



## ASSESSMENT OF ROSE (*Rosa* spp.) GERMPLASM IN UTTARAKHAND

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**Abstract:** The present study comprises of assessment of twenty one genotypes of rose (*Rosa* spp.) under tarai conditions of Uttarakhand for fourteen vegetative and floral attributes. A significant variation was recorded among all the genotypes for different parameters. Cultivar Nurjahan attained maximum thorn density and plant height at second flower flush, whereas cultivar Lady-X exhibited maximum plant spread and maximum number of flowers/plant. Genotype Arjun produced maximum shoot length after 15 days and one month of bud sprouting along with maximum number of flowers at first flush. Cultivar Jantar Mantar was earliest to attain reproductive phase along with maximum length of sprouted bud. Pusa Manhar was another genotype of rose with maximum flower bud diameter. Cultivar Superstar attained maximum flower diameter, whereas Ranisabiba produced maximum number of petals/flower and total shelf life of flowers.

**Key words:** Assessment, genotype, rose.

### I. Introduction

Rose (*Rosa* spp.), popularly known as Queen of flowers, is one of the leading cut flowers in national and International market. No other flower is a better symbol of love, adoration, innocence and other virtues than the rose. It is a commercial cut as well as loose flower belonging to family Rosaceae. It is widely cultivated as bedding plant in landscape design. Beside this, it occupies cleansing, antibacterial, antispasmodic, antiviral and aphrodisiac properties and can be used for balancing and regulatory hormones. Flowers due to higher shelf life, wide array of colours and sizes are used in decoration. Although a large number of rose varieties are present, yet many growers are forced to cultivate mixtures due to unavailability of pure varieties. However, demand of uniform, slow opening, medium sized, compact flowers with bright colours and more shelf life are very high in domestic market. In India, limited work has been done to maintain and evaluate the rose varieties. Hence, concerted efforts have been made to evaluate twenty one germplasm of rose for various growth and flowering attributes.

### Materials and Methods

The present investigation was conducted at Model Floriculture Centre, Department of

Horticulture, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar. The experimental material consisted of twenty one genotypes of rose, collected from various parts of India and plants were maintained at Model Floriculture Centre, Pantnagar. The experiment was laid out in randomized block design (RBD) with three replications. The experiment was conducted in open field at spacing of 60 x 60 cm. Each treatment of each replication had 16 budded rootstocks, out of which 10 plants were selected randomly and observations were recorded. Fourteen parameters covering vegetative and floral attributes were recorded. The observations recorded were plant height at second flower flush, plant spread, length of shoot after 15 days of bud sprouting, length of shoot after one month of bud sprouting, thorn density, days taken to bud sprouting, length of sprouted bud, days taken to anthesis, flower bud diameter, flower diameter, number of petals/flower, number of flowers at first flush, number of flowers/plant and shelf life of flower.

### Results and Discussion

The analysis of variance revealed significant variation among twenty one germplasm of rose for all growth and flowering attributes. The data

presented in Table 1 depicted wide variation in plant height at second flower flush (ranging from 29.35 to 68.13 cm) in between germplasm Lady-X and Nurjahan (Table 1). Statistically higher value for plant spread was observed in germplasm Lady-X (91.27 cm) that was at par with Jantar Mantar (90.92 cm). The results were in close conformity with the findings of Wahi and Bhattacharjee (2000) and Palai *et al.* (2003) in rose. Cultivar Arjun produced maximum length of shoot after 15 days and one month of bud sprouting (25.04 and 44.24 cm, respectively). Wide variation in thorn density was depicted in between Dr. Bharat Ram (8.88) and Nurjahan (133.66) (Table 1). The reason for these differences is probably due to different physiological requirement and genetic potential of different germplasm. These finding are in agreement with the study of Lal *et al.* (1982) in rose.

Different rose germplasm exhibited pronounced variation and significant differences in all the flowering attributes (Table 1). Cultivar Pusa Gaurav took minimum days to bud sprouting (10.10 days) which was statistically at par with cultivar Pusa Manhar, Dr. Bharat Ram and Mother Teresa. Jantar Mantar produced maximum length of sprouted bud (6.10 cm) but attained minimum days to anthesis (4.17 days). The results are in close conformity with Singh *et al.* (2004) in marigold and Dhiman (2003) in chrysanthemum who noticed wide

range of variation in days taken to bud initiation and flowering. Cultivar Pusa Manhar attained maximum bud diameter (2.02 cm), whereas Super Star exhibited maximum flower diameter (9.99 cm). The results were in close conformity with the work of Singh and Singh (2005) and Singh and Singh (2006) who evaluated different lines of marigold on the basis of various morphological parameters. Maximum number of petal/flower and total shelf life of flower were recorded with Ranisahiba (49.76 and 13.61 days, respectively). These finding are in agreement with Lal *et al.* (1982) and Palai (2003) who also found wide variability for thorn density, number of flowers per plant, number of petals per flower and plant height in rose. Cultivar Arjun exhibited maximum number of flowers at first flower flush (9.96) which was at par with Dulhan (9.03). A wide variation in number of flowers/plant was observed from 33.80 to 94.72 in Ranisahiba and Lady-X. Maximum yield of Lady-X was significantly at par with the flowers produced by cultivar Pink Parfait and Pusa Muskan (93.62 and 92.22, respectively). Significant differences with the same findings were noticed with the studies of Srinivas and Gowda (1995) in dahlia for number of florets and flower diameter and Chandrababu and Sharma (1999) in *Prunus dulcis* for number of flowers/unit shoot length.

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Table 1: Performance of different rose genotypes under *tarai* conditions

Characters Treatments	Plant height at second flower flush (cm)	Plant spread (cm)	Length of shoot after 15 days of bud sprouting (cm)	Length of shoot after one month of bud sprouting (cm)	Thorn density	Days taken to bud sprouting	Length of sprouted bud (cm)	Days taken to anthesis	Bud diameter (cm)	Number of petals/flower	Flower diameter (cm)	Number of flowers at first flower flush	Number of flowers/plant	Total shelf life (days)
Happiness	53.90	36.13	21.89	42.96	11.27	20.69	1.68	5.22	1.57	28.30	9.17	2.99	43.64	10.39
Super Star	45.27	69.92	12.03	36.65	12.78	19.36	2.27	5.44	1.78	21.30	9.99	3.71	50.04	8.72
Kiss of Fire	39.30	57.38	15.91	28.34	95.30	18.93	2.94	7.14	1.70	31.14	7.89	5.03	51.32	11.67
Lady-X	29.35	91.27	14.10	25.85	23.67	22.46	2.72	4.80	1.62	32.68	7.76	8.62	94.72	12.00
Ranisahiba	67.12	35.55	12.14	37.43	112.68	19.90	2.99	7.99	1.61	49.76	6.75	6.38	33.80	13.61
Nurjahan	68.13	59.74	11.13	39.36	133.66	20.03	3.17	5.77	1.70	42.56	5.51	8.73	44.91	10.88
Pusa Magic	60.70	81.68	19.79	28.24	60.57	12.75	3.46	5.09	1.68	32.03	5.71	7.44	56.94	8.42
Pink Parfait	43.08	71.44	13.51	17.95	9.30	13.63	3.47	4.81	1.43	25.42	8.28	6.72	93.62	10.71
Raktgandha	40.75	38.60	19.61	22.81	37.69	13.51	3.46	5.01	1.64	30.85	8.82	6.95	41.92	13.14
Pusa Gaurav	50.00	42.77	21.50	28.08	20.32	10.10	4.71	5.67	1.36	33.66	7.71	6.58	34.98	9.13
Pusa Virangana	53.30	57.13	13.95	18.65	13.60	14.07	4.81	4.99	1.48	28.40	8.05	6.70	62.26	7.87
Jantar Mantar	50.74	90.92	14.28	20.16	16.23	15.60	6.10	4.03	1.50	21.02	8.41	7.76	59.35	7.85
Raktima	49.82	62.49	15.37	22.84	23.33	12.92	2.64	4.17	1.67	22.33	8.94	7.25	43.11	8.31
Pusa Muskan	45.19	55.67	15.31	20.50	33.86	13.92	1.75	4.77	1.38	33.66	7.12	8.54	92.22	9.01
Pusa Urmila	42.56	79.99	12.27	16.37	18.04	13.96	3.92	4.37	1.66	23.94	7.67	7.72	40.70	7.21
Dr. Bharat Ram	42.76	40.75	16.33	18.78	8.88	12.31	3.36	4.63	1.51	20.53	5.76	8.14	64.41	6.86
Dr. M. S. Randhawa	44.48	55.64	8.19	12.82	12.53	14.77	4.24	4.38	1.69	26.98	7.43	8.19	38.09	8.27
Pusa Manhar	43.65	72.71	9.92	14.91	13.38	11.83	3.88	4.65	2.02	25.51	8.49	7.68	48.32	8.00
Mother Teresa	40.05	72.34	13.18	13.92	60.47	15.54	4.80	4.05	1.62	21.89	8.07	5.60	35.03	6.36
Arjun	42.64	87.04	25.04	44.24	20.46	12.55	4.94	6.19	1.75	28.73	9.25	9.96	56.60	11.91
Dulhan	45.10	77.76	19.51	27.85	27.39	15.74	3.56	5.45	1.73	33.33	7.97	9.03	60.66	10.06
GM	47.52	63.66	15.47	24.22	36.45	15.45	3.56	5.17	1.62	29.24	7.84	7.13	54.13	9.40
SEM±	0.71	0.56	0.50	0.46	1.06	0.30	0.12	0.13	0.05	0.40	0.14	0.28	0.96	0.26
CD 1%	2.73	2.15	1.91	1.74	4.04	1.14	0.45	0.48	0.21	1.54	0.53	1.08	3.68	1.00
CD 5%	2.04	1.61	1.43	1.30	3.02	0.85	0.34	0.36	0.16	1.15	0.40	0.81	2.75	0.75
CV	2.60	1.53	5.60	3.26	5.02	3.33	5.75	4.22	5.84	2.38	3.06	6.85	3.07	4.83