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Bio-control of *Aspergillus flavus* in groundnut using *Trichoderma harzianum* strain kd

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Pre-harvest infection of groundnut (*Arachis hypogea* L.) during drought stress by strains of *Aspergillus flavus* and *Aspergillus parasiticus* is a major health and food safety concern worldwide. The fungi release aflatoxins are carcinogenic and hepatotoxic at levels of parts per billion. In this study, a formulated bio-control agent, *Trichoderma harzianum* strain kd (Tkd), was used to control *Aspergillus flavus* infection of groundnut in the field. The growth of *Trichoderma* from sterilized roots on *Trichoderma* selective media (TSM) suggested root colonization by Tkd. Moreover, root colonization by *Trichoderma* was evident in roots from untreated plants with Tkd. Under scanning electron microscopy, *T. harzianum* showed the ability to parasitize *A. flavus* by coiling around *A. flavus* hyphae. The aflatoxin B1 contamination from *Aspergillus* infection was also determined using a MaxiSignal® ELISA test kit. The aflatoxin content of *A. flavus* inoculated plants was significantly ($P < 0.001$) higher than the Tkd treated plants. Tkd was able to reduce aflatoxin B1 contamination in groundnut by 57% and 65% in two trials. Yields from plants treated with Tkd were 35% and 49% higher than the control (untreated with Tkd) plants in these field trials. It can be concluded that Tkd may increase crop safety by reducing the infection of the groundnut seeds by *Aspergillus flavus*, and hence it may reduce the contamination of the seed by aflatoxin under drought stress condition.

Biography

Kifle M H has completed his BSc in Biology from University of Asmara, MSc and PhD in Plant Pathology and Post-doc from University of KwaZulu-Natal, South Africa. His topic of research in MSc was "Screening and evaluation of free-living bacteria as bio fertilizers" and in PhD his topic of research was "Effects of diazotrophic bacteria on maize and wheat growth".

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