

XVIII. MANAGEMENT STRATEGIES FOR TSWV, NEMATODES AND CYLINDROCLADIUM BLACK ROT IN PEANUT (Wyne farm)

- A. PURPOSE: To evaluate foliar and in-furrow treatments, soil fumigant and cultivar selection for disease management
- B. EXPERIMENTAL DESIGN:
1. Split-split-plot design with six randomized complete blocks separated by 15-ft alleyways
 2. Two, 35-ft rows per sub-subplot with 36-in. row spacing
 3. Seeding rate of three seed/row ft
- C. FOLIAR TREATMENT AND RATE/A (Main plots): Orthene 97S was applied at thrips threshold in untreated plots on 7 June 2005. Treatment was applied with 8004VS nozzles spaced 18-in. apart and delivered in a volume of 25 gal/A.
1. Untreated
 2. Orthene 97S 8 oz/A
- D. SOIL TREATMENT AND RATE/A(Subplots): Chisel applications of Vapam 42% were applied 8 in. deep on April 21 and rows were bedded (24 in. wide and 4 in. high) during application. Granular treatments were applied in-furrow (F) at planting.
1. Untreated check
 2. Temik 15G 5 lb (F)
 3. Thimet 20G 5 lb (F)
 4. KC791230 15G 5 lb (F)
 5. Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)
- E. CULTIVAR: Sub-subplots
1. VA 98R (CBR-susceptible)
 2. Perry (CBR-resistant)
- F. ADDITIONAL INFORMATION:
1. Location: Wyne Farm, Suffolk
 2. Crop history: Corn 2004; Peanut 2003; Wheat/Soybean 2002
 3. Planting date: 17 May 2005
 4. Soil fertility report:

pH.....	6.2	K	37 ppm
Ca	348ppm	Zn.....	0.5 ppm
Mg	46 ppm	Mn.....	1.9 ppm
P	12 ppm	Soil type.....	Nansemond fine sandy loam
 5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (19 Apr)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (27 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (23 May)
 - Post-emergence – Poast Plus 1 qt + ChemOil 2 pt/A (17 Jun)
 6. Insecticide: Lorsban 15G 13 lb/A (27 Jun)
 7. Acaricide: Danitol 6 fl oz/A (5 Aug, 22 Aug)
 8. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
 9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - c. Landplaster: Peanut Maker 1500 lb/A (28 Jun)
 10. Harvest date: 18 Oct 2005

Table 61. Effect of soil treatment and cultivar selection on emergence of peanut and phytotoxicity.

Soil treatment and rate/A ¹	Plants/ft ² (Jun 15)		Phytotoxicity ³ (0-10)	
	VA 98R	Perry	VA 98R	Perry
Untreated check	3.25 b	3.47 ab	0.3 bc	0.2 bc
Temik 15G 5 lb (F)	3.33 b	3.33 bc	0.0 c	0.0 c
Thimet 20G 5 lb (F)	3.25 b	3.31 c	2.7 a	2.5 a
KC791230 15G 5 lb (F)	3.37 b	3.46 a-c	0.0 c	0.0 c
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)....	3.54 a	3.60 a	0.6 b	0.5 b
Mean.....	3.35	3.43	0.7	0.6
LSD.....	0.14	0.16	0.5	0.4
<i>Split-split-plot analysis</i>				
Foliar treatment.....	.4076		.3272	
Soil treatment.....	.0001		.0001	
Cultivar .....	.0167		.3019	
Foliar treatment x soil treatment.....	.1074		.2381	
Foliar treatment x cultivar.....	.6288		.1205	
Soil treatment x cultivar.....	.3011		.8752	
Foliar treatment x soil treatment x cultivar....	.3598		.1243	

¹ F=in furrow, C=chisel application.

² Determined from counts of two, 35-ft rows per plot.

³ Scale of ratings: 0=none, 10=severe phytotoxicity. Ratings were made on 20 Jun.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). Statistical analysis indicated no significance for foliar insecticide treatment; therefore data are combined across treated and untreated plots.

Table 62. Effect of foliar insecticide, soil treatment and cultivar on severity of plant injury by Tobacco thrips.

Soil treatment and rate/A*	Thrips injury (0-10) (Jun 20) **			
	Untreated		Orthene 97S 8 oz/A	
	VA 98R	Perry	VA 98R	Perry
Untreated check	4.8 a	4.7 a	2.7 a	1.8 a
Temik 15G 5 lb (F)	0.9 b	0.5 c	0.2 b	0.4 b
Thimet 20G 5 lb (F)	0.4 c	0.4 bc	0.0 b	0.0 b
KC791230 15G 5 lb (F)	0.2 c	0.1 c	0.1 b	0.0 b
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	1.0 b	0.7 b	0.5 b	0.3 b
Mean	1.5	1.3	0.7	0.5
LSD	0.4	0.5	0.6	0.4
Split-split-plot analysis				
Foliar treatment.....		.0009		
Soil treatment.....		.0001		
Cultivar .....		.0033		
Foliar treatment x soil treatment.....		.0001		
Foliar treatment x cultivar .....		.8940		
Soil treatment x cultivar.....		.1122		
Foliar treatment x soil treatment x cultivar.....		.0715		

* F=in furrow, C=chisel application.

** Thrips injury scale: 0=no damage, 10=thrips injury on all plants.

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

Table 63. Effect of soil treatment and cultivar on incidence of Tomato spotted wilt virus (TSWV) of peanut.

Soil treatment and rate/A*	TSWV**					
	VA 98R			Perry		
	Jun 20	Jul 22	Aug 30	Jun 20	Jul 22	Aug 30
Untreated check	2.3 a	1.3	0.5	1.3 a	1.8 a	0.2
Temik 15G 5 lb (F)	0.8 b	0.3	0.8	1.0 ab	0.9 ab	0.3
Thimet 20G 5 lb (F)	0.3 b	0.6	0.3	0.1 c	0.3 b	0.0
KC791230 15G 5 lb (F)	0.6 b	0.3	1.0	0.4 bc	0.6 b	0.2
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	0.6 b	0.6	0.4	0.5 bc	0.8 b	0.2
Mean	0.9	0.6	0.6	0.7	0.9	0.2
LSD	1.1	n.s.	n.s.	0.7	0.8	n.s.
Split-split-plot analysis						
	<u>Jun 20</u>		<u>Jul 22</u>		<u>Aug 30</u>	
Foliar treatment.....	.4354		.1195		.2204	
Soil treatment.....	.0001		.0001		.1690	
Cultivar .....	.8878		.0003		.0006	
Foliar treatment x soil treatment.....	.2379		.4337		.4448	
Foliar treatment x cultivar .....	.7778		.3908		.6876	
Soil treatment x cultivar.....	.3432		.8976		.5031	
Foliar treatment x soil treatment x cultivar .....	.4373		.8458		.4024	

* F=in furrow, C=chisel application.

** Determined from counts of two, 35-ft rows 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. Statistical analysis indicated no significance for foliar insecticide treatment; therefore data are combined across treated and untreated plots.

Table 64. Effect of soil treatment and cultivar on incidence of *Cylindrocladium* black rot (CBR) of peanut.

Soil treatment and rate/A*	CBR**					
	VA 98R			Perry		
	Jul 22	Aug 30	Sep 27	Jul 22	Aug 30	Sep 27
Untreated check	12.3 a	18.8 a	67.8 a	10.3 a	17.4 a	12.1 a
Temik 15G 5 lb (F)	8.4 b	15.7 ab	60.7 a	5.3 bc	7.9 cd	10.0 a
Thimet 20G 5 lb (F)	6.9 b	11.4 bc	63.7 a	4.3 c	7.0 d	9.9 a
KC791230 15G 5 lb (F)	9.2 ab	14.3 a-c	63.3 a	7.3 b	13.0 b	12.8 a
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	7.0 b	9.9 c	29.3 b	5.6 bc	11.9 bc	6.3 b
Mean.....	8.8	14.0	57.0	6.6	11.4	10.2
LSD.....	3.2	5.4	7.4	2.7	4.1	3.1
<i>Split-split-plot analysis</i>	<u>Jul 22</u>		<u>Aug 30</u>		<u>Sep 27</u>	
Foliar treatment.....	.5610		.2416		.3282	
Soil treatment.....	.3139		.0001		.0399	
Cultivar .....	.0070		.0249		.0001	
Foliar treatment x soil treatment	.4632		.1508		.9893	
Foliar treatment x cultivar .....	.0461		.4928		.0058	
Soil treatment x cultivar.....	.3187		.0823		.0001	
Foliar treatment x soil treatment x cultivar .....	.7900		.4058		.2617	

* F=in furrow, C=chisel application.

** Number of symptomatic plants per plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05). Statistical analysis indicated no significance for foliar insecticide treatment; therefore data are combined across treated and untreated plots.

Table 65. Effect of soil treatment and cultivar on incidence of Southern stem rot of peanut.

Soil treatment and rate/A*	Stem rot**			
	VA 98R		Perry	
	Jul 22	Aug 30	Jul 22	Aug 30
Untreated check	1.0	24.3 a	0.3	2.8
Temik 15G 5 lb (F)	0.7	25.2 a	0.3	4.2
Thimet 20G 5 lb (F)	0.3	28.3 a	0.3	2.3
KC791230 15G 5 lb (F)	0.7	29.9 a	0.1	3.6
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	0.3	6.2 b	0.2	2.0
Mean.....	0.6	22.8	0.2	3.0
LSD.....	n.s.	8.0	n.s.	n.s.
<i>Split-split-plot analysis</i>	<u>Jul 22</u>		<u>Aug 30</u>	
Foliar treatment.....	.2204		.7423	
Soil treatment.....	.1690		.0133	
Cultivar .....	.0006		.0001	
Foliar treatment x soil treatment.....	.4448		.8785	
Foliar treatment x cultivar .....	.6876		.0724	
Soil treatment x cultivar.....	.5031		.0001	
Foliar treatment x soil treatment x cultivar .....	.4024		.5787	

* F=in furrow, C=chisel application.

** Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05). "n.s." = not significant. Statistical analysis indicated no significance for foliar insecticide treatment; therefore data are combined across treated and untreated plots.

Table 665. Effect of foliar insecticide, soil treatment and cultivar on incidence of *Sclerotinia* blight of peanut.

Soil treatment and rate/A*	Sclerotinia (Aug 30)**			
	Untreated		Orthene 97S 8 oz/A	
	VA 98R	Perry	VA 98R	Perry
Untreated check	5.7	0.8	6.3	0.7
Temik 15G 5 lb (F)	10.3	3.2	9.3	1.3
Thimet 20G 5 lb (F)	10.0	3.2	2.8	1.7
KC791230 15G 5 lb (F)	10.7	4.3	7.8	0.8
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	9.0	2.7	4.2	1.5
Mean	9.1	2.8	6.1	1.2
LSD	n.s.	n.s.	n.s.	n.s.

Split-split-plot analysis

Foliar treatment.....	.0290
Soil treatment.....	.2956
Cultivar .....	.0001
Foliar treatment x soil treatment.....	.5526
Foliar treatment x cultivar .....	.3698
Soil treatment x cultivar.....	.5632
Foliar treatment x soil treatment x cultivar.....	.5401

* F=in furrow, C=chisel application.

** Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by *Sclerotinia minor* and included 6 in. on either side of that point.

Fisher's Protected LSD (P=0.05). "n.s." = not significant.

Table 67. Effect of foliar insecticide, soil treatment and cultivar on severity of root galling.

Soil treatment and rate/A*	Root galling (0-10)** (Oct 4)			
	Untreated		Orthene 97S 8 oz/A	
	VA 98R	Perry	VA 98R	Perry
Untreated check	4.3 a	4.7 a	4.3 a	4.2 a
Temik 15G 5 lb (F)	3.0 c	2.8 b	2.3 b	1.8 b
Thimet 20G 5 lb (F)	4.7 a	4.8 a	4.3 a	3.8 a
KC791230 15G 5 lb (F)	3.7 b	3.3 b	3.2 b	2.5 b
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	1.3 d	1.3 c	1.0 c	1.0 c
Mean	3.4	3.4	3.0	2.7
LSD	0.6	0.8	0.8	0.7

Split-split-plot analysis

Foliar treatment.....	.0368
Soil treatment.....	.0001
Cultivar .....	.0522
Foliar treatment x soil treatment.....	.4363
Foliar treatment x cultivar .....	.0522
Soil treatment x cultivar.....	.2682
Foliar treatment x soil treatment x cultivar.....	.8362

* F=in furrow, C=chisel application.

** Root galling scale: 0=no damage, 10=galls on all plants.

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

Table 68. Percent recovery of *Cylindrocladium parasiticum* from taproots in plots treated with Orthene 97S 6 oz/A..

Soil treatment and rate/A*	biopsy test (%+)**	
	VA 98R	Perry
Temik 15G 5 lb (F)	71	20
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	43	12
LSD	n.s.	n.s.
Treatment mean		
Temik 15G 5 lb (F)	46	a
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	28	b
LSD	15	
Cultivar mean		
VA 98R.....	57	a
Perry.....	16	b
LSD	15	
Split-plot analysis		
Soil treatment.....	.0274	
Cultivar .....	.0001	
Soil treatment x cultivar.....	.1760	

* F=in furrow, C=chisel application.

** Data are percent recovery of *Cylindrocladium parasiticum* from 25 taproots selected at random from each plot. Taproots were assayed with a selective medium on 5 Oct.

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

Table 69. Effect of soil treatment on nematode populations.

Soil treatment and rate/A*	Nematodes/500 cc soil**	
	Root-knot	Ring
Untreated check	5952 a	2553 ab
Temik 15G 5 lb (F)	2308 b	3537 a
Thimet 20G 5 lb (F)	2902 b	3303 a
KC791230 15G 5 lb (F)	2777 b	3877 a
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	605 c	1402 b
LSD	2151	1848

* F=in furrow, C=chisel application.

** Data represent populations in a composite sample from both varieties within a soil treatment in plots oversprayed with Orthene 97S 8 oz/A. Soil was sampled on 26 Aug.

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

Table 70. Effect of soil treatment and cultivar selection on yield of peanut.

Soil treatment and rate/A*	Yield (lb/A)**	
	VA 98R	Perry
Untreated check	995 c	3279 c
Temik 15G 5 lb (F)	1353 b	3492 bc
Thimet 20G 5 lb (F)	1114 bc	3608 b
KC791230 15G 5 lb (F)	1161 bc	3736 b
Vapam 42% 5 gal (C) + Temik 15G 5 lb (F)	2703 a	4077 a
Mean	1465	3638
LSD	286	312
<i>Split-split-plot analysis</i>		
Foliar treatment.....	.1025	
Soil treatment.....	.0108	
Cultivar .....	.0001	
Foliar treatment x soil treatment.....	.9951	
Foliar treatment x cultivar .....	.0628	
Soil treatment x cultivar.....	.0001	
Foliar treatment x soil treatment x cultivar.....	.7790	

* F=in furrow, C=chisel application.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 18 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05). Statistical analysis indicated no significance for foliar insecticide treatment; therefore data are combined across treated and untreated plots.