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## Influence of different growing media on vegetative, flowering and yield parameter of rose cv. Gladiator

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#### Abstract

An investigation on influence of different growing media in rose cv. Gladiator was carried out at College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli during the year 2018-19 and 2019-20 in randomized block design with five treatment of growing media viz., T<sub>1</sub>: Soil, T<sub>2</sub>: Cocopeat, T<sub>3</sub>: Soil+ Cocopeat (1:1), T<sub>4</sub>: Soil + Coirhusk (1:1), T<sub>5</sub>: Soil + FYM + Cocopeat + Ricehusk (1:1:1:1), it was undertaken by considering the commercial importance of rose to maximize the production of farmer throughout the year. The result revealed that, the significantly maximum plant height (106.83 cm), maximum number of branches (18.94), number of leaves (484.93), initiation of first flower bud (36.75), appearance of tight bud stage (41.57), Opening of first flower bud (47.23), stalk length (48.78 cm), number of flower per plant (25.99), number of flower per plot (649.91), number of flower per hectare (13.14 t/ha) was recorded in treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk (1:1:1:1).

**Keywords:** Rose, media, growth, cocopeat, yield

#### Introduction

Rose (*Rosa indica*) is known as 'Queen of flowers' for its shape, different sizes, attractive colours and most delightful fragrance with varied uses. 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. 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.*, 2009) [5]. 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. Roses are used as ornamentals; commercially rose oil is used in manufacturing of perfumes, used as room freshener, rose water has different uses in medicines, rose petals are antiseptic in nature, and are used as an eye wash ingredient. It is enriched with vitamins such as vitamin A, C, D and E. For skin beauty, rose water is used in face masks for fair skin which maintains skin pH and controls extra oil.

The flower production in rose can be increased by using different growing media like soil, cocopeat, ricehusk, coirhusk, FYM, etc. The potted production of rose plants is most popular now a days. For this, garden soil, cocopeat, FYM and coirhusk are important growing substrates preferably used for the container production of both annual and perennial ornamental plants (Tariq *et al.*, 2012) [12] and are very important for the plant growth and development. These materials also increase the microbial activities in soil which are essential to increase and fulfil the nutritional requirement and there also reduce the nitrogen losses (Simpson and Bode, 1980) [11]. The media significantly affect the plant growth when cocopeat with nitrogen fertilizer is used in growth media (Worrall, 1981) [14]. Growing media always play a vital role in growth and quality of pot plants. Rose is one such a classical plant, which requires good medium for better growth and quality of flower production.

#### Material and Method

A field experiment was carried out at College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli during the year 2018-19 and 2019-20 in randomized block design to study influence of different growing media on vegetative, flowering and yield parameter of rose cv. Gladiator with five treatment viz., T<sub>1</sub>: Soil, T<sub>2</sub>: Cocopeat, T<sub>3</sub>: Soil+ Cocopeat (1:1), T<sub>4</sub>: Soil + Coirhusk (1:1), T<sub>5</sub>: Soil + FYM + Cocopeat + Ricehusk (1:1:1:1) and replicated four times. The treatments were imposed on new budded plants of rose cv. Gladiator. The planting of the experiment was done as per layout on June 2018. The variety Gladiator

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was planted under different potting media like soil, cocopeat, coir husk, rice husk, FYM with 25 plants per treatment in each plot i.e. 125 plants were planted under each replication with total plant population of 500 plants. Total 500 pots of 40 x 42 cm (length x width) were utilized for the experiment. Each pot was filled with different media according to treatment. The media was filled in pots as per treatment details given below:

1. Soil (T<sub>1</sub>): The red laterite soil free from pebbles and weed seed was utilized for filling the pots.
2. Cocopeat (T<sub>2</sub>): Bricks of cocopeat were used as a source of cocopeat. The well composed cocopeat was utilized for filling the pots under treatment T<sub>2</sub>.
3. Soil + Cocopeat (T<sub>3</sub>): The red laterite soil and cocopeat was utilized for filling the pots in equal proportion (1:1).
4. Soil + Coir Husk (T<sub>4</sub>): The red laterite soil and pieces of coir husk were utilized for filling the pots in equal proportion (1:1).
5. Soil + FYM + Cocopeat + Ricehusk (T<sub>5</sub>): The red laterite soils, well decomposed FYM, bricks of cocopeat and rice husk were used for filling the pots in equal proportion (1:1:1:1).

Nutrient management was done with application @ 600 kg nitrogen, 200 kg phosphorous and 200 kg potash per hectare in the form of straight fertilizers i.e., urea, single super

phosphate and muriate of potash for three sets of experiments i.e. 17 gm urea, 32.4 gm SSP, 8.64 gm MOP/plant was provided, whole dose of phosphorous, potassium and 1/3<sup>rd</sup> dose of nitrogen was applied at the time of planting. While 2/3<sup>rd</sup> dose of nitrogen was applied as top dressing in three equal splits. Application of 19:19:19 drenching (10gm/lit), soil application of Suphala (15:15:15) @25gm/plant, drenching of 0:52:34 @5gm/lit and Humic acid @10 gm/15 lit of water were singly provided once in a week. FYM was added @100 gm/plant at the time of planting

All cultural operations viz., manual pruning, pinching, disbudding, weeding, irrigation, pest control, etc. were carried out as and when required was done after 45 days of planting. Observations on various vegetative characters viz., plant height, maximum number of branches, number of leaves, flowering parameter like initiation of first flower bud, appearance of tight bud stage, Opening of first flower bud, stalk length, yield parameter like number of flower per plant, number of flower per plot, number of flower per hectare were recorded at proper stage and analysed statistically by the method suggested by Panse and Sukhatme (1978) [8].

### Result and Discussion

The data presented in table 1 revealed that, different treatments of growing media had significant effect on all growth, flowering and yield parameter of rose studied in this.

**Table 1:** Growth, flowering and yield of rose cv. Gladiator as influenced by different growing media

Treatment	Plant height (cm)	Number of branches	Number of leaves	Initiation of first flower bud	Appearance of tight bud stage	Opening of first flower	Stalk length (cm)	Yield of flower/plant	Yield of flower/Plot	Yield of flower/ha
T <sub>1</sub> -Soil	98.81	17.15	454.40	39.13	44.30	49.43	33.97	21.70	542.38	9.41
T <sub>2</sub> -Cocopeat	97.80	16.80	437.33	41.25	46.94	52.00	30.37	20.25	506.25	7.39
T <sub>3</sub> -Soil+Cocopeat (1:1)	105.53	18.08	471.88	40.63	45.88	51.26	44.25	23.66	591.59	10.57
T <sub>4</sub> - Soil+ Coirhusk (1:1)	99.50	17.71	460.45	40.63	46.41	51.84	42.75	22.52	563.03	9.86
T <sub>5</sub> - Soil + FYM + Cocopeat+Ricehusk (1:1:1:1)	106.83	18.94	484.93	36.75	41.57	47.23	48.78	25.99	649.91	13.14
SE	0.22	0.11	3.58	0.79	0.14	0.16	0.48	0.47	11.78	0.27
CD	0.68	0.33	11.02	2.44	0.43	0.48	1.47	1.45	36.29	0.85

### Growth

The vegetative growth parameter like plant height, maximum number of branches, number of leaves in rose shows significant effect on plant growth. The treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk (1:1:1:1) were recorded significantly highest plant height (106.83 cm) which was followed by T<sub>3</sub>- Soil + Cocopeat (1:1). The increase in growth parameters like plant height might be due to the fact that growth substrate like FYM, cocopeat, ricehusk having good favorable physicochemical properties and high nutrient content supported proper plant growth. If any nutrient in the selected growing medium was absent or in less amount then it reduced the plant growth and development. The finding in line with above was noticed by Chavada *et al.* (2017) [3].

Maximum number of branches (18.94) were recorded in treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk (1:1:1:1) this might be due to availability of proper nutrition to plant. Due to cocopeat and ricehusk there was proper aeration in pot which helped to proper growth of plant. This findings are also similar to the findings of Shahina Yasmeen *et al.* (2012) [10] in carnation and Usman *et al.* (2012) [13] in dahlia, who had reported highest number of branches per plant in media

containing cocopeat. Thus FYM in combination with soil is the most suitable potting mixture for optimum water holding capacity, good pore space in media and roots to grow freely and for highest number of branches per plant (Rajeshkar *et al.* 2015) [9].

Significantly maximum number of leaves (484.93) were also recorded in treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk (1:1:1:1) This might be due to the soil containing a large number of nitrogen in treatment T<sub>5</sub> as compared to other treatments so plants produced a large number of leaves. Nutritional level plays a major role in increasing the number of leaves per plant. The finding was similar to Ahmed *et al.* (2004) [1] in dahlia Grassotti *et al.* (2003) [6] on lily and Baskar and Saravanan (1997) [2] in tomato. A good number of leaves coupled with conductive root environment which would have led to proper nutrient uptake in the substrates might have resulted in greater accumulation of food matter leading to increase in number of leaves in rose. Result showed that the cocopeat, FYM, ricehusk show better quantitative effects on growth as compared to the other treatments because of high nutritional level in cocopeat, soil, FYM, ricehusk etc. Similar results were also recorded by Ysmeen *et al.* 2012 [10].

### Flowering

The treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk (1:1:1:1) recorded minimum days for initiation of first flower bud (36.75), days taken for tight bud stage (41.57), Opening of first flower (47.23) to vigorous growth of the plant growing in the media and the rapid uptake of nutrients and water had a pronounced effect on early production. This is also attributed to accumulation of more photosynthetes in plants grown in this media which might have induced early flowering. These results are in conformity to Chavada *et al.*, 2017<sup>[3]</sup>. This might probably be due to more protein formation from manufactured carbohydrate deposited in vegetative part and more in protoplast formation. Similar result was also found by Jawaharlal *et al.* (2001)<sup>[7]</sup> in anthurium. The significantly maximum stalk length (48.78 cm) was recorded in treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk condition this might be due to the fact that growth substrate was having good favourable physicochemical properties and high nutrient content that supported proper plant growth. Increase in the stalk length of the rose grown in coconut, soil, FYM, coirhusk piece was due to decrease in phenolic compound or organic acids. They were leached from the substrate due to irrigation water (Dingrodia *et al.*, 2017)<sup>[4]</sup>. The result analogous to the above finding was reported by Yasmeeen *et al.*, (2012)<sup>[10]</sup> in carnation.

### Yield

The treatment T<sub>5</sub> i.e. Soil + FYM + Cocopeat + Ricehusk recorded significantly maximum yield of flower per plant (25.99), Yield of flower per plot (649.91), Yield of flower per ha (13.14 t/ha) This might be because of higher water retention, proper aeration and good porosity and medium containing cocopeat, ricehusk, soil and FYM thereby decreasing substrate temperature in the pots. Vigorous growth of plants increased the flower production. The more flower production in cocopeat, soil, ricehusk, FYM might be because of optimum and balanced supply of plant nutrients present in the substrate which are essential at all critical growth stages, which in turn, encouraged the plant, to grow better due to increased carbohydrate synthesis. The similar finding was reported by Chavada *et al.*, 2017<sup>[3]</sup>.

### References

1. Ahmed M, Khan MF, Hamid A, Hussain A. Effect of urea, DAP and FYM on growth and flowering of dahlia (*Dahlia variabilis*). Int J. Agri Biol. 2004;2:393-395.
2. Baskar M, Saravanan A. Effect of coir pith based potting mix and methods of fertilizer application on tomato. Madras Agri. J. 1997;84(8):476-480.
3. Chavada JR, Thumar BV, Vihol AN, Patel VS, Padhiyar BM. Effect of potting media on growth, flower yield and quality of rose (*Rosa hybrida* L.) cv. Top Secret under protected condition. Int. J. Pure App. Bio Sci. 2017;5(5):821-827.
4. Dingrodiya P, Gupta NK, Bhadouria RS, Haldar A. Effect of growing media on growth and flowering of cut roses under the protected environmental conditions. Int. J. Micro. Res. 2017;9(2):861-863.
5. Gauchan DP, Pokhrel AR, Pratap M, Lama P. Current status of cut flower business in Nepal. Kathmandu Uni. J. Sci. Eng. Technol. 2009;5:87-98.
6. Grassotti A, Nesi B, Maletta M, Magnani G. Effects of growing media and planting time on lily hybrids in

soilless culture. FAOGUS. 2003.

7. Jawaharlal M, Rajamani K, Muthumanickam D, Bala Krishnamurthy. Potting media for Vanda. J. of Orn. Hort, 2001;4(1):55-56.
8. Panse VG, Sukhatme PV. Statistical methods for agricultural workers. ICAR Publication, New Delhi. 1978, 359.
9. Rajasekar P, Suresh J. Effect of different growing media on growth of pot grown rose (*Rosa chinensis* Jacq.) Res. Env. Life Sci. 2015;8(3):477-478.
10. Shahina, Yasmeeen, Adnan Younis, Adnan Rayit, Atif Riaz, Saira Shabeer. Effect of different substrates on growth and flowering of *Dianthus caryophyllus* cv. "Chauband Mixed". J. Agri and Env. Sci. 2012;12(2):249-258.
11. Simpson KW, Bode RW. Common larvae of choronomidae from rivers. Acta Hort. 1980;28:289-300.
12. Tariq U, Rehman SU, Khan MA, Younis A, Yaseen M, Ahsan M. Agricultural and municipal waste as potting media components for the growth and flowering of *Dahlia hortensis* 'Figaro'. Turk J. Bot. 2012;36:378-385.
13. Usman Tariq, Shoaibur Rehman, Muhammad Aslam Khan, Adnan Younis, Muhammad Yaseen, Muhammad Ahsan. Agricultural and municipal waste as potting media components for the growth and flowering of *Dahlia hortensis* cv. 'Fiaro'. Turk. J. Bot. 2012;36:378-385.
14. Worrall RJ. Comparison of composted hard wood and peat media for the production of seedlings. Acta Hort. 1981;4:311-319.