Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.5915

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **5 (6):** 443-447 (2017)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Evaluation of Different Crossandra Genotypes for Vegetative Shelf Life and Flower Quality Parameters

Priyanka T. K.[1*], Kamble B. S.[2], Subiya R. K., Anuradha R. W. and Kulkarni B. S.[3]

Department of Floriculture and Landscape Architecture, University of Horticultural Sciences, Bagalkot

*Corresponding Author E-mail: priyankakurabet1991@gmail.com

Received: 22.10.2017 | Revised: 29.11.2017 | Accepted: 2.12.2017

ABSTRACT

An experiment was conducted at Kittur Rani Channamma College of Horticulture, Arabhavi during 2014-2015 on evaluation of ten genotypes of crossandra (Crossandra undulaefolia Salisb.) with respect to vegetative, flower quality parameters, shelf life, physiological loss of weight and consumer acceptance of crossandra flowers. The results revealed that the genotypes Arka Shravya and Arka Kanaka produced more number of leaves, whereas the genotype Arka Ambar and ACC-2 produced less number of leaves. The genotypes Arka Shreeya and Arka Kanaka recorded maximum flower diameter whereas the genotype ACC-1 had minimum flower diameter. Corolla tube length did not differ significantly. Shelf life was more in the genotypes Arka Kanaka, Arka Ambar and Arka Shreeya while, minimum was recorded in the genotype ACC-7. Based on consumers acceptance the genotypes Arka Shravya and Arka Kanaka had attractive flower colour and maximum corolla tube length. Flower size was more in Arka Shreeya and Arka Kanaka. Overall acceptability was excellent in the genotypes Arka Shravya and Arka Shreeya.

Key words: *Crossandra, Evaluation, Vegetative parameters, Flower quality parameters, Shelf life, Consumer acceptance, ACC (Arabhavi crossandra collection)*

INTRODUCTION

Crossandra is a small evergreen perennial commercial flower mainly confined to India. It belongs to the family acanthaceae. The main growing areas of crossandra flowers are Karnataka, Tamil Nadu and Andhra Pradesh. The plants are quite hardy and can be grown for flowerbeds and /or for loose flowers. It is an evergreen shrub of minor importance. It consists of five cultivars, namely, orange, yellow, red, deep orange and bluish flowered forms. The bright orange coloured flowers are widely used in temple offerings and adorning the hair in the form of garland. The leaf extracts of *Crossandhra infundibuliformis* shows aphrodisiac, anti-inflammatory and analgesic properties.

Cite this article: Priyanka, T.K., Kamble B.S., Subiya, R.K., Anuradha, R.W. and Kulkarni, B.S., Evaluation of Different Crossandra Genotypes for Vegetative Shelf Life and Flower Quality Parameters, *Int. J. Pure App. Biosci.* **5(6):** 443-447 (2017). doi: http://dx.doi.org/10.18782/2320-7051.5915

The leaf extracts also reported for wound healing, antibacterial, antioxidant activities. Due to its medicinal value, this plant is used to treat various ailments[8]. Present work was aimed to evaluate the genotypes for vegetative, flower quality, shelf life and consumer acceptance.

MATERIALS AND METHODS

The present investigation was carried out in the field experiment of Department of Floriculture and Landscape Architecture, Kittur Rani Channamma College of Horticulture, Arabhavi, during the period from 2014-2015. Arabhavi is situated in Northern dry zone (zone-3) of Karnataka state geographically lies at 16021' North latitude and 75054′ East longitude with an altitude of 640 m above mean sea level. The experiment was laid out in randomized block design having three replications and ten genotypes as treatment. The ten genotypes of crossandra viz., Arka Ambar, Arka Kanaka, Arka Shravya, Arka Shreeya, ACC-1, ACC-2, ACC-3, ACC-4, ACC-5 and ACC-6 were grown in 3 row system at 60 X 30 cm. Five plants from each genotype and from each replication were randomly selected for recording observation on vegetative, flower quality parameters, shelf life and consumer acceptance.

RESULTS AND DISCUSSIONS

The results obtained from the present investigation are summarized in Table 1.

VEGETATIVE PARAMETERS

The highest number of leaves registered in the genotype ACC-1 (100.53) followed by Arka Kanaka (99.67) at 60 DAT whereas lowest was registered in the genotype Arka Shreeya (59.80). At 90 DAT the number of leaves were found significantly maximum in Arka Shravya (290.17) followed by Arka Kanaka (278.93) and minimum was found in Arka Ambar (189.73) which was at par with ACC-2 (193.30). Significant differences were recorded among the genotypes, maximum leaf area was recorded in Arka Shravya (1023.03 cm^2) which was at par with Arka Kanaka (1010.33 cm^2). The minimum leaf area was recorded in ACC-3 (806.17 cm^2). The chlorophyll 'a', chlorophyll 'b' and total chlorophyll content was found maximum in genotype Arka Kanaka (0.28 mg/g, 0.23 mg/g and 0.51 mg/g respectively) which was on par with Arka Shravya and Arka Ambar (0.24 mg/g, 0.22 mg/g and 0.46 mg/g respectively). The lowest was found minimum in genotype Arka Shreeya (0.09 mg/g, 0.07 mg/g and 0.16 mg/g respectively). Among the genotypes Arka Shravya (178.00 g) recorded significantly higher dry matter production followed by Arka Kanaka (145.07 g) and Arka Shreeya (108.20 g) and lowest was recorded in genotype Arka Ambar (85.87 g).Leaves are the functioning units for photosynthesis particularly the chlorophyll content of leaf which influences more on the growth and flower yield. The maximum leaf area was due to the increased number of leaves. Since genotypes varied for their number of leaves accordingly their leaf area also varied. The increased dry matter production might be due to vigorous growth, more number of branches, more number of leaves and leaf area in this genotype. The efficient photosynthetic ability of crop might have facilitated the accumulation of more carbohydrates in stems, which inturn increased the dry matter production. Similar results were also observed in marigold[3].

Flowering parameters

The data pertaining flower diameter, corolla tube length and shelf life parameters were presented in Table 2.The maximum flower diameter (3.44 cm) was recorded in Arka Shreeya which was at par with Arka Kanaka (3.41 cm) whereas, minimum diameter was recorded in ACC- 1 (2.41 cm). Variation in flower size due to varietal variation is attributed to their genetic makeup. This finding is in accordance with the findings of[7] in crossandra[5], in marigold[1,2,4], in chrysanthemum. The trait, corolla tube length were ranged between 2.30 cm to 2.59 cm which showed non-significant results. These results are not in agreement with observations[7,9] in crossandra. Significant

differences were found among the different genotypes of crossandra with respect to shelf life in Fig. 1. Genotype Arka Kanaka possessed a maximum shelf life period of 5.60 days which was on par with the genotypes Arka Ambar (5.40 days) and Arka Shreeya (5.30 days) whereas, least was observed in ACC-3 (3.40 days). During the period of shelf life at 36 hours the physiological loss in weight of flowers found to be minimum of 81.50 per cent in the genotype Arka Ambar followed by Arka Kanaka (89.90 %) and loss was maximum (97.30 %) in the genotype ACC-1 which was on par with ACC-5 (96.00 %) which is represented in Table 4. The variation in shelf life might be attributed to inherent genetic character of the varieties as they have been reported earlier[9] in crossandra[5], in marigold. Sensory scoring done by different consumers represented in Table 4. The score for flower colour was higher in genotype Arka Shravya (4.20) and was at par with Arka Kanaka (4.13) whereas, ACC-3 obtained the lowest score (1.23). Genotype Arka Shreeya obtained maximum score for flower size (4.70) and the genotype ACC-1(1.70) recorded minimum score which was at par with ACC-6 (1.87). Corolla tube length was highest in Arka Shravya (4.17) which was on par with Arka Kanaka (4.11). The minimum score was obtained by ACC-3 (1.83). Flower diameter was high in Arka Shreeya (4.43) which was on par with Arka Kanaka (4.23). The ACC-3 (1.67) and ACC-1 (1.77) recorded lesser diameter. Overall acceptability was excellent in Arka Shravya (4.63) followed by Arka Shreeya (3.70) and ACC-1 (3.50). Similar results were observed in Perk *et al.*[6], in different flower crops.

Table 1: Number of leaves, Leaf area, Chlorophyll 'a', Chlorophyll 'b', Total chlorophyll content and Drymatter production of different crossandra genotypes

Genotypes	Number of leaves	Leaf area (cm^2)	Chlorophyll content (mg/g)			Dry matter production (g)
			Chl 'a'	Chl 'b'	Total chlorophyll	
Arka Ambar	189.73	964.30	0.24	0.22	0.46	85.87
Arka Kanaka	278.93	1010.33	0.28	0.23	0.51	145.07
Arka Shravya	290.17	1023.03	0.24	0.22	0.46	178.00
Arka Shreeya	276.07	991.57	0.09	0.07	0.16	104.77
ACC-1	254.63	987.67	0.17	0.15	0.32	108.20
ACC-2	193.30	1001.43	0.17	0.16	0.33	95.30
ACC-3	265.37	806.17	0.19	0.17	0.36	105.23
ACC-4	213.30	980.80	0.16	0.15	0.32	101.70
ACC-5	197.83	888.73	0.15	0.14	0.29	101.70
ACC-6	165.40	986.00	0.17	0.15	0.33	92.30
S. Em (±)	**3.38**	**5.05**	**0.007**	**0.012**	**0.015**	**3.20**
CD at 5%	**10.05**	**15.00**	**0.023**	**0.035**	**0.044**	**9.50**

Table 2: Flower quality parameters of different crossandra genotypes

Genotypes	Flower diameter (cm)	Corolla tube length (cm)	Shelf life (days)
Arka Ambar	3.27	2.31	5.40
Arka Kanaka	3.41	2.48	5.60
Arka Shravya	2.85	2.59	4.45
Arka Shreeya	3.44	2.45	5.30
ACC-1	2.41	2.53	4.13
ACC-2	3.05	2.35	3.70
ACC-3	3.05	2.39	3.40
ACC-4	3.11	2.37	4.10
ACC-5	2.93	2.30	3.63
ACC-6	2.62	2.41	4.30
S. Em (±)	**0.095**	**0.066**	**0.12**
CD at 5%	**0.28**	**NS**	**0.35**

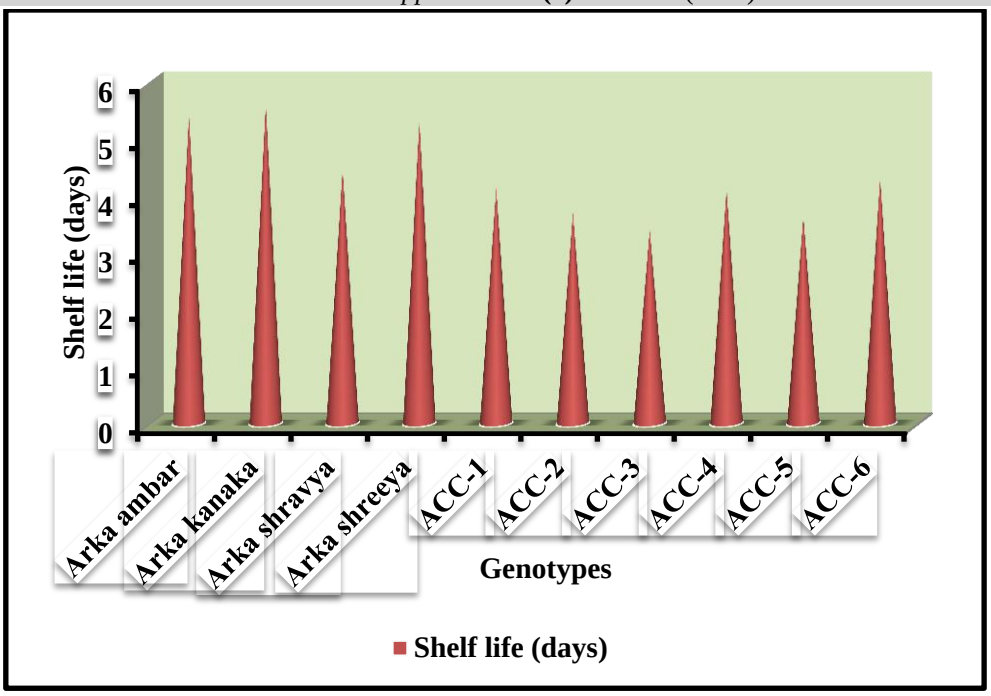

Fig. 1: Shelf life of different crossandra genotypes

Table 3: Physiological loss of weight of different crossandra genotypes

Genotypes	Physiological loss of weight (%) during different hours					
	6	**12**	**18**	**24**	**30**	**36**
Arka Ambar	32.07	49.73	56.17	64.90	69.08	81.50
Arka Kanaka	25.97	47.20	55.23	64.34	70.80	89.90
Arka Shravya	36.13	51.37	61.37	71.59	78.77	93.51
Arka Shreeya	40.93	55.80	58.97	83.20	85.43	91.77
ACC-1	35.63	52.13	61.20	83.35	75.73	97.30
ACC-2	31.27	54.93	62.00	70.42	78.87	95.30
ACC-3	30.47	45.83	56.07	65.20	70.87	90.73
ACC-4	31.03	53.17	58.43	65.60	75.03	93.77
ACC-5	35.17	53.60	63.02	69.13	80.00	96.00
ACC-6	36.97	49.10	57.80	65.30	79.40	91.13
S. Em (±)	**1.03**	**0.99**	**1.25**	**1.108**	**0.81**	**0.83**
CD at 5%	**3.05**	**2.94**	**3.72**	**3.29**	**2.41**	**2.48**

Table 4: Sensory score values for consumer acceptance of different crossandra genotypes

Genotypes	Flower Color	Flower Size	Corolla tube Length	Flower diameter	Overall acceptability
Arka Ambar	1.60	3.33	3.47	3.30	1.83
Arka Kanaka	4.13	3.23	4.11	4.23	2.37
Arka Shravya	4.20	3.50	4.17	2.83	4.63
Arka Shreeya	2.70	4.70	3.37	4.43	3.70
ACC-1	3.37	1.70	2.50	1.77	3.50
ACC-2	2.23	2.57	3.13	3.13	2.70
ACC-3	1.23	2.07	1.83	2.53	2.53
ACC-4	2.03	2.50	2.20	1.67	1.57
ACC-5	3.03	2.63	2.50	2.43	1.80
ACC-6	2.40	1.87	3.03	1.93	2.60
S. Em (±)	**0.08**	**0.09**	**0.048**	**0.07**	**0.09**
CD at 5%	**0.24**	**0.27**	**0.143**	**0.22**	**0.27**

Score card:

Flower colour	Flower Size	Flower diameter	Corolla tube Length	Overall acceptance	Score
Very attractive	Very big	Excellent	Excellent	Highly acceptable	4.1-5.0
Moderately	Big	Good	Good	Moderately acceptable	3.1-4.0
Attractive	Medium	Better	Better	Acceptable	2.1-3.0
Slightly attractive	Small	Fair	Fair	Slightly acceptable	1.1-2.0
Not attraction	Very small	Poor	Poor	Not acceptable	0.1-1.0

REFERENCES

1. Baskaran, V., Jankiram, T. and Jayanthi, R., Varietal evaluation in chrysanthemum. *The Karnataka J. Hort.,* **1(1):** 23-27 (2004).
2. Dahiya, D. S., Sehrawat, S. K. and Rana, G. S.,Evaluation of spray chrysanthemum under semi-arid climatic conditions. *Haryana J. Hort. Sci.,* **36**(**1&2):** 76-77 (2007).
3. Deepti, S. and Anil, K. S., Evaluation of French marigold (*Tagetes patula* Linn.) and Wild marigold (*Tagetes minuta* Linn.) under sub mountainous tarai conditions. *J. Orn. Hort.,* **8(2):** 134-136 (2005).
4. Dhiman M. R., Assessment of chrysanthemum germplasm for commercial cultivation under Kullu-Valley condition. *J. Orn. Hort*., **6(4):** 394-396 (2003).
5. Nandakishor and Raghava, S. P. S., Variability studies in African marigold. *J. Orn. Hort.*, **4(2):** 105-111 (2001).
6. Perk, D. S., Singarwad, P. S., Tawale, J. B. and Maske, V. S., Consumer preference for flowers in general and specific purpose. *The Asian J. Hort.,* **4(2):** 338-339 (2009).
7. Ramachandrudu, K. and Thangam, M., Characterization and evaluation of local germplasm of Crossandra (*Crossandra undulaefolia* Salisb.). *J. Orn. Hort.,* **13(2):** 138-141 (2010).
8. Sowjanya P., Vasmi A. K. and Srinivas B. P., In-vitro Evaluation of flowers of Crossandra infundibuliformis (L) NEES as a natural solar agent. Asian Pac. *J. Health Sci.,* **1(2):**104-106 (2014).
9. Veluswamy, P., Thangraj, T. and Muthuswamy, S., A study of the comparative morphology of four cultivars of Crossandra (*Crossandra undulaefolia* Salisb.). *South Indian Hort.,* **22:** 81-83 (1974).