

CORN/SORGHUM BOARD PROPOSAL—Year End Report, November 2010.

- Title:** Bio-Control Option (Afla-Guard) for Control of Aflatoxin Production in Corn
- Investigators:** Scott Monfort and Burt Bluhm
- Cooperators:** Amy G. Carroll, Michael Emerson, Jason Fortner, and Jason Kelley
- Crop:** Corn
- Objectives:**
- 1.) To determine the potential of the newly available microbial antifungal crop protection product Afla-Guard for reducing aflatoxin development in corn.
 - 2.) To determine optimum application methods and carriers for delivering Afla-Guard in corn.
 - 3.) To evaluate potential of applying Afla-Guard only in high risk areas for aflatoxin development based on remote sensing imagery

Two corn fields were randomly selected this year to be involved in the study for the “Bio-Control Option (Afla-Guard) for Control of Aflatoxin Production in Corn”. These fields are located in the following counties: Clay and Jackson. These fields range from 30 to 70 acres in size. They were irrigated by center pivot and row water irrigated methods. Afla-Guard was applied on both fields prior to tassling at 10 lbs per acre. Evaluation of fields two weeks after application, the competitive fungus (Afla-Guard) was actively sporulating. Imagery was taken of each field but not in time for aflatoxin sampling due to technical problems. Approximately two weeks before harvest, samples were taken in areas treated with and without Afla-Guard. The samples will be shelled and send to the Lab at the University of Arkansas in Fayetteville to be tested for of aflatoxin. Initial results were positive from the Jackson County location where all treated areas had no aflatoxin detected and untreated areas had moderate to high levels of aflatoxin ranging from 45 to 844 ppb. In the Clay County location, results were variable with aflatoxin levels ranging from non-detected to 185 ppb across the treated and untreated plots.

In addition, two Afla-Guard trials were initiated at the Newport Research Center and at a grower’s field in Bald-knob, Ar. Several rates and application timings were evaluated to better define the activity of the *Aspergillus* competitive strain on the toxic producing *Aspergillus* strain. Evaluation of fields two weeks after application, the competitive fungus (Afla-Guard) was actively sporulating. To ensure the each location has a high risk for aflatoxin development, each trial was inoculated with the toxic producing *Aspergillus* species. Approximately two weeks before harvest, samples were taken in areas treated with and without Afla-Guard. The samples were shelled and sent to the Lab at the University of Arkansas in Fayetteville to be tested for of Aflatoxin. Samples for these trials are still being tested for aflatoxin levels.

Results of the Afla-Guard trials have been mixed even in a year where aflatoxin was widespread (See figure 1). We had two locations where the application of Afla-Guard suppressed aflatoxin production below 20 ppb where as the untreated had an average of 70 ppb. This was not the case in every trial. Some locations had aflatoxin levels above 100ppb in both the untreated and the Afla-Guard treated plots. We have found the Afla-Guard to work better at suppressing aflatoxin development in moderate risk fields. It can be overcome in high risk fields like dryland production. As a result of the wide-spread problems with aflatoxin in 2010, an aflatoxin

management brochure was developed and is being handed out at all of the corn production meetings in 2011.

Thanks to the Arkansas Corn and Sorghum Promotion Board and the Corn growers of Arkansas for continuing to make this program possible.

Figure 1.



2010 Aflatoxin Survey

