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**GC Kapare**  
M.Sc. (Horti.) Scholar,  
Department of Floriculture and  
Landscape Architecture, College of  
Horticulture Dapoli, Dr. Balasaheb  
Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**SB Thorat**  
Assistant Professor,  
College of Horticulture Dapoli, Dr.  
Balasaheb Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**NV Dalvi**  
Assistant Professor,  
College of Horticulture Dapoli, Dr.  
Balasaheb Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**NH Khobragade**  
Assistant Professor,  
Department of Soil Science and  
Agriculture Chemistry, College of  
Agriculture, Dapoli, Dr. Balasaheb  
Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**KV Malshe**  
Agronomist, Regional Coconut  
Research Station, Bhatye, Dr.  
Balasaheb Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**Swarda P Parab**  
M. Sc. (Horti.) Scholar,  
Department of Plantation, Spices,  
Medicinal, and Aromatic crops,  
College of Horticulture Dapoli, Dr.  
Balasaheb Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

**Corresponding Author:**  
**GC Kapare**  
M.Sc. (Horti.) Scholar,  
Department of Floriculture and  
Landscape Architecture, College of  
Horticulture Dapoli, Dr. Balasaheb  
Sawant Konkan Krishi  
Vidyapeeth, Dapoli, Maharashtra,  
India

## Performance of cape jasmine (*Gardenia jasminoides* Ellis) to different propagation media on survival by stem cuttings

**GC Kapare, SB Thorat, NV Dalvi, NH Khobragade, KV Malshe and Swarda P Parab**

### Abstract

The present study entitled “Performance of Cape jasmine (*Gardenia jasminoides* Ellis) to different propagation media on survival by stem cuttings” was conducted at Hi Tech Nursery, College of Horticulture, Dapoli, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli during 2021-22. The experiment included eight treatments, each of which was repeated three times. In order to prepare the treatments, a variety of media, including soil, sand, vermicompost, rice husks, cocopeat, and farmyard manure (FYM), were combined. The treatment T<sub>3</sub> (Soil+ FYM+ Ricehusk) in 1:1:1 proportion was the best for the number of days required for sprouting and had highest survival percentage.

**Keywords:** Indian mustard, path coefficient analysis

### Introduction

Cape jasmine is an evergreen flowering plant of the family *Rubiaceae*. It originated in Asia and is most commonly found growing wild in Vietnam, Southern China, India, and Bangladesh. Different species like *G. augusta* and *G. grandiflora* are also being cultivated in different parts of India. It was also honoured with prestigious award of garden merit of the royal horticultural society.

Cape jasmine (*Gardenia jasminoides* E.) is a shrub that ranges from 30 cm to 3 meters high in the wild, with cylindrical to flat branches that are furry at first becoming smooth. The leaves colour is glossy dark green and arranged oppositely or rarely in groups of three along the branches. The flowers are solitary and terminal (arising from the ends of stems). The white flowers have a matte texture, in contrast to the glossy leaves. They gradually take on a creamy yellow colour and a waxy surface. Aside from the value of ornamental plants, recent research shows that other parts of plants such as leaves, roots, and fruits of these trees can be used as pharmaceutical raw materials for the treatment of diseases such as acute nephritis, urination, urinary stones; kidney stones, jaundice, Studies have found that Cape jasmine contains at least 20 active compounds, including several powerful antioxidants.

Rooting media is one of the major factors which determine the rooting of gardenia cuttings (Gopale and Zunjarrao, 2011) [1]. Propagation media is an important source of providing appropriate plant nutrients required for plant metabolism, growth, and development, which determines plant quality. Other than soil, several growing media such as sand, cocopeat, vermicompost, rice husk, and FYM have good porous structure, are light in weight, easy to transport, and are economically cheap, and are thus utilized in propagation mixture.

### Materials and Methods

The present field investigation was conducted at Hi Tech Nursery, College of Horticulture, Dapoli, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. During 2021 to 2022. The experiment was laid out in Randomized Block Design with eight different treatments as a media i.e. Soil + FYM, Soil + FYM + Cocopeat, Soil + FYM + Ricehusk, Soil + FYM + Sand, Soil + Vermicompost + FYM, Soil + Vermicompost + Cocopeat, Soil + Vermicompost + Ricehusk, Soil + Vermicompost + Sand. Propagation media was made individually from soil, sand, farm yard manure (FYM), vermicompost, rice husk, and cocopeat. The appropriate quantities of different media components were mixed together on a volume basis in accordance with the treatment. In each treatment, 50 cutting of cape jasmine were planted in every replication.

The observations on the number of days required for sprouting and survival percentage (%) was recorded of cape jasmine cuttings at 180 days after planting in each treatment. The data was successfully analysed as method suggested by Panse and Sukhatme (1995)<sup>[3]</sup>.

**Results and Discussion**

Observation regarding the effect of different media treatments

on the number of days required for sprouting and survival percentage of Cape jasmine cutting. The results obtained during the present study are presented and discussed along with tables and figures.

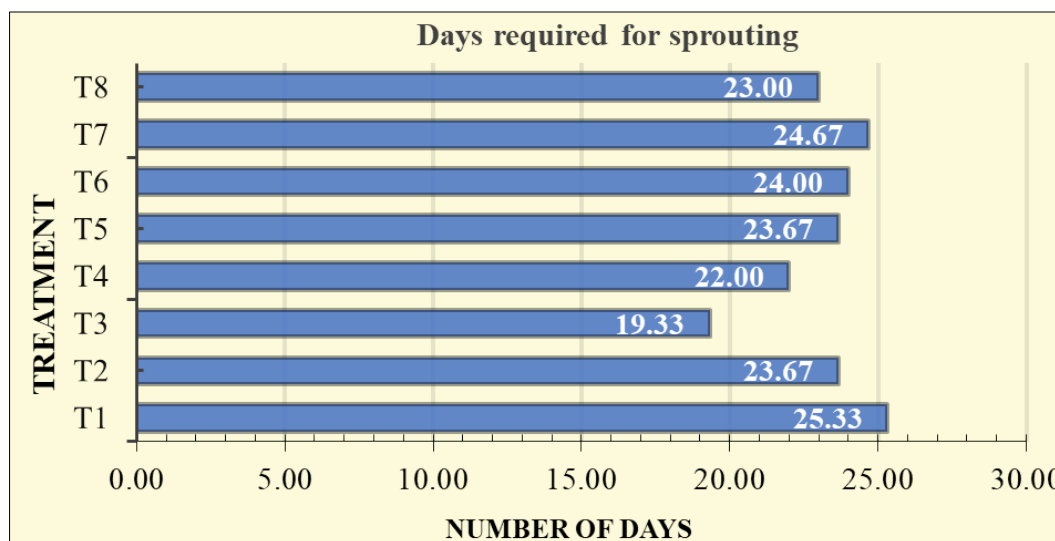
The data on the effect of different propagation media on the number of days required for sprouting of Cape jasmine (*Gardenia jasmenoides* Ellis.) cutting presented in Table 3 and depicted in Fig. 1.

**Table 1:** Effect of different propagation media on number of days required for the sprouting of Cape jasmine (*Gardenia jasmenoides* Ellis.) cuttings.

Treatment	Number of days required for sprouting
T <sub>1</sub> = Soil + FYM (Control) (3:1)	25.33
T <sub>2</sub> = Soil + FYM + Cocopeat (1:1:1)	23.67
T <sub>3</sub> = Soil + FYM + Ricehusk (1:1:1)	19.33
T <sub>4</sub> = Soil + FYM + Sand (1:1:1)	22.00
T <sub>5</sub> = Soil + Vermicompost + F.Y.M (1:1:1)	23.67
T <sub>6</sub> = Soil + Vermicompost + Cocopeat (1:1:1)	24.00
T <sub>7</sub> = Soil + Vermicompost + Ricehusk (1:1:1)	24.67
T <sub>8</sub> = Soil + Vermicompost + Sand (1:1:1)	23.00
Mean	23.21
S.Em.±	1.01
C.D. at 5%	3.07

The minimum number of days required for sprouting of cutting was recorded in treatment T<sub>3</sub> (Soil + FYM + Ricehusk) i.e., 19.33 days. It was followed by T<sub>4</sub> (Soil + FYM + Sand) (22.00) days. Both these treatments were at par and

significantly superior over the remaining treatments. The longest number of days required for sprouting were found in T<sub>1</sub> (25.33).



**Fig 1:** Effect of media on number of days required for sprouting of Cape jasmine cutting

Thus, it was found that the propagation mixture of Soil, FYM, Ricehusk and Sand was beneficial for early sprouting in Cape jasmine cutting. The rice husk when added to the soil resulted in early sprouting in the present investigation. Earliness of sprouting might be due to, moisture available in media, available nutrients, utilization of stored carbohydrates, and maturity of cutting used for planting as well as optimum temperature and relative humidity during the experiment. Similar results also reported by Marasini and Khanal (2018)<sup>[2]</sup> in bougainvillea cutting and by Sharath and Bhoomika, 2018<sup>[5]</sup> in black pepper cuttings.

**3.2 Survival percentage (%)**

The data on the effect of different propagation media on survival percentage of Cape jasmine (*Gardenia jasmenoides* Ellis.) cutting presented in Table 2 and depicted in Fig. 2.

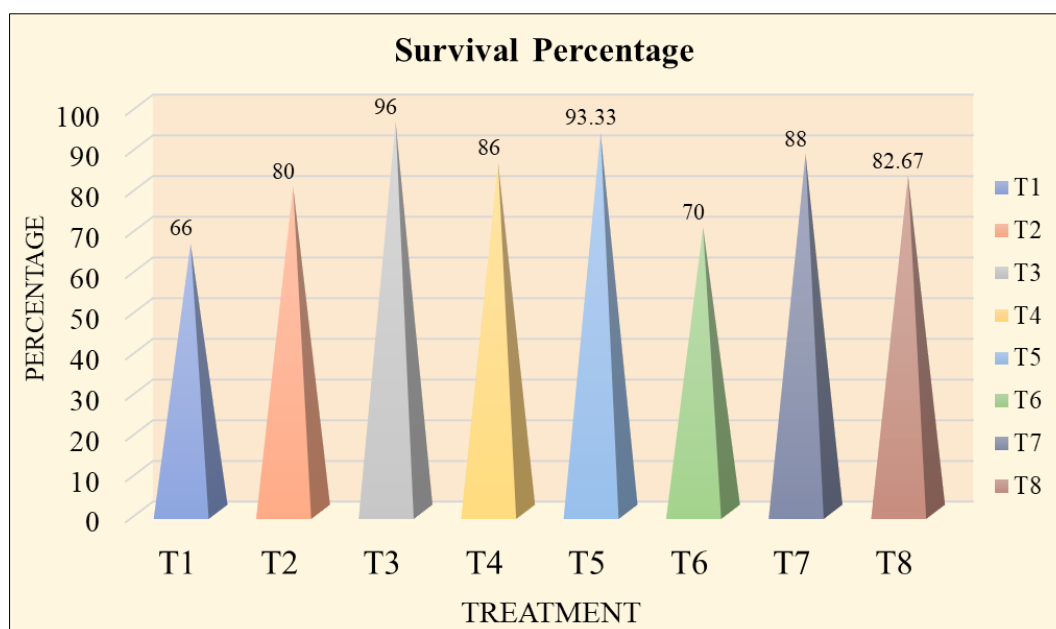
The data of survival percentage was shown a significant variation in experiment among treatments. The highest survival percentage 96.00% was found in T<sub>3</sub> i.e., Soil + FYM + Ricehusk (1:1:1), which was at par with treatment T<sub>5</sub> (93.33%) and treatment T<sub>7</sub> (88.00%). However, the lowest survival percentage 66.00% was observed in treatment T<sub>1</sub> i.e., Soil + FYM (3:1) proportion.

**Table 2:** Effect of different propagation media on survival of Cape jasmine (*Gardenia jasmenoides* Ellis.) cuttings.

Treatment	Survival Percentage (%)
T <sub>1</sub> = Soil + FYM (Control) (3:1)	66.00 (54.46)
T <sub>2</sub> = Soil + FYM + Cocopeat (1:1:1)	80.00 (63.45)
T <sub>3</sub> = Soil + FYM + Ricehusk (1:1:1)	96.00 (78.72)
T <sub>4</sub> = Soil + FYM + Sand (1:1:1)	86.00 (68.06)
T <sub>5</sub> = Soil + Vermicompost + F.Y.M (1:1:1)	93.33 (75.28)
T <sub>6</sub> = Soil + Vermicompost + Cocopeat (1:1:1)	70.00 (56.86)
T <sub>7</sub> = Soil + Vermicompost + Ricehusk (1:1:1)	88.00 (69.85)
T <sub>8</sub> = Soil + Vermicompost + Sand (1:1:1)	82.67 (65.49)
Mean	82.75 (66.52)
S.Em.±	2.66
C.D. at 5%	8.07

The highest survival percentage found in treatment T<sub>3</sub> may be attributable to the higher availability of well-decomposed organic matter in media, which increase nutrient availability. Absorption of nutrients and water which responsible for maintaining cell turgidity cell elongation, root formation and vegetative growth of cutting. The overall performance in

relation to growth parameters of root and shoots were comparatively better in this treatment which ultimately increased the survival percentage. Vijay *et al.* (2018) [5] observed that highest survival percentage of marigold cutting found in the media containing soil: Vermicompost: Cocopeat: Ricehusk (1:1:1:1).

**Fig 2:** Effect of media on survival percentage of Cape jasmine cutting

### Conclusion

From the present experiment result it can be concluded that, the performance of Cape jasmine cutting was significantly superior when raised in media treatment T<sub>3</sub> *i.e.*, Soil + FYM + Ricehusk in 1:1:1 proportion, with respect to number of days required for sprouting and survival percentage. Vigorous growing, higher quality, and healthier Cape jasmine cutting are advantageous for better field establishment.

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