

VII. EVALUATION OF SEED TREATMENTS FOR NEMATODE CONTROL IN COTTON  
(Kenny Edwards Farm, Branchville, VA)

- A. PURPOSE: To compare the efficacy and benefits of seed and in-furrow treatments for control of nematodes in cotton production
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways  
Two, 30-ft rows per plot with 36 in. row spacing
  2. Seeding rate of four seed/row ft
- C. APPLICATION OF TREATMENTS: In-furrow treatments (F) were applied to the seed furrow at planting. Seed treatments (S) were applied to seed by Bayer CropScience.
- D. TREATMENT AND RATE (MAIN PLOTS): ai = active ingredient
1. Untreated check
  2. Gaucho 600FS 1.32 oz ai/100,000 (S)
  3. Gaucho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S)
  4. Gaucho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S)
  5. Gaucho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S)
  6. BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S)
  7. Temik 15G 0.75 lb ai/A (F)
- E. VARIETY (SUB-PLOTS): two rows of each variety
1. ST5599BR (Partially resistant to southern root knot)
  2. FM989BR (Susceptible to southern root knot)
- F. ADDITIONAL INFORMATION:
1. Location: Kenny Edwards farm, The Hall Rd., Branchville, VA
  2. Crop history: Cotton 2004-2001
  3. Planting date: 9 May 2005
  4. Herbicide:
    - Pre-emergence - Cotoran 1 pt + Prowl 1 pt/A (12 May)
    - Post-emergence - Roundup Ultra Max 22 fl oz/A (9 Jun)
    - Cotton Pro 1 pt + Roundup Ultra Max 1 pt/A under hood (1 Jul)
  5. Insecticide: Orthene 97S 6 oz/A (9 Jun)
  6. Cultivation: 30 Jun
  7. Growth regulator: Pix 10 fl oz (1 Jul)
  8. Defoliant/Boll opener: Finish 24 fl oz + Def 6 oz (30 Sep)
  9. Fertilization: 350 lb 6-18-36 (27 Apr), 350 lb 17-0-10 (15 Jun)
  10. Harvest date: 20 Oct 2005

Table 19. Effect of treatment and cultivar selection on emergence of cotton.

Treatment and rate <sup>1</sup>	Plants/ft (Jun 15) <sup>2</sup>		Plant height (in.) <sup>3</sup>	
	ST5599BR	FM989BR	ST5599BR	FM989BR
Untreated check .....	2.05	1.97bc	24.9 a	16.6 d
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	2.02	2.03 a-c	22.3 c	16.9 d
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.91	2.06 a-c	22.9 bc	17.3 cd
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	1.83	1.88c	22.9 bc	18.6 bc
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	1.90	2.11 ab	24.4 ab	18.9 ab
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	1.96	2.10 ab	22.5 c	17.8 b-d
Temik 15G 0.75 lb ai/A (F) .....	2.13	2.20 a	26.2 a	20.3 a
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>	<b>0.19</b>	<b>1.9</b>	<b>1.5</b>
<b><i>Treatment mean</i></b>				
Untreated check .....	2.01 b		20.8	
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	2.03 b		19.6	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.98 b		20.1	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	1.86 b		20.8	
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	2.00 b		21.7	
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	2.03 b		20.2	
Temik 15G 0.75 lb ai/A (F) .....	2.16 a		23.3	
<b>LSD (P=0.05) .....</b>	<b>0.12</b>		<b>--</b>	
<b><i>Cultivar mean</i></b>				
ST5599BR .....	1.97 b		23.7	
FM989BR .....	2.05 a		18.1	
<b>LSD (P=0.05) .....</b>	<b>0.06</b>		<b>--</b>	
<b><i>Split-plot analysis</i></b>				
Treatment .....	.0381		.0375	
Cultivar .....	.0158		.0001	
Treatment x cultivar .....	.2210		.0019	

<sup>1</sup> S=seed treatment, F=in furrow.

<sup>2</sup> Determined from counts of two, 30-ft rows.

<sup>3</sup> Data represent measurement of four randomly-selected plants per plot.

Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05). "--" denotes LSD not valid because of significant treatment by cultivar interaction.

Table 20. Effect of treatment and cultivar selection on number of nodes and flowers in cotton.

Treatment and rate <sup>1</sup>	Nodes/plant <sup>2</sup>		No. of flowers <sup>3</sup>	
	(Jul 12)		(Jul 26)	
	ST5599BR	FM989BR	ST5599BR	FM989BR
Untreated check .....	11.5	10.9	38.5	21.5 c
Gauche 600FS 1.32 oz ai/100,000 (S).....	10.7	11.3	47.0	25.8 bc
Gauche 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	11.4	11.1	48.8	34.8 ab
Gauche 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	11.1	11.3	44.0	32.3 ab
Gauche 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S).....	10.9	11.5	44.3	29.8 a-c
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	10.9	10.9	36.8	32.3 ab
Temik 15G 0.75 lb ai/A (F) .....	11.4	11.4	52.3	40.0 a
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>	<b>n.s.</b>	<b>n.s.</b>	<b>10.4</b>
<b>Treatment mean</b>				
Untreated check .....	11.2		30.0	
Gauche 600FS 1.32 oz ai/100,000 (S).....	11.0		36.4	
Gauche 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	11.3		41.8	
Gauche 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	11.2		38.1	
Gauche 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S).....	11.2		37.0	
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	10.9		34.5	
Temik 15G 0.75 lb ai/A (F) .....	11.4		46.1	
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>		<b>n.s.</b>	
<b>Cultivar mean</b>				
ST5599BR.....	11.1		44.5 a	
FM989BR .....	11.2		30.9 b	
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>		<b>3.8</b>	
<b>Split-plot analysis</b>				
Treatment.....	.8871		.3046	
Cultivar .....	.6173		.0001	
Treatment x cultivar.....	.4277		.3671	

<sup>1</sup> S=seed treatment, F=in furrow.

<sup>2</sup> Data represent counts of four randomly-selected plants per plot.

<sup>3</sup> Data are number of flowers per 12 ft of row.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." =not significant.

Table 21. Effect of treatment and cultivar selection on root galling and root-knot nematode populations in cotton.

Treatment and rate <sup>1</sup>	Root galling (0-6) <sup>2</sup>				Root-knot nematodes/500 cc soil <sup>3</sup>	
	Jun 19		Nov 10		ST5599BR	FM989BR
	ST5599BR	FM989BR	ST5599BR	FM989BR		
Untreated check .....	2.7 a	2.9a	2.2	4.8 a	2250	3770
Gaicho 600FS 1.32 oz ai/100,000 (S).....	2.3 a	3.0a	1.9	4.9 a	2090	8970
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.5 b	2.3ab	2.6	4.5 a	4430	2310
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) ...	1.0 b	2.0b	2.1	3.5 b	4140	13,410
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S).....	1.6 b	2.4ab	2.0	4.4 a	2920	12,290
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) ....	1.3 b	2.4ab	2.5	4.5 a	3080	9130
Temik 15G 0.75 lb ai/A (F) .....	0.0 c	0.0c	1.4	2.4 c	1850	2680
<b>LSD (P=0.05) .....</b>	<b>0.7</b>	<b>0.7</b>	<b>n.s.</b>	<b>0.6</b>		
<b><i>Treatment mean</i></b>	<u>Jun 19</u>		<u>Nov 10</u>			
Untreated check .....	2.8 a		3.5			
Gaicho 600FS 1.32 oz ai/100,000 (S).....	2.7 a		3.4			
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.9 bc		3.6			
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) ...	1.5 c		2.8			
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S).....	2.0 b		3.2			
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) ....	1.8 bc		3.5			
Temik 15G 0.75 lb ai/A (F) .....	0.0 d		1.9			
<b>LSD (P=0.05) .....</b>	<b>0.4</b>		<b>--</b>			
<b><i>Cultivar mean</i></b>						
ST5599BR.....	1.5 b		2.1			
FM989BR .....	2.2 a		4.1			
<b>LSD (P=0.05) .....</b>	<b>0.2</b>		<b>--</b>			
<b><i>Split-plot analysis</i></b>						
Treatment .....	.0001		.0006			
Cultivar .....	.0001		.0001			
Treatment x cultivar .....	.1335		.0006			

<sup>1</sup> S=seed treatment, F=in furrow.

<sup>2</sup> Rating scale: 0=none, 1=10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls and females laying eggs. Ratings were made on 19 Jun from 3 plants per plot and on 10 Nov from 4 plants per plot.

<sup>3</sup> Soil was sampled on 12 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment. Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05). "n.s." =not significant; "--" denotes LSD not valid because of significant treatment by cultivar interaction.

Table 22. Effect of treatment and cultivar selection on earliness of cotton.

Treatment and rate*	Open bolls**		Total bolls**	
	(Sep 15)		(Sep 15)	
	ST5599BR	FM989BR	ST5599BR	FM989BR
Untreated check .....	2.2	1.1	10.7	8.7
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	2.3	1.3	11.4	10.1
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.8	1.7	10.8	9.4
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	1.7	1.3	11.1	8.1
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	1.4	0.8	8.6	7.6
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	2.3	1.8	12.3	9.8
Temik 15G 0.75 lb ai/A (F) .....	2.4	2.1	11.2	8.1
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>	<b>n.s.</b>	<b>n.s.</b>	<b>n.s.</b>
<b><i>Treatment mean</i></b>				
Untreated check .....	1.7		9.7	
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	1.8		10.7	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	1.8		10.1	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	1.5		9.6	
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	1.1		8.1	
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	2.0		11.0	
Temik 15G 0.75 lb ai/A (F) .....	2.2		9.7	
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>		<b>n.s.</b>	
<b><i>Cultivar mean</i></b>				
ST5599BR .....	2.0 a		10.9 a	
FM989BR .....	1.4 b		8.8 b	
<b>LSD (P=0.05) .....</b>	<b>0.4</b>		<b>1.0</b>	
<b><i>Split-plot analysis</i></b>				
Treatment .....	.1149		.5543	
Cultivar .....	.0066		.0001	
Treatment x cultivar .....	.8827		.8617	

\* S=seed treatment, F=in furrow.

\*\* Data represent counts of four randomly-selected plants per plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." =not significant.

Table 23. Effect of treatment and cultivar selection on yield of cotton.

Treatment and rate*	Yield**			
	lb/A		bales/A	
	ST5599BR	FM989BR	ST5599BR	FM989BR
Untreated check .....	3176	1679	2.75	1.35
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	3131	2329	2.71	1.87
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	3328	2496	2.88	2.01
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	2844	2178	2.46	1.75
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	3207	2541	2.78	2.04
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	3101	2738	2.69	2.20
Temik 15G 0.75 lb ai/A (F) .....	3358	2481	2.91	1.99
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>	<b>n.s.</b>	<b>n.s.</b>	<b>n.s.</b>
<b><i>Treatment mean</i></b>	<b><u>lb/A</u></b>		<b><u>bales/A</u></b>	
Untreated check .....	2428		2.05	
Gaicho 600FS 1.32 oz ai/100,000 (S) .....	2730		2.29	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 1.6 oz ai/cwt (S) .....	2912		2.45	
Gaicho 600FS 1.32 oz ai + L1489A 18 EC 0.53 oz ai/100,000 (S) .....	2511		2.11	
Gaicho 600FS 1.32 oz ai/100,000 (S) + EXP60003B 382SC 8 oz ai/cwt (S) .....	2874		2.41	
BCROJO 1.20 oz ai + L1489A 18EC 0.53 oz ai/100,000 (S) .....	2919		2.44	
Temik 15G 0.75 lb ai/A (F) .....	2919		2.45	
<b>LSD (P=0.05) .....</b>	<b>n.s.</b>		<b>n.s.</b>	
<b><i>Cultivar mean</i></b>				
ST5599BR .....	3163 a		2.74 a	
FM989BR .....	2349 b		1.89 b	
<b>LSD (P=0.05) .....</b>	<b>210</b>		<b>0.17</b>	
<b><i>Split-plot analysis</i></b>				
Treatment .....	.4597		.4735	
Cultivar .....	.0001		.0001	
Treatment x cultivar .....	.1739		.1850	

\* S=seed treatment, F=in furrow.

\*\* Yield was determined by hand picking two, 6-ft sections of rows in each plot on 20 Oct. Weight (lb/A) includes lint + seed; bales/A are lint only. Lint of seed cotton was determined by ginning samples from each variety. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." =not significant.