

RESPONSE OF DIFFERENT ORGANIC MEDIA ON GROWING TURMERIC MINISSETTS IN PROTRAY NURSERY

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ABSTRACT

Curcuma longa is known as yellow turmeric is an important, sacred and ancient spice of India. It is used in medicine as a stomachic, carminative, emmenagogue and recently as a health food in Japan. Turmeric is normally propagated by dibbling the seed rhizomes and it requires the seed rate of 2000 -2500 kg ha⁻¹. The farmer has to spend more amount on purchasing seed rhizomes. To overcome this, the present investigation was carried out to study the response of different organic media on growing turmeric minisetts in protray nursery. The experiment consists of eleven treatments with three replications and laid out in Randomized Block Design. The treatments comprised of using different mixtures of organic media such as garden soil, FYM, red earth, vermicompost, coir pith and neem cake in different proportions. Observations on growth parameters like plant height, number of leaves, pseudo stem girth, leaf length and leaf area were recorded. The results revealed that the growth parameters viz., plant height, number of leaves, pseudo stem girth, leaf length and leaf area were recorded the highest in the treatment combination of Garden soil + Coir pith + vermicompost (1:1:1) on the 45th day after planting when compared to other treatments in Turmeric protray nursery.

Keywords: Turmeric, Protray nursery, FYM, Coir pith, Garden soil and neem cake.

INTRODUCTION

Turmeric (*Curcuma longa* L.) is one of the important spices grown and used in India from time immemorial. India is the world's largest producer, consumer and exporter of turmeric. Indian turmeric is considered to be the best in the world market because of its high curcumin content. India accounts for about 80 per cent of the world turmeric production and is maintaining its monopoly in production and export of turmeric. Currently, India exports to 100 countries all over the world. UAE is the major importer of turmeric from India followed by USA, Japan, UK, Iran, Singapore, Sri Lanka and South Africa. ^[1]

Turmeric is normally propagated by dibbling the seed rhizomes. The traditional method of propagation is using 15 g mother or seed rhizomes. Traditional method requires the seed rate of 2000-2500 kg ha⁻¹ of rhizomes if it is sown as a sole crop. It makes the cultivation expensive for large scale production. Use of protray seedlings in turmeric has been recommended by TNAU when the cost of seed rhizome is higher [2]. In an on-farm trial conducted by KVK, Dharmapuri, it has been reported that the use of protray seedlings reduced seed rhizome requirement to 600-750 kg ha⁻¹ instead of 2000-2500 kg ha⁻¹ in the traditional method of planting. It also reduces the seed cost by an average of 15 per cent and reduced the cost of cultivation. Considering these

factors, the present investigation was undertaken to find out the Response of different organic media on growing turmeric minisetts in protray nursery.

MATERIALS AND METHODS

The study was carried out at the Medicinal Unit, Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar during October to December 2018. Maximum temperature of the Annamalai Nagar is 31.1°C and the minimum temperature is 24.3°C. Annamalai Nagar is located at 6 km west to Bay of Bengal at 11.02° North latitude and 79.41° East longitude and at an altitude of 5.72 m above mean sea level in the Cuddalore District of Tamil Nadu, India.

The objective of the study was to find out the response of different organic media on growing turmeric minisetts in protray nursery. The planting material used was well-matured, healthy rhizomes of turmeric variety BSR-1 collected from identified farmers in Sivagiri village of Erode district. The experiment consists of eleven treatments with three replications in Randomized Block design. Observations on growth parameters like plant height, number of leaves, pseudo stem girth, leaf length and leaf area were recorded. The treatments composed of using different mixtures of organic inputs as a media such as T₁ - Garden soil + Coir pith (1:1), T₂ - Garden soil + farmyard manure (1:1), T₃ - Garden soil + vermicompost (1:1), T₄ - Garden soil + Neem cake (1:1), T₅ - Garden soil + coir pith+ Farmyard manure (1:1:1), T₆ - Garden soil + coir pith + vermicompost (1:1:1), T₇ - Garden soil + Coir pith + neem cake (1:1:1), T₈ - Garden soil + farmyard manure + Vermicompost (1:1:1), T₉ - Garden soil + farmyard manure + neem cake (1:1:1), T₁₀ - Garden soil + vermicompost + neem cake (1:1:1) and T₁₁- Garden soil only (control).

RESULTS AND DISCUSSION:

The results obtained from the experiment on the response of different media on the growth of turmeric minisetts grown in protrays are presented in table 1.

Plant height:

The data on the response of different organic media in the growth of turmeric minisetts grown in protrays on plant height recorded at 45 DAP is presented in Table 1. The results revealed that, significantly highest plant height (44.96 cm) was obtained in the treatment with the combination of Garden soil + Coir pith+ vermicompost (1:1:1) and the least plant height (27.82 cm) was recorded in the treatment combination of Garden soil only - T₁₁. Mixture of coir pith compost and vermicompost was the ideal medium registering the good water holding capacity coupled with optimal porosity could have helped the plants to establish better in this media [3].

Number of Leaves per plant

Table.1. shows the response of different organic media in the growth of turmeric minisetts grown in protrays. Number of leaves per plant were recorded at 45 DAP. The results revealed that, significantly highest number of leaves (4.02) was obtained in treatment combination of Garden soil + Coir pith + vermicompost (1:1:1) and the least number of leaves (1.16) was recorded in the treatment with the combination of Garden soil only. Coir pith is having about 533 per cent of maximum water holding capacity. As coir pith is found to contain

appreciable amount of K, studies revealed that 50 per cent of K fertilizer could be saved by this application and would be available for plants over the years ^[4] and it results in better vegetative growth of the plant.

Pseudostem girth (mm):

The pseudostem girth recorded at 45 DAP is presented in Table 1. The results revealed that, significantly highest pseudo stem girth (7.48 mm) was obtained in treatment with the combination of Garden soil + Coir pith + vermicompost (1:1:1) and the least pseudo stem girth (3.05 mm) was recorded in the treatment with the combination of Garden soil only at 45 DAP. Whenever the coir pith is more than 25 per cent in a media mixture, highest shoot growth is observed as it was found to improve soil texture and porosity. It results in the better growth of the plants.

Leaf Length:

The data on the effect of different organic media in the growth of turmeric minisetts grown in protrays on leaf length recorded at 45 DAP is presented in Table 1. The results revealed that, significantly highest leaf length (20.01 cm) was obtained in treatment with the combination of Garden soil + Coir pith + vermicompost (1:1:1) and the least leaf length (11.88 cm) was recorded in the treatment with the combination of Garden soil only at 45 DAP. This may be attributed to the moisture retention property of coir pith and the mixture of garden soil improved the texture of the growing media. This might have helped in good vegetative growth of plants. Similar results were reported by the author ^[5] in turmeric.

Leaf area

The results of the data pertaining to the leaf area were presented in the table 1. Significant differences were observed in the leaf area with the different combination of media used in the protrays to raise turmeric seedlings. Highest leaf area (113.73 cm²) was obtained in treatment with the combination of Garden soil + Coir pith + vermicompost (1:1:1) and the least leaf area (92.01 cm²) was recorded in the treatment with the combination of Garden soil only at 45 DAP. Vermicompost present in the media might have stimulated the biochemical activity and nutrient cycling and thereby increase in the growth of vegetative characters. The results are in conformity with the findings of the author ^[6] in turmeric

CONCLUSION

From the above findings the present study revealed that, among the different organic growing media used for propagating turmeric minisetts in a protray nursery, Garden soil + Coir pith + vermicompost (1:1:1) improved the growth parameters like plant height, number of leaves, pseudo stem girth, leaf length and leaf area in turmeric minisetts.

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Table 1. Response of different organic media on growing turmeric minisetts in protray nursery

Treatments	Plant height (cm)	Number of leaves plant ⁻¹	Pseudo stem girth (mm)	Leaf length (cm)	Leaf area (cm ²)
	45 DAP (days after planting)				
T ₁ (GS+CP)	40.93	3.37	6.46	8.28	109.23
T ₂ (GS+FYM)	35.55	2.44	5.03	15.72	102.57
T ₃ (GS+VC)	42.92	3.69	6.97	19.13	111.55
T ₄ (GS+NC)	29.21	1.46	3.48	12.70	94.27
T ₅ (GS+CP+FYM)	37.33	2.72	5.46	16.56	104.76
T ₆ (GS+CP+VC)	44.96	4.02	7.48	20.01	113.73
T ₇ (GS+CP+NC)	32.77	2.07	4.42	14.42	98.76
T ₈ (GS+FYM+VC)	39.14	3.09	5.97	17.43	107.02
T ₉ (GS+FYM+NC)	30.93	1.78	3.96	13.56	96.58
T ₁₀ (GS+VC+NC)	34.63	2.12	4.82	14.83	100.22
T ₁₁ (GS only)	27.82	1.16	3.05	11.88	92.01
S.Ed.	1.00	0.15	0.20	0.41	1.28
CD	2.01	0.31	0.43	0.86	2.25

GS- Garden soil, CP- coir pith, VC- vermicompost, FYM- farmyard manure, NC-neem cake, all the combination of media was used as equal proportion of (1:1:1)