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Varietal performance of bougainvillea under konkan conditions

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Abstract
A comparative study was conducted to evaluate the performance of different varieties of Bougainvillea with respect to sprouting, flower initiation and survival at the Hi-tech unit of the College of Horticulture, Dapoli, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri, from December 2024 to April 2025. The experiment involved eight varieties of bougainvillea namely, M. P. S. (V_1), Pink Beauty (V_2), Dr. Bhabha (V_3), Mary Palmer (V_4), Singapore Red (V_5), Blondie (V_6), Roseville's Delight (V_7) and Gopal (V_8). Findings indicated that the Singapore Red variety was superior, requiring only 8.45 days for sprout initiation and achieving a 100% sprouting and survival rate. Additionally, Pink Beauty demonstrated the highest number of shoots (4.35) and the earliest flower initiation (93 days), while Dr. Bhabha recorded the best fresh to dry shoot weight ratio (3.21) and a shoot to root ratio (1.82).

Keywords: Bougainvillea, varieties, sprouting, survival, varietal performance, Konkan

Introduction
Bougainvillea, belonging to the Nyctaginaceae family and often referred to as the "Glory of Gardens", is a notable climbing ornamental plant found in tropical and subtropical regions around the globe, renowned for its striking beauty and vibrant bracts. This plant, native to South America, was first documented by the French botanist Philibert Commerson in Rio de Janeiro in 1768, and it was named in honor of the French admiral Louis Antoine de Bougainville, highlighting its historical significance. Introduced to India in 1860, Bougainvillea has become a favoured choice for ornamental gardening due to its adaptability as both a shrub and a climbing vine. As hardy evergreens, they can be shaped into various forms, including hedges and topiaries, and are often used to enhance walls and trellises. India is particularly notable for its Bougainvillea diversity, with around 50% of existing cultivars developed there. (Janakiram *et al*., 2013) [2]. Each variety showcases unique characteristics, such as flower color and growth habits, which assist growers in selecting the most appropriate type for their specific needs. Propagation of these varieties is essential for preserving the genetic traits of parent plants, ensuring that true-to-type progeny are maintained, thus emphasizing the importance of choosing the right variety for different regions.

Materials and methods
The research was carried out at the Hi-tech unit of the College of Horticulture, Dapoli, which is situated at an altitude of 243.84 meters above sea level along the western coast of Maharashtra, with geographical coordinates of 17° 45' 32" North and 73° 11' 8" East. The experiment focused on eight bougainvillea varieties viz., V_1 – M. P. S., V_2 – Pink Beauty, V_3 – Dr. Bhabha, V_4 – Mary Palmer, V_5 – Singapore Red, V_6 – Blondie, V_7 – Roseville's Delight and V_8 – Gopal. These varieties were sourced from established mother plants within the college grounds. A potting mix consisting of soil, vermicompost, and cocopeat in a 2:1:1 ratio was prepared and filled in the polybags of size 10 cm × 15 cm, into which hardwood cuttings treated with IBA (1000 ppm) were planted. The data collected were analyzed using the standard analysis of variance method as described by Panse and Sukhatme (1995) [4].

Results and Discussion

Days required for sprout initiation

Significant variation was observed among all varieties of bougainvillea in relation to the days required for sprout initiation. The variety Singapore Red exhibited the earliest sprout initiation at 8.45 days, while the variety Dr. Bhabha required the longest duration to sprout, taking 28.15 days among all tested varieties. The notable differences in sprout initiation among various Bougainvillea varieties underscore the significant role of genetic factors in this essential developmental characteristic. This variation indicates that different cultivars possess unique genetic traits that influence the mechanisms governing dormancy release and meristematic activity. Such distinct disparities in a key growth aspect like sprout initiation carry important consequences for propagation efficiency and the selection of varieties in the field of ornamental horticulture.

Sprouting percentage

Among the varieties tested in the experiment, Singapore Red achieved a sprouting percentage of 100.00%, which was comparable to the 90.83% recorded by the M. P. S. variety. In contrast, Pink Beauty exhibited the lowest sprouting percentage at 45.83%. The variation in sprouting percentages among the tested varieties reveals notable genotypic differences in dormancy and germination vigor. A sprouting rate of 100.00% indicates a high level of physiological readiness for germination under the experimental conditions, suggesting a potentially shorter or less stringent dormancy requirement. In contrast, the significantly lower sprouting percentages may reflect deeper dormancy, unmet specific environmental triggers, or reduced viability of the propagules, emphasizing the critical role of varietal selection in effective propagation strategies. Similar results were recorded by Singh (2012), Nadakuduru and Fatmi (2023), Asif *et al*. (2024) and Borkar *et al*. (2024) [3, 5, 1, 6] in bougainvillea.

Number of shoots per cutting

The Pink Beauty variety achieved the highest number of shoots at 120 days post-planting, with an average of 4.35 shoots, closely followed by the Blondie variety at 3.70 shoots, both of which were statistically similar. In contrast, the Dr. Bhabha variety recorded the lowest average of 1.65 shoots, which was comparable to the M. P. S. variety, which had an average of 2.35 shoots. The variation in shoot production among different bougainvillea varieties highlights the genotypic differences in their capacity for vegetative growth. The highest shoot counts indicate common genetic factors that may enhance shoot development, likely linked to hormone biosynthesis or meristem activity. In contrast, the varieties with fewer shoots may face genetic constraints affecting axillary bud formation or shoot elongation, potentially influenced by internal growth regulators or the distribution of resources.

Fresh to dry shoot weight ratio

The investigation revealed that the variety Dr. Bhabha exhibited significantly superior fresh to dry shoot weight ratio at 3.21, in contrast to the variety Mary Palmer, which recorded a ratio of 2.30. The observed disparity in fresh to dry shoot weight ratios between bougainvillea varieties suggests a notable difference in water content or biomass allocation strategies. The significantly higher ratio indicates a greater proportion of water relative to dry matter in its shoots, potentially implying enhanced water uptake efficiency, more succulent tissues, or specific physiological adaptations for water retention.

Shoot: Root

The variety Dr. Bhabha exhibited the notably higher shoot to root ratio at 1.82, while the variety M. P. S. demonstrated the lowest ratio, recorded at 0.91. The variation in shoot to root ratios among different bougainvillea varieties indicates distinct strategies for resource allocation, which may be associated with their ecological adaptations or genetic potential. A higher shoot to root ratio reflects a significant investment in above-ground biomass, enhancing light capture and photosynthesis, which is particularly beneficial in light limiting environments. In contrast, a lower ratio suggests a stronger focus on root development, improving the efficiency of nutrient and water uptake. This adaptation may be advantageous in arid or nutrient-deficient soils, as well as providing better anchorage and resilience to environmental stressors.

Days taken for flower initiation

During the course of investigation of 120 days, out of the eight varieties under study, three varieties namely Pink Beauty, Blondie and Roseville's Delight showed flower initiation at 93 days, 111 days and 119 days, respectively. The other five varieties were classified as "NF = Not flowered", as these varieties exhibited no flowering within the experimental timeframe. These findings highlight notable genotypic differences in flower initiation time, indicating varying responses to environmental cues or internal developmental processes among the varieties.

Survival percentage

The survival rates of various bougainvillea varieties showed significant differences, with the Singapore Red variety achieving the highest survival rate of 100.00%, outperforming all other varieties. In contrast, the Dr. Bhabha variety recorded the lowest survival rate at 29.17%, which was slightly comparable to the Pink Beauty variety at 32.50% and the Gopal variety at 40.00%. This notable variation in survival rates suggests that different bougainvillea varieties possess distinct genetic traits that influence their resilience to environmental challenges. The exceptional adaptability of the Singapore Red variety may be attributed to its strong disease resistance, efficient water use or tolerance to specific soil and climatic conditions present during the study. Conversely, the lower survival rates of the other varieties indicate a greater vulnerability to environmental stressors, highlighting the need for further research into their physiological constraints and specific environmental needs. Similar results were reported by Singh (2012), Nadakuduru and Fatmi (2023), Asif *et al*. (2024) and Borkar *et al*. (2024) [3, 5, 1, 6] in bougainvillea.

Table 1: Performance of different varieties of bougainvillea related to days required for sprout initiation, sprouting percentage and survival percentage

Notation	Variety	Days required for sprout initiation	Sprouting (%)	Survival (%)
V_1	M. P. S.	10.95	90.83 (72.38)*	82.50 (65.27)
V_2	Pink Beauty	12.60	45.83 (42.61)	32.50 (34.76)
V_3	Dr. Bhabha	28.15	48.33 (44.04)	29.17 (32.69)
V_4	Mary Palmer	14.25	79.17 (62.84)	55.00 (47.87)
V_5	Singapore Red	8.45	**100.00** (90.00)	**100.00** (90.00)
V_6	Blondie	10.45	79.17 (62.84)	54.17 (47.39)
V_7	Roseville's Delight	15.35	78.33 (62.26)	57.50 (49.31)
V_8	Gopal	18.50	65.00 (53.73)	40.00 (39.23)
S.Em.(±)		0.19	4.30	3.98
C.D. @ 5%		0.58	12.96	11.99
Result		SIG	SIG	SIG

Note: *Figures in parentheses are arcsine transformation values.

Table 2: Performance of different varieties of bougainvillea related to number of shoots, fresh to dry shoot weight ratio, shoot: root and days taken for flower initiation at120 days after planting

Notation	Variety	Number of shoots	Fresh to dry shoot weight ratio	Shoot: Root	Days taken for flower initiation
V_1	M. P. S.	2.35	2.77	0.91	NF
V_2	Pink Beauty	4.35	2.61	1.10	Initiated (93 days)
V_3	Dr. Bhabha	1.65	3.21	1.82	NF
V_4	Mary Palmer	3.70	2.30	1.14	NF
V_5	Singapore Red	3.25	2.62	1.69	NF
V_6	Blondie	3.15	2.45	1.16	Initiated (111 days)
V_7	Roseville's Delight	2.75	2.61	1.19	Initiated (119 days)
V_8	Gopal	2.65	2.59	1.16	NF
S.Em.(±)		0.25	0.04	0.01	--
C.D. @ 5%		0.76	0.12	0.03	--
Result		SIG	SIG	SIG	--

Note: NF = Not flowered.

Conclusion

The present study revealed significant variations among the eight bougainvillea varieties examined across various parameters. Notably, the Singapore Red variety achieved a remarkable 100.00% sprouting and survival rate. In terms of growth, the Pink Beauty variety produced the highest number of shoots and required the least amount of time for flower initiation. Additionally, the Dr. Bhabha variety demonstrated the best ratios for fresh: dry shoot weight and shoot: root.

References

1. Asif M, Ali A, Ahmed K, Khan Q, Irshad A, Khalid M, Talpur A, Wahocho SA, Wahocho NA. Evaluation of propagation of bougainvillea under different plantation conditions. J Appl Res Plant Sci. 2024;5(2):249-258.
2. Janakiram T, Jain R, Swaroop K, Narkar ND. Bougainvilleas – glory of the garden. ICAR News Lett. 2013;19(1):6-7.
3. Singh N. Effect of indole butyric acid (IBA) concentration on sprouting, rooting and callusing potential in bougainvillea stem cuttings. J Hortic Sci. 2012;7(2):209-210.
4. Panse VG, Sukhatme PV. Statistical methods for agricultural workers. Rev ed. New Delhi: ICAR; 1995. p. 97-156.
5. Nadakuduru SP, Fatmi U. Performance of different varieties of bougainvillea (Bougainvillea glabra) propagated through hardwood cuttings under Prayagraj shade net house conditions. Int J Plant Soil Sci. 2023;35(18):1628-1632.
6. Borkar YA, Salvi BR, Dalvi NV, Kulkarni MM, Mahadik SG. Studies on types of cuttings for early propagation in different bougainvillea (Bougainvillea glabra) varieties [MSc thesis]. Dapoli (MH): Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Ratnagiri; 2024.