

## ESTIMATING LEAF AREA OF *Massularia accuminata* (“PAKO IJEBU”) FROM LINEAR MEASUREMENTS

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### ABSTRACT

The study was carried out to develop leaf area prediction models for *Massularia accuminata* using linear measurement. The maximum lamina length (L) and lamina width (W) were measured with a graduated ruler (cm), while the actual leaf area (ALA) were measured with LI-COR 3000 leaf area meter. The best-fit model was selected based on F test; mean square error (MSE) and coefficient of determination ( $R^2$ ). All the parameters were positively and significantly correlated at 1% level. Product of Length and width (l\*w) correlated best with actual leaf area having a correlation coefficient (r) of 0.99. Quadratic and linear regression of the data produced fifteen leaf area models, ranked based on their predictive accuracy. The best five models were product and sum of length and width while the least five models were derived from single dimensional measurement of either lamina length or width. The quadratic model involving the product of lamina length and width gave the best prediction equation,  $LA(\text{leaf area}) = 2.66 + -2.46 / (1 + -0.00512 * LW) + 0.5559 * (LW)$  with  $R^2$  of 98.1%; MSE = 7.23; se = 2.69. A simpler linear model  $LA = 0.51889(LW) + 0.541$ ;  $R^2 = 98\%$ ; MSE = 7.539; se = 2.75 was preferable for leaf area estimation of *Massularia accuminata* even though substitutability of the models required further validation.

**Keywords:** *Massularia accuminata*, linear measurement, leaf area, models, regression equation