

The African baobab (*Adansonia digitata*, Malvaceae): Genetic resources in neglected populations of the Nuba Mountains, Sudan¹

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ABSTRACT

• Premise of the study: *Adansonia digitata* L. is one of the most important indigenous fruit trees of mainland Africa. Despite its significance for subsistence and income generation of local communities, little is known about the genetic and morphological variability of East African populations of *A. digitata*, including those of Sudan. The aim of the current study, therefore, was to analyze genetic and morphological variability of different baobab populations in Kordofan, Sudan and to estimate the effect of human intervention on genetic differentiation and diversity.

• Methods: A total of 306 trees were randomly sampled from seven spatially separated locations in the Nuba Mountains, Sudan, to cover a wide range of differing environmental gradients and management regimes ('homesteads' and 'wild'). Genetic analyses were conducted using nine microsatellite markers. Because of the tetraploid nature of *A. digitata*, different approaches were applied to estimate patterns of genetic diversity. Investigations were completed by measurements of dendrometric and fruit morphological characters.

• Key results: Genetic diversity was balanced and did not differ between locations or management regimes, although tendencies of higher diversity in 'homesteads' were observed. A Bayesian cluster approach detected two distinct gene pools in the sample set, mainly caused by one highly diverse population close to a main road. The variability of tree characters and fruit morphometrics was high, and significantly different between locations.

• Conclusions: Results indicated a rather positive effect with human intervention. The observed populations provide a promising gene pool and likely comprise ecotypes well-adapted to environmental conditions at the northern distribution range of the species, which should be considered in conservation and management programs.

Key words:

Admixture distribution diversity fruit trait microsatellite
molecular marker South Kordofan phenotype tetraploidy

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