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Studies on different levels of pruning in rose (*Rosa indica* L.) cv. Gladiator

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Abstract

Studies on various pruning levels in rose (*Rosa indica* L.) cv. Gladiator were carried out in 2022–2023 at the College of Horticulture, Dapoli, Dist. Ratnagiri. The experiment was set up in a Randomized Block Design with four replications and five treatments: T₁: Pruning at 30 cm from ground level; T₂: Pruning at 45 cm from ground level; T₃: Pruning at 60 cm from ground level; T₄: Pruning at 75 cm from ground level; and T₅: Control (No Pruning). The results revealed that the pruning at 60 cm from ground level (T₃) emerged significantly superior in increasing plant height (107.49cm) maximum number of branches (35.15), minimum days to first flower bud initiation (26.55), minimum days taken for tight bud stage (32.84), minimum days to opening of first flower (36.84), maximum stalk length (33.86 cm), number of flowers per plant (26.16), weight of flower (18.22g) and number of flowers per hectare (1.83lacs).

Keywords: Rose, levels of pruning, open condition, gladiator

1. Introduction

The rose is called the "King of Flowers" as well as the "Queen of Flowers." This implies that kingliness a term that refers to grandeur, prestige and power and queenliness a term that refers to elegance, beauty, and cultural sophistication are among its essential qualities. In terms of beauty, color and fragrance, it is unmatched by any other flower. It is considered to be among the most well-liked flowers worldwide for this reason. Roses are essential to a garden's completion. As a tribute to this bloom, rose-only gardens have been established all over the world. Roses are so popular that their vast range of plant growth, bloom color, form, perfume and slow opening has led to their commercial cultivation to meet the demand for cut flowers. In the flower industry, it is the most popular cut flower in terms of area, production and consumption.

Rose cv. GLADIATOR is a well-liked hybrid "T" rose that is grown for cut flowers due to its attractive color, long stemmed blossoms, and extended vase life. It is widely cultivated in this region for the production of cut flowers since it plays a big part in the Maharashtra flower trade. The rich crimson, well-shaped blooms of this cultivar are produced in large quantities on tall stalks. (Pal, 1991) [8].

One culturally relevant aspect of commercial rose growth is pruning. Removing a particular portion of a plant is called pruning. It is essential for maintaining the vigor and floriferousness of the rose plant as well as the quality of its blooms. Making accurate and careful pruning decisions is crucial to the success of rose gardening. (Gault and Synge, 1971) [3].

There are two main uses for pruning. In order to reduce the stronger stems and encourage the plant to establish new, robust growths that can yield better blooms in greater quantities, it first makes it simpler to chop off weak, twig-like, old branches. Secondly, it acts as a restraint on the plant's dimensions and form. Proper pruning will ensure that the center of the plant receives ample light and air since the canes or stems will be balanced and have blossoming branches going upward and outward. The foundations of rose trimming are rooted in science. Once mastered, these principles need considerable time and effort. Additionally, a certain level of artistry is required.

2. Materials and Methods

In 2022–2023, a Randomized Block Design experiment was set up with five treatments and four replications to determine the appropriate pruning levels for Rose (*Rosa indica* L.) cv. Gladiator. A selection of one-year-old cv. Gladiator rose plants was made for the study. The following fertilizers were applied at a rate of 100:50:50 kg/ha: urea, single super phosphate and muriate of potash for nitrogen, phosphorus and potash, respectively.

Following pruning, half of the N, full P, and K were applied. Two divided doses of the remaining half dosage of N were administered. Rose plants were pruned at different intervals based on the treatments. Below are specifics about the treatment: Planting T₁: at a height of 30 cm above the ground, T₂ at a height of 45 cm, and T₃: pruning at a height of 60 cm,; T₄: Pruning at a height of 75 cm from the ground and T₅: Control (no pruning) notes on a variety of vegetative characteristics, such as plant height, number of branches, leaf area, plant spread, and flowering parameters such as first

flower bud initiation, appearance of tight bud stage, first flower opening, and stalk length Flower parameters such as weight, number of flowers per plant, number of flowers per hectare, bud length, diameter of flower, and vase life were recorded at the appropriate time and statistically analyzed using the approach recommended by Panse and Sukhatme (1995) [10].

3. Results and discussion

Table 1: Growth, flowering and yield of rose cv. Gladiator as influenced by different levels of pruning

Treatments	Plant height (cm)	Number of branches	Initiation of first flower bud	Days taken for tight bud stage	Days to opening of first flower	Stalk length (cm)	Weight of flower (g)	Number of flowers per plant	Number of flowers per Ha (lakh)
T ₁ -pruning at 30 cm from ground level	102.73	25.15	40.87	46.87	49.95	18.73	17.30	21.27	1.47
T ₂ -pruning at 45 cm from ground level	102.98	28.32	35.28	41.08	44.79	25.57	17.80	23.36	1.63
T ₃ -pruning at 60 cm from ground level	107.49	35.15	26.55	32.84	36.84	33.86	18.22	26.16	1.83
T ₄ -pruning at 75 cm from ground level	106.63	30.37	29.32	35.29	39.12	31.24	17.94	25.84	1.76
T ₅ -Control (no pruning)	93.67	15.44	44.93	50.58	53.95	28.22	15.15	16.06	1.16
S.Em ±	0.44	0.11	0.31	0.40	0.33	0.25	0.03	0.03	0.01
CD @5%	1.38	0.31	0.96	1.23	1.03	0.77	0.10	0.09	0.03

Growth

The vegetative development factors of rose, such as plant height and number of branches, have a substantial influence on plant growth. Maximum plant height was reported when plants were pruned at 60 cm from ground level above the remainder of the treatments except T₃ (107.49 cm). T₄ therapy was shown to be considerably comparable to T₃. T₅ (control) had the shortest plant height (93.67cm) 180 days after pruning. Increased plant height might be related to increased physiological activities such as photosynthesis. When plants were pruned at 60 cm over control, this helped to boost the plant's metabolic activity. The findings of the current investigation follow a similar pattern. They are consistent with the findings given by (Mendhe *et al.* 2011) [5], who discovered that when the plant was pruned at 60 cm, the greatest height was reached. When the plant was pruned at 60 cm from ground level, it produced the most branches (35.15). This study is consistent with the findings of (Degeyter, 1975) [2], who discovered that pruning height of 60 cm resulted in the greatest number of branches and better flowering.

Flowering

The treatment T₃, *i.e.* pruning at 60 cm from ground level, resulted in the shortest number of days to the start of the first flower bud (26.55). It is likely that the early strong growth and pruning aided these plants in producing more cytokinin. Study similarly, greater bud length and diameter may have facilitated in the transmission of these synthesised cytokinins, allowing plants to enter the reproductive phase earlier. The current is supported by the findings of (Nanjan *et al.* 1974) [7] and (Mendhe *et al.* 2011) [5]. In treatment T₃, pruning at 60 cm from ground level resulted in the shortest time to tight bud stage (32.84) and the longest time to first flower opening (36.84). (Meshram *et al.* 2022) [6] Showed similar results. The significantly maximum stalk length (33.86cm) was recorded in T₃ *i.e.* pruning at 60 cm from ground level. The result reported is inconformity with the findings of (Patil *et al.* 2021) [9]

Yield

The treatment T₃, *i.e.* pruning at 60 cm from ground level,

resulted in the highest number of flowers per plant (26.16). It might be related to cytokinin accumulation in the producing shoot, which causes an increase in the number of flowers per plant. (Zieslin and Mor, 1981) [12] and (Adhikari *et al.* 2014) [1] observed the same effect. The treatment T₃, which involved pruning at 60 cm from ground level, produced the greatest amount of flowers per hectare (1.83 lakh). The current findings are consistent with those of (Ghulam *et al.* 2001) [4], (Porwal and Nagda, 2002) [11], and (Mendhe *et al.* 2011) [5]. The treatment T₃ (18.22g) produced substantially more blooms than the other treatments. This is congruent with the findings of (Nanjan *et al.* 1974) [7], who showed that minor pruning enhanced the weight of the flower. Mendhe *et al.* (2011) [5], Adhikari *et al.* (2014) [1] and Meshram *et al.* 2022) [6] found similar results.

Conclusion

Based on the outcomes of this study, it is determined that varying levels of pruning had a substantial influence on the development, blooming, and production of rose (*Rosa indica* L.). Treatment T₃-Pruning at 60 cm from ground level recorded the maximum plant height, number of branches, leaf area, plant spread, stalk length, bud length, diameter of bud, diameter of flower, number of flowers per plant, fresh weight of flower, yield of flower per plant, yield of flower per hectare, number of flowers per hectare, and vase life of the flower. T₃ treatment recorded the shortest time to first flower bud initiation, the longest time to tight bud stage, and the shortest time to first flower opening. The present study found that trimming roses helped increase growth, blooming, production, quality, and vase life of cut flowers in general. According to current research, in the case of rose cultivation, trimming at a height of 60 cm from the ground level is efficient for enhancing growth, blooming, production, quality, and vase life of rose cut flowers. However, the findings are based on a one-year study experiment.

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References

1. Adhikari D, Baral DR, Gautam DM, Pun UK. Influence of time and intensity of pruning on growth and flowering behavior of cut rose. *Nepal J Science and Technology*. 2014;15(1):7-12.
2. Degeyter Z. The pruning of glass house roses. *I. B. Y. O., Mededelingen*. 1975;80:(6).
3. Gault MS, Synge PM. *The dictionary of roses in colour*. Rainbird Publishing Group Ltd., London; c1971.
4. Ghulam Z, Ghafoor A, Kashif W. Evaluation of six exotic rose cultivars by three different pruning intensities, *Sarhad J Agric*. 2001;17(1):91-96.
5. Mendhe ST, Jature SD, Parkhe DM, Wadewale GK. Effect of different levels of pruning on growth and flowering of rose (*Rosa indica* L.) cv. Gladiator. *Internat. J Agric. Sci*. 2011;7(2):309-311.
6. Meshram PD, Salvi BR, Khandekar RG, Salvi VG, Pawar CD, Gokhle NB, *et al*. Effect of rose varieties under shade net and open condition in konkan. *The Pharma Innovation Journal*. 2022;11(7):3731-3736.
7. Nanjan K, Muthuswamy S, Rao VNM. Studies on the effect of different levels of pruning on Edward rose (*Rosa bourboniana* Desp.). *South Indian Horticulture*. 1974;22(1/2):37-40.
8. Pal BP. *The rose in India*, A Book ICAR Publication, New Delhi, 1991, p. 51.
9. Patil SR, Khandekar RG, Salvi BR, Pawar CD, Salvi VG, Desai VS. Effect of different growing condition on vegetative, flowering and yield parameter of rose cv. Gladiator. *The Pharma Innovation Journal*. 2021;10(8):1642-1644.
10. Panse VG, Sukhatme PV. *Statistical Methods for Agricultural Workers*. A Book ICAR Pub., New Delhi; c1995.
11. Porwal R, Nagda CL, Pundir JPS. Effects of pruning severity and growth retardants on the vegetative growth, flower yield and oil content of damask rose (*Rosa damascena* Mill.). *Journal Applied. Horticulturae*. 2002;4(1):37-40.
12. Zieslin N, Mor Y. Plant management of greenhouse conditions. *Scientia Horticulture*. 1981;14(3):285-293.