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Aspergillus section *Flavi* community structure in Zambia influences aflatoxin contamination of Maize and Groundnut

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Abstract

Aflatoxins are cancer-causing, immuno-suppressive mycotoxins that frequently contaminate important staples in Zambia including maize and groundnut. Several species within *Aspergillus* section *Flavi* have been implicated as causal agents of aflatoxin contamination in Africa. However, *Aspergillus* populations associated with aflatoxin contamination in Zambia have not been adequately detailed. Most of Zambia's arable land is non-cultivated and *Aspergillus* communities in crops may originate in non-cultivated soil. However, relationships between *Aspergillus* populations on crops and those resident in non-cultivated soils have not been explored. Because characterization of similar fungal populations outside of Zambia have resulted in strategies to prevent aflatoxins, the current study sought to improve understanding of fungal communities in cultivated and non-cultivated soils and in crops. Crops (n=412) and soils from cultivated (n=160) and non-cultivated land (n=60) were assayed for *Aspergillus* section *Flavi* from 2012 to 2016. The L-strain morphotype of *Aspergillus flavus* and *A. parasiticus* were dominant on maize and