Indian Journal of Tropical Biodiversity

EVALUATING THE EFFECT OF GENOTYPES AND IBA CONCENTRATIONS ON VEGETATIVE PROPAGATION OF *GMELINA ARBOREA* ROXB. THROUGH SEMI-HARDWOOD CUTTINGS

FATIMA SHIRIN*, PRIYADARSHANI CHHETRI, HARI OM BARMAIYA, NIRAJ YADAV, SHARMISHTHA GANGOPADHYAY, MUKESH KUMAR SONKAR AND SUSHMA MARAVI

Genetics and Tree Improvement Division, Tropical Forest Research Institute,

PO: RFRC, Mandla Road, Jabalpur-482 021, India.

**Corresponding author email: fatimashirin1997@gmail.com*

ABSTRACT: *Gmelina arborea* Roxb. (Family: Lamiaceae) commonly known as Gamhar is one of the species preferred by the farmers for plantations. It is valuable for furniture, paper and matchwood industry. Roots of *Gmelina arborea* are an ingredient of the ayurvedic medicine Dasamula. It promotes digestive power and improves memory. With the aim of multiplication of phenotypically superior CPTs, semi hardwood cuttings of five different CPTs were collected from Barha Forest Division, Jabalpur. The cuttings of 10-15 cm length were prepared and quick dip treatment in talcum powder paste (10gm) was applied with different concentrations (control, 100 ppm, 200 ppm, 500 ppm and 1000 ppm) of IBA. The morphometric parameters of number of sprouts, length of sprouts (cm), rooting percentage, number of roots and root length was recorded. Recorded data was subjected to two factor statistical analysis. After 30 days, significant effect of trees (genotypes) and interaction between trees and treatments were observed for sprouting parameters. Maximum numbers of sprout (7.497) were obtained in GABH-2 on control. The result for rooting % was significant for the treatments and best rooting percentage was obtained in 200 ppm IBA (73.13%). This was followed by 100 ppm IBA (56.73%) > 500 ppm IBA (50%) > 1000 ppm IBA (21.33%) > control (13.33%). It was concluded that increased number of sprouts were obtained without any growth hormone but maximum rooting percentage with maximum root number (6.22) and root length (6.21 cm) was achieved in the cuttings treated with 200 ppm IBA. Quality planting material of *Gmelina arborea* was produced through this vegetative propagation method.

Keywords: *CPT, genotypes, Gmelina arborea, Indole-3-Butyric Acid, rooting, semi-hard wood cuttings*

Citation: Shirin F, Chhetri P, Barmaiya HO, Yadav N, Gangopadhyay S, Sonkar MK, Maravi S (2022) Evaluating the effect of genotypes and IBA concentrations on vegetative propagation of *Gmelina arborea* Roxb. through semi-hardwood cuttings. Indian J Trop Biodiv 30(1&2):59-66.

INTRODUCTION

Gmelina arborea (Roxb.) is a medium sized deciduous forest tree species of the tropical and sub tropical forests of South-East Asia including India. It is a tree of height 30-35 m and 3-4 m in diameter belonging to family Lamiaceae. The species is commonly known as white teak, Khamer or Gamhari and is grown for timber, fodder and industrial purposes (Troup, 1986). In India, the tree is distributed naturally in many different states including West Bengal, Orissa, Sikkim, Assam, and Madhya Pradesh (Borpuzari and Kachari, 2019). The versatile nature of this species and the nature of rapid growth is enough to attract mankind to gain more knowledge about it (Dvorak, 2003).

It is a preferred multipurpose tree species because of its rapid growth and it is valuable for furniture, paper and matchwood industry. Roots are an ingredient of the “Dasamula” medicine. As its timber is considered as a versatile timber, almost all parts are very useful in various ways such as furniture with excellent durability, with no shrinkage and distortion and with very smooth and fine finishing industrial plywood or industries wood pellets boxes, veneers, etc. It is also used in agriculture equipment such as