

IX. RESPONSE OF COTTON TO NEMATICIDES AND INSECTICIDES (Kenny Edwards Farm, The Hall Rd., Branchville, VA)

- A. PURPOSE: To compare the response of cotton to nematocide treatments (Temik, KC791230, Metam 42%)
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks
  2. Two, 30-ft rows per plot with 36-in. row spacing
  3. Fifteen ft. alleyways between blocks
- C. APPLICATION OF TREATMENTS: Soil fumigant was applied 8 in. deep with a single chisel per row (C) on 19 Apr and rows were bedded after application (24 in.-wide and 4-in. high). Granular in-furrow treatments (F) were applied to the seed furrow at planting. Band treatments (B) were 12-in. wide and applied over rows during cultivation at 6 to 8 weeks after planting. Seed treatments (S) were applied by Gustafson LLC.
- D. TREATMENT AND RATE:
1. Temik 15G 5 lb/A (F)
  2. KC791230 15G 5 lb/A (F)
  3. Temik 15G 5 lb/A (F) + 5 lb/A (B)
  4. KC791230 15G 5 lb/A (F) + 5 lb/A (B)
  5. Temik 15G 7 lb/A (F)
  6. KC791230 15G 7 lb/A (F)
  7. Metam 42% 5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S)
  8. Metam 42% 7.5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S)
  9. Gaucho 480 4 fl oz/cwt (S)
  10. Untreated check
- E. ADDITIONAL INFORMATION:
1. Location: Kenny Edwards Farm, The Hall Rd., Branchville, VA
  2. Crop history: corn 2003, cotton 2002- 2001
  3. Planting date and variety: 5 May 2004, FM 960BR
  4. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (6 May)  
Roundup 22 fl oz/A (18 May, 2 Jun)  
Cotton Pro 1 pt + Roundup 22 fl oz/A, direct & hooded spray (17 Jun)
  5. Insecticide: Orthene 97S 6 oz/a (18 May, 2 Jun)  
Karate Z 2.56 fl oz/A (20 Jul)
  6. Growth regulator: Pix 8 fl oz/A (17 Jun)
  7. Defoliant/Boll opener: Finish 1 qt + Def 8 fl oz/A (7 Oct)
  8. Fertilization: 6-18-36 300 lb/A (Apr)  
17-0-10 350 lb/A (2 Jun)  
Solubor 0.5 lb (2 Jun); 1 lb/A (17 Jun)  
Liquid boron 1 pt/A (20 Jul)
  9. Cultivation: 2 Jun
  10. Harvest date: 28 Oct 2004

Table 28. Nematode populations at planting.

Rep	Nematodes/500 cc soil*				
	Root-knot	Stunt	Spiral	Ring	Stubby root
I	890	170	90	0	40
II	760	300	30	10	50
III	340	190	60	0	60
IV	420	90	60	0	80

\* Soil was sampled on 30 Apr.

Table 29. Effect of nematicide treatments on emergence and growth of cotton.

Treatment, rate and application method <sup>1</sup>	Plants/ft <sup>2</sup> (May 26)	Plant height <sup>3</sup> (in.)	
		Jun 30	Aug 10
Temik 15G 5 lb/A (F) .....	2.18 a	26.2 a	31.4 ab
KC791230 15G 5 lb/A (F) .....	2.07 a-c	23.6 cd	31.4 ab
Temik 15G 5 lb/A (F) + 5 lb/A (B) .....	2.13 a	24.3 bc	29.8 bc
KC791230 15G 5 lb/A (F) + 5 lb/A (B) .....	2.15 a	22.8 d	29.0 c
Temik 15G 7 lb/A (F) .....	2.10 ab	25.1 ab	30.1 a-c
KC791230 15G 7 lb/A (F) .....	2.17 a	24.1 b-d	30.6 a-c
Metam 42% 5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S).....	1.85 bc	26.3 a	31.5 ab
Metam 42% 7.5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S)...	1.82 c	25.9 a	32.1 a
Gaucho 480 4 fl oz/cwt (S) .....	1.82 c	24.1 b-d	31.7 ab
Untreated check .....	1.95 a-c	23.3 cd	29.0 c
<b>LSD</b> .....	<b>0.25</b>	<b>1.35</b>	<b>2.07</b>

<sup>1</sup> F=in furrow, B=band (30 Jun), C=chisel (19 Apr), S=seed treatment.

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

<sup>3</sup> Data are measurements from six plants per plot (30 Jun) and four plants per plot (10 Aug).

Means followed by the same letter(s) are not significantly different (LSD, P=0.05).

Table 30. Effect of nematicide treatments on growth of cotton.

Treatment, rate and application method*	Number of nodes**		No. of bolls** (Aug 10)	Open bolls** (Sep 1)
	Jun 30	Aug 10		
Temik 15G 5 lb/A (F) .....	12.6 ab	13.8 b-d	7.3 c	4.2 ab
KC791230 15G 5 lb/A (F) .....	12.8 ab	14.3 a-c	10.9 a	3.1 d
Temik 15G 5 lb/A (F) + 5 lb/A (B) .....	11.3 c	13.3 cd	7.7 c	3.6 b-d
KC791230 15G 5 lb/A (F) + 5 lb/A (B) ....	12.2 b	14.1 b-d	10.3 ab	3.9 a-c
Temik 15G 7 lb/A (F) .....	12.3 b	13.1 d	7.7 c	3.9 a-c
KC791230 15G 7 lb/A (F) .....	12.2 b	14.1 b-d	10.6 ab	3.4 b-d
Metam 42% 5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S).....	12.8 ab	14.0 b-d	8.2 bc	4.4 a
Metam 42% 7.5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S).....	12.5 ab	14.8 ab	9.3 a-c	4.1 ab
Gaucho 480 4 fl oz/cwt (S) .....	13.2 a	15.3 a	10.8 a	3.3 cd
Untreated check .....	12.5 b	13.4 cd	9.1 a-c	4.5 a
<b>LSD</b> .....	<b>0.68</b>	<b>1.18</b>	<b>2.47</b>	<b>0.77</b>

\* F=in furrow, B=band (30 Jun), C=chisel (19 Apr), S=seed treatment.

\*\* Data are measurements from six plants per plot (Jun 30) and four plants per plot (10 Aug, 1 Sep).

Means followed by the same letter(s) are not significantly different (LSD, P=0.05).

Table 31. Effect of nematicide treatments on nematode populations.

Treatment, rate and application method*	Nematodes/500 cc soil**	
	Root knot	Stubby root
Temik 15G 5 lb/A (F) .....	16,118 a-c	178 ab
KC791230 15G 5 lb/A (F) .....	14,418 a-c	253 a
Temik 15G 5 lb/A (F) + 5 lb/A (B) .....	17,785 ab	213 ab
KC791230 15G 5 lb/A (F) + 5 lb/A (B) .....	17,398 ab	213 ab
Temik 15G 7 lb/A (F) .....	19,753 a	208 b
KC791230 15G 7 lb/A (F) .....	12,483 a-c	78 b
Metam 42% 5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S) .....	10,190 c	280 a
Metam 42% 7.5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S) .....	11,340 bc	128 ab
Gaucho 480 4 fl oz/cwt (S) .....	13,560 a-c	200 ab
Untreated check .....	13,718 a-c	303 a
<b>LSD</b> .....	<b>7085</b>	<b>188</b>

\* F=in furrow, B=band (30 Jun), C=chisel (19 Apr), S=seed treatment.

\*\* Soil was sampled on 30 Jun. Root-knot species was *Meloidogyne incognita*.

Means followed by the same letter(s) are not significantly different (LSD, P=0.05). Square root transformation of population data was made in analysis to determine statistical significance.

Table 32. Effect of nematicide treatments on root galling and yield of cotton.

Treatment, rate and application method <sup>1</sup>	Root galling <sup>2</sup> (0-6)	Yield <sup>3</sup>	
		lb/A	bales/A
Temik 15G 5 lb/A (F) .....	2.9 a-c	1860 b-d	1.68 b-d
KC791230 15G 5 lb/A (F) .....	2.5 b-d	2405 ab	2.17 ab
Temik 15G 5 lb/A (F) + 5 lb/A (B) .....	2.1 d	1830 b-d	1.65 b-d
KC791230 15G 5 lb/A (F) + 5 lb/A (B) .....	3.6 a	2299 a-c	2.07 a-c
Temik 15G 7 lb/A (F) .....	3.1 ab	2072 a-d	1.87 a-d
KC791230 15G 7 lb/A (F) .....	2.8 b-d	2072 a-d	1.87 a-d
Metam 42% 5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S) .....	2.5 b-d	1664 cd	1.50 d
Metam 42% 7.5 gal/A (C) + Gaucho 480 4 fl oz/cwt (S) .....	2.2 cd	2284 a-c	2.06 a-c
Gaucho 480 4 fl oz/cwt (S) .....	3.1 ab	2556 a	2.31 a
Untreated check .....	3.1 ab	1543 d	1.39 d
<b>LSD</b> .....	<b>0.74</b>	<b>665</b>	<b>0.60</b>

<sup>1</sup> F=in furrow, B=band (30 Jun), C=chisel (19 Apr), S=seed treatment.

<sup>2</sup> Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls. Ratings were made on 15 Nov.

<sup>3</sup> Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 43.3% of total weight and 480 lb/bale. Means followed by the same letter(s) are not significantly different (LSD, P=0.05).