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“Development on the margin”

Domestication of *Chrysophyllum albidum* from Rainforest and Derived Savannah Ecosystems – Phenotype Variation and Selection of Elite Trees

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Abstract

Many forest food tree species have immense socio-economic, nutritional and cultural importance. They contribute to food security and increase the diversity of foods necessary to reduce monotony in diets of rural people. Their importance notwithstanding, their regeneration has been neglected. Due to lack of care and old age, fruit yield of existing trees is decreasing, which if not addressed will endanger rural the livelihood. This study investigates phenotypic variation of *Chrysophyllum albidum* in rainforest and derived savannah ecosystems of Nigeria with the aim of selecting elite trees for multiplication as cultivars. From each ecosystem, five villages with high abundance of *C. albidum* trees were selected. One hundred trees (10 from each village) were selected, numbered and tagged. The age and silvicultural history (whether planted or naturally regenerated) of each tree were obtained. Measurements of tree growth parameters and phenotypic variations were made in 2010. Palatability test based on sweetness, fibrosity, juiciness and smoothness was conducted by three test persons. Results indicated greater domestication activity by farmers in derived savannah than rainforest ecosystem. While 6% (3/50) of the trees in rainforest were planted, 36% (18/50) were planted in derived savannah. There was an element of positive selection in domestication by farmers as fruits of domesticated trees were generally bigger, sweeter and non-fibrous. Trees in derived savannah were younger and smaller (age: 20–50 years; dbh: 4.0–72.6 cm; height: 5.1–28.6 m) than those in rainforest ecosystem (age: 50–55 years; dbh: 16.5–125.3 cm; height: 10.8–28.8 m) due probably to higher domestication activity, since domesticated trees were generally younger. A high percentage of trees were found within agroforestry plots. Fruit variations were as follows: length: 2.26–4.76 cm; width: 2.0–74.10 cm; fruit weight: 28.23–86.06 g and pulp weight 8.55–46.14 g. The criteria for selection of elite trees were big fruits, very sweet, juicy and non-fibrous fruit pulp. Since most trees did not meet all the criteria, fruits from the few trees (seven) that met the criteria were collected between in 2011 for nursery experiment as an important step towards their domestication. Thus, we have selected elite trees from this first screening and collected fruits for further research and experimentation.

Keywords: *Chrysophyllum albidum*, domestication, elite trees, forest food trees