



GENETIC EVALUATION OF *Melia composita* PROGENIES FOR GROWTH PERFORMANCE AND PRODUCTIVITY

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ABSTRACT: *Melia composita* is an important multipurpose, deciduous tree species of meliaceae family. It is widely planted under agroforestry, farm forestry and social forestry in Southern India, Northern India and Eastern India. For the identification of superior and productive genotype/s, progeny of 21 different identified plants have been planted under field trial in Completely Randomized Block Design (CRBD) at three different locations in Bihar and Jharkhand. One year old plants were studied for height, basal diameter and volume index and observed significant differences among studied progenies for these traits. Progeny number IFPC 15, IFPC 18 and IFPC 3 showed superiority over other progenies in terms of height, while progeny number IFPC 15 and IFPC 3 showed superiority in terms of basal diameter. In terms of volume index also progeny number IFPC 15, IFPC 3 and IFPC 18 showed superiority over other progenies. The scatter diagram of Metroglyphs grouped studied progenies into five groups, indicating presence of variances among the studied progenies. Progenies IFPC 15, IFPC 3 and IFPC 18 grouped together into high : high group of X/Y axis value. Genetic analysis of the progenies showed adequate genetic variability to carryout genetic improvement of the species. The GCV value of volume index was highest while, height was observed as highly heritable trait followed by volume index and basal diameter. Genetic advance in volume index was also highest followed by height which indicates the worth of these two traits in selection and tree improvement program.

Key words: *Melia composita*, metroglyph, genetic variability, genetic advance, heritability.

Citation: Kumar A, Singh S (2019) Genetic evaluation of *Melia composita* progenies for growth performance and productivity. Indian J of Trop Biodiv 27(1):36-41

Received on : 31 May 2019

Accepted on : 01 July 2019

Published on : 10 July 2019

Melia composita (*syn. Melia dubia*) is one of the fastest growing tree species, indigenous and

belongs to the family Meliaceae. It is found naturally in tropical moist deciduous forests of the Sikkim Himalaya, North Bengal, Upper Assam, Odisha and Western Ghats (Kumar and Das, 2013). The tree is moderately light demander and thrives well in wide range of climatic conditions (Kumar et al., 2013). It can be grown on wide range of soil though grows very fast in well drained loamy or sandy loam soil. Its wood having anti-termite property and used for various purposes like, making packing cases, cigar boxes, ceiling planks, building purposes, agricultural implements, pencils, match boxes, ply boards, paper and pulp etc. (Kumar and Das, 2013). Because of its faster growth and deciduous nature it is being planted extensively under agroforestry and farm forestry by the farmers. In Bihar and Jharkhand it was not present naturally and also there was no report of its introduction and commercial cultivation. Therefore the present study was conceived

with the objective to introduce the species, study their performance under field trials and productivity in these states. Genetic diversity assessment in the material working upon is very important to achieve the genetic gain under selection so; metroglyph analysis has also been carried out.

MATERIALS AND METHODS

Plant Material: Different districts of West Bengal including Siliguri, Jalpaiguri, North Dinajpur, South Dinajpur, Darjeeling, Cooch Behar, Murshidabad etc. were extensively surveyed and 19 plus trees of *M composita* were identified. The Plus trees were selected based on growth parameters like, height, GBH, Basal diameter, Clear Bole length, Crown length, free from insect-pests and diseases etc. Seeds of improved progenies were also collected from FRI Dehradun. Based on germination, availability of plants per progeny and growth in nursery, a total of 21 different progenies were selected for establishing field trials.

Experimental design: Three month old seedlings of selected families were planted under field trial in