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EVALUATION OF CHRYSANTHEMUM (*DENDRANTHEMA GRANDIFLORA* L.) VARIETIES UNDER SAURASHTRA REGION CONDITIONS

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ABSTRACT

The present investigation was conducted during the *Rabi* seasons of 2023–24 and 2024–25 at the Instructional Farm, Jambuvadi, under the Department of Floriculture and Landscape Architecture, College of Horticulture, Junagadh Agricultural University, Junagadh, with the objective of evaluating the performance of chrysanthemum varieties under the agro-climatic conditions of the Saurashtra region. The experiment was laid out in a Randomized Block Design (RBD) comprising eighteen varieties replicated thrice. The varietal treatments included: Deep Red, Punjab Gold, Pusa Guldasta, Dolly Orange, Red Star, Kirti Gold, Little Tubular, Geetanjali, Vijaya, Bidhan Rupanjali, Rekha, Aishwarya Gold, Aishwarya White, Punch White, Button Green, Disk Pink, and Border Red.

The results revealed significant varietal differences across growth, flowering and yield attributes. Among growth attributes, the variety Aishwarya Gold attained the greatest plant height (56.88 cm), Deep Red recorded the maximum number of secondary branches per plant (44.00) and exhibited the widest plant spread in both north-south (41.50 cm) and east-west (42.99 cm) orientations, Aishwarya White produced the highest number of suckers per plant (11.00). In relation to flowering behaviour, Border Red exhibited earliness across all phenological stages, including bud initiation (56.66 days), first flowering (78.17 days), 50% flowering (96.00 days), and full bloom (109.00 days). Aishwarya Gold excelled in floral quality traits, producing the largest flower diameter (6.22 cm), longest flower stalk (20.75 cm) and maximum stalk girth (3.21 mm). Aishwarya White demonstrated superior longevity with the maximum vase life (13.50 days) and in situ flower duration (18.00 days). In terms of productivity, Deep Red recorded the highest number of flowers per plant (101.16), per plot (593.50), and on a per hectare basis (10,99,074 flowers). While, Aishwarya Gold emerged as the highest-yielding variety, with flower yields of 90.49 g per plant, 0.53 kg per plot, and 9.74 t/ha.

In conclusion, based on comprehensive evaluation across all parameters, the varieties Aishwarya Gold, Deep Red, and Aishwarya White were identified as the most promising for commercial cultivation under the climatic and soil conditions prevailing in the Saurashtra region.

Key words : Chrysanthemum, Varieties, Vase life, Variation, Quality.

Introduction

Flowers hold a deep-rooted place in Indian culture, symbolizing beauty, devotion, and celebration. They are integral to social, religious and ceremonial occasions, contributing both aesthetic and economic value. India's diverse agro-climatic zones support the cultivation of a wide range of ornamental crops, making floriculture a rapidly emerging sector with high economic potential.

Among major floricultural crops, chrysanthemum (*Dendranthema grandiflora* L.), known as “Sevanti” in Gujarat, holds great commercial and cultural importance. It ranks second in popularity after rose and is cultivated globally for its vibrant colors, diverse flower forms, and multiple uses. A member of the Asteraceae family, chrysanthemum is native to the Northern Hemisphere, with early domestication in China and Japan.

It is valued not only for its ornamental appeal but also for its medicinal and industrial applications, including insecticide production and essential oils.

Chrysanthemum is a herbaceous perennial propagated mainly by cuttings. It is a short-day plant, sensitive to photoperiod and temperature. Optimal flowering occurs under day lengths less than 13.5 hours and temperatures around 15.6°C. Well-drained sandy loam soils with adequate organic matter and a pH of around 6.5 are ideal for its cultivation.

Its versatility allows use as pot plants, loose flowers for garlands and rituals, and cut flowers for decorations. With increasing consumer demand, the crop is gaining popularity among small and marginal farmers due to its ease of cultivation and profitability.

Despite its wide genetic diversity over 15,000 varieties systematic evaluation under different agro-climatic conditions remains limited. Since genotype performance is environment-dependent, varieties that perform well in one region may underperform in another. Therefore, location-specific varietal evaluation is essential to identify high-yielding, market-preferred, and long-lasting genotypes.

In this context, the present investigation was undertaken to evaluate the performance of selected chrysanthemum varieties under the climatic conditions of the Saurashtra region, with the aim of identifying superior genotypes suitable for commercial cultivation.

Materials and Methods

The experiment on “Evaluation of different varieties

Table 1 : Varietal difference for plant height (cm) at 30, 60 and 90 days.

S. no.	Variety	Plant height (30 DAT)			Plant height (60 DAT)			Plant height (90 DAT)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
1	Deep Red	19.23	18.90	19.06	30.26	29.43	29.85	40.76	39.93	40.35
2	Punjab Gold	17.30	17.16	17.23	27.56	27.36	27.46	34.83	33.40	34.11
3	Pusa Guldasta	21.16	21.00	21.08	32.33	31.93	32.13	43.63	42.56	43.10
4	Dolly Orange	19.20	18.73	18.96	29.63	28.66	29.15	40.43	40.33	40.38
5	Red star	19.00	19.23	19.11	34.26	33.7	33.98	44.50	43.80	44.15
6	Kirti Gold	14.53	14.73	14.63	26.23	27.16	26.70	34.23	33.56	33.90
7	Little Tubular	21.76	21.53	21.65	32.63	31.00	31.81	43.33	43.93	43.63
8	Geetanjali	19.53	19.90	19.71	30.40	29.73	30.06	40.63	40.33	40.48
9	Vijaya	18.43	19.33	18.88	29.66	30.33	30.00	39.76	40.36	40.06
10	Bidhan Rupanjali	15.40	16.06	15.73	26.6	28.33	27.46	37.83	38.73	38.28
11	Rekha	18.43	18.50	18.46	30.33	29.33	29.83	39.00	38.23	38.61
12	Aishwarya Gold	34.63	35.43	35.03	46.50	44.50	45.50	57.10	56.60	56.88
13	Candor Pink	24.63	25.20	24.91	36.06	36.33	36.20	47.6	46.53	47.06
14	Aishwarya White	32.30	35.53	32.91	44.66	45.56	45.11	56.60	55.90	56.25
15	Punch White	25.56	24.56	25.06	37.00	37.33	37.16	49.16	50.46	49.81
16	Button Green	11.66	12.73	12.20	22.66	22.93	22.80	30.46	31.80	31.13
17	Disk Pink	13.16	15.00	14.08	25.76	26.16	25.96	32.36	33.03	32.70
18	Border Red	17.33	18.00	17.66	30.01	31.06	30.58	37.63	37.00	37.31
S.Em.±		1.06	0.98	0.72	1.14	1.16	0.81	1.69	1.69	1.20
C.D. at 5 %		3.06	2.83	2.05	3.29	3.35	2.31	4.88	4.87	3.38
C.V. %		9.14	8.33	8.74	6.24	6.38	6.31	7.06	7.08	7.07
Pooled		S.Em.±	C.D. at	C.V. % 5 %	S.Em.±	C.D. at	C.V. % 5 %	S.Em.±	C.D. at	C.V. % 5 %
Y		0.24	NS	8.74	0.27	NS	6.31	0.40	NS	7.07
Y×T		1.02	NS		1.15	NS		1.69	NS	

Table 2 : Varietal difference for the number of secondary branches per plant.

S. no.	Variety	Number of secondary branches per plant		
		2023-24	2024-25	Pooled
1	Deep Red	45.00	43.00	44.00
2	Punjab Gold	28.00	27.33	27.66
3	Pusa Guldasta	27.33	26.00	26.66
4	Dolly Orange	26.00	25.33	25.66
5	Red star	26.66	25.00	25.83
6	Kirti Gold	22.00	21.33	21.66
7	Little Tubular	22.33	22.00	22.16
8	Geetanjali	28.33	27.66	28.00
9	Vijaya	25.66	26.33	26.00
10	Bidhan Rupanjali	27.00	28.00	27.50
11	Rekha	36.66	31.33	34.00
12	Aishwarya Gold	30.33	31.00	30.66
13	Candor Pink	19.33	20.00	19.66
14	Aishwarya White	34.00	35.00	34.50
15	Punch White	38.00	36.33	37.16
16	Button Green	10.66	11.66	11.16
17	Disk Pink	25.33	24.66	25.00
18	Border Red	18.66	17.00	17.83
S.Em.±		0.86	0.98	0.65
C.D. at 5 %		2.46	2.81	1.83
C.V. %		5.45	6.37	5.92
Pooled		S.Em.±	C.D. at 5 %	C.V. %
Y		0.22	NS	5.92
Y × T		0.92	NS	

of chrysanthemum (*Dendranthema grandiflora* L.) under Saurashtra region” was carried out at open field condition at Instructional farm (Jambuvadi), Department of Floriculture, College of Horticulture, Junagadh Agricultural University, Junagadh during September -2023 to February-2024 and September- 2024 to February-2025. The experiment comprised of eighteen chrysanthemum varieties such as, Deep Red, Punjab Gold, Pusa Guldasta, Dolly Orange, Red Star, Kirti Gold, Little Tubular, Geetanjali, Vijaya, Bidhan Rupanjali, Rekha, Aishwarya Gold, Aishwarya White, Punch White, Button Green, Disk Pink, and Border Red.

The genotypes were evaluated in Randomized Block

Design with three replications at College of Horticulture, Junagadh Agricultural University, Junagadh. The plants were planted at a spacing of 30 × 30 cm and all the recommended cultural practices were followed. Five competitive plants were tagged at random in each treatment in each replication for recording detailed observation and the data were recorded for quantitative and qualitative characters viz., plant height (cm), number of secondary branches, plant spread (E-W) (cm), plant spread (N-S) (cm), number of suckers per plant, days to first flower bud initiation, days to first flowering, duration of flowering (days), flower diameter, stalk length, stalk girth, vase life, longevity in-situ, number of flowers per plant, per plot, per hectare, yield/plant (g) and flower yield per ha (g). In all the varieties of chrysanthemum, the phenotypic expression of a character is mainly governed by the genetic make-up of the plant, the environment in which it is grown and the interaction between the genotype and environment. As a result, genotypes which perform well in one region may not perform same in other regions. Hence, it is necessary to assess the suitability of different chrysanthemum genotypes for successful cultivation through different seasons.

Results and Discussion

Growth attributes

Plant height

Significant variation in plant height was observed among the chrysanthemum varieties at different growth stages. At 30 days after transplanting (DAT), ‘Aishwarya Gold’ recorded the maximum plant height in 2023–24 (34.63 cm) and in the pooled data (35.03 cm), while in 2024–25, ‘Aishwarya White’ showed the highest value (35.53 cm). At 60 DAT, ‘Aishwarya Gold’ again registered the tallest plants (46.50 cm in 2023–24 and 45.50 cm in pooled data), followed closely by ‘Aishwarya White’. At 90 DAT, ‘Aishwarya Gold’ consistently recorded the highest plant height across both years and pooled data (57.10, 56.60 and 56.88 cm, respectively). These differences are primarily attributed to genetic variability among the genotypes (Behera *et al.*, 2002), influenced further by environmental and nutritional factors (Prabhu *et al.*, 2018). Similar findings were reported by Niki *et al.* (2016), Dayal Singh *et al.* (2017), and Guddaraddi and Mishra (2021).

Number of secondary branches

The maximum number of secondary branches per plant was recorded in ‘Deep Red’ (45.00 in 2023–24, 43.00 in 2024–25, and 44.00 in pooled data), while ‘Button Green’ recorded the lowest (10.66, 11.66, and 11.16, respectively). These variations can be attributed to the

Table 3 : Varietal difference for plant spread (N-S) and (E-W).

S. no.	Variety	Plant spread (N-S) (cm)			Plant spread (E-W) (cm)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
1	Deep Red	42.26	40.74	41.50	44.34	41.62	42.99
2	Punjab Gold	23.77	23.20	23.48	21.69	21.97	21.83
3	Pusa Guldasta	29.34	29.16	29.25	27.98	28.16	28.07
4	Dolly Orange	22.73	22.01	22.37	20.70	20.08	20.39
5	Red star	24.30	23.26	23.78	24.03	23.70	23.86
6	Kirti Gold	16.43	15.90	16.16	14.97	14.08	14.52
7	Little Tubular	19.18	18.45	18.81	18.76	18.00	18.38
8	Geetanjali	33.66	33.40	33.53	32.36	31.83	32.10
9	Vijaya	34.37	34.57	34.47	32.23	32.23	32.23
10	Bidhan Rupanjali	16.73	17.20	16.97	16.70	17.17	16.93
11	Rekha	37.50	36.07	36.78	35.03	33.70	34.37
12	Aishwarya Gold	35.30	34.47	34.88	33.58	33.37	33.48
13	Candor Pink	25.10	24.16	24.63	23.01	23.17	23.09
14	Aishwarya White	38.90	38.16	38.53	37.48	37.00	37.24
15	Punch White	40.70	39.43	40.06	39.36	40.17	39.76
16	Button Green	13.70	13.43	13.57	12.08	13.00	12.54
17	Disk Pink	15.55	16.40	15.98	13.87	14.20	14.03
18	Border Red	16.67	17.00	16.83	15.40	16.00	15.70
S.Em.±		0.91	0.91	0.64	0.94	0.80	0.62
C.D. at 5 %		2.63	2.63	1.83	2.72	2.30	1.75
C.V. %		5.89	6.00	5.94	6.37	5.44	5.92
Pooled		S.Em.±	C.D. at 5 %	C.V. %	S.Em.±	C.D. at 5 %	C.V. %
Y		0.21	NS	594	0.20	NS	5.92
Y × T		0.91	NS		0.88	NS	

inherent genetic potential of the cultivars. A greater number of branches contributes to increased foliage, enhancing the plant's source-sink relationship and overall yield potential (Guddaraddi and Mishra, 2021; Mandal, 2024).

Plant spread

‘Deep Red’ showed significantly wider plant spread in both directions. In the N-S direction, the maximum spread was recorded as 42.26 cm (2023–24), 40.74 cm (2024–25), and 41.50 cm (pooled). Similarly, in the E-W direction, it recorded 44.34, 41.62 and 42.99 cm, respectively. Plant spread is largely influenced by genotype and is indicative of vegetative vigour and efficient sunlight utilization. These results align with findings by Niki *et al.* (2016), Suvija *et al.* (2016), and Negi *et al.* (2020).

Number of suckers per plant

‘Aishwarya White’ produced the highest number of suckers per plant across both years and pooled data (11.33, 10.66 and 11.00, respectively), whereas ‘Button Green’ produced the least (5.33, 5.67 and 5.50). Variations

in sucker production are mainly due to genotypic differences influencing growth habit, hormonal balance, and root development. Under uniform environmental conditions, genetic factors are the dominant contributors, as reported by Jyoti (2017).

Floral and quality attributes

Bud appearance and Flowering initiation

Significant differences were observed among varieties for flowering phenology. The earliest bud initiation was recorded in ‘Border Red’ with 54.00 days in 2023–24, 59.33 days in 2024–25, and 56.66 days in pooled data. This earliness is likely a varietal trait, as supported by Behera *et al.* (2002), Srilatha *et al.* (2015) and Naikwad *et al.* (2019).

For first flowering, ‘Border Red’ also showed the minimum number of days (77.00, 79.33, and 78.17), followed closely by ‘Aishwarya White’. Time to first flowering is crucial for market timing and floral availability and is influenced by both genotype and environmental interaction, as reported by Rao and Pratap (2006) and Singh *et al.* (2008).

Table 4 : Varietal difference for number of suckers per plant.

S. no.	Variety	Number of suckers per plant		
		2023-24	2024-25	Pooled
1	Deep Red	6.00	6.66	6.33
2	Punjab Gold	5.33	6.00	5.66
3	Pusa Guldasta	6.67	7.33	7.00
4	Dolly Orange	6.67	6.00	6.33
5	Red star	7.00	6.67	6.83
6	Kirti Gold	6.00	5.00	5.50
7	Little Tubular	7.00	7.33	7.17
8	Geetanjali	8.33	8.00	8.17
9	Vijaya	7.33	7.67	7.50
10	Bidhan Rupanjali	8.67	9.00	8.83
11	Rekha	9.00	8.33	8.67
12	Aishwarya Gold	7.67	7.33	7.50
13	Candor Pink	8.67	7.67	8.17
14	Aishwarya White	11.33	10.66	11.00
15	Punch White	10.33	9.33	9.83
16	Button Green	5.33	5.67	5.50
17	Disk Pink	6.33	7.00	6.67
18	Border Red	6.00	6.67	6.33
S.Em.±		0.59	0.36	0.35
C.D. at 5 %		1.72	1.04	0.98
C.V. %		13.97	8.54	11.60
Pooled		S.Em.±	C.D. at 5 %	C.V. %
Y		0.11	NS	11.60
Y × T		0.49	NS	

Flowering duration

Earliest 50% flowering (92.00, 100.00 and 96.00 days) and full bloom (108.67, 109.33, and 109.00 days) were also observed in ‘Border Red’ across both seasons and pooled data. These results reaffirm the genetic influence on flowering duration, in line with findings from Srilatha *et al.* (2015), Suvija *et al.* (2016) and Kumar *et al.* (2014).

Floral traits

‘Aishwarya Gold’ exhibited the largest flower diameter (6.37 cm in 2023–24, 6.07 cm in 2024–25 and 6.22 cm pooled), which contributes significantly to overall yield and aesthetic quality. Similar variability in flower size was attributed to genotypic differences, as observed

Table 5 : Varietal difference for first bud appearance.

S. no.	Variety	First bud appearance (days)		
		2023-24	2024-25	Pooled
1	Deep Red	76.00	75.33	75.66
2	Punjab Gold	74.00	73.33	73.66
3	Pusa Guldasta	67.33	68.33	67.83
4	Dolly Orange	68.00	69.33	68.66
5	Red star	70.00	71.00	70.50
6	Kirti Gold	74.66	73.33	74.00
7	Little Tubular	70.66	70.00	70.33
8	Geetanjali	68.66	69.33	69.00
9	Vijaya	69.00	69.66	69.33
10	Bidhan Rupanjali	66.66	65.33	66.00
11	Rekha	70.00	72.00	71.00
12	Aishwarya Gold	69.00	68.66	68.83
13	Candor Pink	73.33	72.33	72.83
14	Aishwarya White	67.33	67.00	67.16
15	Punch White	74.33	73.66	74.00
16	Button Green	70.00	68.66	69.33
17	Disk Pink	61.66	66.66	64.16
18	Border Red	54.00	59.33	56.66
S.Em.±		2.48.00	2.95	1.930
C.D. at 5 %		7.14	NS	5.44
C.V. %		6.22	7.34	6.81
Pooled		S.Em.±	C.D. at 5 %	C.V. %
Y		0.64	NS	6.81
Y × T		2.73	NS	

by Suvija *et al.* (2016) and Sarkar *et al.* (2024).

This variety also recorded the longest flower stalk (21.53, 19.97 and 20.75 cm) and greatest stalk girth (3.11, 3.22 and 3.21 mm), both desirable traits for cut flower use and post-harvest quality. These results align with the findings of Roopa *et al.* (2018) and Kumar *et al.* (2024), highlighting the importance of flower structure in determining market value and vase life.

Post-Harvest attributes

The maximum vase life was recorded in ‘Aishwarya White’ (13.67, 13.33 and 13.50 days), on par with ‘Aishwarya Gold’. This variation is primarily attributed to the cultivar’s inherent ability to retain water and carbohydrates, which delays senescence. Similar results were reported by Swaroop *et al.* (2008) and Vasuniya *et*

Table 6 : Varietal difference for days to first flowering.

S. no.	Variety	Days to first flowering		
		2023-24	2024-25	Pooled
1	Deep Red	99.33	97.67	98.50
2	Punjab Gold	101.33	100.67	101.00
3	Pusa Guldasta	95.00	96.67	95.83
4	Dolly Orange	90.00	92.00	91.00
5	Red star	92.33	93.67	93.00
6	Kirti Gold	105.33	106.67	106.00
7	Little Tubular	98.33	100.00	99.17
8	Geetanjali	92.00	93.33	92.67
9	Vijaya	96.67	95.67	96.17
10	Bidhan Rupanjali	89.33	90.33	89.83
11	Rekha	90.00	92.00	91.00
12	Aishwarya Gold	96.00	95.00	95.50
13	Candor Pink	91.00	92.33	91.67
14	Aishwarya White	86.00	88.33	87.17
15	Punch White	91.33	90.33	90.83
16	Button Green	110.33	108.67	109.50
17	Disk Pink	96.00	98.67	97.33
18	Border Red	77.00	79.33	78.17
S.Em.±		3.83	3.34	2.54
C.D. at 5 %		11.03	9.62	7.18
C.V. %		7.05	6.09	6.58
Pooled		S.Em. ±	C.D. at 5%	C.V. %
Y		0.84	NS	6.58
Y × T		3.60	NS	

Table 7 : Varietal difference for flower diameter.

S. no.	Variety	Flower diameter (cm)		
		2023-24	2024-25	Pooled
1	Deep Red	3.52	3.43	3.47
2	Punjab Gold	3.00	2.94	2.97
3	Pusa Guldasta	4.07	4.05	4.06
4	Dolly Orange	3.83	3.87	3.85
5	Red star	4.76	4.66	4.71
6	Kirti Gold	2.63	2.56	2.60
7	Little Tubular	4.04	4.08	4.06
8	Geetanjali	6.25	6.16	6.20

*Table 7 continued...**Table 7 continued...*

9	Vijaya	5.79	5.85	5.82
10	Bidhan Rupanjali	3.82	3.86	3.84
11	Rekha	4.25	4.19	4.22
12	Aishwarya Gold	6.37	6.07	6.22
13	Candor Pink	5.19	5.09	5.14
14	Aishwarya White	5.70	5.86	5.78
15	Punch White	6.02	5.95	5.99
16	Button Green	2.88	2.94	2.91
17	Disk Pink	3.03	2.95	2.99
18	Border Red	4.07	4.13	4.10
S.Em.±		0.24	0.23	0.17
C.D. at 5 %		0.70	0.68	0.48
C.V. %		9.75	9.41	9.58
Pooled		S.Em.±	C.D. at 5 %	C.V. %
Y		0.05	NS	9.58
Y × T		0.24	NS	

al. (2020).

In situ flower longevity was also highest in ‘Aishwarya White’ (18.33, 17.67 and 18.00 days), with differences attributed to genotypic traits influencing ethylene sensitivity and metabolic activity. These observations are consistent with those of Bennurmath *et al.* (2020) and Suvija *et al.* (2016).

Yield attributes

The variety Deep Red recorded a significantly higher number of flowers per plant (105.00, 99.33, and 101.16) across both individual years and in the pooled analysis. It also exhibited the highest number of flowers per plot (598.33, 588.66 and 593.50) and the greatest number of flowers per hectare (11,08,025; 10,90,123; and 10,99,074) consistently over both years and in the pooled data. The number of flowers produced per plant may be directly related to increase in plant height, number of branches and number of leaves and ultimately accumulation of more photosynthates which results in production of good number of flowers with bigger size. The similar results were observed in chrysanthemum by Srilatha *et al.* (2015).

On the other hand, Aishwarya Gold produced the maximum flower yield per plant (91.98, 89.00, and 90.49 g), which was statistically at par with Aishwarya White across both years and the pooled data. Additionally, Aishwarya Gold showed a significantly higher flower yield

Table 8 : Varietal difference for stalk length and stalk girth.

S. no.	Variety	Stalk length (cm)			Stalk girth (mm)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
1	Deep Red	6.90	7.00	6.95	1.92	1.91	1.91
2	Punjab Gold	7.47	7.97	7.72	1.39	1.58	1.48
3	Pusa Guldasta	14.63	13.83	14.23	2.17	2.21	2.19
4	Dolly Orange	13.83	13.00	13.42	2.35	2.31	2.33
5	Red star	15.13	15.87	15.50	2.39	2.37	2.38
6	Kirti Gold	11.57	11.07	11.32	1.41	1.38	1.40
7	Little Tubular	15.60	14.07	14.83	2.34	2.39	2.36
8	Geetanjali	17.43	15.67	16.55	2.31	2.38	2.34
9	Vijaya	17.23	16.70	16.97	2.42	2.40	2.41
10	Bidhan Rupanjali	12.33	12.90	12.62	1.73	1.86	1.79
11	Rekha	14.93	13.67	14.30	1.83	1.87	1.85
12	Aishwarya Gold	21.53	19.97	20.75	3.19	3.22	3.21
13	Candor Pink	16.20	15.43	15.82	2.94	3.00	2.97
14	Aishwarya White	17.00	15.43	16.22	2.96	3.01	2.98
15	Punch White	16.70	15.13	15.92	2.69	2.75	2.72
16	Button Green	11.43	12.33	11.88	1.68	1.70	1.69
17	Disk Pink	6.73	6.67	6.70	1.02	1.10	1.06
18	Border Red	12.13	15.30	13.72	2.49	2.52	2.50
S.Em.±		1.13	0.78	0.69	0.100	0.112	0.075
C.D. at 5%		3.24	2.25	1.94	0.28	0.32	0.21
C.V. %		14.15	10.10	12.35	8.00	8.80	8.42
Pooled		S.Em.±	C.D. at 5 %	C.V. %	S.Em.±	C.D. at 5 %	C.V. %
Y		0.229	NS	12.35	0.02	NS	8.42
Y × T		0.974	NS		0.10	NS	

Table 9 : Varietal difference for vase life.

S. no.	Variety	Vase life (days)		
		2023-24	2024-25	Pooled
1	Deep Red	5.67	5.33	5.50
2	Punjab Gold	8.00	7.67	7.83
3	Pusa Guldasta	8.67	8.33	8.50
4	Dolly Orange	9.67	9.33	9.50
5	Red star	9.33	9.00	9.17
6	Kirti Gold	6.67	6.00	6.33
7	Little Tubular	9.67	9.00	9.33
8	Geetanjali	9.33	8.67	9.00
9	Vijaya	8.00	7.67	7.83
10	Bidhan Rupanjali	8.00	7.33	7.17

*Table 9 continued...***Table 9 continued...**

11	Rekha	8.33	8.00	8.17
12	Aishwarya Gold	13.33	13.00	13.17
13	Candor Pink	11.67	11.00	11.33
14	Aishwarya White	13.67	13.33	13.50
15	Punch White	8.67	8.33	8.50
16	Button Green	5.67	6.00	5.83
17	Disk Pink	4.67	4.66	4.67
18	Border Red	8.33	7.66	8.00
S.Em.±		0.48	0.54	0.36
C.D. at 5 %		1.39	1.56	1.02
C.V. %		9.68	11.28	10.48
Pooled		S.Em.±	C.D. at 5 %	C.V. %
Y		0.12	NS	10.48
Y × T		0.51	NS	

Table 10 : Varietal difference for longevity of flower *in situ*.

S. no.	Variety	Longevity of flower <i>in situ</i> (days)		
		2023-24	2024-25	Pooled
1	Deep Red	8.33	8.00	8.17
2	Punjab Gold	10.67	10.33	10.50
3	Pusa Guldasta	13.33	13.00	13.17
4	Dolly Orange	13.67	13.33	13.50
5	Red star	11.00	11.67	11.33
6	Kirti Gold	8.33	8.00	8.17
7	Little Tubular	13.00	12.33	12.67
8	Geetanjali	11.33	12.00	11.67
9	Vijaya	9.67	9.33	9.50
10	Bidhan Rupanjali	9.00	8.33	8.67
11	Rekha	13.67	13.00	13.33
12	Aishwarya Gold	17.00	16.33	16.67
13	Candor Pink	11.67	12.00	11.83
14	Aishwarya White	18.33	17.67	18.00
15	Punch White	12.33	12.67	12.50
16	Button Green	7.33	7.67	7.50
17	Disk Pink	6.00	6.67	6.33
18	Border Red	10.67	11.00	10.83
S.Em.±		0.47	0.61	0.38
C.D. at 5 %		1.35	1.75	1.08
C.V. %		7.16	9.35	8.32
Pooled		S.Em.±	C.D. at 5%	C.V. %
Y		0.13	NS	8.32
Y × T		0.54	NS	

Table 11 : Varietal difference for number of flowers per plant.

S. no.	Variety	Number of flowers per plant		
		2023-24	2024-25	Pooled
1	Deep Red	105.00	99.33	101.16
2	Punjab Gold	33.33	35.00	34.16
3	Pusa Guldasta	37.33	38.66	38.00
4	Dolly Orange	47.33	46.33	46.83
5	Red star	55.33	53.67	54.50
6	Kirti Gold	23.33	22.67	23.00
7	Little Tubular	36.66	34.00	35.33
8	Geetanjali	44.33	41.67	43.00

*Table 11 continued...***Table 11 continued...**

9	Vijaya	40.33	38.00	39.16
10	Bidhan Rupanjali	25.66	26.33	26.00
11	Rekha	81.33	78.67	80.00
12	Aishwarya Gold	40.66	39.33	40.00
13	Candor Pink	29.33	25.00	27.16
14	Aishwarya White	52.33	49.66	51.00
15	Punch White	62.33	58.00	60.16
16	Button Green	13.00	14.00	13.50
17	Disk Pink	27.33	28.00	27.67
18	Border Red	20.67	21.67	21.17
S.Em.±		2.31	1.70	1.43
C.D. at 5 %		6.65	4.89	4.05
C.V. %		9.32	7.08	8.31
Pooled		S.Em.±	C.D. at 5%	C.V. %
Y		0.47	NS	8.31
Y × T		2.03	NS	

Table 12 : Varietal difference for number of flowers per plot.

S. no.	Variety	Number of flowers per plot		
		2023-24	2024-25	Pooled
1	Deep Red	598.33	588.66	593.50
2	Punjab Gold	196.00	194.33	195.16
3	Pusa Guldasta	211.67	214.00	212.83
4	Dolly Orange	275.67	274.00	274.83
5	Red star	321.00	320.00	320.50
6	Kirti Gold	133.00	131.00	132.00
7	Little Tubular	197.33	192.67	195.00
8	Geetanjali	244.67	242.66	243.67
9	Vijaya	244.67	241.33	243.00
10	Bidhan Rupanjali	133.33	135.33	134.33
11	Rekha	471.67	461.00	466.33
12	Aishwarya Gold	238.33	228.33	233.33
13	Candor Pink	167.00	142.67	154.83
14	Aishwarya White	310.33	288.33	299.33
15	Punch White	359.00	334.33	346.67
16	Button Green	74.67	76.67	75.67
17	Disk Pink	152.00	154.67	153.33
18	Border Red	115.67	117.33	116.50
S.Em.±		11.89	10.69	7.99
C.D. at 5 %		34.19	30.73	22.57
C.V. %		8.34	7.68	8.03
Pooled		S.Em.±	C.D. at 5%	C.V. %
Y		2.66	NS	8.03
Y × T		11.31	NS	

Table 13 : Varietal difference for flower yield per plant.

S. no.	Variety	Weight of flower per plant (g)		
		2023-24	2024-25	Pooled
1	Deep Red	47.67	46.33	47.00
2	Punjab Gold	39.28	38.62	38.95
3	Pusa Guldasta	44.51	43.85	44.18
4	Dolly Orange	48.96	46.41	47.68
5	Red star	51.27	50.60	50.93
6	Kirti Gold	32.70	32.37	32.53
7	Little Tubular	43.22	42.55	42.88
8	Geetanjali	43.75	42.88	43.32
9	Vijaya	47.88	45.48	46.68
10	Bidhan Rupanjali	41.37	40.50	40.93
11	Rekha	72.00	71.33	71.67
12	Aishwarya Gold	91.98	89.00	90.49
13	Candor Pink	68.01	66.51	67.26
14	Aishwarya White	88.25	87.25	87.75
15	Punch White	83.77	81.66	82.71
16	Button Green	30.00	32.08	31.04
17	Disk Pink	24.07	26.07	25.07
18	Border Red	33.10	40.10	36.60
S.Em.±		1.857	2.43	1.52
C.D. at 5 %		5.33	6.98	4.31
C.V. %		6.21	8.20	7.26
Pooled		S.Em.±	C.D. at 5%	C.V. %
Y		0.50	NS	7.26
Y × T		2.16	NS	

per plot (0.53, 0.52 and 0.53 kg) and the highest flower yield per hectare (9.82, 9.66 and 9.74 t/ha) in both years and in the pooled results. Yield variation among varieties is mainly due to genetic differences, plant structure, flowering duration, and efficiency in using nutrients and water. The results in the study are in accordance with Kumar *et al.* (2014), Suvija *et al.* (2016), Guddaraddi and Mishra (2021).

Conclusion

By observing the overall performance of different chrysanthemum varieties, variety Aishwarya Gold excelled in performance in terms of flower yield in Saurashtra region conditions. Flower stalk length, flower colour, flower diameter and vase life are important characters in chrysanthemum from cut flower quality

Table 14 : Varietal difference for flower yield per plot.

S. no.	Variety	Flower yield per plot (kg)		
		2023-24	2024-25	Pooled
1	Deep Red	0.28	0.27	0.27
2	Punjab Gold	0.23	0.25	0.24
3	Pusa Guldasta	0.25	0.25	0.25
4	Dolly Orange	0.28	0.27	0.27
5	Red star	0.29	0.28	0.28
6	Kirti Gold	0.18	0.19	0.18
7	Little Tubular	0.25	0.24	0.25
8	Geetanjali	0.25	0.23	0.24
9	Vijaya	0.27	0.25	0.26
10	Bidhan Rupanjali	0.24	0.25	0.24
11	Rekha	0.42	0.41	0.41
12	Aishwarya Gold	0.53	0.52	0.53
13	Candor Pink	0.39	0.38	0.38
14	Aishwarya White	0.51	0.50	0.51
15	Punch White	0.48	0.49	0.48
16	Button Green	0.18	0.21	0.19
17	Disk Pink	0.14	0.18	0.16
18	Border Red	0.19	0.21	0.20
S.Em.±		0.010	0.017	0.01
C.D. at 5 %		0.03	0.05	0.02
C.V. %		6.39	11.09	9.02
Pooled		S.Em. ±	C.D. at 5 %	C.V. %
Y		0.003	NS	9.02
Y × T		0.014	NS	

point of view. Flower stalk length, flower diameter and vase life has been observed highest in variety Aishwarya Gold. However, in terms of number of flowers, variety Deep Red performed supremely among all the varieties with excellent decorative inflorescence.

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