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PROMOÇÃO:



## **Alometric models to accurate and non-destructive leaf area estimation in *Jatropha curcas* L.**

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Biodiesel is an alternative to petroleum diesel fuel. It is a renewable, a biodegradable, and also a non-toxic fuel. The general interest to produce biodiesel from *Jatropha curcas* seeds oil has increased but its ability to grow on drought-prone areas has barely been investigated. Leaf area (LA) is a key variable for most agronomic and physiological studies involving plant growth, light interception, photosynthetic efficiency, evapotranspiration and responses to fertilizers and irrigation. Therefore, LA strongly influences crop growth and productivity, and estimation of LA is a fundamental component of crop growth models. We aimed to evaluate the currently used allometric models, as well as to propose a reliable and accurate model using non-destructive measurements of leaf length (L) and/or width (W), for estimating the leaf area of *Jatropha curcas*. For model construction, a total of 1200 leaves were randomly selected from different levels of the tree canopies and encompassed the full spectrum of measurable leaf sizes (0.19–367 cm<sup>2</sup>). Power models better fit *Jatropha curcas* leaf area than linear models. We developed two single power model (LA = L<sup>β</sup>e<sub>i</sub> and LA = W<sup>β</sup>e<sub>i</sub>) based on length or width leaf dimensions (LA = L<sup>1.9644</sup> and LA = W<sup>1.8929</sup>) with high precision and accuracy (R<sup>2</sup> > 0.97), and unbiased, irrespective of leaf size and shape. In this study, we concluded that the currently used allometric models proposed in previous studies to *Jatropha curcas* L. in fact were biased, significantly underestimating the true LA when comparing to the true leaf area.

**Keywords:** bio-fuel, purging nut, accurate models

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