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Evaluation of different hybrids of petunia (*Petunia hybrida*) under Allahabad agro-climatic conditions

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Abstract

The present investigation was carried out to evaluate the performance of 11 different hybrids including control of petunia (*Petunia hybrida*) under Allahabad agro-climatic conditions. Significant differences were observed for all the growth, development and flowering parameters during the period of experimentation but for a number of leaves and earliness, it was found to be non-significant. The data revealed that maximum plant height (13.76 cm), number of leaves (67.00) and number of the branch (11.67) was recorded in hybrid Super Rose. The number of buds (27.22) and the number of flowers (27.22) per plant were found to be maximum in hybrid Sup-Yellow. Earliness was recorded in hybrid Crimson star (55.77 days) among all the hybrids and hybrid Sup-Burgandy recorded maximum diameter of full bloom (5.77 cm). Plant spread (24.22) was obtained maximum in hybrid Sup-Red, whereas, the maximum duration of flowering was noted in Sup-Salmon (33.77 days).

Keywords: Evaluation, *Petunia hybrida*, control

Introduction

Petunia hybrida is one of the most important annual ornamental plants not only for the modern world but since the early days of horticulture and its one of the important genera for developing new varieties. Petunia has the maximum turnover in the international market and rank first among the bedding plants and an important ornamental.

Petunias come in many different beautiful colors. To plant them in a planter, we can mix several colors of petunias together to make a beautiful palette of colors. Today, most cultivated petunia are hybrids and come in the different sized flower of about four inches in diameter. As almost all of them are hybrids in order to make them easier to grow in different soil and temperatures. Once they are growing, they require very little maintenance. We can get an arrangement of just large flowers, only small flowers, or we can mix them in a lovely combination.

The genus petunia belongs to the family Solanaceae and is essentially distributed in South America. The genus was founded by A.L. Jussieu in 1803 upon plants collected from the shores plata river (Sink, 1984) [19] which included two species *P. nyctaginiflora* and *P. parviflora*. The name "Petun" was given to their morphological resemblance to tobacco plant, called "petun" in the native language.

The plant grows well in temperate climates and does not tolerate shade. The innumerable horticultural varieties fall into two general types: the compact erect type, reaching 15–25 cm (6–10 inches) height, and the sprawling long-stemmed balcony petunia, which grows to about 46 cm (18 inches) height and is often potted in hanging baskets and window boxes. The flowers range from pure white to deep crimson or purple and are often speckled or veined in contrasting colors. There are single-bloom and double-bloom varieties.

There are about 30 species in the genus (Sink, 1984) [19] together with one synthetic garden species *P. hybrida*. The origin of garden petunias is rather conjectural, it is believed that *P. hybrida* originated from a cross between a member of the colored group *P. violaceae*, *P. inflata* / *P. axillaris* and *P. inflata*. A wide range of colors and forms have been developed over the years which can be classified on the basis of the characteristic of the flower which is the most prominent part of this ornamental. In essence, there is two chief characteristics of flowers in petunia. These are single and double flowers and in each of these two classes, flowers may be small (Multiflora) or large (Grandiflora). Garden petunia can be resolved in four types namely Multiflora single (small flowered single), Grandiflora single (large flowered single), Multiflora double and Grandiflora double. In all the four classes the colors range from white, shades of red, blue, violet, purple, pink and salmon, together with bicolored types like blue-white, red-white, purple-white and pink white. There are two-toned pinks, blues and purple with veined or laced patterns.

In addition to these four categories, there is the fifth type called as “Superbissima” or “California Giant” which was first discovered in California in about 1888 (Bailey, 1910; Stout, 1952) [1, 20]. In “Superbissima” the flower is very large being 11 cm to 14 cm in diameter. They do not possess the typical petunia shape but are spread out being more open with a very broad and shallow tube. The petals are rather thick with a ruffled texture. Petals may have a netted pattern and are often bi-colored with fringed margin.

Materials and Methods

The experiment was carried out at the Horticulture Research Field, Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS), Allahabad. To find out the best performing hybrids for this region, all together eleven hybrids including the control were grown in open conditions with three replications in a Randomized Block design (RBD) during the season of 2017-18.

Allahabad is situated at an elevation of 78 meters above sea level at 25.87° north altitude and 81.15° E longitude. This region has a subtropical climate prevailing in the south-east part of U.P.

The observations were made on two different parameters, viz., growth parameters (plant height, number of leaves, plant spread and number of branches) and floral parameters (Earliness, number of buds, number of flowers diameter of full bloom and duration of flowering).

Results and Discussion

The mean performance data of growth, development and flowering characters pattern of the petunia hybrids have been presented in Table-1, where all varieties show significant differences, except in number of leaves and earliness it shows non-significant, it was observed that the maximum plant height (13.76 cm) was recorded in hybrid Super Rose which was at par with hybrids Sup-Red (13.69 cm), Sup-Burgandy (13.31 cm), Local Variety (13.28 cm), Sup-Salmon (13.13 cm), Sup-Yellow (12.91 cm) and Picotze-Blue (12.85 cm)

followed by hybrid Vein-Blue vein (12.53 cm). Minimum plant height (11.35 cm) was observed in hybrid Sup-Blush. The maximum number of leaves (67.00) was recorded in hybrid Super Rose followed by hybrids Vein Blue-vein (62.50) and Picotze-Blue (62.37). The minimum number of leaves (44.41) was observed in hybrid Pereoth-Blue. The maximum number of plants spread (27.38 cm) was recorded in hybrid Sup-Red which was at par with hybrids Super Rose (26.74 cm), Sup-Burgandy (25.73 cm) and Vein-Blue vein (25.07 cm) followed by hybrid Picotze-Blue (23.65 cm). The minimum number of plants spread (21.49 cm) was observed in hybrid Crimson star. The maximum number of branches (11.67) was recorded in hybrid Super Rose which was at par with hybrids Sup-Blush (10.67) Local Variety (10.67) and Sup-Red (10.33) followed by hybrid Sup-Salmon (9.00). The minimum number of branches (8.33) was observed in hybrid Pereoth-Blue. Earliness was recorded in hybrid Crimson star (55.77 days) which was at par with hybrids Picotze-Blue (58 days), Sup-Yellow (59 days), Sup-Burgandy (60 days), Local Variety (60.11 days), Pereoth-Blue (60.77 days) and Super Rose (61.11 days) followed by hybrid Sup-Red (63.66 days). The hybrid Sup-Blush (64.66 days) was observed late among all the hybrids. The maximum number of buds (27.22) was recorded in hybrid Sup-Yellow followed by hybrids Sup-Yellow and Sup-Red (22.03). The minimum number of buds (11.98) was observed in hybrid Vein-Blue vein. The maximum number of flowers (27.22) was recorded in hybrid Sup-Yellow followed by hybrid Sup-Red (19.29). The minimum number of flowers was observed in hybrid Local-Variety (9.23). A maximum diameter of full bloom (5.77 cm) was recorded in hybrid Sup-Burgandy, followed by hybrids Super-Rose (5.17 cm) and Picotze-Blue (5.17 cm). The minimum diameter of bloom (4.18 cm) was observed in hybrid Sup-Blush. The maximum duration of flowering (35.78 days) was recorded in hybrid Sup-Red which was at par with hybrid Sup-Salmon (33.77 days) followed by hybrid Local Variety (27.55 days). The minimum duration of flowering (18.11 days) was observed in hybrid Vein-Blue vein.

Table 1: Various growth and flowering parameters as influenced by different hybrids of petunia

Hybrids	Plant Height (cm)	Leaves per plant	Plant Spread (cm)	No. of branch	Earliness (No. of days)	No. of buds	No. of flowers	Diameter of full bloom (cm)	Duration of flowering (No. of days)
Super-Rose	13.76	67.00	23.60	11.67	61.11	16.00	15.33	5.17	21.66
Sup-Blush	11.35	50.73	19.38	10.67	64.66	17.03	14.74	4.18	18.89
Sup-Red	13.69	54.08	24.22	10.33	63.66	22.03	19.29	5.06	35.78
Sup-Burgandy	13.31	48.88	22.67	8.67	60	17.12	14.84	5.77	18.55
Vein-Blue vein	12.53	62.50	22.00	8.67	64	11.98	11.09	4.45	18.11
Crimson star	12.44	45.37	18.62	8.67	55.77	16.39	14.42	4.28	23.55
Picotze-Blue	12.85	62.37	20.58	8.33	58	15.51	15.51	5.17	22.22
Sup-Yellow	12.91	54.47	19.73	8.67	59	27.22	27.22	4.27	23.66
Sup-Salmon	13.13	50.33	19.92	9.00	63.55	14.33	12.11	5.14	33.77
Pereoth-Blue	11.61	44.41	19.14	8.33	60.77	14.10	11.90	4.25	25.67
Local Variety	13.28	61.87	19.77	10.67	60.11	13.76	9.23	4.23	27.55
F-test	S	NS	S	S	NS	S	S	S	S
SE.d(±)	0.44	1.64	1.31	0.64	3.33	0.70	0.66	0.11	1.36
CD at 5%	0.46	3.16	2.62	1.34	6.94	1.47	1.37	0.24	2.84

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