

Performance of different Floribunda roses varieties for Yield, Economics and biotic stress under North Eastern Transitional Zone of Karnataka

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ABSTRACT: The Experiment was conducted at College of Horticulture, Bidar, UHS, Bagalkot. The growth of ornamental horticulture has been made possible by global trade, with Floribunda roses being the most economically significant. The ornamental business has seen a shift in the production and sale of flowers from the US and Europe alone to production in Africa and Latin America as a result of changes in global trade and an increase in energy costs. India is a rising leader in the export of roses to Europe. An idea of association can be effectively used to develop selection strategies for enhancing yield components from a research of varietal evaluation between various yield and biotic stress. The relative magnitude of the associations between various features and yield should be taken into account for any successful selection programme, therefore a comprehensive understanding of genotypes aids in determining the optimum genotype for a given area. Determining how several Floribunda rose types perform in terms of yield, economics, and biotic stress in the north-eastern transitional zone of Karnataka is the purpose of the current study. RBD was used to plan the experiment, which had 11 different types and three replications. The maximum flower output per plant and flower yield per hectare among the 11 types examined were documented by Cherishma, at 432.89 g and 4.01 t/ha, respectively. Five Star recorded the lower number of ashweevils (2.85), thrips (1.84), and variety Vanish recorded lower number of red spider mites (2.55). Cherishma had the highest gross returns and benefit cost ratio of all the types examined in the pooled mean (2,22,4,653 ha⁻¹ and 2.56 respectively). However, a limited research work is done to know the performance of outdoor rose varieties. The cultivation of rose under open condition is gaining importance in Karnataka due to its relative ease in cultivation, high returns, increasing market demand and high communication facilities. So far, the research work done on the evaluation of rose cultivars to find out their suitability to this tract is meagre. Considering the importance and popularity of rose flowers both in domestic as well as International markets, it is important to study the performance of Floribunda roses varieties for their performance in North Eastern Transitional Zone of Karnataka.

Keywords: Floribunda roses, Economics, Yield and Biotic stress.

INTRODUCTION

One of nature's most exquisite creations, the floribunda rose, often known as the "Queen of Flowers," is a member of the Rosaceae family and is indigenous to temperate areas of the northern hemisphere. Since ancient times, the rose has been the best flower to represent love, adoration, innocence, peace, friendship, affection, passion, and other virtues. In the top 10 cut flower categories on the global flower market, roses come in first. It is was cultivated for a variety of uses, including garden flowers, aesthetic value, cut flowers for decoration, loose flowers for garland, and the production of products like rose oil, rose water, gulckhand, and rose attar. The influence of these

elements can be determined through correlation studies. Yield is a polygenically regulated quantitative character, which is the entire effect of a number of component factors under which variety is developed. The majority of economic data on roses focuses on cut flowers. According to AIPH 2016, there are sold 10 billion rose stems annually. In addition, garden roses (220 million) and potted roses (80 million) are significant (Roberts *et al.* 2003). In terms of production of cut flowers, roses continue to be the top choice. 30% of the market is made up of red roses (Chaanin 2003). The goal of the current study is to evaluate genotypes for yield, economics, and biotic stress in Karnataka's north-eastern transitional zone. Yield is a multifaceted

character whose activities are influenced by numerous contributing personalities. An idea of association can be effectively used to develop selection strategies for enhancing yield components from a research of varietal evaluation between various yield and biotic stress. The relative magnitude of the associations between various features and yield should be taken into account for any efficient selection programme, therefore a proper understanding of genotypes aids in determining the optimum genotype for a given region. Tropical and subtropical climates are present. One of the most widely grown and valuable crops in the world is the rose. The majority of roses are grown in climate-controlled polyhouses where temperature, moisture and light can be adjusted to produce flowers at periods of peak demand. Some varieties of roses are successfully grown in our country under open conditions for cut flower and loose flower purposes (Soujanya *et al.*, 2018). However, a limited research work is done to know the performance of outdoor rose varieties. The cultivation of rose under open condition is gaining importance in Karnataka due to its relative ease in cultivation, high returns, increasing market demand and high communication facilities. So far, the research work done on the evaluation of rose cultivars to find out their suitability to this tract is meagre. Considering the importance and popularity of rose flowers both in domestic as well as International markets, it is important to study the performance of Floribunda roses varieties for their performance in North Eastern Transitional Zone of Karnataka.

MATERIALS AND METHODS

Field experiment was conducted during 2015 at College of Horticulture, Bidar. 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 genotypes 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 (Anon., 2017). The data collected from the genotypes of floribunda rose on different parameters were subjected to statistical analysis.

RESULTS AND DISCUSSION

The present investigation entitled “Performance of different Floribunda roses varieties for Yield, Economics and biotic stress under north eastern transitional zone of Karnataka” was carried out College of Horticulture, Bidar, India. The results of the present investigation, regarding the evaluation of different Floribunda roses varieties have been discussed and interpreted in the light of previous research work done in India and abroad. The results of the experiment are summarized below.

Pooled data across consecutive two years revealed that, The maximum flower yield per plant and flower yield per hectare among the 11 types examined were documented by Cherishma, at 432.89 g and 4.01 t/ha, respectively. By measuring flower yield per plant and flower yield per hectare, respectively, Five Star (390.34 g and 3.61 t/ha) and Palm D More (372.00 g and 3.44 t/ha) were discovered to be on par with one another. While Vanish had lesser flower yields per plant and per hectare, at 243.98 g and 2.26 t/ha, respectively. The favourable growing environment and climatic factors have also contributed for expressing their maximum yield potential in high yielding varieties (Betonina, 1996; Praneetha *et al.* 2002; Talia *et al.* 2003). These conclusions concur with those made about roses by Chandrashekaraiiah (1973); Nagaraja (1996); Manjula (2005).

Among the different varieties tested in the pooled mean, higher gross returns was obtained in Cherishma (₹ 2,22,4,653 ha⁻¹) followed by Mirabel (₹ 2,052,197 ha⁻¹) and Five Star (₹ 1,69,2138 ha⁻¹). While Vanish (₹ 1,088,927 ha⁻¹) noticed lowest gross returns among all the varieties. The pooled data of two years revealed that, among the different varieties, Cherishma (2.56) noticed higher BC ratio followed by Mirabel (2.38) and Five Star (1.38). While lower BC ratio (1.21) was observed in Vanish. The results are in line with the findings of Mishra *et al.* (2006); Mukesh *et al.* (2012); Lakshmi *et al.* (2015).

Lest number of ashweevil of 2.85 and Thrips 1.84 recorded in Five Star, whereas variety Vanish (2.55) number of Red Spider Mites. With regard to Black spot all the tested varieties were found to be moderately resistant, for Powdery mildew varieties viz., Aishwarya, Cherishma, Five Star, Palm D More and Yellow Babe found to be resistant, for Downey mildew all the varieties found to be resistant and for the dia back almost all the varieties found to be resistant except Aishwarya which was found to be moderately resistant Fascella (2007); Kanamadi and Patil (1993); Malhotra, (1997); Nagaraja (1996); Sanders *et al.* (1989) in rose.

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

Variety	Flowers yield /plant (gm)			Flower yield per ha (tones)		
	I year	II year	Pooled	I year	II 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 2: Economics of Floribunda Roses under North Eastern Transition Zone.

Variety	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

Table 3: Screening of Floribunda roses for Thrips, Red Spider Mites and Ashweevil under North Eastern Transition Zone.

Variety	Thrips (Number)	Red Spider Mites (number)	Ashweevil (number)
V ₁ - Aishwarya	4.15	8.04	4.61
V ₂ - Cherishma	3.21	3.23	4.05
V ₃ - Five Star	1.84	3.55	2.85
V ₄ - Kelly	4.12	3.74	3.40
V ₅ - Mirabel	2.36	2.65	3.60
V ₆ - Orange Babe	5.12	3.70	4.35
V ₇ - Palm D More	3.58	4.05	3.68
V ₈ - Ruby Gon	2.59	3.11	6.08
V ₉ - Ruby Star	3.83	3.62	5.05
V ₁₀ - Vanish	4.65	2.55	4.72
V ₁₁ - Yellow Babe	3.54	2.68	4.40

Table 4: Screening of Floribunda Roses against Black spot, Powdery mildew, Downey mildew and Dieback under North Eastern Transition Zone.

Variety	PDI	Resistant Reaction	PDI	Resistant Reaction	PDI	Resistant Reaction	PDI	Resistant Reaction
V ₁ - Aishwarya	44.00	MR	24.00	R	20.00	R	32.00	MR
V ₂ - Cherishma	28.00	MR	20.00	R	20.00	R	20.00	R
V ₃ - Five Star	32.00	MR	24.00	R	20.00	R	20.00	R
V ₄ - Kelly	32.00	MR	28.00	MR	16.00	R	16.00	R
V ₅ - Mirabel	32.00	MR	16.00	R	24.00	R	24.00	R
V ₆ - Orange Babe	48.00	MR	28.00	MR	20.00	R	20.00	R
V ₇ - Palm D More	36.00	MR	24.00	R	24.00	R	24.00	R
V ₈ - Ruby Gon	48.00	MR	32.00	MR	24.00	R	24.00	R
V ₉ - Ruby Star	36.00	MR	28.00	MR	24.00	R	24.00	R
V ₁₀ - Vanish	40.00	MR	24.00	R	24.00	R	24.00	R
V ₁₁ - Yellow Babe	36.00	MR	24.00	R	24.00	R	24.00	R

CONCLUSION

From this study, it is evident that adopting Cherishma variety, given maximum flower yield per plant and flower yield per hectare 432.89 g and 4.01 t/ha is most profitable by giving higher gross returns of ₹ 2,22,4,653 ha⁻¹ and higher BC ratio of 2.56 as compared to rest of the varieties. This was a significant step towards good agricultural practices to adopt the suitable variety for North Eastern Transitional Zone of Karnataka.

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Conflict of Interest. None.

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