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Influence of media and nutrient on flowering and flower yield of pot grown Kashmiri rose

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Abstract

The present investigation on "Influence of media and nutrient on flowering and flower yield of pot grown Kashmiri rose" was carried out at Ornamental Nursery, College of Horticulture, Anand Agricultural University, Anand during July to December 2022. The experiment was carried out using a completely randomized design (factorial) with two factors with twenty treatment and three repetitions. Among the different media combination, treatment Soil: FYM: Cocopeat (1:1:1) (v/v) exhibited the maximum number of flowers per plant, bud diameter, bud length, flower diameter and length of the rose plant. Among the different treatments of nutrient dose, treatment 19:19:19 (N:P:K) + Humic acid (1%) noticed significantly maximum number of flowers per plant. Regarding the interactive effects, treatment Soil: FYM: Cocopeat (1:1:1) (v/v) + 19:19:19 (N:P:K) + Humic acid (1%) resulted maximum number of flowers per plant.

Keywords: Media, nutrient, pot grown Kashmiri rose, flowering, flower yield

Introduction

The rose, belonging to the Rosaceae family, is a perennial flowering plant. Its name comes from the Latin "erose," meaning "god of love." (Rajesh and Ramesh, 1999) [1]. Roses are cherished globally for their beauty, fragrance, colors, and longevity. They are widely used for worship, garlands, bouquets, and decorations at festivals and events. Roses are significant symbols in metaphysics, a philosophy exploring reality and the universe. There are about 150 rose species worldwide, with 34 in India. The Kashmir rose is a deciduous shrub known for its velvety red blossoms and cashmere-like petals. It is popular in floral arrangements due to its sturdy stems and pleasant fragrance. Soil health is crucial, but excessive chemical fertilizers harm it. Inorganic fertilizers reduce crop yield, create soil acidity, and disrupt nutrient balance, affecting groundwater and air quality. Balanced nutrient management is essential for proper growth and high-quality flower production. Hence, the present experiment was carried out to study the effect of different media and nutrient on growth, flowering and flower yield of pot grown Kashmiri rose.

Materials and Methods

The present investigations entitled as "Influence of media and nutrient on flowering and flower yield of pot grown Kashmiri rose" was undertaken at Ornamental Nursery, College of Horticulture, Anand Agricultural University, Anand during July to December 2022. The experiment was conducted using three-month-old Kashmiri rose plant obtained from a private nursery. Four different combinations of growing media were prepared based on volume *viz.* M₁ - soil + FYM (1:1), M₂ - soil + vermicompost (1:1), M₃ - soil + FYM + coco peat (1:1:1), M₄ - soil + vermicompost + coco peat (1:1:1). Three water soluble nutrients in five combinations were used in the experiment, namely N₁- 19:19:19 (N:P:K), N₂- 13:00:45 (N:P:K), N₃- Humic acid (1%), N₄- 19:19:19 (N:P:K) + Humic acid (1%), N₅- 13:00:45 (N:P:K) + Humic acid (1%). Humic acid (1%) was applied every 15 days interval, while water-soluble nutrients 19:19:19 (N:P:K) and 13:00:45 (N:P:K) were applied at a concentration of 10 g/l on a weekly basis using the drenching method. Hand weeding was conducted twice a month during the experimental period for controlling weed and aeration in the roots.

Results and Discussion

Number of flowers per plant

The data presented in Table 1 reveal that the maximum number of flowers per plant 42.53, was

recorded in the Soil:FYM:Coco peat (1:1:1) (v/v) treatment, while the treatment with the minimum number of flowers per plant 31.93, was observed in the Soil:FYM (1:1) (v/v) treatment. The enhanced vegetative growth due to the application of FYM composition might have resulted in synthesis, accumulation and translocation of more photosynthesis thus results in the production of more flowers. Similar finding were reported by John *et al.* (2020)^[2]; Khanna *et al.* (2016)^[6] in china aster; Riaz *et al.* (2008)^[7] in Zinnia; Tariq *et al.* (2012)^[8] in Dahlia.

The treatment 19:19:19 (N:P:K) + Humic acid (1%) exhibited the maximum number of flowers per plant 42.54, while the treatment with the minimum number of flowers per plant 33.41, was the Humic acid (1%) treatment. The reason for maximum number of flower is due to the fact that the amount of applied nitrogen significantly increased the growth parameter which have synthesized more plant metabolites and ultimately led to increased number of flowers. Similar finding were reported by Mathew *et al.* (2022)^[4] in chrysanthemum. With respect to interactions effect treatment Soil:FYM:Coco peat (1:1:1) (v/v) + 19:19:19 (N:P:K) + Humic acid (1%) registered highest number of flowers per plant 46.00.

Bud diameter (cm)

The data presented in Table 2 reveals that the treatment Soil:FYM:Coco peat (1:1:1) (v/v) registered the maximum bud diameter of 2.16 cm, while the treatment with the minimum bud diameter of 1.95 cm was observed in the Soil:FYM (1:1) (v/v) treatment. Soil:FYM:Cocopeat (1:1:1) (v/v) exhibited a bud diameter that was 0.21 cm larger compared to Soil:FYM (1:1) (v/v). This difference in bud diameter could be attributed to the easy availability of nutrients from FYM, which promotes the translocation of phytohormones to the shoot apex. These results were in concordance with the conclusions of John *et al.* (2020)^[2]; Pooja *et al.* (2017)^[3]; and Bisht *et al.* (2013)^[5] in rose; Khanna *et al.* (2016)^[6] in china aster.

The data depicted in Table 2 revealed that nutrient doses had a non significant effect on bud diameter.

Bud length (cm)

The highest bud length of 3.30 cm was observed in the Soil:FYM:Coco peat (1:1:1) (v/v) treatment, while the lowest bud length of 3.10 cm was recorded in the Soil:FYM (1:1) (v/v) treatment. Similar results were also observed in Pooja *et al.* (2017)^[3]; and Bisht *et al.* (2013)^[5] in rose.

The data depicted in Table 2 revealed that nutrient doses had a non significant effect on bud length.

Flower diameter (cm)

The treatment involving Soil:FYM:Coco peat (1:1:1, v/v) significantly recorded the maximum flower diameter of 8.32 cm, whereas the minimum flower diameter of 7.96 cm was observed in the Soil:FYM (1:1) (v/v) treatment. This result is consistent with the findings of Khanna *et al.* (2016)^[6] in China aster.

As shown in Table 2, nutrient doses had a non significant effect on flower diameter.

Flower length (cm)

Maximum flower length 6.72 cm was noted in the treatment Soil:FYM:Coco peat (1:1:1) (v/v) while, minimum flower length 6.09 cm was recorded in treatment Soil:FYM (1:1)

(v/v). Soil:FYM:Cocopeat (1:1:1) (v/v) recorded a 0.63 cm greater length compared to Soil: FYM (1:1) (v/v). This might be due to the easy availability of nutrients from FYM, which promotes the translocation of phytohormones to the shoot apex. These results were in concordance with the conclusions of John *et al.* (2020)^[2]; Pooja *et al.* (2017)^[3]; and Bisht *et al.* (2013)^[5] in rose.

As depicted in Table 2, nutrient doses had no significant effect on flower length.

Table 1: Effect of different media and nutrients on number of flowers per plant of potted Kashmiri rose

Nutrient (N) Media(M)	Number of flowers per plant					
	N ₁	N ₂	N ₃	N ₄	N ₅	Mean
M ₁	34.33	27.66	26.00	40.16	31.50	31.93
M ₂	37.00	33.83	31.50	41.16	35.33	35.76
M ₃	43.33	41.66	39.33	46.00	42.33	42.53
M ₄	41.33	38.83	36.83	42.83	39.16	39.80
Mean	39.00	35.50	33.41	42.54	37.08	
	M		N		M × N	
S.Em ±	0.47		0.53		1.06	
C. D. at 0.05	1.35		1.51		3.03	
C.V. %	4.90					

Table 2: Effect of different media and nutrients on different floral parameters of potted Kashmiri rose

Treatments	Bud diameter (cm)	Bud length (cm)	Flower diameter (cm)	Flower length (cm)
M ₁	1.95	3.10	7.96	6.09
M ₂	2.06	3.15	8.10	6.41
M ₃	2.16	3.30	8.32	6.72
M ₄	2.10	3.21	8.24	6.61
S.Em ±	0.02	0.03	0.09	0.07
C. D. at 0.05	0.07	0.10	0.26	0.22
N ₁	2.10	3.21	8.21	6.49
N ₂	2.05	3.16	8.12	6.43
N ₃	2.02	3.14	8.00	6.35
N ₄	2.13	3.25	8.31	6.58
N ₅	2.08	3.18	8.15	6.45
S.Em ±	0.03	0.04	0.10	0.08
C. D. at 0.05	NS	NS	NS	NS
C.V. %	4.56	4.27	4.32	4.63

Conclusion

From the study, it can be concluded that the media consisting of soil:FYM:cocopeat (1:1:1) (v/v) enhanced the number of flowers per plant, bud length (cm), bud diameter (cm), flower length (cm) and flower diameter (cm) of the rose plant. The application of nutrient 19:19:19 (N:P:K) (weekly interval) + Humic acid (1%) (15 days interval) increased the number of flowers per plant of the rose plant. Concerning the interaction effect, the treatment Soil:FYM:Coco peat (1:1:1) (v/v) + 19:19:19 (N:P:K) + Humic acid (1%) exhibited the best results in terms of the number of flowers per plant in the rose plants.

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