Richard Madege et al., Madridge J Food Technol. 2017
http://dx.doi.org/10.18689/2577-4182.a1.012

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International Conference on
Food Science and Bioprocess Technology
November 20-22, 2017 Dubai, UAE

Achievable to Safely Limit Fumonisin and Aflatoxin Contamination in Maize without Rigorous Chemical Treatment of Insecticides and Fungicides in Tanzania

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Representing low altitude areas of Tanzania, the experimental farm of Sokoine University of Agriculture was used to implement a four times replicated three factor experiment, in a randomized complete block design. The experiment aimed to associate varietal class of maturity, planting and harvesting times with infestation of maize stalk borer (*Busseola fusca*, Fuller), Fusarium ear and kernel rot, colonization of mycotoxin producing *Fusarium verticillioides*, *F. graminearum*, *Aspergillus flavus*, *A. parasiticus* in maize and contamination of Fumonisins and aflatoxins in maize. Respectively, real time PCR and HPLC techniques were used to quantify fungal biomass and mycotoxins content in maize grains. Recorded stalk and kernel injuries were significantly lower in early than late maturing maize varieties. Insect injuries in stalk, cobs and kernels were lowest in maize planted early in March and harvested as soon as the kernels attained physiological maturity in June. Class of maturity and planting time had no influence on DNA biomass of *F verticillioides* but shown significant influence on *F. graminearum*. Neither *A flavus* nor *A. parasiticus* were detected. Lowest fumonisin B1 and B2 content was realized from combined effects of early maturity, early planting and harvesting. Fumonisin content increased notably with delayed harvesting after maturity. No detectable levels of Aflatoxin B1, B2, G1 and G2 were realized. This study has demonstrated that, in low altitude areas of Tanzania, planting an early maturing variety, early sowing date and harvesting at can be a useful strategy to limit fumonisin concentration below maximum admissible levels without rigorous chemical treatment. Confirming the previous findings that developing crops are normally very resistant to infection by *Aspergillus* species and aflatoxin contamination unless the environment favours fungal growth and crop susceptibility, this study has demonstrated that growing maize free from moisture stress, it is achievable to limit preharvest aflatoxin contamination to near undetectable levels.

Biography:

Richard Madege is an agronomist and lecturer for Sokoine University of Agriculture in Tanzania. During his tenure Richard demonstrated competence in proposing and winning competitive local and international research grants. Richard worked as an expert and team leader in sub-program, Agriculture and food security under CAMCO clean energy, a consulting firm for USAID PREPARED project in East Africa. Collaboratively Richard has published several articles on plant propagation, climate change and Mycotoxins. Currently Richard is final year PhD candidate for University of Ghent researching to find out effective pre harvest strategies to reduce mycotoxin contamination in maize based complementary food in Tanzania