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Evaluation of Crossandra genotypes for growth, floral attributes and yield under Konkan agroclimatic conditions

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Abstract
The present investigation entitled "Evaluation of Crossandra (*Crossandra infundibuliformis*) genotypes for growth, floral attributes, and yield under Konkan agro-climatic conditions" was conducted at the Floriculture Farm, College of Horticulture, Dapoli, during the Kharif seasons of 2022–23 and 2023–24. The experiment was laid out in a Randomized Block Design (RBD) with two replications, comprising 15 genotypes including local types and standard checks, *viz*., Arka Kanaka (G_4), Arka Chenna (G_6), Arka Shreeya (G_9), and Arka Ambara (G_{11}). The objective was to identify suitable crossandra genotypes for growth, floral attributes, and yield performance under Konkan agro-climatic conditions. Marked variability was observed among the genotypes with respect to vegetative, floral and yield traits. The genotype G_8 (Jalgaon type 2) attained the maximum plant height (84.29 cm), whereas G_4 (Arka Kanaka) produced the highest number of branches (24.77). The maximum leaf area (34.87 cm²) was recorded in G_{12} (Jalgaon type 3), while G_{10} (Ladghar type 1) and G_6 (Arka Chenna) exhibited the highest plant spread in the east–west (26.35 cm) and north–south (30.93 cm) directions, respectively. With respect to flowering parameters, G_4 (Arka Kanaka) was the earliest to flower (71.55 days) and recorded the highest number of spikes per plant (42.75). The same genotype also registered the highest flower yield both on a per plant basis (237.42 g) and per plot basis (5.68 kg). In terms of floral quality, G_{11} (Arka Ambara) produced the widest florets (2.17 cm), while G_4 (Arka Kanaka) recorded the longest vase life (8.30 days). Overall, the results clearly indicated that G_4 (Arka Kanaka) outperformed other genotypes in terms of growth, floral attributes, yield, and post-harvest quality, thereby establishing its superiority under Konkan agro-climatic conditions.

Keywords: Evaluation, crossandra, Arka, Genotypes, Konkan

Introduction
The name Crossandra is derived from the Greek words *'Krossos'* meaning "fringe" and *'Aner'* meaning "male," referring to the plant's characteristic fringed anthers. Commonly known as the firecracker flower in English, it is also referred to as *Kanaka-ambaram* in Tamil, Malayalam, and Telugu; Aboli in Marathi; and Kanakambara in Kannada. It belongs to the family Acanthaceae. Crossandra is an economically important loose flower crop, predominantly cultivated in South India. It occupies approximately 4,000 hectares of land in Karnataka, Tamil Nadu, and Andhra Pradesh (Bhattacharjee, 2006) [2]. In the 2023-24 period, India's floriculture industry encompassed 285 thousand hactares of land, yielding 22284 thousand tonnes of loose flowers and 947 thousand tonnes of cut flowers (NHB.2023-24) [13]. In Andhra Pradesh, major cultivation areas include Chittoor, Ananthapur, Kurnool, and East Godavari districts. The popularity of crossandra flowers is attributed to their vibrant coloration, light weight, and extended post-harvest life. Varieties with long floral stems are especially valued in the cut flower industry, making them suitable for floral arrangements and vase decorations. Due to their consistent market demand, crossandra flowers command premium prices in domestic markets. Moreover, the plant is appreciated as an ornamental shrub for landscaping, temple decoration, and pot culture, and is commonly used in flower beds and borders. Given the introduction of numerous genotypes by both public and private sectors, there is a pressing need to evaluate their performance under specific agro-climatic conditions. Despite its potential, the Konkan region lacks comprehensive studies on crossandra genotype adaptability. Therefore, the present investigation was undertaken to evaluate the growth, floral attributes, and yield performance of

various crossandra genotypes under the agro-climatic conditions of the Konkan region, with the aim of identifying superior types suitable for commercial cultivation.

Materials and Methods

The present investigation entitled "Evaluation of Crossandra (*Crossandra infundibuliformis*) Genotypes for Growth, Floral Attributes, and Yield under Konkan Agro-Climatic Conditions" was conducted at the Floriculture Farm, College of Horticulture, Dapoli, during the Kharif seasons of 2022–23 and 2023–24. Fifteen genotypes were evaluated in a Randomized Block Design with two replications. Cuttings of four released varieties i.e. Arka Kanaka (G_4), Arka Chenna (G_6), Arka Shreeya (G_9) and Arka Ambara (G_{11}) were procured from IIHR, Bengaluru, while the remaining eleven local genotypes were collected from various locations in Dapoli tehsil namely G_5 (Gavhe type 4), G_1 (Gavhe type 1), G_2 (Gavhe type 2), G_3 (Gavhe type 3), G_7 (Jalgoan type 1), G_8 (Jalgoan type 2), G_{10} (Ladghar type 1), G_{12} (Jalgoan type 3), G_{13} (Jalgoan type 4), G_{14} (Ladghar type 2), G_{15} (Ladghar type 3). Each plot measured 2.7 m × 1.8 m, and 30 days healthy seedlings raised in polybags were transplanted at a spacing of 45 cm × 45 cm. Recommended agronomic practices were uniformly followed Observations on growth parameters were recorded up to 12 months after planting from five randomly selected plants per treatment. Similarly, data on floral attributes and yield were also recorded from five randomly selected plants in each treatment. The data collected over both years were pooled and subjected to statistical analysis using standard procedures to evaluate the performance of the genotypes under the agro-climatic conditions of the Konkan region.

Results and Discussion

1. Mean Performance of crossandra genotypes for growth characters at 12 MAP

The vegetative characteristics of the plant, such as height, number of branches, plant spread, and leaf area, play a crucial role in determining the overall growth habit of the genotypes. Analysis of the data presented in Table 1 and figure 1 indicates significant variability among the genotypes with respect to these growth parameters.

At 12 months after planting (MAP), the results revealed that the genotype G_8 (Jalgoan Type 2) exhibited the maximum plant height (84.29 cm), whereas the minimum plant height (40.19 cm) was recorded in genotype G_2 (Gavhe Type 2). The significant variation observed in plant height among the genotypes can be attributed primarily to inherent differences in genetic makeup and genotypic characteristics. The findings of Kavitha *et al*. (2025) [9] further support the observation that plant height in crossandra is less influenced by environmental factors, thereby reinforcing its utility as a reliable trait for the selection of superior genotypes in breeding programs. These findings are consistent with earlier reports by Ramchandrudu and Thangam (2010), Priyanka *et al*. (2017) [15], Hosagoudar *et al*. (2022) [8], Sree *et al*. (2023) [18], and Kavitha *et al*. (2025) [9].

The data pertaining to the number of branches per plant, as presented in Table 1 and revealed that at 12 MAP, genotype G_4 (Arka Kanaka) produced the highest number of branches (24.77), followed by G_{10} (Ladghar Type 1) with 24.30 branches, G_8 (Jalgoan Type 2) with 22.73 branches.

Table 1: Mean Performance of crossandra genotypes for growth characters at 12 MAP.

Genotypes	Plant height (cm)	Number of branches	Leaf area (cm^2)	Plant spread (E-W) (cm)	Plant spread (N-S)(cm)
G_1 (Gavhe type 1)	63.30	16.91	30.15	43.23	51.56
G_2 (Gavhe type 2)	40.19	16.23	32.65	46.88	38.87
G_3 (Gavhe type 3)	73.04	16.90	31.77	44.86	50.77
G4 (Arka Kanaka)	74.95	24.77	30.22	48.83	46.85
G_5 (Gavhe type 4)	73.82	17.80	31.52	51.78	49.38
G_6 (Arka Chenna)	78.48	19.15	30.50	48.63	59.58
G_7 (Jalgoan type 1)	82.42	15.93	32.85	45.94	48.41
G_8 (Jalgoan type 2)	84.29	22.73	30.30	49.28	44.44
G_9 (Arka Shreeya)	64.42	21.99	31.02	52.69	48.60
G_{10} (Ladghar type 1)	53.09	24.30	31.15	57.42	52.39
G_{11} (Arka Ambara)	64.98	21.87	33.70	49.63	45.64
G_{12} (Jalgoan type 3)	41.30	21.25	34.87	45.68	48.15
G_{13} (Jalgoan type 4)	81.92	21.37	30.42	44.91	45.48
G_{14} (Ladghar type 2)	77.71	14.67	31.45	48.29	47.37
G_{15} (Ladghar type 3)	69.80	17.54	33.25	53.33	46.48
S.Em ±	0.65	1.37	0.34	0.38	0.68
CD @5%	1.98	4.16	1.04	1.17	2.07
Result	Sig	sig	sig	sig	sig

MAP:- Months after planting

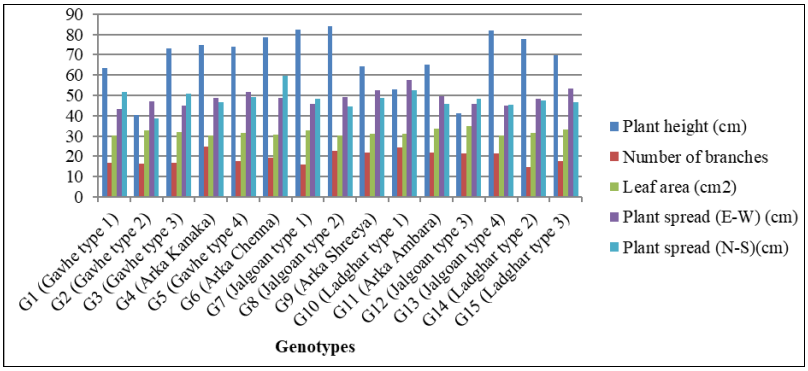

Fig 1: Performance vegetative parameters of crossandra genotypes

Arka Ambara with 21.87 branches. Conversely, the lowest number of branches (14.67) was recorded in genotype G_{14} (Ladghar type 2). The observed variability in branching among genotypes may be due to differences in their genetic constitution and inherent growth vigor. Kavitha *et al*. (2025) [9] reported that the number of primary branches in crossandra was positively and significantly correlated with both yield per plant and number of spikes, indicating the trait's significance in yield enhancement. Additionally, the trait was found to be highly heritable. These results are in alignment with the findings of Sree *et al*. (2023) [18], and Kavitha *et al*. (2025) [9], who also reported considerable genotypic variability for this trait in crossandra.

The data from table 1 revealed that leaf area (cm^2) at 12 MAP, genotype G_{12} (Jalgoan type 3) had the highest leaf area (34.87 cm^2), while genotype G_4 (Arka Kanaka) recorded the minimum (30.22 cm^2). Leaf area determines light interception and is an important parameter in determining productivity of plants (Gifford *et al*. 1984 and Koester *et al*. 2014) [7, 10]. Leaf area variation among different genotypes can be influenced by various factors, including genetic differences, environmental conditions such as light intensity, soil fertility, and water availability. The present research results were found to be corroborating reports of Priyanka *et al*. (2017) [15] in crossandra were Arka shravya had maximum leaf area i.e. (1023.03 $cm^{2)}$ which was at par with Arka Kanaka (1010.33 cm^2), Tejaswi *et al*. (2019) [20] and Sree *et al*. (2023) [18] in crossandra.

The genotype G_{10} (Ladghar type 1) demonstrated the maximum east-west plant spread (57.42 cm^2), whereas the minimum was recorded in genotype G_1 (Gavhe type 1) (43.23 cm^2). The highest north-south plant spread was recorded in the genotype G_6 (Arka Chenna) of (59.58 cm^2), while genotype G_2 (Gavhe type 2) recorded the lowest (38.87 cm^2). The difference in east-west and north-south plant spread in above different fifteen crossandra genotypes may be due to various biological, environmental and management factors. Small variations in temperature, humidity, or shading within the trial can also affect growth pattern in different direction. These findings align with previous research conducted by various workers. Gowsika *et al*. (2019) reported that the genotype Arka Shravya exhibited the highest east–west plant spread, measuring 32.33 cm and 39.00 cm at 90 and 120 DAT, respectively. Similarly, the highest north–south plant spread was recorded for the same genotype, measuring 24.50 cm and 27.33 cm at 90 and 120 DAT, respectively, in crossandra

2. Mean performance of crossandra genotypes for flowering characters

The flowering parameters of Crossandra genotypes showed significant variability, as presented in Table 2 and figure 2. Among the evaluated genotypes, G_4 (Arka Kanaka) consistently recorded the shortest mean duration to flowering initiation (71.55 days), highlighting its superiority in terms of earliness. This was followed by G_8 (Jalgoan type 2) with 75.60 days, G_3 (Gavhe type 3) with 97.98 days, and G_{10} (Ladghar type 1) with 99.20 days. In contrast, G_{13} (Jalgoan type 4) required the maximum time for flowering initiation, averaging 115.38 days. The observed variation in the number of days to flowering among the different genotypes can be attributed to a combination of genetic, physiological, and environmental factors. Similar trends in flowering behaviour were reported by Bharathi and Jawaharlal (2014) [1] in African marigold, Suvija *et al*. (2016) [19] in Chrysanthemum, and Rajiv *et al*. (2022) [16] in Nerium. In terms of reproductive potential, genotype G_4 (Arka Kanaka) also exhibited the highest mean number of spikes per plant (42.75), followed by G_{10} (Ladghar type 1), G_5 (Gavhe type 4), and G_6 (Arka Chenna), with corresponding mean values of 39.07, 38.87, and 36.90 spikes per plant, respectively. Conversely, G_7 (Jalgoan type 1) recorded the lowest spike production, with an average of 12.90 spikes per plant. The variation in spike number is closely linked to the development of primary and secondary shoots. These observations are further corroborated by the findings of Das *et al*. (2022) [5], Hosagoudar *et al*. (2022) [8], Sree *et al*. (2023) [18], and Kavitha *et al*. (2025) [9] in Crossandra. With respect to floral morphology, the highest floret width was recorded in genotype G_{11} (Arka Ambara) at 2.17 cm, followed closely by G_6 (Arka Chenna) and G_2 (Gavhe type 2), with 2.16 cm and 2.11 cm, respectively. On the other hand, G_{14} (Ladghar type 2) exhibited the smallest floret width (1.59 cm). Floret width is largely influenced by additive genetic effects, rendering it a suitable trait for selection in breeding programs. Genotypes with broader florets are often preferred due to their enhanced ornamental appeal, increased pollinator attraction, and superior floral aesthetics. Conversely, narrower florets may be the result of genetic constraints affecting petal expansion or overall floral architecture. Similar findings were reported by Bhosale *et al*. (2018) [3] and Prasanth *et al*. (2020) [14] in Crossandra, and by Byadwal *et al*. (2018) [4] in Gaillardia.

Table 2: Mean performance of crossandra genotypes for flowering characters

Genotypes	Days required for initiation of flowering	Number of spikes /plant	Floret width (cm)
G_1 (Gavhe type 1)	100.68	15.15	1.88
G_2 (Gavhe type 2)	111.06	14.37	2.11
G_3 (Gavhe type 3)	97.98	24.72	1.97
G_4 (Arka Kanaka)	71.55	42.75	1.80
G_5 (Gavhe type 4)	105.03	38.87	1.93
G_6 (Arka Chenna)	98.16	36.90	2.16
G_7 (Jalgoan type 1)	111.65	12.90	1.90
G_8 (Jalgoan type 2)	75.60	22.05	1.84
G_9 (Arka Shreeya)	102.30	29.57	1.94
G_{10} (Ladghar type 1)	99.20	39.07	2.02
G_{11} (Arka Ambara)	102.29	32.20	2.17
G_{12} (Jalgoan type 3)	112.51	23.80	1.76
G_{13} (Jalgoan type 4)	115.38	34.77	1.83
G_{14} (Ladghar type 2)	103.36	22.35	1.59
G_{15} (Ladghar type 3)	114.16	20.80	1.78
S.Em ±	0.33	0.99	0.02
CD @5%	1.01	3.02	0.08
Result	sig	sig	sig

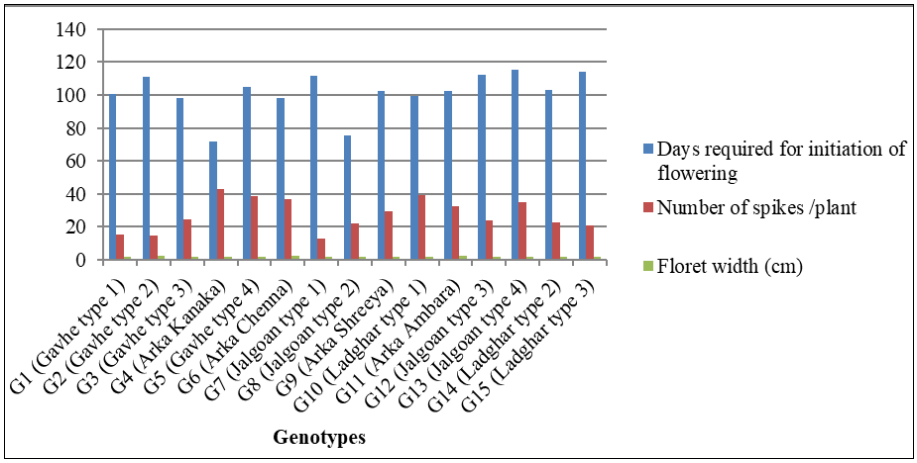

Fig. 2: Performance of crossandra genotypes for flowering parameters

3. Mean performance of crossandra genotypes for yield characters

Yield will determine the overall suitability of a crop for commercial purpose. Yield attributing characters like flower yield per plant (g), yield of flowers kg/ plot are represented in table 3 and figure 3. The highest flower yield per plant was recorded in genotype G_4 (Arka Kanaka), with an average of 237.42 g. This was followed by G_{10} (Ladghar type 1), G_{11} (Arka Ambara), and G_2 (Gavhe type 2), which produced mean yields of 202.40 g, 199.71 g, and 186.98 g per plant, respectively. In contrast, the lowest flower yield per plant was observed in G_8 (Jalgoan type 2), with an average of 95.29 g. Flower yield per plant in crossandra genotypes is influenced by several factors, particularly the number of spikes per plant, which plays a pivotal role in determining floral productivity. Additionally, adequate sunlight exposure is essential to ensure efficient photosynthetic activity, which supports optimal floral development and enhances overall yield. Similar genotypic variations in flower yield have been reported by Priyanka *et al*. (2017) [15], Bhosale *et al*. (2018) [3], Das *et al*. (2022) [5], and Hosagoudar *et al*. (2022) [8] in crossandra.

Genotype G_4 (Arka Kanaka) also consistently recorded the highest yield on a per-plot basis, averaging 5.68 kg/plot. This was followed by G_{10} (Ladghar type 1), G_{11} (Arka Ambara), and G_2 (Gavhe type 2), with average yields of 4.83 kg/plot, 4.72 kg/plot, and 4.46 kg/plot, respectively. The lowest yield was recorded in G_8 (Jalgoan type 2), with 2.24 kg/plot. Genotype G_4 (Arka Kanaka) consistently recorded the highest flower yield, with a mean of 5.68 kg/plot. This was followed by genotypes G_{10} (Ladghar type 1), G_{11} (Arka Ambara), and G_2 (Gavhe type 2), which produced average yields of 4.83, 4.72, and 4.46 kg/plot, respectively. On the other hand, the lowest flower yield was observed in genotype G_8 (Jalgoan type 2), with a mean yield of 2.24 kg /plot. Different crossandra genotypes exhibit inherent variability in their capacity to produce flowers, primarily influenced by their genetic makeup. This variation can be attributed to several factors, including the number of flower buds formed per plant, the duration of the flowering period, and the rate of flower development. These findings are in alignment with those reported by earlier researchers by Das *et al*. (2022) [5] in crossandra, Tejaswini (2017) [21] in marigold.

Table 3: Mean performance of crossandra genotypes for yield parameters

Genotypes	Yield per plant (g)	Yield of flowers kg/plot
G_1 (Gavhe type 1)	126.95	3.04
G_2 (Gavhe type 2)	186.98	4.46
G_3 (Gavhe type 3)	129.56	3.10
G_4 (Arka Kanaka)	237.42	5.68
G_5 (Gavhe type 4)	119.40	2.84
G_6 (Arka Chenna)	135.25	3.20
G_7 (Jalgoan type 1)	98.07	2.32
G_8 (Jalgoan type 2)	95.29	2.24
G_9 (Arka Shreeya)	143.70	3.37
G_{10} (Ladghar type 1)	202.40	4.83
G_{11} (Arka Ambara)	199.71	4.72
G_{12} (Jalgoan type 3)	147.61	3.50
G_{13} (Jalgoan type 4)	155.84	3.72
G_{14} (Ladghar type 2)	123.64	2.92
G_{15} (Ladghar type 3)	169.03	4.03
S.Em ±	0.83	0.01
CD @5%	2.52	0.04
Result	sig	sig

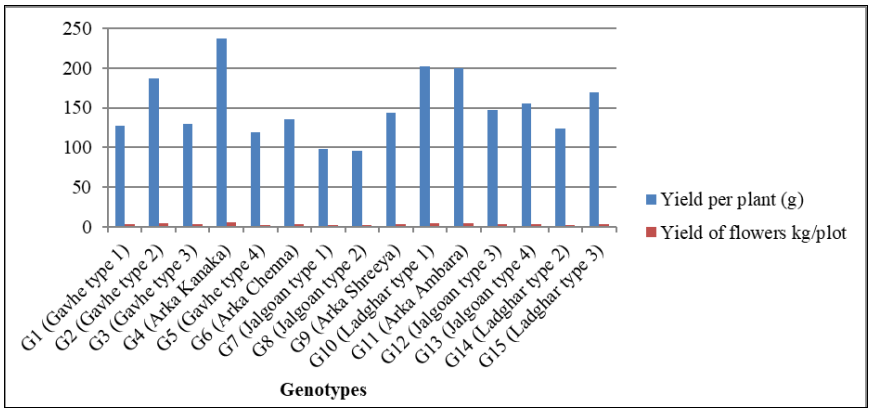

Fig 3: Performance of crossandra genotypes for yiels parameters

4. Mean performance of crossandra genotypes for quality parameters

The results derived from the comprehensive two-year evaluation of genotype performance with respect to vase life and flower colour are systematically summarized in Table 4. Genotype G_4 (Arka Kanaka) exhibiting the longest average vase life of 8.30 days. This was followed by genotypes G_{10} (Ladghar type 1) and G_5 (Gavhe type 4), which recorded average vase lives of 7.50 and 7.02 days, respectively. While, genotype G_8 (Jalgoan type 2) consistently demonstrated the shortest vase life, with a mean duration of 2.62 days. The observed variation in vase life among diverse crossandra genotypes is largely attributable to a complex interplay of physiological and biochemical determinants. Notable genotypic differences in floral morphological traits, such as petal thickness, flower structure, and cuticular characteristics, markedly influence key post-harvest parameters, including moisture retention capacity and ethylene responsiveness. These results were found to correlated with earlier work of various researchers i.e. Kumar and Polara (2017) [12] in Chrysanthemum, Kolur *et al*. (2022) [11] in China aster and Dogra (2023) [6] in Gerbera.

According to the Royal Horticultural Society (RHS) Colour Chart, 6th edition (2015), petal colour observations among different genotypes revealed distinct variations. In genotype G_1 (Gavhe type 1), the petal colour was recorded as strong orange-yellow (RHS 2015, 17A). Genotype G_2 (Gavhe type 2) exhibited vivid yellowish-pink (RHS 2015, 30C), while G_3 (Gavhe type 3) displayed vivid yellow (RHS 2015, 15B). In G_4 (Arka Kanaka), the petals were strong orange (RHS 2015, 30D), and in G_5 (Gavhe type 4) the colour was brilliant orange-yellow (RHS 2015, 23B). Genotype G_6 (Arka Chenna) exhibited strong reddish-orange (RHS 2015, 32B), whereas G_7 (Jalgaon type 1) showed moderate reddish-orange (RHS 2015, 41C). G_8 (Jalgaon type 2) presented light green (RHS 2015, 133D). In G_9 (Arka Shreeya), the petal colour was strong yellowish-pink (RHS 2015, 33C). Both G_{10} (Ladghar type 1) and G_{12} (Jalgaon type 3) showed strong orange (RHS 2015, 30D).

In G_{11} (Arka Ambara), the petals were strong reddish-orange (RHS 2015, 31A), while G_{13} (Jalgaon type 4) displayed brilliant yellow (RHS 2015, 21C). G_{14} (Ladghar type 2) exhibited strong orange-yellow (RHS 2015, 17D), and G_{15} (Ladghar type 3) showed strong reddish-orange (RHS 2015, 42C). Similar investigations have been conducted by various researchers on flower colour variation in crossandra. Bhosle *et al*. (2018), Prasanth *et al*. (2020) [14] and Hosagoudar *et al*. (2022) [8] in crossandra.

Table 4: Mean performance of crossandra genotypes for quality parameters

Genotypes	Vase life (days)	Flower colour
G_1 (Gavhe type 1)	4.07	Strong orange yellow (RHS2015 17 A)
G_2 (Gavhe type 2)	5.45	Vivid Yellowish Pink (RHS 2015 30 C)
G_3 (Gavhe type 3)	4.60	Vivid Yellow (RHS 2015 15 B)
G_4 (Arka Kanaka)	8.30	Strong Orange (RHS 2015 30 D)
G_5 (Gavhe type 4)	7.02	Brilliant Orange Yellow (RHS 2015 23 B)
G_6 (Arka Chenna)	3.72	Strong Reddish Orange (RHS 2015 32 B)
G_7 (Jalgoan type 1)	3.42	Moderate Reddish Orange (RHS 2015 41 C)
G_8 (Jalgoan type 2)	2.62	Light Greeen (RHS 2015 133D)
G_9 (Arka Shreeya)	4.55	Strong Yellowish Pink (RHS 33 C)
G_{10} (Ladghar type 1)	7.50	Strong Orange (RHS 2015 30 D)
G_{11} (Arka Ambara)	6.40	Stronge Reddish Orange (RHS 2015 31 A)
G_{12} (Jalgoan type 3)	5.57	Stronge Orange (RHS 2015 30 D)
G_{13} (Jalgoan type 4)	6.67	Brilliant Yellow (RHS 2015 21 C)
G_{14} (Ladghar type 2)	4.37	Stronge Orange Yellow (RHS 2015 17 D)
G_{15} (Ladghar type 3)	3.65	Strong reddish orange (RHS2015 42 C)
S.Em ±	0.11	
CD @5%	0.35	
Result	sig	

General view of experimental plot

Conclusion

The findings of this two-year comprehensive evaluation of crossandra genotypes underscore the exceptional performance of Arka Kanaka (G_4), which consistently outperformed other genotypes with respect to floral characteristics and overall quality. Its adaptability to the agro-climatic conditions of the Konkan region and its commercial viability affirm its potential as a leading genotype for large-scale cultivation. Furthermore, genotypes G_{10} (Ladghar type 1), G_{11} (Arka Ambara), and G_2 (Gavhe type 2) demonstrated commendable performance in terms of vegetative vigor, flowering behaviour, and yield parameters, indicating their suitability for cultivation under similar environmental conditions.

References

1. Bharathi T, Jawaharlal M. Evaluation of African marigold (*Tagetus erecta* L). genotypes for growth and flower yield under Coimbatore conditions. Trends Biosci. 2014;7(16):2197-201.
2. Bhattacharjee SK. Advances in Ornamental Horticulture: Vistas in Floriculture. Pointer Publishers; 2006. p. 115.
3. Bhosale PB, Kadam MB, Katwate SM, Pawar BG. Evaluation of different genotypes of crossandra. Int J App Res. 2018;4(3):204-6.
4. Byadwal RK, Meena MK, Chauhan S, Rundla SK. Performance of different genotypes of gaillardia (*Gaillardia pulchella* Foug.) in respect to flowering, quality and yield

parameter. J Pharmacogn Phytochem. 2018;7(6):2697-700.
5. Das R, Munikrishnappa PM, Seetharamu GK, Rajesh AM, Kumar P. Evaluation of crossandra (*Crossandra undulaefolia* Salisb.) genotypes under Eastern dry zone of Karnataka. Pha Inn J. 2022;11(4):1950-4.
6. Dogra S. Evaluation of gerbera genotypes for growth, yield and flower quality under subtropical conditions of Jammu. Int J Adv Biochem Res. 2023;SP-7(1):34-6.
7. Gifford RM, Thorne JH, Hitz WD, Giaquinta RT. Crop productivity and photoassimilate partitioning. Science. 1984;24:801–8.
8. Hosagoudar AS, Champa BV, Naveen PM. Evaluation of crossandra genotypes for vegetative, floral and yield parameters for commercial production. Pharma Innov J. 2022;SP-11(6):2554-7.
9. Kavitha M, Gowsika S, Sankari A, Kavitha PS. Assessment of Genetic Variability, Heritability and Correlation in Crossandra (*Crossandra infundibuliformis* (L.) (Nees) Genotypes. 2025;37(1):19-25.
10. Koester RP, Skoneczka JA, Cary TR, Diers BW, Ainsworth EA. Historical gains in soybean (Glycine max Merr.) seed yield are driven by linear increases in light interception, energy conversion, and partitioning efficiencies. J Exp Bot. 2014;65:3311-21.
11. Kolur SM, Hejjegar I, Patil SS. Evaluation of China Aster (*Callestephus chinensis*) Genotypes for Cut Flower Production. Biol Forum-An Int J. 2022;14(3):975-8.
12. Kumar AS, Polara ND. Performance of Thirteen Chrysanthemum Varieties on Flowering, Yield and Quality under South Saurashtra Region. Int J Pure App Biosci. 2017;5(4):2049-57.
13. NHB. Horticultural Statistics at a Glance 2023-24, National Horticulture Board, Ministry of Agriculture and Farmers welfare, Government of India, Gurgon. New Delhi. www.nhb.gov.in.
14. Prasanth P, Girwani A, Salma Z, Kumar SP. Suitability evaluation of crossandra genotypes under Hyderabad conditions. Int J Chem Stud. 2020;8(6):484-6.
15. Priyanka TK, Kamble BS, Anuradha RW, Naveenakumar, Shirol AM. Evaluation of different Crossandra genotypes under Ghataprabha Command Area. J Pharmacogn Phytochem. 2017;6(6):252-4.
16. Rajiv G, Jawaharlal M, Allen JJ, Ganesh S. Diversity assessment of Nerium accessions for growth and flower yield. J Hortic Sci. 2022;17(2).
17. Ramachandrudu K, Thangam M. Characterization and evaluation of local germplasm of crossandra (*Crossandra undulaefolia* Salisb.). J Orn Hort. 2010;13(2):138-41.
18. Sree KG, Srinivas PT, Dorajee Rao AVD, Rajasekharam T. Growth and flowering as influenced by genotypes in Crossandra (*Crossandra infundibuliformis* L.) under Rayalaseema conditions. Pharma Innov J. 2023;12(9):2150-3.
19. Suvija NV, Suresh JS, Ranjith K, Kanan M. Evaluation of chrysanthemum (*Chrysanthemum morifolium* Ramat.). Int J Innov Res Adv Stud. 2016;4.
20. Tejaswi R, Salma Z, Rao AVDD, Naresh S. Study on growth, floral and yield parameters of crossandra genotypes under coastal Andhra Pradesh conditions. Bull Env Pharmacol Life Sci. 2019;8(4):100-4.
21. Tejaswini CR. Evaluation of African marigold (*Tagetus erecta* L.) varieties under south Saurashtra Region [PhD thesis]. Junagadh Agricultural University, Junagath; 2017.