results are in close agreement with and finding of Sehrawat *et al.* (2003) in marigold, Rakesh *et al.* (2005) in chrysanthemum and Pushkar and Singh (2012) in marigold.

Effect of pinching on flower yield parameters

Data from table 1 revealed that, number of flowers plant⁻¹ (112.85), flowers yield plant⁻¹ (372.16g) and ha⁻¹ (275.66 q) were recorded significantly maximum in the treatment plant pinched at 30 days after planting compared to the other pinching treatments followed by pinching at 45 days after planting. Whereas, significantly minimum number of flowers plant⁻¹ (92.33), flowers yield plant⁻¹ (320.81 g) and ha⁻¹ (240.09q) was recorded in no pinching treatment. This might be due to pinched plant inhibits the apical dominance and diverts plant metabolites from vertical growth to horizontal growth, which might have favoured in increasing the stem diameter, number of branches and ultimately the flower yield. The similar results are quoted by Pawar (2001) in chrysanthemum, Sharma *et al.* (2012), Rathor *et al.* (2011) and Pushkar and Singh (2012) in marigold.

Interaction effect

Interaction effect of varieties and pinching were found non-significant in respect of all vegetative as well as yield characters. However variety Sonali Tara and plant pinched at 30 days after transplanting recorded maximum vegetative growth and flower yield plant⁻¹ and ha⁻¹.

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