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EVALUATION OF SCENTED ROSE VARIETIES FOR YIELD AND QUALITY OF FLOWERS

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Abstract

A field experiment was conducted at farm of Horticulture Section, College of Agriculture, Nagpur (Maharashtra), India during *kharif* season of 2014-2015 with view to study the yield and quality of flowers as influenced by rose cultivars. The experiment was laid out in Randomized Block Design with seven scented rose varieties (Sugandha, Chardony, Kumkum, Tajmahal, Birendranath, Bonnie Nuit and Dr. M. S. Randhawa) with three replications. The results of the experiment revealed that the *cv.* (V_1) Sugandha recorded that significantly maximum yield parameters in respect of number of flowers plant^{-1} (239.07), flowers plot^{-1} (2207.33), flowers ha^{-1} (49.05 lakhs), yield of flowers plant^{-1} (2.14 kg), yield of flowers plot^{-1} (21.43 kg), yield of flowers ha^{-1} (476.29 qt), petals plant^{-1} (1.45 kg) petals plot^{-1} (14.53 kg) and petals ha^{-1} (322.96 q). With respect of yield parameters and quality parameters *viz*., diameter of flower (8.88 cm), vase life (2.67 days), shelf life (15.04 hrs) were recorded maximum with Sugandha whereas, *cv.* Dr. M. S. Randhawa had recorded significantly maximum number of petals flower^{-1} (63.77), Kumkum recorded maximum weight of petals flower^{-1} (6.91 g) and maximum weight of flower (9.87 g).

Key words : Scented rose varieties, quality, yield.

Introduction

Rose (*Rosa hybrid* L.) belongs to the family *Rosaceae* and remains a major ornamental plant for cut flower trade all over the world. It is considered to be an ancient flower and scientists assume that the evolution of rose started 60 million years and originated in Asia. Rose is the most popular of all the flowers because of its beauty and fragrance and is called the "Queen of Flowers". Roses are immensely important for landscaping and no garden is considered complete without roses. Rose flowers without stalk and loose flower petals are used in traditional markets for making garlands, for offering in temple, while the cut roses with stalk mainly used for bouquets, interior decoration, religious and social functions and floral arrangements. Besides Damask rose (*Rosa damascena*) and Edward rose (*Rosa bourboniana*) are cultivated for rose attar and other products. Rose petals are used for making candy, wine, gulkand, gulabjal (rose water), rose oil, rose perfume and pankhudi. As the commercial cultivation of rose is gaining importance, introduction and identification of high yielding scented varieties is necessary. Hence, it is important to study morphological variation and performance of rose in respect of yield and quality. Therefore, the present study was undertaken entitle "Evaluation of scented rose varieties for growth and flower yield."

Materials and Methods

An experiment entitled "Evaluation of scented rose varieties for growth and flower yield" was carried out at Horticulture Section, College of Agriculture, Nagpur (Maharashtra), India during July, 2014 to March, 2015. Experiment was laid out in RBD with three replications and seven cultivars *viz*., Sugandha, Chardony, Kumkum, Tajmahal, Birendranath, Bonnie Nuit and Dr. M. S. Randhawa.

Two years old rose plants of *cv.* Sugandha, Chardony, Kumkum, Tajmahal, Birendranath, Bonnie Nuit, Dr. M. S. Randhawa which were budded on the *Rosa indica cv. Odorata* rootstock were selected for investigation. 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 experimental plots were prepared as per the plan of layout. The healthy roseplants were selected and planted with the spacing of 60 cm × 60 cm. Recommended dose of nutrients @ 200 kg N, 200 kg P_2O_5 and 100 kg K_2O ha^{-1} was applied.

Half dose of N, full dose of P and K were applied as a basal dose at the time of transplanting and remaining half dose of N was given one month after transplanting. Fertilizers were applied in the form of Urea, Single Super Phosphate (SSP) and Muriate of Potash (MOP) respectively. Diammonium phosphate (DAP) and Humic acid were also applied 60 DAT.

Five plants from each plot were selected and used foe recoding observations. Observations in respect of vegetative growth *viz*., height of plant, stem diameter, branches plant^{-1}, leaves branches^{-1}, leaf area were recorded at 180 DAT and thorn intensity at 15 cm length^{-1} were recorded at 50 DAT and flowering parameters *viz*., days to initiation of flower bud, days to 50% flowering, days to first harvesting and flowering span were also recorded and data were statistically analysed in RBD as per method given by Panse and Sukhatme (1967).

Results and Discussion

The data presented in table 1 revealed that different varieties had significant effect on yield and quality parameter of scented Rose.

Yield parameters

Significantly maximum number of flowers plant^{-1} (239.07), flowers plot^{-1} (2207.33), flowers ha^{-1} (49.05 lakhs) were recorded in *cv.* Sugandha, which was followed by the *cv*. Kumkum (230.00, 2030.00 and 45.14 lakhs), Tajmahal (197.80, 2025.43 and 45.11 lakhs), Bonnie Nuit (197, 1970 and 43.77 lakhs), Dr. M. S. Randhawa (188.40, 1782.80 and 39.61 lakhs) Birendranath (181.53, 1770.40 and 39.34 lakhs). However, minimum number of flowers plant^{-1}, plot^{-1}, ha^{-1} were recorded in *cv.* Chardony (168.00, 1653.33 and 36.73 lakhs). Whereas significantly maximum yield of flowers plant^{-1} (1.99 kg), yield of flower plot^{-1} (21.43 kg), yield of flowers ha^{-1} (476.29 qt) were recorded in variety Sugandha which was significantly superior over all other *cv*, which was found to be at par the *cv*. Kumkum (1.99 kg, 19.93 kg and 442.96 qt). However, minimum yield of flowers plant^{-1}, plot^{-1}, ha^{-1} were recorded in variety Bonnie Nuit (0.72 kg, 7.20 kg and 160.00 qt). Similarly significantly maximum yield of petals plant^{-1} (1.45 kg), petals plot^{-1} (14.53 kg), petals ha^{-1} (322.96 qt) were recorded in *cv.* Sugandha, which was found to be at par with *cv.* Kumkum (1.40 kg, 13.97 kg and 310.37 qt). However, minimum yield of petals plant^{-1}, plot^{-1}, ha^{-1} were recorded in *cv.* Bonnie Nuit (0.39 kg, 3.90 kg and 86.66 qt).

From the above results, variety Sugandha recorded significantly maximum number of flowers plant^{-1}, plot^{-1} and ha^{-1}. Variation for yield of flowers plant^{-1}, plot^{-1} and ha^{-1} and petals plant^{-1}, plot^{-1} and ha^{-1} among the rose varieties was mainly attributed due to the genetic makeup of the varieties. The result indicate that among these seven varieties Sugandha had better growth performance followed by Tajmahal, Dr. M. S. Randhawa, Birendranath and Chardony. It is clear fact that the production potential of any plants which is ultimately governed by genetic factor to a great extent. Similar results are with the investigation of Lundstad (1975) evaluated 45 new cultivars of Floribunda roses found the cultivars Gold Rausch and Tiptop produced flowers with high diameter (9.50 cm). Bhattacharjee *et al*. (1993) conducted an experiment at Pusa, New Delhi and studied on flower quality and vase life of roses and reported highest flower diameter with Rakthagandha and the *cv.* Sonia Meilland was earliest to initiate flowering after pruning, the *cv.* Raja Surendera Singh of Nalagarh recorded maximum vase life of (10.60 days), followed by Dr. B. P. Pal (9.8 days). Tabassum *et al*. (2002) studied on evaluation of rose cultivars as flower production and observed the maximum flower size (7.93 cm) in rose cultivars Alexendra and Paradise for cut flower production. Alexendra and paradise had maximum flower size (7.93 cm), maximum number of petals (59.20) in Yankee Doodle and longest life persistency (17.17 days) in Golden Times was recorded. Mohanty *et al*. (2011) conducted an experiment in Orissa during 2006-2007 to study the comparative performance of rose varieties *viz,* Gladiator, Minuparle and Montezuma with respect to various floral characters like stem length of flower (30.61cm), largest flower bud (3.54 cm) and maximum bud diameter (3.52cm) and number of petals per plant (44.37) and concluded that Gladiator is the most ideal variety for using as cut flower.

Quality

The data in table 2 revealed that significant differences were recorded among the rose varieties in respect of diameter of flower, petals flower^{-1}, wt. of petals flower^{-1}, wt. of flower, vase life and shelf life. Significantly maximum diameter of flower (8.88 cm) was recorded in *cv*. Sugandha, which was found to be at par with the *cv*. Tajmahal and Birendranath (8.27 and 8.13 cm), respectively. However, significantly minimum diameter of flower was recorded in *cv.* Chardony (6.77 cm). Petals flower^{-1} (63.77 cm) was recorded in *cv*. Dr. M. S. Randhawa. However, significantly minimum petals flower^{-1} (25.07) recorded in variety Bonnie Nuit. wt. of petals flower^{-1} (6.91 cm) was recorded in *cv.* Kumkum which was found to be at par with the variety Sugandha (9.05 g). However, significantly minimum wt. of petals

Table 1: Evaluation of scented rose varieties for yield and quality of flowers

Treatments	No. of flowers plant^{-1}	No. of flowers plot^{-1}	No. flowers ha^{-1}	Yield of flowers plant^{-1}	Yield of flowers plot^{-1}	Yield of flowers ha^{-1}	Petals plant^{-1}	Petals plot^{-1}	Petals ha^{-1}	Diameter of flower	No. of petals flower^{-1}	Wt. of petals flowers^{-1}	Wt. of flower	Vase life	Shelf life
V_1 – Sugandha	239.07	2207.33	49.05	2.14	21.43	476.29	1.45	14.53	322.96	8.88	29.60	6.11	9.05	2.67	15.04
V_2 – Chardony	168.00	1653.33	36.73	1.31	13.13	291.84	1.09	10.90	242.22	6.77	39.13	6.51	7.85	1.80	12.22
V_3 – Kumkum	203.00	2030.00	45.11	1.99	19.93	442.96	1.40	13.97	310.37	7.72	50.07	6.91	9.87	2.33	13.39
V_4 – Tajmahal	197.80	2025.43	45.14	1.45	14.50	322.22	0.96	9.63	214.07	8.27	40.67	4.89	7.35	1.67	12.33
V_5 – Birendranath	181.53	1770.40	39.34	0.79	7.93	176.29	0.59	5.90	131.11	8.13	52.27	3.27	4.41	1.67	11.66
V_6 – Bonnie Nuit	197.00	1970.00	43.77	0.72	7.20	160.00	0.39	3.90	86.66	7.17	25.07	2.00	3.68	1.13	9.00
V_7 – Dr. M. S. Randhawa	188.40	1782.80	39.61	0.88	8.80	195.55	0.56	5.57	123.70	7.65	63.77	2.97	4.70	2.33	11.56
F test	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**	**SIG**
SE (m) ±	7.88	56.71	1.25	0.05	0.56	12.52	0.05	0.57	12.71	0.32	1.81	0.91	0.28	0.07	0.82
CD at 5%	23.41	168.42	3.72	0.16	1.67	37.19	0.16	1.69	37.76	0.96	5.37	0.58	0.83	0.22	2.44

flower^{-1} was recorded in Bonnie Nuit (3.68 cm). With respect to vase life and shelf life maximum vase life and shelf life (2.67 days and 15.04 hrs) were recorded in *cv.* Sugandha which was found to be at par with. However, significantly minimum vase life and shelf life was recorded in Bonnie Nuit (1.13 days and 9 hrs).

From the above results, it was found that the variety Sugandha was superior to all quality parameters. This might be due to the fact that the availability of optimum light intensity maintained higher chlorophyll content, which produce and maintain higher carbohydrate reserve that was diverted for quality flower production. There result are in close conformity with the investigation of Millia (1974) conducted the trial of 13 cultivars grafted on Rosa indica the highest yield was obtained from the cultivars Grandmere, Jenny, Camps, Elysees and Carnia with 77.40, 66.90 and 62.19 flowers/m^2, respectively. Gowda *et al*. (1979) reported that rose *cv.* Eiffel Tower produced highest number of marketable flowers (21.50/plant) followed by Jovencelle (16.50), Summer Queen (10.70) Elida Cardinal, First Prize, Agena and John F. Kennedy (4.00). Tabassum *et al.* (2002) conducted an experiment on Day dreams, Alexendria, Paradise Days, etc. cultivars for flowers per plant, flowers per plot, flowers per ha. studied on evaluation of rose cultivars as cut flower production and reported maximum number of flowers per plant (41.00) in rose *cv*. Daydream.

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