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Molecular identification of fungal species associated with leaf lesions of marama bean seedlings in Namibia

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During a greenhouse experiment on the marama bean plant (*Tylosema esculentum*) at the University of Namibia, signs of necrosis and spotting were observed on leaf tissues of newly developed seedlings. In this study, we described the findings of the investigations to determine the possible causative agent(s) of such plant leaf infections. Infected seedling leaves were surface-sterilized and used in form of leaf-discs (2x2 mm), to inoculate potato dextrose agar (PDA). Alongside, control leaves were similarly treated and overlaid onto PDA. While fungal growths were observed on all infected leaf-discs, no growth was observed on control discs. For the various fungal strains growing on the infected leaf discs, pure cultures were obtained by repeatedly sub-culturing the strains onto PDA. Subsequently, single spore cultures were aseptically isolated from each of the pure cultures and further developed into mycelia through inoculation and incubation in potato dextrose broth (PDB). A total of eight single spore cultures were obtained from the overall inoculations and sub-culturing. The total genomic DNAs of each of the cultures were isolated followed by amplification of their internal transcribed spacer (ITS) regions. The amplified ITS regions were sequenced and compared to nucleotide patterns in GeneBank. Eight commonly known species were found: *Penicillium brevicompactum, Epicoccum sorghi, Rhizopus stolonifer, Alternaria solani, Fusarium equiseti, Penicillium olsonii, Fusarium chlamydosporum and Fusarium incarnatum*. These fungal species are known to cause various diseases and infections in legumes and other agronomically important crops. The presence of these fungal species in marama bean and their involvement in leaf tissue decay should be noted with concern and interest since this plant has been proposed as a potential leguminous crop for possible adoption and utilization in domestication efforts. Future steps will be to understand the natural conditions which support or inhibit mycotoxin biosynthesis in the bean at a molecular and phenotypical level through a full mycological study.

Biography

Mutsa Monica Takundwa has completed her PhD from the University of Namibia and is currently a Post-doctoral fellow at North-West University, Mafikeng, South Africa. She has published 8 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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