THE ASIAN JOURNAL OF HORTICULTURE
Volume **9** | Issue 1 | June, 2014 | 210-212
e ISSN- 0976-724X | Open Access-*www.researchjournal.co.in* |

Research Paper

Article history **:**
Received : 28.08.2013
Revised : 08.05.2014
Accepted : 20.05.2014

Effect of pinching of flowering and yield characters of china aster varieties

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ABSTRACT : A field experiment was undertaken to study the effect of pinching on flowering and yield characters of China aster varieties was conducted at farm of Horticulture Section, College of Agriculture, Nagpur, during the year 2010-11. The experiment consisted of sixteen treatments of four China aster varieties with four pinching treatments and it was laid out in Factorial Randomized Block Design with three replications. The flowering parameters in terms of days to first flower bud initiation, full opening of flower from bud initiation, and days to 50 per cent flowering were found earlier in Phule Ganesh White under the control treatment of pinching *i.e.* no pinching. Whereas, maximum flowering span was found in Phule Ganesh White as well as the treatment double pinching at 30 and 45 days after transplanting. The yield characters like number of flowers per plant, and flower yield per hectare were recorded maximum in Phule Ganesh White as well as under single pinching at 30 days after transplanting.

KEY WORDS : Flowering, Yield, Pinching, China aster varieties

HOW TO CITE THIS ARTICLE : Sailaja, S.M., Panchbhai, D.M., Suneetha, K. and Vinod Kumar, N. (2014). Effect of pinching of flowering and yield characters of china aster varieties. *Asian J. Hort.*, **9**(1) : 210-212.

Among the wide range of commercial flower crops, China aster occupies a selective position because of its prettiness, elegance, diverse form and varied attractive colour ranges. It is native to China and has spread to Europe and other tropical countries during 1731 A.D (Desai, 1967). Among the annual flowers, China aster ranks next to chrysanthemum and marigold and is one of the important commercial flower crops of our country. China aster is a half hardy annual and it has gained considerable importance in flower trade because of its wide range of colors and utility and is also found suitable for intercropping in coconut gardens (Janakiram, 1997). Successful cultivation of China aster depends upon proper selection of varieties. In recent years, several new cultivars of aster with wide range of colours have entered the market but all the cultivars cannot be grown everywhere successfully. Hence, it is necessary to identify the suitable cultivar for commercial cultivation in Vidarbha region and even it is felt necessary to find out suitable pinching time for different varieties for better yield. Hence, the present investigation was carried out to know the effect of pinching on flowering and yield characters of China aster varieties.

RESEARCH METHODS

A field experiment was undertaken to study the effect of pinching on flowering and yield characters of China aster varieties at farm of Horticulture Section, College of Agriculture, Nagpur, during the year 2010-11. The experiment was laid out in Factorial Randomized Block Design comprising sixteen treatments, with two factors. First factor consisted of four varieties of china aster *i.e.* Phule Ganesh White (V_1), Phule Ganesh Pink (V_2), Phule Ganesh Violet (V_3), Phule Ganesh Purple (V_4) and second factor consisted of four pinching treatments, no pinching (P_0), single pinching at 30 DAT(P_1), single pinching at 45 DAT(P_2), double pinching at 30 and 45 DAT(P_3). The entire treatments were replicated thrice. Irrigation, fertilizer application and weeding was done as per recommendations.

RESEARCH FINDINGS AND DISCUSSION

Significantly early flower bud initiation was noticed in control treatment *i.e.* no pinching (49.05 days) followed by single pinching at 30 days after transplanting (52.58 days). Whereas, late flower bud initiation was recorded in the

treatment double pinching at 30 and 45 days after transplanting (57.53 days) (Table 1). These results are in close agreement with the findings of Srivastava *et al.* (2002), Sehrawat *et al.*(2003) in marigold. With reference to varieties, significantly maximum days were required to first flower bud initiation in Phule Ganesh Violet (57.73 days) and minimum in Phule Ganesh White (48.32 days). In contrast to the present investigation Chavan *et al.* (2010) reported that, Phule Ganesh White has recorded maximum number of days to open first flower (80.58 days) as compared to the varieties Phule Ganesh Pink and Phule Ganesh Purple. The interaction effect due to the varieties and pinching on days required to first flower bud initiation were found to be non significant. Significantly minimum days were required for 50 per cent flowering in control treatment *i.e.* no pinching (59.08 days) which was followed by single pinching at 30 days after transplanting (63.67 days). Whereas, significantly maximum days were required for 50 per cent flowering in double pinching at 30 and 45 days after transplanting (70.17 days). These results are in close agreement with the findings of Kumar and Singh (2003) who reported that pinching recorded higher number of days before first flowering in un pinched shoot tips in carnation cv. RED CORSO. In case of varieties, Significantly minimum days were required to 50 per cent flowering in Phule Ganesh White (62.00 days), followed by Phule Ganesh Purple (64.83 days), Phule Ganesh Pink (65.83 days) and 50 per cent flowering was recorded in Phule Ganesh Violet (66.50 days). The interaction effect due to pinching and varieties on days to 50 per cent flowering was found to be non significant. Significantly maximum flowering span was noticed in double pinching at 30 and 45 days after transplanting (26.83 days) which was followed by single pinching at 45 days after transplanting (25.64 days). Whereas, significantly minimum flowering span was recorded in control treatment *i.e.* no pinching (22.46 days). Similar results were recorded by Srivastava *et al.* (2002) and Khandelwal *et al.* (2003) in marigold. With regard to varieties, maximum flowering span was recorded in Phule Ganesh White (25.51 days) followed by Phule Ganesh Purple (25.30 days). Whereas, significantly minimum flowering span was noticed in Phule Ganesh Violet (23.90 days), the interaction effect due to varieties and pinching on total flowering span were found to be non significant. Significantly maximum number of flowers per plant was noticed in treatment single pinching at 30 days after transplanting (42.18) followed by treatment pinching at 45 days after transplanting(38.20). Where as, significantly minimum number of flowers per plant was recorded in control treatment *i.e.* no pinching (30.02). Similar results were also reported by Ryagi *et al.* (2007) in carnation. Significantly maximum number of flowers per plant was recorded Phule Ganesh White (40.00) followed by, Phule Ganesh Pink (37.70 days) which was at par with Phule Ganesh Purple (35.70). Whereas, significantly minimum number of flowers per plant

Table 1 : Effect of pinching on flowering and yield characters of China aster varieties

	Days to first flower bud initiation from transplanting (Days)	Days to 50 % flowering from transplanting (Days)	Flowering Span (Days)	Number of flowers plant^{-1}	Yield of flowers ha^{-1} (q)
Varieties (V)					
Phule Ganesh White	48.32	62.00	25.51	40.00	149.59
Phule Ganesh Pink	54.07	65.83	24.86	37.70	118.35
Phule Ganesh Violet	57.73	66.50	23.90	32.03	102.35
Phule Ganesh Purple	53.97	64.83	25.30	35.70	127.45
'F 'test	Sig.	Sig.	Sig.	Sig.	Sig.
S.E.(m) ±	0.500	0.258	0.101	0.27	8.09
C.D. (P=0.05)	1.445	0.747	0.293	0.78	23.39
Pinching (P)					
No pinching	49.05	59.08	22.46	30.02	102.45
Single pinching at 30 DAT	52.58	63.67	24.64	42.18	148.24
Single pinching at 45 DAT	54.97	65.67	25.64	38.20	126.94
Double pinching at 30 and 45 DAT	57.53	70.17	26.83	34.40	120.12
'F 'test	Sig.	Sig.	Sig.	Sig.	Sig.
SE(m) ±	0.500	0.258	0.101	0.27	8.09
CD at 5%	1.445	0.747	0.293	0.78	23.39
Interaction (VxP)					
'F 'test	NS	NS	NS	NS	NS
S.E.(m) ±	1.002	0.517	0.203	0.54	16.19
C.D. (P=0.05)	–	--	--	--	--

NS=Non-significant

was noticed in Phule Ganesh Violet (32.03). Similar line of research was reported by Mathad Rakesh *et al*. (2009) who revealed that, Kamini variety recorded maximum number of capitula per plant and per hectare over Poornima and Sarpan purple genotypes. The interaction effect due to the varieties and pinching on number of flowers per plant were found to be non significant. Significantly maximum yield of flowers per hectare was noticed in pinching at 30 days after transplanting (148.24 q) followed by pinching at 45 days after transplanting (126.94 q). Whereas, significantly minimum yield of flowers per hectare was recorded in control treatment *i.e*. no pinching (102.45 q). Similar results were also reported by Sawwan and Samawi (2000) and Verma *et al.* (2002) in carnation, and Cheong DongChun *et al.* (2002) in gypsophila. Significantly maximum yield of flowers per hectare was recorded in Phule Ganesh White (149.59 q) followed by the Phule Ganesh Purple (127.45 q) and Phule Ganesh Pink (118.35 q). Whereas, significantly minimum yield of flowers per hectare was noticed in Phule Ganesh Violet (102.35 q). Similar results were reported by Kulkarni and Reddy (2006). They found that the China aster cultivar Phule Ganesh White performed better in terms of flower yield followed by Phule Ganesh Violet and Phule Ganesh Purple.

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