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## Effect of IBA concentrations and media on rooting of Passion fruit cuttings

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### Abstract

The present investigation entitled "Effect of IBA concentration and media on rooting of Passion fruit cuttings" was conducted during 2025-26 at Fruit Nursery Unit, Department of fruit science, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The experiment was laid out in a Factorial Completely Randomised Design (FCRD) with fifteen treatment combinations involving three levels of IBA concentrations (250, 500 and 750 ppm IBA) and five media M<sub>1</sub> was created by soil, sand, and farmyard manure in a ratio of 2:1:1, while for M<sub>2</sub>, the mixture consisted of soil, sand, and vermicompost in the same ratio of 2:1:1. For M<sub>3</sub>, the combination was soil, sand, and cocopeat at a ratio of 2:1:1. The mixture for M<sub>4</sub> included soil, sand, farmyard manure, and cocopeat in equal proportions of 1:1:1:1, and for M<sub>5</sub>, the mixture comprised soil, sand, vermicompost, and cocopeat also in a ratio of 1:1:1:1. replicated thrice. The cuttings treated with 750 ppm IBA concentration and planted in the mixture comprised soil, sand, vermicompost, and cocopeat also in a ratio of 1:1:1:1 exhibited superior performance with the days to sprouting, number of leaves cutting<sup>-1</sup> at 60 DAP, leaf area (cm<sup>2</sup>), number of roots cutting<sup>-1</sup>, length of longest root cutting<sup>-1</sup> (cm), fresh weight of roots (g), dry weight of roots(g), percentage of rooted cuttings (%) and survival percentage of rooted cuttings (%) at 90 DAP. Additionally, this treatment recorded the highest percentage of rooted cuttings (77.78%) and survival percentage of rooted cuttings (81.61%), indicating its effectiveness in enhancing rooting in passion fruit cuttings.

**Keywords:** Passion fruit, IBA, rooting, cuttings, rooting media

### Introduction

Passion fruit (*Passiflora edulis f. flavicarpa*) is a member of the Passifloraceae family, characterized by a chromosome number of 2n=18. Passion fruit is mostly grown in tropical and subtropical regions of the world. The cultivation is mostly concentrated in north-eastern Brazil, particularly in the state of Bahia, which accounts for over half of Brazilian production (Lima *et al.*, 2017)<sup>[13]</sup>. In India, passion fruit was introduced in early twentieth century but its cultivation is confined in Western Ghats such as Nilgiris, Kodaikanal, Chevrans, Coorg and Malabar and North Eastern States like Manipur, Nagaland and Mizoram (Thokchom, R. & Mandal, G. 2017). An area of 11 hectares, with a total production of approximately 48 metric tonnes in India (Anonymous, 2024)<sup>[2]</sup>. The production of passion fruit in India was noted in the states of Tamil Nadu, West Bengal, and Sikkim. Tamil Nadu yielded 0.53 thousand metric tonnes, which is equivalent to 530 tonnes, whereas West Bengal produced 0.13 thousand metric tonnes, translating to 130 tonnes. Sikkim's production was recorded at 0.06 thousand metric tonnes, or 60 tonnes. The total production across these three states amounted to 0.72 thousand metric tonnes, roughly 720 tonnes (Anonymous, 2024-25)<sup>[3]</sup>. This fruit originated in Brazil and is renowned for its distinct flavor and aroma. It serves as the richest source of vitamin A, ascorbic acid, riboflavin, and niacin, while also containing significant amounts of sodium, magnesium, sulfur, and chlorides (Chand, 1980)<sup>[7]</sup>. Propagation through cuttings with the help of auxin and mist reported to be quite successful. Among these, plant growth regulators are found to have stimulatory effect on the rooting of cuttings. So far, a number of synthetic plant growth substances are used for rooting of cuttings, but only Indole butyric acid (IBA) has been found to be superior over all (Hartmann *et al.*, 2002)<sup>[10]</sup>. Moreover, the rooting medium significantly impacts the success of propagation. Various media, including sand, soil, cocopeat, and vermiculite, differ in their physical and chemical characteristics, such as aeration, water retention, and nutrient availability.

These attributes directly influence the initiation, development, and overall survival of cuttings. Therefore, it is crucial to identify an appropriate rooting medium alongside a suitable IBA concentration to maximize rooting efficiency. study aims to assess the combined effects of varying IBA concentrations and rooting media on the rooting behaviour of passion fruit cuttings. Considering this, the present study, “Effect of IBA concentrations and media on rooting of passion fruit cuttings,” was undertaken to optimize treatment of IBA concentration and media combination for improved rooting of passion fruit cuttings.

### Material methods

The present investigation entitled “Effect of IBA concentration and media on rooting of passion fruit cuttings” was conducted during 2025-26 at Fruit Nursery Unit, Department of fruit science, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola with the objectives to study the effect of different concentrations of IBA on rooting of passion fruit cuttings, to study the effect of different media on rooting of passion fruit cuttings and to find out the suitable concentrations of IBA and media for rooting of passion fruit cuttings. An experiment was laid out in Factorial Completely Randomized Design (FCRD) with fifteen treatment combinations replicated thrice. The cuttings were treated with IBA concentrations (250 ppm, 500 ppm, 750 ppm) and planted in different media combinations (sand, soil, FYM, vermicompost and cocopeat) in the polybags. The basal portion of the cuttings (about 2 cm) was dipped in IBA solution for 5 minutes. Later the cuttings were planted in polybags containing media and for easy rooting with one basal node buried in the medium. They were kept inside a high cost polyhouse for rooting.

### Results and Discussions

The days to sprouting in passion fruit cuttings was significantly influenced by the IBA concentration, media, and their interaction (Table 1). The earliest sprouting of the

cuttings of passion fruit was significantly recorded in the solution dip of IBA at I<sub>3</sub> i.e., 750 ppm yielded the most favorable results, with a sprouting time of (22.70 days), which was at par with I<sub>2</sub> i.e., 500 ppm which took (23.71 days) to sprout. In contrast, the longest delay in sprouting was noted for cuttings treated with dip of IBA at I<sub>1</sub> i.e., 250 ppm, which took (26.72 days) to sprout. The numbers of days taken for sprout formation were significantly decreased with increase in concentration of IBA from 250 ppm to 750 ppm. Among media, significantly minimum days to sprouting were observed in M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in a ratio of 1:1:1:1 (21.02 days), which was followed by M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (23.00 days). While maximum days were taken to sprout in M<sub>1</sub> i.e., Soil: Sand: FYM in the ratio 2:1:1 (26.85 days). The interaction effect was also significant, with The earliest sprouting of the cuttings of passion fruit was significantly recorded in I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA+ Soil: Sand: Cocopeat: Vermicompost in the ratio 1:1:1:1 (19.51 days) to sprout, which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (21.00) days to sprout, I<sub>2</sub>M<sub>5</sub> i.e., 500 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1. This was closely followed by I<sub>3</sub>M<sub>3</sub> i.e., 750 ppm IBA+ Soil: Sand: Cocopeat in the ratio 1:1:1:1. While maximum days were taken to sprout in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA+ Soil: Sand: FYM in the ratio 2:1:1 (29.53 days). The decrease in the number of days necessary for the initial sprout can be ascribed to elevated auxin levels (750 ppm), which swiftly induces cambial cell division and the starch hydrolysis essential for the prompt initiation of roots. Simultaneously, the composition of the media creates an optimal physical and chemical setting: sand provides excellent pore aeration for root respiration, cocopeat retains vital moisture, and vermicompost supplies bioavailable nutrients and humic substances that enhance shoot emergence. These findings align with the results reported by Reshma (2017) [20] in passion fruit cuttings.

**Table 1:** Interaction effect of IBA concentrations and media on days to sprouting

| Treatments               | Days to sprouting                         |                                                    |                                                |                                                       |                                                                |       |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |       |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| I <sub>1</sub> (250 ppm) | 29.53                                     | 28.53                                              | 27                                             | 25                                                    | 23.54                                                          | 26.72 |
| I <sub>2</sub> (500 ppm) | 24                                        | 25.01                                              | 26.53                                          | 23                                                    | 20                                                             | 23.71 |
| I <sub>3</sub> (750 ppm) | 27.00                                     | 24                                                 | 22                                             | 21                                                    | 19.51                                                          | 22.70 |
| MEAN                     | 26.85                                     | 25.85                                              | 25.18                                          | 23                                                    | 21.02                                                          |       |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |       |
|                          | I                                         |                                                    | M                                              |                                                       | I X M                                                          |       |
| F- Test                  | Sig.                                      |                                                    | Sig.                                           |                                                       | Sig.                                                           |       |
| SE (m) <sup>+</sup>      | 0.39                                      |                                                    | 0.5                                            |                                                       | 0.87                                                           |       |
| CD at 5%                 | 1.12                                      |                                                    | 1.45                                           |                                                       | 2.51                                                           |       |

The number of leaves cutting<sup>-1</sup> in passion fruit cuttings was significantly influenced by the IBA concentration, media, and their interaction (Table 2). At 60 DAP, leaves cutting<sup>-1</sup> influenced by different IBA concentrations were significant. Significantly maximum number of leaves cutting<sup>-1</sup> (11.3) was recorded in treatment I<sub>3</sub> i.e., 750 ppm IBA, which was at par with I<sub>2</sub> i.e., 500 ppm recorded (10.2) leaves. Whereas the minimum number of leaves cutting<sup>-1</sup> (8.5) was recorded

in treatment I<sub>1</sub> i.e., 250 ppm IBA concentration. Among media combinations, at 60 DAP, number of leaves cutting<sup>-1</sup> influenced by different media were significant. Significantly maximum number of leaves cutting<sup>-1</sup> (11.8) was recorded in treatment M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in a ratio of 1:1:1:1, which was closely followed by treatment M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (11.2). Whereas the minimum number of leaves cutting<sup>-1</sup>

(8.00) was recorded in treatment  $M_1$  i.e., Soil: Sand: FYM in the ratio 2:1:1. There existed a significant interaction between IBA concentrations and rooting media for number of leaves cutting<sup>-1</sup>. The maximum number of leaves cutting<sup>-1</sup> of the passion fruit was significantly recorded in  $I_3M_5$  i.e., 750 ppm IBA+ Soil: Sand: Cocopeat: Vermicompost in the ratio 1:1:1:1 (13.50) leaves, which was at par with  $I_3M_4$  i.e., 750ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 recorded (12.30) leaves. This was closely followed by  $I_2M_4$  i.e., 500 ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 recorded (11.9) leaves, while minimum number of leaves cutting<sup>-1</sup> observed in  $I_1M_2$  i.e., 250 ppm IBA+ Soil: Sand: Vermicompost in the ratio 2:1:1 (6.9). The increased leaf production in these cuttings can be attributed to the stimulation of shoot growth, which promotes the formation of additional nodes, ultimately resulting in a

greater number of leaves. This rise in leaf count per cutting may also be linked to the role of leaves as sites for the synthesis of natural auxins in plants, in addition to their primary functions in photosynthesis, respiration, and transpiration (Wahab *et al.* 2001) [26]. Cuttings cultivated in coco peat may exhibit enhanced root development within this substrate. This phenomenon can be ascribed to the elevated moisture retention capacity, porosity, and nutrient profile of coir pith Nagarajan *et al.* (1985) [15], as demonstrated in coco peat medium. Vermicompost has shown significant potential to enhance plant growth when incorporated into horticultural soils or container growing media (Atiyeh *et al.* 2000) [4]. This finding closely aligns with the observations reported by Gurung *et al.* (2014) [9] Reshma (2017) [20] in passion fruit cuttings and Rani (2017) [19] in dragon fruit cuttings.

**Table 2:** Interaction effect of IBA concentrations and media on number of leaves cutting<sup>-1</sup>

| Treatments            | Number of leaves cutting <sup>-1</sup> |                                           |                                       |                                              |                                                       |      |
|-----------------------|----------------------------------------|-------------------------------------------|---------------------------------------|----------------------------------------------|-------------------------------------------------------|------|
|                       | Media (M)                              |                                           |                                       |                                              |                                                       |      |
| IBA Concentration (I) | $M_1$<br>Soil: Sand: FYM (2:1:1)       | $M_2$<br>Soil: Sand: Vermicompost (2:1:1) | $M_3$<br>Soil: Sand: Cocopeat (2:1:1) | $M_4$<br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | $M_5$<br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean |
| $I_1$ (250 ppm)       | 7.3                                    | 6.9                                       | 8.7                                   | 9.4                                          | 10.2                                                  | 8.5  |
| $I_2$ (500 ppm)       | 7.3                                    | 10.3                                      | 9.8                                   | 11.9                                         | 11.7                                                  | 10.2 |
| $I_3$ (750 ppm)       | 9.4                                    | 9.8                                       | 11.5                                  | 12.3                                         | 13.5                                                  | 11.3 |
| MEAN                  | 8                                      | 9                                         | 10                                    | 11.2                                         | 11.8                                                  |      |
| Interaction (I x M)   |                                        |                                           |                                       |                                              |                                                       |      |
|                       | I                                      |                                           | M                                     |                                              | I X M                                                 |      |
| F- Test               | Sig.                                   |                                           | Sig.                                  |                                              | Sig.                                                  |      |
| SE (m) <sub>±</sub>   | 0.21                                   |                                           | 0.27                                  |                                              | 0.46                                                  |      |
| CD at 5%              | 0.6                                    |                                           | 0.77                                  |                                              | 1.34                                                  |      |

The information concerning the leaf area (cm<sup>2</sup>) influenced by various concentrations of IBA and different rooting media was collected after 90 days after planting (DAP) and is displayed in (Table 3). The cuttings treated with IBA solution at a concentration of 750 ppm exhibited the greatest leaf area cutting<sup>-1</sup>, measuring leaf area (99.62 cm<sup>2</sup>). This was followed by cuttings treated with IBA solution at 500 ppm, which had a leaf area of (92.01 cm<sup>2</sup>). In contrast, the lowest leaf area cutting<sup>-1</sup>, recorded at (85.83 cm<sup>2</sup>), was associated with a solution dip of IBA at 250 ppm. Among media, The cuttings that were planted in  $M_4$  i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 exhibited a significantly greater leaf area (96.27 cm<sup>2</sup>) at 90 days after planting (DAP), which was at par with  $M_3$  i.e., Soil: Sand: Cocopeat in the ratio 2:1:1 and  $M_5$  i.e., Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 with leaf area (92.64 cm<sup>2</sup>) and (92.49 cm<sup>2</sup>) respectively. This was followed by  $M_1$  i.e., Soil: Sand: FYM 2:1:1, which had a leaf area of (92.07 cm<sup>2</sup>). In contrast, the cuttings planted in  $M_2$  i.e., Soil: Sand: Vermicompost in the ratio 2:1:1 recorded the lowest leaf

area at (88.95 cm<sup>2</sup>). There existed a significant interaction between IBA concentrations and rooting media for leaf area (cm<sup>2</sup>). The maximum leaf area (cm<sup>2</sup>) of the passion fruit was significantly recorded in  $I_3M_4$  i.e., 750 ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 recorded (104.66 cm<sup>2</sup>), which was at par with  $I_3M_2$  i.e., 750 ppm IBA + Soil: Sand: Vermicompost in the ratio 2:1:1 recorded (100.13 cm<sup>2</sup>) leaf area. This was closely followed by  $I_3M_3$  i.e., 750 ppm IBA+ Soil: Sand: Cocopeat in the ratio 2:1:1: recorded (99.56 cm<sup>2</sup>) leaf area, while minimum leaf area observed in  $I_1M_2$  i.e., 250 ppm IBA+ Soil: Sand: Vermicompost in the ratio 2:1:1 (78.26 cm<sup>2</sup>). A robust root system facilitating nutrient uptake may have increased the rate of photosynthesis, thereby providing a more favorable environment for the development and expansion of leaves, ultimately resulting in the maximum leaf area per cutting. This finding closely aligns with the observations reported by Reshma (2017) [20] and Bemkaireima *et al.* (2012) [6] in passion fruit cuttings and Minz (2021) [14] in dragon fruit cuttings.

**Table 3:** Interaction effect of IBA concentrations and media on leaf area (cm<sup>2</sup>)

| Treatments            | Leaf area (cm <sup>2</sup> )     |                                           |                                       |                                              |                                                       |       |
|-----------------------|----------------------------------|-------------------------------------------|---------------------------------------|----------------------------------------------|-------------------------------------------------------|-------|
|                       | Media (M)                        |                                           |                                       |                                              |                                                       |       |
| IBA Concentration (I) | $M_1$<br>Soil: Sand: FYM (2:1:1) | $M_2$<br>Soil: Sand: Vermicompost (2:1:1) | $M_3$<br>Soil: Sand: Cocopeat (2:1:1) | $M_4$<br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | $M_5$<br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| $I_1$ (250 ppm)       | 91.80                            | 78.26                                     | 85.13                                 | 86.69                                        | 87.27                                                 | 85.83 |
| $I_2$ (500 ppm)       | 86.493                           | 88.46                                     | 93.23                                 | 97.46                                        | 94.40                                                 | 92.01 |
| $I_3$ (750 ppm)       | 97.93                            | 100.13                                    | 99.56                                 | 104.66                                       | 95.79                                                 | 99.62 |
| MEAN                  | 92.07                            | 88.95                                     | 92.64                                 | 96.27                                        | 92.49                                                 |       |

| Interaction (I x M) |      |      |       |
|---------------------|------|------|-------|
|                     | I    | M    | I X M |
| F- Test             | Sig. | Sig. | Sig.  |
| SE (m)+             | 0.75 | 0.97 | 1.68  |
| CD at 5%            | 2.18 | 2.82 | 4.89  |

The number of roots cutting<sup>-1</sup> in passion fruit cuttings was significantly influenced by the IBA concentration, media, and their interaction (Table 4). Among the IBA treatments, at 90 DAP, IBA solution dip at I<sub>3</sub> i.e., 750 ppm performed the best with maximum value (28.50) in respect of number of roots cutting<sup>-1</sup> followed by IBA solution dip at I<sub>2</sub> i.e., 500 ppm concentration (25.18) while the minimum number of roots (16.84) was observed with the treatment of IBA solution dip at I<sub>1</sub> i.e., 250 ppm. Among different media the cuttings planted in M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in a ratio of 1:1:1:1 which had number of root cutting<sup>-1</sup> (26.98), which was at par with M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 medium had number of root cutting<sup>-1</sup> (26.51) followed by those planted in M<sub>3</sub> i.e., Soil: Sand: Cocopeat in the ratio 2:1:1 (23.83). The minimum number of root cutting<sup>-1</sup> was observed in M<sub>1</sub> i.e., Soil: Sand: FYM 2:1:1 (18.93). There existed a significant interaction between IBA concentrations and rooting media for number of roots cutting<sup>-1</sup>. The maximum number of roots cutting<sup>-1</sup> of the passion fruit was significantly recorded in I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA+ Soil: Sand: Cocopeat: Vermicompost in the ratio 1:1:1:1 (34.48), which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750ppm IBA+ Soil: Sand: FYM: Cocopeat in

the ratio 1:1:1:1 recorded (31.46). This was closely followed by I<sub>2</sub>M<sub>5</sub> i.e., 500 ppm IBA+ Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 recorded (29.5), While minimum number of roots cutting<sup>-1</sup> observed in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA+ Soil: Sand: FYM in the ratio 2:1:1 (12.69 roots). The formation of adventitious roots is a crucial process in vegetative propagation, which includes root induction characterized by molecular and biochemical alterations prior to any cytological changes; root initiation, during which the first anatomical modifications occur; and protrusion, which refers to the emergence of root primordia (Heloir *et al.* 1996). Wahab *et al.* (2001) [26] in guava. The cuttings cultivated in a coco peat and vermicompost medium produced the highest quantity of roots, likely attributable to the presence of cytokinins in coco peat that stimulated the formation of adventitious roots in conjunction with auxin-mediated cellular division (Davis *et al.* 1989), leading to an increased root count. These findings are consistent with the observations reported by Minz (2021) [14] Rani (2017) [19] and Reshma (2017) [20] in passion fruit cuttings. These findings are consistent with the observations reported by Minz (2021) [14], Rani (2017) [19] in dragon fruit and Reshma (2017) [20] in passion fruit cuttings.

**Table 4:** Interaction effect of IBA concentrations and media on number of roots cutting<sup>-1</sup>

| Treatments               | Number of roots cutting <sup>-1</sup>     |                                                    |                                                |                                                       |                                                                |       |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |       |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| I <sub>1</sub> (250 ppm) | 12.69                                     | 15.51                                              | 18.39                                          | 20.65                                                 | 16.94                                                          | 16.84 |
| I <sub>2</sub> (500 ppm) | 21.68                                     | 22.80                                              | 24.52                                          | 27.42                                                 | 29.5                                                           | 25.18 |
| I <sub>3</sub> (750 ppm) | 22.44                                     | 25.55                                              | 28.58                                          | 31.46                                                 | 34.48                                                          | 28.50 |
| MEAN                     | 18.93                                     | 21.29                                              | 23.83                                          | 26.51                                                 | 26.98                                                          |       |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |       |
|                          | I                                         | M                                                  | I X M                                          |                                                       |                                                                |       |
| F- Test                  | Sig.                                      | Sig.                                               | Sig.                                           |                                                       |                                                                |       |
| SE (m)+                  | 0.53                                      | 0.68                                               | 1.17                                           |                                                       |                                                                |       |
| CD at 5%                 | 1.52                                      | 1.97                                               | 3.41                                           |                                                       |                                                                |       |

The length of longest root in passion fruit cuttings was significantly influenced by the IBA concentration, media, and their interaction (Table 5). The longest root length recorded was (17.51 cm) in treatment I<sub>3</sub> i.e., IBA 750 ppm, which was closely followed by I<sub>2</sub> i.e., IBA 500 ppm recorded (14.31 cm). Conversely, the shortest root length of (11.60 cm) was noted in the I<sub>1</sub> i.e., 250 ppm IBA treatment. At 90 DAP, the cuttings planted in M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in a ratio of 1:1:1:1 which had longest length of root cutting<sup>-1</sup> (17.17 cm), which was closely followed by M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 medium had longest length of root cutting<sup>-1</sup> (15.7 cm). The shortest length of root cutting<sup>-1</sup> was observed in M<sub>1</sub> i.e., Soil: Sand: FYM 2:1:1 (11.60 cm). There existed a significant interaction between IBA concentrations and rooting media for length of longest root cutting<sup>-1</sup>. The maximum length of longest cutting<sup>-1</sup> of the passion fruit was significantly recorded in I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA+ Soil:

Sand: Cocopeat: Vermicompost in the ratio 1:1:1:1 (19.57 cm), which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750 ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 recorded (19.20 cm). This was closely followed by I<sub>3</sub>M<sub>3</sub> i.e., 750 ppm IBA+ Soil: Sand: Cocopeat in the ratio 2:1:1 recorded (18.45 cm), While shortest length of longest cutting<sup>-1</sup> observed in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA+ Soil: Sand: FYM in the ratio 2:1:1 (9.60 cm) roots. The extended root length observed in cuttings may be attributed to the quantity of food reserves present in the cuttings (Jain *et al.* 1999) [12]. cuttings cultivated in coco peat exhibited the greatest root length, likely due to the superior texture and porosity of coco peat, which facilitated the downward movement of water and nutrients (Singh *et al.* 2002) [23] and vermicompost also help for easier root penetration within the medium. These findings are consistent with the observations reported by Minz (2021) [14] in dragon fruit and Bemkaireima *et al.* (2012) [6] in passion fruit cuttings.

**Table 5:** Interaction effect of IBA concentrations and media on length of longest root (cm)

| Treatments               | Length of longest root (cm)               |                                                    |                                                |                                                       |                                                                |       |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |       |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| I <sub>1</sub> (250 ppm) | 9.60                                      | 10.35                                              | 11.10                                          | 12.32                                                 | 14.63                                                          | 11.60 |
| I <sub>2</sub> (500 ppm) | 12.17                                     | 12.96                                              | 13.56                                          | 15.56                                                 | 17.31                                                          | 14.31 |
| I <sub>3</sub> (750 ppm) | 14.1                                      | 16.24                                              | 18.45                                          | 19.20                                                 | 19.57                                                          | 17.51 |
| MEAN                     | 11.96                                     | 13.18                                              | 14.37                                          | 15.7                                                  | 17.17                                                          |       |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |       |
|                          | I                                         |                                                    | M                                              |                                                       | I X M                                                          |       |
| F- Test                  | Sig.                                      |                                                    | Sig.                                           |                                                       | Sig.                                                           |       |
| SE (m)+                  | 0.19                                      |                                                    | 0.24                                           |                                                       | 0.42                                                           |       |
| CD at 5%                 | 0.55                                      |                                                    | 0.71                                           |                                                       | 1.23                                                           |       |

The fresh weight of root (g) in passion fruit cuttings was significantly influenced by the IBA concentration, media, and their interaction (Table 6). Among the concentrations of different IBA concentrations it was seen that highest root fresh weight was seen in passion fruit cuttings treated with I<sub>3</sub> i.e., IBA 750 ppm (3.68 g) and it was at par with I<sub>2</sub> i.e., IBA 500 ppm (3.52 g). The fresh weight of root of passion fruit cuttings was least in I<sub>1</sub> i.e., 250 ppm IBA (2.37 g). At 90 DAP, the cuttings planted in the M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 medium had the maximum fresh weight of roots (3.98 g) followed by those planted in M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in a ratio of 1:1:1:1 (3.52 g). The minimum fresh weight of root was observed in M<sub>1</sub> i.e., Soil: Sand: FYM 2:1:1 (2.5 g). There existed a significant interaction between rooting media and IBA treatments for fresh weight of roots. Significantly maximum fresh weight of roots (5.02 g) was found in cuttings treated with I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA + Soil:

Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1, which was closely followed by I<sub>2</sub>M<sub>5</sub> i.e., 500 ppm IBA + Soil: Sand: Vermicompost: Cocopeat (4.42 g). The minimum fresh weight of roots was found in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA + Soil: Sand: FYM (2.24 g). The maximum fresh weight of roots may be attributed to the production of longer and a greater number of roots in these plants. Comparable findings were documented by Parvez *et al.* (2007) [17] in peach and Pires *et al.* (2011) [18] in passion fruit. The increased fresh root weight can be attributed to the optimal concentration of IBA in conjunction with a conducive rooting medium, which facilitates the initiation and growth of adventitious roots. Cocopeat and vermicompost enhance moisture retention, aeration, and nutrient accessibility, leading to an increase in root biomass. This finding closely aligns with the observations reported by Parse *et al.* (2018) [16], Reshma (2017) [20] and Rani (2017) [19] in passion fruit and Gupta (2025) in dragon fruit.

**Table 6:** Interaction effect of IBA concentrations and media on fresh weight of root (g)

| Treatments               | Fresh weight of root (g)                  |                                                    |                                                |                                                       |                                                                |      |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |      |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean |
| I <sub>1</sub> (250 ppm) | 2.24                                      | 2.29                                               | 2.37                                           | 2.44                                                  | 2.51                                                           | 2.37 |
| I <sub>2</sub> (500 ppm) | 2.78                                      | 3.06                                               | 3.46                                           | 3.86                                                  | 4.42                                                           | 3.52 |
| I <sub>3</sub> (750 ppm) | 2.50                                      | 3.02                                               | 3.62                                           | 4.27                                                  | 5.02                                                           | 3.68 |
| MEAN                     | 2.51                                      | 2.79                                               | 3.15                                           | 3.52                                                  | 3.98                                                           |      |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |      |
|                          | I                                         |                                                    | M                                              |                                                       | I X M                                                          |      |
| F- Test                  | Sig.                                      |                                                    | Sig.                                           |                                                       | Sig.                                                           |      |
| SE (m)+                  | 0.10                                      |                                                    | 0.12                                           |                                                       | 0.20                                                           |      |
| CD at 5%                 | 0.27                                      |                                                    | 0.34                                           |                                                       | 0.59                                                           |      |

The information concerning the dry weight of root (g) influenced by various concentrations of IBA and growing media was collected after 90 days after planting (DAP) and is displayed in (Table 7). The maximum dry weight of roots, recorded at 90 days after planting (DAP) was (1.02 g) in treatment I<sub>3</sub> i.e., IBA 750 ppm, which was significantly higher than that of the other treatments, which was followed by I<sub>2</sub> i.e., IBA 500 ppm (0.99 g). Conversely, the minimum dry weight of roots, measured at (0.85 g). Among different media at 90 DAP, the cuttings planted in the M<sub>5</sub> i.e., Soil: Sand: FYM: Vermicompost: Cocopeat in the ratio 1:1:1:1 medium had the maximum dry weight of roots (1.11 g) followed by those planted in M<sub>4</sub> i.e., Soil: Sand: FYM:

Cocopeat in a ratio of 1:1:1:1 (1.00 g). The minimum dry weight of root was observed in M<sub>1</sub> i.e., Soil: Sand: FYM 2:1:1 (0.85 g). There existed a significant interaction between rooting media and IBA treatments for dry weight of roots. Significantly maximum dry weight of roots (1.25 g) was found in cuttings treated with I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1, which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750 ppm IBA + Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (1.20 g), I<sub>2</sub>M<sub>5</sub> i.e., 500 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 (1.15 g) closely followed by I<sub>2</sub>M<sub>1</sub> i.e., 500 ppm IBA + Soil: Sand: FYM 2:1:1 (1.02 g). The minimum dry weight of root was found in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA + Soil:

Sand: FYM (0.73 g). Auxins have been shown to enhance both root length and the fresh weight of roots, which subsequently leads to an increase in the dry weight of roots. Comparable findings were documented by Singh (1977) [22] in *Ixora bunduca*. Consequently, it is anticipated that the external application of auxins, such as plant growth

regulators like IBA, will stimulate root formation in cuttings. Rymbai (2010) [21] have reported similar observations in guava. This finding closely aligns with the observations reported by Reshma (2017) [20], Parse *et al.* (2018) [16] and Bemkaireima *et al.* (2012) [6] in passion fruit cuttings.

**Table 7:** Interaction effect of IBA concentrations and media on dry weight of root (g)

| Treatments               | Dry weight of root (g)                    |                                                    |                                                |                                                       |                                                                |      |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |      |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean |
| I <sub>1</sub> (250 ppm) | 0.73                                      | 0.78                                               | 0.86                                           | 0.94                                                  | 0.93                                                           | 0.85 |
| I <sub>2</sub> (500 ppm) | 1.02                                      | 1.1                                                | 0.82                                           | 0.85                                                  | 1.15                                                           | 0.99 |
| I <sub>3</sub> (750 ppm) | 0.8                                       | 0.91                                               | 0.95                                           | 1.2                                                   | 1.25                                                           | 1.02 |
| MEAN                     | 0.85                                      | 0.93                                               | 0.88                                           | 1.00                                                  | 1.11                                                           |      |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |      |
|                          | I                                         |                                                    | M                                              |                                                       | I X M                                                          |      |
| F- Test                  | Sig.                                      |                                                    | Sig.                                           |                                                       | Sig.                                                           |      |
| SE (m) <sub>t</sub>      | 0.02                                      |                                                    | 0.03                                           |                                                       | 0.05                                                           |      |
| CD at 5%                 | 0.06                                      |                                                    | 0.09                                           |                                                       | 0.14                                                           |      |

The percentage of rooted cuttings (%) varied significantly by the influence of IBA treatments and rooting media as well as their interactions at 90 DAP (Table 8). The highest percentage of rooted cuttings of passion fruit was observed in cuttings treated with IBA at I<sub>3</sub> i.e., 750 ppm, achieving a (72.22%), which was followed by I<sub>2</sub> i.e., 500 ppm IBA (63.11%). In contrast, the I<sub>1</sub> i.e., 250 ppm IBA exhibited the lowest rooting percentage at (50.22%). Among different media at 90 DAP, the cuttings planted in M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 (63.71%), which was at par with M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (62.96%). This was followed by M<sub>3</sub> i.e., Soil: Sand: Cocopeat in the ratio 2:1:1 medium had percentage of rooted cuttings (61.85%). Lowest percentage of rooted cuttings was observed in M<sub>1</sub> i.e., Soil: Sand: FYM in the ratio 2:1:1 (60.00%). There existed a significant interaction between rooting media and IBA treatments for percentage of rooted cuttings (%). Significantly maximum

percentage of rooted cuttings (77.78%) was found in cuttings treated with I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1, which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750 ppm IBA + Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (75.56%). This was followed by I<sub>3</sub>M<sub>3</sub> i.e., 750 ppm IBA + Soil: Sand: Cocopeat in the ratio 2:1:1 (72.22%) The minimum percentage of rooted cuttings was found in I<sub>1</sub>M<sub>5</sub> i.e., 250 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 (46.67%). The notable interaction suggests that the concentration of IBA and the rooting medium worked together to influence rooting success. The optimal rooting percentage observed with 750 ppm IBA combined with soil: sand: vermicompost: cocopeat (77.78%) is likely attributable to an ideal auxin supply, which, when paired with enhanced moisture retention, aeration, and nutrient availability of the medium, promotes the induction of adventitious roots.

**Table 8:** Interaction effect of IBA concentrations and media on percentage of rooted cuttings (%)

| Treatments               | percentage of rooted cuttings (%)         |                                                    |                                                |                                                       |                                                                |       |
|--------------------------|-------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------|
|                          | Media (M)                                 |                                                    |                                                |                                                       |                                                                |       |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1) | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| I <sub>1</sub> (250 ppm) | 54.44                                     | 52.22                                              | 50                                             | 47.78                                                 | 46.67                                                          | 50.22 |
| I <sub>2</sub> (500 ppm) | 58.89                                     | 61.11                                              | 63.33                                          | 65.56                                                 | 66.67                                                          | 63.11 |
| I <sub>3</sub> (750 ppm) | 66.67                                     | 68.89                                              | 72.22                                          | 75.56                                                 | 77.78                                                          | 72.22 |
| MEAN                     | 60.00                                     | 60.74                                              | 61.85                                          | 62.96                                                 | 63.71                                                          |       |
| Interaction (I x M)      |                                           |                                                    |                                                |                                                       |                                                                |       |
|                          | I                                         |                                                    | M                                              |                                                       | I X M                                                          |       |
| F- Test                  | Sig.                                      |                                                    | Sig.                                           |                                                       | Sig.                                                           |       |
| SE (m) <sub>t</sub>      | 0.40                                      |                                                    | 0.52                                           |                                                       | 0.90                                                           |       |
| CD at 5%                 | 1.17                                      |                                                    | 1.52                                           |                                                       | 2.63                                                           |       |

The survival percentage of rooted cuttings (%) varied significantly by the influence of IBA treatments and rooting media as well as their interactions at 90 DAP (Table 9). The highest survival percentage of rooting in cuttings of passion fruit was observed in cuttings treated with IBA at I<sub>3</sub> i.e., 750 ppm, achieving a (80.00%), which was followed by I<sub>2</sub> i.e.,

500 ppm IBA (78.82%). In contrast, the I<sub>1</sub> i.e., 250 ppm IBA exhibited the lowest survival percentage at (76.84%). Among different media At 90 DAP, the cuttings planted in M<sub>5</sub> i.e., Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1 (80.05%), which was followed by M<sub>4</sub> i.e., Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (79.47%). Lowest

survival percentage of rooted cuttings was observed in M<sub>1</sub> i.e., Soil: Sand: FYM in the ratio 2:1:1 (76.97%). There existed a significant interaction between rooting media and IBA treatments for survival percentage of rooted cuttings. Significantly maximum survival percentage of rooted cuttings (81.61%) was found in cuttings treated with I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA + Soil: Sand: Vermicompost: Cocopeat in the ratio 1:1:1:1, which was at par with I<sub>3</sub>M<sub>4</sub> i.e., 750 ppm IBA+ Soil: Sand: FYM: Cocopeat in the ratio 1:1:1:1 (80.83%). This was followed by I<sub>3</sub>M<sub>3</sub> i.e., 750 ppm IBA + Soil: Sand: Cocopeat in the ratio 2:1:1 (80.01%) The minimum survival percentage of rooted cuttings was found in I<sub>1</sub>M<sub>1</sub> i.e., 250 ppm IBA + Soil: Sand: FYM in the ratio 2:1:1 (75.00%). The survival rate of cuttings subjected to

various concentrations of IBA is likely associated with the ability of the growth regulator to promote root formation. The adventitious roots play a crucial role in absorbing minerals and nutrients from the soil, thereby enhancing the survival of the cuttings. The cuttings that were planted in a coco peat medium exhibited the highest survival rate, likely attributable to its beneficial effects on both root and shoot development and its ability to sustain growth over time. The benefits associated with coco peat may stem from the inclusion of coarser materials, which enhance the medium's aeration properties (Awang *et al.* 2009) <sup>[5]</sup>. These findings align with the research conducted by several scholars, including Rani (2017) <sup>[19]</sup> in guava, Reshma (2017) <sup>[20]</sup> and Altinkaya *et al.* (2024) <sup>[1]</sup> in passion fruit.

**Table 9:** Interaction effect of IBA concentrations and media on survival percentage of rooted cuttings (%)

| Treatments               | Survival percentage of rooted cuttings (%) |                                                    |                                                |                                                       |                                                                |       |
|--------------------------|--------------------------------------------|----------------------------------------------------|------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------|
|                          | Media (M)                                  |                                                    |                                                |                                                       |                                                                |       |
| IBA Concentration (I)    | M <sub>1</sub><br>Soil: Sand: FYM (2:1:1)  | M <sub>2</sub><br>Soil: Sand: Vermicompost (2:1:1) | M <sub>3</sub><br>Soil: Sand: Cocopeat (2:1:1) | M <sub>4</sub><br>Soil: Sand: FYM: Cocopeat (1:1:1:1) | M <sub>5</sub><br>Soil: Sand: Vermicompost: Cocopeat (1:1:1:1) | Mean  |
| I <sub>1</sub> (250 ppm) | 75                                         | 75.79                                              | 76.91                                          | 77.93                                                 | 78.56                                                          | 76.84 |
| I <sub>2</sub> (500 ppm) | 77.34                                      | 78.17                                              | 78.95                                          | 79.65                                                 | 80                                                             | 78.82 |
| I <sub>3</sub> (750 ppm) | 78.57                                      | 79.04                                              | 80.01                                          | 80.83                                                 | 81.61                                                          | 80.01 |
| MEAN                     | 76.97                                      | 77.66                                              | 78.62                                          | 79.47                                                 | 80.05                                                          |       |
| Interaction (I x M)      |                                            |                                                    |                                                |                                                       |                                                                |       |
|                          | I                                          |                                                    | M                                              |                                                       | I X M                                                          |       |
| F- Test                  | Sig.                                       |                                                    | Sig.                                           |                                                       | Sig.                                                           |       |
| SE (m) <sub>+</sub>      | 0.14                                       |                                                    | 0.18                                           |                                                       | 0.31                                                           |       |
| CD at 5%                 | 0.41                                       |                                                    | 0.53                                           |                                                       | 0.91                                                           |       |

Conclusion

Based on the results, it can be concluded that treatment of IBA concentrations and rooting media for minimum days to sprouting (19.51 days), while maximum number of leaves cutting<sup>-1</sup> (13.50) at 60 DAP, number of roots cutting<sup>-1</sup> (34.48),maximum length of longest root cutting<sup>-1</sup> (19.57 cm), maximum fresh weight of roots (5.02 g), maximum dry weight of roots (1.25 g), maximum percentage of rooted cuttings (77.78%) and survival percentage of rooted cuttings (81.61%) were recorded in I<sub>3</sub>M<sub>5</sub> i.e., 750 ppm IBA+ Soil: Sand: Cocopeat: Vermicompost in the ratio 1:1:1:1.

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References

1. Altinkaya L, Gubbuk H, Biner B. The effect of microbial fertilizers and growth media on the rooting of passion fruit (cv. *Possum Purple*) cuttings. *Indian J Hortic.* 2024;81(1):110-114.

2. Anonymous. Horticultural statistics at a glance 2024. New Delhi: Department of Agriculture and Farmers Welfare, Horticulture Statistics Unit, Economics, Statistics and Evaluation Division, Ministry of Agriculture and Farmers Welfare, Government of India; 2024.

3. Anonymous. Year and state-wise area and production of passion fruit. New Delhi: Ministry of Agriculture and

Farmers Welfare, Government of India; 2024-25. Available from: <https://dataful.in/datasets/21351/>

4. Atiyeh RM, Arancon NQ, Edwards CA, Metzger JD. Influence of earthworm-processed pig manure on the growth and yield of greenhouse tomatoes. *Bioresour Technol.* 2000;75(3):175-180.

5. Awang Y, Rahman NA, Sandrang AK. Adventitious rooting in microcuttings of selected indigenous landscape trees of Malaysia. *Int J Agric Biol.* 2009;11(4):419-424.

6. Bemkaireima K, Angami T, Singh MS. Response of different size and growth regulator on cuttings of passion fruit var. Purple (*Passiflora edulis* var. *edulis* Sims). *Asian J Hortic.* 2012;7(2):515-520.

7. Chand HJ. Tropical and sub-tropical fruits. Westport (CT): AVI Publishing; 1980.

8. Davis TD, Potter JR. Relations between carbohydrate, water status and adventitious root formation in leafy pea cuttings rooted under various levels of atmospheric CO<sub>2</sub> and relative humidity. *Physiol Plant.* 1989;77(2):185-190.

9. Gurung N, Swamy GSK, Sarkar SK. Rooting response of passion fruit cuttings under mist house and closed media sachet (CMS). *Environ Ecol.* 2014;33(3):1019-1021.

10. Hartmann HT, Kester DE, Davies JFT, Geneve RL. Plant propagation: principles and practices. 7th ed. New Jersey: Prentice Hall; 2002.

11. Heloir MC, Kevers C, Hausman JF, Gaspar T. Changes in the concentrations of auxins and polyamines during rooting of in-vitro-propagated walnut shoots. *Tree Physiol.* 1996;16(5):515-519.

12. Jain AK, Dand SB, Seng K. Micropropagation through axillary bud multiplication in different mulberry genotypes. *Plant Cell Rep.* 1999;8:737-740.
13. Lima LKS, Soares TL, de Souza EH, de Jesus ON, Girardi EA. Initial vegetative growth and graft region anatomy of yellow passion fruit on *Passiflora* spp. rootstocks. *Sci Hortic.* 2017;215:134-141.
14. Minz V, Panigrahi HK, Sangeeta. Effect of different plant growth regulators and media on shooting of stem cuttings in dragon fruit. *Pharma Innov J.* 2021;10(8):330-332.
15. Nagarajan R, Manickam TS, Kothandaraman GV. Manurial value of coir pith. *Madras Agric J.* 1985;72:533-535.
16. Parse RN, Mane SB, Nag UM. Effect of different chemicals on root growth success of cuttings in passion fruit. *Int J Curr Microbiol Appl Sci.* 2018;7(9):3139-3144.
17. Parvez M, Zubair M, Saleem M, Wali K, Shah M. Effect of indole butyric acid (IBA) and planting times on the growth and rooting of peach cuttings. *Sarhad J Agric.* 2007;23(3):587-592.
18. Pires MC, Peixoto JR, Yamanishi OK. Rooting of passion fruit species with indole-3-butyric acid under intermittent misting conditions. *Acta Hortic.* 2011;894:177-184.
19. Rani R. Studies on effect of rooting media and IBA treatments on rhizogenesis of terminal cuttings in guava (*Psidium guajava* L.) cv. Taiwan Pink [MSc thesis]. Nauni, Solan, Himachal Pradesh, India: Dr. Yashwant Singh Parmar University of Horticulture and Forestry; 2017.
20. Reshma BR. Effect of different plant growth regulators on rooting of softwood cuttings of passion fruit (*Passiflora edulis* Sims) [thesis]. Shivamogga, Karnataka, India: University of Agricultural and Horticultural Sciences; 2017.
21. Rymbai H, Verma VK, Talang H, Devi MB, Mawlein J. Higher propagation and nutrient use efficiency of cladode cuttings in dragon fruit (*Hylocereus costaricensis*) due to the effect of substrates and growth regulators. *Discover Plants.* 2025;2:282.
22. Singh SP. Regeneration of roots in *Ixora banduca* terminal cuttings under intermittent mist. *Haryana J Hortic Sci.* 1977;6(3-4):198-200.
23. Singh AK, Singh VS. Influence of wood maturity and auxins on the regeneration of *Bougainvillea* cuttings. *Prog Hortic.* 2002;34(2):196-199.
24. Testolin R, Vitagliano C. Influence of temperature and applied auxins during winter propagation of kiwifruit. *HortScience.* 1987;22(4):573-574.
25. Thokchom R, Mandal G. Production preference and importance of passion fruit (*Passiflora edulis*): a review. *J Agric Eng.* 2017;4(1):27-30.
26. Wahab F, Nabi G, Nawab AM, Shah M. Rooting response of semi-hardwood cuttings of guava (*Psidium guajava* L.) to various concentrations of different auxins. *Online J Biol Sci.* 2001;1(4):184-187.