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SA Ayare
College of Horticulture, Dapoli,
Maharashtra, India

RT Bhingarde
Associate Professor, College of
Horticulture, Dapoli, Ratnagiri,
Maharashtra, India

RG Khandekar
Professor and Head, Department
of PSMA, College of
Horticulture, Dapoli,
Maharashtra, India

NH Khobragade
Assistant Professor, Dept. of Soil
Science and Agricultural
Chemistry, College of
Agriculture, Dapoli,
Maharashtra, India

Corresponding Author:
SA Ayare
College of Horticulture, Dapoli,
Maharashtra, India

Standardization of potting media for cashew grafts (*Anacardium occidentale* L.) cv. Vengurla - 4

SA Ayare, RT Bhingarde, RG Khandekar, NH Khobragade

Abstract

The investigation entitled “Standardization of potting media for cashew grafts (*Anacardium occidentale* L.) cv. Vengurla - 4” was undertaken at College of Horticulture, Dapoli (M.S.) during the year 2020-2021. The treatments comprises; T₁-Soil + FYM (3:1) (Control), T₂- Soil + FYM + Vermicompost (1:1:1), T₃- Soil + FYM + Rice husk (1:1:1), T₄- Soil + Vermicompost + Rice husk (1:1:1), T₅- Soil + Cocopeat (1:1). The data obtained in the present investigation revealed that the maximum length of new sprout at 180 days of rebagging i.e. 24.11 cm was found in the treatment T₃ i.e. Soil + FYM + Rice husk (1:1:1), while significantly maximum girth of scion (10.74 mm) and girth of root stock (13.26 mm) of cashew grafts was obtained in treatment T₁ i.e. Soil + FYM (3:1), which was at par with the treatments T₃ (10.66 mm), T₄ (10.08 mm) and T₂ (9.88 mm) indicating the superiority of the potting medium over the other potting medium combinations.

Keywords: Standardization, potting, cashew, grafts, *Anacardium occidentale* L.

Introduction

Cashew is one of the important plantation crops of India. In India, area under cashew is 1125 thousand ha and the total production 703 thousand MT (Anonymous, 2019) ^[1]. The major cashew nut-producing states in India are Maharashtra, Kerala, Andhra Pradesh, Orissa, Karnataka, Tamil Nadu, Goa and West Bengal. In Konkan region, initially cashew was introduced as a soil conservation crop on marginal land. However, after realization of its potential, it was promoted as a commercial plantation crop to strengthen the economy of marginal farmers of the region. Assured rainfall, hot and humid climate and well-drained soil, undulating and sloping terrain of the Konkan region is very much conducive for its cultivation in the region. Cashew gives four to five times more returns per unit area than the traditional cereal crops in Konkan (Gajbhiye *et al.*, 2018) ^[2].

Establishment and survival of the planting stock in the field are mainly dependent on the production of good quality planting stock, which is dependent on the suitable potting mixture. Better establishment of grafts in the field is possible if it is healthy, free of pests and diseases, with profuse root system for anchorage in the soil. Which interns is possible on good medium containing sufficient nutrients and aeration for roots, which enhance its growth and vigour. Keeping this in view, the present investigation was carried out to find out a suitable potting medium to ensure the healthy growth of cashew grafts.

Material and Methods

The field experiment was carried out at College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri during the year 2020-2021. The experiment was conducted in Randomized Block Design (RBD) with five treatments *viz.*, T₁ - Soil + FYM (3:1), T₂ - Soil + FYM + Vermicompost (1:1:1), T₃ - Soil + FYM + Rice husk (1:1:1), T₄ - Soil + Vermicompost + Rice husk (1:1:1), T₅ - Soil + Cocopeat (1:1) and four replications. Cashew nut cv. Vengurla 4, released in 1982 by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, was used as a test crop. Vengurla 4 is a cross between Midnapur red x Vetore 56 having medium sized nuts with an average shelling percentage of about 31. It is a high yielding variety with export grade W210. Six months old softwood grafts of cashew cv. Vengurla 4, raised in polybags of size 6" X 8" without disturbing the root ball were transplanted or re-bagged in the polybag of size 10"×14" in the respective medium and kept under poly tunnel for initial 30 days, which thereafter kept in open field condition for further next 150 days during the present investigation. The morphological observations and analytical values obtained during the course of study were subjected to statistical analysis by following

the procedure pertinent to Randomized Block Design analysis as given by Panse and Sukhatme (1995) [5].

Results and Discussion

The data pertaining to the effect of different potting media on cashew grafts have been presented in Table 1. The effect of different potting media on cashew grafts showed that the maximum length of new sprout i.e. 24.11 cm was found in the treatment T₃ i.e. Soil + FYM + Rice husk (1:1:1), which was significantly superior over all other treatments. Among other treatments, T₁, T₂ and T₄ were at par with each other. The

minimum sprout length of 9.44 cm was recorded in the treatment T₅ i.e. Soil + Cocopeat (1:1). The maximum length of new sprout in potting mixture of Soil + FYM + Rice husk (1:1:1) indicating the superiority of the potting medium over the other potting medium combinations particularly in case of sprout length, which might be due to physiological activity in successful grafts produced new shoots and leaves. More number of shoots and leaves triggered the process of photosynthesis, which resulted in accumulation of energy. Simultaneously availability of moisture, nutrient through medium (Ikram *et al.*, 2012) [3] resulted in more sprouting.

Table 1: Effect of different potting media on cashew grafts

Tr.	Treatments	New sprout length (cm)	Girth of scion (mm)	Girth of Rootstock (mm)
T ₁	Soil + FYM (3:1) – Control	18.28	10.74(69.40)	13.26(131.73)
T ₂	Soil + FYM + Vermicompost (1:1:1)	16.50	9.88(59.40)	12.54(107.36)
T ₃	Soil + FYM + Rice husk (1:1:1)	24.11	10.66(76.20)	12.95(127.99)
T ₄	Soil + Vermicompost + Rice husk (1:1:1)	17.60	10.08(65.11)	12.98(124.37)
T ₅	Soil + Cocopeat (1:1)	9.44	8.36(33.44)	11.61(102.00)
	Mean	17.18	9.94	12.67
	Range	9.44-24.11	8.36-10.74	11.61-13.26
	S.E.m±	0.92	0.36	0.32
	C.D. at 5%	2.83	1.11	0.98

(Value in parenthesis indicates per cent increase)

Further, significantly maximum girth of scion (10.74 mm) was found in the potting mixture of T₁ i.e. Soil + FYM (3:1), which was found to be at par with treatment T₂, T₃ and T₄, whereas the minimum girth of scion (8.36 mm) was found in the treatment T₅ i.e. Soil + Cocopeat (1:1). Similarly, the maximum girth of rootstock (13.26 mm) was also found in the treatment T₁ i.e. Soil + FYM (3:1), which was at par with treatment T₂, T₃ and T₄; while the minimum girth of rootstock (11.61 mm) was found in the treatment T₅ i.e. Soil + Cocopeat (1:1).

This increase in girth of scion and girth of rootstock might be due to sufficient nutrients, better aeration which favours growth of cashew grafts in medium containing FYM, Vermicompost and Rice husk as compared to Soil + Cocopeat. In this context, Rajput *et al.* (2019) [6] opined that more the girth stronger is the vascular bundle of the plant which facilitates better translocation of solute within plant and ultimately produced vigorous grafts. Similar results were reported by Khedkar (2019) [4] under agro-climatic conditions of Konkan.

Conclusion

On the basis of data obtained from the present study, it can be concluded that in order to obtain healthy and quality cashew grafts of Vengurla-4, cashew grafts may be transplanted in large size polybags with the potting mixture of Soil + FYM + Rice husk in the ratio of 1:1:1 so as to provide healthy and quality cashew grafts for successful plantations in the field for better survival and establishment.

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