



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:
conflicts, controversies and resolutions”

Baobab (*Adansonia digitata* L.) in Kenya – A Valuable Genetic Resource in a Changing Environment

MERCEDES THIEME¹, KATJA KEHLENBECK², FRANK HELLWIG¹, JENS GEBAUER³, KATHLEEN PRINZ¹

¹*Friedrich-Schiller-University Jena, Inst. of Systematic Botany with Herbarium Haussknecht and Botanical Garden, Germany*

²*World Agroforestry Centre (ICRAF), Tree Diversity, Domestication and Delivery, Kenya*

³*Rhine-Waal University of Applied Sciences, Sustainable Agricultural Production Systems with Special Focus on Horticulture, Germany*

Abstract

Baobab (*Adansonia digitata* L.), an autotetraploid species of the Malvaceae, represents one of the most important indigenous fruit tree species in drylands of sub-Saharan Africa. Despite its significance for food and nutrition security of local communities, the baobab is being threatened by increasing climate and land-use changes, especially by agricultural intensification. Also the species' persistence depends on genetic resources available in its populations. The knowledge of intra-specific morphological variation is increasing while investigations on the genetic diversity of the baobab are rare, especially in the East African centre of its distribution. This study aimed at examining the genetic diversity patterns of *A. digitata* in Kenya, where a high morphological variability suggests a significant genetic diversity. Leaf and bark material of 180 randomly selected baobab trees from six regions in Kenya (East and Coast Province) were collected and analysed in the laboratory with ten nuclear microsatellite markers (SSR) to characterise the genetic diversity patterns. The results indicate that genetic structure correlates with the geographical distribution. At a larger biogeographic scale, investigated populations can be integrated in the East African centre of distribution by examining their haplotypes resulted from chloroplast microsatellite markers. However, single gene pools in Kenya are possibly influenced by gene flow among the Kenyan regions also explained by human-induced seed distribution. The results of genetic investigation will be combined with morphological diversity patterns based on tree and leaf characteristics. The combination of these variation patterns will allow for identification and characterisation of locally adapted types, which may be enabled to persist the increasing threats of climate and environmental changes. The knowledge of local gene pools based on combined diversity patterns are a prerequisite for conservation programs, and the development of sustainable management strategies, especially domestication activities.

Keywords: *Adansonia digitata*, baobab, East Africa, genetic diversity, Kenya, microsatellite markers, polyploidy, population structure