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The Analysis and Experimentation of *Aspergillus flavus* Colonizing Corn in West Tennessee

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Abstract

Aspergillus flavus is an opportunistic fungus that affects many crops including corn. *A. flavus* colonizes the ear of the corn, causing a disease known as *Aspergillus* ear rot (AER). AER contributes to yield loss in two ways; through fungal infection, which results in decreased kernel weight, and through contamination of the grain with aflatoxins. *A. flavus* has the ability to produce toxic secondary metabolites called aflatoxins which are harmful to humans and animals when consumed. Contamination with aflatoxin can result in reduced price, or rejection of grain depending on FDA regulatory limits. Due to their ability to compete with and displace toxigenic strains, atoxigenic (non-toxin producing) strains of *A. flavus* have been used as a biological control, such as the Syngenta product Afla-Guard®. The evaluation of local populations of *A. flavus* strains enables researchers to gather information about what is present in the field (atoxigenic or toxigenic) and can help make more informed management recommendations. Therefore, the purpose of this research was to evaluate the characteristics of an unknown isolate of *A. flavus* isolated from corn in West Tennessee in comparison to known atoxigenic (1 isolate from Afla-Guard®) and toxigenic isolates (2 isolates). Each isolate was grown on barley seed and plated onto MDRB media three times (i.e. 3 replications) along with a negative control (autoclaved barley) (total of 15 plates). Radial growth and colony morphology of each isolate were evaluated at 3- and

5-days after plating in a laboratory setting. Based on observations of the activity of the TN field collected isolate, it was predicted to grow slower than the Afla-Guard®/atoxigenic isolate. Preliminary results demonstrate that the Afla-Guard®/atoxigenic isolate did outgrow the TN strain as hypothesized. Additional research is required to determine the toxicity of the TN strain, as well as evaluation of other naturally occurring strains in TN in relation to potential use as biological controls.

This is the full abstract presented at the Experimental Biology meeting and is only available in HTML format. There are no additional versions or additional content available for this abstract.



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