



Effect of gibberellic acid on seed germination and growth of *Jatropha curcas* L.

V.B. PAWAR, R.V. GORE, V.K. PATIL AND P.B. NARSUDE

ABSTRACT

The seed germination and growth parameters like height of plant, number of leaves per plant, diameter of stem, fresh and dry weight of shoot and root were influenced significantly due to application of various pre-sowing treatments of gibberellic acid at different concentrations and different time. In *Jatropha*, 77.55 per cent seed germination was obtained with treatment *i.e.* GA₃ 300 ppm for 4 hr., followed by 300 ppm for 8 hr. which is 62.14 as against control. The maximum height (65.1 cm), average number of leaves per plant (15.6), maximum diameter of stem was (20.6 mm) of seedlings was recorded in all the treatments of GA₃ at higher concentration *i.e.* 300 ppm for 8 hr. as compared to control. Similarly, the maximum fresh weight of shoot (30.2 g) and root (6.5 g) were recorded with application of GA₃ at 300 ppm for 8 hr., as compared to control. The treatment of GA₃ 300 ppm for 8 hr and GA₃ 300 ppm for 6 hr. recorded maximum dry weight of shoot as 14.3 g and 13.9 g, respectively while the treatment GA₃ 300 ppm. 8 hr. produced maximum increase in dry weight of root (4.3 g) as compared to control.

See end of the article for authors' affiliations

Correspondence to:

V.B. PAWAR

Department of
Horticulture, College of
Agriculture, LATUR (M.S.)
INDIA

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Jatropha' is an important perennial crop locally known as 'Moghli erand'. The seeds of *Jatropha* are oblong in shape. It is originated from 'Latin America'. It is spreaded over drought porn hot area of the world. This tree is also well known in Africa and Asia. . India ranks sixth in the world in term of energy demand. It is a soil erosion resistant tree or shrub and hence used for reclamation of soil erosion. It is also used for fencing. 0.8 kg seeds and 0.17 lit of oil can be obtained from 1 m fencing of *Jatropha* (Henning, 1996). *Jatropha* is also an important medicinal crop. It is useful in dysentery, thirst, thridosha, urinary discharge, abdominal comphillions ness, anemia, disease of heart as described in 'Ayurveda.' Biodiesel is fatty acid *ethyl* or *methyl ester* made from virgin or vegetable oils and animal fats (Mohibbe *et al.*, 2001). The importance of *Jatropha* for commercial cultivation seed is only the source of propagation. Demand for seedling of *jatropha* is increasing day by day. It is very important to provide healthy and vigorous seedlings, among which seed treatment with growth regulators like GA₃ is of immense useful. The effect of GA₃ for enhancing the germination and vitality of so many sexually propagated horticultural crops like vegetables, seed propagated fruit crops like papaya, kagzilime, rangapur lime etc. has been proven. An investigation was, therefore,

conducted to find out the effect of gibberellic acid on seed germination and growth of *Jatropha curcas* L.

MATERIALS AND METHODS

The experiment was conducted during *Kharif* season of 2007-2008 at Horticultural farm, Department of Horticulture, College of Agriculture, Latur. The experiment was laid out in a Randomized Block Design with ten treatment *viz.*, T₁) GA₃ 100 ppm for 4 hr. T₂) GA₃ 100 ppm for 6 hr. T₃) GA₃ 100 ppm for 8 hr. T₄) GA₃ 200 ppm for 4 hr. T₅) GA₃ 200 ppm for 6 hr. T₆) GA₃ 200 ppm for 8 hr. T₇) GA₃ 300 ppm for 4 hr. T₈) GA₃ 300 ppm for 6 hr. T₉) GA₃ 300 ppm for 8 hr. and T₁₀) Control (Water soaking for 8 hr.). The normal and uniform sized 30 seeds of *Jatropha curcas* L. were subjected for the soaking treatments, the desired concentration of gibberellic acid was taken from stock solution and distilled water was added to make a volume 1000 ml. The seeds were soaked thoroughly in different concentrations of GA₃ at different time as per treatments. For control of damping off disease drenching of copper oxychloride (1 per cent) was done twice during the early period of investigation. Observations were recorded and statistically analyzed as per method given by Panse and Sukhatme (1967).