



BEST ORGANIC MEDIA FOR GROWING TURMERIC MINISSETTS IN PROTRAY NURSERY

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Abstract

Turmeric (*Curcuma longa*) is also known as Indian Saffron is used as a principle spice. The experiment was carried out at Medicinal unit of Department of Horticulture, Faculty of Agriculture, Annamalai University to find out the best organic media for growing turmeric seedlings in a protray nursery. The experiment consists of thirteen 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, saw dust and neem cake in different proportions. Observations on growth parameters like plant height, number of leaves, pseudostem girth and leaf length were recorded. The results revealed that the growth parameters viz., plant height, number of leaves, pseudo stem girth and leaf length were recorded the highest in the treatment combination of Garden soil + Farm yard manure + Coir pith (1:1:1) on the 30th day after planting when compared to other treatments in Turmeric protray nursery.

Key words: Turmeric, Protray nursery, FYM, Coir pith, Garden soil and neem cake

Introduction

Spices are high value export oriented crops extensively used since time immemorial. In India, spices occupy an important place among the agro products exported. *Curcuma longa* known as yellow turmeric (Manjal in Tamil) is a rhizomatous herbaceous plant belonging to the family Zingiberaceae is native to tropical South Asia is a valued spice and aromatic cum medicinal plant. It has been widely used in ayurvedic medicines (Sasikumar, 2000). Rhizomes of *Curcuma longa* are also used in medicines as a stomachic, carminative and emmenagogue. Curcumin is the pigment that lends the bright stunning yellow colour to turmeric which can be used as a dye (Neeraja *et al.*, 2017). Indian turmeric is considered to be the best in the world. Erode, a city in the South Indian state of Tamil Nadu, is the world's largest producer and the most important trading centre for turmeric. Though there are many high yielding varieties of turmeric available, variety named BSR 2 which is a mutant from Erode local type released in 1994 found to be more effective and commonly cultivated. The crop yields 32 t ha⁻¹ in shorter crop duration of 240-250 days. The plants are medium statured, high yielding and are

resistant to scale insects. It is suitable for Erode, Coimbatore, Salem, Dharmapuri, Trichy, Thanjavur, Vellore, Villupuram, Thiruvannamalai, Cuddalore districts of Tamilnadu.

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 pro-tray seedlings in turmeric has been recommended by TNAU when the cost of seed rhizome is higher (TNAU, 2012). 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 best organic media that can be used for the Rapid multiplication of turmeric minisetts using protray nursery.

Materials and Methods

The study was carried out at the Medicinal Unit,

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Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar during October to December 2018. The objective of the study was to standardize the best organic media for the growth of turmeric minisetts in the protray nursery. The planting material used was well-matured, health rhizomes of turmeric variety BSR-1 collected from identified farmers in Sivagiri village of Erode district. The experiment consists of thirteen treatments with three replications in Randomized Block design (RBD). Observations on growth parameters like plant height, number of leaves, pseudostem girth and leaf length were recorded. The treatments composed of using different mixtures of organic inputs as a media such as T₁ - Garden soil + Farmyard manure (1:1), T₂ - Garden soil + Vermicompost (1:1), T₃ - Garden soil + Saw dust (1:1), T₄ - Garden soil + Coir pith (1:1), T₅ - Garden soil + Farmyard manure + Vermicompost (1:1:1), T₆ - Garden soil + Farmyard manure + Saw dust (1:1:1), T₇ - Garden soil + Farmyard manure + Coir pith (1:1:1), T₈ - Garden soil + Vermicompost + Saw dust (1:1:1), T₉ - Garden soil + Vermicompost + Coir pith (1:1:1), T₁₀ - Garden soil + Saw dust + Coir pith (1:1:1), T₁₁ - Garden soil + Neem cake + Red earth (1:1:1), T₁₂ - Garden soil + Neem cake + coir pith (1:1:1), T₁₃ - Garden soil only. Observations on growth parameters like plant height, number of leaves, pseudostem girth and leaf length were recorded.

Results and Discussion

The results obtained from the experiment on the best

Table 1: Effect of organic media on growth parameters of turmeric minisetts.

Treat-ments	Plant height (cm)		Number of leaves plant ⁻¹		Pseudo stem girth (mm)	Leaf length (cm)
	15 DAP	30 DAP	15 DAP	30 DAP	30 DAP	30 DAP
T ₁ (G+F)	13.00	22.30	1.01	2.00	4.00	9.50
T ₂ (G+V)	13.90	24.00	1.00	2.01	4.01	9.20
T ₃ (G+S)	15.00	28.00	1.02	3.00	4.55	8.00
T ₄ (G+C)	14.00	28.03	1.01	3.02	4.00	9.00
T ₅ (G+F+V)	18.40	31.90	1.00	2.00	6.41	8.51
T ₆ (G+F+S)	16.80	30.00	1.01	2.01	5.30	8.00
T ₇ (G+F+C)	26.01	35.70	2.00	3.50	8.02	12.01
T ₈ (G+V+S)	20.00	31.00	1.00	2.00	5.40	9.30
T ₉ (G+V+C)	22.52	33.93	1.52	2.51	6.31	8.52
T ₁₀ (G+S+C)	24.70	33.00	1.54	2.00	6.43	8.24
T ₁₁ (G+N+R)	12.00	20.00	1.00	2.02	3.00	8.00
T ₁₂ (G+N+C)	11.00	19.32	1.00	2.00	2.51	7.61
T ₁₃ (G only)	9.00	17.00	0.51	1.51	2.34	6.50
S.Ed.	0.54	0.72	0.14	0.42	0.63	1.54
CD	1.20	1.50	0.32	0.95	1.40	3.20

G- Garden soil, F- farmyard manure, V- vermicompost, S- sawdust, C- coir pith, N- neem cake, all the combination of media was used as equal proportion (1:1:1).

media for the growth of turmeric seedlings grown in protrays are;

Plant height (cm):

The data on the effect of different organic media in the growth of turmeric minisetts grown in protrays on plant height recorded at 15 and 30 DAP is presented in Table 1. The results revealed that, significantly highest plant height (26.01 and 35.70 cm at 15 and 30 DAP) was obtained in the treatment with the combination of Garden soil + Farm yard manure + Coir pith (1:1:1) in T₇ and the least plant height (9.00 and 17.00 cm at 15 and 30 DAP) was recorded in the treatment combination of Garden soil only -T₁₃. Mixture of coir pith compost and farm yard manure 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.

Number of Leaves per plant:

Table 1 shows the influence of different organic media in the growth of turmeric minisetts grown in protrays. Number of leaves per plant were recorded at 15 and 30 DAP. The results revealed that, significantly highest number of leaves (2.00 and 3.50 at 15 and 30 DAP) was obtained in treatment combination of Garden soil + Farm yard manure + Coir pith (1:1:1) -T₇ and the least number of leaves (0.51 and 1.51 at 15 and 30 DAP) was recorded in the treatment with the combination of Garden soil only -T₁₃. 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 (Singh *et al.*, 2002) and it results in better vegetative growth of the plant.

Pseudostem girth (mm):

The pseudostem girth recorded at 30 DAP is presented in Table 1. The results revealed that, significantly highest pseudostem girth (8.02 mm) was obtained in treatment with the combination of Garden soil + Farm yard manure + Coir pith (1:1:1) -T₇ and the least pseudostem girth (2.34 mm) was recorded in the treatment with the combination of Garden soil only -T₁₃ at 30 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 (cm):

The data on the effect of different organic media in the growth of turmeric minisetts grown in protrays on leaf length recorded at 30 DAP is presented in Table 1. The results revealed that, significantly highest leaf length was obtained in treatment with the combination of Garden soil + Farm yard manure + Coir pith (1:1:1) (12.01 cm at 30 DAP) and the leaf length was recorded in the treatment with the combination of Garden soil only -T₁₃ (6.50 cm) at 30 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 Ravi Pujari, 2013 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 + Farm yard manure + Coir pith (1:1:1) improved the growth parameters like plant height, Number of leaves, Pseudostem girth and leaf length in turmeric

minisetts.

References

- Aswathy, T.S. (2013). Rapid multiplication of kasthuri turmeric (*Curcuma aromatica* Salisb.) through miniset technique and nursery management. M.Sc.(Hort.) thesis, Kerala Agricultural University, Thrissur.
- Neeraja, A., D.V. Swami, B. Prasanna Kumar, T.S.K.K. Kiran Patro, D.R. Salomi Suneetha and B. Babu Rao (2017). *International journal of current Microbiology and Applied sciences*, **6**: 422-428.
- Ravi Pujari (2013). Effect of propagation media, rhizome size and growth regulators on growth, yield and quality of turmeric (*Curcuma longa* L.) var. Suroma. M.Sc. (Hort.) thesis, Kittur Rani Channamma College of Horticulture, Arabhavi.
- Sasikumar, B. (2000). Kasthuri turmeric: Ignorance pervasive. *Indian Spices*, **37**: 2-5.
- Singh, K.P., S.P.S. Suchitra Raghava and R.L. Mishra (2002). Effect of media on rooting of carnation cuttings. *J. Ornamental Hortic.*, **5**: 53 –58.
- Tnau (Tamil Nadu Agricultural University)- Annual Report (2012-2013). Revised Performa for Annual Report-KVK Dharmapuri (online). Error! Hyperlink reference not valid. (18 Oct. 2013).