COMPARISON OF SELECTED INSECTICIDES FOR CONTROL OF THE COTTON FLEAHOPPER IN COTTON

Cooperator: Bill and Randy Wright Farm
Nueces County, 2011

Authors: Roy D. Parker and Jeffrey R. Stapper
Extension Entomologist and County Extension Agent, respectively
Corpus Christi and Robstown, Texas

Summary

Centric, Carbine, Belay, and Intruder significantly reduced fleahopper number through 14 days after treatment (DAT). Centric and Belay were especially impressive in reducing nymphs. Carbine treated plots tended to have more fleahoppers than other treatments at 8 and 14 DAT. Since the treatments were applied late in the development of the cotton plant no differences were observed in lint production.

Objective

The field study on cotton was conducted to measure the impact of the insecticides on the cotton fleahopper.

Materials/Methods

The test was conducted on the Bill and Randy Wright Farm on County Road 44 about 0.5 miles west of FM 1694 in Nueces County. The cotton variety was FiberMax 832. Treatments were applied late in the fruiting stage with the cotton at 5 nodes above white flower (NAWF) on May 26, 2011. The test was arranged in a randomized complete block design with 4 replications of each treatment. Plots were 4 rows by 40 feet with 8 buffer rows between treatments.

Treatments were applied with a Spider Trac sprayer calibrated to deliver 5.1 gpa total volume through 4X hollow cone nozzles at 40 psi and at a speed of 4.2 mph. All treatments included a non-ionic surfactant (0.25% v/v).

Treatments were assessed by (1) counting fleahoppers on 20 plant terminals/plot before treatments were applied on May 26 followed by counts 2, 4, 8, and 14 days after treatment [DAT], and (2) harvesting the third row of each plot with an International Harvester model 120A spindle picker. Seed cotton was weighed and lint production was based on 37% of the seed cotton weight.

Agriculture Research Manager (ARM revision 6.1.13) software was used to conduct analysis of variance, and means were separated by LSD at the 0.05 probability level.

Results/Discussion

The experiment was conducted on cotton that was beyond the growth stage for which fleahopper control would be expected to have any impact on lint production; the cotton was at 5 nodes above white flower (NAWF) on May 26 when pretreatment counts were made, but the location provided opportunity to evaluate the impact of chemicals on fleahopper numbers.

Fleahopper nymphs were abundant when treatments were applied on May 26 (Table 1). All fleahopper nymph counts at 2, 4, 8, and 14 days after treatment (DAT) were significantly lower in the insecticide treatments regardless of chemical or rate used. Statistical differences were not observed among any of the insecticide treatments evaluated. However, nymphs were not detected in the Belay treated cotton at either rate evaluated on any post-treatment evaluation. Only at 14 DAT were any nymphs detected in the Centric treatment.

Adult fleahoppers generally increased in number following treatment in non-insecticide treated cotton (Table 2). Centric, Belay (both rates), and Intruder were more effective than either rate of Carbine. Fleahopper adults increased in Carbine treated cotton at 8 DAT. When nymph and adult fleahopper counts were combined (Table 3), all insecticides tested provided significant control when compared with the nontreated cotton.

No differences were observed in lint production (Table 3). Cotton was already at 5 NAWF when the test was established; it was well beyond the treatment period for cotton fleahopper (cotton is most susceptible to damage from first square to one week into bloom). These results demonstrate that nothing can be gained by treating for cotton fleahopper beyond the established growth stage for which treatments are currently recommended. It also demonstrates the effectiveness of insecticides in controlling cotton fleahopper. However, since the test was conducted at a late stage of cotton plant development little migration of fleahoppers into the cotton seemed to occur. It will be useful to conduct additional tests when treatments can be made for fleahopper control when the plants are more vulnerable to damage.

Table 1. Evaluation of insecticides for fleahopper control applied to blooming cotton under dry soil conditions, Bill and Randy Wright Farm, Nueces County, TX, 2011.

Treatment (rate)	Fleahopper **nymphs** per 100 plants					
	Pretreat	2 DAT	4 DAT	8 DAT	14 DAT	Post-treat. avg.
Centric 40WG (1.25 oz/acre)	20.0[a]	0.0[b]	0.0[b]	0.0[b]	2.5[b]	0.6[b]
Carbine 50WG (1.7 oz/acre)	31.3[a]	3.8[b]	1.3[b]	5.0[b]	3.8[b]	3.4[b]
Carbine 50WG (1.25 oz/acre)	26.3[a]	3.8[b]	3.8[b]	7.5[b]	2.5[b]	4.4[b]
Belay 2.13 SC (4.0 oz/acre)	26.3[a]	0.0[b]	0.0[b]	0.0[b]	0.0[b]	0.0[b]
Belay 2.13 SC (3.0 oz/acre)	22.5[a]	0.0[b]	0.0[b]	0.0[b]	0.0[b]	0.0[b]
Intruder 70WP (1.0 oz/acre)	30.0[a]	1.3[b]	2.5[b]	2.5[b]	2.5[b]	2.2[b]
Nontreated	23.8[a]	63.8[a]	67.5[a]	46.3[a]	38.8[a]	54.1[a]
LSD (P=0.05)	NS[1/]	12.34	11.28	8.44	14.67	9.25
P > F	.7150	.0001	.0001	.0001	.0003	.0001

Means in a column followed by the same letter are not significantly different by ANOVA.
[1/] NS = Not Significant

Table 2. Evaluation of insecticides for fleahopper control applied to blooming cotton under dry soil conditions, Bill and Randy Wright Farm, Nueces County, TX, 2011.

Treatment (rate)	Fleahopper **adults** per 100 plants					
	Pretreat	2 DAT	4 DAT	8 DAT	14 DAT	Post-treat. avg.
Centric 40WG (1.25 oz/acre)	3.8[a]	2.5[b]	1.3[b]	6.3[cd]	7.5[c]	4.4[c]
Carbine 50WG (1.7 oz/acre)	5.0[a]	0.0[b]	1.3[b]	18.8[bc]	21.3[ab]	10.3[b]
Carbine 50WG (1.25 oz/acre)	3.8[a]	0.0[b]	5.0[ab]	28.8[b]	13.8[bc]	11.9[b]
Belay 2.13 SC (4.0 oz/acre)	7.5[a]	0.0[b]	1.3[b]	1.3[d]	2.5[c]	1.3[c]
Belay 2.13 SC (3.0 oz/acre)	3.8[a]	0.0[b]	2.5[b]	5.0[cd]	3.8[c]	2.8[c]
Intruder 70WP (1.0 oz/acre)	7.5[a]	2.5[b]	2.5[b]	10.0[cd]	10.0[bc]	6.3[bc]
Nontreated	11.3[a]	10.0[a]	10.0[a]	57.5[a]	26.3[a]	25.9[a]
LSD (P=0.05)	NS[1/]	4.68	5.50	14.81	11.93	5.64
P > F	.2955	.0024	.0327	.0001	.0039	.0001

Means in a column followed by the same letter are not significantly different by ANOVA.
[1/] NS = Not Significant

Table 3. Evaluation of insecticides for fleahopper control applied to blooming cotton under dry soil conditions, Bill and Randy Wright Farm, Nueces County, TX, 2011.

Treatment[1/] (rate)	Fleahopper **nymphs** and **adults** per 100 plants						Lint yield lb/acre
	Pretreat	2 DAT	4 DAT	8 DAT	14 DAT	Post-treat avg.	
Centric 40WG (1.25 oz/acre)	23.8[a]	2.5[b]	1.3[b]	6.3[cd]	10.0[bc]	5.0[bcd]	745[a]
Carbine 50WG (1.7 oz/acre)	36.3[a]	3.8[b]	2.5[b]	23.8[bc]	25.0[b]	13.8[bc]	703[a]
Carbine 50WG (1.25 oz/acre)	30.0[a]	3.8[b]	8.8[b]	36.3[b]	16.3[bc]	16.3[b]	675[a]
Belay 2.13 SC (4.0 oz/acre)	33.8[a]	0.0[b]	1.3[b]	1.3[d]	2.5[c]	1.3[d]	715[a]
Belay 2.13 SC (3.0 oz/acre)	26.3[a]	0.0[b]	2.5[b]	5.0[cd]	3.8[c]	2.8[cd]	726[a]
Intruder 70WP (1.0 oz/acre)	37.5[a]	3.8[b]	5.0[b]	12.5[cd]	7.5[bc]	7.2[bcd]	688[a]
Nontreated	35.0[a]	73.8[a]	77.5[a]	103.8[a]	65.0[a]	80.0[a]	714[a]
LSD (P = 0.05)	NS[1/]	15.33	12.87	19.41	19.39	11.63	NS
P > F	.7495	.0001	.0001	.0001	.0001	.0001	.9110

Means in a column followed by the same letter are not significantly different by ANOVA.
[1/] NS = Not Significant

Acknowledgements
Thanks are extended to Bill and Randy Wright for providing the field location for conduct of the study and their interest in such work. Randy Alaniz and Clint Livingston, Demonstration Assistants, are thanked for applying treatments, and for harvest and ginning of cotton samples.