



Mississippi Corn Promotion Board 2023 Progress Report

Project

Title: Management of Stored Grain Insect Pests of Field Corn

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Project Summary (Issue/Response)



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 research is being conducted on stored grain insect pests in Mississippi or the Mid-South.



Project Results/Outcomes

Grain temperature among treatments was similar during Feb to May (data not shown). From Jun to Oct all of the insecticides, except Diacon IGR Plus and Diacon IGR Plus + PBO (Oct and Nov samples), resulted in lower grain temperature than the untreated control. Only Actellic plus PBO, Diacon IGR Plus + PBO, and Aluminum Phosphide resulted in lower temperatures compared to the non-treated. No differences among treatments were observed for grain moisture during Feb to Aug (data not shown). During Sep through Dec all of the insecticides, except Diacon IGR Plus, resulted in lower grain moisture content compared to the untreated control. Maize/rice weevil densities were low during Feb through Apr (<1 per sample) (Figure 1). During Jun weevil densities exceeded 6 and 19 per sample in the Diacon IGR Plus treated and untreated drums, respectively. All of the other insecticides resulted in <1 weevil per sample. During Jul weevil densities declined in all drums (<3). During Aug weevil densities in the untreated drums and those treated with Diacon IGR Plus exceeded 15 and 29 weevils per sample, respectively. All of the other insecticides resulted in ≤ 1 weevil per sample, except Sensat. During Sep only Actellic, Actellic + PBO and Sensat plus PBO maintained weevil densities below 1 per sample. During Oct only Actellic + PBO and Sensat + PBO maintained weevil densities below 1 per sample. During Nov and Dec, all of the insecticides, except Diacon IGR Plus, resulted in fewer weevils than in the non-treated. Only Actellic, Actellic + PBO, Sensat + PBO, and Aluminum Phosphide maintained weevil densities below 3.5 per sample. The addition of the insecticide synergist PBO (piperonyl butoxide) to Diacon IGR Plus (deltamethrin + methoprene) substantially improved performance.

Project Results

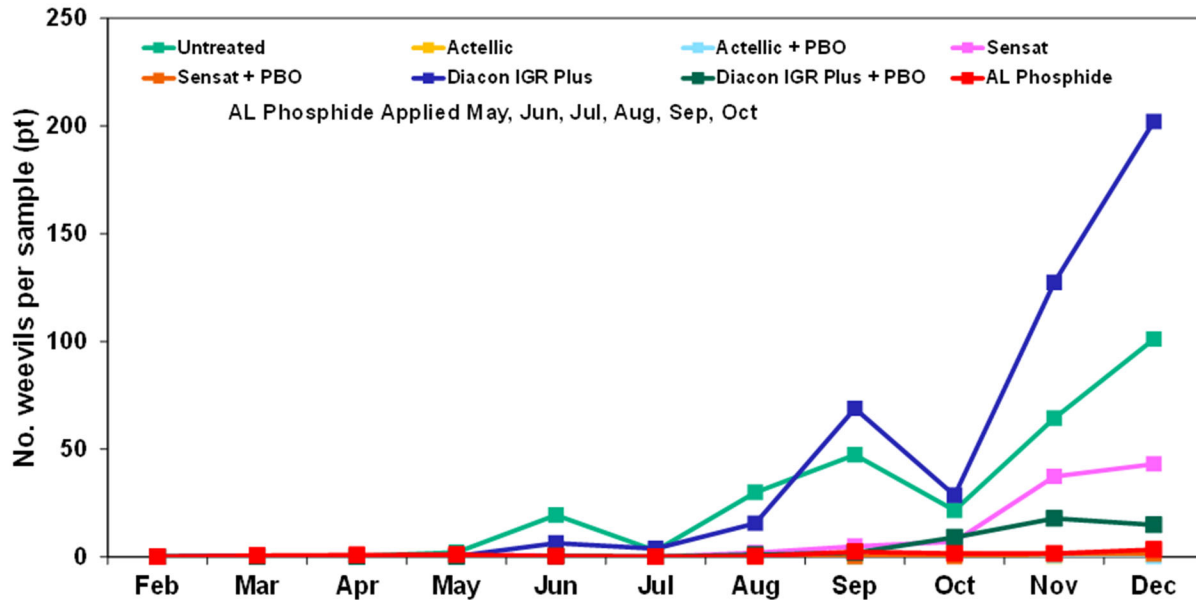


Figure 1. Impact of selected stored grain insect pest management on maize/rice weevil densities during Feb to Dec 2023. This trial was initiated during Dec 2022.

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

Results have been presented at locally at grower and consultant meetings, regionally and nationally.