EVALUATION OF SEED AND GRANULAR INSECTICIDE SEED TREATMENTS USED ON CORN FOR CONTROL OF CHINCH BUGS

Bruce and Harvey McDonald Farm, Victoria County, 2005
Roy D. Parker, Stephen P. Biles, and Joseph D. Janak
Extension Entomologist, Extension Agent - IPM, and County Extension Agent, respectively
Corpus Christi, Port Lavaca, and Victoria, Texas

SUMMARY:

Plant stands were not affected by insecticide treatment, indicating lack of significant seed or seedling destroying insects. At both 20 and 30 days after planting, chinch bug numbers were statistically lower in all insecticide treatments compared to numbers in nontreated corn. These numbers were somewhat above the established economic damage threshold, but they were not excessively high. After dying corn plants were noted on 20-inch tall corn, counts were made with no statistical differences observed; however, numerically fewer such plants were noted in the Counter treatment. It appeared that birds may have been responsible for removing soil from around plants as they sought to feed on the remains of germinated seed. It has been noted that Counter has a certain level of repellent action on birds and may have accounted for numerically lower loss of plants in the Counter treated plots. Except for the high rate Poncho treatment, Counter treated corn produced significantly higher yields compared to all other treatments. Yield differences cannot be readily explained; there may be some relationship to loss of living corn plants as explained above.

OBJECTIVE:

The study was established to compare insecticide seed treatments at different rates and granular at-planting applied Counter for their effects on insects attacking young corn plants.

MATERIALS/METHODS:

The test site was 0.3 miles west of Highway 87 next to Crouch Road in Victoria County on the Bruce McDonald Farm. B&H 8913 RR/YGCB hybrid corn was planted March 15, 2005 at a seeding rate of 19,420 per acre on rows of 38-inch centers with a John Deere MaxEmerge Plus Vacumeter planter. Plots were 6 rows by over 2,700 ft with treatments arranged in a randomized complete block design with 3 replications. Soybeans had been planted in the field the previous season. The soil moisture at-planting was excellent, and it was 60°F with a 6.6 pH. The clay loam soil (46 % sand 2 % silt 52 % clay) contained 2.09 % organic matter. Fertilizer consisted of 537 lb/acre with an analysis of 25-2-2 + 2 sulphur along with 90 lb/acre of a 9-30-0 + 1 quart of 10% zinc. Gardsman Max (1.7 pints/acre) herbicide was applied in a 19-inch band at-planting.

Treatments were assessed by (1) counting the number of plants on 13.75 ft row at two locations in the center rows of each plot on April 8 [20 days after planting], (2) examining 20 plants/plot and soil around these plants for chinch bugs 20 and 30 days after planting, (3) counting the number of dying plants on 13.75 row ft at two locations on four of the rows in each plot on April 15, and (4) harvesting of 1,240 ft of row of each plot on August 3 with a commercial machine and adjusting plot weights for moisture to 15%.

RESULTS/DISCUSSION:

A total of 1.4 inches of rain was received on two dates before plant emergence which occurred on March 22. Differences were not found in plant populations among the treatments, indicating a lack of significant insect pest attack of seed or seedlings, but there were significant differences in the number of chinch bugs depending upon treatment (Table 1). On both 20 and 30 days after planting all insecticide treated corn had fewer chinch bugs compared to the nontreated corn. Although not statistically significant, at 30 days after planting there appeared to be a seed treatment rate response with both Poncho and Cruiser high rate treated corn containing fewer chinch bugs than the lower rates. Chinch bug numbers in nontreated corn did somewhat exceed the established economic treatment threshold for 6-inch or shorter corn (40 bugs/100 plants), but plants on both evaluation dates were 8 and 20 inches tall, respectively. At this level of chinch bug infestation a small yield increase was expected in the insecticide plots, but no increase was observed over the nontreated corn. Another factor may have accounted for the apparent lack of a yield increase in the seed treatment plots. Birds were observed to have fed on germinating seed 20 days after planting, but no counts were taken. Ten days later the number of dying plants were so obvious that extensive counts were made. Although statistical differences were not detected in the number of dying plants, it appeared that the Counter treatment was the least affected, and this product is known to have some repellent action on birds. Significantly higher yield occurred in the Counter treated corn than all other treatments except for the high rate Poncho treatment.

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Table 1. Effect of seed treatments on corn plant stand, chinch bug numbers, damaged plants and yield, Bruce McDonald Farm, Victoria County, TX, 2005.

Insecticide (rate)	Plants 1000's/acre	Chinch bugs/20 plants		Dying Plants[b] 1000's/acre	Yield bu/acre
		20 DAP[a]	30 DAP		
Poncho 5FS (0.25 mg AI/seed)	19.5 a	0.0 b	0.3 b	0.8 a	129 cd
Poncho 5FS (1.25 mg AI/seed)	18.5 a	0.0 b	0.0 b	1.3 a	133 ab
Cruiser 5FS (0.25 mg AI/seed)	18.3 a	0.0 b	3.3 b	1.3 a	127 de
Cruiser 5FS (1.25 mg AI/seed)	17.0 a	0.0 b	0.7 b	1.7 a	125 e
Counter 15G (8.0 oz/1000 ft row)	18.3 a	1.0 b	3.7 b	0.4 a	136 a
Nontreated	19.2 a	10.7 a	14.0 a	0.9 a	132 bc
LSD (P = 0.05)	NS	2.39	3.70	NS	3.30
P > F	.1059	.0001	.0001	.1325	.0002

Means in a column followed by the same letter are not significantly different by ANOVA.

[a] DAP = days after planting

[b] Suspect damage caused by birds