2015 End of Year Report

Title: Refining the Economic Threshold for Whorl Feeding Caterpillars in non-Bt Field Corn
Investigators: Glenn Studebaker, Gus Lorenz, Nick Seiter
Crop: Field Corn & Grain Sorghum
Status: Year 1 of 3

Value to the Grower: Research is needed to refine the economic threshold for whorl feeding caterpillars (fall armyworm and corn earworm) on early and later growth stage non-Bt field corn and grain sorghum in Arkansas.

Objectives:
Objective 1: Determine what infestation level of whorl feeding caterpillars cause an economic yield loss in non-Bt field corn and grain sorghum.
Objective 2: Determine the impacts plant growth stage has on associated yield loss from whorl feeding caterpillars.

2015 Results:

Threshold trials were conducted in at the Northeast Research and Extension Center in Mississippi County, the Rohwer Research Station in Desha County and the Lon Mann Research Station in Lee County. Non-Bt field corn at all three locations was infested with third instar fall armyworm larvae at densities of:

1. 6 per whorl
2. 3 per whorl
3. 1 per whorl
4. 1 per 5 whorls
5. 1 per 10 whorls
6. Caterpillar free check (treated automatically at early whorl to prevent natural infestations)

Threshold trials on grain sorghum were conducted at the same locations with infestations of third instar fall armyworm larvae at densities of:

1. 3 per whorl
2. 1 per whorl
3. 1 per 2 whorls
4. Caterpillar free check (treated automatically at early whorl to prevent natural infestations)

Plots were infested at V4-V6 growth stages at all locations. There was little to no yield response measured at any location from infestation levels. Herbicide carryover caused substantial yield effects at the Marianna location, so yields from those trials will not be reported. Plots with the highest infestation levels at the other locations also had the numerically highest yields. Data from the first year of the project indicates that the current threshold of 3-6 worms per whorl is a conservative threshold on corn and grain sorghum at the V4-V6 growth stage. Plans for the coming year are to make infestations on earlier as well as later (near tassel) growth stages.

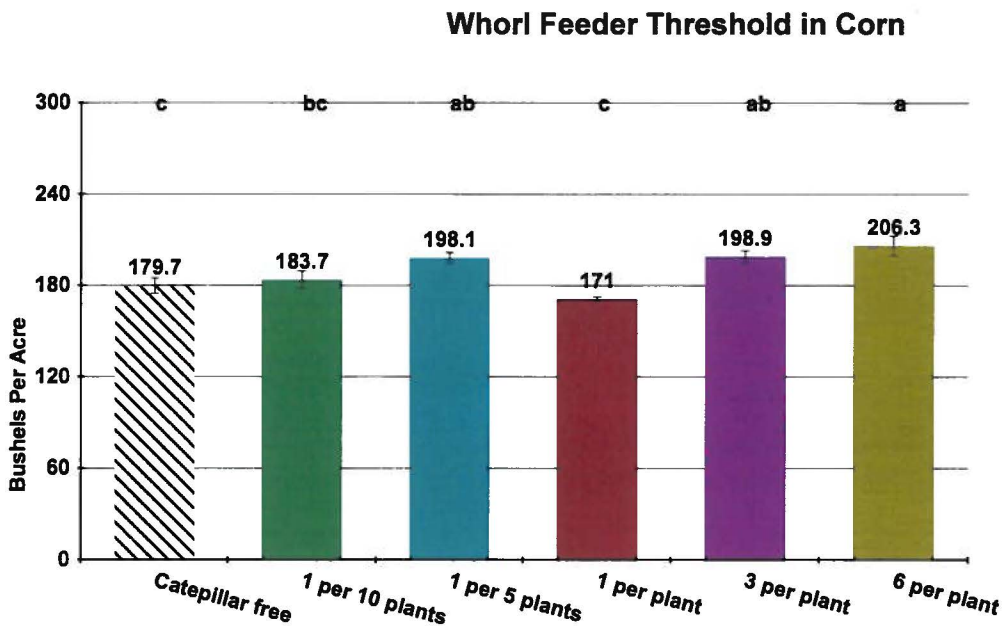

Fig. 1. Field corn yield at each infestation level at Keiser in 2015

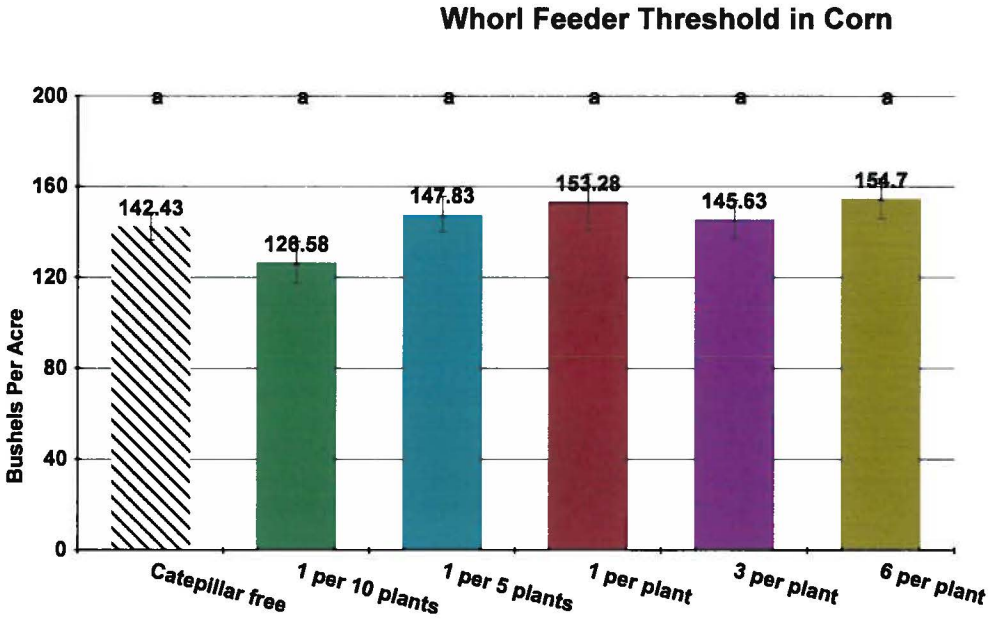

Fig. 2. Field corn yield at each infestation level at Rohwer in 2015

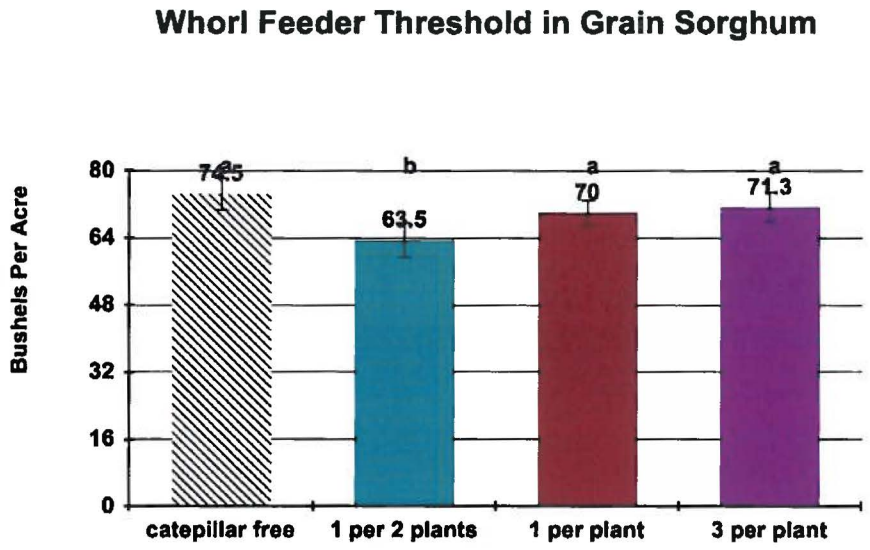

Fig. 3. Grain sorghum yield at each infestation level at Keiser in 2015.

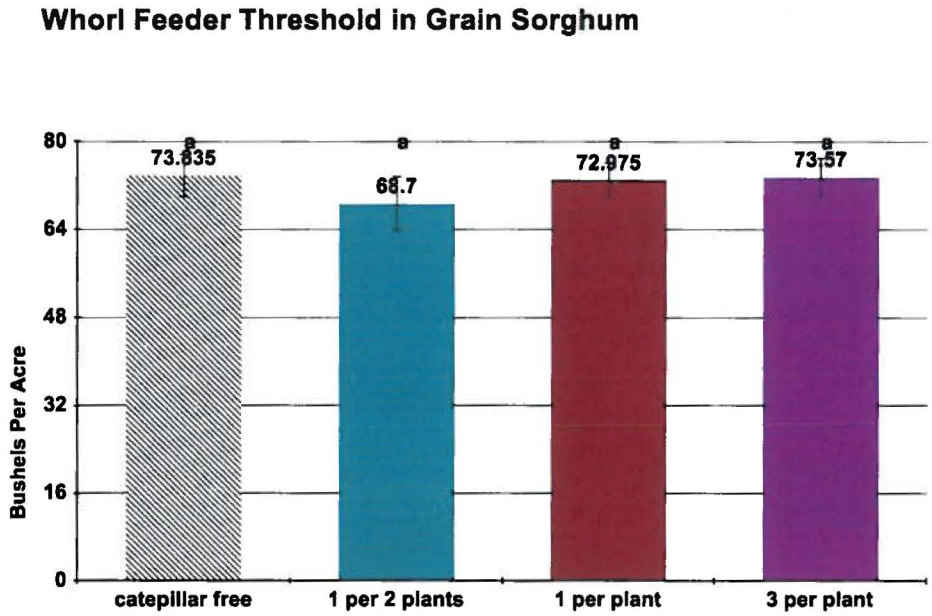

Fig. 4. Grain sorghum yield at each infestation level at Rohwer in 2015.