

C2108. TOLERANCE OF MAIZE VARIETIES TO INFECTION BY *ASPERGILLUS FLAVUS* AND AFLATOXIN ACCUMULATION

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Abstract

Recurrent outbreaks of aflatoxin poisoning in Kenya pose a major food safety concern considering that maize is the main staple food in the country. A study was conducted in Mwea and Waruhiu over two growing seasons to evaluate the susceptibility of 16 maize varieties to *Aspergillus flavus* and aflatoxin accumulation. The varieties tested were H513, Duma 43, DK8031, DH01, DH02, DH04, Panner 77, Panner 7-19M, Panner 4M, Panner 67/5243, H515, H516, KCB, H614, Pioneer 3253 and Katumani composite. Cobs were inoculated with *A. flavus* in the field by silk channel inoculation method. *Aspergillus* rot assessment was done at physiological maturity. At maturity cobs were harvested, dried to 13% moisture content. Sub-samples (500 g) were adjusted to 10, 13.5, 15, 17 and 20%. Percent kernels infection with *Aspergillus flavus* was determined by plating kernels on agar medium while aflatoxin content was determined by enzyme linked immunosorbent assay (ELISA). The varieties differed in visual *Aspergillus* rot rating with varieties Katumani and Katumani composite B having the lowest rating while H614 had the highest *Aspergillus* infection. Husk coverage also influenced the aflatoxin contamination with variety P77M, which had a loose coverage having a higher aflatoxin concentration. *Aspergillus flavus* kernel infection was significantly affected by sampling time, moisture content and variety. Samples stored at 17% moisture content had significantly higher *A. flavus* kernel infection. Most varieties were susceptible to *Aspergillus flavus* infection and had aflatoxin levels greater than $10\mu\text{g kg}^{-1}$ aflatoxin B₁ allowed in Kenya. The study demonstrated the need for development of varieties that are resistant to *Aspergillus* ear rot as an option for managing aflatoxin poisoning.

Keywords: Aflatoxins, *Aspergillus flavus*, ear rot, maize, mycotoxins, resistance.