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Varietal Evaluation of Hybrid Tea Rose under Prayagraj Climatic Condition

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A B S T R A C T

An experiment entitled "Varietal evaluation of Hybrid Tea Rose under Prayagraj climatic conditions" was conducted at Horticulture Research field, Naini Agricultural Institute (NAI), SHUATS, Prayagraj during 2019-2020. The experiment was laid out in Randomized Block Design with three replications and twelve plants with a view to find out the overall evaluation of different hybrid tea rose viz. Black Pal, First Prize, Tata Red Rose, Mirinda Lambard, Ivory karan, Double Delight, Best Ever, New Ice Berg and Purple Delight on the basis of different growth and flower yield. Maximum plant height was found in DOUBLE DELIGHT(39.76 cm), maximum no of branch was found in FIRST PRIZE and MIRINDA LAMBARD (7.08), maximum no of leaves was found in DOUBLE DELIGHT (29.58), maximum stem girth was found in DOUBLE DELIGHT (3.14 cm), maximum no of buds as found in DOUBLE DELIGHT (12.50), maximum no of stalk length was found in BEST EVER(25.95 cm),maximum days taken for bud to become flower is PURPLE DELIGHT(11.66days), maximum flower diameter was found in BEST EVER (25.92 cm) and maximum vase life was found in FIRST PRIZE (7.75 days).

Introduction

A Rose is a woody Perennial plant of the genus *Rosa*, in the family *Rosaceae*. It bears with chromosome number 2n = 4x = 28. There are over three hundred Rose species and thousands of Garden roses. *Rosaceae* is one of the nature's beautiful creations and is universally acclaimed as the „Queen of flowers" due to its great aesthetic value and magnificent flowers. Most of the species are native to Asia, with smaller number of species native to Europe, North America and Northwest Africa. The genus Rosa is naturally distributed throughout the temperate and subtropical regions of the northern hemisphere. It has been cultivated for the last 5000 years during ancient civilization of China, Western Asia and Northern Africa.

In landscape gardening, also rose is an important ornamental plant because of its adaptability to a wide range of climate and the habitats. The great demand for roses is attributed mainly to its different types having beautiful flowers of exquisite shape, different sizes, bewitching colours and most delightful fragrance has made it an important flower for

plant and also for production of extremely high value allied products like rose oil, its varied uses such as cut flower, interior decoration, making bouquets, as a garden plant, as pot rose water, gulkand, gulrogan hair oil, rose honey and rose conserve.

Hybrid Tea are group of roses originally developed from crossing between Hybrid Perpetuals and garden purpose the rose plants should produce more number of flowers per unit area over a longer scented flowers. The genetic character of a variety influences the growth and flowering performance of roses to a great extent.

The significant variations in the plant growth and flowering have been noted at the species level and also within the cultivars. Garden roses are uniquely different from cut roses on account of production of more number of flowers per stem unlike cut roses. The present day Hybrid Tea roses by far the most popular type bearing large, highly period of time.

Flower traits such as floral architecture, petal color, and recurrent flowering are key characters that have been subjected to artificial selection pressure during domestication and crossbreeding. The inheritance of different characters including flower colour and flower size are important parameters for the selection of parents, besides stem length, flower yield, plant vigor and resistance to diseases and pests.

The range of variability for both vegetative as well as floral characteristics in rose is huge. Like other flowers, the growth and flowering habit of roses is governed by genetic factors. The significant variation in growth and flowering behaviour of different rose genotypes and species have been observed which is associated with inherent genetic variation of the genotypes and species (Arora 2007).

Many available cultivars of roses are suitable for almost all the purposes. The tall varieties having height of several meters are suitable for planted as background or making hedges. In contrast, miniature roses with dwarfing nature and small cluster of flowers are also available.

The extent of variability is of principal importance for the improvement of crop because if there is variability found in the germplasm, there are better chances for selecting superior genotypes (Bose and Mukherjee 2012)

Materials and Methods

The present investigations entitled, "Varietal evaluation of Hybrid tea rose under Prayagraj climatic conditions" were carried out at the Research Farm, Department of Horticulture (Floriculture and Landscaping), Naini Agricultural Institute Sam Higginbottom university of Agriculture, technology and Sciences, during October -2019 to February-2020.

Geographical location

The experiment was conducted during winter season of the year 2019-20 in crop Research Field, department of Horticulture, Naini Agricultural Institute, Sam Higginbottom university of Agriculture, technology and Sciences, Prayagraj the area is situated on the South of Prayagraj on the right bank of river Yamuna at Rewa Road at a distance of about 6km from Prayagraj city. It is situated at $25^{o}.85'$N latitude and $81^{o}.57'$E longitude on elevation of 98 meters from the sea level.

Climate and weather

The area Prayagraj district comes under Subtropical belt in the South East of Uttar Pradesh, which experience extremely hot

summer and fairly cold winters. The maximum temperature of the location reaches up to 46°C - 48°C and seldom falls as low as 2°C – 5°C has the relative humidity ranged between 20 to 94 percent. The average rainfall in this area is around 1013.4 mm annually.

Results and Discussion

Plant height (cm)

Among the different varieties under study at 30, 60 and 90 days after planting variety Double Delight (24.3, 30.93 and 39.76) respectively, was found to be tallest, followed by variety Ivory Karan (23.33, 29.77 and 36.58) respectively, followed by variety purple delight (22.18) in 30 days after planting and variety Mirinda Lambard (28.71 and 35.72) respectively in 60 and 90 days after planting, which were at par with each other and smallest plant height was found in variety Check Mate (15.72, 20.63 and 27.56) respectively (Table 1).

Stem girth (cm)

The maximum stem girth was observed under study at 30, 60 and 90 days after planting in variety First Prize (1.18) in 30 days after planting and in Variety Double delight and CheckMate (2.44 and 3.14) in 60 and 90 days after planting respectively, followed by variety Black Pal (1.16 and 2.40) in 30 and 90 days after planting respectively and variety First Prize (1.73) in 60 days after planting, followed by Variety Ivory Karan (1.15) in 30 days after planting and in Variety Check Mate (1.63) in 60 days after planting and in variety.

First Prize (2.35) in 90 days after planting, which were at par with each other and minimum stem girth was observed in 30 60 and 90 days after planting was found in variety Purple Delight (1.08) in 30 days after planting and in variety Black pal (1.41) in 60 days after planting and in variety Ivory Karan (1.90) in 90 days after planting.

Number of days taken from bud to flower (days)

Variety Purple delight (11.66 days) required the longer time period to form flower from bud followed by variety Black Pal, CheckMate and Ivory Karan (11.41 days), followed by variety First Prize (11.25 days), followed by Mirinda Lambard, Best Ever, New Ice Berg which required 11.16days, 11.08days, and 11.00 days for forming the flower from bud.

The variety Double Delight (10.66 days) required the minimum number of days to form flower from bud after planting

Number of buds per plant (n)

Variety Double delight (12.50) had significantly highest number of buds among the varities under study followed by variety Ivory Karan and Best Ever (8.58), followed by variety Mirinda Lambard (7.08), followed by variety Black pal (6.91), First Prize (6.66), Purple Delight (5.08), CheckMate (4.41)and New Ice Berg (4.08) which were at par with each other regarding of number of buds per plant

Flower diameter (cm)

Variety Best Ever (25.92) had significantly maximum diameter among the varieties under study followed by varieties Mirinda Lambard (23.59), variety Double Delight (23.16), variety CheckMate (16.10), Variety Purple Delight (14.85), variety Ivory Karan (12.48), Variety New Ice Berg (8.78), variety First Prize (6.55) which were at par with each other had significantly minimum diameter was found in variety Black Pal (5.50).

Table.1

sl.no	Varieties	Plant height (cm)	Stem girth (cm)	No. of days taken from bud to flower	No. of buds	Flower diameter (cm)	Stalk length (cm)	Vase life
1	Blackpal	29.72	2.4	11.41	6.91	5.50	18.82	7.25
2	First Prize	33.05	2.35	11.25	6.66	6.55	17.65	7.75
3	Checkmate	27.56	1.99	11.41	4.41	16.10	19.87	7.58
4	Mirinda Lambard	35.72	1.97	11.16	7.08	23.59	21.45	6.50
5	Ivory Karan	36.58	1.90	11.41	8.58	12.48	21.60	6.50
6	Double Delight	39.76	3.14	10.66	12.50	23.16	23.37	7.08
7	Best Ever	33.91	2.20	11.08	8.58	25.92	25.95	7.16
8	New Ice Berg	32.25	2.16	11.00	4.08	8.78	17.95	6.91
9	Purple Delight	33.29	2.30	11.66	5.08	14.85	20.05	6.91
	Mean	**33.5**	**2.27**	**11.23**	**7.1**	**15.21**	**20.74**	**7.07**
	Cv	**17.40**	**4.87**	**4.52**	**13.2**	**32.28**	**1.74**	**5.84**
	f.ratio	**1.15**	**33.54**	**1.0**	**23.07**	**7.26**	**165.30**	**3.21**
	f.prob	**0.38**	**0.00**	**0.47**	**0.00**	**0.00**	**0.00**	**0.02**
	S.E±	**3.37**	**0.06**	**0.29**	**0.54**	**2.83**	**0.20**	**0.23**
	C.D 5%	**-**	**0.19**	**-**	**1.62**	**8.50**	**0.62**	**0.71**
	C.D 1%	**-**	**0.26**	**-**	**2.23**	**11.71**	**0.86**	**0.98**
	Range Lowest	**27.56**	**1.90**	**10.66**	**4.08**	**5.50**	**17.65**	**6.50**
	Range highest	**39.76**	**3.14**	**11.66**	**12.5**	**25.92**	**25.95**	**7.75**

Flower stalk length (cm)

The variety Best Ever (25.95)significantly had longest flower stalk then the other varieties followed by varieties Double delight (23.37), Ivory Karan (21.60), Mirinda Lambard (21.45), Purple Delight (20.05), CheckMate (19.87), Black Pal (18.82), New Ice Berg (17.95) which were at par to each other variety First Prize (17.65) had significantly shortest stalk length among the varieties.

Vase life (days)

The variety First Prize (7.75 days) had significantly show maximum vase life in plain water followed by varieties CheckMate (7.58 days), Black Pal (7.25days), best Ever (7.160days), Double Delight (7.08 days), New Ice Berg (6.91days), Purple delight (6.91days) which were at par with each other variety Mirinda Lambard (6.50days) and Ivory Karan (6.50days) had significantly minimum

In conclusion the based on the present investigation on varietal evaluation of hybrid tea rose, it is concluded that the variety Double Delight was found best in terms of yield flowers per plant and even for the height of the plant while variety First Prize and Mirinda Lambard was found having most number of stalk per plant and in terms of flower size and quality variety Best Ever is the best among all the varieties while variety First Prize have the long vase life in normal water.

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