EXTENSION COTTON ENTOMOLOGY: INSECTICIDE PERFORMANCE TRIALS, 2016







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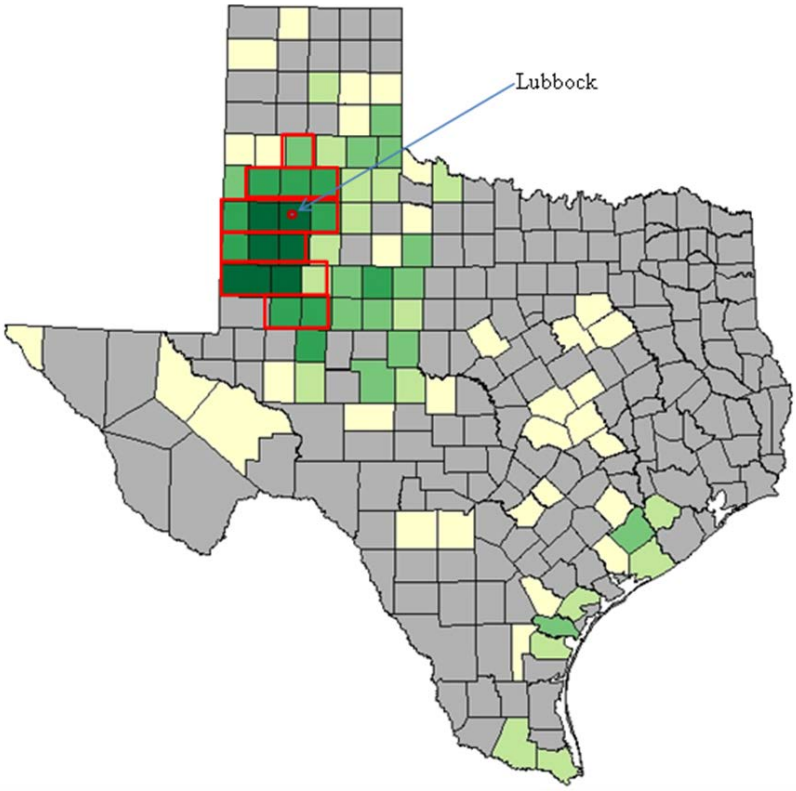
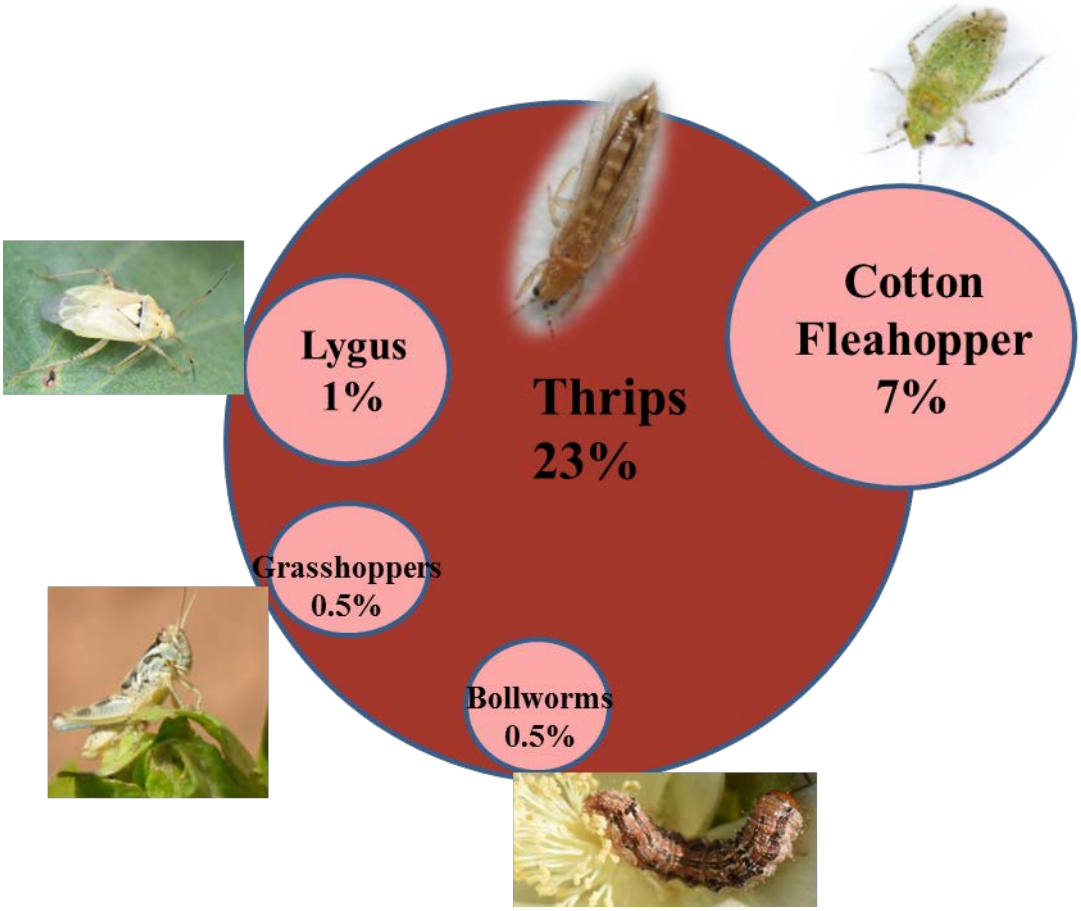
HIGHLIGHTS FROM IPM AGENTS' SCOUTING PROGRAMS

In 2016, a total of 183 cotton fields spread over >19,000 acres were scouted throughout the growing season. Selected cotton fields were in 16 counties--Lubbock, Crosby, Hale, Swisher, Floyd, Cochran, Hockley, Lamb, Gaines, Terry, Yoakum, Dawson, Lynn, Martin, Borden, and Howard.

Of the 183 cotton fields in 2016 scouting program, 31 fields (2631 acres) were non-Bt cotton.



The major insect pests included thrips (23% of fields reaching economic threshold) and the cotton fleahopper (7% of fields reaching economic threshold). Populations of *Lygus*, grasshoppers, and cotton bollworm reached economic threshold in ≤1% of the fields scouted. Outside of the scouting program, outbreaks of conchuela stink bug were reported in parts of Lubbock and Crosby counties.



Percentage of cotton fields with insect pest population reaching economic threshold

Conchuela stink bug

EVALUATION OF FOLIAR INSECTICIDE APPLICATIONS FOR WESTERN FLOWER THRIPS CONTROL IN COTTON, 2016

COTTON: *Gossypium hirsutum* (L.) 'FM1911GLT'

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Western flower thrips (WFT): *Frankliniella occidentalis* (Pergande)

This test was conducted in field at the Texas A&M AgriLife Research and Extension center in Lubbock, TX. The field was planted on May 27 on 40-inch row spacing. The field was irrigated using furrow irrigation. The experiment was designed as a RCB with 3 treatments and 4 replications. The plots were 4-rows wide x 30 ft in length. Treatments were applied on Jun 24. Insecticide applications were made with a CO_2 pressurized hand-boom sprayer calibrated to deliver 10 gpa through hollow cone TeeJet TXVS6 spray tip nozzles (2 per row) at 30 psi. Sampling was done at 4DAT and 13DAT. 10 randomly selected plants from each plot on each sampling date were taken to the laboratory in glass mason jar containing 75% ethyl alcohol. Number of thrips adults and nymphs in each sample were counted by washing technique. Data were analyzed by ANOVA and means were separated by LSD.

There was significant reduction in number of WFT immatures in response to Acephate application at 4DAT. At 13DAT both Acephate and Bidrin resulted in significantly fewer WFT immatures compared to the untreated check. Numbers of WFT adults did not vary significantly across treatments at both 4DAT and 13DAT.

Table 1

Treatment/formulation	Rate amt product/acre	WTF/10 plants 4DAT adults	4DAT immatures	4DAT total	13DAT adults	13DAT immatures	13DAT total
Untreated check	-	3.50 a	4.30 a	7.80 a	1.50 a	6.30 a	7.80 a
Acephate 97UP	12 oz wt	1.50 a	0.80 b	2.30 b	2.30 a	1.30 b	3.50 a
Bidrin 8E	8 fl oz	1.80 a	3.30 a	5.00 ab	3.80 a	1.50 b	5.30 a
P>F		0.1707	0.039	0.0488	0.1072	0.0191	0.057

Means in a column followed by the same letter are not significantly different (LSD, P = 0.05).

EVALUATION OF FOLIAR INSECTICIDE APPLICATIONS FOR COTTON FLEAHOPPER CONTROL IN COTTON, 2016

COTTON: *Gossypium hirsutum* (L.) 'Phytogen 333WRF'

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Cotton Fleahopper (CFH): *Pseudatomoscelis seriatus* (Reuter)

This test was conducted in a commercial cotton field near Tulia, TX. The field was planted in late May on 30-inch row spacing. The field was irrigated using center-pivot irrigation method. The experiment was designed as a RCB with 7 treatments and 4 replications. The plots were 4-rows wide x 40 ft. in length. Treatments were applied on 15 Jul during the bloom stage of cotton. Insecticide applications were made with a CO2 pressurized hand-boom sprayer calibrated to deliver 10 GPA through hollow cone TeeJet TXVS6 spray tip nozzles (2 per row) at 30 psi. Wind speed was well below 10 mph during spray applications. Three drop cloth samples (3 row

ft/sample) were taken from middle two rows of each plot at 3 DAT, 7 DAT, 10 DAT, 14 DAT, and 21 DAT. Numbers of CFH adults and nymphs were counted in each drop cloth sample, and the mean of the three drop cloth samples per plot are reported. Data were analyzed by ANOVA and means were separated by LSD.

There were no significant differences among treatments for numbers of CFH adults on any sample date (Tables 1 and 2). All the insecticide treatments, except Diamond and Carbine at 10 DAT, resulted in significantly fewer CFH nymphs on all sample dates. Application of insect growth regulator Diamond significantly reduced CFH nymphs compared to the untreated check at 3 DAT, 7 DAT, 14 DAT, and 21 DAT. Overall, Carbine, Transform, Orthene, and Bidrin (rates for each are the highest labeled rates) provided excellent control of CFH. Tank mixing Diamond with Orthene did not improve efficacy against CFH compared to Orthene applied alone.

Table 1

Treatment/ formulation	Rate/acre	3 DAT CFHs per 3 row-ft.			7 DAT CFHs per 3 row-ft.			10 DAT CFHs per 3 row-ft.		
		nymphs	adults	total[a]	nymphs[a]	adults	total	nymphs[a]	adults	total[a]
Untreated check	-	2.33a	0.00a	2.33a	3.80a	0.40a	4.20a	2.80a	0.10a	2.90a
Diamond 0.83 EC + Orthene 97S	6 fl oz. + 4 oz wt.	0.00c	0.00a	0.00b	0.10c	0.10a	0.20c	0.30b	0.10a	0.40b
Diamond 0.83EC	9 fl oz.	1.42b	0.17a	1.58a	1.70b	0.10a	1.80b	1.50ab	0.30a	1.80ab
Carbine 50WG	4 oz. wt.	0.42c	0.08a	0.50b	0.80bc	0.20a	1.00bc	0.90ab	0.00a	0.90b
*Transform 50WG	1.5 oz. wt.	0.08c	0.17a	0.25b	0.10c	0.10a	0.20c	0.20b	0.10a	0.30b
Orthene 97S	4 oz. wt.	0.00c	0.08a	0.08b	0.50c	0.30a	0.80bc	0.30b	0.00a	0.30b
Bidrin 8E	8 fl oz.	0.00c	0.00a	0.00b	0.00c	0.00a	0.00c	0.20b	0.00a	0.20b
P>F		0.0001	0.6400	0.0003	0.0001	0.2462	0.0001	0.0032	0.3507	0.0016

Means in a column followed by the same letter are not significantly different (LSD, P = 0.05).

[a]Statistics were generated on Arcsine square-root transformed data. Means presented in table are actual data. *Not registered for use in cotton in Texas.

Table 2

Treatment/ formulation	Rate/acre	14 DAT CFHs per 3 row-ft. nymphs	14 DAT CFHs per 3 row-ft. adults	14 DAT CFHs per 3 row-ft. total[a]	21 DAT CFHs per 3 row-ft. nymphs[a]	21 DAT CFHs per 3 row-ft. adults	21 DAT CFHs per 3 row-ft. total
Untreated check	-	3.40a	0.20a	3.60a	2.90a	0.30a	3.30a
Diamond 0.83 EC + Orthene 97S	6 fl oz. + 4 oz wt.	0.20c	0.10a	0.30c	1.10b	0.30a	1.30bc
Diamond 0.83EC	9 fl oz.	1.80b	0.30a	2.20b	1.20b	0.30a	1.40bc
Carbine 50WG	4 oz. wt.	0.60c	0.00a	0.60c	1.50b	0.40a	1.90ab
*Transform 50WG	1.5 oz. wt.	0.00c	0.00a	0.00c	0.30b	0.20a	0.50c
Orthene 97S	4 oz. wt.	0.30c	0.20a	0.50c	0.80b	0.60a	1.40bc
Bidrin 8E	8 fl oz.	0.20c	0.10a	0.30c	1.20b	0.30a	1.50bc
P>F		0.0001	0.3090	0.0001	0.0023	0.8345	0.0026

Means in a column followed by the same letter are not significantly different (LSD, P = 0.05).

[a]Statistics were generated on Arcsine square-root transformed data. Means presented in table are actual data. *Not registered for use in cotton in Texas.

EVALUATION OF FOLIAR INSECTICIDE APPLICATIONS FOR GRASSHOPPER CONTROL IN COTTON, 2016

COTTON: *Gossypium hirsutum* (L.) 'FiberMax 2011'

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Differential grasshopper (DG): *Melanoplus differentialis* (Thomas)

This test was conducted in a commercial cotton field near Plainview, TX. The field was planted on 4 Jun on 40-inch row spacing. The field was irrigated using a drip irrigation system. The experiment was designed as a RCB with 6 treatments and 4 replications. The plots were 4-rows wide x 40 ft. in length. Treatments were applied on 12 Aug. Insecticide applications were made with a CO_2 pressurized hand-boom sprayer calibrated to deliver 10 GPA through hollow cone TeeJet TXVS6 spray tip nozzles (2 per row) at 30 psi. Wind speed was well below 10 mph during spray applications. Insect sampling was done by swinging the sweep net through the top

of the canopy. Each sample consisted of DG nymphs and adults collected in 25 consecutive sweeps taken in a row while walking forward. Sweep net contents (foliage + insects) were placed in plastic zip-lock bags and brought to the laboratory. Plastic bags containing insects were stored at 3^0 C for further processing. Laboratory processing included counting of DG nymphs and adults found per sample. Sampling was conducted at 3 DAT, 7 DAT, and 21 DAT. Data were analyzed by ANOVA and means were separated by LSD.

There were no significant differences among treatments for numbers of DG adults at 3, 7, or 21 DAT or for numbers of DG nymphs and total grasshoppers at 21 DAT (Table 1). At 3 DAT only Baythroid XL and Prevathon resulted in significantly fewer DG nymphs compared to the untreated check, while all the insecticide treatments resulted in significantly fewer total grasshoppers than the untreated check. At 7 DAT, all the insecticide treatments resulted in significantly lower numbers of DG nymphs and total numbers of grasshoppers compared to the untreated check. Also, plots treated with Baythroid XL, Hero, or Prevathon had significantly lower densities of total grasshoppers than plots treated with Lorsban.

Table 1

Treatment/ formulation	Rate/acre (fl oz)	3 DAT DGs per 25 sweeps adults	3 DAT DGs per 25 sweeps nymphs[a]	3 DAT DGs per 25 sweeps total[a]	7 DAT DGs per 25 sweeps adults	7 DAT DGs per 25 sweeps nymphs[a]	7 DAT DGs per 25 sweeps total[a]	21 DAT DGs per 25 sweeps adults	21 DAT DGs per 25 sweeps nymphs[b]	21 DAT DGs per 25 sweeps total
Untreated check	-	2.0a	3.5a	5.5a	1.5a	4.5a	6.0a	2.5a	2.0a	4.5a
Baythroid XL 1EC	2.8	0.0a	0.0b	0.0b	0.0a	0.0b	0.0c	1.0a	0.0a	1.0a
Hero 1.24EC	10.3	0.0a	0.0b	0.0b	0.0a	0.0b	0.0c	1.5a	1.5a	3.0a
Prevathon 0.43SC	10.0	0.0a	1.5ab	1.5b	0.0a	0.5b	0.5c	1.0a	0.0a	1.0a
Prevathon 0.43SC	20.0	0.0a	1.5ab	1.5b	0.0a	0.0b	0.0c	0.5a	0.5a	1.0a
Lorsban 4E	16.0	0.5a	2.0ab	2.5b	1.5a	1.0b	2.5b	1.5a	1.5a	3.0a
P>F		0.07	0.03	<0.01	0.18	<0.01	<0.01	0.71	0.06	0.22

Means in a column followed by the same letter are not significantly different (LSD, P = 0.05).

[a]Statistics were generated on data transformed using square root of X+0.5. Means presented in the table are actual data.

[b]Statistics were generated on data transformed using Arcsine square root % transformation. Means presented in the table are actual data.

EVALUATION OF FOLIAR INSECTICIDE APPLICATIONS FOR CONCHUELA STINK BUG CONTROL IN COTTON, 2016

COTTON: *Gossypium hirsutum* (L.) 'FiberMax 2011'

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Conchuela stink bug (CST): *Chlorochroa ligata* (Say)

This test was conducted in a commercial cotton field near McAdoo, TX. The field was planted on Jun 3 on 40-inch rows (2:1 skip-row). The field was irrigated using a drip irrigation system. The experiment was designed as an RCB with 6 treatments and 4 replications. The plots were 2-rows wide x 40 ft in length. Treatments were applied on Oct 28 at the beginning of boll opening stage of cotton. Insecticide applications were made with a CO_2 pressurized hand-boom sprayer

calibrated to deliver 10 gpa through hollow cone TeeJet TXVS6 spray tip nozzles (2 per row) at 30 psi. Wind speed was well below 10 mph during spray applications. Two drop cloth samples were taken from each plot at 7 DAT. Numbers of CSTs were counted in each drop cloth sample. Data collection was terminated 14 DAT due to low numbers of CSTs. Data were analyzed by ANOVA and means were separated by LSD.

Data show all insecticide products tested provided excellent control of CST when applied at highest labeled rates. No nymphs were seen so data presented are CST adults per 6 row-ft.

Table 1

Treatment/formulation	Rate (amt product/acre)	Stink bugs/ 6 ft-row (7DAT)
Untreated check	-	4.5 a
Bidrin 8E	8 fl oz	0.8 b
Hero 1.24EC	10.3 fl oz	0.0 b
Baythroid XL 1EC	2.8 fl oz	0.0 b
Bifenthrin 2EC	6.4 fl oz	0.0 b
Acephate 97UP	12 oz wt	0.8 b
P>F		0.0025

Means in a column followed by the same or no letter are not significantly different (LSD, P>0.05).

Precautionary Statement

Some of the pesticides used in these trials are for research purposes only. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide.