Williamson County
Result Demonstration Report

Texas Cooperative EXTENSION
The Texas A&M University System

EVALUATION OF SOIL APPLIED INSECTICIDES AND SEED TREATMENTS FOR CONTROL OF CHINCH BUGS AND MEXICAN CORN ROOTWORM

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SUMMARY:

Chinch bug activity was very light in this trial with the untreated check averaging 4.2 chinch bugs per 5 plants compared to the Poncho 1250 treatment which averaged 0.3 chinch bugs per 5 plants. The untreated check had a significantly higher mean Mexican corn rootworm (MCR) damage rating than all other treatments. The untreated check also had the lowest mean yield, 118.1 bu/ac, of all the treatments. The Garst 8302 YG-CRW + Poncho 250 had the highest mean yield, 145.8, bu/ac, of all the treatments. However, it was a different variety than that in the other treatments, both the variety and transgenic character could have contributed to the greater yield.

OBJECTIVE:

To evaluate newly labeled seed treatments, transgenic *Bt* technology and soil applied insecticides for control of chinch bugs and/or Mexican corn rootworm (MCR) in corn. Chinch bugs generally appear during dry years and can cause significant damage to unprotected corn.

The Mexican Corn Rootworm (MCRW) is a serious pest of corn in the Central Texas area. As more continuous corn and sorghum are being grown in Williamson County, the potential for this pest to cause severe economic damage will increase as its population increases. MCRWs are

especially a problem in fields that have had continuous corn for three or more years, although there is a potential for fields of second year corn to be completely destroyed even with the use of full label rates of soil insecticides. Crop rotation to any other crop other than corn therefore is the most effective control practice for MCR. However, the economic benefit of corn production and limited land available for rotation often requires continuous corn production without rotation.

The objective of this trial was to evaluate selected seed treatments and soil insecticides for control of chinch bugs and/or Mexican corn rootworm (MCR) in a field where continuous corn has been grown without rotation for over six years. Also, a genetically modified variety with resistance to MCR, Garst 8302 RR Yieldgard-Rootworm, was evaluated.

MATERIALS & METHODS:

Garst 8270RR hybrid corn was planted on the Roland Weiland Farm 3 miles south of Frameswitch on March 11, 2004 with a 4-row JD 7100 planter equipped with granular insecticide boxes. In addition, one of the treatments was planted to Garst 8302 RR Yieldgard CRW instead of the Garst 8270RR. This variety has the Yieldgard *Bt* technology for control of Mexican corn rootworm. Treatments were arranged in a randomized complete block design with 3 replications in 4-row wide by 100-ft long plots with rows on 38-inch centers. Corn had been grown at the site for more than 5 years. The soil type is a Houston Blackland Clay. Granular insecticide was banded over the open seed furrow. Fertilizer consisted one application of 150 lbs of 10-22-0-9 in October of 2003 and 130 lbs of anhydrous in December of 2003. The study was sprayed with Roundup WeatherMax® @ 16 oz/ac on April 10.

Treatments were assessed by taking stand counts on 2- 1/1000th ac units in the middle 2 rows of each plot on March 29. On April 29, 5 consecutive plants from the second row of each plot was inspected for chinch bug adults and nymphs. The roots of six plants were dug from the two center rows of each plot on May 20 and were cleaned and rated on a 0-3 scale for damage from Mexican corn rootworm (MCR). Each entire plot was machine harvested with a 4 row combine on August 5 and were weighed for yield.

RESULTS AND DISCUSSION:

Plant stand, mean chinch bugs per 5 plants, mean MCR root damage rating, and mean per acre treatment yield are provided in Table 1. None of the treatments had a significantly different plant population relative to the untreated check. All treatments, except Force + Cruiser, had significantly fewer chinch bugs than the untreated check. Mean MCR ratings ranged from 0.09 to 1.32 for the Garst 8302 RR Yieldgard + Poncho 250 and the untreated control, respectively. All of the soil insecticides and seed treatments significantly reduced root damage by MCR, but these treatments did not differ significantly from one another in root damage or yield except for the Garst 8302 RR Yieldgard + Poncho 250 which out-yielded all other treatments.. Mean yields ranged from 118.1 to 145.8 bu/ac for the untreated and the Garst 8302 RR Yieldgard + Poncho 250 treatments, respectively.

It is important to note that the Garst 8302 RR Yieldgard + Poncho 250 treatment is the closest variety to the Garst 8270RR used for the other 10 treatments. The difference in varieties is likely to make more difference in final yields than does the crop protection treatment/technology in this trial.

Table 1. Stand counts, chinch bugs, root damage ratings and yields, Roland Weiland, Williamson Co., TX. 2004.

Treatment and formulation	Rate	Plant Population (1/1000 ac)[1]	Chinch Bugs/ 5 plants[2]	MCR root damage rating (0-3)[3]	Mean yield (bu/ac)
Cruiser 400	1.25 mg/kernel	23 b	1.7 b	0.32 b	129.0 b
Cruiser 50 Force	0.125 mg/kernel 3 oz/1000 row-ft	27 ab	1.5 b	0.17 b	125.7 b
Cruiser 100 Force	0.25 mg/kernel 3 oz/1000 row-ft	27 ab	2.2 ab	0.19 b	129.0 b
Force	5 oz/1000 row-ft.	31 a	1.0 b	0.21 b	128.9 b
Poncho 250	0.25 mg/kernel	28 ab	1.2 b	0.23 b	131.0 b
Poncho 1250	1.25 mg/kernel	27 ab	0.3 b	0.19 b	130.6 b
Aztec	6.7 oz/1000 row-ft.	26 ab	1.2 b	0.14 b	132.2 b
Poncho 250 Aztec	0.25 mg/kernel 3.35 oz/1000 row-ft	26 ab	0.5 b	0.12 b	131.0 b
Garst 8302 YG-CRW + Poncho 250[4]	0.25 mg/kernel	26 ab	0.5 b	0.09 b	145.8 a
Counter	6 oz/1000 row-ft	26 ab	1.7 b	0.32 b	128.1 b
Untreated		24 ab	4.2 a	1.32 a	118.1 c
LSD (P=.10)		4.0	2.16	0.539	6.67
Treatment Prob (F)		0.0884	0.0734	0.0073	0.0001

[1] Means within a column followed by the same letter are not significantly different.

[2] Mean chinch bugs per 5 plants.

[3] Mean MCR Rating. Iowa State University 0-3 MCR rating scale: 0 = no feeding damage, 1 = 1 node of roots eaten within 2 inches of stalk, 2 = 2 nodes of roots eaten, and 3= 3 or more nodes of roots eaten.

[4] Garst 8302 YG-CRW + Poncho 250 treatment is a different variety than the 10 other treatments that use Garst 8270RR without the CRW technology.

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