Effect of different growing media on growth of pot grown Rose (Rosa chinensis Jacq.)

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Abstract: Rose is one such a classical plant which requires good medium for better growth and quality of flower production. Miniature rose (Rosa chinensis Jacq.) is a dwarf bush with small leaves and flowers. Physical and chemical properties of growing media determine the nutritional status, water holding capacity and aeration which determine the rate of growth and suitability. Considering international demand and socio economic status of miniature rose, the present investigation on the standardization of media composition for pot grown roses (Rosa chinensis Jacq.) was carried out. Results of the present investigation revealed that the cultivar Pink (V1) ranked first for the plant height (36.83 cm) and number of branches per plant (10.12). The variety Summer Snow (V7) ranked first for the trait plant spread N×S (20.14 cm). Whereas, the variety Red Kudthki (V3) adjudged as the best for plant spread E×W (20.37 cm). Among the growing media, Soil + FYM (T2) recorded the increased plant height (46.92 cm) and plant spread (E×W 24.90 cm, N×S 22.41 cm). However, the growing media, Soil + Vermicompost + Leaf mould (T6) recorded the highest number of branches per plant (12.62).

Key words: Miniature rose, Potting Mixture and Plant growth

Introduction
Rose is a symbol of affection, elegance, inspiration and an important source for aesthetic gratification. Rose is also the most famous and popular cut flower in global floriculture trade. Miniature rose (Rosa chinensis Jacq.) is a dwarf bush with small leaves and flowers. Several types of miniature roses viz., climbers, trailers, micro-mini and miniiflora are available and highly suitable for pot culture and could be shifted wherever it is required for beautification. Planting miniature roses in a container is also having a benefit as it saves space. Potted plants are highly valued for urbanization and flat system of housing. Potted plants are the only group of the plants which can provide freshness even in small space and good source for decreasing the air pollution in indoor (Jones 1999). Growing media always play a vital role in growth and quality of pot plants. Rose is one such a classical plant requires good medium for better growth and quality of flower production. Physio - chemical properties of growing media determine the nutritional status, water holding capacity and aeration which determine the rate of growth as reported by Alf Riaz et al. (2008). Although several media have been successfully used for growing of miniature rose since long back. A light, rich, porous and well drained media is considered ideal for growing of miniatures. To study the effect of different growing medium for the growth of pot grown rose and using appropriate potting media for the quality production of plants.

Materials and Methods
The present investigation was carried out during 2012 at HC&RI, Periyakulam, located at 10°N latitude and 77.8°E longitude at an elevation of 300 m above MSL. The climate of this region is tropical. Six month old uniform budded miniature rose cultivars viz., ‘Red Kudthki’, ‘Pink’ and ‘Summer Snow’ were selected for the study. The experiment was laid out in FCRD with two factors viz., Factor I as cultivar which included three varieties and Factor II as growing media which included seven treatments. Earthen pots measuring 25 cm width and 25 cm height and containing seven growing media replicated into four times viz. T1 - Soil + Farmyard Manure (1:1 v/v), T2 - Soil + Farmyard Manure + Leaf mould (1:1:1 v/v), T3 - Soil + Vermicompost (1:1 v/v), T4 - Soil + Coco peat + Farmyard Manure (1:1:1 v/v), T5 - Soil + Coco peat + Leaf mould (1:1:1 v/v), T6 - Perlite + Coco peat + Farmyard Manure (1:1:1 v/v), T7 - Soil + Vermicompost + Farmyard Manure (1:1:1 v/v).

The different biometrical parameters like Plant height at the time of first flower bud appearance, Plant spread (E x W) and (N x S) and Number of branches per plant were recorded. Along with these characters, chemical analysis of all growing media was done and different properties were recorded (Table-1). Electrical conductivity and pH were determined in suspension of medium in soil water (1:2.5) by following Jackson (1973). Bulk density was determined by following Piper (1966). For available nitrogen; the method given by Subbiah and Asija (1956) was used. For measurement of available phosphorus, the method used was of Olsen et al. (1954) and for available potassium, Stanford and English (1949) method was used and determined was made with flame photometer. Determination of cation exchange capacity was measured by Piper. (1966). Standard procedure was followed to collect the data for growth parameters. The data collected was analyzed statistically by using factorial complete randomized block design (FCRBD) test at 0.05 % probability level and used to compare difference among treatments means (Panse and Sukhatme 1978).

Results and Discussion
The quality production of ornamental plants was attained by the use of appropriate potting media, which had a prominent effect on growth (Vendrame et al. 2005). The mean data on different biometrical parameters such as plant height at the time of first flower bud appearance, number of branches per plant, plant spread E×W (cm) and N×S (cm) of Rosa chinensis cv. Red Kudthki, Pink and Summer Snow as influenced by different growing medium were presented in Table-1.
Table-2: Influence of different growing medium and varieties on plant growth of *Rosa chinesis* Jacq.

<table>
<thead>
<tr>
<th>T/V</th>
<th>Plant height at the time of first flower bud (cm)</th>
<th>Plant spread E x W (cm)</th>
<th>Plant spread N x S (cm)</th>
<th>Number of branches per plant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V1</td>
<td>V2</td>
<td>V3</td>
<td>M</td>
</tr>
<tr>
<td>T1</td>
<td>45.57</td>
<td>52.06</td>
<td>43.15</td>
<td>46.92</td>
</tr>
<tr>
<td>T2</td>
<td>40.97</td>
<td>45.87</td>
<td>39.60</td>
<td>42.15</td>
</tr>
<tr>
<td>T3</td>
<td>29.17</td>
<td>31.27</td>
<td>30.17</td>
<td>30.20</td>
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<tr>
<td>T4</td>
<td>25.87</td>
<td>31.02</td>
<td>29.70</td>
<td>30.20</td>
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<tr>
<td>T5</td>
<td>32.82</td>
<td>31.75</td>
<td>30.55</td>
<td>31.70</td>
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<tr>
<td>T7</td>
<td>35.20</td>
<td>37.62</td>
<td>33.95</td>
<td>35.59</td>
</tr>
</tbody>
</table>

**Interaction**: TxV

**NS**: not significant, ****: Significant at 1 % level of significance

- **Table-2:** Among the different growing media, Soil + FYM (T1) recorded significantly the highest mean plant height of 46.92 cm and among the cultivars, ‘Pink’ (V2) registered the highest mean plant height of 36.83 cm. This could be attributed to the best combination of chemical and physical properties and ease of nutrient uptake by the plants. These findings are in accordance with Anon. (2011). Interaction between growing media and cultivars showed significant difference for this trait. Among the different treatment combination, T1V2 (Soil + FYM + cv. Pink) registered the highest plant height (52.05 cm). Whereas the lowest plant height (25.65 cm) at the time of first flower bud appearance was recorded in T1V1 (Perlite + coco peat + FYM + cv Red Kudthki).

- **The important morphological character viz., plant spread E x W** was influenced by the growing media on three cultivars of miniature rose (table-1). The cultivar, ‘Red Kudthki’ (V2) registered significantly the highest plant spread (24.90 cm) at E x W direction. Among the different growing media, Soil + FYM (T1) recorded significantly the highest mean plant spread (24.90 cm). The lowest plant spread (16.14 cm) was registered in T4 (Perlite + coco peat + FYM). Among the different treatment combination, T1V2 (Soil+ FYM + cv. Red Kudthki) recorded the highest plant spread (26.42 cm). Whereas the lowest plant spread in E x W direction was recorded in T1V2 (Perlite+coco peat+FYM+ cv. Red Kudthki) which registered 14.38 cm. The plants spread at N x S direction of three cultivars of miniature rose are given in table-1. Among the three cultivars, significantly higher plant spread at N x S direction was registered by the cultivar ‘Summer Snow’ (V2) (20.14 cm). Among the growing media, Soil + FYM (T1) recorded the highest mean plant spread (22.41 cm). Interaction between growing media and cultivars showed non significant influence on plant spread. Among the treatment combinations, T1V2 (Soil+ FYM + cv.Pink) registered the highest plant spread (23.25 cm). This might be due to the good soil air circulation, nutrient content of potting media and high photosynthetic effect of plants. These results are in line with the findings of Anon. (2011). Effects of growing media on number of branches per plant of three cultivars of miniature rose are given in table-1. Among the three cultivars, ‘Pink’ (V2) registered significantly higher number of branches per plant (10.12). Whereas the cultivar ‘Red Kudthki’ (V2) recorded the lowest number of branches per plant (7.39). Among the different growing media, the highest number of branches per plant (12.62) was recorded in Soil + FYM + Leaf mould (T1). This is in accordance with the findings of Shahina Yasmeen et al. (2012) in carnation and Usman Tariq et al. (2012) in dahlia, who had reported highest number of branches per plant in media containing Coco peat combined with Silt + Leaf manure. Thus FYM in combination with soil in the ratio of 1:1 is the most suitable potting mixture for optimum water holding capacity, good pore space in media and roots to grow freely. Among the interaction effect, T1V2 (Soil+ FYM + Leaf mould + cv.Pink) recorded the highest number of branches per plant (16.26). Whereas the least number of branches per plant (4.11) was recorded in T1V1 (Soil+ FYM + cv. Red Kudthki). Interaction effect of growing media and cultivars showed a highly significant difference for this trait.

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**References**


