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PERFORMANCE AND COMPARISON OF SCENTED ROSE VARIETIES UNDER LOW HILLS OF HIMACHAL PRADESH INDIA

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ABSTRACT

An investigation on performance and comparison of two rose varieties, Rose Sherbet and Pusa Alapana, under open field condition was carried out at experimental farm of Department of Floriculture and Landscape Architecture, College of Horticulture and Forestry, Dr. YS Parmar University of Horticulture and Forestry, Neri, Hamirpur, Himachal Pradesh during 2023-24. Among two rose cultivars studied, Rose Sherbet was found to be superior in terms of vegetative and floral parameters for cultivation under open field condition in low hill zone of Himachal Pradesh. Although Pusa Alpana also survived and performed good under this condition, but yield is more in Rose Sherbet.
Keywords: Scented field roses, vegetative parameters, floral parameters

Introduction

Rose has been ever the World's most favourite and unchallenged queen of flowers is undoubtedly one of the most beautiful nature's creations belongs to genus *Rosa* and family *Rosaceae* with chromosome number 2n=2x=14. Roses are well known for their variety of colours and classes. Different varieties of roses can be grown as cut and loose flower, as climber, in pots, as shrubs and for the extraction of essential oil. It is preferred over other shrubs for landscaping because of its longer blooming period, gorgeous flower colour, and lovely leaf fall colour.

Long-stemmed cut roses are mostly used for bouquets, arrangements, and decorations whereas; loose roses are mostly used for garland, veni, essential oil extraction, and offerings in religious places etc. (Amita *et al.*, 2021). Apart from this, the fragrant roses are also used in aromatic as well as cosmetic industry. Rose water extracted is widely used for adding flavour to food besides being used for cosmetic purpose, fragrant rose petals are ideal for preparing gulkand and as additive to various food items. Roses are also known for its nutraceutical properties and health benefits. India's principal rose-growing regions are Haldighati in Rajasthan and Ghazipur and Aligarh in Uttar Pradesh. In addition, roses are grown on a smaller scale in several regions of India, including Kashmir, Himachal Pradesh, and Pushkar in Rajasthan, as well as in Kannauj and Varanasi, Uttar Pradesh. Rose Sherbet is a highly fragrant variety, with an oil content of 0.003 per cent was developed by Dr. B.P. Pal and released in 1962. The variety is good for the production of processed products like Sherbet, Jam, and Gulkand etc. Pusa Alpana, released in 2021 is a floribunda type variety of rose having compact, light pinkish and highly fragrant flower. This variety is ideal for loose flower production and the fragrant flowers can be used for garland preparation (IARI). Since, fragrant roses are becoming more and more popular as loose flower and its commercial cultivation is gaining importance, there is need for identification of high-yielding scented rose cultivar and the information regarding the evaluation of rose genotypes under open field condition in various agro-climatic conditions is inadequate. Therefore, the present study was undertaken to evaluate the scented field rose varieties

in open field conditions under low hills of Himachal Pradesh.

Material and Methods

The present investigation was carried out at the experimental block of the Department of Floriculture and Landscape Architecture, College of Horticulture and Forestry, Neri, Hamirpur, Himachal Pradesh situated at 670 m above msl having latitude 31°4' N and longitude 76°3' E. The Neri being sub humid subtropical, is characterized by cold winters, with occasional ground frost in December and January, and, high temperatures associated with hot, desiccating winds in May and June. Average rainfall in the area is 1600mm. Two rose varieties, Rosa Sherbet and Pusa Alpana were selected to study their phenotypic correlation and performance under open field conditions. This experiment was carried by following Randomized Block Design (RBD). The treatments comprised of two varieties and fifty plants of each variety were planted at a distance of 60×60cm during December 2022 and standard cultural practices were followed consistently to raise a good crop. The planting material was procured from Indian Agricultural Research Institute, New Delhi. Ten plants from each plot were selected and used for observations in respect of vegetative growth viz., plant height, plant spread and number of branches and for flowering parameters viz., number of inflorescence, number of flowers per plant and weight of flower per plant were also recorded and data were statistically analysed in SPSS software.

Observations on vegetative parameters such as plant height, number of shoot per plant and plant spread, flowering parameters such as Number of flowers per plant and yield was recorded at peak flowering season (April 2024) given in Table 1. Flowering starts from January and last till august.

Result and Discussion

Vegetative parameters

The two varieties differ significantly in terms of plant height, spread, and number of branches. The maximum plant height (77.40 cm), plant spread (65.50 cm) and number of branches (4.8) was recorded in Rose Sherbet, whereas in Pusa Alpana, the plant height, spread and number of branches was observed as 62.10 cm, 51.60 cm and 3.43, respectively.

Differences in vegetative parameters depend on the varietal character of the plants and it varies from one variety to the other (Kanamadi and Patil, 1993). More number of leaves may have contributed to the increased photosynthesis rate resulting in increased plant height and spread. Comparable differences in vegetative parameters in rose were also recorded by Mohanty *et al.* (2011), Ramzan et *al.* (2014), Amita *et al.* (2021) and Muthulakshmi *et al.* (2022).

Floral parameters

Between two varieties higher no. of inflorescence (4.83), no. of flowers/plant (44.50) and weight of flower per plant (121.00g) was observed in Rose Sherbet, whereas in Pusa Alpana recorded no. of inflorescence, no. of flowers/plant and weight of flower/plant was 3.30, 35.80 and 72.40 g, respectively. The genetic makeup of the variety affects the diversity in terms of floral characters of the plant. In Rose Sherbet, maximum vegetative parameters were recorded, so there will be more photosynthetic area and more growth of the plants will be there. Similar findings were also observed by Shahrin *et al.* (2014), Wasnik *et al.* (2015), Philip *et al.* (2019) and Muthulakshmi *et al.* (2022).

Correlation stud

Knowledge on the degree of association among quantitative characters would helps to know the characters whose selection would automatically result in an overall progress of positively correlated characters and elimination of negatively correlated characters. The data on correlation studies on various characters are presented in Table 2, figure 1a and Table 3, figure 1b. for Rose Sherbet (V1) and Pusa Alapana (V2). For the character plant height none of the characters showed significant positive correlation for Rose Sherbet and Pusa Alapana. Plant spread had positive and significant correlation with number of inflorescence per plant for Rose Sherbet. The character number of inflorescence per plant had positive and significant correlation with total number of flower per plant and weight of flower per plant for variety Rose Sherbet whereas, significant and positive correlation for total number of branch per plant for variety Pusa Alapana. Total number of flower per plant showed highly significant and positive correlation with weight of flower per plant for Rose Sherbet and Pusa Alapana. However total number of branch per plant had significant and positive correlation with weight of flower per plant for variety Pusa Alapana. These results are supported by Panwar *et al*. (2012), Verma *et al.* (2013), Prajapati *et al.* (2014), Singh and Katiyar (2014), Singh and Sinha (2020).

Conclusion

From the present experimental findings, it was observed that the variety Rose Sherbet has performed better in terms of vegetative and floral parameters in agro climatic conditions of Neri, Hamirpur, Himachal

Pradesh. It recorded maximum plant height, number of branches per plant, plant spread, maximum fresh flower weight, number of inflorescence and number of flowers/plant. Even though Pusa Alpana exhibit less vigorous growth, they can be planted in high density planting which accommodates more number of plants which subsequently leads to more yield. The correlation among the characters and its relation with plant height, plant spread and number of branches and for flowering parameters viz., number of inflorescence, number of flowers per plant and weight of flower per plant were also studied and justifies the use of these two varieties for loose flower purpose.

Table 1: Descriptive statistics for Rose Sherbet and Pusa Alapana

Characters		Mean	SE	Median	SD	Minimum	Maximum
Plant Height	V1	62.10	1.69	62.00	9.24	44.00	88.00
	V2	77.40	4.34	71.00	23.80	50.00	144.00
Plant Spread	V1	51.60	1.34	53.00	7.33	37.00	64.00
	V2	65.50	2.13	66.00	11.70	47.00	95.00
No. of inflorescence per plant	V1	3.30	0.19	3.00	1.02	2.00	6.00
	V2	4.83	0.22	5.00	1.18	3.00	7.00
Total no. of flower per plant	V1	35.80	2.52	34.50	13.80	13.00	69.00
	V2	44.50	2.82	45.50	15.50	19.00	89.00
Total no. of branch per plant	V1	3.43	0.18	3.00	0.97	2.00	6.00
	V2	4.80	0.24	5.00	1.32	2.00	7.00
Weight of flower per plant	V1	72.40	4.89	69.00	26.80	34.00	138.00
	V2	121.00	6.54	126.00	35.80	57.00	201.00

V1: Pusa Alapana, V2: Rose Sherbet

Table 2: Correlation of Rose Sherbet

	PH	PS	NIPP	TNFPP	TNBPP	WFPP
PH	-					
PS	0.322	-				
NIPP	-0.073	0.440*	-			
TNFPP	0.236	0.176	0.439*	-		
TNBPP	0.053	0.107	0.316	0.278	-	
WFPP	0.199	0.151	0.451*	0.995***	0.266	-

Note. * p < .05, ** p < .01, *** p < .001

Table 3: Correlation of Pusa Alapana

	PH	PS	NIPP	TNFPP	TNBPP	WFPP
PH	-					
PS	0.331	-				
NIPP	-0.184	0.027	-			
TNFPP	-0.121	0.188	-0.052	-		
TNBPP	0.196	0.353	0.531**	0.352	-	
WFPP	-0.235	0.224	0.081	0.717***	0.532**	-

Note. * p < .05, ** p < .01, *** p < .001

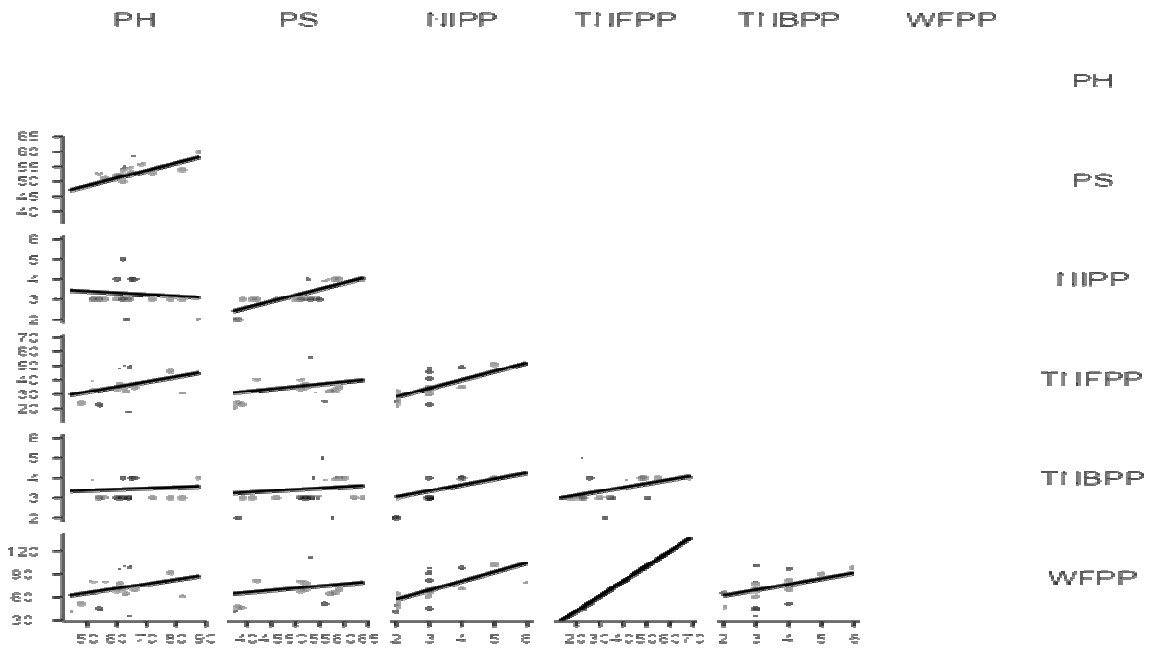

Fig. 1a: Graphical presentation of Correlation for Rose Sherbet

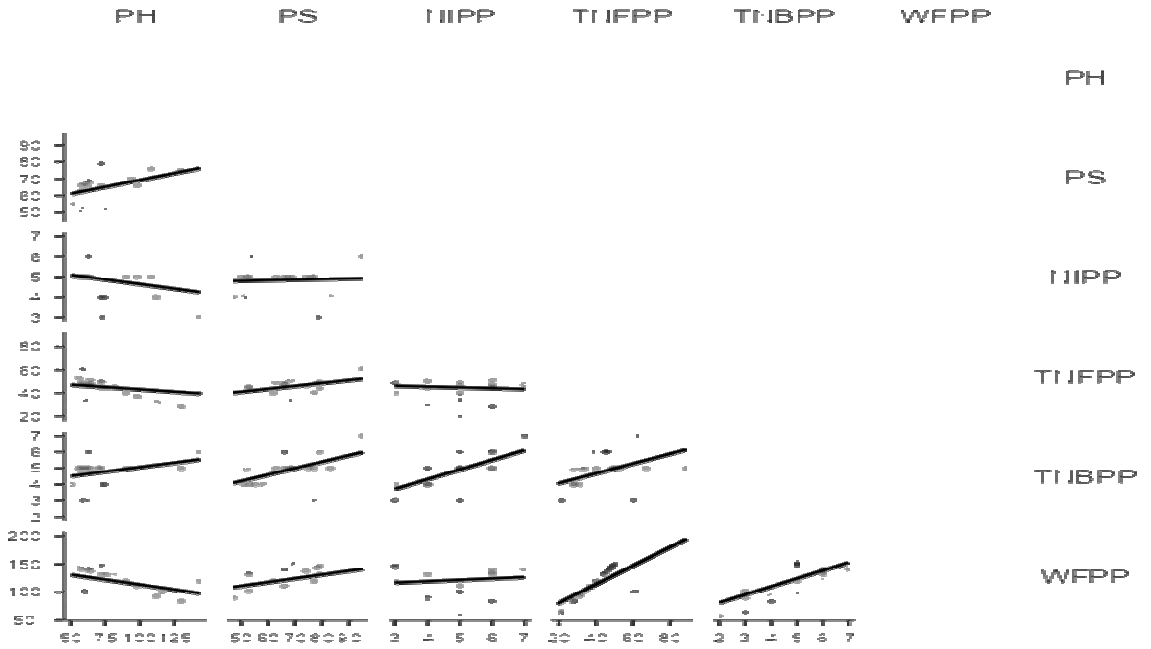

Fig. 1b : Graphical presentation of Correlation for Pusa Alapana

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