

## TEMIK EFFECTS ON INSECTS AND COTTON PRODUCTION

Darby and Howard Salge Farm, San Patricio County, 2000

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**SUMMARY:** Temik was applied to cotton at planting at 2.3, 4.0 and 5.8 oz/1000 row ft to determine impact on insects and subsequent lint production. Thrips and aphids were reduced, and plant damage was lower in Temik treated cotton. Significantly more bolls were produced in Temik treated cotton compared to untreated cotton and numerically more lint was produced by the Temik treatments.

**OBJECTIVES:** The field experiments was established to evaluate the effects of Temik on insects, compare use rates and measure effects on cotton production.

**MATERIALS/METHODS:** Temik 15G (2.3, 4.0 and 5.8 oz/1000 row ft) was applied into the seed furrow at-planting in a field farmed by Darby and Howard Salge located at the intersection of County Roads 26 and 21 in San Patricio County. Stoneville 474 variety cotton was planted 24 Mar with a 12-row John Deere MaxEmerge 7300 air planter. Plots were 24 rows (30-inch centers) by 2200 ft long (3.03 acres/plot) and arranged in a randomized complete block design with 3 replications. Sorghum had been grown on the site during the previous season. The soil was an orelia sandy clay with a 7.0 pH. Air temperature at-planting was 77°F, soil was moist and soil temperature at 4-inch depth was 71°F. Fertilizer applied was 50-25-0. Treflan (4 lb ai/gal) was applied preplant at 1.5 pt/acre. Dual II Magnum (7.64 lb ai/gal) at 1.5 pt/acre + Roundup Ultra (4 lb ai/gal) at 1.67 pt/acre was banded over the row at-planting. Temik 15G was applied into the seed furrow at-planting.

Treatment effects were assessed by (1) counting the number of aphids and thrips found on 2-true leaf stage cotton (17 Apr or 24 days after planting = DAP) from 10 plants collected in the middle of each plot; plants were placed in alcohol, washed and insects were collected on filter paper for microscopic examination, (2) estimating cotton aphid numbers per plant on 27 Apr = 34 DAP (6-7 true leaf stage), (3) assigning a visual plant damage rating (1 = no damage up to 5 = severe stunting and leaf curling) to each plot 34 DAP, (3) examining 10 plants per plot 34 DAP to determining true leaf stage (4) counting plants in 17.4 ft row in each plot on 27 Apr and again 27 May, (5) estimating aphids/leaf on 4 May and 7 May, (6) treating 12 rows in each plot with a tractor mounted sprayer for cotton aphids in each plot on 4 May with Furadan 4F (3.0 oz/acre) applied in a 15-inch band with #25 core and D-3 disc at 60psi and 4 gpa = 8 gpa broadcast, (7) harvesting 17.4 ft row by hand at 6 locations in each plot on 22 Jul (3 plots in Furadan overspray and 3 plots where Furadan was not applied), (8) harvesting each treatment with a 6-row John Deere stripper with a burr extractor and placing all plots in single modules for comparison with hand harvest data. Modules samples were obtained for laboratory ginning. Hand harvested cotton and module samples were processed on a 10-saw Eagle laboratory gin.

**RESULTS/DISCUSSION:** Thrips and aphid numbers on 2 true leaf cotton, aphids on 6-7 true leaf cotton and plant damage ratings were significantly lower in Temik treated cotton (Table 1). We believe insect numbers were high enough to adversely affect yield. No statistical differences were noted in plant stand data, bolls required to produce one pound of lint or yield (Table 2). However, significantly more bolls were

harvested in Temik treated cotton compared to untreated cotton. Although we could not demonstrate statistical yield increase, several factors lead us to believe Temik use resulted in increased lint production: (1) All the Temik treatments produced more lint than the untreated cotton (42-60 lb/acre). (2) Temik treated moduled cotton produced more lint than moduled untreated cotton (28-79 lb/acre). (3) Experience over many years in tests demonstrate similar results. (4) Untreated cotton in all 3 replications visually appeared to have less cotton.

Cotton aphid numbers exceeded the economic threshold level on 4 May (Table 3). They declined to low numbers where Furadan was applied and in the non-Furadan treated cotton by 3 DAT. Statistical differences due to Furadan treatment were not found.

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Table 1. Aphid and thrips numbers, and plant damage rating in cotton treated with Temik, Darby and Howard Salge Farm, San Patricio County, TX, 2000.

Temik 15G rate oz/1000 row ft	No. per 10 plants on 17 May <sup>a</sup>		Aphids/ leaf 27 Apr	Plant damage rating <sup>c</sup>	True leaf stage on 27 Apr
	Aphids	Thrips			
2.3	24.3 b	2.33 b	19.3 b	1.67 b	7.0 a
4.0	16.3 b	1.67 b	17.7 b	2.00 b	7.0 a
5.8	11.3 b	1.00 b	7.7 b	1.33 b	6.7 ab
0.0	749.0 a	16.30 a	120.0 a	5.00 a	6.0 b
LSD (P = 0.05)	362.8	<sup>b</sup>	38.25	1.373	.763
P > F	.0058	.0243	.0011	.0021	.0541

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

<sup>a</sup> Plant growth stage = 2 true leaves

<sup>b</sup> The P > F in this column is based on transformed [square root (x + 1)] data values. It is inappropriate to list LSD values based on transformed data.

<sup>c</sup> Plants were in the 6 - 7 true leaf stage on 27 Apr. Plant damage ratings range from 1 = no damage to 5 = severe stunting and leaf curling.

Table 2. Plant population, boll production lint yield and dollar return in cotton treated with Temik, Darby and Howard Salge Farm, San Patricio County, TX, 2000.

Temik 15G rate oz/1000 row ft	1000's Plants/acre		bolls/lint lb	harvested bolls	Yield lb lint/acre	Return \$ over untreated <sup>a</sup>
	initial	midseason				
2.3	56.7 a	49.4 a	318 a	279 a	880 a	11.65
4.0	54.3 a	51.2 a	312 a	276 a	898 a	14.13
5.8	56.3 a	51.5 a	321 a	281 a	884 a	0.22
0.0	49.0 a	48.2 a	299 a	247 b	838 a	
LSD (P = 0.05)	NS	NS	NS	9.58	NS	
P > F	.0675	.5897	.3251	.0004	.2548	

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

<sup>a</sup> Cotton value based on \$0.60/lb for lint and \$0.05/lb for seed; costs include Temik 15G (\$3.23/lb) and harvesting/hauling/ginning/fees (\$0.21/lb lint).

Table 3. Aphid numbers and lint production in cotton treated at-planting with Temik followed by Furadan overspray of 12 rows in each plot for aphids on 4 May, Darby and Howard Salge Farm, San Patricio County, TX, 2000.

Temik 15G rate oz/1000 row ft	Furadan overspray	Aphids per leaf		Yield lb lint/acre
		Pretreatment	3 - DAT <sup>a</sup>	
2.3	Yes	122.9 a	0.2 b	860 a
4.0	Yes	97.6 a	0.7 b	866 a
5.8	Yes	75.4 a	0.5 b	872 a
0.0	Yes	50.6 a	0.3 b	811 a
2.3	No	122.9 a	4.3 ab	900 a
4.0	No	97.6 a	6.4 a	930 a
5.8	No	75.4 a	7.8 a	896 a
0.0	No	50.6 a	2.7 ab	864 a
LSD (P = 0.05)		NS	5.235	NS
P > F		.4237	.0363	.3720

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

<sup>a</sup> 3-DAT = 3 days after Furadan treatment