# Identification of Mother Plant Selection Criteria of Gliricidia (*Gliricidia sepium* (Jacq.) Kunth ex Walp

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A multipurpose leguminous tree species native to Mexico known as Gliricidia (*Gliricidia sepium* (Jacq.) Kunth ex Walp) has traditionally offered goods and services to the farming people of tropical nations like Sri Lanka. Early on after its introduction in 1700, its primary purposes included defining fences in farmlands and backyard gardens, providing shade for coffee, cocoa, and tea cultivation, and providing support for a variety of climbing crops like pepper, vanilla, yams and vegetables. Gliricidia is currently plays a significant part of Sri Lanka's agriculture, livestock, and green energy sectors. Since Sri Lanka has very few prospective hydro-generating sites that are now available for development, non-traditional renewable energy generation represents a promising option. To meet future electricity demand, Gliricidia can be used as a biomass energy source, although there is no proper selection methods for mother plants for higher wood biomass production. Therefore, the present study was conducted to make Gliricidia mother plant selection criteria aiming for high amount of fuelwood yield. Out of 12 variables recorded over 100 Gliricidia trees, only leaf weight, stem girth and average branch girth were shown positive linear relationship with the wood weight. Relationships between wood weight (Y1) and leaf weight (X1), stem girth (X2) and average branch girth (X3) are identified as Y1 = 2.46558 X1 + 7.56337 ($R^2$=72%), Y1 = 5.5036 X2 – 10.19207($R^2$=31%) and Y1 = 6.80236 X3 – 6.78043 ($R^2$=27%), respectively. According to multiple linear regression X2 and X3 relationship with Y1 was Y1 = 3.85472 X2 + 4.06939 X3 – 20.06631 ($R^2$=36.9%), whereas the relationship of all three variable was Y1 = 2.08909 X1 + 1.57609 X2 + 1.87959 X3 – 10.55528 ($R^2$=77.7%). Based on the results and practicality, it can be concluded that the better approach for selection of mother plants will be obtaining of wood weight after harvesting.

**Keywords:** Branch girth, Dendro power, Fuelwood, Leaf weight, Mother plant, Wood weight

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