Southwest Research-Extension Center

GAUCHO SEED TREATMENT FOR SORGHUM

by

Phil Sloderbeck, Merle Witt, Gerald Wilde[1], and Larry Buschman

SUMMARY

Five different sorghum hybrids treated with Gaucho were monitored to evaluate the seed treatment's impacts on greenbug populations and sorghum yield. Gaucho was found to reduce greenbug populations by about 40% and to reduce yield losses by about 4 bushels per acre. Greenbug reductions and yield increases tended to be higher on susceptible sorghum hybrids.

PROCEDURES

Treated and untreated seed of five sorghum hybrids (NC+ 271, DeKalb DK-56, Cargill 607E, Deltapine 1552, Pioneer 8500) were obtained from Gustafson, Inc. for use in the trial. Each treated seed lot had been treated with Gaucho 480 (imidacloprid) at a rate of 8 oz per 100 lb of seed (4 oz AI/cwt). Plots were established on 9 June in field 5B at the Southwest Research-Extension Center, Finney County, KS. Plots were 2 rows (5 ft) by 22 ft, arranged in a randomized split plot design, and replicated four times. Seed was planted with a cone planter using 7 g of seed per row. Ramrod and Atrazine were used for weed control.

Greenbugs were sampled four times by cutting off two plants per plot at ground level and visually searching them for greenbugs. Yields were taken by machine harvesting the plots and calculating yields on a bu/acre basis.

RESULTS AND DISCUSSION

Greenbug populations reached moderate levels by mid to late August (70 to 82 days after planting). The greenbugs in the plots were identified as a mixture of biotypes E and I. The effect of Gaucho was found to be significant when analyzed across sampling dates, but the effect of sampling date was also found to be significant. The 18 and 22 August sampling dates had significantly lower greenbug numbers than the 26 and 30 August sampling dates. Thus, the data for the two pairs of sampling dates were analyzed separately. The analysis showed that Gaucho significantly reduced greenbug numbers during both sampling periods. Averaged across dates and hybrids, Gaucho reduced greenbug numbers by about 40%. Gaucho also significantly reduced yield losses by just over 4 bu/acre. Although the interaction terms for hybrid and seed treatment were not significant, trends appear when visually comparing the percent reduction in greenbug numbers from the Gaucho treatment among hybrids. Cargill 607E had very low greenbug numbers in the control plots (this hybrid is resistant to both biotype E and I greenbugs) and showed only about a 2% reduction in greenbug numbers and a yield difference of only about 1.2 bu/acre between the treated and untreated plots. DK-56 (which is resistant to biotype E greenbugs but not biotype I greenbugs) had a low to intermediate number of greenbugs on the untreated plots and only a 4.1 bu yield difference from Gaucho treatments. Pioneer 8500 (which is susceptible to both biotype E and I greenbugs) showed about a 70% reduction in greenbug numbers and had a 11.8 bu/acre yield difference in response to the Gaucho treatment. One surprising observation was the low response of NC+ 271 to the Gaucho seed treatment. In previous studies, Gaucho was shown to significantly reduce greenbug numbers and yield losses in this hybrid. The reason for this lack of response is unclear but may be related to the lateness of the greenbug infestation. These data seem to indicate that Gaucho can be effective in reducing late-season greenbug populations and associated yield losses, but

[1]Department of Entomology, Kansas State University, Manhattan.

that the amount of reduction may vary with hybrid and its type and amount of greenbug resistance. These data also indicate that greenbugs should still be monitored in Gaucho-treated plots and that other treatment measures sometimes could be justified.

Table 1. Effects of Gaucho seed treatment on sorghum, Southwest Research-Extension Center, 1995.

Hybrid	Avg. Greenbug Numbers per Plant 18 & 22 Aug.		Avg. Greenbug Numbers per Plant 26 & 30 Aug.		Yield bu/acre	
	Without Gaucho	With Gaucho	Without Gaucho	With Gaucho	Without Gaucho	With Gaucho
NC+271	137	72	725	683	80.7	80.1
DeKalb DK-56	56	4	191	45	73.9	78.0
Cargill 607E	33	49	68	49	76.4	77.6
Deltapine 1552	134	100	539	246	83.4	88.2
Pioneer 8500	295	94	270	94	92.4	104.2

Anova Table	P-Value	P-Value	P-Value
Hybrid	0.1752	0.0090	0.0018
Seed Treatment	0.0339	0.0452	0.0153
Interaction	0.2838	0.6915	0.1695

Main Effect Means			
Hybrid			
NC+271	105 ab	704 b	80.4 a
Dekalb 56	30 a	118 a	75.9 a
Cargill 607E	41 ab	58 a	80.4 a
Deltapine 1552	117 ab	393 ab	85.8 a
Pioneer 8500	194 b	182 a	98.3 b
Seed Treatment			
Without Gaucho	131 b	359 b	81.4 a
With Gaucho	64 a	223 a	85.6 b

Means separated using the Duncan's New Multiple Range Test.