



Tropentag, October 7-9, 2008, Hohenheim

“Competition for Resources in a Changing World:
New Drive for Rural Development”

Temporal and Spatial Variation in Soil Seed Banks in Elain Natural Forest Reserve, North Kordofan, Sudan

MOHAMMED H. MOHAMMED¹, HUSSEIN M. SULIEMAN²

¹Technische Universität Dresden, Institute of Forest Growth and Forest Computer Sciences, Germany

²University of Gadarif, Faculty of Agricultural and Environmental Sciences, Sudan

Abstract

This study was conducted in Elain Natural Forest Reserve, 26 km Southeast of Elobeid town, capital of North Kordofan State, Sudan. It was carried out in May and December 2004 to estimate soil seed banks in four soil depths (5, 10, 15 and 20 cm) under two densities of trees (88.9 and 150.3 trees per ha). Vegetations (trees, shrubs and natural regenerations) were sampled and number of stems and species composition per sample plot were obtained. Visible seeds were estimated for each soil depth at each tree density. Collected soil samples were exposed to germination under nursery conditions and the germinated seeds were identified and counted. The obtained data were analysed using descriptive statistics and means comparison. Possible co-relations between tree seed density and number of stems per sample plot (0.1 ha) were worked out. Though seven tree species were reported and five naturally regenerated, in the study area, seeds of *Acacia mellifera* were the only detected seeds in the bank. Tree seeds density ranged from 828.6 to 1052.6 seeds m⁻² representing 59.7 to 73.9% in the top 5 cm soil depth, whereas the highest germinated seeds (trees, shrubs and herbaceous) were 3540.5 seeds m⁻² of which only 10.0% were tree seeds. The results of the study showed that tree seeds available up to 10 cm soil depth and decreasing with increasing in depth, while herbaceous seeds are vary and available up to 20 cm depth. These findings may be of great values for the upcoming studies in the context of soil seed banks and their impacts on plant biodiversity.

Keywords: *Acacia mellifera*, forest reserve, biodiversity, soil seed bank