

**Title** Identification of atoxigenic *Aspergillus flavus* isolates to reduce aflatoxin contamination of maize in Kenya

**Authors** C. Probst, R. Bandyopadhyay, L. E. Price and P. J. Cotty

**Citation** Plant Disease 95 (2): 212-218. 2011.

**Keywords** maize; aflatoxin

### **Abstract**

*Aspergillus flavus* has two morphotypes, the S strain and the L strain, that differ in aflatoxin-producing ability and other characteristics. Fungal communities on maize dominated by the S strain of *A. flavus* have repeatedly been associated with acute aflatoxin poisonings in Kenya, where management tools to reduce aflatoxin levels in maize are needed urgently. *A. flavus* isolates ( $n = 290$ ) originating from maize produced in Kenya and belonging to the L strain morphotype were tested for aflatoxin-producing potential. A total of 96 atoxigenic isolates was identified from four provinces sampled. The 96 atoxigenic isolates were placed into 53 vegetative compatibility groups (VCGs) through complementation of nitrate non-utilizing mutants. Isolates from each of 11 VCGs were obtained from more than one maize sample, isolates from 10 of the VCGs were detected in multiple districts, and isolates of four VCGs were found in multiple provinces. Atoxigenic isolates were tested for potential to reduce aflatoxin concentrations in viable maize kernels that were co-inoculated with highly toxigenic S strain isolates. The 12 most effective isolates reduced aflatoxin levels by >80%. Reductions in aflatoxin levels caused by the most effective Kenyan isolates were comparable with those achieved with a United States isolate (NRRL-21882) used commercially for aflatoxin management. This study identified atoxigenic isolates of *A. flavus* with potential value for biological control within highly toxic *Aspergillus* communities associated with maize production in Kenya. These atoxigenic isolates have potential value in mitigating aflatoxin outbreaks in Kenya, and should be evaluated under field conditions.