“Effect of propagation media on growth performance of star jasmine (*Jasminum multiflorum* Burm. f. Andrews) by stem cuttings”.

Abstract:

Present study investigated “Effect of different propagation media on the growth and survival of Star Jasmine (*Jasminum multiflorum* Burm. f. Andrews) cuttings” during 2022-2023 using a Randomized Block Design (RBD) with eight treatments and three replicationswith eight treatments *i.e.*,T_1: Soil + FYM + Sand (1:1:1), T_2: Soil + FYM + Cocopeat (1:1:1), T_3: Soil + FYM + Rice husk (1:1:1), T_4: Soil + Vermicompost + Sand (1:1:1), T_5: Soil + Vermicompost + Cocopeat (1:1:1), T_6: Soil + Vermicompost + Rice husk (1:1:1), T_7: Soil + Vermicompost + FYM (1:1:1), T_8 Soil + FYM (Control) (3:1). The treatments comprised various combinations of soil, farmyard manure (FYM), cocopeat, sand, rice husk, and vermicompost. The results indicated that the propagation media significantly affected the growth parameters. Notably, Treatment T_5*i.e.*Soil + Vermicompost + Cocopeat (1:1:1) demonstrated superior performance, with the shortest sprouting time (9.67 days), highest survival rate (78.67%) and overall enhanced growth attributes, including sprout number, sprout length, plant height, leaf area, and root and shoot weights. The findings suggest that Soil + Vermicompost + Cocopeat (1:1:1) is an optimal medium for propagating Star Jasmine cuttings, warranting further studies to confirm its efficacy across different locations and seasons.

Introduction

Jasminum multiflorum, commonly known as Star Jasmine, is an ornamental flowering shrub native to India and Southeast Asia.Jasmine belongs to the family Oleaceae and the genus *Jasminum* comprises about 500 species, which are dispersed in the warmer parts of Europe, Asia, Africa and the Pacific region (Bhattacharjee, 1980) and is known to be the native of subtropical regions (David, 1990). While species like *J. sambac*, *J. grandiflorum*and *J. auriculatum* are commercially cultivated, *J. multiflorum* holds potential for off-season production.Itstemperatures between 15□ and 17°C during the night shuts the flowering for a week (Leonhardt and Teves, 2002).

Jasmine is one of the most important tropical fragrant flowers of family Oleaceae and the genus *Jasminum* contains around 200 species (Dickey, 1969). However, limited studies have been conducted on its propagation. Stem cutting is a simple and cost-effective method for *J. multiflorum* propagation, but success depends on factors like cutting type, season, and growth regulators. Auxins, in particular, play a critical role in root initiation. Investigating the influence of different media on the growth of Star Jasmine cuttings, this study sheds light on the optimal conditions necessary for successful propagation. The aim is to optimize its asexual propagation for commercial purposes.

Material and methods

The present research work was carried out during *Rabi* season of the year 2023-24 at Floriculture farm of College of Horticulture, Dapoli, Dist. Ratnagiri, (Maharashtra state). The experiment was laid out in Randomized Bock Design replicated thrice with eight treatments *i.e.*,T_1: Soil + FYM + Sand (1:1:1), T_2: Soil + FYM + Cocopeat (1:1:1), T_3: Soil + FYM + Rice husk (1:1:1), T_4: Soil + Vermicompost + Sand (1:1:1), T_5: Soil + Vermicompost + Cocopeat (1:1:1), T_6: Soil + Vermicompost + Rice husk (1:1:1), T_7: Soil + Vermicompost + FYM (1:1:1), T_8 Soil + FYM (Control) (3:1). A slanting cut was given at the base of the cuttings having three to four buds. A transverse cut was given at the top of each cutting. The basal end of the cuttings ware treated with rooting hormone *i.e.*,keradix powder. Then the treated cuttings were planted in polybags (6" x 8") containing media as per treatments. Daily observation was noted for sprouting parameters whereas survival percentage was recorded at the end of the experiment (120 DAP). The data were analyzed by standard method of analysis of variance described by Panse and Sukhatme (1985) [7].

Result and discussion

Number of days required for initiation of sprouting

The effect of different propagation media on number of days required for initiation of sprouting is one of the key factors in the growth and survival of cuttings. Data was recorded till last initiation of sprouting. The minimum number of days (9.67 days) required for initiation sprouting of cutting was recorded in treatment T_5 (Soil + Vermicompost + cocopeat), which was followed by T_4 (Soil + Vermicompost + Sand) *i.e.*, (11.00) days. Both these treatments were at par and significantly superior over the remaining treatments. Similar results reportedby Marasini and khanal, (2018) on bougainvillea cutting with the effect of media (cocopeat + Sand) *i.e.*, 9 days.The media comprising of soil + perlite + vermicompost in a 2:1:2 ratio was found to be best in early sprouting in black pepper cuttings (Sharath and Bhoomika, 2018)

Number of sprouts

The various media show significant effect in star jasmine. The maximum number of sprouts (4.27) were recorded in treatment T_5 (Soil + Vermicompost + Cocopeat), which was significantly superior over remaining treatments. The minimum number of sprouts (1.87) were recorded in treatment T_8 (Soil + FYM).Shira and Kumar (2015) noted that a highest number of sprouts in Salix cuttings was observed when they were grown in a mixture of soil and sand in a 1:1 ratio.

survival percentage

The data of survival percentage showed a significant variation in experiment among treatments. The highest survival percentage 78.67% was found in T_5*i.e.*, Soil + Vermicompost + Cocopeat (1:1:1), which was at par with treatment T_4 (74.67 %). However, the lowest survival percentage 47.33 % was observed in treatment T_8*i.e.*, Soil + FYM (3:1) proportion. The overall performance in relation to growth parameters of

root and shoots was comparatively better in this treatment which ultimately increased the survival percentage.

Plant height

The perusal of data revealed that the difference in the number of sprouts significantdifferencewas foundintheplantheightamongvarioustreatments in the experiment. Themaximum plant height (46.35 cm) was found in treatment T_5*i.e.,* Soil + Vermicompost+ Cocopeat (1:1:1), whereas the minimumplant height (34.36 cm) was observed in treatment T_8*i.e.,* Soil + F.Y.M (3:1). Treatment T_5*i.e.,* Soil + Vermicompost + cocopeat (1:1:1)was found statistically significant in relation to plant height. The vermicompost and soil have high organic matter content which enhances nutrient availability and improves the permeability, aeration and water holding capacity of the growing medium (Bhardwaj, 2014).Vermicompost is enriched with diversityof soil micro- organisms. Similar findings were also reported by Meenakshi *et al*. (2023) in Lilly grown in Soil + Vermicompost + sand.

Table 1. effect of different propagation media on Number of days required for initiation of sprouting, number of sprouts, survival percentage andplant height of Star jasmine cuttings.

Treatments		Days required for inhiation of sprouting.	Survival percentage (%)	Number of sprouts	Plant height (cm)
T_1	Soil + FYM + Sand (1:1:1)	12.33	69.33	3.07	42.11
T_2	Soil + FYM + Cocopeat (1:1:1)	11.67	70.00	3.27	43.14
T_3	Soil + FYM + Rice husk (1:1:1)	15.67	56.00	2.60	36.29
T_4	Soil+ Vermicompost +Sand (1:1:1)	11.00	74.67	3.67	43.95
T_5	Soil + Vermicompost +Cocopeat (1:1:1)	9.67	78.67	4.27	46.35
T_6	Soil + Vermicompost + Rice husk (1:1:1)	14.67	62.67	2.87	41.37
T_7	Soil + Vermicompost + FYM (1:1:1)	13.33	65.33	2.80	40.79
T_8	Soil + FYM (Control) (3:1)	16.33	47.33	1.87	34.36
	Mean	13.08	65.50	3.05	41.05

	S. Em ±	1.12	1.56	0.14	0.50
	CD @ 5%	3.39	4.72	0.43	1.52
	Result	SIG	SIG	SIG	SIG

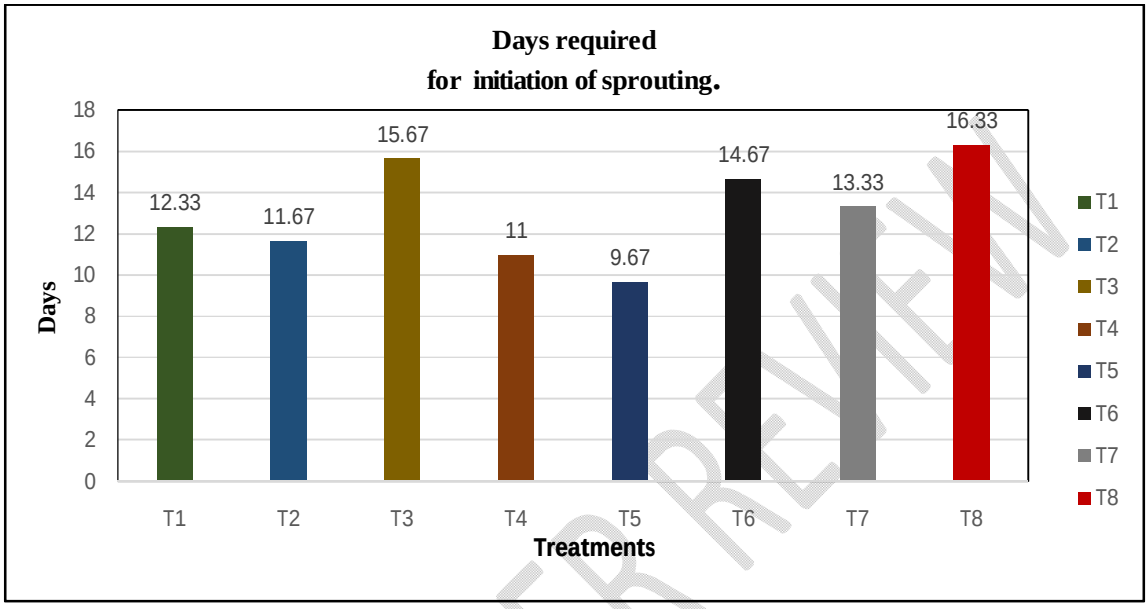

Fig.1. Effect of different propagation media on number of days requiredfor initiation of sprouting in Star jasmine.

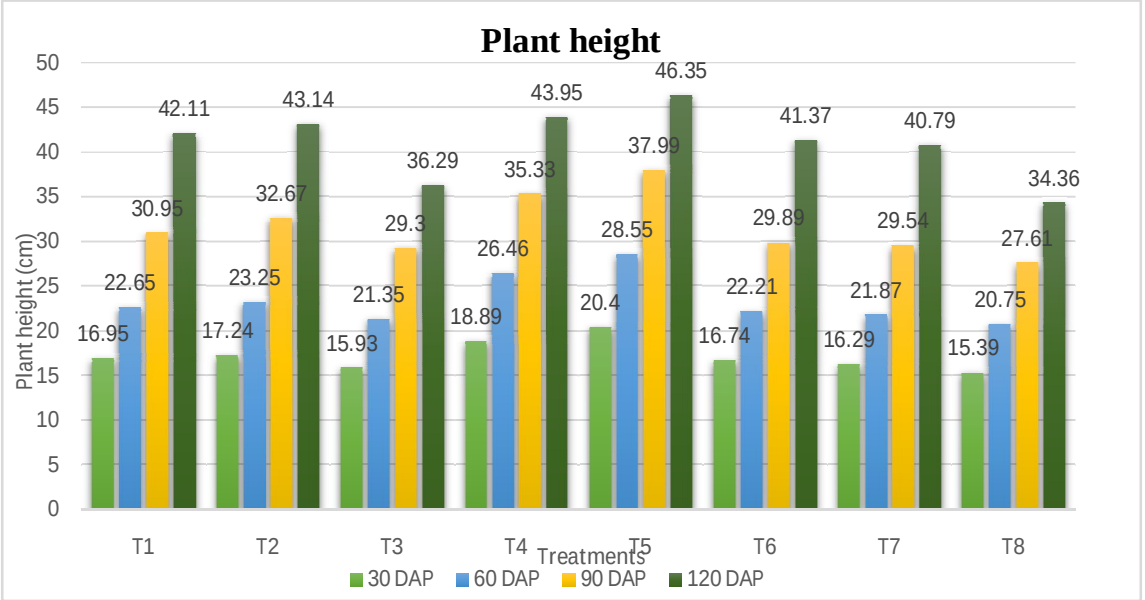

Fig. 2. Effect of different propagation media on Plant height of Star jasmine cuttings.

Conclusion:

From the present investigation on effect of propagation media on growth performance of star jasmine (*Jasminum multiflorum* Burm. f. Andrews) by stem cuttings, following conclusion can be drawn that Use of Propagation media of (Soil + Vermicompost + Cocopeat) with the ratio of 1:1:1 (T_5) showed the promising results with respect to survival and growth attributes such as days required for sprouting, number of sprouts, plant height, over other media,

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