

Effect Of Pruning In Different Time Interval On Growth And Yield of Button Rose

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ABSTRACT

A Field study entitled "effect of pruning in different time intervals on growth and yield of button rose was carried out in a farmer's field near Hosur, Krishnagiri district during 2020-21. The experiment conducted in a factorial randomized block design with two factors and three replication. i.e., third week of oct, first week of nov, third week of nov and first week of dec by altering different heights 40 cm and 45cm. The following growth characters are plant height, plant spread, number of branches plant¹, number of leaves plant¹, leaf area, days to flower bud initiation, number of flower plant¹, flower diameter, single flower weight, flower yield plant¹, flower yield plot¹, estimated yield kg ha¹ were recorded at periodical intervals. The results revealed that S₃H₂ pruning 3rd week of November @ the height of 45cm consistently registered the maximum plant height (110.6), plant spread (43.3), number of laterals plant⁻¹ (46.2), number of leaves per plant (180.3), leaf area (42.3) and Chlorophyll (1.55) when compared with treatments comprising growth regulator alone or nano-micronutrients alone. The flowering and yield parameters such as the number of flowers plant⁻¹ (482.3), days taken for first flowering (58.86) flower diameter (5.85), single flower weight (3.58), flower yield per plant (5.76) was also recorded as the highest in the above treatment. It was followed by S₃H₁ pruning in the 3rd week of November @ the height of 40cm and S₂H₂ pruning in the 1st week of November @ the height of 45cm which recorded next best on-bar values in these parameters. By considering the yield parameters it can be concluded that

S₃H₁ pruning in the 3rd week of November @ the height of 45cm was found to have the best effect on growth, flowering and yield parameters of button rose cultivated in open field condition.

Key-button rose, pruning, growth, height

INTRODUCTION

Rose (*Rosa hybrida* L.) belongs to the family Rosaceae, consisting of about 200 species and 20000 cultivars, remains a major ornamental plant for cut and loose flower trade all over the world (Ritz *et al.*, 2005). In Tamil Nadu, rose is grown in an area of 3,020 hectares with a production of 28.35 metric tons (Indiastat, 2021). The major rose varieties cultivated for loose

flower purposes include Edward Rose, Andra Red Rose, and Button Rose. In the recent past, the open field rose varieties, viz., Arka Savi, Arka Parimala, Arka swadesh, Roman yellow, Seven Days Rose, Scent pink, Roman red, Mirabel red, Fanta, Chocklet, Mookuthi yellow, and Zadique, have become more popular and demanding in the market due to their colorful petals, which are used for modern floral adornments and crafts. . Rose production in open fields can be increased by using special horticultural practices such as training, pruning, manuring, and growth regulation. Pruning, in its broadest sense, refers to the scientifically guided removal of plant parts with the goal of reappportioning photosynthates towards flowering and increasing flower production. It improves energy utilization by removing unproductive and vegetative shoots. The timing of pruning has a significant impact on rose flower yield and quality. Depending on the pruning season and variety, roses will start flowering within 35 to 45 days. However, the ability of plants to reach the maximum daily flower production and sustain the flowering for a longer duration is governed by factors like pruning season, pruning height, plant health, nutritional status, climatic conditions, and growth regulation practices. The pruning height also plays a vital role in flowering as it determines the production of flowering shoots. In Tamil Nadu, open-field roses are generally pruned between August and December. In general, the months of January, February, March, May, June, and December will see the highest rose demand. When early pruning (August to October) is practiced, the plants will produce maximum flowers during the first peak period of market demand (*i.e.*, January to March), but the yield will be decreased during the second period (*i.e.*, May to June). Peak flowering won't coincide with the initial wave of market demand in late pruning (December). To make button rose production profitable and to synchronize peak flowering with both spells of market demand, it is essential to determine the right pruning season, pruning height, growth regulation practices, and plant nutrition.

MATERIALS AND METHODS

The study was conducted on three-year-old shrubs of the button rose cultivar Merable Red grown in a farmer's field at Mookandapalli, village in Hosur taluk, Krishnagiri District, Tamil Nadu. The experimental plot was located at 13° 09' N latitude and 80° 29' E longitude, at an elevation of 857 meters above mean sea level. The experiment was laid out in red sandy loam soil with a pH of 6.5 to 7.0. The climate is favorable for flower production year-round in open fields. The maximum temperature ranges from 26.2°C to 34.2°C, while the mean minimum temperature ranges from 15.1°C to 22.8°C. The mean annual rainfall is 649 mm, and the relative humidity is 67%.the expriement conducted in a factorial randomized block design with two factors and three replication. *i.e.*, third week of oct,first week of nov,third week of nov and first week of dec by altering different heights 40 cm and 45cm. The irrigation is done on soil moisture conditions and all the intercultural operations are done whenever it is needed. The mature plants are harvested in the early morning. The data were statistically analyzed by Panse and sukhatme (1985).

RESULTS AND DISCUSSION

The study revealed that the effect of pruning in the different time intervals in button rose on growth and yield parameters envisage significant differences in all parameters. The plant height and plant spread were found significant in all growth parameters. Among the treatments, S₃H₂(110.6 and 43.30) shows the best in plant height and plant spread. Thus, it was observed that pruning in the 3rd week of November @ height of 45cm recorded the maximum plant height and spread compared to other times of pruning. These results are in close agreement with the findings of Notani et al. (2014). This may be due to the pruning destroying the apical dominance and promoting the plant spread. This is reported by Porwal (1996) in rose

From the above results, it is noticed that number of laterals and the number of leaves plant (46.20 and 180.3) was recorded significantly maximum with pruning done on the 3rd week of November @ height of 45cm. This might be since. The dormant buds from the mature shoots need some mechanical stimulus like pruning along with appropriate climatic conditions to enhance sprouting in rose plants. These results are in close agreement with the findings of Wang (2008).

The results show that total leaf area and total chlorophyll content also recorded highest in treatment (42.3&180.3) pruning in the first week of November @ height of 45cm. This may be due to the pruning increase increases light infiltration and distribution in the plant's canopy, which changes the photosynthetic ability and chlorophyll yield of leaves. This is also reported by (Hossain et al., 2007)

The flower yield is a complex character which is contributed by different components. In button rose flower diameter, single flower weight, and single flower weight may constitute the flower yield plant1, flower yield plant1, flower yield plot1, and estimated yield kg ha. The said traits were found to be significantly influenced by (S₃H₂) pruning at the 3rd week of November @ height of 45cm and These results are in close agreement with the findings Pal et al. (1984)

CONCLUSION

Pruning in different seasons reduces the yield. But it enhance the yield significantly when we pruned the 3rd week of November @ height of 45cm. therefore we can conclude that pruning plants in November are more effective to improve the yield of button roses.

TREATMENT	Plant Height 180 DAP	Plant spread 180 DAP	Number of laterals 180 DAP	Number of leaves plant¹ 180 DAP	Leaf area cm² 180 DAP	Chlorophyll 180 DAP
S ₁ H ₁	98.82	34.49	40.16	163.67	33.49	1.13
S ₁ H ₂	101.37	36.40	41.47	167.27	35.40	1.22
S ₂ H ₁	103.05	37.65	42.33	169.64	36.65	1.28
S ₂ H ₂	105.69	39.63	43.68	173.36	38.63	1.38
S ₃ H ₁	108.56	41.77	45.15	177.42	40.77	1.48
S ₃ H ₂	110.60	43.30	46.20	180.30	42.30	1.55
S ₄ H ₁	103.60	38.06	42.61	170.41	37.06	1.30
S ₄ H ₂	106.32	40.10	44.00	174.25	39.10	1.40
S.Ed	0.57	0.43	0.29	0.81	0.43	0.02
CD (0.05)	1.22	0.92	0.63	1.73	0.92	0.04
Pruning Season Mean						
S ₁ 3 rd week of Oct	51.33	35.44	40.81	165.47	34.44	1.18
S ₂ 1 st week of Oct	54.96	38.64	43.01	171.50	37.64	1.33
S ₃ 3 rd week of Nov	59.38	42.54	45.68	178.86	41.54	1.51
S ₄ 1 st week of Nov	55.46	39.08	43.31	172.33	38.08	1.35
CD (0.05)	0.34	0.30	0.21	0.57	0.30	0.01
S.Ed	0.74	0.65	0.44	1.23	0.65	0.03
Pruning Height Mean						
H₁ Height @ 30 cm	54.23	37.99	42.56	170.29	36.99	1.30
H₂ Height@ 45 cm	56.34	39.85	43.84	173.80	38.85	1.39

S.Ed	0.24	0.21	0.14	0.39	0.21	0.01
CD (0.05)	0.53	0.46	0.32	0.87	0.46	0.02

TABLE :2

TREATMENT	Flower diameter (cm)	Days taken for first flowering	Number of flower plant¹day	Single flower weight (g)	Flower yield plant⁻¹ day(g)
S ₁ P ₁	4.88	60.25	1.35	3.23	4.36
S ₁ P ₂	5.09	57.14	1.40	3.31	4.66
S ₂ P ₁	5.23	55.08	1.44	3.36	4.86
S ₂ P ₂	5.45	51.86	1.50	3.44	5.17
S ₃ P ₁	5.68	48.35	1.56	3.52	5.51
S ₃ P ₂	5.85	45.86	1.61	3.58	5.76
S ₄ P ₁	5.27	54.42	1.45	3.37	4.93
S ₄ P ₂	5.50	51.09	1.51	3.45	5.25
CD (0.05)	0.05	0.702	0.01	0.02	0.07
S.Ed	0.10	1.496	0.03	0.04	0.15
Pruning Season Mean					
S ₁ First week of Oct	4.98	58.70	1.38	3.27	4.51
S ₂ Last week of Oct	5.34	53.47	1.47	3.40	5.02
S ₃ First week of Nov	5.77	47.11	1.59	3.55	5.63
S ₄ Last week of Nov	5.39	52.76	1.48	3.41	5.09
CD (0.05)	0.03	0.493	0.01	0.01	0.05
S.Ed	0.07	1.061	0.02	0.03	0.10
Pruning height Mean					
P₁ Pruning @ 30 cm	5.27	54.53	1.45	3.37	4.91
P₂ Pruning @ 45 cm	5.47	51.49	1.51	3.44	5.21

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CD (0.05)	0.02	0.341	0.01	0.01	0.03
S.Ed	0.05	0.757	0.01	0.02	0.07

REFERENCES

- Hossain, A.B.M.S., N.B. Amru and O. Normaniza, 2007. Postharvest Quality, Vase Life and Photosynthetic Yield (Chlorophyll Fluorescence) of Bougainvillea Flower by App
- Indian statistical issue. 2021. Ministry of Agriculture and Farmers Welfare. Govt. of India.
- Notani, S. K. Batoch, A. Baloch, W. Bashir, A. R. Arain and A. I. A. Saliman, 2014. Effect of pruning intervals on the quality and production of rose (Rosa Indiae-L.). PerSian Gulf Crop Protection 3 (1): 1-14.
- Pal. P .. R.G. Maity and T.K.Bose, 1984. Effect of different time and height of pruning on growth and yield of flowers in Jasminum sambac var. Khoya Proceedings of National Seminar on Production Technology for Commercial flowers, Coimbatore, 27- 29 Feb.,1984.
- Panse, V.G. and P.V. Sukhatme. 1985 *Statistical Methods for Agricultural Workers*. ICAR Pub., New Delhi.
- Porwal, R. (1996). Effect of pruning, plant growth regulators and nutrients on vegetative growth, flower yield and oil content of Damask rose (Rosa damascena Mill.) Ph.D. Thesis. Swami Keshwanand Rajasthan Agricultural University, Bikaner, RAJASTHAN (INDIA)
- Ritz, C.M., H. Schmutz and V. Wissemann, 2005. Evaluation by reticulation: European doroses originated by multiple hybridization across the genus Rosa. J. Heredity, 96: 4-14.
- Wang, T., 2008. Effect of pruning on flowering of Rhododendron simsii planch. Acta Hort., 769: 463- 465.