

# Mississippi Corn Promotion Board 2020 Progress Report

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**Title:** Management of Stored Grain Insect Pests of Field Corn

**PI:** Don Cook, Jeff Gore, Angus Catchot and Whitney Crow

**Department:** Delta Research and Extension Center & BCH-EPP

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## Project Summary

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The increase in corn production and grain production in general has also resulted in an increase in on-farm grain storage. Numerous insects can infest stored grain in Mississippi. Many of these are beetle and weevil species, but several caterpillars can also infest stored grain. The risk of insect infestations when storing grain on-farm can vary depending on the level of site and grain bin sanitation, the length of grain storage, and the use of preventative treatments including insecticide application to the empty grain bin and/or insecticide grain protectants (applied directly to the grain). Typically, the risk of infestation/damage is relatively low with short term grain storage (till late winter/early spring). However, if winter conditions are mild insects that infest stored grain could remain active. Also, some producers are holding grain for longer periods of time for marketing purposes. The longer grain is stored, the greater the risk of insect infestations. Currently, little to no research is being conducted on stored grain insect pests in Mississippi or the Mid-South. Studies were conducted during 2019 to evaluate empty bin insecticide treatments and grain protectants against insect pests infesting stored field corn.

For the 2020 experiment, only grain protectants were included. These included Actellic (pirimiphos-methyl), Sensat (spinosad), Suspend (deltamethrin), Diacon IGR (methoprine), Diacon IGR Plus (methoprine plus deltamethrin), and an untreated control.



## Project Results/Outcomes

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Plots/treatments from the trial initiated during 2018 that had low insect numbers during October 2019 were sampled through October 2020 (Figure 1). These included the Actellic and Sensat treated plots. The untreated control was also sampled as a comparison. Both Actellic and Sensat maintained weevil densities below 2 per sample during the period of Mar 2019 to Oct 2020. Total insect pests followed a similar trend.

For the trial initiated during 2019, only Actellic maintained weevil densities below two per sample from Jan to Oct 2020 (Figure 2). Weevil densities in the Aug samples for the Suspend, Diacon IGR, and Diacon IGR Plus treated plots exceeded 20 per sample. On 6 Aug the Diacon IGR plots were fumigated with aluminum phosphide pellets. Following fumigation weevil densities were  $\leq 1.5$  per sample for the Sep and Oct samples. Total insect pests followed a similar trend.

# Project Results

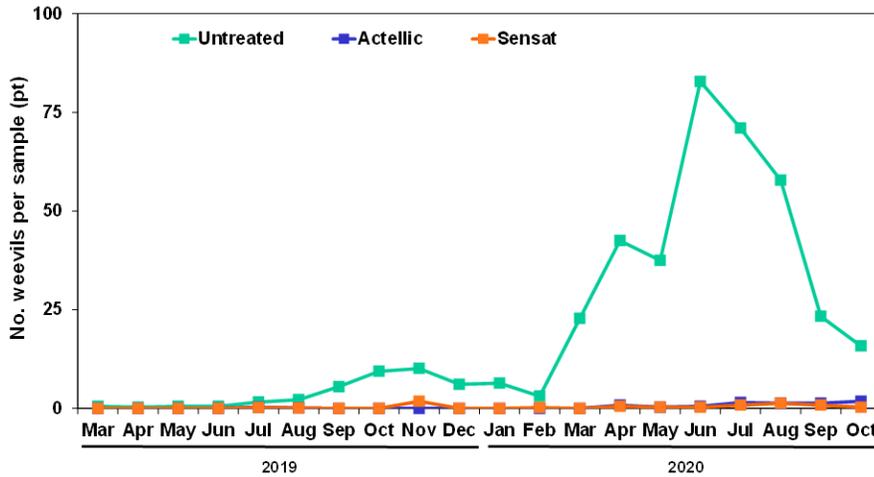


Figure 1. Impact of selected stored grain insect pest management on maize weevil densities during Mar 2019 to Oct 2020. This trial was initiated during Oct 2018.

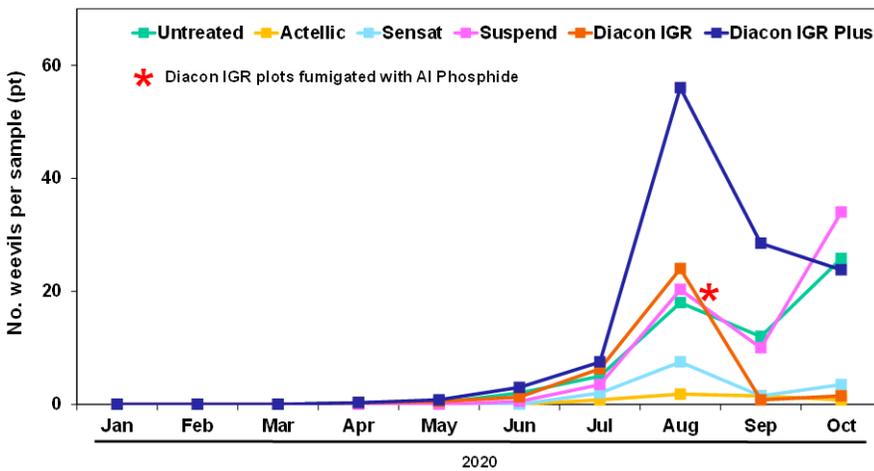


Figure 2. Impact of stored grain insect pest management on maize weevil densities during Jan to Oct 2020. This trial was initiated during Nov 2019.

## Project Impacts/Benefits

These studies demonstrate the performance of stored grain insect management tools under Mississippi conditions. As growers store grain for longer periods of time, information from these studies will be to assist them in managing insect pests to preserve the value of stored grain.

## Project Deliverables

Currently the results have been presented at the 2019 MSU Seed Technology Short Course and the 2020 Mississippi Agricultural Consultants Association annual meeting. Results have also been shared with consultants and growers (upon request) to aid in management decisions for stored grain insect pests.