

REGULAR ARTICLE

Vegetative propagation of *Jatropha* species by stem cuttings

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KEYWORDS

Vegetative propagation, Stem cutting, *Jatropha curcas* L., *Jatropha gossypifolia* L.

ABSTRACT

Investigation carried out on rooting of stem cuttings of *Jatropha curcas* and *J. gossypifolia*. Cuttings were treated with different combinations of auxins.along with distilled water (control). Stem cuttings of *J. curcas*, IAA+IBA at 300 ppm was proved significantly effective for percent rooting and more number of leaves.

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Introduction

The genus *Jatropha* is a morphological diverse genus comprising 170 species of shrubs subshrubs and herbs belonging to family Euphorbiaceae native of Mexico and central America, but is widely distributed in wild or cultivated stands in Latin America, Africa, India and South East Asia .It is well known as a Bio-diesel plant.Most of the species of the *Jatropha* can be cultivated in the tropical and subtropical regions of the country. It has low requirements to soil quality and can grow under low rainfall conditions. *Jatropha curcas* L.is an ideal plant for afforestation of wasteland under both irrigated as well as rainfed conditions. The cultivation of *jatropha* species is also reported to prevent and control erosion (Gubitz et al., 1999).

Materials and Methods

In the present study healthy semi hard wood cuttings from five years old mature thick terminal branches of *Jatropha curcas* and three years of old *Jatropha gossypifolia* mature branches were selected from Botanical Research garden at Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (M.S).

20-30 cm length and 3 to 4 cm thick stem cutting from the basal portion of branches with short internode of *Jatropha curcas* and *Jatropha gossypifolia* were selected (Kobilke, 1989, Heller, 1992, Kaushik and Kumar, 2005)

The cuttings were planted in right season i.e. February to March and September to October. Polybags having size of 22.5 x 12.5 cm were used for planting (Heller, 1992).Polybags were

filled with mixed soil and well decomposed farm yard manure in equal proportion in ratio (1:1:1). The drainage holes were provided at the bottom of the polybags. The treated as well as untreated cuttings were planted to a depth about 6 to 8 cm.

Various concentrations of growth regulators were prepared. Basal slanting was done bellow the buds. The cutting were washed in tap water and tied in bundles of 10 each. Cutting bundles were treated with 0.3 % Benomyl for 15 minutes. These cutting bundles were treated with 50–400 ppm concentrations of growth regulators for 12 hours by dilute solution soaking method described by Hartmann and Kester (2007), one lot served as control. The cuttings were dipped with basal 4–6 cm portion in solution. The experiment was laid out in randomized block design with replications. The cuttings were planted in polybags. After 90 days of planting observations were recorded.

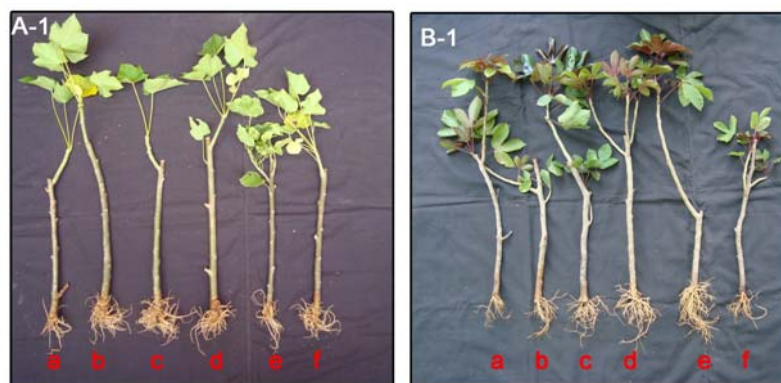
Results and Discussion

The effect of IAA+IBA in combination on rooting of stem cutting in *Jatropha curcas* and *J. gossypifolia* growth hormones for different concentrations 50, 100, 200, 300 and 400 ppm were used.The cuttings of *J. curcas* and *J. gossypifolia* treated for IAA+IBA at 200 ppm were proved significantly effective for percent rooting while comparing with different hormones concentrations. Maximum number of leaves per cuttings was found for IAA+IBA at 200 ppm in *J. gossypifolia* (Table 1).

Use of vegetative stem cuttings for the propagation of plants have been found very effective method in number of plants like *Ficus carica*, *Nerium indicum* (Nambison et.al, 1977).

Table 1 Effect of IAA+IBA on rooting of stem cuttings in *Jatropha curcas* and *Jatropha gossypifolia*

| Concentration (ppm) | Species of <i>Jatropha</i> | | | |
|---------------------|----------------------------|-------------------------------|------------------------------|-------------------------------|
| | <i>Jatropha curcas</i> | | <i>Jatropha gossypifolia</i> | |
| | Percent of rooting | Number of leaves per cuttings | Percent of rooting | Number of leaves per cuttings |
| Control | 50 | 10.6 | 20 | 9.6 |
| IAA 50 + IBA 50 | 60 | 14.2 | 40 | 10.6 |
| IAA 100 + IBA 100 | 100 | 15.6 | 60 | 11.2 |
| IAA 200 + IBA 200 | 100 | 14.2 | 100 | 16.7 |
| IAA 300 + IBA 300 | 80 | 14.8 | -- | -- |
| IAA 400 + IBA 400 | -- | -- | -- | -- |
| S.D | 37.82 | 5.92 | 38.82 | 6.68 |
| S.E± | 15.44 | 2.42 | 15.85 | 2.73 |
| C.D(P=0.05) | 39.68 | 6.21 | 40.73 | 7.01 |

**Fig 1. A-1 and B-1: Effect OF IAA + IBA on rooting****a. Control****b. IAA – 50 + IBA – 50 (ppm)****c. IAA – 100 + IBA – 100 (ppm)****d. IAA – 200 + IBA – 200 (ppm)****e. IAA – 300 + IBA – 300 (ppm)****f. IAA – 400 + IBA – 400 (ppm)****Acknowledgement**

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