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Effect of Growing Substrates on Shoot Parameters of Stem Cuttings of Damask Rose (*Rosa Damascena* Mill.) CV. 'Ranisahiba'

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Abstract:
The present experiment was carried out in Model Floriculture Centre, GBPUAT, Pantnagar. The experiment comprised of five growing substrates viz., soil, soil + FYM, soil + vermicompost, soil + cocopeat, soil + rice husk. Findings of the present investigation revealed that among growing substrates soil + vermicompost planted cuttings gave best results in most of the parameters like, days to sprouting (19.76 days), maximum sprouting percentage (79.08%) survival percentage (87.28%), diameter of sprout (3.31mm), length of sprouts (66.21cm), number of leaves (23.39), fresh weight (22.41g) and dry weight of shoot (10.37g), fresh weight (2.55g) and dry weight (0.84g) of root, number of primary roots (23.73), diameter of root (1.53mm), except length of root (23.73cm) which was foundlongest in soil + cocopeat medium.

Keywords: *Damask rose, Ranisahiba, vermicompost, FYM*

1. Introduction

Damask rose (*Rosa damascena* Mill.), belongs to family Rosaceae is one of the most important species of rose that is planted mainly for its essential oil and medicinal aspects in many areas of the world, such as Bulgaria, Turkey, India and Iran (Aghdaei *et al*., 2006).During the course of work on genetic improvement of Kannauj damask rose (*Rosa damascena* var. *bifera*) race via seed progeny researches, a variety named as Ranisahiba with doubled essential oil productivity and standard oil quality, was developed by Patra *et al.* (2001) at CSIR-CIMAP Research Centre, Pantnagar, US Nagar, Uttarakhand. This variety was initially labelled as V1 HS – 4 -18 and later named as Ranisahiba. Asexual method of propagation is not fast, but is the easiest and best method to produce new plants with true to the type genotype to its parents. But success rate through cuttings is limited in most of the rose varieties due to failure of proper root formation. the percentage of rooting and quality of roots can in many ways be directly linked to the medium itself and that the characteristics of the medium (Bruce, 1993). Locally and readily available materials such as vermi compost, farmyard manure, coconut fibre, rice hull, sawdust, peanut hull, river sand, and mixtures of these materials can be used as rooting media for cuttings (Ayodele, 1997). These agricultural wastes are easily available in the country at reasonably affordable price and can be used to improve the soil characteristics and nutrient availability. In soil by incorporation of organic amendments and microbial agent's nutrients can be easily available by plants whenever the crop requires.

2. Materials and Methods

Present research work was carried out in the year 2014 at Model Floriculture Centre, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, to ascertain the effect of growing substrates on growth of cuttings of *Rosa damascena* variety Ranisahiba. The experiment consisted of five growing substrates as first factor, S_1: soil, S_2: soil+ FYM, S_3: soil+ vermicompost, S_4: soil+ cocopeat, S_5: soil+ rice husk. The different substrate component was mixed by volume (2:1).and Substrate samples were also analyzed prior to experiment to determine their physico-chemical properties viz. pH, EC, organic carbon (%), available N, P, K. (Table 1). The experiment was laid out in Randomized Block Design (factorial).

Treatment Combination	:	5
Treatment Unit	:	10 cuttings
Replication	:	03
Design	:	RBD
Date of planting	:	5.02.2014

3. Result and Discussion

Days taken to sprouting of cutting were recorded minimum in S_3 (soil+vermicompost) medium and maximum in S_1 (soil) medium Maximum percentage of sprouted cuttings was found in S_3 (soil+vermicompost) medium while minimum in S_1 medium similar result found by Nashir and Wani (2014). The mean value of number of sprouts was counted highest under S_3 (soil+vermicompost) medium compared to soil medium. Longest sprout per cutting were found in S_3 (soil+vermicompost) medium and it was found minimum in S_1 (soil) medium. The mean number of leaves per cutting was found highest in S_3 (soil+vermicompost) medium while minimum was recorded in S_1 (soil) medium. The diameter of sprout per cutting was significantly influenced by substrates, growth regulators and their interaction effect. At final stage maximum diameter was observed in S_3 (soil+ vermicompost) and minimum value was recorded in S_1 (soil) medium similar result studied by Cuevas, 1996. Statistically significant differences were observed among substrates, growth regulators and their interaction for fresh weight of shoot. The highest fresh weight was gained in S_3 (soil+vermicompost) medium (Sharma *et al.,* 2002). The dry weight of shoot was estimated maximum in S_3 (soil+vermicompost) medium and minimum in S_1 (soil) (Shadanpour, *et al.*, 2011).

In the light of aforesaid experimental findings, it may be concluded that among growing substrates, soil + vermicompost planted cuttings gave best results in most of the parameters like, days to sprouting, maximum sprouting percentage, diameter of sprout, length of sprouts, number of leaves, fresh weight and dry weight of shoot.

4. References

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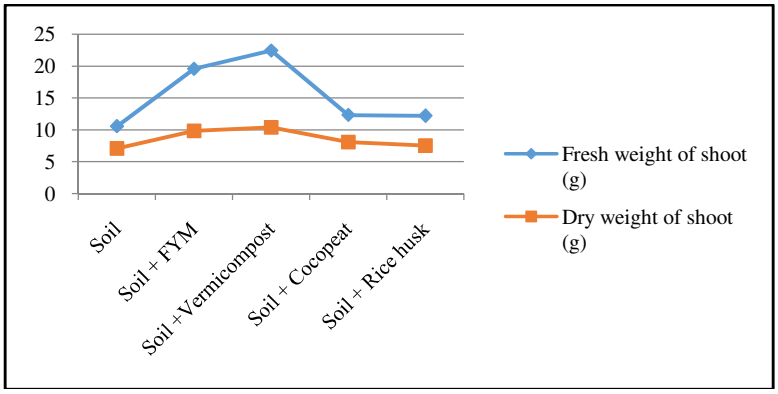

Figure 1: Fresh and Dry Weight

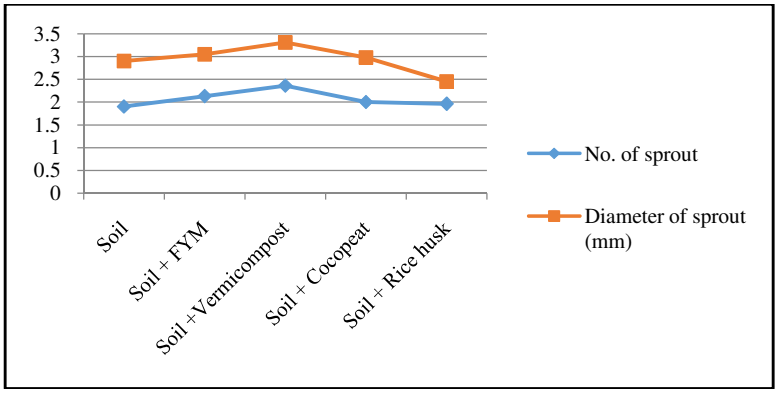

Figure 2:No. and Diameter of sprout

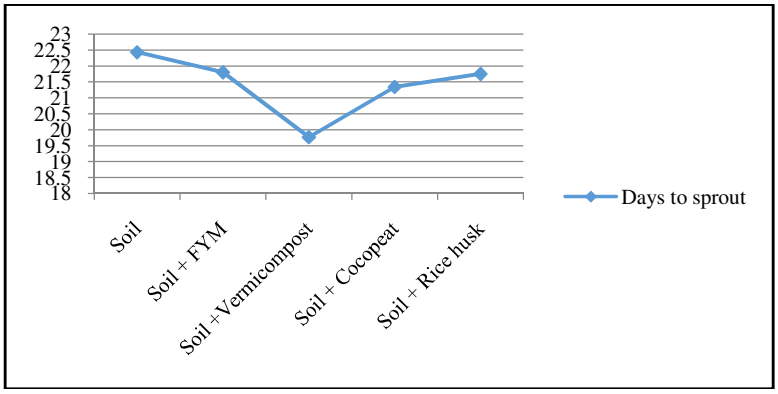

Figure 3: Days to sprout

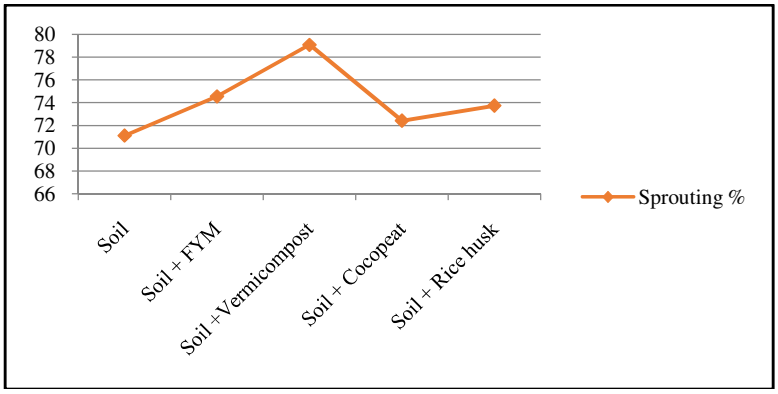

Figure 4: Sprouting %

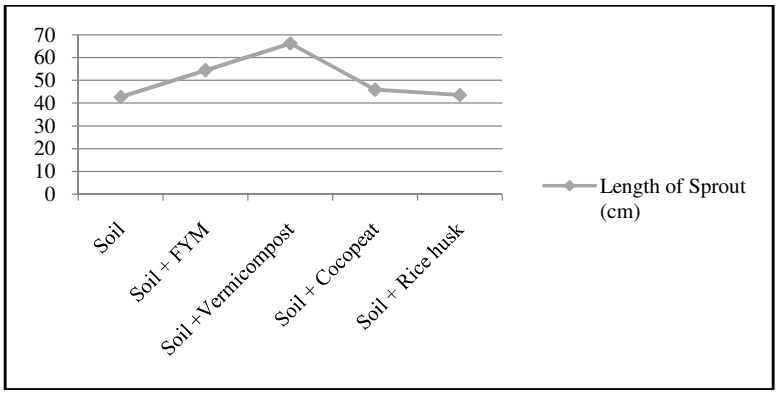

Figure 5: Length of Sprout (cm)

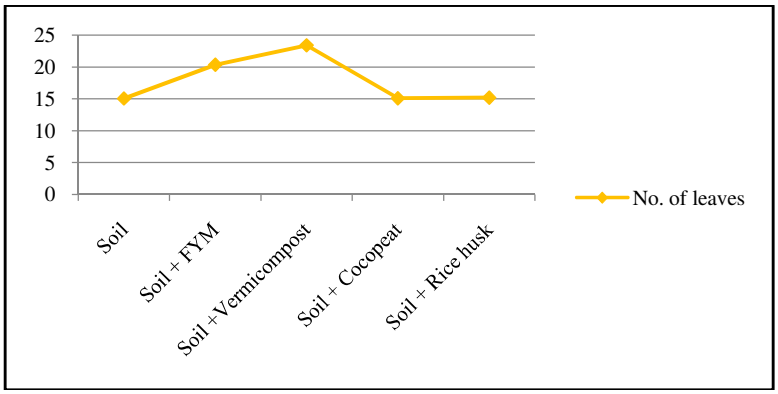

Figure 6:No. of leaves