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Performance of different cultivars of chrysanthemum on growth and flowering

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Abstract
The present experiment entitled "Performance of different cultivars of chrysanthemum on growth and flowering" was conducted during Rabi season in year 2023 at Pt. K.L.S. College of Horticulture & Research Station, Rajnandgaon (C.G.). The experiment was laid out in RBD (Randomized Block Design) with eight treatments and three replications. The treatment consists of T_1 (Pompon), T_2 (Sonar Bangla), T_3 (Snow Ball), T_4 (Pink Cloud), T_5 (S.L. (Andra Reffad)), T_6 (Gengis khan), T_7 (Miss India) and T_8 (Star yellow). The results showed that the Snow Ball treatment (T_3) performed the best in terms of plant height (63.90 cm), number of leaves per plant (92.47), leaf length (6.34 cm), stem diameter (2.50 cm), plant spread (E-W) (25.16 cm), plant spread (N-S) (25.22 cm), number of primary branches (17.00), number of secondary branches (22.93), days to first flower bud initiation (61.93 days), days to fully opened flower from bud emergence (16.86 days), flower diameter (7.28 cm), fresh flower weight (15.77 g) and dry flower weight (6.80 g).

Keywords: Chrysanthemum, cultivars, flowering, yield

1. Introduction
Floriculture is fast emerging major venture in world scenario. Many kinds of ornamental plants are grown for domestic and international trade in developed and developing countries. Today floriculture is recognized as a lucrative profession with much higher potential for returns per unit area than field crops and even some other horticultural crops. (Singh *et al.*, 2009) [7].

Chrysanthemum (*Dendranthema grandiflora* L.) is often called mums or chrysanths is the genus (*Chrysanthemum*) consisting approximately 30 species of perennial flowering plants belongs to the family Asteraceae. Genus *Dendranthema* has basic chromosome No. n=9 and *Dendranthema grandiflora* is hexaploid innature, *i.e.* 2n=54. Which is native to Asia and north-eastern Europe. Chrysanthemum derived from Greek word "*Chrysos*" means golden and '*anthos*' means flower. (Carter, 1980) [2].

Chrysanthemum is becoming attractive to the growers as well as users, as it has great potential for local and export market. Chrysanthemum flowers have high worth and price because of its diverse shapes, sizes, forms and of course distinction in its flower colour. The foremost use of small flowered chrysanthemum is for making venis, garlands and also in sacred offerings (Bohra and Kumar 2014) [1].

To maximize the yield and enhance the quality of flowers. It is need to evaluate the different cultivar for Rajnandgaon (C.G.) region.

2. Materials and Methods
The field experiment was conducted during Rabi 2023 at Pt. K.L.S. College of Horticulture & Research Station, Rajnandgaon (C.G.). The soil type was sandy loam with pH 6.5. The trial was laid out in Randomized Block Design with three replications. Well-rotted FYM was incorporated during land preparation. Cutting of different cultivars were transplanted at a spacing of 45x30 cm. Standard agronomic practices were followed for irrigation, weeding etc. Growth and floral parameters were recorded. Growth parameters recorded included plant height, number of leaves per plant, leaf length, stem diameters, plant spread, number of primary branches, and number of secondary branches.

Floral parameters recorded included days to first flower bud initiation, days to fully opened flower from bud emergence, flower diameter, fresh flower weight, and dry flower weight. The data collected was statistically analysed by ANOVA and critical difference was calculated at 5% level of significance to compare the treatments.

3. Results

The data regarding performance of different cultivars of chrysanthemum on growth and flowering has been presented in Table 1 and 2.

3.1 Growth parameters

The data pertaining to the vegetative growth of chrysanthemum cultivars are present in table 1. maximum plant height (63.90 cm), Number of leaves per plant (92.47), Leaf length (6.34 cm), Stem diameter (2.50 cm), Plant spread (E-W) (25.16 cm), Plant spread (N-S) (25.22 cm), Number of primary and secondary branches (17.00 and 22.93) was observed in Snow Ball at 90 DAT. variation in plant height among chrysanthemum cultivars can be attributed to both genetic and environmental factors. Genetically, cultivars like Snow Ball have greater potential for vigorous growth. However, expression of genetic potential also depends on favourable growing conditions like sunlight, temperature, soil nutrition etc. Optimum environment allows the genetic makeup of a cultivar to fully manifest resulting in maximum plant height. Similar result was also found by Suvija *et al.* (2016) [6], Prabhu *et al.* (2018) [4] and Nag *et al.* (2022) [3] in chrysanthemum.

3.2 Floral parameters

The data pertaining to the flowering growth of chrysanthemum cultivars are present in table 2. The significantly minimum days to first flower bud initiation (61.93 days), days to fully opened flower from bud emergence (16.86 days) was recorded in Snow Ball. Variations in the number of days taken to initiate first flower buds among chrysanthemum cultivars could be attributed to both genetic and environmental factors. While the innate flowering potential of early cultivars like 'Snow Ball' led to earlier budding compared to late genotypes such as 'Pompon', prevailing climatic conditions also likely influenced this trait. Similar results were also observed by Siddiqua *et al.* (2018)) [8] in chrysanthemum.

The significantly highest flower diameter (7.28 cm), fresh flower weight (15.77 g) and dry flower weight (6.80 g) was recorded in the Pompon. Flower diameter varied significantly between chrysanthemum cultivars due to genetic differences controlling floral organ size and development. Cultivars with pompom flowers like Pompon produced the largest blooms, while snowball-type had the smallest decorative blooms suitable for different uses. Similar results were reported by Roopa *et al.* (2018) [5] and Thakur *et al.* (2018) [9] in chrysanthemum.

Table 1: Performance of different cultivars of chrysanthemum on growth parameters at 90 DAT.

Treatments	Plant height (cm)	Number of leaves per plant	Leaf length (cm)	Stem Diameter (cm)	Plant spread (E-W) (cm)	Plant spread (N-S) (cm)		Number of primary branches	Number of secondary branches
Pompon	37.64	64.27	2.57	1.75	18.18	18.93		5.47	7.80
Sonar Bangla	56.38	81.53	4.55	1.95	21.31	20.37		12.33	17.22
Snow Ball	63.90	92.47	6.34	2.50	25.16	25.22		17.00	22.93
Pink Cloud	41.50	67.46	3.02	1.78	18.30	19.46		6.73	9.29
S.L. (Andra Reffad)	58.43	83.06	5.54	1.99	23.05	22.39		11.62	19.80
Gengis khan	45.22	71.55	3.13	1.85	19.33	20.05		7.55	11.74
Miss India	52.29	79.53	3.67	1.94	21.21	19.01		9.60	15.22
	Star yellow	48.42	74.28	3.26	1.89	20.22	21.43	8.27	13.40
Sem (±)		1.58	2.51	0.23	0.08	0.69	0.82	0.73	1.03
CD (5%)		4.79	7.63	0.73	0.24	2.10	2.48	2.22	3.12
CV (%)		5.42	5.67	10.32	7.06	5.75	6.78	12.92	12.16

Table 2: Performance of different cultivars of chrysanthemum on flowering parameters.

Treatments	Days to first flower bud initiation	Days to fully opened flower from bud emergence (days)	Flower diameter (cm)	Fresh flower weight (g)	Dry flower weight (g)
Pompon	81.20	26.23	7.28	15.77	6.80
Sonar Bangla	71.53	22.11	5.65	11.04	4.71
Snow Ball	61.93	16.86	2.79	7.85	2.11
Pink Cloud	80.73	24.50	3.40	9.16	2.93
S.L. (Andra Reffad)	67.93	19.60	5.46	11.38	4.81
Gengis khan	76.47	25.36	3.99	9.92	2.97
Miss India	72.47	22.59	5.06	10.79	4.19
Star yellow	73.93	23.24	4.37	12.13	3.83
Sem (±)	2.23	0.81	0.49	0.96	0.37
CD (5%)	6.76	2.47	1.48	2.93	1.13
CV (%)	5.27	6.24	17.83	15.18	15.94

4. Conclusion

The study evaluated the growth and flowering parameters of different chrysanthemum varieties. Snow Ball was found to perform best for growth parameters like plant height, number of leaves and branches. It recorded highest values at par with S.L. (Andra Reffad) and Sonar Bangla for plant height. Mean while, floral parameters like days to first flower bud initiation and flower opening were maximum in Snow Ball. However, Pompon variety excelled with larger flower diameter and higher fresh and dry flower weight.

Thus, Snow Ball and Pompon were identified as promising varieties showing overall superior performance for growth as well as flowering in chrysanthemum.

5. References

1. Bohra M, Kumar A. Studies on effect of organic manure and bio-inoculants on vegetative and floral attributes of chrysanthemum cv. Little Darling. The Bioscan. 2014;9(3):1007-1010.
2. Carter GD. Introduction to floriculture. In: Larson RA, editor. Academic Press Inc; 1980.
3. Nag K, Tamrakar SK, Verma LS, Nair SK, Tiwari SP. Evaluation of different dahlia (*Dahlia variabilis* L.) cultivars for cut flower and garden display under Chhattisgarh plains. Pharma Innovation. 2022;11(9):2001-2005.
4. Prabhu G, Thamaraiselvi SP, Aruna P, Sudhakar R. Evaluation of chrysanthemum (*Dendranthema grandiflora* Tzelev.) genotypes for loose flower production under Coimbatore conditions. International Journal of Chemical Studies. 2018;6(4):1618-1621.
5. Roopa S, Chandrashekar SY, Shivaprasad M, Hanumantharaya L, Kumar H. Evaluation of chrysanthemum (*Dendranthema grandiflora* Tzvelev) genotypes for floral and quality traits under Hill Zone of Karnataka, India. International Journal of Current Microbiology and Applied Sciences. 2018;7(8):1874-1879.
6. Suvija NV, Suresh J, Kumar SR, Kannan M. Evaluation of chrysanthemum (*Chrysanthemum morifolium* Ramat) genotypes for loose flower, cut flower, and pot mums. International Journal of Innovative Research. 2016;3(4):101-104.
7. Singh A, Kumar R, Singh P. Varietal evaluation of African marigold for growth, flower production, and carotenoid pigment. Abstract book, National Conference on Floriculture for Livelihood and Profitability. 2009 Mar 16-19; New Delhi, India: IARI; p. 36-37.
8. Siddiqua A, Swarajya LK, Nagaraju R, Reddy D. Performance of spray chrysanthemum cultivars (*Dendranthema grandiflora* Tzvelev.) in polyhouse condition. Journal of Pharmacognosy and Phytochemistry. 2018;7(6):1572-1575.
9. Thakur N, Nair SA, Kumar R, Bharathi TU, Dhananjaya MV, Venugopalan R. Evaluation of chrysanthemum (*Dendranthema grandiflora* Tzvelev) for desirable horticultural traits. International Journal of Current Microbiology and Applied Sciences. 2018;7(8):565-574.