

COMPARISON OF INSECTICIDES FOR COTTON APHID CONTROL

Texas Agricultural Experiment Station, Corpus Christi, TX, 1999

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OBJECTIVES: Cotton aphids often increase to economically damaging numbers in the Coastal Bend but may not remain at high levels long enough to cause significant yield, quality or earliness loss. However, we have measured up to 80 lb/acre increase in lint production where aphids persisted at high levels for more than two weeks in early bloom stage cotton. Insecticide effects on the aphid population is often uncertain, i.e. an effective level of control may not be achieved. Therefore, our objective was to evaluate effects of labeled and experimental insecticides on aphid numbers and to measure the impact on cotton production.

MATERIALS/METHODS: DPL 20B cotton variety was planted at 56,000 seed/acre on 16 Mar in soil with excellent moisture at the Texas Agricultural Experiment Station, Corpus Christi, TX. The test was replicated 4 times and arranged in a RCB design in 4 row (38-inch centers) X 50 ft plots. Fertilizer applied was 100-14-0+0.6 Zn/acre, Treflan 4HFP (1 qt/acre) was incorporated for weed control before planting and Pix Plus (5.5 oz/acre) was applied on 14 May for plant growth control. Insecticides were applied to the center two rows of each plot on 4 May to prebloom stage cotton (first bloom did not occur until 18 May). Insecticide treatments were applied with a self propelled Lee Company Spider Spray Trac using TX-8 hollow cone nozzles which delivered 10.9 gpa total spray volume at 40 psi and a speed of 3.75 mph.

Treatments effects were measured by (1) counting the number of aphids on 10 leaves/plot taken from the top, middle and bottom of prebloom plants just before treatment on 4 May, followed by additional counts 3 and 6 days after treatment (DAT), (2) harvesting cotton for yield determination on 2 Aug from 13.75 ft row in each plot, and (3) evaluating lint samples for fiber characteristics (International Textile Center, Texas Tech University, Lubbock, TX).

RESULTS/DISCUSSION: Pretreatment aphid counts taken on the same day insecticides were applied averaged 59.4 per leaf but by 3 DAT all insecticide treatments contained significantly fewer aphids compared with the untreated check (Table 1). In the untreated check, cotton aphid numbers had declined to 10 per leaf 3 DAT. By 6 DAT only Bayer EXP4591, Fulfill and Furadan treated cotton still contained statistically fewer aphids than the untreated check. Aphid numbers in the untreated check on this last inspection date had further declined to 5.95/leaf. No other significant aphid population developed in the test cotton during the season. Although statistical differences occurred in the number of harvested bolls, no differences were found in lint production (Table 2). Fiber characteristics were not affected. Aphids did not persist long enough under test conditions to impact yield or fiber characteristics.

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Table 1. Comparison of insecticides for control of aphids on cotton, Texas Agricultural Experiment Station, Corpus Christi, TX, 1999.

Treatment/ formulation	Rate oz/acre	Number cotton aphids per 10 leaves		
		Pretreatment	3 DAT	6 DAT
Provado 1.6F ^a	2.00	790 a	14.3 b	20.3 abc
Provado 1.6F	2.00	478 a	10.0 b	31.3 abc
Provado 1.6F	3.75	710 a	15.8 b	30.8 abc
Calypso 4SC ^a	1.15	538 a	16.8 b	30.3 abc
Calypso 4SC ^a	0.80	638 a	29.3 b	29.0 abc
EXP4591 25WG ^a	1.60	620 a	12.3 b	7.3 c
Fulfill 50WG ^a	2.75	595 a	38.3 b	15.5 bc
Furadan 4F	8.00	485 a	3.3 b	2.0 c
Bidrin 8E	3.20	623 a	31.5 b	54.3 ab
Untreated		463 a	100.0 a	59.5 a
LSD (P=0.05)		NS	50.6	43.22
P>F		.1912	.0046	.0303

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

^a Silwet (8 oz/100 gallons spray volume) was added to the mixture.

Table 2. Boll production, lint yield and selected fiber characteristics of cotton treated for aphids, Texas Agricultural Experiment Station, Corpus Christi, TX, 1999.

Treatment/ formulation	Rate oz/acre	Harvested bolls (1000's/acre)	Yield (lb lint/acre)	Fiber characteristics ^b		
				Mic	Lgth	St
Provado 1.6F ^a	2.00	257 abc	1121 a	4.9 a	1.02 a	24.5 a
Provado 1.6F	2.00	246 abc	1069 a	5.0 a	1.03 a	24.4 a
Provado 1.6F	3.75	254 abc	1102 a	4.9 a	1.02 a	23.7 a
Calypso 4SC ^a	1.15	275 a	1102 a	4.8 a	1.02 a	24.0 a
Calypso 4SC ^a	0.80	230 c	1088 a	4.8 a	1.03 a	24.7 a
EXP4591 25WG ^a	1.60	242 bc	1106 a	5.0 a	1.02 a	23.8 a
Fulfill 50WG ^a	2.75	246 abc	1085 a	5.1 a	1.03 a	23.7 a
Furadan 4F	8.00	272 ab	1146 a	4.8 a	1.03 a	24.2 a
Bidrin 8E	3.20	240 c	1061 a	5.1 a	1.04 a	24.2 a
Untreated		251 abc	1101 a	4.9 a	1.03 a	23.9 a
LSD (P=0.05)		30.69	NS	NS	NS	NS
P>F		.0195	.2227	.0896	.2010	.2034

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

^a Silwet (8 oz/100 gallons spray volume) was added to the mixture.

^b Mic = micronaire, Lgth = length and St = strength