

# Williamson County Result Demonstration Report



## EVALUATION OF TWO NEONICOTINOIDS FOR CONTROL OF COTTON FLEAHOPPERS IN THE SOUTHERN BLACKLANDS OF TEXAS

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### SUMMARY:

The cotton fleahopper is considered a key pest in the Southern Blacklands of Texas. This trial evaluated two different neonicotinoids commonly used by growers. Both Intruder<sup>®</sup> and Centric<sup>®</sup> performed well in this trial. Both significantly reduced cotton fleahoppers below published thresholds. The Intruder<sup>®</sup> significantly reduced *Orius* spp. numbers at one date but both products did not significantly reduced natural enemy numbers over the whole trial. Yields were higher in treated plots but not significantly different than the untreated.

### OBJECTIVE:

The cotton fleahopper, *Pseudatomoscelis seriatus* (Reuter), is considered a key pest in the eastern part of Texas. Both adults and nymphs feed on new growth, including small squares. Squares up to pinhead size are susceptible to damage and the plant is most susceptible during the first three weeks of fruiting.

Cotton fleahopper populations increase in wild hosts and move into cotton fields prior to squaring. In the Southern Blacklands, the population dynamics are consistent through years and vary only in numbers. As a result, cotton fleahoppers migrate continuously between wild hosts and cotton in this production region averages two insecticide applications for cotton fleahoppers, with a range of one to four applications depending on the populations.

The organophosphate insecticides are the dominant class for cotton fleahopper control in Texas. Producers are looking for alternatives to this class of insecticides because of their impact on natural enemies and the potential loss of some of this class due to the Food Quality and Protect Act (FQPA). The alternatives can be expensive and so this trial was established to evaluate two commonly used materials.

## MATERIALS AND METHODS:

The experiment was conducted in the eastern part of the state in Williamson County, Texas south of Hutto. The cotton was divided into 4 row X 50 ft plots with four replications in a randomized complete block design. Treatments were made beginning at pinhead square stage (May 16) The treatments are listed in Table 1. Applications were made with a self-propelled CO<sub>2</sub> sprayer equipped with two TX-6 hollow cone nozzles per row calibrated to deliver 6 gpa total volume at 30 psi. A second application was made on May 21. The difference in the rates are based on use patterns in Williamson County.

**Table 1. List of insecticides used for control of cotton fleahoppers. Krueger Farm, Williamson Co., TX. 2003.**

Treatment	Rate (lb ai/ac)	Rate (oz. formulation/ac)
Untreated		
Centric <sup>®</sup> 40 WG	0.025	1.0
Intruder <sup>®</sup> 70 WP	0.048	1.1

Treatments were evaluated by counting the number of cotton fleahoppers (nymphs and adults) and predators on 10 plant terminals on two dates after each application. Percent control for cotton fleahoppers was calculated using Abbott's method. Percent square set, total white blooms and final yields were also collected.

## RESULTS AND DISCUSSION:

Cotton fleahopper populations were consistently high throughout the trial. Three days after treatment, the treated plots had significantly lower cotton fleahopper numbers than the untreated control (Table 2).

Five days after treatment, all the treated plots had significantly lower cotton fleahopper numbers (Table 2). Only the Intruder<sup>®</sup> was effective at lowering numbers below threshold levels. Treatment efficacy generally started to decline except for a few treatments.

**Table 2. Total number of cotton fleahoppers per 10 plants for first application. Krueger Farm, Williamson Co., TX. 2003.**

Treatment	Rate (lb ai/ac)	Average number/10 Plants (Percent Control*)		
		5/16	5/19	5/21
Untreated		5.8a**	3.5a	5.5a
Centric <sup>®</sup> 40 WG	0.025	5.5a	0.3b (87.5)	0.3b (95.8)
Intruder <sup>®</sup> 70 WP	0.048	6.0a	0.5b (75.0)	1.0b (79.4)
LSD (P=0.10)		NS	1.57	1.676
P>F		0.8917	0.0122	0.0017

\*Percent control corrected using Abbott's formula.

\*\* Means followed by the same letter do not significantly differ (Fisher's LSD P<0.10)  
Plots treated on May 16, 2003.

A second application was made on May 21 after all the plots went above threshold levels (Table 3). The treatments were significantly different from the untreated control at 2 DAT. However, 5 DAT, cotton fleahoppers had moved back into all the plots.

**Table 3. Total number of cotton fleahoppers per 10 plants for second application. Krueger Farm, Williamson Co., TX. 2003.**

Treatment	Rate (lb ai/ac)	Average number/10 Plants (Percent Control*)	
		5/23	5/26
Untreated		2.3a**	5.5a
Centric <sup>®</sup> 40 WG	0.025	1.5b (37.5)	2.3a
Intruder <sup>®</sup> 70 WP	0.048	1.0b (58.3)	3.5a
LSD (P=0.10)		0.51	NS
P>F		0.0090	0.1566

\*Percent control corrected using Abbott's formula.

\*\* Means followed by the same letter do not significantly differ (Fisher's LSD P<0.10)  
Plots treated on May 21, 2003.

Counts were made for *Geocoris* spp. (big-eyed bugs) and *Orius* spp. (pirate bugs) but the only significant difference was 3 DAT after the first application for *Orius* spp. Both treatments significantly reduced populations but numbers quickly recovered at 5 DAT (Table 4).

**Table 4. Total number of pirate bugs per 10 plants for first application. Krueger Farm, Williamson Co., TX. 2003.**

Treatment	Rate (lb ai/ac)	Average number/10 Plants		
		5/16	5/19	5/21
Untreated		0.5a	3.5a	1.3a
Centric <sup>®</sup> 40 WG	0.025	0.5a	0.8b	0.5a
Intruder <sup>®</sup> 70 WP	0.048	0.8a	0.0b	0.8a
LSD (P=0.10)		NS	1.73	NS
P>F		0.4321	0.0174	0.4219

\*Percent control corrected using Abbott's formula.

\*\* Means followed by the same letter do not significantly differ (Fisher's LSD P<0.10)

Plots treated on May 16, 2003.

Plant data was evaluated in three measures. Percent square set was taken during the same time as insect data was collected. The only time percent square sets were significantly different from the control was five days after the first treatment (Table 5). Many times final yields can be masked by late season weather so total number of white blooms in 0.001 acres were counted every other day for three weeks. The total number of white blooms can give an indication of how many squares were saved from cotton fleahopper damage. Both treatments had significantly more white blooms than the control (Table 5). Finally, ten feet of row were harvested and yields per acre were calculated. Both treatments had higher calculated yields than the untreated control.

**Table 5. Percent square set, total white blooms per 0.001 acres and seed cotton yields per acre. Krueger Farm, Williamson Co., TX. 2003.**

Treatment	Rate (lb ai/ac)	Percent Square Set* (5/21)	Total White Blooms (0.001 acre)	Yields (lbs lint/ac)
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Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

Untreated		68b	107.25b	1376.10a
Centric <sup>®</sup> 40 WG	0.025	75a	128.75a	1488.06a
Intruder <sup>®</sup> 70 WP	0.048	75a	123.25a	1425.5a
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LSD (P=0.10)		0.043	15.368	NS
P>F		0.0572	0.0791	0.6635

\*Data was transformed using the arcsin square root of the percent for analysis. Data shown is the untransformed data.

\*\* Means followed by the same letter do not significantly differ (Fisher's LSD P<0.10) Plots treated on May 16, 2003.

## CONCLUSION:

This trial had high populations of cotton fleahoppers throughout the trial. This trial does show the importance of cotton fleahopper control in the Southern Blacklands. Insecticides in the trial reduced cotton fleahopper numbers below the untreated control. One of the difficulties in early season insect control trials is relating control back to yield. Although all the treated plots yielded better than the untreated, the treatments were not significant.

Both products performed well. Neither product showed any differences in length of control. Most producer decisions will be based on price when using the neonicotinoids.

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