Research Paper

Relationships between leaf surface area and linear dimensions in *Citrus macroptera* (heiribob) using non-destructive method

■ W. INGO MEITEI, H. JAYALAXMI DEVI[1] AND S. ROMEN SINGH[1]

Members of the Research Forum

Associated Authors:
[1]Department of Horticulture, College of Agriculture, Central Agricultural University, IMPHAL (MANIPUR) INDIA
Email: drjayalaxmi_h@rediffmail.com; romensenjam@yahoo.com

Author for correspondence :
W. INGO MEITEI
Department of Horticulture, College of Agriculture, Central Agricultural University, IMPHAL (MANIPUR) INDIA
Email : w_ingomeitei@rediffmail.com

ABSTRACT : Leaf area is a commonly used measurement in many horticulture research experiments, but is generally destructive, requiring leaves to be removed for measurement which disturbs carbohydrates assimilation and translocation. The investigations on relationships between leaf surface area and linear dimensions in *Citrus macroptera* (heiribob) using non-destructive method were carried out at the experimental field of the Department of Horticulture, College of Agriculture, Central Agricultural University, Imphal, Manipur, during the period 2011-12. Study employed random selection of *Citrus macroptera* (heiribob) leaves from the exposed part of the trees and estimation of leaf area was carried out. Out of the non-destructive method of leaf area estimation, the area based on the breadth had high co-efficient of determination (r^2 = 0.903), suggesting that the result has shown a good fit of observed and predicted value for the leaf area estimation in the future. The produced model in this study can be reliably used for estimating area of leaf samples from the plants of *Citrus macroptera*.

KEY WORDS : *Citrus macroptera*, Leaf area estimation, Non-destructive method

HOW TO CITE THIS ARTICLE : Meitei, W. Ingo, Devi, H. Jayalaxmi and Singh, S. Romen (2012). Relationships between leaf surface area and linear dimensions in *Citrus macroptera* (heiribob) using non-destructive method, *Asian J. Hort.*, **7**(2) : 327-329.

*C*itrus macroptera is a fruit tree in the family Rutaceae which is a semi-wild species of citrus native to Malaysia and is very popular in India particularly throughout North East India, especially in Mizoram and Manipur, where it is most commonly used as a flavouring and aromatic agent. The rind is peeled and added fresh or dried for further use by the people of Manipur and is locally known as heiribob. The tree, which has thrown, can reach 5 m in height. Its fruit is about 6–7 cm in diameter, has a fairly smooth, moderately thick rind, and is yellow when ripe. The pulp of the fruit is greenish yellow and dry (does not produce much juice). The juice is very sour, and somewhat bitter. Mild antioxidant activity with the n-hexane compound of lupeol and stigmasterol can be extracted from the stem bark of *Citrus macroptera* (Chowdhury *et al*., 2008). Several methods for measuring leaf area have been widely used, including tracing, matching, punching and photoelectric devices. Most of the methods described involve injury to the leaves. Estimates also can be obtained at successive stages of plant development by measuring leaf dimensions using non-destructive method of estimation. Accurate, nondestructive method of estimating leaf area is useful in studying the relationship between leaf area development and plant growth. These method permits repeated sampling of the same plant over time, thus facilitating the study of dynamic not possible with destructive sampling procedures. However, nondestructive method of leaf area assessment with leaf area meter is limited due to financial constraints. Various workers reported about the accurate non-destructive method of estimating leaf area on various crops like citrus (Ascenso and Soost, 1976), mango (Rao *et al*., 1978), banana (Potdar and Pawar, 1991), dwarf mango syn Moreh (Meitei and Devi, 2005) and grape (Beslic *et al*., 2009). There is not much systematic research work done on estimation of leaf area related to heiribob (*Citrus macroptera*) in India or elsewhere. Therefore, the objective of this investigation was to test whether a leaf area estimate model could be derived for heiribob (*Citrus macroptera*) from the linear measurement of leaf length and breadth alone or from the product of length