



Applied Research Report

Sugarcane Borer Effect on Fumonisin Levels in Corn Ears

Stephen Biles, Extension Agent - IPM for Calhoun, Refugio and Victoria Counties

Cooperator: Tommy Mutchler, Calhoun County

Summary

A trial was conducted with the purpose of determining the effect of sugarcane borer feeding in the ear on fumonisin levels. Kernels were separated into kernels with sugarcane borer feeding, kernels without sugarcane borer feeding in and infested ear, and kernels in an un-infested ear. Sugarcane borer feeding increased the level of fumonisin in the kernels and resulted in increased levels in infested ears.

Objectives

The objective of this project was to evaluate if sugarcane borer feeding in the ear affected fumonisin levels in corn ears.

Materials and Methods

A trial was conducted with the purpose of determining the effect of sugarcane borer feeding in the ear on fumonisin levels.

In each of 8 replicates, 25 consecutive ears were pulled and shucked. The ears were separated into ears infested and un-infested with sugarcane borer. If damage typical of the sugarcane borer was observed, the ear was considered infested. The kernels on the infested ears were further separated into damaged and undamaged kernels. Thus, this trial had three treatments:

1. Infested ear, Kernels with sugarcane borer feeding
2. Infested ear, Kernels without sugarcane borer feeding
3. Un-infested ear

Results Discussion

The results indicate a correlation between feeding of the sugarcane borer and fumonisin levels. Kernels that were fed upon had higher levels of fumonisin than kernels that were not fed upon. Kernels in infested ears that were not fed upon had higher levels of fumonisin than kernels in uninfested ears.

Discussion

The differences in mycotoxin levels between kernels with and without sugarcane borer feeding is not surprising. Insect feeding by other species have been shown to have similar effects on mycotoxin levels. This project should be repeated to see if similar results can be observed. In addition, if the damage from the sugarcane borer proves to be economical due to mycotoxin levels, control strategies should be investigated to determine the best management practice of this insect.

Table 1. Sample weight and fumonisin concentrations of the various levels of feeding and infestation by the sugarcane borer (Calhoun County, 2007).

	Sample Weight (kg)	Fumonisin Concentration (ppm)
Infested Ear, Kernels with feeding	0.58 b	39.30 a
Infested Ear, Kernels without feeding	2.36 a	14.66 b
Uninfested Ear	1.04 b	4.95 c
Tukey's HSD (P=.05)	0.56	3.75
Standard Deviation	0.43	2.86
CV	32.21	14.58
Replicate F	0.149	2.385
Replicate Prob(F)	0.9914	0.0788
Treatment F	37.404	305.894
Treatment Prob(F)	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Tukey's HSD)

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