

**EVALUATION OF GAUCHO GRANDE AND OTHER INSECTICIDES FOR MANAGEMENT  
OF EARLY SEASON INSECT PESTS IN COTTON ACROSS EASTERN TEXAS**

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**Abstract**

Two seed treatments, Cruiser (thiamethoxam) and Gaucho Grande (imidacloprid) and the in-furrow insecticide Temik (aldicarb) were evaluated for control of thrips (*Frankliniella spp.*) and aphids (*Aphis gossypii* Glover) in early-season cotton across the eastern region of Texas in 2005. Interest in seed treatments is high among producers who continue to fine tune production practices that will maximize profitability.

Conditions were warmer and drier than normal during and following planting of cotton in the eastern region of the state in most of the trials. All the insecticides significantly reduced thrips numbers compared to the untreated check. Although yields in the treated plots were numerically higher, only those plots treated with Temik were significantly better than the untreated cotton.

**Introduction**

Thrips can be a significant problem in the region where cotton is planted early to take advantage of rainfall patterns and early planted cotton is often exposed to cooler temperatures not conducive to cotton growth. High populations of thrips and/or aphids can cause stunted and/or deformed plants which can in turn lead to negative yield impacts.

In 2005, a new option available to producers for management of early season insect pests in cotton was Gaucho Grande, a different formulation than the original Gaucho seed treatment that was initially released in the late 90's. As a result of its introduction and producer inquiries, many trials were established across the southeastern part of Texas to compare it to grower standards including, Cruiser and Temik. This paper represents a summary of data from 6 different trials conducted in the Southeast part of Texas in 2005.

**Materials and Methods**

Plot sizes ranged from 3 to 4 rows by 40 to 1320 feet in length with four replications. Trial location, plant and harvest dates, plot size and cotton variety used are provided in Table 1. Thrips per 10 plants and aphids per 10 plants at 1-2 and 3-4 true leaf, a visual damage rating (1-5 scale) at 3-4 true leaf and yield were measured. Treatment effects were measured in the center one to two rows of plots. Plant damage rating using a visual plant damage rating scale (1= no damage, 3=moderate damage, 5=severe damage, stunting and leaf curling) was performed on each study at the 3-4 true leaf stage.

Table 1. Trial Location, Researcher, Planting Date, Harvest Date Plot Size for Data Summarized, 2005

Location	Researcher	Planting Date	Harvest Date	Plot size	Variety
Coastal Bend	Roy Parker				
	-Pinkston	29 March	6 August	6-38" rows X 1320'	FM 958
	-Meany	24 March	15 August	4-38" rows x 40'	FM 9602B2R
Coastal Bend	Stephen Biles	4 April	5 August	4-38" rows x 200'	DPL 444BR
Upper Gulf Coast	Daniel Fromme	6 April	11 August	4-40" fows x 700'	DPL 444BR
Southern Blacklands	Dale Mott	7 April	1 Sept	4-38" rows x 40'	DPL 444BR
Northern Blacklands	Marty Jungman	3 April	n/a1	3-30" rows x 300'	DPL 444BR

The cotton was harvested by hand from 1/1000 acre lengths of row in each plot and lint weight was obtained by processing each sample on a 10 saw Eagle Laboratory gin. Data from the various tests were considered as replicates for statistical analysis. Data was analyzed using the SAS Mixed Procedure at P=0.05.

Table 2 provides a summary of which treatments were evaluated at each location. Soil types consisted of heavy Victoria and Houston clay's. Yield potential was reduced in 2005 due to extremely dry conditions. Data from all trials that had similar treatments were analyzed together. Three sets of treatment by location effects were evaluated individually, based on treatments contained at each location.

Table 2. List of Treatments Included at Each Location, Texas. 2005

Researcher	Treatments Included			
	Cruiser 5 FS	Gaucha Grande	Temik	Check
Roy Parker	X	X	X	X
-Pinkston	X	X	X	X
-Meany		X	X	X
Stephen Biles	X	X		X
Daniel Fromme	X	X	X	X
Dale Mott	X	X	X	X
Marty Jungman	X	X		X

### Results

Three trial locations (Parker- Pinkston, Fromme, and Mott) contained all four treatments (Table 3). Mean thrips per 10 plants were significantly higher in the check at 1-2 true leaves, 5.75, than the treated plots. There were no differences observed among any of the insecticide treatments among these three locations at 3-4 true leaves.

Table 3. Mean Number of Thrips and Aphids per 10 Plants (3 locations). 2005

Treatment	Rate	Mean Number per 10 Plants			
		Thrips		Aphids	
		1-2 TL <sup>1</sup>	3-4 TL	1-2 TL	3-4 TL
Check		5.75 a	25.0	5.8	3.3
Cruiser 5FS	7.6 fl oz/cwt	1.25 b	24.9	3.3	0.28
Gaucha Grande	12.8 fl oz/cwt	0.75 b	17.0	12.3	5.8
Temik	3.5 lbs/ac	0.75 b	16.0	10.3	8.3
P>F		0.0060	0.7785	0.6813	0.5254

<sup>1</sup> Means followed by the same letter are not significantly different at 0.05 (Tukey's).

The untreated check had a significantly higher plant damage rating, 2.75, at 3-4 true leaves at the three locations compared to the insecticide treatments. No significant yield differences were observed between the treatments at the three locations. Yields ranged from 738 lbs/ac for the check to 848 lbs/ac for Temik.

Table 4. Mean Visual Damage Rating and Yields (3 locations). 2005

Treatment	Rate	Visual Rating <sup>1,2</sup>	Yield
Check		2.75 a	738
Cruiser 5FS	7.6 fl oz/cwt	2.08 b	786
Gaucha Grande	12.8 fl oz/cwt	1.83 b	801
Temik	3.5 lbs/ac	1.83 b	848
P>F		0.0010	0.6116

<sup>1</sup> Means followed by the same letter are not significantly different at 0.05 (Tukey's).

<sup>2</sup> Visual Damage Rating using 1-5 visual, where 1=No damage to 3=Severe Plant Damage. Visual rating performed at 3-4 True Leaf.

Five trial locations (Parker-Pinkston, Biles, Fromme, Mott and Jungman) contained each of the three treatments listed in Table 5. There were no differences in mean thrips and aphids per 10 plants among this data set at 1-2 and 3-4 true leaves. However, there is a slight trend for higher average thrips in the untreated treatment compared to the two seed treatments across the five locations.

Table 5. Mean Number of Thrips and Aphids per 10 plants (5 locations). 2005

Treatment	Rate	Mean Number per 10 Plants			
		Thrips		Aphids	
		1-2 TL <sup>1</sup>	3-4 TL	1-2 TL	3-4 TL
Check		12.2	26.7	82.1	10.6
Cruiser 5 FS	7.6 fl oz/cwt	6.1	18.7	7.9	2.4
Gaucha Grande	12.8 fl oz/cwt	5.9	13.3	14.0	8.2
P>F		0.2992	0.2417	0.1982	0.1830

<sup>1</sup> Means followed by the same letter are not significantly different at 0.05 (Tukey's).

The check had a significantly higher plant damage rating, 3.05, at the 3-4 true leaves among this data set compared to the seed treatments (Table 6). However, there was no significant difference in yield between the check and the two seed treatments.

Table 6. Mean Visual Damage Rating and Yields (5 locations). 2005

Treatment	Rate	Visual Rating <sup>1,2</sup>	Yield
Check		3.05 a	735
Cruiser 5FS	7.6 fl oz/cwt	2.25 b	786
Gaucha Grande	12.8 fl oz/cwt	2.10 b	794
P>F		0.0326	0.5974

<sup>1</sup> Means followed by the same letter are not significantly different at 0.05 (Tukey's).

<sup>2</sup> Visual Damage Rating using 1-5 visual, where 1=No damage to 3=Severe Plant Damage. Visual rating performed at 3-4 True Leaf. Four trial locations (Parker-Pinkston, Parker-Meany, Fromme and Mott) contained each of the three treatments listed in Table 7. Mean thrips per 10 plants were significantly higher in the untreated check at 1-2 true leaves, 5.0, than the insecticide plots. However, there were no differences observed among any of the insecticide treatments among these three locations at 3-4 true leaves for mean thrips or aphids.

Table 7. Mean Number of Thrips and (4 Locations, Texas). 2005

Treatment	Rate	Mean Number per 10 Plants			
		Thrips		Aphids	
		1-2 TL <sup>1</sup>	3-4 TL	1-2 TL	3-4 TL
Check		5.0 a	23.1	4.5	3.2
Gaucha Grande	12.8 fl oz/cwt	1.3 b	16.4	9.9	5.5
Temik	3.5 lbs/ac	0.6 b	15.3	8.3	6.6
P>F		0.0207	0.5252	0.7489	0.7697

<sup>1</sup> Means followed by the same letter are not significantly different at 0.05 (Tukey's).

There were no differences in mean visual ratings or yields among treatments in this data set (Table 8).

Table 8. Mean Visual and Yield for (4 Locations, Texas). 2005

<b>Treatment</b>	<b>Rate</b>	<b>Visual Rating</b>	<b>Yield</b>
Check		2.56 a	671
Gaucho Grande	12.8 fl oz/cwt	1.80 b	750
Temik	3.5 lbs/ac	1.67 b	778
P>F		0.0473	0.4306

<sup>†</sup> Visual Damage Rating using 1-5 visual, where 1=No damage to 3=Severe Plant Damage. Visual rating performed at 3-4 True Leaf.

### **Conclusions**

Cruiser, Gaucho Grande, and Temik provided effective control of early season thrips in all of these trials. Control lasted up to the 3-4 true leaf stage or about 28 days after planting. Greater differences between the check and the seed treatments and Temik were observed at 1-2 true leaves compared to 3-4 true leaves for thrips management. Aphid levels were generally very light and variable among these trials and no differences were observed between treatments in aphid levels.

The untreated check had mean higher visual damage ratings compared to the other treatments at 3-4 true leaves which demonstrates that all treatments are providing crop protection up through that point of cotton's development than the check. Although, not always significant, yields were greater numerically in the insecticide treatments than the check. This demonstrates that there could be a potential yield benefit when using cotton seed treatments or soil applied insecticides such as Temik, at-plant.

Finally, no significant yield differences were observed between the two seed treatments, Cruiser and Gaucho Grande across the five locations that contained those in this analysis.