

*Aspergillus flavus* is a pathogen of maize kernels that reduces seed quality by producing the mycotoxin aflatoxin. Infection of the same kernels with *Fusarium verticillioides* has been shown to reduce aflatoxin contamination. The goal of this research is to determine if *F. verticillioides* is having a negative effect on aflatoxin production by 1) reducing *A. flavus* growth, 2) inhibiting the aflatoxin biosynthesis pathway or 3) a combination of the two factors. No antagonism between the two fungi was observed when they were co-cultured on artificial media. However, co-inoculation of kernels on detached maize ears with the two fungi resulted in a reduction of aflatoxin production from 11,493 ug/g to non-detectible levels. Yet, when *A. flavus* was introduced 2 days prior to inoculation with *F. verticillioides*, aflatoxin production was unaffected. Co-inoculation with the two fungi resulted in a visible reduction in growth of *A. flavus*, and a new HPLC/MS marker being tested for quantification of *A. flavus* biomass indicated that *F. verticillioides* does reduce *A. flavus* growth in maize kernels. Field experiments are being designed to examine gene expression and aflatoxin production in developing maize kernels. With the use of the new marker to quantify growth and RT PCR to measure the expression of key genes in the aflatoxin biosynthesis pathway, we will be able to gain a better insight into the mechanism(s) involved in the inhibition of aflatoxin production by *F. verticillioides*.