Autumn Joy-A New Variety of Chrysanthemum for Garden Decoration

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A field experiment was conducted during 2003-07 at the research farm of department of Floriculture and Landscaping. The objective was to develop varieties suitable as cut flower, loose flower, pot culture and garden decoration. The recently released variety Autumn Joy (hybrid of White Bouquet X Flirt) had medium height (57.63 cm) and spread (62.66 cm) of plants. It exhibited 11.73 number of sprays per plant and 25.33 flowers per spray. The total number of flowers was reported to be 283.46 per plant. On the other hand, the length of spray was observed as 48.46 cm. Autumn Joy had pink decorative flowers with creamy yellow centre. It took 101.26 days for flowering (from transplanting) and was an early bloomer with long duration of flowering (35.81 days). The size and weight of flowers was reported to be 6.60 cm and 3.90 g, respectively.

Key Words: Chrysanthemum, Variety, Autumn Joy

Introduction

Chrysanthemum, belonging to family *Asteraceae*, is popular as cut or loose flower, for garden decoration and pot culture. It ranks second among the top ten flowering plants of the world owing to its attractive flowers of different shapes with wide spectacle of colours. In India, it occupies third position with jasmine and rose standing first and second respectively (Kolavalli *et al*., 1991). A lot of varieties in the market. Also, commercial success of any crop depends upon the availability of suitable cultivars to fulfill the needs of the consumers. Since chrysanthemum is a cross-pollinated crop, a lot of scope lies in development of varieties through conventional breeding programme. An added advantage of the asexual propagation makes it quicker and easier for breeders to release the variety. Hence, it is necessary to assess the earlier germplasm and find out the suitable parents for establishing strong breeding programme by hybridization.

Materials and Methods

A field experiment was conducted during 2003-07 at the research farm of Floriculture and Landscaping. The objective of breeding was to develop varieties suitable as cut flower, loose flower, pot culture and garden display. The 18 parents were used for crossing, namely, Ajay, Reegan White, Reegan Emperor, Majoor Bosshardt Wit, Rage, Vyking, Flirt Jaya, Mother Terassa, White Bouquet, Puncho, Bindiya, Gul-e-Sahir, Sharad Shingar, Sadbhawna, Regal Times, Ratlam Selection and Baggi. These were selected on the basis of quantitative and qualitative characteristics (plant height, spread, number of flowers per plant, flowering behaviour, duration of flowering, flower size, shape, type and colour) to be utilized in breeding programme. These varieties were selected as per their suitability for cultivation as cut or loose flowers, for garden decoration and pot culture. Various reciprocal crosses were made among these varieties. Apart from this, open pollinated seeds of the germplasm available at the centre was also collected and sown. As a result, 1,500 hybrids and 1,700 open pollinated seedlings were studied for various growth and flowering characters (Poonam and Kumar, 2006). Out of these, 15 open pollinated seedlings and 27 hybrids were selected on the basis of flower type, colour, shape, floriferous ness, earliness and duration of flowering and rest were discarded. Among these, four hybrids and two open pollinated seedlings were further short listed as they were having better traits with respect to growth and flowering parameters. Next year, the terminal cuttings of selected plants were made, treated with IBA (100 ppm) and transplanted in pots during 1st week of July. The experiment was laid out in Complete Randomized Block Design with 3 replications. The recommended cultural practices were followed. The data on various vegetative (plant height, spread, number of sprays per plant, length of spray) and floral characters (number of flowers per spray, number of flowers per plant, number of days to flowering, duration of flowering, size and weight of flowers) were recorded. The pooled analysis was carried out as per method suggested by Panse and Sukhatme (1967).

Results and Discussion

The hybrids generated from these crosses were screened

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for various qualitative and quantitative characters. As a result, the hybrid 'Autumn Joy', an outcome of cross between White Bouquet and Flirt was found promising with respect to growth and flowering parameters.

The pooled data of 3 years (2004-07) presented in Table 1 and 2 revealed that variety Autumn Joy had medium height (57.63) and spread (62.66 cm) of plants. It exhibited 11.73 number of sprays per plant having 25.33 flowers per spray per plant. The length of spray was recorded to be 48.47 cm. It is highly floriferous in nature having 283.46 flowers per plant. Autumn Joy has decorative flowers of pink colour with creamy yellow centre (68 A as per Royal Horticultural Society, London, Colour Charts). It belonged to early maturity group *i.e.* it took 101.26 days to mature. It had long duration of flowering *i.e.* 35.81 days, which is a desirable trait for suitability of any variety for garden decoration. The size and weight of flowers were reported to be 6.60 cm and 3.90 g, respectively.

The data presented in Table 3 revealed that the recently released variety Autumn Joy was superior over the parents *i.e.* Flirt and White Bouquet and also over other varieties for garden decoration available at the research farm for most of the growth and flowering parameters.

The variety Autumn Joy had medium height of 52.63 cm, which was at par with height of White Bouquet (51.33 cm), but slightly dwarf than Flirt (66.46 cm). However, Autumn Joy exhibited more plant spread (62.66 cm) than the parents (42.39 cm in White Bouquet and 46.16 cm in Flirt) and all other varieties. On the other hand, variety White Bouquet had 4.63 sprays per plant with 10.56 flowers per spray. This indicated that the number of flowers per plant in White Bouquet was 48.69 while in Flirt it was 90.24. The variety Autumn Joy exceeded in all the three parameters over the parents and other varieties *i.e.* it had 11.73 sprays per plant with 25.33 flowers per spray resulting in 283.46 flowers per plant. It made this variety highly floriferous and suitable for garden decoration. Further, the length of spray of Autumn Joy was 48.46 which was at par with the spray length of parents (47.48 cm in White Bouquet and 39.00 cm in Flirt) and also some of other varieties.

White Bouquet is an early flowering variety taking 108.46 days for flowering, whereas, on the contrary, Flirt belonged to late maturity group, which took120.26 days from transplanting to flowering. Autumn Joy was a very early blooming variety, which flowered in early October taking 101.26 days for flowering after transplanting. The flowering duration of Autumn Joy was 35.81 days which was at par with White Bouquet having flowering duration of 35.80 days but significantly higher than Flirt (26.20 days) and all other cultivars. The flower size (6.60 cm) and weight (3.90 g) of Autumn Joy was in between the flower size and weight (4.58 cm and 2.28 g, respectively) in White Bouquet and (7.56 cm and 3.68 g, respectively (in Flirt. The variety White Bouquet had pure white pompon flowers, Flirt had decorative maroon flowers, while flowers in Autumn Joy were decorative type and colour was pink with creamy yellow centre (Table 4).

Table 1. Performance of Autumn Joy during 2004-2007

Year	Plant height (cm)	Plant spread (cm)	Number of sprays per plant	Number of flowers per spray per plant	Number of flowers per plant	Length of spray (cm)
2004-05	62.20	68.70	15.20	31.40	250.20	45.20
2005-06	55.30	71.70	11.40	21.00	302.00	48.60
2006-07	55.40	47.60	8.60	23.60	298.21	51.60
Pooled Mean	57.63	62.66	11.73	25.33	283.46	48.47

Table 2. Performance of Autumn Joy during 2004-2007

Year	Number of days to flowering	duration of flowering (days)	Flower size (cm)	Flower weight (g)	Flower type	Flower colour
2004-05	100.20	36.60	6.50	3.42	Decorative	Pink with creamy Yellow centre
2005-06	105.60	35.60	6.80	4.00	Decorative	Pink with creamy Yellow centre
2006-07	98.00	35.24	6.50	4.30	Decorative	Pink with creamy Yellow centre
Pooled Mean	101.26	35.81	6.60	3.90	-	-

Table 3. Evaluation of different varieties of chrysanthemum (for garden decoration) for growth and flowering parameters

Variety	Plant height (cm	Plant spread (cm)	Number of sprays per plant	Number of flowers per spray per plant	Number of flowers per plant	Length of spray (cm)
Autumn Joy	52.63	62.66	11.73	25.33	283.46	48.46
Flirt	66.46	46.16	7.56	9.58	90.24	39.00
White Bouquet	51.33	42.39	4.63	10.56	48.69	47.48
Jaya	63.99	47.72	8.60	11.60	106.22	38.52
Ravi Kiran	57.53	50.16	4.80	12.90	68.28	50.00
Ratlam Selection	61.76	59.74	1050	16.26	172.90	52.60
Sadbawna	54.72	53.62	7.58	10.59	88.62	41.30
Baggi	65.78	48.55	8.96	9.88	85.60	55.58
Basanti	55.56	46.48	7.50	10.52	80.40	47.64
$CD_{(0.05)}$	2.50	2.72	1.10	1.90	20.50	2.10

Table 4. Evaluation of different varieties of chrysanthemum (for garden decoration) flowering parameters

Variety	Number of days to flowering	Duration of flowering (days)	Flower size (cm)	Flower weight (g)	Flower type	Flower colour
Autumn Joy Yellow centre	101.26	35.81	6.60	3.90	Decorative	Pink with creamy
Flirt	120.26	26.20	7.56	3.68	Decorative	Deep maroon
White Bouquet	108.46	35.80	4.58	2.28	Pompon	White
Jaya	118.20	29.66	5.72	3.37	Decorative Maroon	
Ravi Kiran	116.66	28.98	6.78	2.05	Decorative	Rusty red
Ratlam Selection	105.90	28.40	8.16	4.60	Decorative	Creamy White
Sadbhawna	102.82	25.66	6.62	1.06	Korean single	Peach
Baggi	103.69	30.22	5.99	2.92	Pompon	White
Basanti	110.80	28.80	6.70	3.33	Decorative	Yellow
$CD_{(0.05)}$	1.78	2.00	0.56	0.48	-	-

Therefore, it is concluded that Autumn Joy due to its early flowering; medium height; highly floriferous variety with long duration of flowering and pink (creamy yellow centre) decorative flowers is suitable for cultivation for garden decoration.

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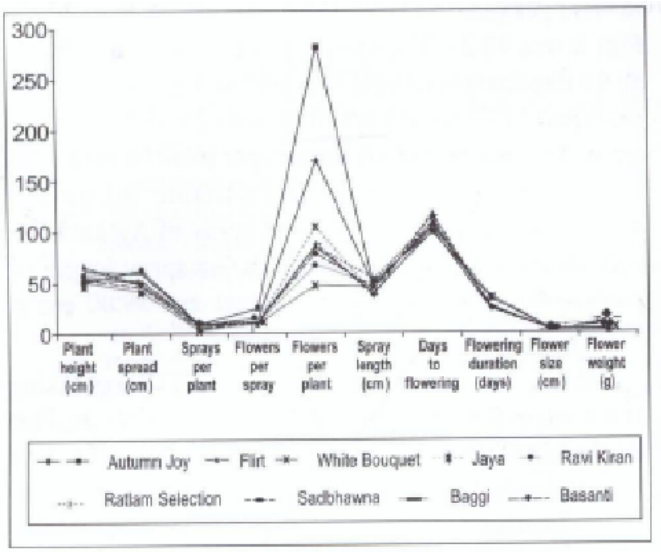
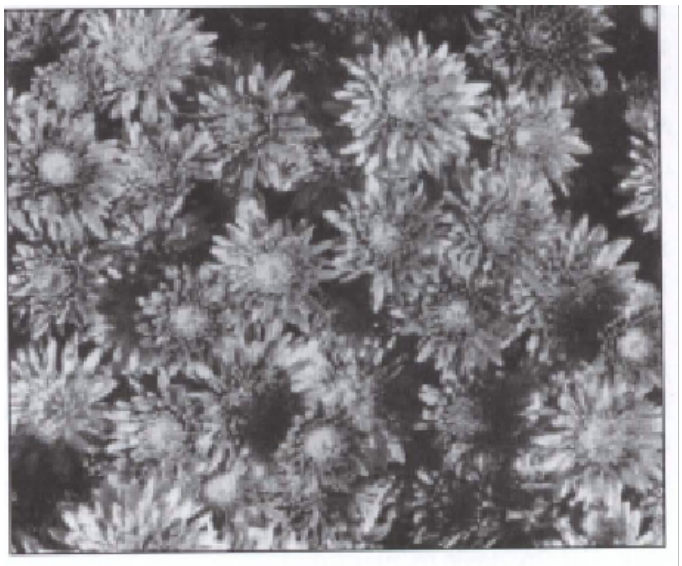


Fig. 1: Evaluation of different varieties of chrysanthemum for growth and flowering parameters



Autumn Joy