Open field evaluation of rose cultivars under Pune, Maharashtra conditions

RS KUTE[1], AA BHAGAT[2], GM IDATE[3] and CD BADGUJAR[2]

[1]Department of Horticulture, College of Agriculture, Pune 411005 Maharashtra, India
[2]Zonal Agricultural Research Station (MPKV), Ganeshkhind, Pune 411067 Maharashtra, India
[3]AICRP on Arid Zone Fruits (Fig and Custard Apple)
Jadhavwadi 412301 Maharashtra, India
Email for correspondence: stataab@gmail.com

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ABSTRACT

The present experiment was carried out in the field of Directorate of Floriculture Research, Pune, Maharashtra during 2019-20 with the objective to evaluate the performance of ten rose varieties in open field conditions. The experiment was laid in randomized block design with ten rose genotypes viz Charishma, Kashmir Velvet, Abhisarika, Paradise, Sophia, Folklore, Peter Frankelfeld, Tenacious, Strawberry and Rose Sherbet replicated thrice and spaced at 60 cm x 90 cm. From the study it was revealed that among varieties, Folklore, Paradise, Tenacious, Peter Frankelfeld and Rose Sherbet emerged as promising varieties for loose flower production in open field conditions.

Keywords: Rose; genotypes; open field; loose flowers; production

INTRODUCTION

Rose is one of the oldest flowers under cultivation and most popular of all garden flowers throughout the world and rightly called 'Queen of Flowers'. Variability in size, colour, and shape has made it the Queen of Flowers. It belongs to the family Rosaceae and is native to temperate region of northern hemisphere. Flowers are used both as cut and loose for floral arrangement, garland making, landscape gardening and also for making various byproducts. India produces 1962.03 thousand MT of loose flowers. Tamil Nadu state leads in loose flowers production with 482.52 thousand MT over 34.23 thousand hectares followed by Andhra Pradesh with 428.95 thousand MT production over 25.74 thousand hectares in 2017-18 (Anon 2018). In the western region extensive export-oriented cut flower cultivation is done in Pune, Nasik and Sangli districts of Maharashtra.

Hence an attempt was made to evaluate the varieties for open field conditions to help the consumers to get better quality flowers to fetch the growers higher income. Total ten number of varieties were evaluated under open field conditions.

MATERIAL and METHODS

The present investigations were carried out at the experimental unit of the Directorate of Floriculture Research, Pune, Maharashtra during 2019-20 for evaluating the performance of ten rose varieties in open field conditions. The varieties were Charishma, Kashmir Velvet, Abhisarika, Paradise, Sophia, Folklore, Peter Frankelfeld, Tenacious, Strawberry and Rose Sherbet. The experiment was laid out in randomized block design and replicated thrice as suggested by Panse and Sukhatme (1985).

The soil of the experimental field was medium with good drainage. Uniform, healthy and vigorously growing three months old budded plants of ten rose varieties were procured and planted at 60 cm x 90 cm. The plots were irrigated (flood method) once at 3-5 days interval depending upon the weather and growth stage of the crop. The major nutrients, NPK were provided through soil application as per the recommended package of practices.

Five labeled plants which were randomly selected from each replication under each treatment

were used for recording observations (at 15 days interval). The observations were recorded on plant height, plant spread, days taken to flowering after pruning, days required for flower bud initiation after pruning, days required for flower opening after bud initiation, duration of flowering, days required for colour break, shelf-life, number of flowers per plant, number of petals per flower, flower diameter and 100-flower weight.

RESULTS and DISCUSSION

The data on mean plant height and spread were recorded at different growth stages of crop (Table 1). The varieties showed significant variation for plant height at different stages of growth after pruning. At all the growth stages, the variety Folklore recorded its superiority over the rest for plant height. Maximum plant height was recorded in Folklore 197.67, 202.34, 208.00 and 213.67 cm at 15, 30, 45 and 60 DAP respectively. The least plant height was recorded in Kashmir Velvet ie 40, 41.50, 43 and 47.67 cm at 15, 30, 45 and 60 DAP respectively. Similar variation in plant height was reported by Soujanya et al (2018). Similar to plant height, Folklore showed its superiority for plant spread and it was 174.67, 180.34, 186.0 and 188.34 cm at 15, 30,45 and 60 DAP respectively. Plant spread is an important growth attribute for flower crops. It helps to utilize the sunlight to maximum extent. Similar results were obtained by Mohanty et al (2011) in rose.

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Significant differences were recorded by all rose varieties studied for flower parameters except days required for flower opening after bud initiation which was non- significant (Table 2). Significantly least number of days for bud initiation after pruning was recorded by cv Abhisarika (36.00), Tenacious (37.00), Kashmir Velvet (39.67), Charishma (41.00), Peter Frankenfeld (42.00), Folklore and Strawberry (43.00 each) which were on par. Maximum number of days for bud initiation was taken by Rose Sherbet (102.34).

Minimum number of days for flowering after pruning was recorded by Abhisarika (48.00), Tenacious (48.67), Kashmir Velvet (50.67), Charishma (54.67), Strawberry (54.67), Folklore (55.33) and Peter Frankenfeld (55.67) all being at par and maximum (115.33) by Rose Sherbet.

The varieties took 10.67 to 13.67 days for flower opening after bud initiation but there were no significant differences among them for this trait. Maximum number of days for flowering (132.67 and 131.33) was recorded in case of Folklore and Peter Frankenfeld respectively the two being at par and minimum in Abhisarika (98.33), Kashmir Velvet (98.34) and Tenacious (107.34) all the three being at par. Kashmir Velvet (7.00), Rose Sherbet (7.00), Strawberry (7.67) and Charishma (8.00) took minimum number of days for colour break and Sophia (11.00), Paradise (10.67), Peter Frankenfeld (10.33) and Abhisarika (10.00) the maximum. Maximum shelf-life was observed in Paradise (55.13 h), Peter Frankenfeld (53.83 h), and Abhisarika (53.35 h) and minimum in Rose Sherbet (30.78 h) and Kashmir Velvet (32.75 h).

The above findings in respect of flowering parameters were also reported by Atram et al (2015), Singh et al (2013), Murugesan et al (1991) and Verma et al (2008).

The yield attributes of rose cultivars studied are presented in Table 3. At 60 days after pruning, significantly maximum number of flowers was recorded in Folklore (74.67) and Paradise (73.00) which were on par. The number of petals per flower was found significantly maximum in tenacious (55.00) Charishma (48.34), Strawberry (47.34), Rose Sherbet (45.67), Peter Frankelfeld (40.00) and Sophia (45.34) which were on par. Maximum flower diameter was recorded in Paradise (9.84 cm) and Folklore (8.75 cm) which were on par. From production point of view, 100-flower weight is an important parameter. Significantly maximum 100-flower weight was recorded in Peter Frankelfeld (660.3 g) followed by Paradise (614.5 g).

Similar results with respect to flower yield parameters were recorded by Ramzan et al (2014), Atram et al (2015), Tabassum et al (2002), Polara et al (2004) and Manjula (2005) in rose crop.

Thus in overall, the best rose cultivars proved in the present study were Folklore, Paradise, Abhisarika, Peter Frankelfeld and Rose Sherbet in order of merit and were more suitable for open field cultivation under Pune, Maharashtra conditions.

Table 1. Growth parameters of rose genotypes at different growth stages

Treatment (variety)	Plant height (cm)				Plant spread (cm)			
	15 DAP	30 DAP	45 DAP	60 DAP	15 DAP	30 DAP	45 DAP	60 DAP
Charishma	56.34	58.00	61.00	62.34	46.50	49.00	52.17	54.84
Kashmir Velvet	40.00	41.50	43.00	47.67	70.67	73.50	76.50	78.34
Abhisarika	91.64	95.67	102.34	108.67	80.50	84.84	88.50	93.00
Paradise	119.00	124.34	128.84	131.67	100.84	105.17	110.00	112.67
Sophia	144.84	148.47	151.67	155.00	112.67	114.84	117.17	119.67
Folklore	197.67	202.34	208.00	213.67	174.67	180.34	186.00	188.34
Peter Frankelfeld	62.84	64.84	66.67	68.80	46.67	47.84	49.67	51.67
Tenacious	79.00	83.47	86.50	89.47	46.67	49.00	50.50	52.84
Strawberry	56.67	60.47	62.47	64.74	66.34	69.34	72.17	75.34
Rose Sherbet	99.00	101.40	103.74	105.30	91.50	95.17	97.14	100.00
SEm±	6.54	6.65	6.68	6.73	8.29	8.38	8.40	8.47
$CD_{0.05}$	19.59	9.91	20.01	20.15	24.83	25.11	25.17	25.38

DAP: Days after pruning

Table 2. Flower characters of different rose varieties

Treatment (variety)	Days required for flower bud initiation after pruning	Days taken to flowering after pruning	Days required for flower opening after bud initiation	Duration of flowering (days)	Days required for colour break	Shelf-life (h)
Charishma	41.00	54.67	13.33	112.33	8.00	45.85
Kashmir Velvet	39.67	50.67	11.33	98.34	7.00	32.75
Abhisarika	36.00	48.00	12.33	98.33	10.00	53.35
Paradise	70.00	82.67	13.00	113.00	10.67	55.13
Sophia	80.34	91.67	11.33	118.00	11.00	40.42
Folklore	43.00	55.33	11.33	132.67	9.67	44.80
Peter Frankenfeld	42.00	55.67	13.67	131.33	10.33	53.83
Tenacious	37.00	48.67	10.67	107.34	9.33	39.83
Strawberry	43.00	54.67	11.67	111.00	7.67	41.43
Rose Sherbet	102.34	115.33	13.00	97.34	7.00	30.78
SEm±	2.47	2.64	0.68	3.79	0.76	1.24
$CD_{0.05}$	7.41	7.90	NS	11.36	2.32	3.72

NS: Non-significant

Table 3. Yield parameters of rose genotypes 60 days after pruning

Treatment (variety)	Number of flowers/plant	Number of petals/flower	Flower diameter (cm)	100-flower weight (g)
Charishma	21.34	48.34	4.67	277.3
Kashmir Velvet	56.34	28.00	6.50	137.8
Abhisarika	38.67	29.67	8.17	457.7
Paradise	73.00	30.67	9.84	614.5
Sophia	45.00	45.34	8.67	514.5
Folklore	74.67	35.00	8.75	525.0
Peter Frankelfeld	33.34	40.00	6.67	660.3
Tenacious	27.00	55.00	7.84	549.0
Strawberry	22.67	47.34	6.00	248.8
Rose Sherbet	24.00	45.67	6.67	360.6
SEm±	4.99	2.97	0.38	4.82
$CD_{0.05}$	14.93	8.90	1.15	13.45

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