

## Genetic Variation of Growth and Reproductive Parameters of *Jatropha curcas* in a Progeny Trial at Anapallama (1M2) in Sri Lanka

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*Jatropha curcas* is used for biodiesel production as an alternative for fossil fuel. Genetic variability among seed sources of Sri Lankan *Jatropha* population was studied for tree diameter at 10 cm height, tree height, and number of branches, fruits and flowers per tree, in a field trial which was established at Anapallama Wellawaya in 2009. The trial consisted of 60 open pollinated families from 13 seed sources. Those families were allocated in a row column design with 4 replicates, each family represented by 5 trees row plot. The results indicate significant differences ( $p < 0.05$ ) among seed sources for survival, base diameter, number of branches, fruits and further indicate significant differences among families within seed sources for the tree basal diameter, number of branches, flowers and fruits. Progeny of seeds from Polonnaruwa, Hambanthota and Badulla performed better in tree base diameter and number of branches and number of flowers. Tree diameter (5.9 cm) was highest in the progeny of seeds from Hambanthota, whereas those from Badulla showed highest number of branches (16/tree) and highest number of flowers (27/tree). Maximum survival (100%) was recorded in the seed sources of Matara and Embilipitiya, and the least (80%) was from Anuradhapura seed source. Individual tree narrow sense heritability estimates for number of flowers, fruits, branches and base diameter were 0.34, 0.8, 0.78, and 0.59 respectively. There were strong positive correlations between number of branches and fruit production; and the tree diameter and fruit production. Hundred individual trees selected using an index based on number of branches and number of fruits per tree (economic weights 1 and 2 respectively) reveal that diverse distribution across the seed sources (50% Matara, 30% Hambantota and 20% Kurunegala) as well as within seed sources. Superior genotypes selected from this breeding population can be used for future improvement and for commercial plantations establishment.

**Keywords:** *Jatropha curcas*, genetic variation, heritability, correlation, selection