

CHARACTERISATION OF *ASPERGILLUS FLAVUS* ISOLATED FROM MAIZE

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Aspergillus flavus is the main producer of carcinogenic aflatoxins in agricultural commodities such as maize. This fungus produces aflatoxin B₁ (AFB₁) and aflatoxin B₂ (AFB₂), being the most relevant in crops and this can result in economic losses. The aim of this study was to investigate four strains of *A. flavus* field for the production of aflatoxin B₁ and aflatoxin B₂. The strains: 3909, 3911, 3951 and 3955 are isolated from Lydenburg in Mpumalanga were morphologically identified at ARC-Plant Protection Research Institute and were further characterised by Polymerase Chain Reaction (PCR) and Sanger sequencing of the internal transcriber subunit regions: ITS-5.8-ITS2. The strains were analysed for the presence of genes encoding AFB₁, targeting both regulatory (*aflR*, *aflS*) and structural genes (*aflD*, *aflM*, *aflO*, *aflP* and *aflQ*). To determine the actual production of aflatoxin B₁ and B₂ of the four strains, a reverse high performance liquid chromatographic (HPLC) instrument was used. All the four strains amplified 600bp of ITS-5.8-ITS2 rDNA region. Similarly, all of seven genes for aflotoxin B1 were detected in four strains with expected band sizes. Aflatoxin production was present in strain 3911 and 3955 for AFB₁ and AFB₂ and in strain 3951 only AFB₁ while strain 3909 revealed negative aflatoxin (AFB₁ and AFB₂) production. The results may contribute to development of reliable molecular techniques for detection of aflatoxigenicity as well as illustrating the complexity of local fungal communities associated with maize.

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