Morphological characterisation of *Ricinodendron heudelotii* (Baill.) Heckel in Cameroon – potential for domestication

Marie Kalousová, Patrick Choungo, Dennis Kyereh, Bohdan Lojka

Czech University of Life Sciences Prague
Faculty of Tropical AgriSciences

Introduction

Ricinodendron heudelotii (Baill.) Heckel, also known as 'Djansang', is found in the semi-dry wooded-savannah zone of Central and West Africa. It is one of the economically most important indigenous fruit tree species with potential for use in agroforestry systems, but it is also underutilised and under-researched. The kernels, which produce edible oil, are one of the most traded non-timber forest products in Cameroon. Despite its importance, the species is still harvested from the wild populations. It lacks basic information on morphological diversity which is crucial for its domestication process. The objective of the study was therefore to evaluate morphological variability in Djansang fruits and seeds across the Southern and Central regions of Cameroon.

Methodology

Data were collected from a total of 50 individuals of *R. heudelotii* from four geographical populations: Alen, Mviili Mengale and Tya' Assono in the Southern region and Ondeck in the Central region (Fig. 1). Ten fruits per tree were collected, evaluated and all seeds were characterised for basic morphotypes. Fruit weight, length and width, seed weight, length and width, and number of seeds per fruit were analysed using PCA, hierarchical clustering and one-way anova.

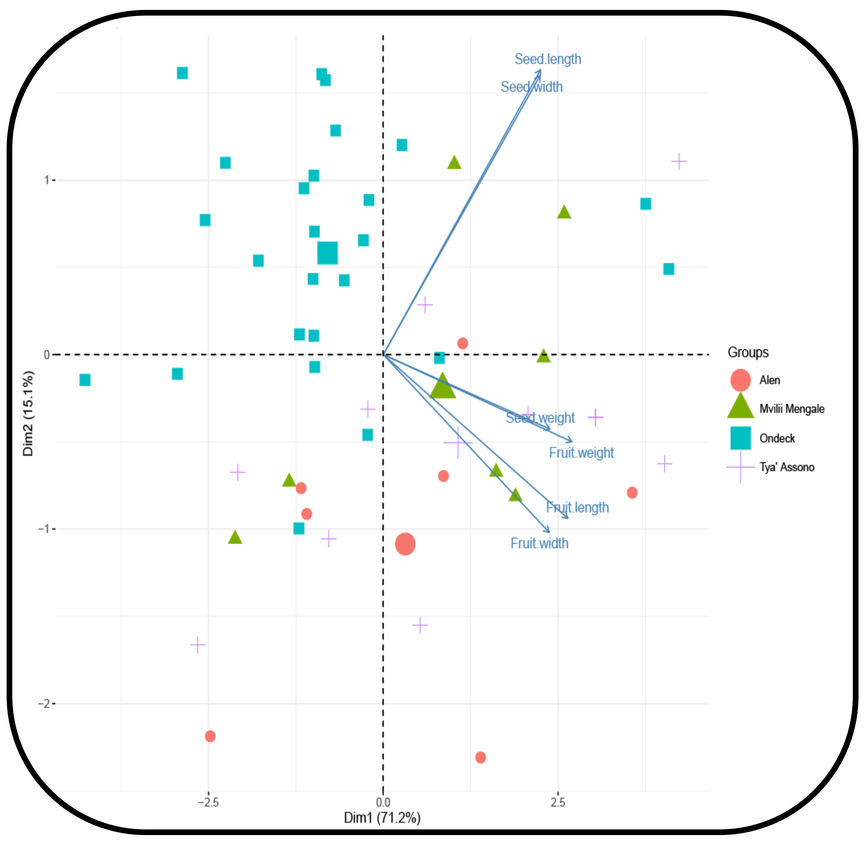

Figure 2. Principal component analysis biplot based on six seed and fruit morphological descriptors of 50 individuals of *Ricinodendron heudelotii* from South and Central Cameroon

Figure 1. Sampling location of Ricinodenrdon heudelotii in Cameroon. Southern region: villages Alen, Mviili Mengale, Tya' Assono; Central region: village Ondeck

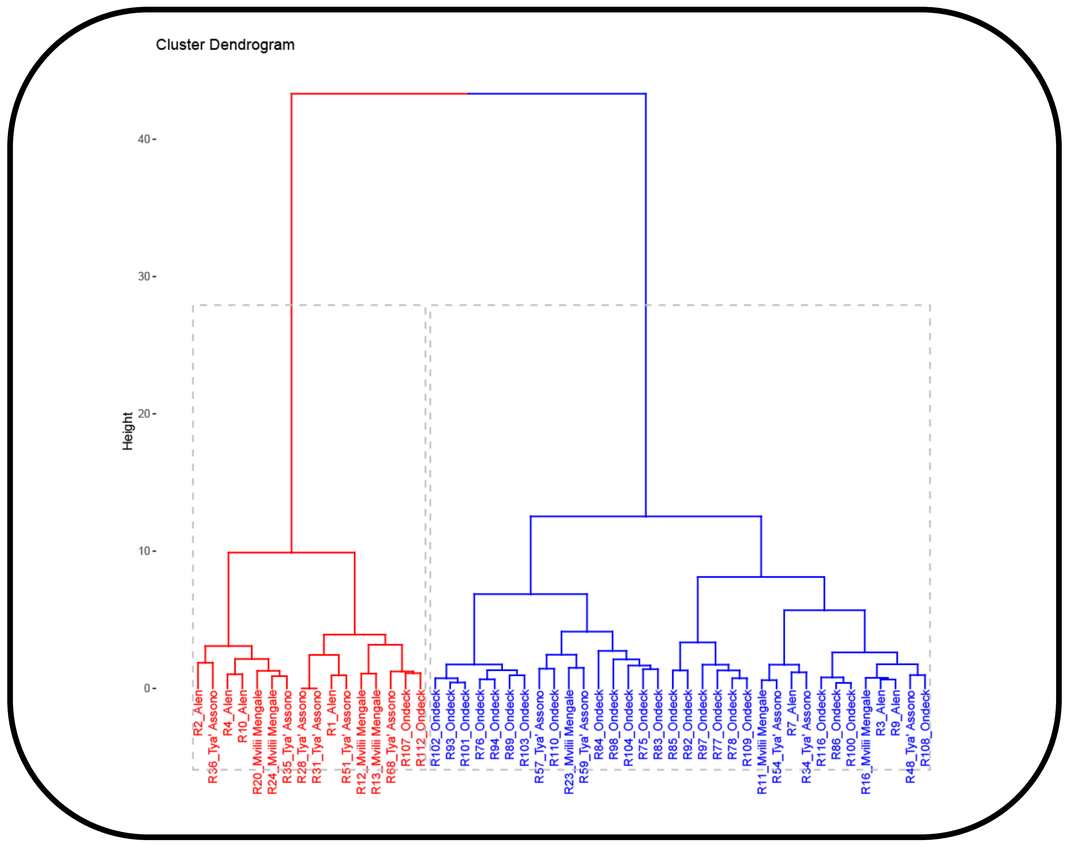

Figure 3. Hierarchical clustering based on distance matrix generated from six seed and fruit morphological descriptors of 50 individuals of *Ricinodendron heudelotii* from South and Central Cameroon

Table 1. Mean values of fruit and seed morphological descriptors of 50 Ricinodendron heudelotii trees from four provenances in South and Central regions of Cameroon.

		Fruit			Seed		
	n	Length (cm)	Width (cm)	Weigth (g)	Length (cm)	Width (cm)	Weigth (g)
Alen	7	4.58[a]	3.14[a]	33.65	1.37	0.96	2.05[a]
Mviliii Mengale	7	4.58[a]	3.14[a]	33.65	1.42	1.04	2.01[a]
Tya' Assono	11	4.64[a]	3.18[a]	34.78	1.41	1.03	2.09[a]
Ondeck	25	4.09[b]	2.95[b]	29.63	1.42	1.02	1.66[b]

Conclusions

The results revealed clustering roughly based on geographic origin (Tab. 1, Figs. 2 and 3), however, significant variations in fruit size were likewise observed among individual trees sampled ($P<0.05$). Variations could have genetic basis that may be reflected in molecular DNA analysis currently in progress. Selection and improvement programmes focusing on trees with large fruits could lead to higher yield of seeds for oil production.

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