Result Demonstration Report

Sugarcane Aphid Insecticide Seed Treatment Efficacy Trial

Texas A&M AgriLife Extension Service – Fort Bend County Cooperator: Alan Stasney
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Entomologist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used as a rotation partner with cotton. According to USDA Farm Service Agency data, in 2016, grain sorghum was planted on over 27,000 acres in Fort Bend County, accounting for approximately 36% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions. One recent production issue for grain sorghum is the sugarcane aphid. Since its first detection in 2013, this pest has become the leading cause of yield loss and harvest issues in Fort Bend County and throughout sorghum production regions in the U.S. Because of its potential to damage sorghum, evaluation of insecticide seed treatments is necessary to determine their value in protecting sorghum from early season damage by SCA.

Objective

The objective of this result demonstration trial was to evaluate insecticide seed treatments for early-season efficacy and residual control of sugarcane aphid on susceptible grain sorghum.

Materials and Methods

The performance of four insecticide seed treatments and a foliar insecticide application were evaluated for efficacy against sugarcane aphid in a grain sorghum field near Beasley, TX (See Table 1). Plots measured 20 feet by 4 rows with 36" spacing arranged in a randomized complete block design with 4 replications. The grain sorghum hybrid KS

585 was used for this trial. The trial was planted on May 5 and stand counts and phytotoxicity ratings were made at 13 and 27 days after planting (DAP).

Weekly aphid counts (20 leaves, upper and lower leaves on 10 random plants per plot) were initiated on June 1, 27 DAP. On June 7, 33 DAP, all plots reached 50+ aphids per leaf, a locally accepted action threshold. On June 8, 2016 an application of Transform WG (Dow AgroSciences) at 1.0 oz/acre was applied to all plots except the untreated check, using a hand-held CO_2 assisted boom sprayer with total spray volume of 13.5 gallons per acre. Due to excessive midge damage and adverse weather conditions, the total number of heads per plot (for middle two rows) were counted in lieu of harvesting grain. Data were analyzed using analysis of variance and mean separation was performed using LSD.

Table 1: Product-Rate and Insecticide Follow-up Combinations Evaluated Against Sugarcane Aphid

Treatment*	Active Ingredient	Rate
No IST	n/a	n/a
No IST FB insecticide	n/a	n/a
Cruiser 5FS FB insecticide (L)	Thiamethoxam	5.1 fl oz/100 lb. seed
Cruiser 5FS FB insecticide (H)	Thiamethoxam	7.6 fl oz/100 lb. seed
Poncho 600 FB insecticide	Clothianidin	6.4 fl oz/100 lb. seed
Gaucho 480 FB insecticide	Imidacloprid	8.0 fl oz/100 lb. seed

***FB = followed by**

Results

No differences in stand establishment or phytotoxicity were observed among treatments at 13 or 27 DAP None of the seed treatments delayed the need for a foliar insecticide application beyond 33 DAP. There was considerable variation in aphid counts among treatments on the second sample date (June 8, 34 DAP) with the high rate of Cruiser showing the lowest population of SCA, However, the differences were not statistically significant (p=0.086) (see Figure 1). The shortened duration of protection offered by seed treatments is likely due to excessive rain events (>11 inches of rain received between 5/6 and 6/6). SCA did not return to treatable levels in plots receiving an application of Transform WG on June 8.

Figure 1: Aphids per Leaf by Treatment at 27, 34, and 41 Days After Planting

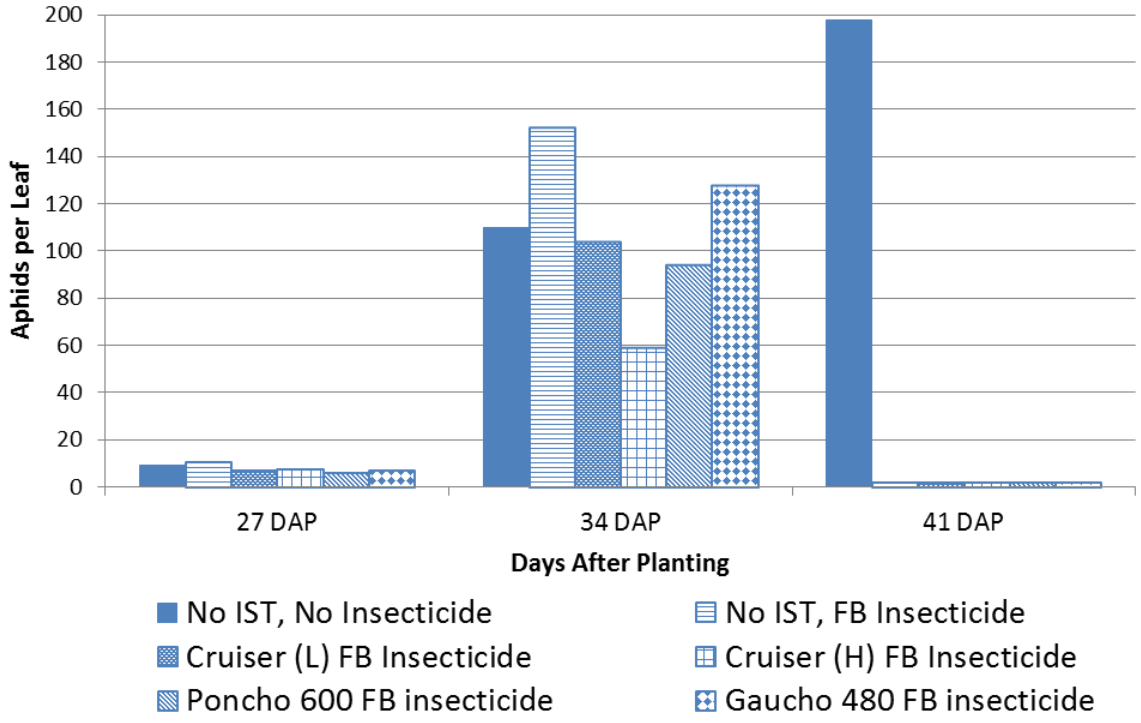
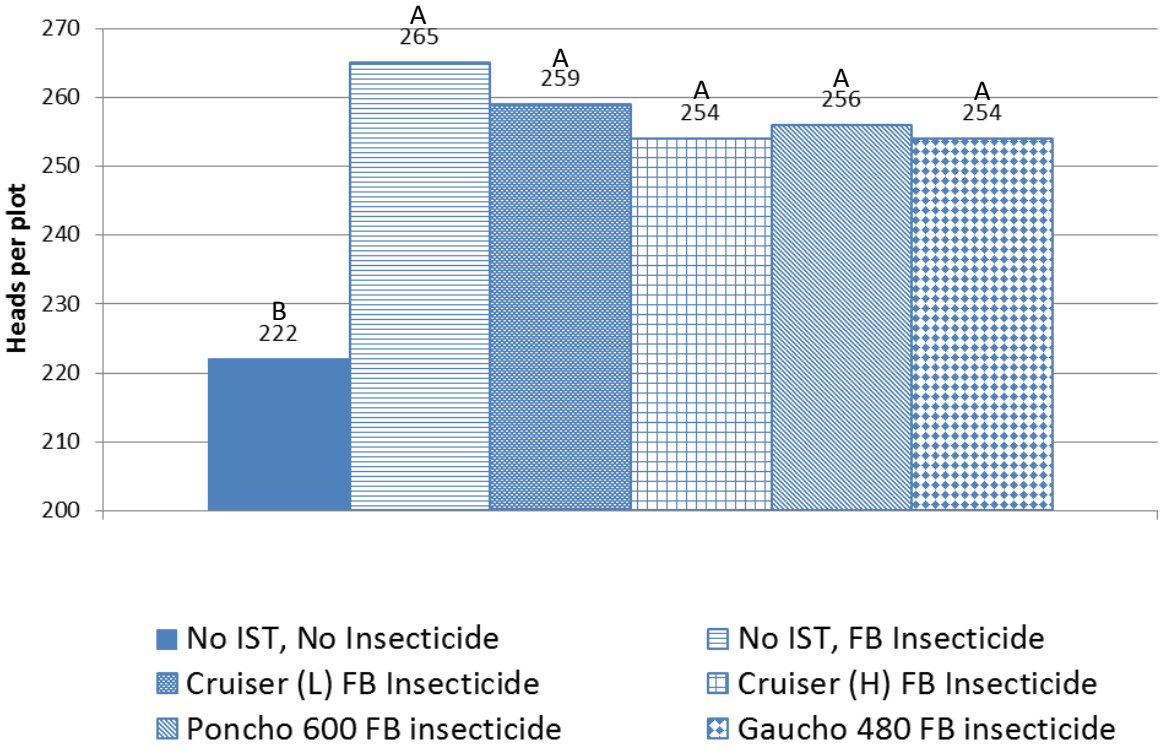


Figure 2: Number of Heads Per Treatment



Note: Columns with a common letter are not significantly different (p=0.05)

Summary and Conclusions

Insecticide seed treatments had no effect on stand establishment and showed no phytotoxicity on emerged plants. In this study, seed treatments provided approximately 33 days of protection against sugarcane aphid. The short residual of these insecticide seed treatments likely were caused by significant rain events occurring between May 5 and June 6 (in excess of 11 inches). Excessive soil moisture may have diluted the insecticide treatment or possibly leached the insecticide seed treatment away from the roots. It should be noted that SCA populations were lower on the treatment receiving an insecticide or the insecticide over-spray in the treatments with an insecticide seed treatment compared with the untreated check.

Although the number of heads among the five insecticide treatments were not different, they were greater than head emergence in the untreated check. This result demonstrates the value of a well-timed insecticide application protecting sorghum from plant injury caused by SCA.

Although residual of the insecticide seed treatments in this study were not extended beyond treatments with no insecticide seed treatment, they should still be considered as a part of an integrated pest management program. In dryer years, we often see damaging populations of chinch bugs in fields where insecticide seed treatments are not used. Additionally, in years with less precipitation than observed in 2016, residual activity of seed treatments may extend beyond the 34 days observed in this study. The objective of this result demonstration was met and will provide grain sorghum producers with valuable information regarding insecticide seed treatments and foliar insecticide applications for management of sugarcane aphid on sorghum.

For Additional Information and Data, Please See:

http://ccag.tamu.edu/sorghum-insect-pests

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