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Fungal Flora Associated with Canker and Dieback Disease in *Adansonia digitata* and *Sclerrocarya birrea* under Domestication in Eastern Kenya

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Abstract

Domestication of indigenous fruit trees in drylands agroforestry systems has been threatened by canker and dieback diseases. However magnitude, distribution and identity of associated pathogens have not been documented in Kenya on *Adansonia digitata* and *Sclerrocarya birrea*. About 360 samples were collected from five farms spread over two Agro-ecological zones (Kitui and Kibwezi). 21 fungal species were identified using morphological characteristics and molecular data of the ITS region. Members of Botryospheriaceae comprised of 47 % of total isolates and *Lasiodiplodia theobromae, Lasiodiplodia mahajangana, Lasiodiplodia* sp, *Lasiodiplodia pseudotheobromae* were the most frequent species encountered. Members of Pestalotiopsis species were made up of 30 % of total isolates with Pestalotiopsis sp, and Neopestalotiopsis protearum occurring predominantly. Phylogenetic analysis and closest matches in GenBank showed that the fungal species associated with the fruit trees also occurred in other plant species. Hence plurivorous nature of these pathogens threatens trees and crops in agroforestry systems. The occurrence of main canker and dieback pathogen were significantly correlating with disease in dry season (< 0.01, Pearson corr. $=0.72$) indicating the hot conditions favouring their growth. However, occurrence of *Alternaria* was higher in humid areas and during wet season. This study will provide a comprehensive study on fungal flora associated with *A. digitata* and *S. birrea* in eastern Kenya which clearly document the need for detail study of host-pathogen dynamics. It also demonstrate the ability of this indigenous fruit trees to share pathogens with other crops and possibly act as source of reservoir or inoculum for agricultural crops which could compromise disease management strategies on farms. This study will contribute towards epidemiological and management strategies for fungal pathogens in arid and semi-arid lands.

Keywords: *Adansonia digitata*, agroforestry, *Botryospheriaceae*, canker and dieback, fungal flora, pestalopsis, *Sclerrocarya birrea*

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