

ENVIRONMENTAL RESPONSE OF SOME EXOTIC ROSE CULTIVARS TO D.I. KHAN CONDITIONS

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Abstract

Of the 10 exotic rose cultivars evaluated for their performance and adaptability in the D.I. Khan, Magic Carrousel, Paradise, Pink Delight, Yankee Doodle, and Love were found most promising as compared to Green Sleeves, Oregold, Peer Gynt, Razzle Dazzle and Revenue. Magic Carrousel was dwarf, dense with small sized fragrant flowers and bore maximum flowers per plant per month. Paradise was tallest and produced large sized flowers without fragrance. Pink Delight had maximum flower vase life (8 days) and persistence, in both spring and summer months, with slight fragrance. During spring, 91 petals per flower were counted in Yankee Doodle, while Love produced 47 petals per flower in Summer. Both cultivars were slightly fragrant.

Introduction

From the commercial and aesthetic view point evaluation trials for suitability of different rose cultivars in a given locality has been carried out (Brander, 1985; Gelder, 1985; Abdullaev, 1986; Denchev & Groshkov, 1989; Kaminski & Tracz 1989; Tombolato *et al.*, 1990; Sohne, 1990; Collicutt, 1991; IIsink, 1991; Andersen *et al.*, 1992). As temperature and light are two important factors affecting rose growing, Holcomb & Tsinaraki (1987) subjected Sonia variety to different day temperatures keeping a constant night temperature at 15.6°C in a greenhouse found that most flowers were produced at 23.9°C day temperature with greatest stem length and highest flower quality. Zieslin & Mor (1990) observed light intensity as the most important factor affecting rose plant growth and flowering where low light intensity and short duration of light period owing to seasonal changes or shading resulted in low yield of roses whereas high light intensity, especially during periods of low solar radiation, increased the productivity and quality of flowers. Anderson (1991) found that in 10 cultivars of English rose the first flush of flowers occurred in mid-to late June, while second flood of flower in early August. Experiments were therefore carried out to determine the most suitable exotic cultivars (s) under the climatic conditions of D.I. Khan and to observe their growing habits in this area.

Materials and Methods

Ten rose cultivars viz., Green Sleeves, Love, Magic Carrousel, Oregold, Paradise, Peer Gynt, Pink Delight, Razzle Dazzle, Revenue and Yankee Doodle already bedded on *Rosa damasena* rootstock, were brought from commercial nurseries of Patoki,

Lahore and tested for their performance at the Faculty of Agriculture, Gomal University, D.I. Khan during 1990. Four bushes in each bed (6x6 feet size) were planted on 1st August, 1989.

The parameters studied during the investigation were: days to sprouting (days counted from the pruning date, 1st January, 1990), days to flowering (same as for sprouting), plant height (at the end of growing season, December), number of branches per plant (data recorded at 15 days interval), total flowers bloomed per plant (at one day interval during 10 months period) from March to December), flower vase life (daily), flower size (at 2 days interval), number of petals per flower (at 3 days interval), flower persistence (at 2 days interval), flower colour (daily from bloom), fragrance (early in the morning of half and full bloomed flowers), foliage colour and surface (assessed and compared with that of Hessayon, (1988) before flowering).

The experiment was laid out in a Randomized Complete Block Design, having 10 treatments and three replications. All the data were analyzed statistically using analysis of variance technique (Steel & Torrie, 1980) and Duncan's Multiple Range Test (Duncan, 1955) to determine the significance among the cultivars.

Results and Discussion

Rose cv. Paradise took a maximum of 21 days to sprouting, followed by Razzle Dazzle, Yankee Doodle and Revenue (20 days each) with a minimum of 16 days taken by Magic Carrousel and Love (Table 1). A maximum of 85 days to flowering were taken by the Revenue with a minimum time of 70 days by Magic Carrousel. Paradise was the tallest cultivar of 105.33 cm height with minimum height of 49.33 cm in Oregold. Anderson (1991) reported that plant height was significantly different in many English rose cultivars. A maximum of 9 branches per plant were produced in Magic

Table 1. Days to sprouting, flowering, plant height, number of flows per plant per month, and flower vase life of ten rose cultivars.

Cultivars	Days to Sprouting	Days to Flowering	Plant Height (cm)	Branches Per plant	Total Flowers Per Plant	Flower vase (days)
Green Sleeves	17 b	74 de	89.67 ab	3 cd	33 cd	5 d
Love	16 b	75 d	78.67 bc	5 bc	70 bc	6 c
Magic Carrousel	16 b	70 f	50.00 e	9 a	147 a	5 d
Oregold	17 b	71 f	49.33 e	2 d	77 bc	5 d
Paradise	21 a	76 cd	105.33 a	5 bc	70 bc	7 b
Peer Gynt	19 a	78 c	64.33 cde	4 bcd	60 bcd	7 b
Pink Delight	17 b	82 b	74.33 bcd	4 bcd	103 b	8 a
Razzle Dazzle	20 a	72 ef	55.33 de	6 b	43 cd	6 c
Revenue	20 a	85 a	57.33 cde	4 bcd	20 d	7 b
Yankee Doodle	20 a	82 b	88.00 ab	4 bcd	53 cd	6 c

Means followed by same letter (s) are not significantly different at 5% level of significant according to DMRT.

Table 2. Flower size, number of petals per flowers, and flower persistence in March-April and June-July of ten rose cultivars.

Cultivar	Flower Size (cm)		Petals per Flower		Flower persistence (days)	
	March-April	June-July	March-April	June-July	March-April	June-July
Green Sleeves	7.63 d	4.60 de	17 cd	16 e	16 a	8 a
Love	11.30 ab	5.63 bc	39 bc	47 a	12 c	7 ab
Magic Carrousel	4.83 e	2.83 f	35 bcd	25 de	12 c	5 bc
Oregold	7.87 d	4.80 cde	46 b	32 bcd	8 e	4 c
Paradise	11.57 a	6.97 a	30 bcd	22 de	10 d	4 c
Peer Gynt	9.67 c	5.50 bcd	43 b	39 abc	12 c	8 a
Pink Delight	7.90 d	4.13 e	51 b	35 abcd	16 a	9 a
Razzle Dazzle	8.00 d	5.53 bcd	15 d	21 de	7 e	5 bc
Revenue	10.43 bc	6.37 ab	48 b	29 cde	12 c	7 ab
Yankee Doodle	9.80 c	5.90 b	91 a	44 ab	14 b	8 a

Mean followed by same letter (s) are not significantly different at 5% level of significant according to DMRT.

Carrousel, with a minimum of 2 branches in Oregold. Maximum number of a total of 147 flowers per plant in ten months bloomed in Magic Carrousel followed by Pink Delight (103) with a minimum number of 20 flowers in Revenue. Similarly Andersen *et al.*, (1992) obtained maximum flowers from Dreaming Parade and Victory Parade rose cultivars. Maximum vase life of 8 days was recorded in Pink Delight with a minimum of 5 days. observed in Green Sleeves, Magic Carrousel and Oregold.

During March-April, when the average high temperature was 24.6- 32.7°C a maximum flower size of 11.57 cm was recorded in Paradise followed by 11.30 cm in Love with a minimum of 4.83 cm recorded in Magic Carrousel. During June-July, when the average high temperature was 41.8 and 39.5°C respectively, a maximum flower size of 6.97 cm was again recorded in Paradise followed by 6.37 cm in cv. Revenue with a minimum size of 2.83 cm in Magic Carrousel. The size of almost all the cultivars reduced to nearly half during June-July as compared to that of March-April, which could be due to a rise in temperature of 6.8 to 17.2°C during June-July.

During March-April, a maximum of 91 petals per flower were recorded in Yankee Doodle, with a minimum of 15 petals in Razzle Dazzle whereas in June-July, a maximum number of 47 petals per flower were found in Love with a minimum of 16 petals in Green Sleeves. A reduction in the number of petals per flower was during June-July due to high temperature. Zieslin & Mor (1990) reported that low light intensity and short duration of the light period owing to seasonal changes or shading resulted in low yield of roses.

Maximum flower persistence during March-April was recorded in Green Sleeves and Pink Delight taking 16 days to fading, followed by 14 days in cv. Revenue, while a minimum persistence period of 7 and 8 days respectively was found in Razzle Dazzle and Oregold. On the other hand, maximum flower persistence period of 9 days during

Table 3. Flower colour and fragrance, foliage colour and surface of ten rose cultivars.

Cultivars	Flower colour	Flower Fragrance	Foliage colour	Foliage surface
Green Sleeves	Light pink, changing to light or chartreuse green	Slightly fragrant	Light green	Matt
Love	Red (Crimson) with white reverse.	Slightly fragrant	Dark green	Semi glossy
Magic Carrousel	White with deep pink edges	Fragrant	Dark green	Semi glossy
Oregold	Deep Yellow	Slightly fragrant	Medium green	Semi glossy
Paradise	Pink (Mauve), edges red	No fragrance.	Dark green	Glossy
Peer Gynt	Canary yellow, flushed pink	Slightly fragrant	Dark green	Glossy
Pink Delight	Light pink	Slightly fragrant	Dark green	Matt
Razzle Dazzle	Red (Crimson) with white reverse	Slight fragrant	Medium green	Glossy
Revenue	Creamy white, edges deep pink with yellowish reverse	Slightly fragrant	Dark green	Semi glossy
Yankee Doodle	Yellow with pink edges and apricot shadings	Slightly fragrant	Dark green	Semi glossy

June-July was again recorded in Pink Delight followed by 8 days in peer Gynt, Green Sleeves, and Yankee Doodle while a minimum period of 4 days found was in Oregold and Paradise. Similarly Andersen *et al.*, (1992). stated that Dreaming Parade and Victory Parade had 40-50% longer flower persistence life as compared to other English rose cultivars. Kaminski & Tracz (1989) observed that flowers of cv. Paprika lasted for 10-14 days in June, August and October.

Colour is the most important character for the identification as well as selection of different cultivars. Among the colour changing cultivars Love, Magic Carrousel, Revenue and Yankee Doodle were the most touching ones. According to the panel opinion about the fragrance, Magic Carrousel was on the top. Paradise did not have any smell, whereas rest of all cultivars were slightly fragrant. Fragrance is often affected by weather, temperature and stages of growth.

The result of the present studies shows that all the exotic rose cultivars acclimatized well under the ecological conditions of D.I. Khan especially cvs. Magic Carrousel, Paradise, Pink Delight, Yankee Doodle and Love which can be recommended for plantation in the area.

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