



Standardization of Different Growing Environment Conditions for Button Rose

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

An investigation on Standardization of different growing environment conditions for button rose was carried out at Floriculture Research Station, Thovalai, Tamil Nadu during the year 2017-18 in randomized block design with five treatments of growing condition. The result revealed that, the significantly influence in button rose, the treatment T₃ (35% shade net only as top cover) recorded the highest plant height (53.38 cm), number of shoots / plant (7.00) and number of flowers in a cluster (9.75). The same treatment exhibited the highest number of leaves (77.75), early flowering (18 days) and early bud initiation after previous flowering (14.75 days) which was on par with the treatment T₅ (open condition) which recorded 76.50, 18.75 days and 15.00 days respectively at three months after planting. Among the treatments, the treatment T₂ (50% shade net) recorded the

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lowest plant height (46.63 cm), number of leaves / plant (70.75), number of shoots / plant (3.50), number of flowers in a cluster (6.50) and delayed flowering (20.75 days) and bud initiation after previous flowering (20.00 days). In case of yield parameters T₅- Open condition recorded maximum individual flower weight (1.06 g), Number of petals per flower (65.23) and Flower yield per plant / year (125.38g).

Keywords: Rose; shade net house; growth; flower yield.

1. INTRODUCTION

“Rose (*Rosa indica*) is a tropical and subtropical plant which belongs to family Rosaceae. Rose is one of nature’s most beautiful creations and is universally known as ‘Queen of flowers’ for its shape, different sizes, attractive colours and most delightful fragrance with varied uses. Roses are most popular flowers among many floriculture crops of the world. The major rose producing states in India are Karnataka, Maharashtra, Punjab, Uttar Pradesh, Delhi, Chandigarh, West Bengal, Himachal Pradesh, Rajasthan, Kashmir and Gujarat” [1]. The rose word derived from the Latin word “Erose” meaning the “God of love”. The rose has 200 species and more than 20,000 varieties (Gauchan *et al.*, [2]. “Among these the important categories of roses are Hybrid Tea, Floribunda, Hybrid perpetual, Grandifloras, Tea scented china roses, Polyanthas, Miniatures, Cabbage rose, Bourbon rose, French rose alba, Musk rose, Mambler moss roses, Noisette roses. Rose is a symbol of love, adoration and innocence and it occupies a prominent position in the tradition, religious and social culture of every country in the world. Rose as cut flower has great demand in the internal as well as export markets. Rose can be successfully cultivated in mild climate with good sunshine. The flower production in rose can be increased by using different growing structure like polyhouse, shade net. As it is difficult to obtain good quality cut flowers under open conditions throughout the year” [1]. Open conditions are not predictable in climatological factors to influencing the cultivation of rose cultivation. “Therefore, the crops should be cultivated under the cover to get good quality produce (Polyhouse, Shade net), it is large enough to grow crops under partial or fully controlled environmental conditions to obtain optimum growth and quality production. The main advantages of polyhouse and Shade net cultivation are the crops can be cultivated successfully throughout the year, getting high productivity with excellent quality, it is easy to protect the crops against extreme climatic conditions and incidence of pests and disease.

Climatic factors play a vital role in the production of quality roses” [1].

2. MATERIALS AND METHODS

The present research was carried out at Floriculture Research Station, Thoivalai to ‘Standardization of different growing environment conditions for button rose’. The present study was carried out during 2019-2020 in randomized block design to study effect of different growing condition on vegetative, flowering and yield parameter of button rose with five treatments viz., T₁-Shade net (35%), T₂-Shade net (50%), T₃-35% shade net only as top cover, T₄-50% shade net only as top cover and T₅-Open condition. The treatments were imposed on new budded plants of button rose and each treatment consisting of four plants was replicated four. Observation was recorded on four randomly selected plants in each treatment i.e., highest plant height, number of shoots/plants, number of leaves, number of flowers in a cluster, early flowering and early bud initiation after previous flowering at three months after planting. The experimental data were analysed statistically by ANOVA (Analysis of Variance) technique (Panse and Sukhatme, [3].

3. RESULTS AND DISCUSSION

Roses are grown for cut flowers, for making garlands, bouquets, in flower arrangement, vase decoration for worshipping to prepare gulkand, pankhuri and to extract essential oil, perfume and rose water. The field preparation was done and button rose were planted under different growing environments viz., under 35% shade net, 50% shade net, 35% and 50% shade net only as top cover and purely under open conditions.

3.1 Growth Parameters

Present study the vegetative growth parameter like plant height, maximum number of branches, number of leaves in rose shows significant effect on plant growth. “The treatment T₃ i.e. shade net house were recorded significantly in button rose, the treatment T₃ (35% shade net only as top

cover) recorded the highest plant height (53.38 cm), number of shoots / plant (7.00), the highest number of leaves (77.75), which was followed by T₅-Open condition plant height (52.13 cm), the highest number of leaves (76.50 cm) open condition this might be due to optimum light intensity in combination with warmer environment and higher relative humidity inside the polyhouse which helped in increase in height as compared to open condition and shade environments" (Table 1). Mohanty et al. [4]. "Shade net house this might be due to Reduction of light intensity to optimum condition, increased temperature and relative humidity under polyhouse might have favoured early sprouting of buds and increase in branches as compared to open condition". Moe [5]. "Significantly maximum number of leaves (77.75) were also recorded in treatment T₃ i.e. shade net house this might be due to the long waves of light which entre into the polyhouse might have converted into short wave, the short waves were trapped into the polyhouse which helps to increase the inner temperature and CO₂ inside the polyhouse which increase the photosynthesis rate of plant and simultaneously increase the number of leaves" [6].

3.2 Flowering Parameters

The present data revealed that the significantly the treatment T₃ i.e. shade net house recorded maximum number of flowers in a cluster (9.75). The same treatment exhibited early flowering (18 days) and early bud initiation after previous flowering (14.75 days) which was on par with the treatment T₅ (open condition) which recorded 76.50, 18.75 days and 15.00 days respectively at three months after planting (Table 1). Among the treatments, the treatment T₂ (50% shade net) recorded the lowest plant height (46.63 cm), number of leaves / plant (70.75), number of

shoots / plant (3.50), number of flowers in a cluster (6.50) and delayed flowering (20.75 days) and bud initiation after previous flowering (20.00 days). "This might be due suitable growing condition with optimum light intensity, favorable temperature and moist air inside the shade net house might have helped in the faster growth and early appearance of flower buds as observed in the present study. This might have favored accumulation of more carbohydrate than other growing environments. It is the tendency of plant to come to reproductive phase early if it has enough carbohydrate in it" Malhotra and Kumar, [7]. Shade net house condition this might be due to, in shade net house plant get maximum sunshine which helps to increase the number of flowers per cluster and early flowering in button rose. Malhotra and Kumar [7] also observed "these characters of roses under polyhouse as compared to open condition. The results of the present investigation indicated that number of flowers per plant were the maximum in open field situation. This might be due to the fact that the total number of leaves were maximum under open field which accumulated more carbohydrates and were directly used for increasing the number of flowers". "This might be also due to a greater number of shoots in open field which had produced a greater number of flowers" Patil et al. [6]. From the above results it is noticed that, maximum number of flowers per plant were observed in variety Gladiator. This might be due to the varietal characters of the various varieties. These results are in line with those of results obtained by Tabassum et al. [7] in rose cultivars and reported maximum number of flowers plant-1 in rose cv. D^{aydream} among rose cultivars. The variation in number of flowers per plant might be due to the varietal character and another one reason is environmental conditions". Ranchana et al. [8].

Table 1. Influence of growing environment in button rose at 3 months after planting

Treatments	Plant height (cm)	No. of leaves / plant	No. of shoots / plant	Days taken for flowering	No. of flowers in a cluster	Days taken for bud initiation after flowering
T ₁	49.13	72.00	4.25	20.00	7.75	19.00
T ₂	46.63	70.75	3.50	20.75	6.50	20.00
T ₃	53.38	77.75	7.00	18.00	9.75	14.75
T ₄	51.13	75.00	5.75	19.25	8.75	17.00
T ₅	52.13	76.50	5.50	18.75	9.00	15.00
Mean	50.48	74.4	5.20	19.35	8.35	17.15
SEd	0.50	0.62	0.51	0.41	0.34	0.65
CD (0.05)	1.10	1.36	1.12	0.90	0.73	1.42

Table 2. Influence of growing environment on growth and yield of button rose

Treatment	Individual flower weight (g)	No. of petals / flower	Flower yield / plant / year (g)
T ₁	0.94	63.18	112.48
T ₂	0.90	58.73	111.10
T ₃	0.95	64.48	117.33
T ₄	0.90	62.43	114.30
T ₅	1.06	65.23	125.38
Mean	0.95	62.81	116.12
SEd	0.0116	0.1057	0.0878
CD (0.05)	0.0253	0.2302	0.1913

3.3 Yield Parameters

The yield data revealed that the treatment T₅ i.e. shade net house recorded significantly maximum individual flower weight (1.06 g), Number of petals per flower (65.23), Flower yield per plant / year (125.38g) (Table 2) this might be due to the microclimatic conditions in polyhouse which helps to increase the flower yield and more light intensity, warmer environment. The same result was noticed by Talukdar et al. [9]. However, performance of button rose under shade net and open condition were statistically comparable with each other. The similar findings were also observed by Mohantay et al. [10]. Similar findings were observed by Bhattacharjee et al. [11] and Fascella and Zizzo [12].

4. CONCLUSION

The main advantages of polyhouse and Shadenet cultivation are the crops can be cultivated successfully throughout the year, getting high productivity with excellent quality, it is easy to protect the crops against extreme climatic conditions and incidence of pests and disease. Climatic factors play a vital role in the production of quality roses. The present study concluded that the button rose, the treatment T₃ (35% shade net only as top cover) recorded the highest plant height (53.38 cm), number of shoots/plant (7.00) number of leaves (77.75), number of flowers in a cluster (9.75), early flowering (18.00 days), early bud initiation after previous flowering (14.75 days), whereas yield parameters T₅- Open condition recorded maximum individual flower weight (1.06 g), Number of petals per flower (65.23) and Flower yield per plant / year (125.38g).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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