

Performance of Elite Floribunda Rose Cultivars for Yield, Yield Parameters, Economics and Consumer Acceptability for Consecutive Two Years under North Eastern Transitional Zone of Karnataka

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ABSTRACT: An investigation on performance of Floribunda Rose cultivars North Eastern Transitional Zone of Karnataka. The cultivars viz., Aishwarya Cherishma, Five Star, Kelly, Mirabel, Orange Babe, Palm D More, Ruby Gon, Ruby Star, Vanish and Yellow Babe were taken for study. The cultivar Cherishma was recorded maximum 100 flower weight of 258.64 followed by Palm D More (248.67 g) and Five Star (247.25 g) which were statistically on par with each other in the pooled mean. While cultivar Yellow Babe (182.77 g) recorded lower 100 flower weight. Among the cultivars evaluated, the cv. Cherishma recorded maximum flower yield per hectare (4.01tonne) and this found to be on par with cv. Five Star with the yield of 3.61 tonnes per hectare. While minimum yield per hectare was recorded in cv. Vanish (2.26 tonnes per hectare). Cherishma realized maximum gross returns (Rs. 2224653) and net returns (Rs. 1356008), and maximum benefit to cost ratio (B: C) of 2.56. The information regarding the performance of rose genotypes under open field condition in North Eastern Transitional Zone of Karnataka is meager. Hence, the present investigation was carried out to collect the informations regarding these aspects which will be useful for rose breeders to select the desirable genotypes and for rose growing farmers to economize their production.

Keywords: Floribunda rose, Yield, Economics and Consumer acceptability.

INTRODUCTION

One of nature's most exquisite creations, the rose is hailed as the "Queen of Flowers" for its exquisite shape, range of sizes, bewitching colours, and most delightful fragrance, which has numerous applications. The genus *Rosa* and family Rosaceae are home to the rose. Every country in the world has a significant place for the rose in tradition, religion, and social culture. It is a symbol of love, adoration, and innocence. Roses are in high demand both domestically and abroad as cut flowers. The demand for cut flowers is growing every day as people's standards of living, aesthetic sensibilities, and awareness rise. Based on average production and consumption, roses hold the top spot in the cut flower market. In India, roses are cultivated for cut flowers, garlands, bouquets, flower arrangements, vase decoration, worship, preparation of gulkand and

pankhuri, and the extraction of essential oils, attar, and rose water. Additionally, it is a crop grown for medicine that has antioxidant and nutraceutical properties to treat heart, liver, and kidney issues. Additionally, it has antibacterial, antifungal, antiviral, and antidepressant properties. Vitamin C is another important component of rose hips (Venkatesha *et al.*, 2022). In Karnataka's North Eastern Transitional Zone, floribunda roses can be grown in open fields, which lowers production costs even though roses are not commercially grown there. For a variety of uses, there is a great need for novel floribunda rose cultivars. The development of new genotypes with novel colours, distinctive sizes, and distinctive fragrances is required to meet the market demand for roses in order to maximise yield and achieve higher market prices. To improve genotypes for this purpose, better parents with desirable traits must be chosen. In comparison to

protected cultivation types, the genotypes suitable for open field cultivation and their evaluation details under various regions and climatic conditions are few. Therefore, the current investigation was conducted to gather information on these aspects that will help rose breeders choose the desirable genotypes and floribunda rose farmers reduce their production costs.

MATERIALS AND METHODS

The present investigations on cabbage were undertaken at College of Horticulture, Bidar.

North Eastern transitional zone (Zone-I) of Karnataka state. It is located between 17.91° North latitude and 77.51° East longitudes at an altitude of 615 m above the mean sea level. The soil of experimental site was lateritic red soil in nature. Light digging operation was done to loosen the soil for better aeration. The experimental field was prepared to a fine tilth by deep ploughing and harrowing. The field was ploughed twice before one month of planting and farm yard manure was incorporated at the rate of @ 20 t ha⁻¹ at land harrowing and mixed well. The experiment was laid out using RCBD with three replications and 11 cultivars viz., V₁ - Aishwarya V₂ -Cherishma, V₃ -Five Star, V₄ - Kelly, V₅ - Mirabel, V₆ -Orange Babe, V₇ -Palm D More, V₈ -Ruby Gon, V₉ -Ruby Star, V₁₀-Vanish, V₁₁-Yellow Babe. The adopted spacing is 120 cm × 90 cm. The experimental plots were irrigated immediately after the completion of transplanting and gap filling operation was undertaken. All cultural practices have followed as per package of practices of UHS, Bagalkot. The data collected from the genotypes of floribunda rose on different parameters were subjected to statistical analysis.

RESULTS AND DISCUSSION

Yield, Yield Parameters: Data pertaining to yield parameters at different stages of crop growth are furnished in Table 1 and 2. Among the different rose cultivars significant difference was seen with 100 flower weight. Maximum 100 flower weight was recorded for the cultivar Cherishma at 258.64 g, followed by Palm D More (248.67 g) and Five Star (247.25 g), which were statistically equal in the pooled mean. While Yellow Babe (182.77 g) recorded a lower weight for 100 flowers. This might be as a result of cultivar characteristics, as well as enhanced vegetative growth, which may have had an impact on the early transition of vegetative growth into reproductive stage. The results are inline with the findings of Manjula (2005); Fascella and Zizzo (2007) in rose.

The results reveal that there was significant difference among various cultivar with regard to number of flowers/plant during the growth period. The cultivar Cherishma had the most flowers per plant (213.99), equal to the cultivar Mirabel (196.36), and Palm D More (190.00). Vanish (131.21) has the fewest flowers

per plant of all cultivars. This may be caused by increased morphological factors such as plant height, primary branch count, and spread, which aid in increasing photosynthesis and, as a result, the accumulation of dry matter, which either directly or indirectly results in the production of more flowers per plant. These observations were in conformity with the result of Fascella and Zizzo (2007); Mohanty *et al.* (2011) in rose.

Among the cultivars evaluated the cv. Cherishma recorded maximum (432.89 g) flower yield per plant, followed by Five Star (390.34 g) and Palm D More (372.00 g). Whereas cv. Vanish (243.98 g) registered minimum flower yield per plant. Variation in flower yield was observed previously in rose by Nagaraju *et al.* (2019).

Among the cultivars evaluated, the cv. Cherishma recorded maximum flower yield per hectare (4.01tonne) and this found to be on par with cv. Five Star with the yield of 3.61 tonnes per hectare. While minum yield per hectare was recorded in cv. Vanish (2.26 tonnes per hectare). These results may be due to increased morphological parameters like plant height, more number of leaves, more number of branches and leaf area which helps in production of more photosynthesis resulting in greater accumulation of dry matter which inturn directly or indirectly leads to production of more number of flowers per plant. Variation in flower yield was also observed previously in rose by Nagaraju *et al.* (2019); Subiya *et al.* (2017) in rose.

Consumer acceptability. Data pertaining to Consumer acceptability furnished in Table 3. Among the cultivars evaluated, the cv. Cherishma recorded maximum overall acceptability during both years *i e.*, 8.07 (1st year) and 7.17 (2nd year). While lowest overall acceptability was recorded in cv. Kelly 6.16 (1st year) and 5.28 (2nd year).

Economics study. The total cost, gross returns, net returns and benefit to cost ratio of rose cultivars grown open cultivation are presented in Table 4. The cultivar Vanish produced the lowest gross returns (Rs. 1088927) and net returns (Rs. 192532), while Cherishma realised the highest gross returns (Rs. 2224653) and net returns (Rs. 1356008). Mirabel and Five Star came in second and third, respectively, with net returns of Rs. 2052197 and Rs. 1692138. The cultivar Cherishma had the highest benefit to cost ratio (B: C) (2.56), followed by Mirabel (2.38) and Five Star (1.95), which were discovered to be superior to other cultivars under study. In Cvs, the minimum benefit-to-cost ratio (B:C) was attained (1.21). The production of more high-quality flowers and their high market value are the main causes of this. These findings are in accordance with the findings of Kale (2008); Sengar and Kothari (2008); Majumdar and Lahiri (2012); Haque *et al.* (2013); Shivaprasad *et al.* (2017) in rose.

Table 1: Performance of Floribunda roses for Yield parameters north eastern transitional zone of Karnataka.

Cultivars	100 flower weight(gm)			No. of flowers/plant		
	1 st year	2 nd year	Pooled	1 st year	2 nd year	Pooled
V ₁ - Aishwarya	176.67	198.90	187.78	147.52	160.67	154.10
V ₂ - Cherishma	246.33	270.95	258.64	199.08	228.89	213.99
V ₃ - Five Star	235.08	259.42	247.25	153.97	205.03	179.50
V ₄ - Kelly	181.33	206.02	193.68	152.64	165.18	158.91
V ₅ - Mirabel	185.12	259.46	222.29	183.75	208.97	196.36
V ₆ - Orange Babe	177.08	210.53	193.81	160.86	188.72	174.79
V ₇ - Palm D More	240.75	256.58	248.67	174.75	205.25	190.00
V ₈ - Ruby Gon	171.75	202.25	187.00	154.37	170.28	162.33
V ₉ - Ruby Star	155.53	203.83	179.68	145.56	176.34	160.95
V ₁₀ - Vanish	168.67	200.50	184.59	106.41	156.00	131.21
V ₁₁ - Yellow Babe	165.67	199.86	182.77	167.64	190.42	179.03
Mean	176.21	206.22	191.21	143.53	169.57	156.55
S Em±	11.92	8.63	8.12	15.69	10.72	9.69
C. D. at (5%)	35.16	25.47	23.95	46.29	31.63	28.60
CV (%)	11.71	7.25	7.35	18.93	10.95	10.72

Table 2: Performance of Floribunda roses for Yield north eastern transitional zone of Karnataka.

Cultivars	flowers yield /plant (gm)			Flower yield per ha (tones)		
	1 st year	2 nd year	Pooled	1 st year	2 nd year	Pooled
V ₁ - Aishwarya	206.44	335.87	271.15	1.91	3.11	2.51
V ₂ - Cherishma	324.77	541.00	432.89	3.01	5.01	4.01
V ₃ - Five Star	283.60	497.07	390.34	2.63	4.60	3.61
V ₄ - Kelly	241.60	416.52	329.06	2.24	3.86	3.05
V ₅ - Mirabel	259.99	451.48	355.74	2.41	4.18	3.29
V ₆ - Orange Babe	234.61	388.40	311.50	2.17	3.60	2.88
V ₇ - Palm D More	322.72	421.28	372.00	2.99	3.90	3.44
V ₈ - Ruby Gon	172.05	352.80	262.43	1.59	3.27	2.43
V ₉ - Ruby Star	217.77	381.85	299.81	2.02	3.54	2.78
V ₁₀ - Vanish	164.27	323.69	243.98	1.52	3.00	2.26
V ₁₁ - Yellow Babe	219.16	373.77	296.47	2.03	3.46	2.74
Mean	220.71	373.63	297.17	2.04	3.45	2.75
S Em±	20.81	21.43	12.12	0.19	0.19	0.11
C. D. at (5%)	61.39	63.23	35.77	0.56	0.58	0.33
CV (%)	16.33	9.93	7.06	16.33	9.93	7.06

Table 3: Consumer acceptability of different Floribunda roses cultivars.

Cultivars	Consumer acceptability test									
	shape		color		size		Arrangement of petals		Overall Acceptability	
	1 st year	2 nd year	1 st year	2 nd year	1 st year	2 nd year	1 st year	2 nd year	1 st year	2 nd year
V ₁ - Aishwarya	5.57	6.42	5.80	6.45	5.76	6.77	5.66	6.57	5.92	6.72
V ₂ - Cherishma	7.42	6.77	8.14	7.10	7.61	6.65	7.61	6.90	8.07	7.17
V ₃ - Five Star	6.33	7.00	6.90	7.80	6.47	7.25	6.33	7.12	6.76	7.20
V ₄ - Kelly	5.42	4.72	5.57	5.50	5.67	4.80	5.80	4.65	6.16	5.28
V ₅ - Mirabel	6.85	7.40	7.54	7.70	6.80	7.60	7.42	7.40	7.54	7.61
V ₆ - Orange Babe	5.97	7.45	6.52	7.12	6.28	7.17	6.14	7.35	6.26	7.20
V ₇ - Palm D More	6.47	7.65	6.38	7.50	6.09	7.52	6.28	7.72	6.42	7.55
V ₈ - Ruby Gon	6.21	6.90	6.61	7.47	5.52	6.52	6.14	6.95	6.33	7.27
V ₉ - Ruby Star	6.40	6.70	6.50	7.10	5.78	6.85	6.23	6.22	6.19	6.75
V ₁₀ - Vanisha	6.19	6.42	6.47	6.62	6.19	6.35	6.90	6.82	6.61	6.65
V ₁₁ - Yellow Babe	6.09	6.52	5.90	7.13	5.47	6.52	6.07	6.67	5.97	6.87

Table 4: Economics of Floribunda Roses under North Eastern Transition Zone.

Cultivars	Cost of cultivation	Gross income	Net income	B:C ratio
V ₁ - Aishwarya	988895	1153924	165029	1.16
V ₂ - Cherishma	868645	2224653	1356008	2.56
V ₃ - Five Star	868645	1692138	823493	1.95
V ₄ - Kelly	942645	1422406	479761	1.50
V ₅ - Mirabel	859395	2052197	1192803	2.38
V ₆ - Orange Babe	896395	1332662	436267	1.48
V ₇ - Palm D More	896395	1690542	794147	1.88
V ₈ - Ruby Gon	896395	1181920	285525	1.31
V ₉ - Ruby Star	868645	1301914	433269	1.50
V ₁₀ - Vanish	896395	1088927	192532	1.21
V ₁₁ - Yellow Babe	896395	1276666	380271	1.42

CONCLUSION

Thus, from the present study considering the better performance in terms of flower colour, shape, yield and economics of floribunda rose, cultivars Cherishma, Mirabel and Five Star were found superior over the rest of the cultivars, was suitable for open cultivation under North Eastern Transitional Zone of Karnataka.

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Conflict of Interest. None.

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