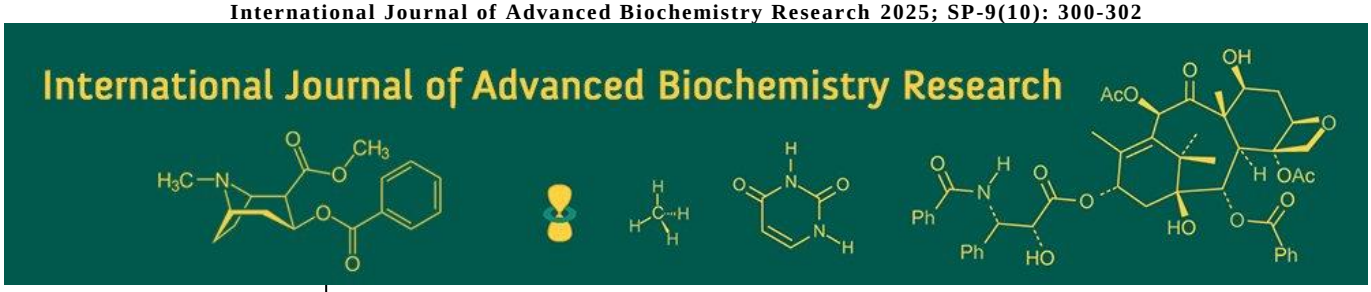

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Impact of different potting media on propagation efficiency and subsequent field performance of ivy gourd (*Coccinia grandis* L.)

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Abstract
Ivy gourd (*Coccinia grandis* L.) is an important vegetable and medicinal climber whose successful establishment from vegetative cuttings depends strongly on the rooting environment were studied at research-cum-instructional farm, K.D. College of Horticulture and Research Station, Jagdalpur (Chhattisgarh), India. This study evaluated the effects of Three types of media with different combinations on rooting and growth performance under nursery conditions and on subsequent field growth and yield following transplanting. The experiment was laid out in Completely Randomized Design, with nine treatment combinations, and replicated thrice. Results showed that the medium, (Termitarium soil : Cocopeat : Vermicompost in 2: 1: 2 ratio) proportion gave the maximum number of primary roots (7.78), longest average root length (30.70 cm), highest root fresh weight (1.53 g), and root dry weight (0.52 g) were observed in T_6, indicating its superior rooting potential. The results indicate that a well-aerated, moisture-retentive medium particularly Termitarium soil, cocopeat, and vermicompost in a 2: 1: 2 ratio optimizes vegetative propagation of ivy gourd and improves subsequent field productivity. Adoption of such media can increase establishment success, shorten nursery duration, and enhance yield potential.

Keywords: *Coccinia grandis*, potting media, termitarium soil, cocopeat, vermicompost, root and growth performance

Introduction
Ivy gourd (*Coccinia grandis* L.), a perennial climbing vine of the Cucurbitaceae family (2n = 24), is an underutilized vegetable crop cultivated across tropical and subtropical regions for its edible fruits, shoots, and medicinal properties. Known by various vernacular names such as Kundru, Bimbi, and Telakucha, it is rich in vitamins A and C, minerals, and antioxidants, and is traditionally used in Ayurvedic and Unani medicine for treating diabetes, skin disorders, and bronchitis. (Jagdale, 2023) [1] Despite its nutritional and therapeutic value, commercial cultivation of ivy gourd faces challenges due to its dioecious nature and poor seed viability, resulting in a high proportion of non-fruiting male plants. Consequently, vegetative propagation through stem cuttings has emerged as a reliable method for ensuring uniformity and productivity. However, the success of rooting and subsequent growth is highly influenced by the potting media, which governs moisture retention, aeration, nutrient availability, and microbial activity. Organic substrates like cocopeat and vermicompost, when combined with termitarium soil, have shown promise in enhancing sprouting, root biomass, and overall plant vigor. The variety 'Sulabha', released by Kerala Agricultural University, is gaining popularity due to its parthenocarpic fruiting and adaptability to protected cultivation systems. Given the rising demand for ivy gourd as a salad and culinary vegetable, especially in tribal and semi-urban regions, optimizing potting media for propagation is essential. Therefore, the present study was undertaken to evaluate the impact of different potting media combinations on the rooting, growth, yield, quality, and economics of ivy gourd propagated through stem cuttings under nursery conditions.

Materials and Methods
An experiment was conducted at the Research-cum-Instructional Nursery, K.D. College of

Horticulture and Research Station, Jagdalpur (Chhattisgarh), India during summer season, 2024-25. The nursery was maintained under partially shade net conditions. The experiment was laid out in a Completely Randomized Design (CRD) with three replications. The media comprised of termitarium soil, cocopeat and vermicompost with nine treatment combinations replicated thrice. One-year-old pencil thickness stem cuttings of ivy gourd were used as planting material for rooting purpose. A total of 135 cuttings were planted in each replication. From each treatment, five cuttings were selected randomly for recording observations. Data were recorded on sprouting percentage, vine growth and root parameters of cuttings at 20 days after planting (DAP).

Results and Discussion

The results of the present study revealed significant variation in root development of *Coccinia grandis* stem cuttings under different potting media. Among the treatments, T_6 (Termitarium soil: Cocopeat: Vermicompost in 2: 1: 2 ratio) recorded the highest performance across all root parameters. The maximum number of primary roots (7.78), longest average root length (30.70 cm), highest root fresh weight (1.53 g), and root dry weight (0.52 g) were observed in T_6, indicating its superior rooting potential. This enhanced performance can be attributed to the synergistic effect of cocopeat and vermicompost, which together improve moisture retention, aeration, and nutrient availability in the rooting zone. In contrast, the lowest values for all root traits were recorded in T_1 (cultivated field soil), with only 3.22 primary roots, 15.33 cm average root length, 1.03 g fresh weight, and 0.31 g dry weight, reflecting poor rooting response in conventional media. These findings confirm that enriched organic potting media significantly promote root initiation and biomass accumulation in ivy gourd cuttings, with T_6 emerging as the most effective treatment for nursery-level propagation. These findings are in accordance with the results reported by Venketa (2018), who also observed that organic media combinations significantly enhance root development in vegetatively propagated cucurbitaceous crops. In his study, media enriched with vermicompost and cocopeat led to increased root number, length, and biomass, owing to improved aeration, moisture retention, and microbial activity. The superior performance of T_6 in the present investigation, particularly in terms of primary root count (7.78), average root length (30.70 cm), and root biomass, aligns closely with Venketa's conclusion that balanced organic substrates promote vigorous rooting and early establishment in stem cuttings. This consistency across studies reinforces the reliability of T_6 as an ideal potting media for ivy gourd propagation.

Table 1: The effect of different potting media on the rooting performance of ivy gourd cutting

Treatment	No. of primary root	Average root length (cm)	Root fresh weight (g)	Root dry weight (g)
T_1	3.223	15.333	1.033	0.313
T_2	4.223	17.100	1.110	0.343
T_3	5.000	17.633	1.190	0.373
T_4	7.330	26.000	1.310	0.413
T_5	6.223	23.233	1.270	0.393
T_6	7.780	30.700	1.533	0.527
T_7	7.670	28.267	1.390	0.433
T_8	5.223	21.633	1.230	0.363
T_9	6.000	22.767	1.350	0.413
C.D 5%	0.459	1.325	0.082	0.030
SE(m)	0.153	0.443	0.027	0.010
C.V.	4.538	3.405	3.732	4.443

T_1-Cultivated feild soil,
T_2-Termitarium soil: Cocopeat: Vermicompost (3:1:1)
T_3-Termitarium soil: Cocopeat: Vermicompost (1:3:1)
T_4-Termitarium soil: Cocopeat: Vermicompost (1:1:3)
T_5-Termitarium soil: Cocopeat: Vermicompost (2:2:1)
T_6-Termitarium soil: Cocopeat: Vermicompost (2:1:2)
T_7 Termitarium soil: Cocopeat: Vermicompost (1:2:2)
T_8-Termitarium soil: Cocopeat: Vermicompost (4:1:0)
T_9-Termitarium soil: Cocopeat: Vermicompost (4:0:1)

Table 2: Effect of subsequent field performance on yield and yield attributes of ivy gourd cutting

Treatment	Days to 50% flowering	No. of fruits/plant	Fruits weight (g)	Fruits length (cm)	Fruits diameter (cm)	Days to first harvest	No. of harvest	Fruits yield (kg/plant)	Fruits yield (qt./ha^{-1})
T_1	52.00	391.7	12.01	3.74	2.12	61.00	7.00	6.020	0.060
T_2	56.00	483.3	14.1	3.943	2.64	58.00	9.00	7.433	0.075
T_3	57.00	530	14.6	4.09	2.6	58.00	9.33	8.153	0.082
T_4	60.00	625	16.67	4.523	2.94	49.667	13.00	9.617	0.096
T_5	55.33	475	14.9	4.077	2.457	54.00	9.00	7.307	0.073
T_6	54.33	531.7	15.77	4.483	2.707	52.00	14.00	8.180	0.082
T_7	58.33	467.7	13.9	3.937	2.14	57.00	9.67	7.193	0.072
T_8	53.00	495.7	13.6	3.757	2.653	60.00	8.33	7.623	0.076
T_9	55.33	501	14.3	3.977	2.623	61.00	10.00	7.707	0.077
C.D 5%	1.372	3.334	0.470	0.154	0.086	2.260	0.814	0.497	0.005
C.V.	1.424	8.740	1.857	2.180	1.946	2.282	4.699	3.736	3.764

Conclusion

The present investigation demonstrated that the choice of potting media exerts a significant influence on both the propagation efficiency and subsequent field performance of ivy gourd (*Coccinia grandis* L.). Among the tested substrates, Termitarium soil, cocopeat, and vermicompost in a 2: 1: 2 ratio consistently enhanced rooting percentage, accelerated root initiation, and promoted superior root system development during the nursery phase. These early advantages translated into improved field establishment, greater vine vigor, earlier flowering, higher fruit set, and increased marketable yield compared to conventional garden soil and FYM-based media. Thus, propagation of ivy gourd cuttings in a well-aerated, moisture-retentive medium particularly Termitarium soil, cocopeat, and vermi-compost in a 2: 1: 2 ratio can be recommended for large-scale multiplication and commercial cultivation. Adoption of improved potting media not only shortens nursery duration

but also ensures better field performance, leading to higher productivity and profitability for growers.

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