



Quantitative morphological descriptors confirm traditionally classified morphotypes of *Pentadesma butyracea* Sabine (clusiaceae)

Serge S. Houédjissin¹, Paulin Azokpota^{2,3}, Assogbadjo Achille⁴, Ahanhanzo Corneille^{*1}, Hounhouigan D. Joseph^{2,3}

¹Département de Génétique et des Biotechnologies ; Faculté des Sciences et Techniques. Université d'Abomey-Calavi; 01 BP 526 ; Cotonou, Bénin.

²Laboratoire de Biochimie Microbienne et de Biotechnologie Alimentaires (LMBA), Faculté des Sciences Agronomiques, Université d'Abomey-Calavi; 01 BP 526 ; Cotonou, Bénin.

³Laboratoire de Biologie Moléculaire et Formulations des Aliments (LAFAB) ; Faculté des Sciences Agronomiques, Université d'Abomey-Calavi; 01 BP 526 Cotonou, Bénin.

⁴Laboratoire d'Ecologie Appliquée; Faculté des Sciences Agronomiques, Université d'Abomey-Calavi ; 01 BP 526, Cotonou, Bénin

***1Corresponding author email** : Professeur Ahanhanzo Corneille; . corneillea@yahoo.com

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ABSTRACT

Objective: *Pentadesma butyracea* is a multi-purpose tree species in Africa with great morphological variability. This study used quantitative descriptors to assess morphological variation of traditionally classified *P. butyracea* and its relation to ecological conditions.

Methodology and results: 108 trees and 1080 fruits were sampled spanning locally recognized trees morphotypes within four phytodistricts. Six morphological descriptors were measured on the trees and the fruits. Univariate and canonical discriminant analyses were used to describe variability enters and inside the populations of *P. butyracea*. These data were supplemented by an evaluation and a modelling of the seeds number per fruit (the principal trait of commercial importance). Principal components analysis (ACP) was carried out to examine ecological influence. The variance components analysis showed substantial variations within morphotypes, suggesting a significant heterogeneity within trees and fruits traditionally classified as belonging to the same morphotypes. Regression equations indicated that fruits length and width are good predictors of seeds yield, although their predictive capacities differ between the phytodistricts. Fruits morphometric variations were significantly correlated with ecological factors. Fruits size (length, width) decreased with temperature, hygrometry and pluviometry increase.

Conclusion and application: The quantitative descriptors made it possible to make precise morphotypes of the various *P. butyracea* trees and to estimate the seeds number per fruit starting from predictive models. This will have positive influence on *P. butyracea* improvement, conservation and domestication programs in aid of Benin local communities.

Key words: *Pentadesma butyracea*, morphological variation, indigenous knowledge, Ecological factors, Benin