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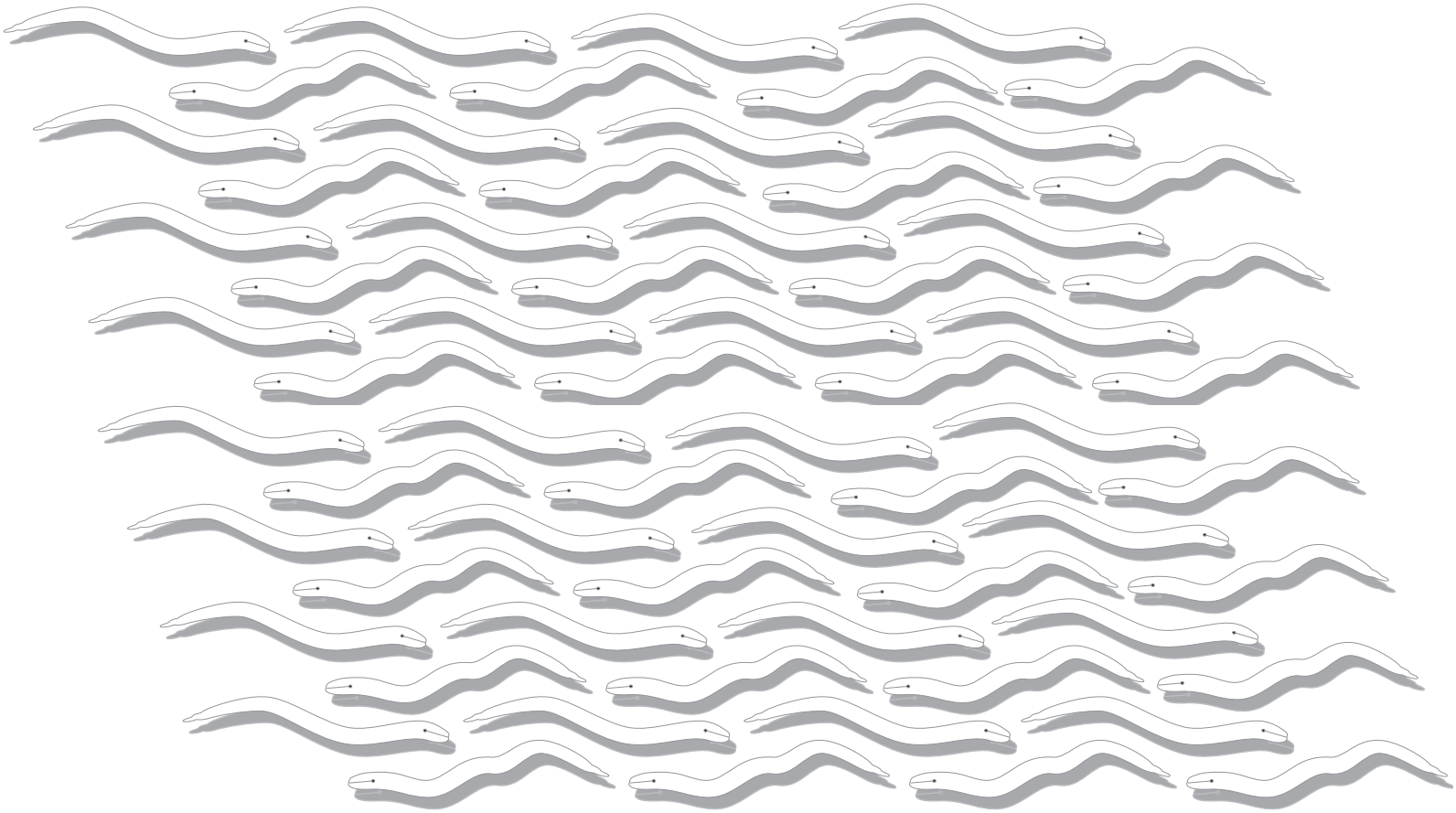
Nematode Management Investigations

in Mississippi, 2006



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Nematode Management Investigations in Mississippi, 2006

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Nematode Management Investigations in Mississippi, 2006

Introduction

This summary of 2006 nematode trials on cotton and soybeans was prepared for industry cooperators, colleagues at other universities, and other interested persons. The information presented is not an endorsement or recommendation. This information is intended for private use and may not be reproduced without permission.

Trade names are used throughout this report for clarity, except where they are unavailable. A list of all chemicals used in this research — including trade, common, and chemical names when available — and company sources are included in the Appendix. Nematicide rates are expressed as formulated rate per acre as suggested by manufacturers.

Data presented in this report were statistically analyzed using the Statistical Analysis System (SAS Institute Inc., Cary, N.C.). Data were subjected to ANOVA appropriate for the experimental design used, and means were separated using the least significant difference test. All statistical tests were performed at the 5% level of significance.

Single-Rate Applications. Temik 15G was applied at planting in the seed furrow with a Case 900 Early Riser planter equipped with a granular chemical applicator.

Telone II was applied with a modified John Deere ripper-hipper. A CO_2-charged system was used to propel the fumigant through flow regulators mounted on stainless steel delivery tubes attached to the trailing edge of forward-swept chisels. Rows were immediately hipped with disk-hillers to seal and prevent rapid loss of the fumigant.

Gaucho was added to the seed before planting by Gustafson at their recommended rates.

Vydate C-LV was applied as a foliar spray at the 6th-true-leaf stage and again 14 days later or other specified dates. Vydate C-LV was applied with a CO_2-charged backpack field plot spray system using two 8003 flat fan nozzles spaced over each row at 30 psi.

Nematode Counts. For most tests, population densities of plant-parasitic nematodes were determined at planting and at monthly intervals for the entire growing season. Ten soil cores, 1 inch in diameter and 8 inches deep, were collected from the two center rows of each plot in a systematic randomized sampling pattern. Cores from each plot were thoroughly mixed, and a 250-cubic-centimeter subsample was collected. Nematodes were extracted using a combination of gravity sieving and centrifugal flotation (sucrose sp. gr. 1.13).

Best Management Practices for the Reniform Nematode on Mississippi Cotton

Objective: The objective of the test was to use the recommended nematode management practices for the management of the reniform nematode on cotton. Gaucho Grande seed treatment, Temik 15G, and Vydate C-LV were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

Temik 15G was applied at planting in the seed furrow or as a side-dress treatment to plants that were in the 10th-true-leaf growth stage. In-furrow Temik 15G was applied at 5 pounds per acre. The side-dress treatment was 5 pounds per acre in combination with a 5-pound-per-acre, side-dress rate. Bayer CropScience applied the Gaucho Grande seed treatment to the seed.

Temik 15G in-furrow treatments were applied with a Case 900 Early Riser planter equipped with granular chemical applicators. Side-dress applications of Temik 15G were placed approximately 6 inches deep and 8 inches on each side of the row with rolling coulters.

Vydate C-LV was applied as a foliar spray at the 6th-true-leaf stage and again 14 days later. Vydate C-LV was applied with a CO_2-charged backpack field plot spray system. A total volume of 10 gallons per acre was applied through two 8003 flat fan nozzles spaced over each row at 30 psi.

All plots were treated with Orthene 75S at 4 ounces of formulated product per acre when thrips were detected in any plots.

Cultivar: DP 444 BGRR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

April 24, 2006	Temik 15G applied in-furrow
May 11, 2006	Orthene 75S applied to all treatments
May 18, 2006	Orthene 75S applied to all treatments
June 7, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments
June 13, 2006	Temik 15G side-dress treatment
June 21, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Nematode sample date:
April 25, 2006
May 30, 2006
June 26, 2006
July 25, 2006
September 28, 2006

Results: See Table 1 and Table 2.

Table 1. Best management practices of Gaucho Grande, Temik 15G, and Vydate C-LV on population development of the reniform nematode on DP 444 BGRR cotton.[1]

Treatment	Rate per acre[2]	Application method	*R. reniformis* / 500 cc soil at 0-158 days after planting					Mean[3]
			0	30	59	88	152	
Gaucho Grande 600 FS	12.8 fl. oz/cwt seed	Seed treatment	1,909.2	1,135.2 a	619.2ab	825.6 ab	23,220.0 b	5,541.84
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 3.5 lb	Seed treatment + in-furrow	1,909.2	1,496.4 a	670.8ab	1,032.0 ab	31,579.2 ab	7,337.52
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 5 lb	Seed treatment + in-furrow	1,651.2	516.0 b	361.2ab	1,135.2 ab	35,604.0 a	7,853.52
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 7 lb	Seed treatment + side dress	1,238.4	928.8 a	928.8b	877.2 ab	26,316.0 ab	6,057.84
Gaucho Grande 600 FS + Temik 15G + Temik 15G	12.8 fl. oz/cwt seed + 5 lb + 5 lb	Seed treatment + in-furrow + side dress	1,032.0	464.4 b	258.0a	2,408.0b	23,839.2 ab	5,600.32
Gaucho Grande 600 FS + Temik 15G + Vydate C-LV	12.8 fl. oz/cwt seed + 3.5 lb + 8.5 oz + 8.5 oz	Seed treatment + in-furrow + 6 true leaf + 14 days	1,651.2	1,186.8 a	412.8ab	1,599.6 ab	33,127.2 ab	7,595.52
Gaucho Grande 600 FS + Temik 15G + Vydate C-LV	12.8 fl. oz/cwt seed + 3.5 lb + 11 oz	Seed treatment + in-furrow + 6 true leaf	1,290.0	722.4 b	722.4ab	516.0 a	27,244.8 ab	6,099.12
LSD (P=0.05)			NS	720.09	607.38	1,787.02	11,839.23	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.
[3]Average reniform nematode population density across sample dates.

Table 2. Best management practices of Gaucho Grande, Temik 15G, and Vydate C-LV on the yield of DP 444 BGRR cotton in a field infested with the reniform nematode.[1]

Treatment[2]	Rate per acre[3]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Gaucho Grande 600 FS	12.8 fl. oz/cwt seed	Seed treatment	13.58 bc	2,348.09 bc	
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 3.5 lb	Seed treatment + in-furrow	11.29 c	1,951.90 c	-396.19
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 5 lb	Seed treatment + in-furrow	11.83 c	2,044.55 c	-303.54
Gaucho Grande 600 FS + Temik 15G	12.8 fl. oz/cwt seed + 7 lb	Seed treatment + side dress	13.12 bc	2,267.89 bc	-80.20
Gaucho Grande 600 FS + Temik 15G + Temik 15G	12.8 fl. oz/cwt seed + 5 lb + 5 lb	Seed treatment + in-furrow + side dress	14.85 ab	2,567.27 ab	219.18
Gaucho Grande 600 FS + Temik 15G + Vydate C-LV	12.8 fl. oz/cwt seed + 3.5 lb + 8.5 oz + 8.5 oz	Seed treatment + in-furrow + 6 true leaf + 14 days	16.74 a	2,892.94 a	544.85
Gaucho Grande 600 FS + Temik 15G + Vydate C-LV	12.8 fl. oz/cwt seed + 3.5 lb + 11 oz	Seed treatment + in-furrow + 6 true leaf	14.02 bc	2,424.15 b	76.06
LSD (P=0.05)			2.11	364.94	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Temik 15G was applied as a side dress treatment on June 27, 2005.
[3]Rates calculated are based on 38-inch row spacing.

Reniform Nematode Management with Gaucho Grande, Temik 15G, and EXP 3 Experimental Seed Treatment

Objective: Gaucho Grande, Temik 15G, and the experimental seed Treatment EXP 3 were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

Temik 15G was applied at planting in the seed furrow at 5 pounds per acre with a Case 900 Early Riser planter equipped with granular chemical applicators. Bayer CropScience applied the seed treatments to the seeds.

All plots were treated with Orthene 75S at 4 ounces of formulated product per acre when thrips were detected in any plots.

Cultivar: DP 444 BGRR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

April 24, 2006	Temik 15G applied in-furrow
May 11, 2006	Orthene 75S applied to all treatments
May 18, 2006	Orthene 75S applied to all treatments

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Nematode sample date:
April 25, 2006
May 30, 2006
June 26, 2006
July 25, 2006
September 28, 2006

Harvest date: September 28, 2006

Results: See Table 3 and Table 4.

Table 3. Effect of Temik 15G, Gaucho Grande, and Exp3 seed treatment on population development of the reniform nematode on DP 444 BGRR cotton.[1]

Treatment	Rate per acre[2]	Application method	*R. reniformis* / 500 cc soil at 0-158 days after planting					Mean[3]
			0	30	59	88	152	
Untreated			2,631.6 ab	1,393.2	1,290.0 a	877.2 ab	17,750.40	4,788.48 b
Gaucho Grande 600 FS	0.375 mg A/seed	Seed treatment	980.4 b	670.8	361.2 a	412.8 a	16,150.80	3,715.20 ab
Gaucho Grande 600 FS + Test cpd. nematicide	0.375 mg A/seed	Seed treatment	4,592.4 a	1,909.2	1,341.6 ab	1,083.6 ab	20,124.00	5,810.16 ab
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 250g A/100 kg	Seed treatment	3,199.2 ab	877.2	567.6 a	1,032.6 ab	12,693.60	3,673.92 a
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 375 ga /100 kg	Seed treatment	3,715.2 a	1,548.0	1,444.8 b	774.0 ab	14,190.00	4,334.40 ab
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 500 g A/100 kg	Seed treatment	3,508.8 a	1,393.2	825.6 a	1,341.6 b	14,241.60	4,262.16 ab
BCSTON 02100602 600SC + L1505-A 500 FL	0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	3,354.0 a	1,032.0	722.4 a	412.8 a	17,956.80	4,695.60 ab
Temik 15G	5 lb	In-furrow	2,115.6 ab	1,341.6	1,135.2 a	1,444.8 b	16,598.00	4,527.04 ab
LSD (P=0.05)			2,226.92	NS	840.09	853.74	NS	2,092.85

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.
[3]Average reniform nematode population density across sample dates.

Table 4. Effect of Temik 15G, Gaucho Grande 600 FS, and Exp3 seed treatments on the yield of DP 444 BGRR cotton in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Untreated			12.47 a	2,144.97 a	
Gaucho Grande 600 FS	0.375 mg A/seed	Seed treatment	16.49 ab	2,837.25 ab	692.28
Gaucho Grande 600 FS + Test cpd. nematicide	0.375 mg A/seed	Seed treatment	13.08 ab	2,249.57 ab	104.6
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 250 g A/100 kg	Seed treatment	12.81 ab	2,203.46 ab	58.49
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 375 ga/100 kg	Seed treatment	15.26 ab	2,625.99 ab	481.02
Gaucho Grande 600 FS + Exp 3 382 ga/L	0.375 mg A/seed + 500 g A/100 kg	Seed treatment	14.72 ab	2,532.40 ab	387.43
BCSTON 02100602 600SC + L1505-A 500 FL	0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	17.36 b	2,986.58 b	841.6
Temik 15G	5 lb	In-furrow	15.54 ab	2,673.47 ab	528.5
LSD (P=0.05)			4.10	705.58	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.

Reniform Nematode Management with Temik 15G, Avicta Complete Pak, and the Experimental Nematicide KC 791230

Objective: Temik 15G, Avicta Complete Pac, and the experimental nematicide KC 791230 were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

Bayer Crop Science coated cottonseeds of DP 444 BGRR with Gaucho Grande 600FS 0.375 MG A/seed. Temik 15G and KC 791230 were applied at planting in the seed furrow. Temik 15G was also applied as a side-dress treatment to plants that were in the 10th-true-leaf growth stage. In-furrow, both Temik 15G and KC 791230 were applied at 5 pounds per acre. The Temik 15G side-dress treatment rate was 5 pounds per acre in combination with a 5-pound-per-acre, in-furrow rate applied at planting.

Temik 15G and KC 791230 in-furrow treatments were applied with a Case 900 Early Riser planter equipped with granular chemical applicators. Side-dress applications were placed approximately 6 inches deep and 8 inches on each side of the row with rolling coulters.

All plots were treated with Orthene 75S at 4 ounces of formulated product per acre when thrips were detected in any plots.

Cultivar: DP 444 BGRR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

April 24, 2006	Temik 15G and KC 791230 applied in-furrow
May 11, 2006	Orthene 75S applied to all treatments
May 18, 2006	Orthene 75S applied to all treatments
June 13, 2006	Temik 15G side-dress treatment

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Nematode sample date:
April 25, 2006
June 26, 2006
July 25, 2006
September 29, 2006

Harvest date: September 29, 2006

Results: See Table 5 and Table 6.

Table 5. Effect of Temik 15G, Avicta Complete Pak, and the experimental nematicide KC 791230 on population development of the reniform nematode on DP 444 BGRR cotton.[1]

Treatment[2]	Rate per acre[3]	Application method	*R. reniformis* / 500 cc soil at 0-158 days after planting				Mean[3]
			0	59	88	152	
Untreated			3,096	4,747	5,986	14,551	7,095
Temik 15G	5 lb	In-furrow	1,806	1,496	4,902	14,551	5,689
KC 791230	5 lb	In-furrow	1,393	1,909	4,334	24,458	8,024
Temik 15G	5 lb	In-furrow	1,806	1,342	4,025	20,434	6,902
+ Temik 15G	+ 5 lb	+ side dress					
Dynasty CST 125FS	0.03 mg ai/seed	Seed treatment	1,858	3,354	5,177	22,601	8,247
+ Cruiser FS	+ 0.34 mg ai/seed						
+ Systhane 50 WP	+ 21 g ai/100 kg seed						
+ Avicta	+ 0.15 mg ai/seed						
LSD (P=0.05)			NS	NS	NS	NS	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Temik 15G was applied as a side-dress treatment on June 13, 2006
[3]Rates calculated are based on 38-inch row spacing.
[4]Average reniform nematode population density across sample dates.

Table 6. Effect of Temik 15G, Avicta Complete Pak, and the experimental nematicide KC 791230 on seed cotton yield of DP 444 BGRR in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Untreated			9.22	1,593.7	0
Temik 15G	5 lb	In-furrow	15.30	2,644.7	1,051
KC 791230	5 lb	In-furrow	14.31	2,473.2	879.5
Temik 15G	5 lb	In-furrow	17.72	3,062.3	1,468.6
+ Temik 15G	+ 5 lb	+ side dress			
Dynasty CST 125FS	0.03 mg ai/seed	Seed treatment	13.00	2,245.1	651.4
+ Cruiser FS	+ 0.34 mg ai/seed				
+ Systhane 50 WP	+ 21 g ai/100 kg seed				
+ Avicta	+ 0.15 mg ai/seed				
LSD (P=0.05)			NS	NS	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2] Rates calculated are based on 38-inch row spacing.

Effect of Avicta Complete Pac and Avicta Prepack Variants on the Management of the Reniform Nematode

Objective: Avicta Complete Pac and Avicta prepack variants, along with Temik 15G and Vydate C-LV, were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

Cottonseed of DP 449 BG/RR was treated with Cruiser 5 FS, 0.34 Mga/seed; Dynasty ST 125 FS, 0.03 Mga/seed; and/or Abamectin, 0.12 Mga/seed by Syngenta. Temik 15G was applied at planting in the seed furrow at a formulated rates of 5 pounds per acre.

Temik 15G was applied with a Case 900 Early Riser planter equipped with granular chemical applicators. All plants received a foliar spray of Orthene 75S at 4 ounces per acre when early-season insects were detected in any plot.

Cultivar: DP 449 BG/RR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

April 24, 2006	Temik 15G applied in-furrow
May 11, 2006	Orthene 75S applied to all treatments
May 18, 2006	Orthene 75S applied to all treatments
June 7, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments
June 21, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Nematode sample date:
April 25, 2006
May 30, 2006
June 26, 2006
July 25, 2006
September 28, 2006

Harvest date: September 28, 2006

Results: See Table 7 and Table 8.

Table 7. Effect of Avicta Complete Pac and Avicta Prepack Variants on population development of the reniform nematode on ST 4892 BG/RR cotton.[1]

Treatment	Rate per acre[2]	Application method	*R. reniformis* / 500 cc soil at 0-158 days after planting					Mean[3]
			0	30	59	88	152	
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed	Seed treatment	1,634.0	412.8	1,444.8	1,496.4	27,967.2	6,591.04
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed	Seed treatment	1,135.2	1,806.0	1,548.0	1,651.2	32,198.4	7,667.76
A14905B 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	877.2	877.2	1,290.0	825.6	19,814.4	4,736.88
A14905E 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	1,186.8	516.0	1,186.8	825.6	24,991.6	5,741.36
A14905F 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	2,373.6	1,186.8	1,238.4	739.6	27,864.0	6,680.48
A14905G 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	1,496.4	1,341.6	1,238.4	3,250.8	32,508.0	7,967.04
A14905H 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	1,444.8	1,135.2	1,754.4	2,476.8	24,148.8	6,192.00
A14905A 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	1,462.0	1,444.8	1,960.8	1,702.8	28,792.8	7,072.64
A14905 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	619.2	619.2	1,651.2	1,651.2	24,148.8	5,737.92
Dynasty CST 125FS + Temik 15G	0.03 mg ai/seed + 5 lb	Seed treatment + in-furrow	1,599.6	1,290.0	1,548.0	2,115.6	25,920.4	6,494.72
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta + Vydate C-LV	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed + 8.5 oz + 8.5 oz	Seed treatment + true leaf + 14 days	1,341.6	1,393.2	774.0	1,857.6	32,198.4	7,512.96
Dynasty CST 125FS + Temik 15G + Vydate C-LV	0.03 mg ai/seed + 5 lb + 8.5 oz + 8.5 oz	Seed treatment + in-furrow + 6 true leaf + 14 days	1,238.4	1,496.4	2,926.3	1,806.0	14,860.8	4,522.21
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta + Temik 15G	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed + 5 lb	Seed treatment + side dress	946.0	2,115.6	928.8	3,663.6	31,269.6	7,784.72
Dynasty CST 125FS + Temik 15G + Temik 15G	0.03 mg ai/seed + 5 lb + 5 lb	Seed treatment + in-furrow + side dress	1,341.6	1,444.8	1,290.0	3,715.2	29,412.0	7,440.72
LSD (P=0.05)			1,347.7	1,316.5	1,192.17	1,852.9	14,835.8	2,938.81

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.
[3]Nematodes averaged across the growing season.

Table 8. Effect of Avicta Complete Pac and Prepack Variants on the yield of DP 444 BR cotton in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed	Seed treatment	17.64 ab	3,048.85 ab	—
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed	Seed treatment	18.10 ab	3,128.71 ab	79.86
A14905B 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	18.84 ab	3,255.94 ab	207.09
A14905E 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	19.46 a	3,364.49 a	315.64
A14905F 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	17.30 ab	2,991.12 ab	-57.73
A14905G 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	17.50 ab	3,024.31 ab	-24.54
A14905H 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	20.18 a	3,488.95 a	44.0.10
A14905A 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	18.84 ab	3,255.94 ab	207.09
A14905 533.15 FS	589.6 g ai/100 kg seed	Seed treatment	15.48 b	2,675.83 b	-373.02
Dynasty CST 125FS + Temik 15G	0.03 mg ai/seed + 5 lb	Seed treatment + in-furrow	17.01 ab	2,940.65 ab	-108.20
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta + Vydate C-LV	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed + 8.5 oz + 8.5 oz	Seed treatment + true leaf + 14 days	20.35 a	3,518.33 a	469.48
Dynasty CST 125FS + Temik 15G + Vydate C-LV	0.03 mg ai/seed + 5 lb + 8.5 oz + 8.5 oz	Seed treatment + in-furrow + 6 true leaf + 14 days	17.22 ab	2,976.60 ab	-72.25
Dynasty CST 125FS + Cruiser FS + Systhane 50 WP + Avicta + Temik 15G	0.03 mg ai/seed + 0.34 mg ai/seed + 21 g ai/100 kg seed + 0.15 mg ai/seed + 5 lb	Seed treatment + side dress	17.75 ab	3,067.87 ab	19.02
Dynasty CST 125FS + Temik 15G + Temik 15G	0.03 mg ai/seed + 5 lb + 5 lb	Seed treatment + in-furrow + side dress	19.37 a	3,347.90 a	299.05
LSD (P=0.05)			2.16	374.87	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.

Effect of Syngenta Experimental Compounds on Reniform Nematode Management on Soybean

Objective: Syngenta experimental seed treatments, along with Temik 15G, were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established soybean production system.

Soybean seed was treated by Syngenta with Cruiser 5 FS at 50 gallons of active ingredient per l00 kilograms of seed and with Apron Maxx RFC at 6.25 gallons of active ingredient per l00 kilograms of seed. Temik 15G was applied at planting in the seed furrow at a formulated rates of 5 pounds per acre.

Temik 15G was applied with a Case 900 Early Riser planter equipped with granular chemical applicators. All plants received a foliar spray of Orthene 75S at 4 ounces per acre when early-season insects were detected in any plot.

Cultivar: ST 4892 BG/RR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

May 9, 2006	Temik 15G applied in-furrow
May 11, 2006	Orthene applied to all plots

Planting date: May 9, 2006

Seed rate: 400 seeds per row

Nematode sample date:
May 22, 2006
June 26, 2006
July 25, 2006
September 27, 2006

Harvest date: October 4, 2006

Results: See Table 9 and Table 10.

Table 9. Effect of Syngenta experimental compounds on population development of the reniform nematode.[1]

Treatment	Rate per acre[2]	Application	*R. reniformis* / 500 cc soil at 0-126 days after planting				Mean[3]
			0	30	64	126	
Cruiser 5 FS + Apron Maxx RFC	50 ga/100 kg seed + 6.25 ga/100 kg seed	Seed treatment	1,857.6	2,322.0	1,135.2	3,457.2	2,193.0
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.15 mg A/seed	Seed treatment	2,838.0	3,405.6	980.4	3,663.6	2,721.9
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.2 mg A/seed	Seed treatment	2,992.8	3,096.0	1,444.8	4,386.0	2,979.9
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.25 mg A/seed	Seed treatment	3,508.8	3,457.2	1,135.2	3,250.8	2,838.0
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.3 mg A/seed	Seed treatment	2,734.8	2,184.4	1,083.6	4,334.4	2,584.3
Cruiser 5 FS + Apron Maxx RFC + A10466	50 ga/100 kg seed + 6.25 ga/100 kg seed + 20 ga/100 kg seed	Seed treatment	3,044.4	2,322.0	877.2	4,953.6	2,799.3
Cruiser 5 FS + Apron Maxx RFC + A14006 + A10466	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.15 mg A/seed + 20 ga/100 kg seed	Seed treatment	2,838.0	1,943.6	670.8	4,231.2	2,420.9
Cruiser 5 FS + Apron Maxx RFC + Temik 15G	50 ga/100 kg seed + 6.25 ga/100 kg seed + 5 lb/A	Seed treatment + in-furrow	2,528.4	2,425.2	1,032.0	3,457.2	2,360.7
LSD (P=0.05)			NS	NS	NS	NS	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.
[3]Average reniform nematode population across all sample dates.

Table 10. Effect of Syngenta experimental seed treatments on soybean yield in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Soybean yield	Soybean yield	Yield over control
			lb/plot	*lb/A*	*bu/A*
Cruiser 5 FS + Apron Maxx RFC	50 ga/100 kg seed + 6.25 ga/100 kg seed	Seed treatment	6.7	19.13	—
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.15 mg A/seed	Seed treatment	7.1	23.93	4.8
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.2 mg A/seed	Seed treatment	8.3	26.08	6.95
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.25 mg A/seed	Seed treatment	6.3	21.24	2.11
Cruiser 5 FS + Apron Maxx RFC + A14006	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.3 mg A/seed	Seed treatment	6.7	19.07	-0.06
Cruiser 5 FS + Apron Maxx RFC + A10466	50 ga/100 kg seed + 6.25 ga/100 kg seed + 20 ga/100 kg seed	Seed treatment	6.8	20.92	1.79
Cruiser 5 FS + Apron Maxx RFC + A14006 + A10466	50 ga/100 kg seed + 6.25 ga/100 kg seed + 0.15 mg A/seed + 20 ga/100 kg seed	Seed treatment	7.1	21.74	2.61
Cruiser 5 FS + Apron Maxx RFC + Temik 15G	50 ga/100 kg seed + 6.25 ga/100 kg seed + 5 lb/A	Seed treatment + in-furrow	6.3	18.72	-0.41
LSD (P=0.05)			NS	NS	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.

Effect of Vydate C-LV in Combination with Avicta Complete Pac and Temik 15G on the Management of the Reniform Nematode

Objective: Avicta Complete Pac, Temik 15G, and Vydate C-LV were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

Cottonseed of DP 449 BG/RR was treated by Syngenta with Cruiser 5 FS, 0.34 Mga/seed; Dynasty CST 125 FS, 0.03 Mga/seed; and/or Abamectin, 0.12 Mga/seed. Temik 15G was applied at planting in the seed furrow at a formulated rates of 5 pounds per acre.

Temik 15G was applied with a Case 900 Early Riser planter equipped with granular chemical applicators. All plants received a foliar spray of Orthene 75S at 4 ounces per acre when early-season insects were detected in any plot.

Vydate C-LV was applied as a foliar spray at the 6th-true-leaf stage and again 14 days later. Vydate C-LV was applied with a CO_2-charged backpack field plot spray system. A total volume of 10 gallons per acre was applied through two 8003 flat fan nozzles spaced over each row at 30 psi.

Cultivar: DP 449 BG/RR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

April 24, 2006	Temik 15G applied in-furrow
May 11, 2006	Orthene 75S applied to all treatments
May 18, 2006	Orthene 75S applied to all treatments
June 7, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments
June 21, 2006	Vydate C-LV applied to designated plots
	Orthene 75S applied to all treatments

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Nematode sample date:
April 25, 2006
May 30, 2006
June 26, 2006
July 25, 2006
September 28, 2006

Harvest date: September 28, 2006

Results: See Table 11 and Table 12

Table 11. Effect of Vydate C-LV in combination with Avicta Complete Pac, Vydate C-LV, and Temik 15G on population development of the reniform nematode on DP 449 BG/RR cotton.[1]

Treatment[2]	Rate per acre[3]	Application method	*R. reniformis* / 500cc soil at 0-158 days after planting					Mean[4]
			0	28	60	89	158	
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	2,043	1,806	452	3,612	2,637	2,109.9
Dynasty CST 125FS + Cruiser 5 FS + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.5 lb ai	Seed treatment + 6 true leaf	2,301	2,129	1,226	3,806	2,962	2,484.3
Dynasty CST 125FS + Cruiser 5 FS + Vydate C-LV + Vydate C-LV	32 ga/100 kg seed + 0.25 lb ai + 0.25 lb ai	Seed treatment + 6 true leaf + 14 days	3,161	2,451	710	7,353	2,938	3,322.3
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	2,451	1,806	839	3,870	2,907	2,374.6
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 0.5 lb ai	Seed treatment + 6 true leaf	3,483	1,935	1,032	5,805	2,920	3,035.1
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Vydate C-LV + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 0.25 lb ai + 0.25 lb ai	Seed treatment + 6 true leaf + 14 days	2,344	1,097	387	3,548	2,972	2,069.3
Temik 15G	5 lb	In-furrow	3,806	2,129	323	4,515	3,012	2,756.6
Temik 15G + Vydate C-LV	5 lb + 0.5 lb ai	In-furrow + 6 true leaf	2,903	1,677	645	4,193	3,015	2,486.4
Temik 15G + Vydate C-LV + Vydate C-LV	5 lb + 0.25 lb ai + 0.25 lb ai	In-furrow + 6 true leaf + 14 days	2,903	1,613	516	4,816	3,027	2,574.8
Temik 15G + Vydate C-LV + Vydate C-LV	3.5 lb + 0.25 lb ai + 0.25 lb ai	In-furrow + 6 true leaf + 14 days	2,903	1,484	710	6,192	3,092	2,876
Dynasty CST 125FS	32 ga/100 kg seed	Seed treatment	2,580	1,405	774	4,494	2,993	2,639.5
LSD (P=0.05)			NS	NS	NS	NS	NS	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Vydate C-LV was applied at the 6 true leaf stage and a second application 14 days later on June 7 and June 21, respectively.
[3]Rates calculated are based on 38-inch row spacing.
[4]Nematodes averaged across the growing season.

Table 12. Effect of Vydate C-LV in combination with Avicta Complete Pac, Vydate C-LV, and Temik 15G on the yield of DP 449 BG/RR cotton in a field infested with the reniform nematode.[1]

Treatment[2]	Rate per acre[3]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	11.82 ab	2044.6 ab	0
Dynasty CST 125FS + Cruiser 5 FS + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.5 lb ai	Seed treatment + 6 true leaf	13.28 b	2,295.5 b	250.9
Dynasty CST 125FS + Cruiser 5 FS + Vydate C-LV + Vydate C-LV	32 ga/100 kg seed + 0.25 lb ai + 0.25 lb ai	Seed treatment + 6 true leaf + 14 days	13.81 b	2,387.2 ab	342.6
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	17.60 a	3,042.3 a	997.7
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 0.5 lb ai	Seed treatment + 6 true leaf	17.16 a	2,965.5 a	920.9
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Vydate C-LV + Vydate C-LV	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 0.25 lb ai + 0.25 lb ai	Seed treatment + 6 true leaf + 14 days	16.92 a	2,924.1 a	879.5
Temik 15G	5 lb	In-furrow	14.64 b	2,530.6 b	486.0
Temik 15G + Vydate C-LV	5 lb + 0.5 lb ai	In-furrow + 6 true leaf	13.78 ab	2,382.7 ab	338.1
Temik 15G + Vydate C-LV + Vydate C-LV	5 lb + 0.25 lb ai + 0.25 lb ai	In-furrow + 6 true leaf + 14 days	14.31 ab	2,473.2 ab	428.6
Temik 15G + Vydate C-LV + Vydate C-LV	3.5 lb + 0.25 lb ai + 0.25 lb ai	In-furrow + 6 true leaf + 14 days	14.86 a	2,568.0 a	523.4
Dynasty CST 125FS	32 ga/100 kg seed	Seed treatment	8.29 c	1,432.3 c	-612.0
LSD (P=0.05)			3.57	617.7	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Vydate C-LV was applied at the 6 true leaf stage on and a second application 14 days later on June 7 and June 21, respectively.
[3]Rates calculated are based on 38-inch row spacing.

Management of the Reniform Nematode with Telone II

Objective: Telone II, Avicta Complete Pac, and Temik 15G were examined at the R.R. Foil Plant Science Research Facility at Mississippi State University for the management of the reniform nematode (*Rotylenchulus reniformis*) in an established cotton production system.

A preplanting application of Telone II at 3 gallons per acre was compared with Avicta Complete Pac, the standard at-planting application of Temik 15G at 3.5 and 5 pounds per acre, and a Temik 15G 5-pound-per-acre, at-plant application followed with a Temik 15G 5-pound-per-acre, side-dress treatment. Di-Syston 8EC was included as an insecticide-treated control. All plots were treated with Orthene 75S at 4 ounces of formulated product per acre when thrips were detected in any plots.

Telone II was applied with a modified John Deere ripper hipper. A CO_2-charged system was used to propel the fumigant through flow regulators mounted on stainless steel delivery tubes attached to the trailing edge of forward-swept chisels. The fumigant was injected 16 inches deep 14 days prior to planting with one chisel per row. Rows were immediately hipped with disk hillers to seal and prevent rapid loss of the fumigant. All remaining rows were subsoiled 16 inches deep and hipped without applying the fumigant. Temik 15G was applied at planting with a Case 900 Early Riser planter equipped with granular chemical applicators. Side-dress applications were placed approximately 6 inches deep and 8 inches on each side of the row with rolling coulters.

Cultivar: DP 449BGRR

Experimental design: Randomized complete block with five replications.

Plot design: Four-row plots; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

May 15, 2006	Telone II injected
May 30, 2006	Temik 15G applied in-furrow
June 18, 2006	Orthene 75S applied to all treatments
June 21, 2006	Orthene 75S applied to all treatments
June 26, 2006	Temik 15G side-dress application

Planting date: May 15, 2006

Seed rate: 200 seeds per row

Nematode sample date:
May 30**,** 2006
June 26, 2006
July 25, 2006
September 26, 2006

Harvest date: September 28, 2006

Results: See Table 13 and Table 14.

Table 13. Effect of Telone II, Avicta Complete Pac, and Temik 15G on population development of the reniform nematode on DP449 BG/RR cotton.[1]

Treatment[2]	Rate per acre[3]	Application method	*R. reniformis* / 500cc soil at 0-117 days after planting				Mean[4]
			0	27	56	117	
Untreated			6,192.0	1,651.0	6,243.6	17,028.0	7,778.7
Telone II + Temik 15G	3 gal + 3.5 lb	Inject 14 days preplant + in-furrow	2,218.8	1,754.4	3,921.6	8,101.2	3,999.0
Temik 15G	5 lb	In-furrow	4,884.8	1,496.4	3,560.4	5,496.6	3,852.8
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	4,231.2	1,960.8	6,088.8	16,615.2	7,224.0
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	7,585.2	877.2	7,120.8	17,905.2	8,372.1
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Telone II	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 3 gal	Inject 14 days preplant + Seed treatment	1,393.2	1,118.0	4,747.20	13,106.4	5,091.2
Temik 15G + Temik 15G	5 lb + 5 lb	In-furrow + side dress	4,540.8	1,909.2	5,934.0	16,546.4	7,232.6
LSD (P=0.05)			NS	NS	NS	NS	NS

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Temik 15G side-dress treatment was applied on June 26, 2006.
[3]Rates calculated are based on 38-inch row spacing.
[4]Nematodes averaged across the growing season.

Table 14. Effect of Telone II, Avicta Complete Pac, and Temik 15G on the yield of DP 449 BG/RR cotton in a field infested with the reniform nematode.[1]

Treatment[2]	Rate per acre[3]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Untreated			7.99 c	1367.90 c	0
Telone II + Temik 15G	3 gal + 3.5 lb	Inject 14 days preplant + in-furrow	15.08 a	2589.80 a	1,221.9
Temik 15G	5 lb	In-furrow	9.25 c	1589.12 c	221.23
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	12.89 b	2212.27 b	844.38
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	11.91 b	2045.32 b	677.43
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + Telone II	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 3 gal	Inject 14 days preplant + seed treatment	12.65 b	2173.45 b	805.56
Temik 15G + Temik 15G	5 lb + 5 lb	In-furrow + side dress	13.89 ab	2385.40 ab	1,017.51
LSD (P=0.05)			1.73	298.67	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Temik 15G side-dress treatment was applied on June 26, 2006.
[3]Rates calculated are based on 38-inch row spacing.

Effect of Avicta Complete Pac, Temik 15G, Visible, Worm Tea, and N-Hibit on the Growth of Cotton in a Reniform-Nematode-Infested Field

Objective: Visible, Avicta Complete Pac, N-Hibit, Temik 15G, and Earthworm Tea were examined for their effects on cotton growth, reniform population development, and subsequent yields at the R.R. Foil Plant Science Research Facility at Mississippi State University.

The objectives of this test were to determine if the enhanced root and plant growth provided by these materials would benefit cotton production when used in the presence of the reniform nematode.

The test was conducted in an established cotton production location and naturally infested with the reniform nematode (*Rotylenchulus reniformis*). The enhanced growth effects were compared with an at-planting application of Temik 15G at 5 pounds of formulated product per acre. Visible granular was applied at 5 pounds per acre. N-Hibit was used as a seed treatment at a rate of 3 ounces per hundredweight. Worm tea was applied at 20 gallons per acre. The insecticide Di-Syston 8EC was included as an insecticide treatment with the control at 1 pound of active ingredient per acre. Orthene 75S was applied at 4 ounces of formulated product per acre when thrips were detected in any plots.

Temik 15G and the granular formulation of Visible were applied at planting with a Case 900 Early Riser planter equipped with granular applicators. The earthworm tea was applied as a soil drench calibrated to deliver 20 gallons per acre with a CO_2-charged backpack field plot spray system.

Cultivar: DP 449 BG/RR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots with two row borders; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

May 30, 2006	Visible applied in-furrow
	Temik 15G applied in-furrow
	Avicta-Complete-Pac-treated seed planted
	N-Hibit treated seed planted
	Worm Tea applied in-furrow
June 18, 2006	Orthene 75S applied to all treatments
June 21, 2006	Orthene 75S applied to all treatments
July 18, 2006	Pro-Act applied as a foliar spray

Planting date: May 30, 2006

Seed rate: 200 seeds per row

Nematode sample date:
May 30, 2006
June 26, 2006
July 25, 2006
September 26, 2006

Harvest date: September 28, 2005

Results: See Table 15 and Table 16.

Table 15. Effect of Avicta Complete Pac, Temik 15G, Visible, Worm Tea, and N-Hibit on population development of the reniform nematode on DP 449 BG/RR cotton.[1]

Treatment	Rate per acre[2]	Application method	*R. reniformis* / 500 cc soil at 0-117 days after planting				Mean[3]
			0	27	56	117	
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	464.0	1,599.6	980.4	18,782.4 ab	5,456.7 ab
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	670.8	619.2	928.8	14,138.4 ab	4,089.3 ab
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + N-Hibit + ProAct	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 3 oz/cwt + 1 oz	Seed treatment + seed treatment + foliar	516.0	877.2	1,599.6	21,981.6 a	6,243.6 a
Temik 15G	5 lb	In-furrow	825.6	877.2	1,238.4	14,964.0 ab	4,476.3 ab
Temik 15G + N-Hibit + ProAct	5 lb	In-furrow	1,083.6	1,341.6	2,167.2	17,492.4 ab	5,521.2 ab
N- Hibit + ProAct	3 oz/cwt + 1 oz	Seed treatment + foliar	619.2	1,599.6	774.0	8,823.6 b	2,954.1 b
Visible Granule	5 lb	In-furrow	774.0	980.4	1,135.2	13,209.6 ab	4,024.8 ab
Visible Liquid	1 pt	In-furrow	567.6	825.6	1,393.2	12,280.8 ab	3,766.8 ab
Worm Tea	20 gal	In-furrow	825.6	670.8	722.4	10,371.6 b	3,147.6 ab
Dynasty CST 15 + Cruiser 5 FS + Avicta 4.17 FS + Visible Granule	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 5 lb	Seed treatment + in-furrow	670.80	1,960.8	1,238.4	12,900.0 ab	4,192.5 ab
LSD (P=0.05)			NS	NS	NS	6,955.52	1,910.78

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of significance according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.
[3]Nematodes averaged across the growing season.

Table 16. Effect of Avicta Complete Pac, Temik 15G, Visible, Worm Tea, and N-Hibit on the yield of DP 449 BG/RR cotton in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Dynasty CST 125FS + Cruiser 5 FS	32 ga/100 kg seed + 0.34 mg A/seed	Seed treatment	19.16 a	3,312.6 a	0
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed	Seed treatment	18.26 abc	3,156.4 abc	-156.2
Dynasty CST 125FS + Cruiser 5 FS + Avicta 4.17 FS + N-Hibit + ProAct	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 3 oz/cwt + 1 oz	Seed treatment + seed treatment + foliar	18.92 ab	3,269.8 ab	-42.8
Temik 15G	5 lb	In-furrow	14.06 c	2,430.4 c	-882.2
Temik 15G + N-Hibit + ProAct	5 lb	In-furrow	14.55 bc	2,514.7 bc	-797.9
N- Hibit + ProAct	3 oz/cwt + 1 oz	Seed treatment + foliar	14.96 abc	2,585.3 abc	-727.3
Visible Granule	5 lb	In-furrow	17.55 abc	3,034.0 abc	-298.6
Visible Liquid	1 pt	In-furrow	18.26 abc	3,156.4 abc	-156.2
Worm Tea	20 gal	In-furrow	18.90 ab	3,267.7 ab	-44.9
Dynasty CST 15 + Cruiser 5 FS + Avicta 4.17 FS + Visible Granule	32 ga/100 kg seed + 0.34 mg A/seed + 0.15 mg A/seed + 5 lb	Seed treatment + in-furrow	17.7 abc	3,059.6 abc	-253.0
LSD (P=0.05)			2.81	486.8	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.

Effect of Worm Tea on the Growth of Cotton in a Reniform-Nematode-Infested Field

Objective: Earthworm Tea was examined for its effects on cotton growth, reniform population development and subsequent yields at the R.R. Foil Plant Science Research Facility at Mississippi State University. The objectives of this test were to determine if the enhanced root and plant growth provided would benefit cotton production when used in the presence of the reniform nematode.

The test was conducted in an established cotton production location and naturally infested with the reniform nematode (*Rotylenchulus reniformis*). The insecticide Di-Syston 8EC was included as an insecticide treatment with the control at 1 pound of active ingredient per acre. Orthene 75S was applied at 4 ounces of formulated product per acre when thrips were detected in any plots.

The earthworm tea was applied as a soil drench calibrated to deliver 20 gallons per acre with a CO_2-charged backpack field plot spray system at first bloom and again at full bloom.

Cultivar: DP 449 BG/RR

Experimental design: Randomized complete block with five replications.

Plot design: Two-row plots with two row borders; rows 40 feet long, 38 inches wide; blocks separated by a 20-foot alley.

Application date:

June 18, 2006	Worm Tea applied at first bloom
July 4, 2006	Worm tea applied at full bloom

Planting date: April 24, 2006

Seed rate: 200 seeds per row

Harvest date: September 28, 2005

Results: See Table 17.

Table 17. Effect of Worm Tea on the yield of DP 449 BG/RR cotton in a field infested with the reniform nematode.[1]

Treatment	Rate per acre[2]	Application method	Seed cotton	Seed cotton	Yield over control
			lb/plot	*lb/A*	*lb/A*
Control	—	—	11.62 bc	2,008.60 bc	—
Worm tea	10 gal	First bloom	13.31 ab	2,300.73 ab	292.13
+ Water	+ 30 gal				
Worm tea	10 gal	First bloom	12.16 abc	2,101.05 abc	9,2348
+ Water	+ 30 gal	+ full bloom			
+ Worm tea	+ 10 gal				
Worm tea	20 gal	First bloom	14.27 a	2,465.81 a	457.21
+ Water	+ 30 gal				
Worm tea	20 gal	First bloom	10.10 c	1,745.86 c	-262.71
+ Water	+ 30 gal	+ full bloom			
+ Worm tea	+ 10 gal				
Worm tea	20 gal	First bloom	14.05 a	2,429.07 a	420.47
LSD (P=0.05)			2.28	394	

[1]Data are means of five replications. Means within a column not followed by the same letter are significantly different at the 0.05 level of probability according to the least significant difference test.
[2]Rates calculated are based on 38-inch row spacing.

Appendix Table 1. List of chemicals used in the nematode management studies for 2006.

Trade name	Formulation	Company	Common Name	Scientific description
Avicta Complete Pac	—	Syngenta	Abamectin	*Streptomyces avermitilis*
Di-Syston	8EC	Bayer Corporation	Disulfoton	O, O-Diethyl S-[2-(ethylthio)ethyl] phosphordodithioate
Cruiser	5 FS	Syngenta	Thiamethoxam	
Telone II	—	Dow AgriSciences	—	1, 3-dichloropropene
Temik	15G	Rhone-Poulenc	Aldicarb	[2-methyl-2-(methylthio) propionaldehyde O-(methyl carbamoy)oxime]
Orthene	75S	Valent	Acephate	O, S-Dimethyl acetyl phosphoramidothioate
Vydate	C-LV	DuPont	Oxamyl	[Methyl N'N'-dimethyl-N-[(methyl carbamoy)oxy]-1-thioxamimidate]
Worm Tea	—	Church Hill Worm Farm	—	Leachates from Worm Castings
Visible	—	AgTime Company, Inc.	—	Secondary Alcohol ethoxylates
KC791230	—	Bayer	—	Unknown
Gaucho	600	Bayer	Imidacloprid	1-[(6-Chloro-3-pyridinyl) methyl]-N-nitro-2-imidazdidinimine

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