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# **APPLIED RESEARCH ON FIELD CROP DISEASE CONTROL**

## **2007**

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## POLICY FOR ACCEPTANCE OF PESTICIDES FOR TESTING

Research on synthesis and exploration of agricultural chemicals and biotechnology for use in pest control continues to provide new materials for field evaluation. Compounds are being made available by private companies and universities for local research in a variety of ways; ranging from a sample with a code number to a thoroughly-tested material, with secure patents, technical data sheets, and comprehensive résumés of results of laboratory and field trials. Unfortunately, it is not possible for a scientist to include all materials and use patterns in a field research demonstration program. Therefore, materials are selected according to (i) overall need for a product in a particular crop or problem area, and (ii) overall promise of the material to improve crop management at the local level.

Before a material can be accepted for testing, the following descriptive information is required: (i) a list of the spectrum of biological activity, (ii) data on phytotoxicity and suggested rates of application, (iii) methods of application, (iv) formulations available, (v) mammalian toxicity (LD<sub>50</sub>), (vi) possible health hazards, and (vii) possible hazards to the environment. Additional information that would be desirable includes: (i) identity of the active ingredient(s) and inert materials, (ii) physical properties (solubility, MP, VP, stability, etc.), (iii) residue information, (iv) residual soil life, (v) EPA residue tolerance (if any) and registration status, (vi) patent status, and (vii) unit cost in commercial markets.

Upon completion of field applications, it is the responsibility of the sponsor to dispose of all unused test materials. Because of limited space in controlled pesticide storage facilities and expenses associated with shipping and disposal, all sponsors are encouraged to ship not more than 1.5 times the anticipated quantity needed to complete a test.

## INTRODUCTION

Rainfall in May, June, July, August and September was 1.66, 1.33, 4.16, 0.71 and 4.09 in. below normal, respectively, and October was 1.74 in. above normal (Table 1). Rainfall during the period totaled 17.56 in., which was 10.21 in. below normal. Minimum air temperatures averaged near normal ( $\pm 1^\circ\text{F}$ ) in June, July and September,  $2^\circ\text{F}$  above normal in August,  $3^\circ\text{F}$  above normal in May, and  $9^\circ\text{F}$  above normal in October. Maximum air temperatures were near normal ( $\pm 1^\circ\text{F}$ ) in May and July,  $3^\circ\text{F}$  above normal in June and September,  $5^\circ\text{F}$  above normal in August and  $10^\circ\text{F}$  above normal in October according to records from a NOAA station (44-4044) at the Tidewater AREC in Suffolk. Cool temperatures and rainfall totaling 2.2 in. (11 thru 16 April) delayed planting of cotton and peanut in Virginia. Thereafter, rainfall was widely scattered and soil temperatures averaging above  $60^\circ\text{F}$  by 22 April allowed planting to proceed in a timely manner. Most crops showed good emergence after planting throughout Eastern Virginia. Periods of moderate to severe drought stress in July and September caused wilting and stunting of crops especially in fields with sandy textured soils and without irrigation. Seasonal heat units for peanut from 1 May to 31 October totaled 2982 in Suffolk, 143 units above the previous 12-yr average. A total of 2450 to 2600 heat units are needed for maturation of most commercial peanut varieties in Virginia. Cotton degree-days ( $\text{DD}_{60}$ ) in the same period totaled 2334 or 161 above the 12-yr average. As the harvest season approached, many fields exhibited early maturity but reduced yield potential due to dry weather stress. Harvest was completed early in many areas because of excellent weather until heavy rainfall from 24 to 27 October. The first killing frost in the Tidewater area was on 30 October when night-time temperatures ranged in the mid 20's to  $30^\circ\text{F}$ . Fortunately, peanut harvest had been completed in most fields prior this event.

Peanut yields in 2007 averaged 2700 lb/A on 21,000 acres (Table 2). Dry weather stress and above normal temperatures reduced yields throughout the peanut production area. However, fields that received three or more timely applications of overhead irrigation made yields that were in excess of 4,000 lb/A. Disease in peanuts was generally low and caused relatively low yield losses in comparison to years with near normal or greater rainfall. Nematodes were among the most common causes of yield loss in 2007 (Table 3). *Cylindrocladium* black rot and southern stem rot accounted for the most common causes of root, stem and pod rot in peanuts. *Sclerotinia* blight and leaf spot incidence were low throughout the production area as a result of extended periods of dry weather stress and above normal temperatures. The incidence of tomato spotted wilt virus (TSWV) was low in 2007 and caused minimal damage.

Soybean yields averaged 27 bu/A in 2007 on 480,000 acres (Table 2). Low yields were mostly a result of dry weather stress and root damage by nematodes (Table 4). Soybean cyst, southern and northern root-knot, sting, lance and stubby root nematodes probably accounted for the greatest losses of yield. Leaf spot diseases (brown spot, frog-eye leaf spot, anthracnose, *Cercospora* blight) showed low incidence as a result of dry weather stress. Soybean rust was first detected on 19 October through weekly examinations of leaf samples from 10 sentinel plots and numerous commercial fields. Further sampling up to 10 November confirmed incidence of the



disease in a total of eight counties (Chesapeake, Gloucester, Isle of Wight, Middlesex, Suffolk, Surry, Sussex, and Virginia Beach).

Corn yields averaged 85 bu/A in 2007 on 405,000 acres (Table 2). The widespread occurrence of stubby root nematode and patches of southern root-knot and sting nematode were thought to account for most of the yield losses to disease in corn. Diplodia ear rot was detected in some fields, but incidence was low and not likely to reduce yield significantly. Otherwise, stalk rots and foliar diseases were minimal as a result of low rainfall and moisture stress.

Cotton yields in 2007 averaged 829 lb or 1.73 bales/A on 59,000 acres (Table 2). Rhizoctonia and Pythium damping-off were the most common cause of damping-off and seedling disease (Table 5). Crop damage by southern root-knot nematode, *Meloidogyne incognita*, accounted for the heaviest loss of yield in fields planted continuously to cotton for 5 years or longer. No significant losses to reniform nematode, *Rotylenchulus reniformis*, were detected in 2007. Instances of yield losses to stubby root and sting nematodes were found, but overall were less destructive than southern root knot. No occurrences of root damage by Columbia lance nematode were detected.

Powdery mildew, Stagonospora leaf blotch, and tan spot were the most common diseases of wheat in southeastern Virginia. Stripe rust was widely scattered and caused minimal crop damage. Occurrences of scab on heads were minimal in 2007.

The research described in this book was designed to evaluate strategies for improving disease control and the overall efficiency of crop production in Virginia. Commercial products are named for informational purposes only. Virginia Cooperative Extension, Virginia Polytechnic Institute and State University, and Virginia State University do not advocate or warrant products named nor do they intend or imply discrimination against those not named.

The primary purpose of this book is to provide cooperators and contributors a summary of field research. Eleven chapters from this book have been submitted for publication by the American Phytopathological Society in *Plant Disease Management Reports* in 2008. Reprints of these publications are available upon request.

**Table 1. Comparison of rainfall, peanut heat units (DD<sub>56</sub>) and cotton degree-days (DD<sub>60</sub>) in 2007 to records for the previous five years and averages of historical records.**

Month	Rainfall (in.)						Normal
	2002	2003	2004	2005	2006	2007	
May	3.98	7.14	4.77	4.78	2.86	2.16	3.82
Jun	1.66	4.10	5.10	2.64	10.08	3.00	4.33
Jul	5.53	4.98	12.53	5.19	3.66	1.71	5.87
Aug	2.22	3.50	11.00	4.50	2.50	5.00	5.71
Sep	2.96	11.81	5.15	3.08	9.16	0.43	4.52
Oct	4.89	4.40	4.52	5.68	8.14	5.26	3.52
Total	21.24	35.93	43.07	25.87	36.40	17.56	27.77

\*Normal is the 74-yr mean of records maintained at the Tidewater AREC, Suffolk.

Month	Peanut Heat Units (DD <sub>56</sub> )						Avg.**
	2002	2003	2004	2005	2006	2007	
May	365	313	508	248	307	319	350
Jun	627	537	544	549	504	547	551
Jul	731	667	647	710	665	629	670
Aug	681	660	548	680	664	664	629
Sep	488	446	429	506	363	455	429
Oct	242	184	168	240	171	368	209
Total	3134	2807	2844	2932	2674	2982	2839

\*\*Avg. is the 12-yr mean (1995-2006).

Month	Cotton Degree Days (DD <sub>60</sub> )						Avg.
	2002	2003	2004	2005	2006	2007	
May	271	216	395	169	221	230	256
Jun	513	421	426	433	386	431	427
Jul	615	543	523	587	541	508	531
Aug	564	536	427	557	542	541	496
Sep	373	334	320	393	259	351	324
Oct	162	116	100	158	104	273	139
Total	2498	2166	2191	2297	2053	2334	2173

\*\*Avg. is the 12-yr mean (1995-2006).

**Table 2. Crop production statistics in year of record yield compared to 2007.**

Crop	Statistics of record year for yield*			2007 projection*	
	Year	Acreage	Yield/A	Acreage	Yield/A
Peanut.....	2004	32,000	3,250 lb	21,000	2,700 lb
Soybean.....	2004	530,000	39.0 bu	480,000	27 bu
Corn.....	2000	330,000	146 bu	405,000	85 bu
Cotton (lint)..	2004	81,000	956 lb	59,000	829 lb
Wheat .....	2006	155,000	68 bu	205,000	64 bu

\* Based on crop production estimates by the Virginia Agricultural Statistics Service at <http://www.nass.usda.gov/va>.

Acreage based on harvested acres.

**Table 3. Estimated loss in yield as a result of peanut diseases in 2007.**

Disease	Causal organism	Percent loss
Early leaf spot .....	<i>Cercospora arachidicola</i>	0.5
Late leaf spot .....	<i>Cercosporidium personatum</i>	0.2
Pepper spot & leaf scorch .....	<i>Leptosphaerulina crassiasca</i>	0
Web blotch .....	<i>Phoma arachidicola</i>	0.1
Botrytis blight .....	<i>Botrytis</i> sp.	0
Peanut rust .....	<i>Puccinia arachidis</i>	Trace
Sclerotinia blight .....	<i>Sclerotinia minor</i>	0.5
Sclerotinia blight .....	<i>Sclerotinia sclerotiorum</i>	ND*
Southern stem rot .....	<i>Sclerotium rolfsii</i>	1.5
Stem, root, & pod rot .....	<i>Rhizoctonia</i> spp.	0.2
Botrytis blight .....	<i>Botrytis</i> sp.	Trace
Pythium pod rot .....	<i>Pythium</i> spp.	0
Tomato spotted wilt virus .....	<i>Tospovirus</i>	0.5
Cylindrocladium black rot (CBR) .....	<i>Cylindrocladium parasiticum</i>	1.5
Nematode damage .....	Northern root knot, sting, lesion, etc.	2.0
<b>Total .....</b>		<b>7.0**</b>

\* Not detected.

\*\* The loss estimate equals 2,134 tons of peanuts or \$904,816 in farm income based on an estimated total production of 28,350 tons and a mean value of \$424 per ton in 2007.

**Table 4. Estimated loss in yield as a result of soybean diseases in 2007.**

Disease	Causal agent(s)	Percent loss
Seedling diseases .....	<i>Rhizoctonia</i> spp., <i>Pythium</i> spp., etc.	0.5
Cercospora blight .....	<i>Cercospora kikuchii</i>	0.2
Purple seed stain .....	<i>Cercospora kikuchii</i>	0.1
Downy mildew .....	<i>Peronospora manshurica</i>	Trace
Anthrachnose .....	<i>Colletotrichum truncatum</i>	0.4
Brown spot .....	<i>Septoria glycines</i>	0.2
Pod & stem blight .....	<i>Diaporthe phaseolorum</i> var. <i>sojae</i>	0.1
Frogeye leaf spot .....	<i>Cercospora sojae</i>	0
Southern blight .....	<i>Sclerotium rolfsii</i>	0.1
Brown stem rot .....	<i>Phialophora gregata</i>	0.1
Charcoal rot .....	<i>Macrophomina phaseolina</i>	0.1
Stem canker .....	<i>Diaporthe phaseolorum</i> var. <i>caulivora</i>	Trace
Sudden death syndrome .....	<i>Fusarium solani</i> f.sp. <i>glycines</i>	Trace
Root & lower stem rot .....	<i>Rhizoctonia</i> spp.	Trace
Red crown rot .....	<i>Cylindrocladium parasiticum</i>	Trace
Phytophthora root & stem rot .....	<i>Phytophthora megasperma</i> f.sp. <i>glycinea</i>	0
Sclerotinia stem rot .....	<i>Sclerotinia sclerotiorum</i> and <i>S. minor</i>	0
Viruses .....	SMV, PMV, BPMV, etc.	Trace
Bacterial pustule .....	<i>Xanthomonas phaseoli</i>	Trace
Bacterial blight .....	<i>Pseudomonas glycinea</i>	0.2
Soybean cyst nematode .....	<i>Heterodera glycines</i>	2.3
Southern root knot nematode .....	<i>Meloidogyne incognita</i>	1.5
Other nematodes .....	---various---	0.5
<b>Total loss (%) .....</b>		<b>6.3*</b>

\* The loss estimate equals 871,376 bushels based on production of 12.96 million bushels in 2007. At a value of \$10.50/bu, the loss in revenues at the farm gate would be 9.15 million dollars.

**Table 5. Estimated loss of yield to cotton diseases in 2007.**

Disease	Causal agent(s)	Percent loss
Seedling disease.....	<i>Rhizoctonia solani</i> , <i>Pythium</i> spp.	1.0
Fusarium wilt.....	<i>Fusarium oxysporum</i> f. sp. <i>vasinfectum</i>	trace
Verticillium wilt.....	<i>Verticillium dahlia</i>	0
Texas root rot.....	<i>Phymatotrichum omnivorum</i>	0
Ascochyta blight.....	<i>Ascochyta gossypii</i>	0
Bacterial blight.....	<i>Xanthomonas</i> spp.	0.1
Boll rots.....	<i>Diplodia</i> spp., <i>Fusarium</i> spp., <i>Xanthomonas</i> spp.	0.2
Leaf spots.....	---various---	0.1
Southern root-knot nematode.....	<i>Meloidogyne incognita</i>	3.0
Reniform nematode.....	<i>Rotylenchulus reniformis</i>	0.1
Other nematodes.....	<i>Trichodorus</i> spp., <i>Belonolaimus</i> spp., etc.	1.9
Total loss (%).....		6.4*

\* The loss estimate equals 3.34 million pounds in Virginia based on production of 52.26 million pounds of lint in 2007. At a value of \$0.553 per pound, the loss in revenues at the farm gate would be 1.85 million dollars in 2007.

I. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES IN WHEAT (WHEAT107, Tidewater Research Farm, Suffolk, Field 29)

A. PURPOSE: To compare fungicide treatments for foliar disease control and impact on yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleys between blocks
2. Plots 12-ft wide and 30-ft long with 6.67-in row spacing
3. Data collected from the center, seven rows in each plot

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 16.5 gal/A.

D. TREATMENT AND RATE/A: Sprays were applied at GS 32 (1<sup>st</sup> node) and GS 45 (boot). Sprays of Quadris, Quilt and Headline were applied with Coverall surfactant 0.1% of spray volume.

1. Untreated
2. Quadris 2.08SC 3 fl oz + Tilt 3.6EC 1.5 fl oz (GS 32, GS 45)
3. Quadris 2.08SC 6 fl oz (GS 45)
4. Quilt 10.5 fl oz (GS 45)
5. Quilt 10.5 fl oz + Quadris 2.08SC 3 fl oz (GS 45)
6. Headline 250EC 3 fl oz (GS 32, GS 45)
7. Headline 250EC 3 fl oz + Tilt 3.6EC 2 fl oz (GS 32)
8. Headline 250EC 3 fl oz (GS 45)  
Headline 250EC 6 fl oz (GS 45)
9. LEM17 200SC 9.6 fl oz (GS 45)
10. LEM17 200SC 16.8 fl oz (GS 45)
11. LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz (GS 45)
12. LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz (GS 45)
13. Punch 3.3EC 4 fl oz (GS 45)
14. Punch 3.3EC 3 fl oz + YT669 2.08SC 4 fl oz (GS 45)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd.
2. Crop history: peanut 2006, wheat/soybean 2005, peanut 2004
3. Planting date and variety: 31 Oct 2006, Coker 9803
4. Soil fertility report:

pH.....	6.64
Ca .....	258 ppm
Mg .....	28 ppm
P .....	31 ppm
K.....	40 ppm
Zn .....	0.8 ppm
Mn .....	0.5 ppm
Soil type .....	Goldsboro fine sandy loam
5. Fertilizer: 9-16-31 350 lb/A (25 Oct 2006)  
Liquid nitrogen (32%) 60 lb/A (10 Feb, 14 Mar)
6. Herbicide: Harmony Extra 0.6 oz/A (10 Feb)
7. Insecticide: Karate 1 fl oz/A (30 Apr)
8. Harvest date: 19 Jun 2007

Table 6. Effect of fungicide treatments on severity of foliar disease in wheat on 20 April.\*

Treatment, rate/A and application timing**	% powdery mildew		% Septoria
	upper leaves	lower leaves	
Untreated .....	1.3	10.0	1.8
Quadris 2.08SC 3 fl oz + Tilt 3.6EC 1.5 fl oz (GS 32, GS 45) .....	1.3	9.0	1.3
Quadris 2.08SC 6 fl oz (GS 45) .....	1.0	11.5	2.3
Quilt 10.5 fl oz (GS 45) .....	2.0	12.5	1.8
Quilt 10.5 fl oz + Quadris 2.08SC 3 fl oz (GS 45)	1.5	11.3	1.5
Headline 250EC 3 fl oz (GS 32, GS 45).....	1.0	8.8	1.3
Headline 250EC 3 fl oz + Tilt 3.6EC 2 fl oz (GS 32)			
Headline 250EC 3 fl oz (GS 45).....	1.0	7.3	1.3
Headline 250EC 6 fl oz (GS 45).....	1.3	9.0	1.5
LEM17 200SC 9.6 fl oz (GS 45) .....	1.5	11.0	1.0
LEM17 200SC 16.8 fl oz (GS 45) .....	2.0	13.0	1.5
LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz (GS 45).....	1.5	11.3	1.0
LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz (GS 45) .....	1.8	11.3	1.8
Punch 3.3EC 4 fl oz (GS 45) .....	1.0	9.5	1.3
Punch 3.3EC 3 fl oz + YT669 2.08SC 4 fl oz (GS 45).....	1.0	9.0	1.3
SNK, $P=0.05$ .....	n.s.	n.s.	n.s.

\* Data represent percent of leaf area with disease symptoms.

\*\* GS 32= 5 Apr; GS 45 = 23 Apr. Quadris, Quilt and Headline were applied with Coverall surfactant 0.1% of spray volume. Arcsine transformation of percentage data was made in analysis to determine statistical significance, n.s. denotes that means are not significantly different by Student-Newman-Keuls test ( $P=0.05$ ).

Table 7. Effect of fungicide treatments on severity of foliar disease in wheat on 14 May.\*

Treatment, rate/A and application timing**	% powdery mildew		% Septoria	
	flag leaf	flag -1	flag leaf	flag -1
Untreated .....	18.5 a	19.5 a	3.5 a	13.8 a
Quadris 2.08SC 3 fl oz + Tilt 3.6EC 1.5 fl oz (GS 32, GS 45) .....	3.0 ef	3.0 c	0.7 b-d	4.7 b
Quadris 2.08SC 6 fl oz (GS 45) .....	7.3 d	6.3 c	1.3 b-d	6.3 b
Quilt 10.5 fl oz (GS 45) .....	1.3 f	1.8 c	0.3 d	3.5 b
Quilt 10.5 fl oz + Quadris 2.08SC 3 fl oz (GS 45)	2.0 ef	2.8 c	0.5 cd	4.5 b
Headline 250EC 3 fl oz (GS 32, GS 45).....	4.8 d-f	3.8 c	1.0 b-d	4.5 b
Headline 250EC 3 fl oz + Tilt 3.6EC 2 fl oz (GS 32)				
Headline 250EC 3 fl oz (GS 45).....	3.3 ef	2.5 c	0.5 cd	3.5 b
Headline 250EC 6 fl oz (GS 45).....	3.0 ef	4.0 c	1.3 b-d	5.3 b
LEM17 200SC 9.6 fl oz (GS 45) .....	10.3 c	11.8 b	2.0 b-d	8.0 b
LEM17 200SC 16.8 fl oz (GS 45) .....	13.5 b	11.5 b	2.5 ab	8.5 b
LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz (GS 45).....	4.0 b-f	4.5 c	1.0 b-d	6.0 b
LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz (GS 45) .....	5.8 de	4.8 c	2.3 a-c	7.0 b
Punch 3.3EC 4 fl oz (GS 45) .....	4.0 d-f	4.0 c	1.0 b-d	6.8 b
Punch 3.3EC 3 fl oz + YT669 2.08SC 4 fl oz (GS 45).....	0.8 f	2.5 c	0.8 b-d	4.8 b

\* Data represent percent of leaf area with disease symptoms.

\*\* GS 32= 5 Apr; GS 45 = 23 Apr. Quadris, Quilt and Headline were applied with Coverall surfactant 0.1% of spray volume. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Means followed by the same letter(s) are not significantly different by Student-Newman-Keuls test ( $P=0.05$ ).

Table 8. Effect of fungicide treatments on yield and test weight in wheat.

Treatment, rate/A and application timing*	Yield** (bu/A)	Test weight (lb/bu)
Untreated .....	82.0	64.3
Quadris 2.08SC 3 fl oz + Tilt 3.6EC 1.5 fl oz (GS 32, GS 45) .....	88.1	64.1
Quadris 2.08SC 6 fl oz (GS 45) .....	84.9	64.3
Quilt 10.5 fl oz (GS 45) .....	79.3	64.4
Quilt 10.5 fl oz + Quadris 2.08SC 3 fl oz (GS 45) .....	87.4	64.4
Headline 250EC 3 fl oz (GS 32, GS 45) .....	79.7	63.7
Headline 250EC 3 fl oz + Tilt 3.6EC 2 fl oz (GS 32) Headline 250EC 3 fl oz (GS 45) .....	83.6	63.8
Headline 250EC 6 fl oz (GS 45) .....	86.3	64.4
LEM17 200SC 9.6 fl oz (GS 45) .....	81.6	64.3
LEM17 200SC 16.8 fl oz (GS 45) .....	82.5	64.6
LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz (GS 45) .....	83.9	64.0
LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz (GS 45) .....	80.4	64.1
Punch 3.3EC 4 fl oz (GS 45) .....	86.5	64.3
Punch 3.3EC 3 fl oz + YT669 2.08SC 4 fl oz (GS 45) .....	83.9	64.1
<i>SNK, P=0.05</i> .....	n.s.	n.s.

\* GS 32= 5 Apr; GS 45 = 23 Apr. Quadris, Quilt and Headline were applied with Coverall surfactant 0.1% of spray volume.

\*\* Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 19 Jun 2007.

n..s. denotes that means are not significantly different by Student-Newman-Keuls test ( $P=0.05$ ).



II. RESPONSE OF CORN TO FUNGICIDES FOR CONTROL OF FOLIAR DISEASE, STALK ROT AND EAR ROT (CORNFUN107, Tidewater Research Farm, Suffolk, Field 9A)

A. PURPOSE: To evaluate fungicide chemistries for disease control and improvement of yield in corn

B. EXPERIMENTAL DESIGN:

1. Five randomized complete blocks separated by 10 ft alleyways
2. Four, 30-ft rows per plot
3. Seed spacing 10 in. apart

C. TREATMENT AND RATE/A: All treatments were applied at 4-7 days pretassel (22 Jun) with 8002VS nozzles spaced 18-inches apart and delivering 16.5 gal/A.

1. Untreated check
2. Stratego 10 fl oz + Induce 2.56 fl oz (0.125% spray vol.)
3. Stratego 12 fl oz + Induce 2.56 fl oz (0.125% spray vol.)
4. Headline 250EC 6.14 fl oz + Induce 2.56 fl oz (0.125% spray vol.)
5. Headline 250EC 9.2 fl oz + Induce 2.56 fl oz (0.125% spray vol.)
6. Quadris 250SC 9.2 fl oz + COC 20.5 fl oz (1% v/v)
7. Quilt 250SC 14 fl oz + COC 20.5 fl oz (1% v/v)

D. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk, VA
2. Crop history: Cotton 2006, Peanut 2005, Corn 2004
3. Land preparation: rip-strip till (29 Mar)
4. Planting date and cultivar: 10 Apr, DKC 69-71 RR YG
5. Soil fertility report (Jan 2007):

pH.....	6.45	K .....	31 ppm
Ca .....	277 ppm	Zn.....	0.4 ppm
Mg .....	33 ppm	Mn.....	1.4 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy sand
6. Fertilization: 9-15-36 300 lb/A (24 Mar)  
Starter fertilizer 11 gal/A (10 Apr)  
32% N 60 units/A (14 Apr, 25 May)
7. Herbicide: Banvel 8 fl oz/A (23 Mar)  
Lariat 3 qt/A (14 Apr)  
Roundup Ultra Max 20 fl oz/A (14 Apr)
8. Irrigation (ca 0.75"): 25 Jun, 6 Jul
9. Harvest date: 6 Sep

Table 9. Plant populations, growth and yield of corn.

Treatment and rate/A <sup>1</sup>	Plants/ft <sup>2</sup> (1 Jun)	% green <sup>3</sup> (27 Aug)	Yield <sup>4</sup> (bu/A)
Untreated check .....	1.56	28	66.0
Stratego 10 fl oz + Induce 2.56 fl oz .....	1.67	23	62.1
Stratego 12 fl oz + Induce 2.56 fl oz .....	1.46	23	66.4
Headline 250EC 6.14 fl oz + Induce 2.56 fl oz .....	1.52	28	79.6
Headline 250EC 9.2 fl oz + Induce 2.56 fl oz .....	1.60	28	75.4
Quadris 250SC 9.2 fl oz + COC 20.5 fl oz .....	1.60	25	76.7
Quilt 250SC 14 fl oz + COC 20.5 fl oz .....	1.50	24	72.4

<sup>1</sup> All treatments applied on 22 Jun.

<sup>2</sup> Determined from counts in 6-ft section per row in each plot.

<sup>3</sup> Data are percent of leaf area with green coloration.

<sup>4</sup> Yields are based on weight of corn with 15.5% moisture. Corn was harvested on 6 Sep (One bushel=56 lbs of grain). Means were not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), except yield was analyzed using Student-Newman-Keuls test ( $P=0.05$ ). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

III. EVALUATION OF AVICTA ON CORN SEED FOR NEMATODE CONTROL  
(CORNNEMA107, Tidewater Research Farm, Suffolk, Field 16)

A. PURPOSE: to assess the efficacy of experimental seed treatments for control of nematodes in corn

B. EXPERIMENTAL DESIGN:

1. Two, 30-ft rows per plot
2. Fifteen-ft alleyways between blocks
3. Four replications in a randomized complete block design

C. APPLICATION OF TREATMENTS: All seed treatments applied by personnel with Syngenta Crop Protection

D. TREATMENT AND RATE (a.i.): Note: all seed treated with a base fungicide/insecticide treatment of Maxim XL 2.7 FS 3.5 g/100 kg seed +Apron XL 3 LS 1.0 g/100 kg seed + Dynasty .83 FS 1.0 g/100 kg seed + Cruiser 5FS 0.25 mg/seed. Treatments listed below were applied as an over-coat on top of the base seed treatment. F=in furrow at planting.

1. A14006 FS .025 mg/seed + A10466 SC 0.05 mg/seed + STP27301 0.032 mg/seed
2. Untreated check
3. A14006 FS 0.15 mg/seed
4. A14006 FS 0.2 mg/seed
5. A14006 FS 0.25 mg/seed
6. A10466 FS 0.05 mg/seed
7. A10466 FS 0.1 mg/seed
8. A14006 FS 0.25 mg/seed + A10466 FS 0.05 mg/seed
9. A14006 FS 0.25 mg/seed + A10466 FS 0.1 mg/seed
10. Counter 15G 7.28 lb/A (F)
11. STP17217 0.375 mg/seed

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop History: cotton 2006, peanut 2005, corn 2004,
3. Planting date and variety: 13 Apr, H-8998 GT/RW
4. Soil fertility report (Jan 2007):

pH .....	6.31	K.....	46 ppm
Ca.....	235 ppm	Zn .....	0.5 ppm
Mg.....	37 ppm	Mn .....	1.5 ppm
P .....	35 ppm	Soil type .....	Kenansville loamy fine sand
5. Nematode assay report (14 May)

<u>Nematodes/500 cc soil</u>	
Root knot.....	360
Soybean cyst.....	10
Stunt.....	310
Stubby root .....	50
6. Fertilization: 9-15-36 300 lb/A (24 Mar); 32% N 60 units/A (14 Apr, 25 May)
7. Herbicide: Touchdown 1 qt + Banvel 8 fl oz/A (22 Mar); Lariat 3 qt/A (14 Apr)  
Roundup Ultra Max 20 fl oz/A (14 Apr)
8. Irrigation (ca 0.75"): 31 May, 25 Jun
9. Harvest date: 7 Sep

Table 10. Effect of seed treatments on nematode populations in corn.

Treatment and rate* (a.i. unless otherwise noted)	Nematodes/500 cc soil**		
	Root-knot juveniles	Lesion	Stubby root
A14006 FS .025 mg/seed (O) + A10466 SC 0.05 mg/seed (O) + STP27301 0.032 mg/seed (O) .....	430	70	520
Untreated check .....	200	70	450
A14006 FS 0.15 mg/seed (O) .....	50	70	380
A14006 FS 0.2 mg/seed (O) .....	60	40	520
A14006 FS 0.25 mg/seed (O) .....	30	20	800
A10466 FS 0.05 mg/seed (O) .....	20	20	250
A10466 FS 0.1 mg/seed (O) .....	10	10	140
A14006 FS 0.25 mg/seed (O) + A10466 FS 0.05 mg/seed (O) .....	30	60	450
A14006 FS 0.25 mg/seed (O) + A10466 FS 0.1 mg/seed (O) .....	10	0	150
Counter 15G 7.28 lb/A (F).....	10	10	110
STP17217 0.375 mg/seed (O).....	40	20	300

\* All seed treated with a base seed treatment of Maxim XL 2.7 FS 3.5 g/100 kg seed +Apron XL 3 LS 1.0 g/100 kg seed + Dynasty .83 FS 1.0 g/100 kg seed + Cruiser 5 FS 0.25 mg/seed. O=overcoat, F=in furrow.

\*\* Soil was sampled on 24 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 11. Effect of seed treatments on emergence, growth and yield of corn.

Treatment and rate <sup>1</sup>	Plants/ft <sup>2</sup>		Plant vigor <sup>3</sup> (1-10) (13 Jun)	Ear height (in.) <sup>4</sup> (28 Aug)	Yield <sup>5</sup> (lb/A)
	26 Apr	10 May			
A14006 FS .025 mg/seed (O) + A10466 SC 0.05 mg/seed (O) + STP27301 0.032 mg/seed (O) ...	1.25 ab	1.37	5.0	39.7	83.4
Untreated check .....	1.17 b	1.40	4.3	39.5	96.4
A14006 FS 0.15 mg/seed (O) .....	1.30 a	1.45	4.5	37.7	76.0
A14006 FS 0.2 mg/seed (O) .....	1.26 ab	1.41	4.5	39.3	81.9
A14006 FS 0.25 mg/seed (O) .....	1.24 ab	1.40	4.5	40.1	88.1
A10466 FS 0.05 mg/seed (O) .....	1.20 ab	1.33	4.5	39.4	90.8
A10466 FS 0.1 mg/seed (O) .....	1.29 a	1.40	4.3	41.0	92.5
A14006 FS 0.25 mg/seed (O) + A10466 FS 0.05 mg/seed (O) ....	1.18 ab	1.43	4.3	39.1	94.9
A14006 FS 0.25 mg/seed (O) + A10466 FS 0.1 mg/seed (O) .....	1.18 ab	1.43	4.5	39.3	85.4
Counter 15G 7.28 lb/A (F).....	0.89 c	1.34	4.8	39.6	90.8
STP17217 0.375 mg/seed (O).....	1.19 ab	1.38	4.8	39.0	89.8
LSD.....	0.12	n.s.	n.s.	n.s.	n.s.

<sup>1</sup> All seed treated with a base seed treatment of Maxim XL 2.7 FS 3.5 g/100 kg seed +Apron XL 3 LS 1.0 g/100 kg seed + Dynasty .83 FS 1.0 g/100 kg seed + Cruiser 5 FS 0.25 mg/seed. O=seed treatment applied as overcoat on base treatment. F=in furrow application at formulated product rate.

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

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Measurement from ground to base of first ear on three plants per row in each plot.

<sup>5</sup> Yields are weight of corn with moisture content of 15.5%. Corn was harvested on 7 Sep. One bushel=56 lbs of grain. 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. denotes not significant.

Table 12. Effect of selected treatments on growth of corn.

Treatment and rate*	Plant height**	No.
	(in.) (4 Jun)	leaves/plant** (4 Jun)
Untreated check .....	21.4	7.9
Counter 15G 7.28 lb/A (F).....	20.9	7.8
LSD.....	n.s.	n.s.

\* All seed treated with a base seed treatment of Maxim XL 2.7 FS 3.5 g/100 kg seed +Apron XL 3 LS 1.0 g/100 kg seed + Dynasty .83 FS 1.0 g/100 kg seed + Cruiser 5 FS 0.25 mg/seed. F=in furrow.

\*\* Determined from observations of two randomly selected plants per row in each plot.

Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

IV. EFFICACY OF AVICTA ON CORN SEED FOR NEMATODE CONTROL  
(CORNNEMA207, Tidewater Research Farm, Suffolk, Field 16)

A. PURPOSE: to assess the efficacy of experimental seed treatments for control of nematodes in corn

B. EXPERIMENTAL DESIGN:

1. Two, 30-ft rows per plot
2. Fifteen-ft alleyways between blocks
3. Four replications in a randomized complete block design

C. APPLICATION OF TREATMENTS: All seed treatments applied by personnel with Syngenta Crop Protection

D. TREATMENT AND RATE/A: All seed treatments are mg active ingredient (a.i.) per seed. All seed were treated with Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

1. Maxim XL 2.7 FS 0.0089 mg + Apron XL 3 LS 0.0025 mg + Dynasty .83 FS 0.0025 mg/seed
2. A14918 0.0652 mg/seed
3. Maxim XL 2.7 FS 0.0089 mg + Apron XL 3 LS 0.0025 mg + Dynasty .83 FS 0.0025 mg + Avicta 500 0.25 mg/seed
4. Maxim XL 2.7 FS 0.0089 mg + Apron XL 3 LS 0.0025 mg + Dynasty .83 FS 0.0025 mg + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed
5. A14918 0.0652 mg + Avicta 500 0.25 mg/seed
6. Maxim XL 2.7 FS 0.0089 mg + Apron XL 3 LS 0.0025 mg + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F)
7. Maxim XL 2.7 FS 0.0089 mg + Apron XL 3 LS 0.0025 mg + Dynasty .83 FS 0.0025 mg + STP17217 0.375 mg/seed

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop History: cotton 2006, peanut 2005, corn 2004
3. Planting date and variety: 11 Apr, N70-C3 GT/RW
4. Soil fertility report:
 

pH .....	6.31	K.....	46 ppm
Ca.....	235 ppm	Zn.....	0.5 ppm
Mg.....	37 ppm	Mn.....	1.5 ppm
P.....	35 ppm	Soil type .....	Kenansville loamy fine sand
5. Nematode assay report (14 May)
 

<u>Nematodes/500 cc soil</u>	
Root knot .....	360
Soybean cyst.....	10
Stunt.....	310
Stubby root .....	50
6. Fertilization: 9-15-36 300 lb/A (24 Mar); 32% N 60 units/A (14 Apr, 25 May)
7. Herbicide: Touchdown 1 qt + Banvel 8 fl oz/A (22 Mar); Lariat 3 qt/A (14 Apr)  
Roundup Ultra Max 20 fl oz/A (14 Apr)
8. Irrigation (ca 0.75"): 31 May, 25 Jun
9. Harvest date: 7 Sep

Table 13. Effect of seed treatments on nematode populations in corn.

Treatment and rate* (a.i. unless otherwise noted)	Nematodes/500 cc soil**		
	Root-knot juveniles	Lesion	Stubby root
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed .....	0	50	310
A14918 0.0652 mg/seed .....	30	30	160
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed .....	10	60	240
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed.....	0	0	350
A14918 0.0652 mg/seed + Avicta 500 0.25 mg/seed .....	0	90	210
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F) .....	20	10	170
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + STP17217 0.375 mg/seed .....	0	10	180

\* All treatments received Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

\*\* Soil was sampled on 24 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 14. Effect of seed and in-furrow treatments on emergence, growth and yield of corn.

Treatment and rate (a.i.) <sup>1</sup>	Plants/ft <sup>2</sup>		Plant vigor (0-10) <sup>3</sup>	Ear height (in.) <sup>4</sup>	Yield <sup>5</sup> (bu/A)
	26 Apr	10 May	(13 Jun)	(28 Aug)	
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed .....	1.47	1.51 a	6.0 bc	38.2	60.3
A14918 0.0652 mg/seed .....	1.45	1.50 ab	6.8 ab	39.8	73.5
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed .....	1.40	1.43 bc	6.0 bc	38.3	59.6
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed.....	1.42	1.44 bc	7.0 a	39.0	75.2
A14918 0.0652 mg/seed + Avicta 500 0.25 mg/seed .....	1.36	1.38 c	7.0 a	38.9	80.1
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F) .....	1.36	1.49 ab	5.8 c	37.5	66.9
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + STP17217 0.375 mg/seed .....	1.45	1.47 ab	7.0 a	40.0	74.7
LSD .....	n.s.	0.07	0.9	n.s.	n.s.

<sup>1</sup> All treatments received Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

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

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Measurement from ground to base of first ear on three plants per row in each plot.

<sup>5</sup> Yields are weight of corn with moisture content of 15.5%. Corn was harvested on 7 Sep. One bushel=56 lbs of grain.

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. denotes not significant.

Table 15. Effect of selected seed treatments on growth of corn.

Treatment and rate (mg a.i./seed)*	Plant height (in.)** (4 Jun)	Leaves/plant** (4 Jun)
Maxim XL 2.7 FS 0.0089 + Apron XL 3 LS 0.0025 + Dynasty .83 FS 0.0025.....	24.8	8.7
Maxim XL 2.7 FS 0.0089 + Apron XL 3 LS 0.0025 + Dynasty .83 FS 0.0025 + STP17217 0.375 .....	24.9	8.8
LSD .....	n.s.	n.s.

\* All treatments received Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

\*\* Determined from measurement of two plants per row in each plot.

Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).



V. EFFICACY OF AVICTA ON CORN SEED FOR NEMATODE CONTROL  
(CORNNEMA307, Glenn Carr Farm, Spivey Town Rd., Isle of Wight County)

A. PURPOSE: to assess the efficacy of Avicta on seed for control of nematodes in corn

B. EXPERIMENTAL DESIGN:

1. Two, 30-ft rows per plot
2. Fifteen-ft alleyways between blocks
3. Four replications in a randomized complete block design

C. APPLICATION OF TREATMENTS: All seed treatments applied by personnel with Syngenta Crop Protection

D. TREATMENT AND RATE/A: All seed treatments are mg active ingredient (a.i.) per seed. Seed were treated with Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

1. Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed
2. A14918 0.0652 mg/seed
3. Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed
4. Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed
5. A14918 0.0652 mg/seed + Avicta 500 0.25 mg/seed
6. Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Glen Carr farm, Colosse
2. Crop History: corn 2006, soybean 2005, corn 2004
3. Planting date and variety: 18 Apr, N70-C3 GT/RW
4. Soil fertility report:

pH.....	5.46	K .....	63 ppm
Ca .....	279 ppm	Zn.....	0.9 ppm
Mg .....	45 ppm	Mn.....	3.0 ppm
P .....	16 ppm	Soil type .....	Slagle fine sandy loam

5. Nematode assay report (30 Apr):

Nematode	Nematodes/500 cc soil
Root knot larvae .....	170
Lesion.....	170
Stunt .....	240
Spiral .....	10
Ring.....	10
Stubby root.....	110
Dagger.....	120

6. Herbicide: Lariat 3 qt + Roundup 22 fl oz/A (23 Apr)  
Roundup 22 fl oz/A (21 May)

7. Fertilization: 6-13-40 400 lb/A (13 Apr)  
32% N 60 units/A (23 Apr, 25 May)

8. Harvest date: 7 Sep

Table 16. Effect of seed treatments on nematode populations in corn.

Treatment and rate* (a.i. unless otherwise noted)	Nematodes/500 cc soil**			
	Root-knot juveniles	Lesion	Stubby root	Dagger
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed .....	10	250	210	740
A14918 0.0652 mg/seed .....	110	530	90	490
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed .....	10	900	110	710
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed.....	10	140	300	350
A14918 0.0652 mg/seed + Avicta 500 0.25 mg/seed .....	40	970	90	590
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F) .....	20	90	80	460

\* All treatments included Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

\*\* Soil was sampled on 24 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 17. Effect of seed and in-furrow treatments on emergence, growth and yield of corn.

Treatment and rate (a.i.) <sup>1</sup>	Plants/ft <sup>2</sup>		Plant vigor	Ear height	Yield <sup>5</sup> (bu/A)
	2 May	17 May	(0-10) <sup>3</sup> (13 Jun)	(in.) <sup>4</sup> (28 Aug)	
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed .....	1.48	1.50 a	5.5	43.9 b	62.3
A14918 0.0652 mg/seed .....	1.39	1.46 ab	5.8	46.5 a	70.3
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed .....	1.37	1.38 c	6.3	47.1 a	62.0
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Avicta 500 0.25 mg/seed + Bion 50WG 0.6 g/100 kg seed.....	1.36	1.45 ab	6.3	45.3 ab	72.5
A14918 0.0652 mg/seed + Avicta 500 0.25 mg/seed .....	1.33	1.45 ab	6.0	46.5 a	64.2
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F).....	1.23	1.43 bc	6.5	46.4 a	68.7
<i>P</i> (F) .....	.5274	.0858	.2240	.0910	.5293

<sup>1</sup> All treatments included Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

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

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Measurement from ground to base of first ear on three plants per row in each plot

<sup>5</sup> Yields are weight of corn with moisture content of 15.5%. Corn was harvested on 7 Sep. One bushel=56 lbs of grain. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), except yield was analyzed using Student-Newman-Keuls test ( $P=0.05$ ).

Table 18. Effect of selected seed and in-furrow treatments on growth of corn.

Treatment and rate (a.i.)*	Plant height (in.)** (4 Jun)	No. leaves/ plant** (4 Jun)
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed .....	32.1	8.8
Maxim XL 2.7 FS 0.0089 mg/seed + Apron XL 3 LS 0.0025 mg/seed + Dynasty .83 FS 0.0025 mg/seed + Counter 15G 7.28 lb/A (F).....	32.6	9.1
LSD .....	.6712	.2205

\* All treatments included Cruiser 5FS 0.25 mg/seed. F=in furrow at planting.

\*\* Determined from measurement of two randomly selected plants per row in each plot.

Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

VI. COTTON FOUNDATION SEED TREATMENT FUNGICIDE TEST (COTSEEDFUN107, Tidewater Research Farm, Suffolk, Field 34)

A. PURPOSE: To compare seed treatments for control of pre- and post-emergence damping-off diseases of cotton

B. EXPERIMENTAL DESIGN:

1. Split-plot design with seed treatments in main plots of four, 30-ft rows
2. Subplots of two rows with and without in-furrow inoculum
3. Four replications in randomized complete block design separated by 15-ft alleyways

C. APPLICATION OF TREATMENTS: Seed and overcoat treatments were applied by Bayer CropScience.

D. TREATMENT AND RATE/CWT SEED: S=base seed treatment, O=overcoat treatment

1. Untreated
2. RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S)
3. RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)
4. RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O)
5. RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O)

E. INOCULANT (Subplots): Dr. Steve Rideout produced inoculum of *Rhizoctonia solani* on millet seed. Inoculum was applied at 0.5 ml/ft of row in the seed furrow at planting.

1. Non-inoculated check
2. Inoculated

F. ADDITIONAL INFORMATION: Jan 2007

1. Location: TAREC Research farm
2. Crop history: peanut 2006, corn 2005, cotton 2004
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 25 Apr; DP 444 BG/RR, lot #2B8-E-6973-N1 (warm germ 89%, cool germ 84%)
5. Soil fertility report:

pH.....	6.23	K .....	41 ppm
Ca .....	188 ppm	Zn.....	0.4 ppm
Mg .....	17 ppm	Mn.....	0.8 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy fine sand
6. Herbicide:
  - Preplant – Roundup Ultra Max 1 qt/A (3 Apr)
  - Pre-emergence – Cotoran 1 qt + Prowl 1 pt/A (27 Apr)
  - Post emergence – Roundup 22 fl oz/A (21 May, 31 May)
7. Insecticide: Temik 15G 5 lb/A in furrow (25 Apr);  
Orthene 75S 8 oz/A (21 May, 31 May)
8. Growth regulator: Pentia 6 fl oz/A (2 Jul); 8 fl oz/A (23 Jul)
9. Defoliant/boll opener: Finish 21 fl oz + Dropp 2 oz + Def 8 oz/A (11 Sep)
10. Fertilization: 6-16-39 330 lb/A (14 Apr)  
32% liquid N 30 lb/A + Liquid boron 1 qt/A (22 Jun, 5 Jul)
11. Harvest date: 25 Sep

Table 19. Effect of seed and in-furrow inoculum on emergence of cotton.

Treatment and rate/cwt seed	Plants/ft*			
	9 May		23 May	
	Non-inoculated	Inoculated	Non-inoculated	Inoculated
Untreated .....	1.89	0.00 d	1.73	0.00 b
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....	2.11	0.10 c	1.98	0.00 b
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)...	2.15	0.25 b	2.08	0.02 b
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....	2.00	0.39 a	1.96	0.09 a
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....	2.09	0.07 cd	1.94	0.02 b
LSD .....	n.s.	0.08	n.s.	0.02
<b>Treatment mean</b>				
Untreated .....		0.95		0.87
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....		1.10		0.99
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)		1.20		1.05
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....		1.20		1.03
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....		1.08		0.98
LSD .....		--		n.s.
<b>Inoculum mean</b>				
Non-inoculated .....		2.05		1.94 a
Inoculated .....		0.16		0.03 b
LSD .....		--		0.07
<b>Split-plot analysis</b>				
Treatment .....		.0014		.0593
Inoculum .....		.0001		.0001
Treatment x inoculum .....		.0195		.0752

\* Determined from counts of two, 30-ft rows per plot. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- LSD not reported because of significant treatment by inoculum interaction.

Table 20. Effect of seed and in-furrow inoculum on growth of cotton.

Treatment and rate/cwt seed	Plant height (in.), 25 Jul*		Flowers/12 ft** Non-inoculated (26 Jul)
	Non-inoculated	Inoculated	
Untreated .....	33.0	--	43.5
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....	33.0	40.0	43.0
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)...	32.6	35.4	40.8
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....	31.9	35.3	44.8
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....	32.5	33.8	48.8
LSD .....	n.s.	n.s.	n.s.
<b>Treatment mean</b>			
Untreated .....		33.0	--
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....		33.5	--
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)		33.7	--
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....		33.6	--
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....		32.8	--
<b>Inoculum mean</b>			
Non-inoculated .....		32.6 b	--
Inoculated .....		35.3 a	--
<b>Split-plot analysis P(F)</b>			
Treatment .....		.7947	--
Inoculum .....		.0002	--
Treatment x inoculum .....		.4192	--

\* Determined from measurements of three randomly selected plants per row in each plot.

\*\* Data are counts from 6-ft sections of row in each plot. Inoculated lacked enough plants to obtain an accurate count. Means in a column and group are not significantly different according to Student-Newman-Keuls test ( $P=0.05$ ); -- flowers counted only in non-inoculated.

Table 21. Effect of seed and in-furrow inoculum on yield of cotton.

Treatment and rate/cwt seed	Yield*			
	lb/A		bales/A	
	Non-inoculated	Inoculated	Non-inoculated	Inoculated
Untreated .....	4398	0 c	4.11	0.00 c
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....	4586	48 c	4.28	0.05 c
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)...	4789	393 b	4.47	0.37 b
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....	3869	911 a	3.61	0.85 a
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....	4616	88 c	4.31	0.08 c
<b>LSD</b> .....	n.s.	211	n.s.	0.20
<b>Treatment mean</b>				
Untreated.....	2199		2.05	
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) .....	2317		2.16	
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz (O)	2591		2.42	
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Trilex Advanced 1.64 oz + Vortex FL 0.34 oz (O) .....	2390		2.23	
RTU Baytan-Thiram 3.0 oz + Allegiance 0.75 oz (S) + Dynasty CST 3.95 oz (O) .....	2352		2.20	
<b>LSD</b> .....	--		--	
<b>Inoculum mean</b>				
Non-inoculated.....	4452		4.15	
Inoculated.....	288		0.27	
<b>LSD</b> .....	--		--	
<b>Split-plot analysis</b>				
Treatment .....	.2640		.2640	
Inoculum .....	.0001		.0001	
Treatment x inoculum .....	.0030		.0030	

\* Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 44.8% of total weight. One bale equals 480 lb. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- denotes LSD not reported because of significant treatment by inoculum interaction.

VII. NATIONAL COTTONSEED TREATMENT TEST – VIRGINIA LOCATION  
(COTSEEDFUN207, Tidewater Research Farm, Suffolk, Field 34)

- A. PURPOSE: To evaluate seed treatment fungicides for control of damping-off diseases
- B. EXPERIMENTAL DESIGN:
1. Two, 30-ft rows per plot
  2. Four replications in randomized complete block design separated by 15-ft alleyways
- C. APPLICATION OF TREATMENTS: Treatments were applied by Dr. Craig Rothrock, Coordinator of National Cottonseed Treatment Trials at the University of Arkansas
- D. TREATMENT AND RATE/A: rates are either active ingredient (a.i.) or formulated product
1. V10178 50 g a.i. + V10209 15 g a.i./100 kg seed
  2. V10178 50 g a.i. + V10116 1.0 g a.i. + V10209 15 g a.i./100 kg seed
  3. Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz + Trilex FL 0.64 fl oz/cwt
  4. Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz/cwt
  5. Vortex FL 0.342 fl oz + Allegiance FL 0.75 fl oz + Trilex FL 0.64 fl oz/cwt
  6. Baytan 30 0.25 fl oz + Allegiance FL 0.75 fl oz + Vortex Fl 0.342 fl oz/cwt
  7. RTU Baytan Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz/cwt
  8. Dynasty CST 3.95 fl oz/cwt
  9. Dynasty Extreme 3.0 fl oz/cwt
  10. Dynasty Extreme-D 3.0 + 2.0 fl oz/cwt
  11. ATM 8.0 fl oz/cwt
  12. ATM 8.0 fl oz + WECO 0319 4.0 oz/cwt
  13. ATM 8.0 fl oz + WECO 3007 0.5 fl oz/cwt
  14. ATM 8.0 fl oz + WECO 3007 0.5 fl oz + WECO 0319 2.0 fl oz/cwt
  15. Vitavax-PCNB 6.0 fl oz + Allegiance 0.75 fl oz/cwt
  16. RTU-PCNB 14.5 fl oz/cwt
  17. Allegiance 1.5 fl oz/cwt
  18. Argent 4.5 fl oz/cwt
  19. Non-treated
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm
  2. Crop history: peanut 2006, corn 2005, cotton 2004
  3. Land preparation: rip and strip till into wheat cover crop
  4. Planting date and variety: 18 Apr; DP 444 BG/RR
  5. Soil fertility report:

pH.....	6.23	K .....	41 ppm
Ca .....	188 ppm	Zn.....	0.4 ppm
Mg .....	17 ppm	Mn.....	0.8 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy fine sand
  6. Herbicide:
    - Preplant – Roundup Ultra Max 1 qt/A (3 Apr)
    - Post emergence – Cotoran 1 qt + Prowl 1 pt/A (24 Apr)
    - Roundup 22 fl oz/A (21 May, 31 May)
  7. Insecticide: Temik 15G 5 lb/A in furrow (18 Apr)
    - Orthene 75S 8 oz/A (21 May, 31 May)



8. Growth regulator: Pentia 6 fl oz/A (2 Jul); 8 fl oz/A (23 Jul)
9. Defoliant/boll opener: Finish 21 fl oz + Dropp 2 oz + Def 8 oz/A (11 Sep)
10. Fertilization: 6-16-39 330 lb/A (14 Apr)  
32% liquid N 30 lb + liquid boron 1 qt/A (22 Jun, 5 Jul)
11. Harvest date: 25 Sep

Table 22. Effect of seed treatment on emergence of cotton.

Treatment and rate	Plants/ft* (17 May)	Yield**	
		lb/A	bales/A
V10178 50 g. a.i. + V10209 15 g a.i./100 kg seed .....	1.60 b-f	3482	3.24
V10178 50 g a.i. + V10116 1.0 g a.i. + V10209 15 g a.i./100 kg seed .....	1.75 a-d	3769	3.50
Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz + Trilex FL 0.64 fl oz/cwt .....	1.75 a-d	3594	3.34
Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz/cwt...	1.63 b-f	3536	3.29
Vortex FL 0.342 fl oz + Allegiance FL 0.75 fl oz + Trilex FL 0.64 fl oz/cwt ....	1.73 a-e	3406	3.16
Baytan 30 0.25 fl oz + Allegiance FL 0.75 fl oz + Vortex Fl 0.342 fl oz/cwt ..	1.77 a-c	3951	3.67
RTU Baytan Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz/cwt .....	1.80 ab	3712	3.45
Dynasty CST 3.95 fl oz/cwt.....	1.93 a	3790	3.52
Dynasty Extreme 3.0 fl oz/cwt.....	1.54 c-g	3778	3.51
Dynasty Extreme-D 3.0 + 2.0 fl oz/cwt .....	1.78 a-c	3669	3.41
ATM 8.0 fl oz/cwt.....	1.42 fg	3170	2.95
ATM 8.0 fl oz + WECO 0319 4.0 oz/cwt.....	1.43 fg	3379	3.14
ATM 8.0 fl oz + WECO 3007 0.5 fl oz/cwt .....	1.13 h	3061	2.84
ATM 8.0 fl oz + WECO 3007 0.5 fl oz + WECO 0319 2.0 fl oz/cwt .....	1.16 h	3564	3.34
Vitavax-PCNB 6.0 fl oz + Allegiance 0.75 fl oz/cwt .....	1.50 d-g	3588	3.33
RTU-PCNB 14.5 fl oz/cwt.....	1.49 e-g	3666	3.41
Allegiance 1.5 fl oz/cwt .....	1.70 a-e	3766	3.50
Argent 4.5 fl oz/cwt .....	1.58 b-f	3600	3.34
Non-treated .....	1.33 gh	3294	3.06
LSD.....	0.25	n.s.	n.s.

\* Determined from counts of two, 30-ft rows per plot.

\*\* Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 44.6% of total weight. One bale equals 480 lb. Plots were harvested on 25 Sep.

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. denotes no significant differences.

VIII. RESPONSE OF COTTON TO FUNGICIDES FOR CONTROL OF FOLIAR DISEASE, BOLL ROT AND HARDLOCK (COTHARDLOCK107, Tidewater Research Farm, Suffolk, Field 34)

A. PURPOSE: To evaluate fungicide chemistries for disease control and improvement of yield

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleyways
2. Four, 30-ft rows per plot
3. Seeding rate of 4 seed/ft of row

C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18-inches apart and delivering 16.5 gal/A. All plots including the untreated control were treated with Pentia (mepiquat) according to Virginia Tech recommendations.

D. TREATMENT AND RATE/A:

1. Untreated check
2. Headline 250EC 6.14 fl oz (14 days after 1<sup>st</sup> bloom)
3. Headline 250EC 6.14 fl oz (28 days after 1<sup>st</sup> bloom)
4. Headline 250EC 6.14 fl oz (14 days and 28 days after 1<sup>st</sup> bloom)
5. BAS55601F 210EC 6.8 fl oz (14 days and 28 days after 1<sup>st</sup> bloom)
6. BAS55601F 210EC 8.6 fl oz (14 days and 28 days after 1<sup>st</sup> bloom)
7. Caramba 90SL 6 fl oz (14 days and 28 days after 1<sup>st</sup> bloom)
8. Caramba 90SL 12 fl oz (14 days and 28 days after 1<sup>st</sup> bloom)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm
2. Crop history: peanut 2006, corn 2005, cotton 2004
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 27 Apr, DP 555 RR
5. Soil fertility report:

pH.....	6.23	K .....	41 ppm
Ca .....	188 ppm	Zn.....	0.4 ppm
Mg .....	17 ppm	Mn.....	0.8 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy fine sand
6. Herbicide:
  - Preplant – Roundup Ultra Max 1 qt/A (3 Apr)
  - Cotoran 1 qt + Prowl 1 pt/A (27 Apr)
  - Post emergence – Roundup 22 fl oz/A (25 May, 6 Jun)
7. Insecticide: Temik 15G 5 lb/A in furrow (27 Apr)
  - Orthene 75S 8 oz/A (25 May, 6 Jun)
8. Growth regulator: Pentia 6 fl oz/A (2 Jul); 8 fl oz/A (23 Jul)
9. Defoliant/boll opener: Finish 1 qt + Dropp 2.6 oz + Def 6 oz/A (24 Sep)
10. Fertilization: 6-16-39 330 lb/A (14 Apr)
  - Liquid 32% N 30 lb + Liquid boron 1 qt/A (22 Jun, 5 Jul)
11. Harvest date: 11 Oct

Table 23. Emergence and growth of cotton.

Treatment, rate/A and application timing <sup>1</sup>	Plants/ ft <sup>2</sup> (1 Jun)	Flowers/12 ft <sup>3</sup>		Plant height (in.) <sup>4</sup> (7 Aug)	No. of nodes/ plant <sup>4</sup> (7 Aug)
		23 Jul	7 Aug		
Untreated check .....	2.94	58.3	27.5	30.0	14.8
Headline 250EC 6.14 fl oz (7/25) .....	2.92	50.0	29.8	30.8	12.3
Headline 250EC 6.14 fl oz (8/7).....	3.00	60.3	29.0	30.1	13.4
Headline 250EC 6.14 fl oz (7/25, 8/7).....	3.13	51.5	32.3	30.3	13.0
BAS55601F 210EC 6.8 fl oz (7/25, 8/7) .....	2.98	57.0	30.0	30.4	13.1
BAS55601F 210EC 8.6 fl oz (7/25, 8/7) .....	2.85	59.5	29.8	29.9	14.0
Caramba 90SL 6 fl oz (7/25, 8/7) .....	3.04	60.0	30.0	30.4	13.3
Caramba 90SL 12 fl oz (7/25, 8/7).....	3.33	60.3	29.3	28.0	12.9
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.

<sup>1</sup> Treatments were applied at either 14 and/or 28 days after first bloom (23 Jul, 7 Aug).

<sup>2</sup> Determined from counts in 6-ft section of row in each plot.

<sup>3</sup> Data are number of flowers in two 6-ft sections of row per plot.

<sup>4</sup> Measurements of two, randomly selected plants per plot.

Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

Table 24. Growth and yield of cotton.

Treatment, rate/A and application timing <sup>1</sup>	No. open bolls <sup>2</sup> (13 Sep)	% open bolls <sup>3</sup> (11 Oct)	Yield <sup>4</sup>	
			lb/A	bales/A
Untreated check .....	6.8 a	96.0 bc	3815	3.60
Headline 250EC 6.14 fl oz (7/25) .....	5.9 a-c	97.5 ab	3645	3.44
Headline 250EC 6.14 fl oz (8/7).....	4.9 c	98.5 a	3875	3.66
Headline 250EC 6.14 fl oz (7/25, 8/7).....	6.9 a	97.8 ab	4172	3.94
BAS55601F 210EC 6.8 fl oz (7/25, 8/7) .....	5.9 a-c	97.3 a-c	4193	3.96
BAS55601F 210EC 8.6 fl oz (7/25, 8/7) .....	6.0 a-c	97.8 ab	4338	4.09
Caramba 90SL 6 fl oz (7/25, 8/7) .....	6.6 ab	95.5 c	4023	3.80
Caramba 90SL 12 fl oz (7/25, 8/7).....	5.7 bc	98.0 a	3917	3.70
LSD.....	1.1	1.8	n.s.	n.s.

<sup>1</sup> Treatments were applied at either 14 and/or 28 days after first bloom (23 Jul, 7 Aug).

<sup>2</sup> Data are the mean of counts from two plants per row in each plot.

<sup>3</sup> Data are percent of bolls open and without hardlock symptoms prior to harvest.

<sup>4</sup> Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 45.3% of total weight and 480 lb/bale. Plots were harvested on 11 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD at  $P=0.05$  except open boll count was analyzed at  $P=0.10$ ; n.s. denotes not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

IX. COTTON SEED TREATMENT NEMATICIDE TEST - AERIS VS AVICTA  
(COTSEEDNEMA507, TAREC Research Farm, Suffolk, Field 34)

A. PURPOSE: To compare the efficacy of seed treatment nematicides to Temik 15G in furrow

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleys
2. Two, 30-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting. Avicta Complete Pak was applied to seed by Syngenta Crop Protection and Aeris was applied by Bayer CropScience. Seed treatments were applied as an overcoat (O) on top of the seed company's standard fungicide treatment (Baytan, Thiram, Allegiance). Side dress treatments (SD) were applied with cultivation on 3 Jul.

D. TREATMENT:

1. Untreated check
2. Aeris Seed Applied System (O)
3. Avicta Complete Pak (O)
4. Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F)
5. Avicta Complete Pak (O) + Temik 15G 5 lb/A (F)
6. Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD)
7. Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm
2. Crop history: peanut 2006, corn 2005, cotton 2004
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 7 May, ST 4575 BR (Lot A13H3204F; warm germ 88%, cool germ 68%)
5. Soil fertility report:

pH.....	6.23	K .....	41 ppm
Ca .....	188 ppm	Zn.....	0.4 ppm
Mg .....	17 ppm	Mn.....	0.8 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy fine sand
6. Nematode assay report:

<u>Nematodes/500 cc soil (14 May)</u>	
Root knot.....	610
Stunt .....	10
Ring.....	170
7. Herbicide:

Preplant - Roundup Ultra Max 1 qt/A (3 Apr); Cotoran 1 qt + Prowl 1 pt/A (27 Apr)  
Post emergence - Roundup 22 fl oz/A (25 May, 6 Jun)
8. Insecticide: Orthene 75S 8 oz/A (25 May, 6 Jun)
9. Growth regulator: Pentia 6 fl oz/A (2 Jul); 8 fl oz/A (23 Jul)
10. Defoliant/boll opener: Finish 1 qt + Dropp 2.6 oz + Def 6 oz/A (24 Sep)
11. Fertilization: 6-16-39 330 lb/A (14 Apr)

Liquid 32% N 30 lb + Liquid boron 1 qt/A (22 Jun, 5 Jul)
12. Harvest date: 11 Oct

Table 25. Effect of treatments on emergence, growth and severity of thrips injury in cotton.

Treatment and application method <sup>1</sup>	Plants/ft <sup>2</sup> (30 May)	Plant vigor <sup>3</sup> (13 Jun)	Thrips injury <sup>4</sup> (13 Jun)	Plant	Flowers/ 12 ft <sup>6</sup> (25 Jul)	Open bolls <sup>7</sup> (13 Sep)
				height (in.) <sup>5</sup> (25 Jul)		
Untreated check .....	2.05	5.0	4.5 a	23.0 b	45.0	7.4 ab
Aeris Seed Applied System (O)	1.95	5.8	1.0 b	23.6 ab	51.3	6.5 a-c
Avicta Complete Pak (O).....	1.94	5.8	1.8 b	24.5 a	51.0	6.3 bc
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F).....	1.83	6.0	1.0 b	24.5 a	44.8	7.0 ab
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F).....	2.07	6.5	1.0 b	24.0 ab	50.8	7.9 a
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD).....	2.01	6.5	1.3 b	24.2 a	48.0	5.4 c
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD).....	2.01	6.5	1.3 b	24.5 a	51.0	7.7 ab
LSD.....	n.s.	n.s.	0.9	1.0	n.s.	1.6

<sup>1</sup> O=overcoat treatment, F=in furrow, SD=side dress with cultivation (3 Jul).

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

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Thrips rating scale: 0=no damage, 10=severe thrips damage.

<sup>5</sup> Measurements of three randomly selected plants per row in each plot.

<sup>6</sup> Number of flowers in 6-ft section of each row per plot.

<sup>7</sup> Plant mean for counts of two plants per row in each 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. denotes not significant.

Table 26. Effect of treatments on nematode populations in cotton.

Treatment and application method*	Nematodes/500 cc soil**			
	Root-knot	Ring	Stubby root	Sting
Untreated check .....	520	150	40	30
Aeris Seed Applied System (O).....	120	170	30	40
Avicta Complete Pak (O).....	90	270	0	40
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F) .....	90	130	30	30
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F) .....	100	60	0	10
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD) ...	320	260	0	30
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD) .....	130	110	50	20

\* O=overcoat treatment on top of base seed treatment, F=in furrow, SD=side dress with cultivation (3 Jul).

\*\* Soil was sampled on 23 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 27. Effect of treatments on yield of cotton.

Treatment and application method*	Yield**	
	lb/A	bales/A
Untreated check .....	3869 c	3.55 c
Aeris Seed Applied System (O).....	4268 ab	3.91 ab
Avicta Complete Pak (O).....	4359 a	4.00 a
Aeris Seed Applied System (O)+ Temik 15G 5 lb/A (F) .....	3899 bc	3.57 bc
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F) .....	4368 a	4.00 a
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD) .....	4311 a	3.95 a
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD) .....	4175 a-c	3.83 a-c
LSD.....	371	0.34

\* O=overcoat treatment, F=in furrow, SD=side dress with cultivation (3 Jul).

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 44.0% of total weight and 480 lb/bale. Plots were harvested on 11 Oct.

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

X. BAYER COTTON SEED TREATMENT NEMATICIDE TEST - AERIS VS AVICTA (COTSEEDNEMA407, Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy of Aeris and Avicta seed treatments for control of nematodes in cotton

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleys
2. Two, 30-ft rows per plot with 38-in. row spacing

C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting. Avicta Complete Pak and Aeris were applied by their respective owners as an overcoat (O) on the seed company's standard fungicide treatment of RTU Baytan-Thiram-Allegiance. Side dress treatments (SD) were applied with cultivation on 3 Jul.

D. TREATMENT:

1. Untreated check
2. Aeris Seed Applied System (O)
3. Avicta Complete Pak (O)
4. Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F)
5. Avicta Complete Pak (O) + Temik 15G 5 lb/A (F)
6. Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD)
7. Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2006-2001, Peanut 2000
3. Land preparation: Rip and bed rows over stale cotton beds from 2006
4. Planting date and variety: 2 May, ST 4575 BR (Lot A13H3204F, warm germ 88%, cool germ 68%)
5. Soil fertility report:

pH.....	6.64	K .....	52 ppm
Ca .....	472 ppm	Zn.....	0.7 ppm
Mg .....	85 ppm	Mn.....	2.4 ppm
P .....	29 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report:

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Nematodes/500 cc soil (14 May)	
Root knot.....	390
Stunt .....	20

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7. Herbicide:
  - Pre-emergence – Prowl 1 pt + Cotoran 1 qt + Roundup Ultra Max 22 fl oz/A (2 May)  
Roundup Ultra Max 22 fl oz/A (11 May)
  - Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May)  
Valor 1.3 fl oz/A directed between rows (10 Jul)  
Envoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)
8. Insecticide: Orthene 97S 8 oz/A (31 May, 19 Jun)
9. Growth regulator: Pix bar, wick application 4 oz/A (1 Aug)
10. Defoliant/Boll opener: Quick-Pick 0.5 gal/A (8 Oct)
11. Fertilization: liquid N 80 lb/A of N (26 Jun); Crop Booster (12-4-6) 1 qt/A (6 Jul)
12. Harvest date: 23 Oct

Table 28. Effect of treatments on emergence and growth of cotton.

Treatment and application method <sup>1</sup>	Plants/ft <sup>2</sup> (30 May)	Vigor <sup>3</sup> (21 Jun)	Plant height (in.) <sup>4</sup> (2 Aug)	Flowers/ 12 ft <sup>5</sup> (3 Aug)
Untreated check .....	1.65	2.3 b	25.1 c	19.5
Aeris Seed Applied System (O) .....	1.48	6.0 a	27.4 b	25.3
Avicta Complete Pak (O) .....	1.94	6.3 a	27.5 ab	21.3
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F) .....	1.60	6.8 a	26.6 b	28.3
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F) .....	1.75	6.8 a	26.9 b	27.0
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD) .....	1.73	6.5 a	26.9 b	26.0
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD) .....	1.92	6.3 a	28.8 a	26.3
LSD .....	n.s.	0.8	1.4	n.s.

<sup>1</sup> O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

<sup>2</sup> Determined from counts in one, 6-ft section per row in each plot.

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Data are measurements of three randomly-selected plants per row in each plot.

<sup>5</sup> Number of flowers in one, 6-ft section per row in each 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. denotes not significant.

Table 29. Effect of treatments on thrips injury, root galling and open bolls in cotton.

Treatment and application method <sup>1</sup>	Thrips injury <sup>2</sup> (21 Jul)	Root galling <sup>3</sup> (0-6)		Open bolls <sup>4</sup> (14 Sep)
		28 Jun	1 Nov	
Untreated check .....	5.3 a	3.5 a	5.3 a	4.9 d
Aeris Seed Applied System (O) .....	1.0 b	2.6 bc	5.2 a	8.9 ab
Avicta Complete Pak (O) .....	1.0 b	2.9 ab	4.8 ab	6.5 cd
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F) .....	1.0 b	2.8 b	4.4 bc	10.3 a
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F) .....	1.0 b	2.1 c	4.2 b-d	8.3 b
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD) .....	1.0 b	3.1 ab	3.7 d	8.5 b
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD) .....	1.0 b	2.9 ab	4.1 cd	7.5 bc
LSD .....	0.3	0.7	0.7	1.7

<sup>1</sup> O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

<sup>2</sup> Thrips rating scale: 0=no damage, 10=severe damage.

<sup>3</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 caused by southern root-knot nematode. Ratings were made on two randomly selected plants per row in each plot.

<sup>4</sup> Mean of four plants per plot.

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



Table 30. Effect of treatments on nematode populations in cotton.

Treatment and application method*	Nematodes/500 cc soil**	
	Root-knot	Stubby root
Untreated check.....	1670	30
Aeris Seed Applied System (O).....	3020	200
Avicta Complete Pak (O).....	2970	160
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F).....	1880	50
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F).....	4520	40
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD).....	3770	30
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD).....	2520	20

\* O=overcoat treatment on top of base seed treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

\*\* Soil was sampled on 24 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 31. Effect of treatments on yield of cotton.

Treatment and application method*	Yield**	
	lb/A	bales/A
Untreated check.....	1777 c	1.48 c
Aeris Seed Applied System (O).....	2389 bc	1.99 bc
Avicta Complete Pak (O).....	2255 bc	1.88 bc
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (F).....	2847 ab	2.37 ab
Avicta Complete Pak (O) + Temik 15G 5 lb/A (F).....	2885 ab	2.40 ab
Aeris Seed Applied System (O) + Temik 15G 5 lb/A (SD).....	2484 bc	2.07 bc
Avicta Complete Pak (O) + Temik 15G 5 lb/A (SD).....	3612 a	3.01 a
LSD.....	871	0.73

\* O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 40.0% of total weight and 480 lb/bale. Plots were harvested on 23 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.10$ ). Data are the mean of three reps (Rep 1 was dropped due to high variability).

XI. BIOLOGICAL CONTROL OF NEMATODES IN COTTON (COTNEMA607, Tidewater Research Farm, Suffolk, Field 34)

A. PURPOSE: To determine the response of cotton to synthetic chemicals and a biological agent for nematode control

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 10-ft alleyways between blocks
2. Two, 30-ft rows/plot and 36 in. row spacing

C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting. Avicta Complete Pak and Aeris were applied by their respective owners as an overcoat (O) on the seed company's standard fungicide treatment of RTU Baytan-Thiram-Allegiance. NemOut SP was sprayed in a 12-in. band (B) with a 8004E nozzle delivering 10 gal/A and soil incorporated with a rolling cultivator in front of planters. NemOut in-furrow (F) was mixed in water and applied in a volume of 5 gal/A with a microtube to the seed furrow at planting.

D. TREATMENT:

1. Untreated check
2. Temik 15G 5 lb/A (F)
3. Avicta Complete Pak (O)
4. Aeris Seed Applied System (O)
5. NemOut SP 2.4 oz/A (B)
6. NemOut SP 2.4 oz/A (F)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: peanut 2006, corn 2005, cotton 2004
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 7 May 2007, ST4575BR, Lot A13H3204F (warm germ 88%, cool germ 68%)

5. Soil fertility report:

pH.....	6.23	K .....	41 ppm
Ca .....	188 ppm	Zn.....	0.4 ppm
Mg .....	17 ppm	Mn.....	0.8 ppm
P .....	28 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report:

Nematodes/500 cc soil (14 May)

Root knot.....	1120
Lesion.....	10
Stunt .....	20
Ring.....	480
Stubby root.....	10

7. Herbicide:

Preplant - Roundup Ultra Max 1 qt/A (3 Apr) + Cotoran 1 qt + Prowl 1 pt/A (27 Apr)  
Post emergence - Roundup 22 fl oz/A (25 May, 6 Jun)

8. Insecticide: Orthene 75S 8 oz/A (25 May, 6 Jun)
9. Growth regulator: Pentia 6 fl oz/A (2 Jul); 8 fl oz/A (23 Jul)
10. Defoliant/boll opener: Finish 1 qt + Dropp 2.6 oz + Def 6 oz/A (24 Sep)

11. Fertilization: 6-16-39 330 lb/A (14 Apr)  
 Liquid boron 1 qt/A (22 Jun, 5 Jul)  
 32% N 30 lb/A (22 Jun, 5 Jul)
12. Harvest date: 11 Oct

Table 32. Effect of treatments on emergence and growth of cotton.

Treatment and application method <sup>1</sup>	Plants/ft <sup>2</sup> (4 Jun)	Vigor <sup>3</sup> (13 Jun)	Plant height <sup>4</sup> (25 Jul)	Flowers/ 12 ft <sup>5</sup> (26 Jul)	Open bolls <sup>6</sup> (13 Sep)
Untreated check .....	2.05	5.0 c	24.1 a	41.3	7.1 a
Temik 15G 5 lb/A (F) .....	2.07	7.0 a	24.6 a	40.0	6.2 ab
Avicta Complete Pak (O).....	1.95	6.5 a	25.0 a	46.3	7.1 a
Aeris Seed Applied System (O)....	1.96	7.0 a	24.5 a	46.3	6.9 a
NemOut SP 2.4 oz/A (B) .....	2.00	5.3 bc	22.9 b	42.5	5.1 b
NemOut SP 2.4 oz/A (F).....	2.31	5.8 b	24.1 a	38.3	5.1 b
LSD .....	n.s.	0.7	1.1	n.s.	1.5

<sup>1</sup> O=overcoat treatment on top of base seed treatment, F=in furrow, B=band application at planting.

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

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Data are measurements of three randomly-selected plants per row in each plot.

<sup>5</sup> Number of flowers per 6-ft section in each row per plot.

<sup>6</sup> Counts of four 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. denotes not significant.

Table 33. Effect of treatments on thrips damage and nematode populations in cotton.

Treatment and application method <sup>1</sup>	Thrips <sup>2</sup> (13 Jun)	Nematodes/500 cc soil <sup>3</sup>			
		Root-knot	Ring	Stubby root	Sting
Untreated check .....	4.5 a	380	310	20	50
Temik 15G 5 lb/A (F) .....	1.0 b	610	250	30	0
Avicta Complete Pak (O).....	1.0 b	680	70	20	10
Aeris Seed Applied System (O)...	1.0 b	370	310	50	30
NemOut SP 2.4 oz/A (B) .....	4.5 a	1450	330	150	30
NemOut SP 2.4 oz/A (F).....	4.3 a	990	650	160	160
LSD .....	0.5	--	--	--	--

<sup>1</sup> O=overcoat treatment on top of base seed treatment, F=in furrow, B=band application at planting.

<sup>2</sup> Thrips rating scale: 0=no damage, 10=severe thrips damage.

<sup>3</sup> Soil was sampled on 23 Jul. 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 according to Fisher's Protected LSD ( $P=0.05$ ).

Table 34. Effect of treatments on yield of cotton.

Treatment and application method*	Yield**	
	lb/A	bales/A
Untreated check .....	4277	4.00
Temik 15G 5 lb/A (F) .....	4417	4.13
Avicta Complete Pak (O).....	4662	4.36
Aeris Seed Applied System (O).....	4592	4.30
NemOut SP 2.4 oz/A (B) .....	4041	3.78
NemOut SP 2.4 oz/A (F).....	4211	3.94
LSD.....	n.s.	n.s.

\* O=overcoat treatment on top of base seed treatment, F=in furrow, B=band application at planting.

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 44.0% of total weight and 480 lb/bale. Plots were harvested on 11 Oct.

Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

XII. YIELD AND GROWTH RESPONSE OF COTTON TO AVICTA COMPLETE PAK ON SEED AND TEMIK 15G IN-FURROW (COTVARNEMA107, Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy and benefits of nematicide treatments and variety selection for control of southern root-knot nematode in cotton production

B. EXPERIMENTAL DESIGN:

1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways
2. Two, 30-ft rows per plot at 38-in. row spacing and seeding rate of three seed/ft of row

C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting. Avicta Complete Pak was applied by Syngenta Crop Protection and Aeris was applied by Bayer CropScience as an overcoat (O) on top of the seed company's fungicide treatment.

D. TREATMENT (Main plots):

1. Untreated check
2. Avicta Complete Pak (O)
3. Aeris (O)
4. Temik 15G 5 lb/A (F)

E. VARIETY, COOL GERM AND BASE SEED TREATMENT (Sub-plots):

1. ST 4575 BR (68% - RTU Baytan/Thiram + Allegiance)
2. DP 444 BG/RR (89% - Lorsban 30FL/Apron XL/Maxim/Systhane)
3. DP 445 BR (84% - Lorsban 30FL/Apron XL/Maxim/Systhane)
4. DP 117 B2RF (91% - Lorsban 30FL/Apron XL/Maxim/Systhane)
5. PHY 370 WR (81% - Apron XL/Maxim/Systhane)
6. ST 5599 BR (91% - RTU Baytan/Thiram + Allegiance)

F. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2006-2001, Peanut 2000
3. Land preparation: Rip and bed rows over stale cotton beds from 2006
4. Planting date: 2 May
5. Soil fertility report:

pH.....	6.64	K .....	52 ppm
Ca .....	472 ppm	Zn.....	0.7 ppm
Mg .....	85 ppm	Mn.....	2.4 ppm
P .....	29 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report:

Nematodes/500 cc soil (14 May)

Root knot..... 390

Stunt .....

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20

7. Herbicide:

Pre-emergence – Prowl 1 pt + Cotoran 1 qt + Roundup Ultra Max 22 fl oz/A (2 May)  
Roundup Ultra Max 22 fl oz/A (11 May)

Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May)

Valor 1.3 fl oz/A directed between rows (10 Jul)

Envoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)

8. Insecticide: Orthene 97S 8 oz/A (31 May, 19 Jun)

9. Growth regulator: Pix bar, wick application 4 oz/A (1 Aug)

10. Defoliant/Boll opener: Quick-Pick 0.5 gal/A (8 Oct)

11. Fertilization: liquid nitrogen 80 lb/A of N (26 Jun); Crop Booster (12-4-6) 1 qt/A (6 Jul)

12. Harvest date: 23 Oct

Table 35. Effect of treatments on emergence, growth and severity of thrips injury in cotton.

Variety and treatment <sup>1</sup>	Plants/ft <sup>2</sup> (7 Jun)	Vigor <sup>3</sup> (21 Jun)	Thrips injury <sup>4</sup> (21 Jun)	Plant ht. (in.) <sup>5</sup> (3 Aug)	Flowers/12 ft (8 Aug)
<b>ST 4575 BR</b>					
Untreated Check .....	1.73	3.3 c	5.5 a	25.1 c	28.3
Avicta Complete Pak (O) .....	1.79	6.0 ab	1.3 b	28.5 b	32.3
Aeris Seed Applied System (O) .....	1.94	5.8 b	1.3 b	27.5 b	31.3
Temik 15G 5 lb/A (F).....	1.85	6.8 a	1.0 b	30.5 a	27.3
<b>DP 444 BG/RR</b>					
Untreated Check .....	1.85	3.5 b	4.3 a	28.2	28.8
Avicta Complete Pak (O) .....	1.88	6.5 a	1.0 b	28.9	26.8
Aeris Seed Applied System (O) .....	2.21	6.8 a	1.0 b	29.5	29.3
Temik 15G 5 lb/A (F).....	2.02	7.0 a	1.0 b	30.4	23.5
<b>DP 445 BR</b>					
Untreated Check .....	1.83	4.0 b	4.5 a	26.2 b	29.8
Avicta Complete Pak (O) .....	2.10	6.0 a	1.0 b	27.7 ab	32.3
Aeris Seed Applied System (O) .....	2.54	6.0 a	1.3 b	28.5 a	28.8
Temik 15G 5 lb/A (F).....	1.88	6.3 a	1.3 b	28.8 a	28.8
<b>DP 117 B2RF</b>					
Untreated Check .....	1.92	5.0 b	2.3 a	28.9	31.5
Avicta Complete Pak (O) .....	2.27	6.8 a	1.0 b	29.0	30.5
Aeris Seed Applied System (O) .....	2.06	7.0 a	1.0 b	28.5	33.0
Temik 15G 5 lb/A (F).....	2.04	6.5 a	1.0 b	27.8	24.3
<b>PHY 370 WR</b>					
Untreated Check .....	1.98	3.0 b	5.3 a	24.3 b	21.5
Avicta Complete Pak (O) .....	1.79	5.5 a	1.5 b	28.7 a	31.8
Aeris Seed Applied System (O) .....	2.15	5.5 a	1.5 b	28.3 a	28.5
Temik 15G 5 lb/A (F).....	2.02	6.3 a	1.0 b	29.1 a	29.3
<b>ST 5599 BR</b>					
Untreated Check .....	2.02	4.0 b	2.8 a	27.5 b	30.3
Avicta Complete Pak (O) .....	2.33	6.5 a	1.0 b	31.4 a	36.5
Aeris Seed Applied System (O) .....	2.06	6.5 a	1.0 b	30.2 a	40.5
Temik 15G 5 lb/A (F).....	2.10	6.5 a	1.0 b	31.2 a	33.5
<b>Variety mean</b>					
ST 4575 BR.....	1.83 b	5.4 cd	2.3	27.9	29.8 b
DP 444 BG/RR.....	1.99 ab	5.9 ab	1.8	29.3	27.1 b
DP 445 BR .....	2.09 a	5.6 bc	2.0	27.8	29.9 b
DP 117 B2RF .....	2.07 a	6.3 a	1.3	28.6	29.8 b
PHY 370 WR .....	1.98 ab	5.1 d	2.3	27.6	27.8 b
ST 5599 BR .....	2.13 a	5.9 b	1.4	30.1	35.2 a
LSD .....	0.17	0.4	--	--	3.5
<b>Treatment mean</b>					
Untreated check.....	1.89	3.8 b	4.1	26.7	28.3
Avicta Complete Pak (O) .....	2.03	6.2 a	1.1	29.0	31.7
Aeris Seed Applied System (O) .....	2.16	6.3 a	1.2	28.8	31.9
Temik 15G 5 lb/A (F).....	1.99	6.5 a	1.0	29.6	27.8
LSD .....	n.s.	0.3	--	--	n.s.
<b>Split-plot analysis, P(F)</b>					
Treatment .....	.1679	.0001	.0001	.0073	.4270
Variety .....	.0114	.0001	.0001	.0001	.0004
Treatment x variety .....	.0616	.1393	.0001	.0001	.2186

<sup>1</sup> O=overcoat treatment on top of base seed treatment, F=in furrow.

<sup>2</sup> Determined from counts of one 6-ft section in each row.

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy

1. <sup>4</sup> ST 4427 B2RF (61% - Allegiance/Lorsban/Baytan/Thiram)
2. ST 5458 B2RF (82% - Allegiance/Lorsban/Baytan/Thiram)
3. DP 141 B2RF (81% - Lorsban/Apron XL/Maxim/Systhane M)

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4. DP 143 B2RF (75% - Lorsban/Apron XL/Maxim/Systhane M)

5. PHY 370 WR (85% - Maxim 4FS/Apron XL/Nuflow M/Nusan 30/Lorsban)

FM 1740 B2RF

<sup>5</sup> Determined from counts of four plants per plot.

Means followed by different letter(s) in a column and group are significantly different (LSD,  $P=0.05$ ), n.s. denotes not significant, "--" denotes combined analysis not valid due to significant treatment by variety interaction.

Table 36. Effect of treatments on nematode populations in cotton.

Variety and treatment*	Nematodes/500 cc soil**	
	Root-knot	Stubby root
<b>ST 4575 BR</b>		
Untreated Check .....	1160	70
Avicta Complete Pak (O).....	2840	60
Aeris Seed Applied System (O).....	2970	170
Temik 15G 5 lb/A (F).....	1930	90
<b>DP 444 BG/RR</b>		
Untreated Check .....	3470	90
Avicta Complete Pak (O) .....	2670	250
Aeris Seed Applied System (O).....	5620	160
Temik 15G 5 lb/A (F).....	3430	20
<b>DP 445 BR</b>		
Untreated Check .....	1150	110
Avicta Complete Pak (O) .....	2550	80
Aeris Seed Applied System (O).....	2640	180
Temik 15G 5 lb/A (F).....	9160	300
<b>DP 117 B2RF</b>		
Untreated Check .....	1580	260
Avicta Complete Pak (O) .....	1882	200
Aeris Seed Applied System (O).....	1530	160
Temik 15G 5 lb/A (F).....	3540	130
<b>PHY 370 WR</b>		
Untreated Check .....	1100	90
Avicta Complete Pak (O).....	1440	70
Aeris Seed Applied System (O).....	5630	270
Temik 15G 5 lb/A (F).....	3540	170
<b>ST 5599 BR</b>		
Untreated Check .....	1510	260
Avicta Complete Pak (O).....	3680	170
Aeris Seed Applied System (O).....	1590	170
Temik 15G 5 lb/A (F).....	3090	160
<b>Variety mean</b>		
ST 4575 BR .....	2225	98
DP 444 BG/RR .....	3798	130
DP 445 BR.....	3875	168
DP 117 B2RF.....	2133	188
PHY 370 WR.....	2928	150
ST 5599 BR .....	2468	190
LSD.....	n.s.	n.s.
<b>Treatment mean</b>		
Untreated Check .....	1662 b	147
Avicta Complete Pak (O).....	2510 ab	138
Aeris Seed Applied System (O).....	3330 a	185
Temik 15G 5 lb/A (F).....	4115 a	147
LSD.....	1754	n.s.

\* O=overcoat treatment on top of base seed treatment, F=in furrow.

\*\* Soil was sampled on 24 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment/variety combination.

Means followed by different letter(s) in a column and group are significantly different (LSD,  $P=0.10$ ), n.s. denotes not significant.



Table 37. Effect of treatments on root galling, open bolls and yield of cotton.

Variety, treatment and rate <sup>1</sup>	Root galling <sup>2</sup>		Open bolls <sup>3</sup> (14 Sep)	Yield <sup>4</sup>	
	2 Jul	1 Nov		lb/A	bales/A
<b>ST 4575 BR</b>					
Untreated Check.....	3.1 a	4.6 a	4.1 c	2293 b	2.04 b
Avicta Complete Pak (O).....	2.5 b	3.6 b	6.9 a	2935 a	2.62 a
Aeris Seed Applied System (O).....	3.3 a	3.8 b	5.8 b	2823 ab	2.52 ab
Temik 15G 5 lb/A (F).....	2.0 b	3.5 b	6.5 ab	3382 a	3.02 a
<b>DP 444 BG/RR</b>					
Untreated Check.....	3.2 a	3.0	4.9 c	2293	2.05
Avicta Complete Pak (O).....	2.3 b	2.9	7.4 b	2909	2.61
Aeris Seed Applied System (O).....	3.4 a	2.8	6.3 bc	2737	2.45
Temik 15G 5 lb/A (F).....	2.3 b	2.5	9.4 a	2809	2.52
<b>DP 445 BR</b>					
Untreated Check.....	3.2	4.0 ab	3.9 b	2680	2.35
Avicta Complete Pak (O).....	3.0	4.5 a	4.6 b	3024	2.65
Aeris Seed Applied System (O).....	2.9	3.4 b	4.8 b	3081	2.70
Temik 15G 5 lb/A (F).....	2.3	3.7 b	6.6 a	2909	2.55
<b>DP 117 B2RF</b>					
Untreated Check.....	3.1 a	3.3	5.8 b	2766	2.48
Avicta Complete Pak (O).....	2.7 a	3.4	7.2 a	3210	2.88
Aeris Seed Applied System (O).....	3.0 a	3.8	6.1 ab	3038	2.72
Temik 15G 5 lb/A (F).....	2.1 b	3.0	7.1 a	3096	2.77
<b>PHY 370 WR</b>					
Untreated Check.....	3.6 a	4.3	3.8 c	2121	1.91
Avicta Complete Pak (O).....	2.8 b	3.8	5.9 b	2694	2.43
Aeris Seed Applied System (O).....	3.3 ab	4.0	4.8 bc	2451	2.21
Temik 15G 5 lb/A (F).....	2.2 c	3.9	7.7 a	3110	2.81
<b>ST 5599 BR</b>					
Untreated Check.....	2.3	2.1	4.0	3139	2.78
Avicta Complete Pak (O).....	2.1	2.1	3.9	3741	3.31
Aeris Seed Applied System (O).....	2.1	3.1	4.3	3784	3.35
Temik 15G 5 lb/A (F).....	1.9	1.9	4.2	3640	3.22
<b>Variety mean</b>					
ST 4575 BR.....	2.7 a	3.8	5.8	2858 bc	2.55 bc
DP 444 BG/RR.....	2.8 a	2.8	7.0	2687 cd	2.41 cd
DP 445 BR.....	2.8 a	3.9	5.0	2924 b	2.56 bc
DP 117 B2RF.....	2.7 a	3.4	6.5	3028 b	2.71 b
PHY 370 WR.....	3.0 a	4.0	5.6	2594 d	2.34 d
ST 5599 BR.....	2.1 b	2.3	4.1	3576 a	3.17 a
LSD.....	0.3	--	--	225	0.20
<b>Treatment mean</b>					
Untreated check.....	3.1 a	3.5	4.4	2549	2.27
Avicta Complete Pak (S).....	2.6 b	3.4	6.0	3086	2.75
Aeris Seed Applied System (O).....	3.0 a	3.4	5.3	2986	2.66
Temik 15G 5 lb/A (F).....	2.1 c	3.1	6.9	3158	2.81
LSD.....	0.2	--	--	n.s.	n.s.
<b>Split-plot analysis, P(F)</b>					
Treatment.....	.0019	.0001	.0106	.1170	.1162
Variety.....	.0001	.5104	.0001	.0001	.0001
Treatment x variety.....	.1238	.0223	.0001	.6105	.6024

<sup>1</sup> O=overcoat treatment on top of base seed treatment, F=in furrow.

<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 four randomly selected plants per plot.

<sup>3</sup> Mean of four plants per plot.

<sup>4</sup> Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint weight (480 lb/bale) was determined by ginning samples of seed cotton from each variety. Plots were harvested on 23 Oct.

Means followed by different letter(s) in a column and group are significantly different at  $P=0.05$  except yield was analyzed for treatments within a given variety at  $P=0.10$ , n.s. denotes not significant, "--" denotes LSD not reported due to significant treatment by variety interaction.

XIII. EVALUATION OF SEED TREATMENTS, TEMIK 15G AND VYDATE C-LV FOR CONTROL OF NEMATODES IN COTTON (COTSEEDNEMA107, Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy of treatments for control of southern root-knot nematode

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleys
2. Two, 30-ft rows per plot with 38-in. row spacing

C. APPLICATION OF TREATMENTS: Seed treatments were applied to seed by personnel with Syngenta Crop Protection as an overcoat on the seed company's standard treatment (Lorsban 30FL, Apron XL, Maxim, Systhane 40WP). O=overcoat treatment, F=in-furrow, SD=side dress with cultivation (3 Jul), FS=foliar spray applied in a volume of 25 gal/A with 2 nozzles spaced 18 in. apart (6 Jul).

D. TREATMENT AND RATE:

1. Cruiser 5 FS 0.342 mg a.i./seed (O)
2. Temik 15G 5 lb/A (F)
3. Dynasty CST 125 FS 0.034 mg a.i./seed (O) + Temik 15G 5 lb/A (F)
4. Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O)
5. A14911 0.45 mg a.i./seed + A16113 0.5 mg a.i./seed (O)
6. A14911 0.45 mg a.i./seed + A16114 0.5 mg a.i./seed (O)
7. A14911 0.45 mg a.i./seed + A16115 0.5 mg a.i./seed (O)
8. STP15273 0.375 mg a.i./seed + STP17217 0.375 mg a.i./seed (O)
9. Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Temik 15G 5 lb/A (SD)
10. Temik 15G 5 lb (F) + 5 lb/A (SD)
11. Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Centric 40WG 2.0 oz/A (FS)
12. Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Vydate C-LV 3.77 SL 1.06 pt/A (FS)
13. Temik 15G 5 lb/A (F) + Vydate C-LV 3.77 SL 1.06 pt/A (FS)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2006-2001, Peanut 2000
3. Land preparation: Rip and bed rows over stale cotton beds from 2006
4. Planting date and variety: 1 May, DP 444 BG/RR (Lot 2B8-E-5727-61E ; warm germ 95%, cool germ 89%)
5. Soil fertility report:

pH.....	6.64	K .....	52 ppm
Ca .....	472 ppm	Zn.....	0.7 ppm
Mg .....	85 ppm	Mn.....	2.4 ppm
P .....	29 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report:

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Nematodes/500 cc soil (14 May):	
Root knot.....	290
Cyst larvae.....	20
Stunt .....	20
Spiral .....	100
Stubby root.....	20

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7. Herbicide:

Pre-emergence – Prowl 1 pt + Cotoran 1 qt + Roundup Ultra Max 22 fl oz/A (2 May)  
Roundup Ultra Max 22 fl oz/A (11 May)

Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May)

Valor 1.3 fl oz/A directed between rows (10 Jul)

Envoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)

8. Insecticide: Orthene 97S 8 oz/A (31 May, 19 Jun)

9. Growth regulator: Pix bar, wick application 4 oz/A (1 Aug)

10. Defoliant/Boll opener: Quick-Pick 0.5 gal/A (8 Oct)

11. Fertilization: liquid nitrogen 80 lb/A of N (26 Jun)

Crop Booster (12-4-6) 1 qt/A (6 Jul)

12. Harvest date: 23 Oct

Table 38. Effect of treatments on emergence and growth of cotton.

Treatment, rate and application method <sup>1</sup>	Plants/ft <sup>2</sup> (30 May)	Vigor <sup>3</sup> (21 Jun)	Plant ht. (in.) <sup>4</sup> (2 Aug)	Flowers/ 12 ft <sup>5</sup> (3 Aug)
Cruiser 5 FS 0.342 mg a.i./seed (O).....	1.96	6.8	30.8 b-d	28.0
Temik 15G 5 lb/A (F) .....	2.00	6.8	29.3 d	26.8
Dynasty CST 125 FS 0.034 mg a.i./seed (O) + Temik 15G 5 lb/A (F).....	2.00	7.0	30.3 b-d	24.8
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) .....	1.88	6.5	30.4 b-d	35.5
A14911 0.45 mg a.i./seed + A16113 0.5 mg a.i./seed (O).....	2.04	6.8	31.8 ab	26.0
A14911 0.45 mg a.i./seed + A16114 0.5 mg a.i./seed (O).....	1.83	7.0	30.8 b-d	25.0
A14911 0.45 mg a.i./seed + A16115 0.5 mg a.i./seed (O).....	1.96	6.5	29.5 cd	29.3
STP15273 0.375 mg a.i./seed + STP17217 0.375 mg a.i./seed (O).....	1.54	6.5	30.2 b-d	30.5
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Temik 15G 5 lb/A (SD).....	2.04	6.5	33.3 a	32.3
Temik 15G 5 lb (F) + 5 lb/A (SD) .....	2.12	6.5	31.0 b-d	30.0
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Centric 40WG 2.0 oz/A (FS).....	1.71	6.8	31.5 a-c	25.8
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Vydate C-LV 3.77 SL 1.06 pt/A (FS) .....	1.67	7.3	31.8 ab	28.0
Temik 15G 5 lb/A (F) + Vydate C-LV 3.77 SL 1.06 pt/A (FS) .....	1.71	6.8	29.4 d	28.5
LSD.....	n.s.	n.s.	2.0	n.s.

<sup>1</sup> O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul), FS=foliar spray (6 Jul).

<sup>2</sup> Determined from counts of two, 6-ft sections per row in each plot.

<sup>3</sup> Plant vigor rating: 1=severely stunted, 10=healthy.

<sup>4</sup> Data are measurements of three randomly-selected plants per row in each plot.

<sup>5</sup> Number of flowers in 6-ft section per row in each 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. denotes not significant.

Table 39. Effect of treatments on root galling by southern root-knot nematode, number of open bolls and nematode populations in cotton.

Treatment, rate and application method <sup>1</sup>	Root galling (0-6) <sup>2</sup>		Open bolls (14 Sep) <sup>3</sup>	Nematodes/ 500 cc soil	
	27 Jun	1 Nov		Root knot	Stubby root
Cruiser 5 FS 0.342 mg a.i./seed (O).....	2.3	3.5	2.2	1670	30
Temik 15G 5 lb/A (F) .....	2.2	3.2	2.2	3300	90
Dynasty CST 125 FS 0.034 mg a.i./seed (O) + Temik 15G 5 lb/A (F) .....	2.3	3.5	2.3	10,590	40
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) .....	2.3	3.8	2.3	8840	140
A14911 0.45 mg a.i./seed + A16113 0.5 mg a.i./seed (O).....	2.8	3.4	2.8	9980	100
A14911 0.45 mg a.i./seed + A16114 0.5 mg a.i./seed (O).....	2.6	3.8	2.6	18,680	50
A14911 0.45 mg a.i./seed + A16115 0.5 mg a.i./seed (O).....	2.2	3.3	2.2	7180	150
STP15273 0.375 mg a.i./seed + STP17217 0.375 mg a.i./seed (O).....	2.3	3.2	2.3	6170	0
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Temik 15G 5 lb/A (SD) .....	2.9	3.8	2.9	8200	40
Temik 15G 5 lb (F) + 5 lb/A (SD) .....	2.1	3.0	2.1	11,250	0
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Centric 40WG 2.0 oz/A (FS).....	2.3	3.0	2.3	4180	60
Dynasty CST 125 FS 0.034 mg a.i./seed +Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Vydate C-LV 3.77 SL 1.06 pt/A (FS) .....	2.4	3.4	2.4	6620	200
Temik 15G 5 lb/A (F) + Vydate C-LV 3.77 SL 1.06 pt/A (FS) .....	2.5	3.1	2.5	12,420	50
LSD .....	n.s.	n.s.	n.s.	--	--

<sup>1</sup> O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul), FS=foliar spray (6 Jul).

<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 two randomly selected plants per row in each plot.

<sup>3</sup> Counts of four plants per plot.

<sup>4</sup> Soil was sampled on 2 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment. Means in columns were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

Table 40. Effect of treatments on yield of cotton.

Treatment, rate and application method*	Yield**	
	lb/A	bales/A
Cruiser 5 FS 0.342 mg a.i./seed (O).....	3311	2.96
Temik 15G 5 lb/A (F).....	3024	2.70
Dynasty CST 125 FS 0.034 mg a.i./seed (O) + Temik 15G 5 lb/A (F).....	3124	2.79
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O).....	2938	2.63
A14911 0.45 mg a.i./seed + A16113 0.5 mg a.i./seed (O).....	3311	2.96
A14911 0.45 mg a.i./seed + A16114 0.5 mg a.i./seed (O).....	3010	2.69
A14911 0.45 mg a.i./seed + A16115 0.5 mg a.i./seed (O).....	3167	2.83
STP15273 0.375 mg a.i./seed + STP17217 0.375 mg a.i./seed (O).....	2967	2.65
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Temik 15G 5 lb/A (SD).....	3397	3.04
Temik 15G 5 lb (F) + 5 lb/A (SD).....	3569	3.19
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Centric 40WG 2.0 oz/A (FS).....	3311	2.96
Dynasty CST 125 FS 0.034 mg a.i./seed + Cruiser 5 FS 0.342 mg a.i./seed + Avicta 4.17 FS 0.145 mg a.i./seed (O) + Vydate C-LV 3.77 SL 1.06 pt/A (FS).....	3354	3.00
Temik 15G 5 lb/A (F) + Vydate C-LV 3.77 SL 1.06 pt/A (FS).....	2995	2.68
LSD.....	n.s.	n.s.

\* O=overcoat treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul), FS=foliar spray (6 Jul).

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 42.9% of total weight and 480 lb/bale. Plots were harvested on 23 Oct.

Means in columns are not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

XIV. BELTWIDE NEMATODE RESEARCH AND EDUCATION COMMITTEE 2007  
 NEMATODE RESEARCH PROTOCOL (COTSEEDNEMA207, Rick Morgan Farm,  
 Suffolk)

A. PURPOSE: To compare the efficacy of AERIS and Avicta on seed to Temik 15G for control of southern root-knot nematode

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleys
2. Two, 30-ft rows per plot with 38-in. row spacing

C. APPLICATION OF TREATMENTS: Granular treatments were applied in-furrow (F) at planting or applied as a side-dress treatment (SD) with cultivation on 3 Jul. Overcoat treatments (O) were applied to seed according to label directions by each manufacturer (Avicta by Syngenta Crop Protection; Aeris by Bayer CropScience) over the seed company's standard fungicide treatment (RTU Baytan-Thiram-Allegiance).

D. TREATMENT: Seed treatments were applied at label rates

1. Temik 15G 5 lb (F)
2. Aeris Seed Applied System (O)
3. Avicta Complete Pak (O)
4. Temik 15G 5 lb (F) + 5 lb (SD)
5. Aeris Seed Applied System (O) + Temik 15G 5 lb (SD)
6. Avicta Complete Pak (O) + Temik15G 5 lb (SD)
7. Untreated check

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2006-2001, Peanut 2000
3. Land preparation: Rip and bed rows over stale cotton beds from 2006
4. Planting date and variety: 1 May, DP 444 BG/RR (Lot 2B8-E-6973-N1; warm germ 89%, cool germ 84%)

5. Soil fertility report:

pH.....	6.64	K .....	52 ppm
Ca .....	472 ppm	Zn.....	0.7 ppm
Mg .....	85 ppm	Mn.....	2.4 ppm
P .....	29 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report:

Nematodes/500 cc soil (14 May):	
Root knot.....	310
Lesion.....	10
Stunt .....	10
Stubby root.....	140

7. Herbicide:

- Pre-emergence – Prowl 1 pt + Cotoran 1 qt + Roundup Ultra Max 22 fl oz/A (2 May)
- Roundup Ultra Max 22 fl oz/A (11 May)
- Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May)
- Valor 1.3 fl oz/A directed between rows (10 Jul)
- Envoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)

8. Insecticide: Orthene 97S 8 oz/A (31 May, 19 Jun)

9. Growth regulator: Pix bar, wick application 4 oz/A (1 Aug)

10. Defoliant/Boll opener: Quick-Pick 0.5 gal/A (8 Oct)
11. Fertilization: liquid nitrogen 80 lb/A of N (26 Jun); Crop Booster (12-4-6) 1 qt/A (6 Jul)
12. Harvest date: 23 Oct

Table 41. Effect of treatments on emergence and growth of cotton.

Treatment and application method <sup>1</sup>	Plants/ft <sup>2</sup> (30 May)	Vigor <sup>3</sup> (21 Jun)	Plant ht. <sup>4</sup> (in.) (2 Aug)	Flowers/ 12 ft <sup>5</sup> (3 Aug)
Temik 15G 5 lb (F) .....	2.27	6.5 ab	28.2 ab	20.5
Aeris Seed Applied System (O) .....	1.79	7.3 a	27.2 b	21.5
Avicta Complete Pak (O) .....	2.06	6.0 b	28.3 ab	20.0
Temik 15G 5 lb (F) + 5 lb (SD) .....	1.81	7.0 ab	28.2 ab	23.3
Aeris Seed Applied System (O) + Temik 15G 5 lb (SD) .....	1.90	6.3 ab	28.8 ab	21.8
Avicta Complete Pak (O) + Temik15G 5 lb (SD) .....	2.02	7.3 a	28.9 a	21.3
Untreated check .....	1.94	2.8 c	26.0 c	16.3
LSD .....	n.s.	1.2	1.4	n.s.

<sup>1</sup> O=overcoat on top of seed-fungicide treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

<sup>2</sup> Determined from counts of 6-ft sections per row in each plot.

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Data are measurements of three randomly-selected plants per row in each plot.

<sup>5</sup> Number of flowers in 6-ft sections per row in each 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. denotes not significant.

Table 42. Effect of treatments on thrips injury and root galling of cotton.

Treatment and application method <sup>1</sup>	Thrips injury <sup>2</sup> (21 Jun)	Root galling, (0-6) <sup>3</sup>		Open bolls <sup>4</sup> (14 Sep)
		28 Jun	2 Nov	
Temik 15G 5 lb (F) .....	1.5 b	3.4 a	3.1	8.3 ab
Aeris Seed Applied System (O) .....	1.0 b	3.1 a	3.5	8.7 ab
Avicta Complete Pak (O) .....	1.0 b	2.7 ab	3.4	7.2 b
Temik 15G 5 lb (F) + 5 lb (SD) .....	1.0 b	2.2 b	3.3	9.5 a
Aeris Seed Applied System (O) + Temik 15G 5 lb (SD) .....	1.0 b	3.0 a	3.7	8.0 ab
Avicta Complete Pak (O) + Temik15G 5 lb (SD) .....	1.0 b	2.6 ab	3.8	7.6 b
Untreated check .....	6.0 a	3.3 a	3.6	5.1 c
LSD .....	0.5	--	0.7	1.5

<sup>1</sup> O=overcoat on top of seed-fungicide treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

<sup>2</sup> Thrips injury scale: 0=no damage, 10=severe thrips damage.

<sup>3</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 four randomly selected plants per plot.

<sup>4</sup> Counts of two randomly selected plants per row in each plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), except root galling on 28 Jun was analyzed using Student-Newman-Kuels test ( $P=0.05$ ), -- no LSD calculated.



Table 43. Effect of treatments on nematode populations in cotton.

Treatment, rate/A and application method*	Nematodes/500 cc soil**	
	Root-knot	Stubby root
Temik 15G 5 lb (F) .....	4580	110
Aeris Seed Applied System (O).....	2530	150
Avicta Complete Pak (O).....	5150	350
Temik 15G 5 lb (F) + 5 lb (SD) .....	4590	130
Aeris Seed Applied System (O) + Temik 15G 5 lb (SD) .....	2560	70
Avicta Complete Pak (O) + Temik15G 5 lb (SD) .....	3280	150
Untreated check .....	2590	480

\* O=overcoat on top of seed-fungicide treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

\*\* Soil was sampled on 24 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 44. Effect of treatments on yield of cotton.

Treatment, rate/A and application method*	Yield**	
	lb/A	bales/A
Temik 15G 5 lb (F) .....	2608	2.31
Aeris Seed Applied System (O).....	2322	2.06
Avicta Complete Pak (O).....	2193	1.94
Temik 15G 5 lb (F) + 5 lb (SD) .....	2393	2.12
Aeris Seed Applied System (O) + Temik 15G 5 lb (SD) .....	2221	1.97
Avicta Complete Pak (O) + Temik15G 5 lb (SD) .....	2322	2.06
Untreated check .....	1920	1.70
LSD .....	n.s.	n.s.

\* O=overcoat on top of seed-fungicide treatment, F=in furrow, SD=side-dress application w/cultivation (3 Jul).

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 42.5% of total weight and 480 lb/bale. Plots were harvested on 23 Oct.

Means in a column are not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

XV. BAYER COTTON SEED TREATMENTS FOR CONTROL OF THRIPS AND NEMATODES (COTSEEDNEMA307, Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy of treatments for control of southern root-knot nematode

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleys
2. Two, 30-ft rows per plot with 38-in. row spacing

C. APPLICATION OF TREATMENTS: Treatments were applied by Bayer CropScience as an overcoat (O) on top of the seed company's standard fungicide treatment (Baytan-Thiram-Allegiance).

D. TREATMENT:

1. Untreated check
2. Gaucho 600 FS 0.375 mg/seed (O)
3. Aeris Seed Applied System (O)
4. Aeris Seed Applied System + GB 126 (high rate) (O)
5. Aeris Seed Applied System + GB 126 (low rate) (O)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2006-2001, Peanut 2000
3. Land preparation: Rip and bed rows over stale cotton beds from 2006
4. Planting date and variety: 1 May, ST 4575 BR (Lot A13H3204F, warm germ 88%, cool germ 68%)

5. Soil fertility report:

pH.....	6.64	K .....	52 ppm
Ca .....	472 ppm	Zn.....	0.7 ppm
Mg .....	85 ppm	Mn.....	2.4 ppm
P .....	29 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report:

Nematodes/500 cc soil (14 May)

Root knot.....	450
Spiral .....	30
Stubby root.....	30

7. Herbicide:

Pre-emergence – Prowl 1 pt + Cotoran 1 qt + Roundup Ultra Max 22 fl oz/A (2 May)  
Roundup Ultra Max 22 fl oz/A (11 May)

Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May)  
Valor 1.3 fl oz/A directed between rows (10 Jul)  
Envoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)

8. Insecticide: Orthene 97S 8 oz/A (31 May, 19 Jun)
9. Growth regulator: Pix bar, wick application 4 oz/A (1 Aug)
10. Defoliant/Boll opener: Quick-Pick 0.5 gal/A (8 Oct)
11. Fertilization: Liquid nitrogen 25 gal/A, 80 lb/A of N (26 Jun)  
Crop Booster (12-4-6) 1 qt/A (6 Jul)
12. Harvest date: 23 Oct

Table 45. Effect of treatments on emergence and growth in cotton.

Treatment and application method <sup>1</sup>	Plants/ft <sup>2</sup> (30 May)	Plant vigor <sup>3</sup> (21 Jun)	Plant height (in.) <sup>4</sup> (2 Aug)	Flowers/ 12 ft <sup>5</sup> (3 Aug)
Untreated check .....	1.77	2.0 c	22.4 d	13.8 b
Gaicho 600 FS 0.375 mg/seed (O).....	1.85	6.3 ab	25.0 c	25.8 a
Aeris Seed Applied System (O).....	1.67	5.8 b	25.1 bc	24.0 a
Aeris Seed Applied System + GB 126 (high rate) (O) .....	1.85	6.3 ab	27.4 a	30.5 a
Aeris Seed Applied System + GB 126 (low rate) (O) .....	1.73	6.5 a	26.5 ab	31.0 a
LSD .....	n.s.	0.6	1.4	8.4

<sup>1</sup> O=overcoat on top of seed-fungicide treatment.

<sup>2</sup> Determined from counts of 6-ft sections per row in each plot.

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Data are measurements of three randomly-selected plants per row in each plot.

<sup>5</sup> Number of flowers in 6-ft sections per row in each 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. denotes not significant.

Table 46. Effect of treatments on thrips injury, root galling by southern root knot nematode and number of open bolls in cotton.

Treatment and application method <sup>1</sup>	Thrips injury <sup>2</sup> (21 Jun)	Root galling (0-6) <sup>3</sup>		Open bolls <sup>4</sup> (14 Sep)
		28 Jun	1 Nov	
Untreated check .....	6.5 a	4.1 a	5.1	3.4 b
Gaicho 600 FS 0.375 mg/seed (O).....	1.0 b	3.8 ab	5.1	8.6 a
Aeris Seed Applied System (O).....	1.0 b	3.5 b	4.8	8.4 a
Aeris Seed Applied System + GB 126 (high rate) (O) .....	1.0 b	3.5 b	4.9	9.9 a
Aeris Seed Applied System + GB 126 (low rate) (O) .....	1.0 b	3.3 b	5.1	8.1 a
LSD .....	0.4	0.6	n.s.	2.1

<sup>1</sup> O=overcoat on top of seed-fungicide treatment.

<sup>2</sup> Thrips rating scale: 0=no damage, 10=severe thrips damage.

<sup>3</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 two randomly selected plants per row in each plot.

<sup>4</sup> Counts of four 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. denotes not significant.

Table 47. Effect of treatments on nematode populations in cotton.

Treatment and application method*	Nematodes/500 c soil**	
	Root-knot	Stubby root
Untreated check .....	1350	30
Gaicho 600 FS 0.375 mg/seed (O).....	1970	60
Aeris Seed Applied System (O).....	3470	240
Aeris Seed Applied System + GB 126 (high rate) (O) .....	7710	20
Aeris Seed Applied System + GB 126 (low rate) (O) .....	2650	30

\* O=overcoat on top of seed-fungicide treatment.

\*\* Soil was sampled on 24 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 48. Effect of treatments on yield of cotton.

Treatment and application method <sup>1</sup>	Yield**	
	lb/A	bales/A
Untreated check .....	1834 b	1.60 b
Gaicho 600 FS 0.375 mg/seed (O).....	2623 a	2.28 a
Aeris Seed Applied System (O).....	2780 a	2.42 a
Aeris Seed Applied System + GB 126 (high rate) (O) .....	2666 a	2.32 a
Aeris Seed Applied System + GB 126 (low rate) (O) .....	2766 a	2.41 a
LSD.....	585	0.51

\* O=overcoat on top of seed-fungicide treatment.

\*\* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.8% of total weight and 480 lb/bale. Plots were harvested on 23 Oct.

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

XVI. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT DISEASES AND SOUTHERN STEM ROT OF PEANUT (LFSPOT107, Tidewater Research Farm, Suffolk, Field 9B)

A. PURPOSE: To evaluate Enable 2F (fenbuconazole) on peanut and compare performance to fungicides with similar chemistry

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at pegging (R<sub>3</sub>) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>).

D. TREATMENT AND RATE/A:

1. Untreated Check
2. Enable 2F 5.78 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
3. Enable 2F 7.87 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
4. Folicur 3.6F 7.2 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
5. Enable 2F 5.78 fl oz (1<sup>st</sup>, 3<sup>rd</sup> spray)  
Headline 250EC 6 fl oz (2<sup>nd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
6. Folicur 3.6F 7.2 fl oz (1<sup>st</sup>, 3<sup>rd</sup> spray)  
Headline 250EC 6 fl oz (2<sup>nd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
7. Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Absolute 500SC 7 fl oz (3<sup>rd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
8. Bravo 720 1.5 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Provost 433SC 8 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Farm, Hare Rd. (Field 9B)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 10 May, Champs
4. Soil fertility report:

pH.....	6.63	K.....	47 ppm
Ca .....	251 ppm	Zn .....	0.3 ppm
Mg .....	24 ppm	Mn .....	0.3 ppm
P .....	27 ppm	Soil type .....	Kenansville loamy fine sand
5. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)
6. *Cylindrocladium* black rot control: Vapam 42% 7.5 gal/A (19 Apr)

7. Insecticide: Temik 15G 7 lb/A in furrow (10 May)  
Orthene 97S 8 oz/A (30 May)  
Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Sclerotinia blight control: Omega 500 1 pt/A (13 Aug, 7 Sep)
10. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: 0.75 in. (23 Jun, 6 Jul, 5 Sep), 2 in. (17 Sep)
  - e. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
11. Harvest date: 12 Oct 2007

Table 49. Effect of treatments on incidence of foliar disease and severity of defoliation.

Treatment, rate/A and application timing <sup>1</sup>	% leaf spot <sup>2</sup>			% defoliation <sup>3</sup>	
	27 Aug	19 Sep	3 Oct	19 Sep	3 Oct
Untreated Check.....	40.0 a	57.5 a	94.0 a	8.8 a	32.5 a
Enable 2F 5.78 fl oz (7/16, 7/31, 8/20)					
Bravo 720 1.5 pt (9/10) .....	0.1 b	6.5 b	26.8 b	1.0 b	9.8 b
Enable 2F 7.87 fl oz (7/16, 7/31, 8/20)					
Bravo 720 1.5 pt (9/10) .....	0.1 b	5.3 b	9.8 c	1.0 b	2.8 bc
Folicur 3.6F 7.2 fl oz (7/16, 7/31, 8/20)					
Bravo 720 1.5 pt (9/10) .....	0.5 b	4.3 b	3.0 c	1.0 b	1.3 c
Enable 2F 5.78 fl oz (7/16, 8/20)					
Headline 250EC 6 fl oz (7/31)					
Bravo 720 1.5 pt (9/10) .....	0.8 b	4.5 b	4.0 c	1.0 b	2.0 bc
Folicur 3.6F 7.2 fl oz (7/16, 8/20)					
Headline 250EC 6 fl oz (7/31)					
Bravo 720 1.5 pt (9/10) .....	0.3 b	6.3 b	2.5 c	1.0 b	1.3 c
Provost 433SC 8 fl oz (7/16, 7/31)					
Absolute 500SC 7 fl oz (8/20)					
Bravo 720 1.5 pt (9/10) .....	0.1 b	4.3 b	3.3 c	1.0 b	1.3 c
Bravo 720 1.5 pt (7/16, 9/10)					
Provost 433SC 8 fl oz (7/31, 8/20) .....	2.0 b	3.5 b	2.5 c	1.0 b	1.3 c
LSD .....	3.1	4.5	14.9	1.3	8.3

<sup>1</sup> Fungicides were applied at R<sub>3</sub> (beginning pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity).

<sup>2</sup> Leaf spot rating scale: 0=none; 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

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

Table 50. Effect of treatments on yield of peanuts.

Treatment, rate/A and application timing*	Yield** (lb/A)
Untreated Check.....	5234 c
Enable 2F 5.78 fl oz (7/16, 7/31, 8/20) Bravo 720 1.5 pt (9/10) .....	5949 ab
Enable 2F 7.87 fl oz (7/16, 7/31, 8/20) Bravo 720 1.5 pt (9/10) .....	5924 ab
Folicur 3.6F 7.2 fl oz (7/16, 7/31, 8/20) Bravo 720 1.5 pt (9/10) .....	6217 a
Enable 2F 5.78 fl oz (7/16, 8/20) Headline 250EC 6 fl oz (7/31) Bravo 720 1.5 pt (9/10) .....	5745 b
Folicur 3.6F 7.2 fl oz (7/16, 8/20) Headline 250EC 6 fl oz (7/31) Bravo 720 1.5 pt (9/10) .....	6307 a
Provost 433SC 8 fl oz (7/16, 7/31) Absolute 500SC 7 fl oz (8/20) Bravo 720 1.5 pt (9/10) .....	6013 ab
Bravo 720 1.5 pt (7/16, 9/10) Provost 433SC 8 fl oz (7/31, 8/20) .....	6000 ab
LSD .....	467

\* Fungicides were applied at R<sub>3</sub> (beginning pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity).

\*\* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 12 Oct. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

XVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT DISEASES AND SOUTHERN STEM ROT OF PEANUT (LFSPOT207, Tidewater Research Farm, Suffolk, Field 9B)

A. PURPOSE: To evaluate Evito 4FL (fluoxastrobin) on peanut and compare performance to fungicides with similar chemistry

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at pegging (R<sub>3</sub>) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>).

D. TREATMENT AND RATE/A:

1. Untreated Check
2. Bravo 720 1.5 pt (1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> spray)  
Evito 4FL 5.7 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)
3. Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1<sup>st</sup>, 3<sup>rd</sup> spray)  
Evito 4FL 3.8 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (5<sup>th</sup> spray)
4. Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1<sup>st</sup>, 3<sup>rd</sup> spray)  
Evito 4FL 3.8 fl oz (2<sup>nd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
5. Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1<sup>st</sup> spray)  
Evito 4FL 3.8 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
6. Bravo 720 1.5 pt (1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> spray)  
Abound 2.08SC 18 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)
7. Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1<sup>st</sup>, 3<sup>rd</sup> spray)  
Headline 250EC 6 fl oz (2<sup>nd</sup> spray)  
Bravo 720 1.5 pt (4<sup>th</sup> spray)
8. Bravo 720 1.5 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Provost 433SC 8 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Farm, Hare Rd. (Field 9B)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 10 May, Champs
4. Soil fertility report:

pH.....	6.63	K .....	47 ppm
Ca .....	251 ppm	Zn.....	0.3 ppm
Mg .....	24 ppm	Mn.....	0.3 ppm
P .....	27 ppm	Soil type.....	Kenansville loamy fine sand
5. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)
6. *Cylindrocladium* black rot control: Vapam 42% 7.5 gal/A (19 Apr)



7. Insecticide: Temik 15G 7 lb/A in furrow (10 May)  
Orthene 97S 8 oz/A (30 May)  
Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Sclerotinia blight control: Omega 500 1 pt/A (13 Aug, 7 Sep)
10. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: 0.75 in. (23 Jun, 6 Jul, 5 Sep), 2 in. (17 Sep)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
11. Harvest date: 12 Oct 2007

Table 51. Disease incidence and defoliation in fungicide-treated plots.

Treatment, rate/A and application date <sup>1</sup>	% leaf spot <sup>2</sup>			% defoliation <sup>3</sup>		Yield <sup>4</sup> (lb/A)
	27 Aug	20 Sep	3 Oct	20 Sep	3 Oct	
Untreated Check.....	42.5 a	76.3 a	92.5 a	10.0 a	35.0 a	5454
Bravo 720 1.5 pt (7/16, 8/20, 9/28)						
Evito 4FL 5.7 fl oz (7/31, 9/10).....	1.0 b	3.5 b	2.0 c	1.0 b	1.0 b	6017
Folicur 3.6F 7.2 fl oz (7/16, 8/20)						
Evito 4FL 3.8 fl oz (7/31, 9/10)						
Bravo 720 1.5 pt (9/28) .....	0.1 b	3.8 b	5.5 bc	1.0 b	1.0 b	5992
Folicur 3.6F 7.2 fl oz (7/16, 8/20)						
Evito 4FL 3.8 fl oz (7/31)						
Bravo 720 1.5 pt (9/10).....	1.3 b	4.0 b	18.8 b	1.0 b	3.3 b	6171
Folicur 3.6F 7.2 fl oz (7/16)						
Evito 4FL 3.8 fl oz (7/31,8/20)						
Bravo 720 1.5 pt (9/10) .....	1.0 b	2.5 b	7.0 bc	1.0 b	1.0 b	6069
Bravo 720 1.5 pt (7/16, 8/20, 9/28)						
Abound 2.08SC 18 fl oz (7/31, 9/10)	0.3 b	3.0 b	3.5 bc	1.0 b	1.0 b	5518
Folicur 3.6F 7.2 fl oz (7/16, 8/20)						
Headline 250EC 6 fl oz (7/31)						
Bravo 720 1.5 pt (9/10) .....	0.3 b	2.0 b	2.3 c	1.0 b	1.0 b	5915
Bravo 720 1.5 pt (7/16, 9/10)						
Provost 433SC 8 fl oz (7/31, 8/20) ....	1.1 b	2.3 b	4.8 bc	1.0 b	1.3 b	6235
LSD .....	1.9	3.4	15.0	2.1	9.3	n.s.

<sup>1</sup> Fungicides were applied at R<sub>3</sub> (beginning pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity) or as specified in treatment list. All Folicur treatments were applied with Induce 1.2 fl oz/A.

<sup>2</sup> Leaf spot rating scale: 0=none; 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

<sup>4</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 12 Oct.

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

Arcsine transformation of percentage data was made in analysis to determine statistical significance.

XVIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT DISEASES AND SOUTHERN STEM ROT OF PEANUT (LFSPOT307, Duke Farm, Suffolk, Field 40)

- A. PURPOSE: To evaluate V-10116 (metconazole) on peanut and compare performance to programs with similar chemistry
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
  2. Four, 35-ft rows per plot with treatments applied to the center two rows
  3. Seeding rate of ca. 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D<sub>2</sub>23 nozzles/row delivering 15 gal/A. The initial application was at pegging (R<sub>3</sub>) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>).
- D. TREATMENT AND RATE/A:
1. Untreated Check
  2. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
V-10116 50WG 1.75 oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  3. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
V-10116 50WG 2.50 oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  4. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
V-10116 50WG 4 oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  5. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
Folicur 3.6F 7.2 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  6. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
V-10116 2DC 3.5 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  7. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
Enable 2F 5.87 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08SC 9 fl oz (3<sup>rd</sup> spray)
  8. Bravo 720 1.5 pt (1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> spray)  
Abound 2.08SC 18 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)
  9. Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Absolute 500SC 7 fl oz (3<sup>rd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (5<sup>th</sup> spray)
  10. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
Provost 433SC 8 fl oz (2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> spray)
  11. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
Evito 4FL 5.7 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)
  12. Bravo 720 1.5 pt (1<sup>st</sup>, 5<sup>th</sup> spray)  
Artisan 1 pt + Bravo 720 1 pt (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Headline 2.08EC 9 fl oz (3<sup>rd</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Longstreet Lane (Field 40)
2. Crop history: cotton 2006, peanut 2005, corn 2004
3. Planting date and cultivar: 10 May 2007, VA 98R
4. Soil fertility report:

pH.....	6.54	K.....	59 ppm
Ca .....	382 ppm	Zn .....	0.5 ppm
Mg .....	44 ppm	Mn .....	1.7 ppm
P .....	19 ppm	Soil type .....	Nansemond fine sandy loam
5. Cylindrocladium black rot control: Vapam 7.5 gal/A (23 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Pursuit 2 fl oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (11 May)
7. Insecticide: Temik 15G 7 lb/A in furrow (10 May)
  - Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: 0.75 in. (9 Aug, 10 Aug, 15 Aug)
  - e. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
10. Harvest date: 9 Oct 2007

Table 52. Effect of treatments on incidence of *Cercospora* leaf spot and defoliation in peanut.

Treatment, rate/A and application timing <sup>1</sup>	% leaf spot <sup>2</sup>			% defoliation <sup>3</sup>	
	30 Aug	20 Sep	4 Oct	20 Sep	4 Oct
Untreated Check .....	33.8 a	66.3 a	81.3 a	13.8 a	38.8 a
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 1.75 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.1 b	0.8 b	1.5 b	1.0 b	1.3 b
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 2.50 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.3 b	0.8 b	1.5 b	1.0 b	1.0 b
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 4 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.5 b	1.3 b	2.0 b	1.0 b	1.0 b
Bravo 720 1.5 pt (7/17, 9/28) Folicur 3.6F 7.2 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.3 b	0.8 b	1.8 b	1.0 b	1.3 b
Bravo 720 1.5 pt (7/17, 9/28) V-10116 2DC 3.5 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.3 b	0.8 b	1.3 b	1.0 b	1.0 b
Bravo 720 1.5 pt (7/17, 9/28) Enable 2F 5.87 fl oz (8/1, 9/10) Headline 2.08SC 9 fl oz (8/21) .....	0.0 b	1.0 b	1.8 b	1.0 b	1.0 b
Bravo 720 1.5 pt (7/17, 8/21, 9/28) Abound 2.08SC 18 fl oz (8/1, 9/10) .....	0.1 b	0.8 b	2.0 b	1.0 b	1.5 b
Provost 433SC 8 fl oz (7/17, 8/1) Absolute 500SC 7 fl oz (8/21, 9/10) Bravo 720 1.5 pt (9/28) .....	1.0 b	0.3 b	1.8 b	1.0 b	1.0 b
Bravo 720 1.5 pt (7/17, 9/28) Provost 433SC 8 fl oz (8/1, 8/21, 9/10) .....	0.3 b	0.3 b	1.3 b	1.0 b	1.3 b
Bravo 720 1.5 pt (7/17, 9/28) Evito 4FL 5.7 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.5 b	1.1 b	1.8 b	1.0 b	1.3 b
Bravo 720 1.5 pt (7/17, 9/28) Artisan 1 pt + Bravo 720 1 pt (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21) .....	0.1 b	0.6 b	1.3 b	1.0 b	1.0 b
LSD .....	2.1	4.9	6.4	2.0	4.6

<sup>1</sup> Fungicides were applied at R<sub>2</sub> (early pegging) and thereafter according to the Va. Peanut Leaf Spot Advisory Program.

<sup>2</sup> Leaf spot rating scale: 0=none; 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

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

Table 53. Effect of treatments on incidence of Sclerotinia blight and yield in peanut.

Treatment, rate/A and application timing <sup>1</sup>	Sclerotinia blight <sup>2</sup>		Yield <sup>3</sup> (lb/A)
	30 Aug	20 Sep	
Untreated Check.....	1.8	11.3	3758
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 1.75 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	2.5	14.0	3771
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 2.50 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	2.0	10.0	4236
Bravo 720 1.5 pt (7/17, 9/28) V-10116 50WG 4 oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	2.8	15.5	3655
Bravo 720 1.5 pt (7/17, 9/28) Folicur 3.6F 7.2 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	2.8	22.0	3810
Bravo 720 1.5 pt (7/17, 9/28) V-10116 2DC 3.5 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	2.3	17.0	3965
Bravo 720 1.5 pt (7/17, 9/28) Enable 2F 5.87 fl oz (8/1, 9/10) Headline 2.08SC 9 fl oz (8/21).....	3.8	20.8	3487
Bravo 720 1.5 pt (7/17, 8/21, 9/28) Abound 2.08SC 18 fl oz (8/1, 9/10).....	4.0	14.3	3577
Provost 433SC 8 fl oz (7/17, 8/1) Absolute 500SC 7 fl oz (8/21, 9/10) Bravo 720 1.5 pt (9/28).....	3.0	13.3	4301
Bravo 720 1.5 pt (7/17, 9/28) Provost 433SC 8 fl oz (8/1, 8/21, 9/10).....	2.5	12.0	4107
Bravo 720 1.5 pt (7/17, 9/28) Evito 4FL 5.7 fl oz (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	1.0	9.3	4058
Bravo 720 1.5 pt (7/17, 9/28) Artisan 1 pt + Bravo 720 1 pt (8/1, 9/10) Headline 2.08EC 9 fl oz (8/21).....	3.3	16.3	3887
LSD .....	n.s.	n.s.	n.s.

<sup>1</sup> Fungicides were applied at R<sub>2</sub> (early pegging) and thereafter according to the Va. Peanut Leaf Spot Advisory Program.

<sup>2</sup> 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 the *Sclerotinia minor* and included 6 in. on either side of that point.

<sup>3</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 5 Oct and harvested on 9 Oct. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

XIX. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (LFSPOT407, Duke Farm, Suffolk, Field 40)

A. PURPOSE: To compare fungicide chemistries for disease control in a low input program (not recommended commercially because of inadequate resistance management)

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at beginning seed (R<sub>5</sub>) and thereafter according to the Peanut Leaf Spot Advisory Program for a total of three sprays.

D. TREATMENT AND RATE/A:

1. Untreated Check
2. V-10116 50WG 4 oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
3. Headline 2.08EC 9 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
4. Headline 2.08EC 12 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
5. Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
6. Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
7. Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
8. Absolute 500SC 7 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
9. Abound 2.08SC 12 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
10. Abound 2.08SC 18 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
11. Evito 4FL 5.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)
12. Enable 2F 5.78 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Bravo 720 1 pt (3<sup>rd</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Longstreet Lane (Field 40)
2. Crop history: cotton 2006, peanut 2005, corn 2004
3. Planting date and cultivar: 10 May 2007, VA 98R
4. Soil fertility report: January 2007

pH.....	6.54	K .....	59 ppm
Ca .....	382 ppm	Zn.....	0.5 ppm
Mg .....	44 ppm	Mn.....	1.7 ppm
P .....	19 ppm	Soil type.....	Nansemond fine sandy loam

5. *Cylindrocladium* black rot control: Vapam 7.5 gal/A (23 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
    - Dual II Magnum 1 pt + Pursuit 2 fl oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (11 May)
7. Insecticide: Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: 0.75 in. (9 Aug, 10 Aug, 15 Aug)
  - e. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
10. Harvest date: 9 Oct 2007

Table 54. Incidence of *Cercospora* leaf spot and defoliation in fungicide-treated plots.

Treatment, rate/A and application date <sup>1</sup>	% leaf spot <sup>2</sup>			% defoliation <sup>3</sup>	
	27 Aug	21 Sep	4 Oct	21 Sep	4 Oct
Untreated Check.....	25.8 a	75.0 a	65.5 a	36.3 a	27.8 a
V-10116 50WG 4 oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	1.3 b	3.3 bc	1.0 b	1.0 b	1.0 b
Headline 2.08EC 9 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	2.5 b	1.0 c	1.5 b	1.0 b	1.0 b
Headline 2.08EC 12 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	0.8 b	1.3 c	1.3 b	1.0 b	1.0 b
Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	2.0 b	4.0 bc	3.8 b	1.0 b	1.0 b
Provost 433SC 8 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10).....	4.3 b	1.0 c	1.3 b	1.0 b	1.0 b
Provost 433SC 10.7 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	2.5 b	2.5 c	3.5 b	1.0 b	1.5 b
Absolute 500SC 7 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	2.0 b	1.8 c	4.5 b	1.0 b	1.0 b
Abound 2.08SC 12 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	1.5 b	7.8 bc	5.0 b	1.0 b	1.0 b
Abound 2.08SC 18 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	1.5 b	8.3 bc	4.0 b	1.0 b	1.0 b
Evito 4FL 5.7 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	2.3 b	6.5 bc	5.8 b	1.0 b	1.3 b
Enable 2F 5.78 fl oz (7/31, 8/20)					
Bravo 720 1 pt (9/10) .....	3.8 b	10.3 b	11.0 b	1.0 b	3.0 b
LSD.....	3.6	7.5	17.0	2.0	9.3

<sup>1</sup> Fungicides were applied at R<sub>5</sub> (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity).

<sup>2</sup> Leaf spot rating scale: 0=none; 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

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



Table 55. Effect of treatments on Sclerotinia blight and yield of peanut.

Treatment, rate/A and application date <sup>1</sup>	Sclerotinia blight <sup>2</sup> (21 Sep)	Yield <sup>3</sup> (lb/A)
Untreated Check.....	2.8	3983
V-10116 50WG 4 oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	1.0	3700
Headline 2.08EC 9 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	4.0	3880
Headline 2.08EC 12 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	3.3	4021
Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	5.0	4175
Provost 433SC 8 fl oz (7/31, 8/20)		
Bravo 720 1 pt/A (9/10).....	4.0	3983
Provost 433SC 10.7 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	5.5	4265
Absolute 500SC 7 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	6.3	3700
Abound 2.08SC 12 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	2.8	3983
Abound 2.08SC 18 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	6.5	4265
Evito 4FL 5.7 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	2.3	3764
Enable 2F 5.78 fl oz (7/31, 8/20)		
Bravo 720 1 pt (9/10) .....	6.3	3957
LSD.....	n.s.	n.s.

<sup>1</sup> Fungicides were applied at R<sub>5</sub> (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>).

<sup>2</sup> 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 the *Sclerotinia minor* and included 6 in. on either side of that point.

<sup>3</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 5 Oct and harvested on 9 Oct. Means were not significantly different (n.s.) according to Fisher's Protected LSD ( $P=0.05$ ).

XX. EVALUATION OF IN-FURROW AND FOLIAR FUNGICIDES FOR CONTROL OF CYLINDROCLADIUM BLACK ROT (CBR), LEAF SPOTS AND OTHER DISEASES OF PEANUT (CBRLFSPOT107, Tidewater Research Farm, Suffolk, Field 16)

A. PURPOSE: To compare in-furrow and foliar sprays of new fungicide chemistry (prothioconazole, prothioconazole + tebuconazole) to soil fumigation for disease control in a field with a history of low to moderate CBR

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 40-ft rows per plot with 36 in. row spacing and four seed/ft of row

C. APPLICATION OF TREATMENTS: Chisel applications (C) of Vapam 42% were applied 8 in. under each row on 20 Apr. A single chisel was centered in each row and rows were bedded (24 in. wide and 4 in. high) during application. Proline 480SC in-furrow (F) was mixed in water and applied in a volume of 5 gal/A with a microtube to each seed furrow at planting. Foliar sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at beginning pod (R<sub>3</sub>) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>) with the final application being Echo 720SC for resistance management.

D. TREATMENT AND RATE/A:

1. Echo 720SC 1.5 pt (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> spray)
2. Provost 433SC 8 fl oz/A (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
3. Proline 480SC 5.7 fl oz (F)  
Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
4. Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
5. Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Echo 720SC 1.5 pt (3<sup>rd</sup>, 4<sup>th</sup> spray)
6. Vapam 42% 7.5 gal (C)  
Proline 480SC 5.7 fl oz (F)  
Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
7. Vapam 42% 7.5 gal (C)  
Proline 480SC 5.7 fl oz (F)  
Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd. (Field #16)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 9 May 2007, VA 98R
4. Soil fertility report:

pH.....	6.31	K.....	46 ppm
Ca .....	235 ppm	Zn .....	0.5 ppm
Mg .....	37 ppm	Mn .....	1.5 ppm
P .....	35 ppm	Soil type .....	Kenansville loamy fine sand

5. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)
6. Insecticide: Temik 15G 7 lb/A in furrow (9 May)
  - Orthene 97S 8 oz/A (30 May); Lorsban 15G 13 lb/A (2 Jul)
7. Acaricide: Danitol 16 fl oz/A (13 Aug)
8. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: ca. 0.75 in. (25 Jun, 26 Jul, 16 Aug, 5 Sep)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
9. Harvest date: 9 Oct 2007

Table 56. Effect of treatment on emergence, growth, disease incidence and yield of peanut.

Treatment, rate/A and application date <sup>1</sup>	Vigor <sup>2</sup> (13 Jun)	Plants/ft <sup>3</sup> (21 Jun)	CBR <sup>4</sup>		% leaf spot <sup>5</sup>		Yield <sup>6</sup> (lb/A)
			23 Aug	20 Sep	23 Aug	20 Sep	
Echo 720SC 1.5 pt (7/16, 7/31, 8/20, 9/10)...	6.8 a	2.67	1.3	16.8 a	0.3	2.8	4535 b
Provost 433SC 8 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.8 a	2.79	0.8	9.3 b	0.3	2.3	5178 a
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 8 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.8 a	2.77	1.3	6.8 b	0.1	1.8	5381 a
Provost 433SC 10.7 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.8 a	2.85	0.5	6.0 b	0.1	2.0	5517 a
Provost 433SC 10.7 fl oz (7/16, 7/31)							
Echo 720SC 1.5 pt (8/20, 9/10).....	7.0 a	2.58	1.0	8.0 b	0.1	2.3	5043 ab
Vapam 42% 7.5 gal (C)							
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 8 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.0 b	2.67	0.5	3.3 b	0.1	1.5	5573 a
Vapam 42% 7.5 gal (C)							
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 10.7 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.3 b	3.00	1.8	5.3 b	0.1	1.8	5482 a
LSD .....	0.4	n.s.	n.s.	7.3	n.s.	n.s.	594

<sup>1</sup> C=chisel application (20 Apr), F=in furrow at planting (9 May). Fungicide sprays were applied at R<sub>3</sub> (beginning pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity).

<sup>2</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>3</sup> Determined from counts in 6-ft sections per row in each plot.

<sup>4</sup> Number of symptomatic plants per plot.

<sup>5</sup> Leaf spot rating scale: 0=none, 100=spots on all leaflets.

<sup>6</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 1 Oct and harvested on 9 Oct.

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. denotes not significant.

XXI. EVALUATION OF IN-FURROW AND FOLIAR FUNGICIDES FOR CONTROL OF CYLINDROCLADIUM BLACK ROT (CBR), LEAF SPOTS AND OTHER DISEASES OF PEANUT (CBRLFSPOT207, Tidewater Research Farm, Suffolk, Field 28)

A. PURPOSE: To compare in-furrow and foliar sprays of new fungicide chemistry (prothioconazole, prothioconazole + tebuconazole) to soil fumigation for disease control in a field with a history of high CBR incidence

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 40-ft rows per plot with 36 in. row spacing and four seed/ft of row

C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row with a single chisel (C) centered in each row on 20 Apr. Rows were bedded (24 in. wide and 4 in. high) during application. Proline 480SC in-furrow (F) was mixed in water and applied in a volume of 5 gal/A with a microtube to each seed furrow at planting. Foliar sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at beginning pod (R<sub>3</sub>) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>). The final application used Echo 720SC for resistance management.

D. TREATMENT AND RATE/A:

1. Echo 720SC 1.5 pt (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> spray)
2. Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
3. Proline 480SC 5.7 fl oz (F)  
Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
4. Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
5. Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup> spray)  
Echo 720SC 1.5 pt (3<sup>rd</sup>, 4<sup>th</sup> spray)
6. Vapam 42% 7.5 gal (C)  
Proline 480SC 5.7 fl oz (F)  
Provost 433SC 8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)
7. Vapam 42% 7.5 gal (C)  
Proline 480SC 5.7 fl oz (F)  
Provost 433SC 10.7 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> spray)  
Echo 720SC 1.5 pt (4<sup>th</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Farm, Hare Rd. (Field 28)
2. Crop history: wheat/soybean, peanut rotation for at least two decades
3. Planting date and cultivar: 9 May 2007, VA 98R
4. Soil fertility report:

pH.....	6.68	K.....	27 ppm
Ca.....	288 ppm	Zn.....	0.3 ppm
Mg.....	37 ppm	Mn.....	0.9 ppm
P.....	26 ppm	Soil type.....	Kenansville loamy fine sand

5. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Pursuit 2.0 fl oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (11 May)
  - Post-emergence – Basagran 1.5 pt + Pursuit 2.0 fl oz (5 Jun)
  - Basagran 1.5 pt + COC 1.5 pt/A (24 Jul)
6. Insecticide: Temik 15G 7 lb/A (9 May)
  - Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
7. Acaricide: Danitol 16 fl oz/A (13 Aug)
8. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: ca. 0.75 in. (27 Jun, 16 Aug, 4 Sep)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
9. Harvest date: 4 Oct 2007

Table 57. Effect of treatment on emergence, growth, disease incidence and yield of peanuts.

Treatment, rate/A and application dates <sup>1</sup>	Vigor <sup>2</sup> (13 Jun)	Plants/ft <sup>3</sup> (21 Jun)	CBR <sup>4</sup>		% leaf spot <sup>5</sup>		Yield <sup>6</sup> (lb/A)
			23 Aug	22 Sep	3 Aug	22 Sep	
Echo 720SC 1.5 pt (7/16, 7/31, 8/20, 9/10)....	6.3 b	3.21	1.0	27.3 a	0.1	0.1	3172 c
Provost 433SC 8 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.3 b	2.83	1.8	31.8 a	0.5	0.1	3598 bc
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 10.7 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	7.0 a	2.58	1.8	14.8 ab	0.3	0.1	4047 b
Provost 433SC 10.7 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	6.3 b	2.83	2.3	23.3 a	0.1	0.1	3576 bc
Provost 433SC 10.7 fl oz (7/16, 7/31)							
Echo 720SC 1.5 pt (8/20, 9/10).....	6.5 ab	3.04	1.8	19.8 ab	0.1	0.1	3542 bc
Vapam 42% 7.5 gal (C)							
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 8 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	5.5 c	3.00	0.0	3.0 b	0.3	0.1	4820 a
Vapam 42% 7.5 gal (C)							
Proline 480SC 5.7 fl oz (F)							
Provost 433SC 10.7 fl oz (7/16, 7/31, 8/20)							
Echo 720SC 1.5 pt (9/10) .....	5.0 c	2.81	0.3	2.0 b	0.1	0.1	4809 a
LSD .....	0.6	n.s.	n.s.	19.4	n.s.	n.s.	558

<sup>1</sup> C=chisel application (20 Apr), F=in furrow at planting (9 May). Fungicide sprays were applied at R<sub>3</sub> (beginning pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program.

<sup>2</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy.

<sup>3</sup> Determined from counts of 6-ft sections per row of each plot.

<sup>4</sup> Number of symptomatic plants per plot.

<sup>5</sup> Leaf spot rating scale: 0=none, 100=spots on all leaflets.

<sup>6</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 28 Sep and harvested on 4 Oct.

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. denotes not significant.

XXII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SCLEROTINIA BLIGHT OF PEANUT (SCL107, Tidewater Research Farm, Suffolk, Field 46C)

A. PURPOSE: To evaluate new fungicide chemistries for control of leaf spot, Sclerotinia blight, and other soilborne diseases

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application was at beginning pod (R<sub>3</sub>) and subsequent sprays according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R<sub>7</sub>). Omega 500 in Treatment #11 was applied according to Sclerotinia blight advisories with the same sprayer set up used for other treatments.

D. TREATMENT AND RATE/A:

1. Untreated Check
2. LEM17 200SC 9.6 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)
3. LEM17 200EC 16.8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)
4. LEM17 200SC 16.8 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)
5. LEM17 200SC 24 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)
6. Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (1<sup>st</sup> spray)  
LEM17 200SC 16.8 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (3<sup>rd</sup>, 5<sup>th</sup> spray)
7. LEM17 200SC 16.8 fl oz + Punch 3.3EC 4 fl oz (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)
8. Punch 3.3EC 5 fl oz + LEM17 200SC 9.6 fl oz (1<sup>st</sup> spray)  
LEM17 200SC 16.8 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (3<sup>rd</sup>, 5<sup>th</sup> spray)
9. Tilt 3.6EC 2 fl oz + Bravo 720 1.5 pt (1<sup>st</sup> spray)  
Abound 2.08SC 18.2 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (3<sup>rd</sup>, 5<sup>th</sup> spray)
10. Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (1<sup>st</sup> spray)  
Endura 70WG 9 fl oz (2<sup>nd</sup>, 4<sup>th</sup> spray)  
Bravo 720 1.5 pt (3<sup>rd</sup>, 5<sup>th</sup> spray)
11. Bravo 720 1.5 pt (1<sup>st</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)  
Bravo 720 1.5 pt + Omega 500 1 pt/A (2<sup>nd</sup> spray)  
Omega 500 1 pt (SCL advisory)
12. Bravo 720 1.5 pt (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Holland Rd. (Field #46C)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 10 May 2007, NC 12C
4. Soil fertility report:

pH.....	6.05	K .....	105 ppm
Ca .....	492 ppm	Zn.....	0.4 ppm
Mg .....	47 ppm	Mn.....	2.3 ppm
P .....	14 ppm	Soil type.....	Nansemond fine sandy loam

5. *Cylindrocladium* black rot control: Vapam 15 gal/A (23 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
    - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)
7. Insecticide: Temik 15G 7 lb/A in furrow (10 May)
  - Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - e. Crop Booster (12-4-6) 3 qt/A (6 Jul)
10. Harvest date: 24 Oct 2007

Table 58. Incidence of *Sclerotinia* blight in fungicide-treated plots.

Treatment, rate/A and application timing*	Sclerotinia blight**		
	15 Aug	19 Sep	14 Oct
Untreated Check .....	1.0	1.0	1.5 bc
LEM17 200SC 9.6 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	0.5	0.8	1.3 bc
LEM17 200EC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28) .....	0.3	1.0	1.8 bc
LEM17 200SC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	0.0	0.5	0.5 c
LEM17 200SC 24 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	0.5	0.0	0.3 c
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	0.5	0.3	1.3 bc
LEM17 200SC 16.8 fl oz			
+ Punch 3.3EC 4 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	0.8	0.3	1.0 bc
Punch 3.3EC 5 fl oz + LEM17 200SC 9.6 fl oz (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	0.3	0.3	1.8 bc
Tilt 3.6EC 2 fl oz + Bravo 720 1.5 pt (7/17)			
Abound 2.08SC 18.2 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	1.0	2.5	3.0 ab
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
Endura 70WG 9 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	0.5	0.8	1.8 bc
Bravo 720 1.5 pt (7/17, 8/21, 9/11, 9/28)			
Bravo 720 1.5 pt + Omega 500 1 pt (8/1)			
Omega 500 1 pt (8/27).....	0.8	0.8	1.5 bc
Bravo 720 1.5 pt (7/17, 8/1, 8/21, 9/11, 9/28) .....	1.3	1.8	4.8 a
LSD.....	n.s.	n.s.	2.1

\* Fungicides were applied at the R<sub>3</sub> growth stage (early pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity); Omega 500 was applied on 27 Aug according to the *Sclerotinia* blight advisory.

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

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

Table 59. Evidence of TSWV and other diseases in fungicide-treated plots on 14 Oct.

Treatment, rate/A and application timing <sup>1</sup>	Yellowed/ wilted plants <sup>2</sup>	Dead plants or with dead limbs <sup>2</sup>	Total disease <sup>3</sup>
Untreated Check .....	11.3	6.0 ab	17.3 ab
LEM17 200SC 9.6 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	10.3	4.3 bc	14.5 b-d
LEM17 200EC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	10.0	3.8 bc	13.8 b-d
LEM17 200SC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	10.0	1.8 c	11.8 d
LEM17 200SC 24 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	9.3	3.8 bc	13.0 cd
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	10.3	8.8 a	19.0 a
LEM17 200SC 16.8 fl oz			
+ Punch 3.3EC 4 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	8.5	3.5 bc	12.0 cd
Punch 3.3EC 5 fl oz + LEM17 200SC 9.6 fl oz (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	8.8	3.5 bc	12.3 cd
Tilt 3.6EC 2 fl oz + Bravo 720 1.5 pt (7/17)			
Abound 2.08SC 18.2 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	10.3	4.3 bc	14.5 b-d
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
Endura 70WG 9 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	11.0	4.8 bc	15.8 a-c
Bravo 720 1.5 pt (7/17, 8/21, 9/11, 9/28)			
Bravo 720 1.5 pt + Omega 500 1 pt (8/1)			
Omega 500 1 pt (8/27) .....	9.5	2.3 c	11.8 d
Bravo 720 1.5 pt (7/17, 8/1, 8/21, 9/11, 9/28) .....	10.5	3.8 bc	14.3 b-d
LSD .....	n.s.	3.0	3.9

<sup>1</sup> Fungicides were applied at the R<sub>3</sub> growth stage (early pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity); Omega 500 was applied on 27 Aug according to the Sclerotinia blight advisory.

<sup>2</sup> Plants either dead or with dead limbs lacked diagnostic signs or symptoms, but were likely a result of *Cylindrocladium* black rot (CBR), southern stem rot, and/or tomato spotted wilt virus (TSWV). Data are the mean of plants per plot.

<sup>3</sup> Total disease is sum of plants with symptoms of TSWV and plants either dead or with dead branches. Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD at  $P=0.05$ , except number of dead plants and total disease were analyzed at  $P=0.10$ , n.s. denotes not significant.



Table 60. Effect treatments on early leaf spot, defoliation, and yield of peanut.

Treatment, rate/A and application timing <sup>1</sup>	% leaf spot <sup>2</sup>	% defoliation <sup>3</sup>	Yield <sup>4</sup> (lb/A)
Untreated Check .....	52.5 a	20.0 a	4372 cd
LEM17 200SC 9.6 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	3.8 c	4.3 bc	4884 ab
LEM17 200EC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	14.5 b	5.3 b	4577 bc
LEM17 200SC 16.8 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	3.8 c	2.5 c	4756 a-c
LEM17 200SC 24 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	2.8 c	4.3 bc	4808 a-c
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	2.5 c	3.8 bc	4115 d
LEM17 200SC 16.8 fl oz			
+ Punch 3.3EC 4 fl oz (7/17, 8/1, 8/21, 9/11, 9/28).....	2.0 c	3.5 bc	4808 a-c
Punch 3.3EC 5 fl oz + LEM17 200SC 9.6 fl oz (7/17)			
LEM17 200SC 16.8 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	2.0 c	3.0 c	4808 a-c
Tilt 3.6EC 2 fl oz + Bravo 720 1.5 pt (7/17)			
Abound 2.08SC 18.2 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	2.0 c	3.3 bc	4987 ab
Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (7/17)			
Endura 70WG 9 fl oz (8/1, 9/11)			
Bravo 720 1.5 pt (8/21, 9/28) .....	2.0 c	2.3 c	4731 a-c
Bravo 720 1.5 pt (7/17, 8/21, 9/11, 9/28)			
Bravo 720 1.5 pt + Omega 500 1 pt (8/1)			
Omega 500 1 pt (8/27) .....	2.0 c	2.5 c	4949 ab
Bravo 720 1.5 pt (7/17, 8/1, 8/21, 9/11, 9/28) .....	2.3 c	4.3 bc	5077 a
LSD.....	9.8	2.2	455

<sup>1</sup> Fungicides were applied at the R<sub>3</sub> growth stage (early pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity); Omega 500 was applied on 27 Aug according to the Sclerotinia blight advisory.

<sup>2</sup> Leaf spot rating scale: 0=none, 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

<sup>4</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 15 Oct and harvested on 24 Oct.

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

XXIII. EVALUATION OF A BIOLOGICAL PRODUCT FOR CONTROL OF SCLEROTINIA  
BLIGHT OF PEANUT (SCL207, Tidewater Research Farm, Suffolk, Field 46C)

A. PURPOSE: To evaluate a new biological agent for control of Sclerotinia blight, and other soilborne diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Sprays were applied with 8004VS nozzles/row spaced 18 in. apart and delivering 25 gal/A. The first application of QRD 800 was applied at initial onset of disease and repeated at 14 day intervals or as needed. Four applications of QRD were applied, whereas Omega and Endura were applied twice according to Sclerotinia blight advisories. Bravo 720 1.5 pt/A was applied to all plots for control of early leaf spot.

D. TREATMENT AND RATE/A:

1. Untreated Check
2. QRD 800 2.5 lb
3. QRD 800 1.25 lb
4. QRD 800 0.63 lb
5. Omega 500 1 pt
6. Endura 70WG 9 oz

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Holland Rd. (Field #46C)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 10 May 2007, NC 12C
4. Soil fertility report:

pH.....	6.05	K.....	105 ppm
Ca.....	492 ppm	Zn.....	0.4 ppm
Mg.....	47 ppm	Mn.....	2.3 ppm
P.....	14 ppm	Soil type.....	Nansemond fine sandy loam
5. *Cylindrocladium* black rot control: Vapam 15 gal/A (23 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)
7. Insecticide: Temik 15G 7 lb/A in furrow (10 May); Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
8. Leaf spot control: Bravo 1.5 pt/A (17 Jul, 31 Jul, 21 Aug, 12 Sep)
9. Acaricide: Danitol 16 fl oz/A (13 Aug)
10. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - e. Crop Booster (12-4-6) 3 qt/A (6 Jul)
11. Harvest date: 30 Oct 2007

Table 61. Incidence of Sclerotinia blight in plots on 14 Aug and 19 Sep.

Treatment, rate/A and application timing <sup>1</sup>	Sclerotinia blight <sup>2</sup>	
	14 Aug	19 Sep
Untreated Check.....	0.0	0.8
QRD 800 2.5 lb (8/1, 8/15, 8/29, 9/11).....	0.0	0.3
QRD 800 1.25 lb (8/1, 8/15, 8/29, 9/11).....	0.0	0.5
QRD 800 0.63 lb (8/1, 8/15, 8/29, 9/11).....	0.0	0.8
Omega 500 1 pt (8/1, 8/27).....	0.0	0.3
Endura 70WG 9 oz (8/1, 8/27).....	0.3	0.3
LSD.....	n.s.	n.s.

<sup>1</sup> QRD 800 was applied at initial onset of disease and repeated at 14 day intervals; Omega and Endura were applied according to the Sclerotinia blight advisory.

<sup>2</sup> 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 the causal fungus and included 6 in. on either side of that point.  
Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

Table 62. Disease incidence in plots on 11 October.

Treatment, rate/A and application timing <sup>1</sup>	Sclerotinia blight <sup>2</sup>	Plants		Total disease <sup>4</sup>
		with dead branches <sup>3</sup>	Dead plants <sup>3</sup>	
Untreated Check.....	1.3 b	9.0	2.8 b	13.0 b
QRD 800 2.5 lb (8/1, 8/15, 8/29, 9/11).....	0.8 b	8.5	3.0 b	12.3 b
QRD 800 1.25 lb (8/1, 8/15, 8/29, 9/11).....	0.5 b	12.0	6.8 a	19.3 a
QRD 800 0.63 lb (8/1, 8/15, 8/29, 9/11).....	2.5 a	7.8	3.0 b	13.3 b
Omega 500 1 pt (8/1, 8/27).....	0.5 b	7.8	5.0 ab	13.3 b
Endura 70WG 9 oz (8/1, 8/27).....	1.3 b	9.3	3.8 b	14.3 b
LSD.....	1.1	n.s.	2.6	4.2

<sup>1</sup> QRD 800 was applied at initial onset of disease and repeated at 14 day intervals; Omega and Endura were applied according to the Sclerotinia blight advisory.

<sup>2</sup> 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 the causal fungus and included 6 in. on either side of that point.

<sup>3</sup> Plants with dead branches often lacked diagnostic signs or symptoms, but were thought to be a result of *Cylindrocladium* black rot, southern stem rot and/or tomato spotted wilt virus. Number of affected plants per plot.

<sup>4</sup> Total disease is sum of plants showing symptoms or signs of Sclerotinia blight and other diseases.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.10$ ), n.s. denotes not significant.

Table 63. Effect of treatment on yield of peanut.

Treatment, rate/A and application timing*	Yield** (lb/A)
Untreated Check.....	4422 a
QRD 800 2.5 lb (8/1, 8/15, 8/29, 9/11).....	4168 ab
QRD 800 1.25 lb (8/1, 8/15, 8/29, 9/11).....	3811 b
QRD 800 0.63 lb (8/1, 8/15, 8/29, 9/11).....	4512 a
Omega 500 1 pt (8/1, 8/27).....	4155 ab
Endura 70WG 9 oz (8/1, 8/27).....	4117 ab
LSD.....	436

\* QRD 800 was applied at initial onset of disease and repeated at 14 day intervals; Omega and Endura were applied according to the Sclerotinia blight advisory.

\*\* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 15 Oct and harvested on 30 Oct. Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.10$ ), n.s. denotes not significant.

XXIV. NON-TARGET EFFECTS OF NEW FOLIAR FUNGICIDES ON SCLEROTINIA BLIGHT OF PEANUT (SCL307, Tidewater Research Farm, Suffolk, Field 46C)

A. PURPOSE: To evaluate the effect of new fungicide chemistries of Sclerotinia blight and other soilborne diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 35-ft rows per plot with treatments applied to the center two rows
3. Seeding rate of ca. 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Sprays were applied with three, D<sub>3</sub>23 nozzles/row delivering 15 gal/A. The initial application of treatments was at beginning pod (R<sub>3</sub>) and subsequent sprays followed according to the Va. Peanut Leaf Spot Advisory Program.

D. TREATMENT AND RATE/A:

1. Untreated Check
2. Bravo 720 1.5 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Abound 2.08SC 18.2 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
3. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Headline 250EC 9 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
4. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Provost 433SC 10.7 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
5. Bravo 720 1 pt/A (1<sup>st</sup>, 4<sup>th</sup> spray)  
Absolute 500SC 7 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
6. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Folicur 3.6EC 7.2 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
7. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Enable 2F 7.87 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
8. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
Evito 4FL 5.7 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
9. Bravo 720 1 pt (1<sup>st</sup>, 4<sup>th</sup> spray)  
LEM17 200SC 16.8 fl oz (2<sup>nd</sup>, 3<sup>rd</sup> spray)
10. Bravo 720 1.5 pt (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Holland Rd. (Field 46C)
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date and cultivar: 10 May 2007, NC 12C
4. Soil fertility report:

pH.....	6.05	K .....	105 ppm
Ca .....	492 ppm	Zn.....	0.4 ppm
Mg .....	47 ppm	Mn.....	2.3 ppm
P .....	14 ppm	Soil type.....	Nansemond fine sandy loam
5. Cylindrocladium black rot control: Vapam 15 gal/A (23 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (11 May)

7. Insecticide: Temik 15G 7 lb/A in furrow; Orthene 97S 8 oz/A (30 May)  
Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Liquid Mn 3 pt/A (20 Jun); 1 qt/A (19 Jul)
  - e. Crop Booster (12-4-6) 3 qt/A (6 Jul)
10. Harvest date: 24 Oct 2007

Table 64. Disease incidence in fungicide-treated plots.

Treatment, rate/A and application dates <sup>1</sup>	Sclerotinia blight <sup>2</sup>			% leaf spot <sup>3</sup> (14 Oct)	% defol- iation <sup>4</sup> (14 Oct)
	16 Aug	19 Sep	14 Oct		
Untreated Check.....	1.0	1.8	2.5	30.0 a	11.3
Bravo 720 1.5 pt (7/17, 9/11) Abound 2.08SC 18.2 fl oz (8/1, 8/21).....	0.5	1.0	1.5	3.0 b	4.5
Bravo 720 1 pt (7/17, 9/11) Headline 250EC 9 fl oz (8/1, 8/21).....	1.8	3.3	5.0	2.3 b	3.8
Bravo 720 1 pt (7/17, 9/11) Provost 433SC 10.7 fl oz (8/1, 8/21).....	0.8	1.3	3.0	4.0 b	4.8
Bravo 720 1 pt (7/17, 9/11) Absolute 500SC 7 fl oz (8/1, 8/21).....	1.8	1.5	3.8	2.3 b	4.5
Bravo 720 1 pt (7/17, 9/11) Folicur 3.6EC 7.2 fl oz (8/1, 8/21).....	0.8	1.0	2.3	5.8 b	7.0
Bravo 720 1 pt (7/17, 9/11) Enable 2F 7.87 fl oz (8/1, 8/21).....	0.3	1.8	3.5	3.8 b	5.8
Bravo 720 1 pt (7/17, 9/11) Evito 4FL 5.7 fl oz (8/1, 8/21).....	0.8	2.3	4.0	4.5 b	5.0
Bravo 720 1 pt (7/17, 9/11) LEM17 200SC 16.8 fl oz (8/1, 8/21).....	2.5	2.5	3.5	6.0 b	5.0
Bravo 720 1.5 pt (7/17, 8/1, 8/21, 9/11).....	0.8	1.0	2.3	1.0 b	3.8
LSD.....	n.s.	n.s.	n.s.	7.4	n.s.

<sup>1</sup> Fungicides were applied at the R<sub>3</sub> (early pod) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R<sub>7</sub> (beginning maturity).

<sup>2</sup> 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 the causal fungus and included 6 in. on either side of that point.

<sup>3</sup> Leaf spot rating scale: 0=none, 100=spots on all leaflets.

<sup>4</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 65. Disease incidence and yield in fungicide-treated plots.

Treatment, rate/A and application timing <sup>1</sup>	14 Oct <sup>2</sup>			Yield <sup>3</sup> (lb/A)
	Plants w/dead branches	Dead plants	Total disease	
Untreated Check.....	13.8	3.8	17.5	4563 bc
Bravo 720 1.5 pt (7/17, 9/11)				
Abound 2.08SC 18.2 fl oz (8/1, 8/21).....	12.3	3.8	16.0	4292 ab
Bravo 720 1 pt (7/17, 9/11)				
Headline 250EC 9 fl oz (8/1, 8/21).....	15.8	5.0	20.8	5037 ab
Bravo 720 1 pt (7/17, 9/11)				
Provost 433SC 10.7 fl oz (8/1, 8/21).....	15.0	5.0	20.0	4768 ab
Bravo 720 1 pt (7/17, 9/11)				
Absolute 500SC 7 fl oz (8/1, 8/21).....	11.5	4.5	16.0	5255 a
Bravo 720 1 pt (7/17, 9/11)				
Folicur 3.6EC 7.2 fl oz (8/1, 8/21).....	12.5	6.0	18.5	5024 ab
Bravo 720 1 pt (7/17, 9/11)				
Enable 2F 7.87 fl oz (8/1, 8/21).....	11.8	3.8	15.5	4883 ab
Bravo 720 1 pt (7/17, 9/11)				
Evito 4FL 5.7 fl oz (8/1, 8/21).....	14.0	3.0	17.0	5153 ab
Bravo 720 1 pt (7/17, 9/11)				
LEM17 200SC 16.8 fl oz (8/1, 8/21).....	11.5	3.3	14.8	5063 ab
Bravo 720 1.5 pt (7/17, 8/1, 8/21, 9/11).....	13.0	6.8	19.8	4114 c
LSD.....	n.s.	n.s.	n.s.	595

<sup>1</sup> Fungicides were applied at the R<sub>3</sub> growth stage (early pod) and thereafter according to Va. Peanut Leaf Spot Advisories.

<sup>2</sup> Plants with dead branches lacked diagnostic signs or symptoms, but were thought to be a result of *Cylindrocladium* black rot, southern stem rot and/or tomato spotted wilt virus. Data are the mean of affected plants per plot. Total disease is the sum of plants showing symptoms or signs of diseases other than *Sclerotinia* blight.

<sup>3</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 15 Oct and harvested on 24 Oct. 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. denotes not significant.

XXV. EVALUATION OF LEAF SPOT IN TRANSFORMED PEANUT LINES WITH THE OXALATE OXIDASE GENE (SCLTLFSPOT107, Tidewater Research Farm, Suffolk, Field 16)

- A. PURPOSE: To compare agronomic traits and disease resistance in non-transformed cultivars to genetically transformed lines with the barley oxalate oxidase gene
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleyways between replications
  2. Split-plot design with fungicide treatment in main plots and cultivars in subplots
  3. Two, 25-ft rows per plot and seed spaced 4 to 5 in. apart at planting
- C. FUNGICIDE TREATMENT: Main plots
1. Non-treated control
  2. Bravo 720 1.5 pt/A at R<sub>3</sub> (beginning pod – 16 Jul) and thereafter according to the Va. Leaf Spot Advisory Program (31 Jul, 21 Aug, 11 Sep)
- D. CULTIVARS: Sub-plots
1. NC 7 (non-transformed)
  2. N70-8-24-B-B (transformed)
  3. N70-6-B-B-B (transformed)
  
  4. WILSON (non-transformed)
  5. W14-10-2-B-B (transformed)
  6. W73-27-B-B-B (transformed)
  
  7. PERRY (non-transformed)
  8. P39-7-9-B-B (transformed)
  9. P53-30-21-B-B (transformed)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
  2. Crop history: corn 2006, cotton 2005, peanut 2004
  3. Planting date: 14 May
  4. Soil fertility report (Jan 2007):

pH.....	6.31	K .....	46 ppm
Ca .....	235 ppm	Zn.....	0.5 ppm
Mg .....	37 ppm	Mn.....	1.5 ppm
P .....	35 ppm	Soil type .....	Kenansville loamy fine sand
  5. *Cylindrocladium* black rot control: Vapam 42% 15 gal/A (19 Apr)
  6. Herbicide:
    - Pre-plant - Prowl 1 pt/A (26 Mar)
    - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
    - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (14 May)
    - Post-emergence – Poast Plus 2 pt + Crop Oil 2 pt/A (31 Jul)
  7. Insecticide: Temik 15G 7 lb/A in furrow (14 May)
    - Orthene 97S 8 oz/A (30 May, 8 Jun)
    - Lorsban 15G 13 lb/A (2 Jul)
  8. Acaricide: Danitol 16 fl oz/A (13 Aug)



9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: 0.75 in. (1 Jun, 26 Jun, 27 Jul, 4 Sep, 15 Sep); 1.0 in (15 Aug, 2 Oct)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
10. Harvest date: 2 Nov

Table 66. Stand count, plant height and oxalate oxidase expression in non-transformed parent cultivars and transformed cultivars in Bravo-treated plots.

Cultivar	Stand count (plants/ft) <sup>1</sup> (11 Jun)	Plant ht. (cm) <sup>2</sup> (8 Aug)	Oxalate oxidase expression <sup>3</sup>	
			31 Jul	18 Sep
NC7 (non-transformed).....	1.33 b	20.7 ab	0.010 c	0.010 c
N70-8-24-B-B.....	1.83 a	21.6 a	0.679 a	0.778 a
N70-6-B-B-B.....	1.30 b	18.7 b	0.343 b	0.394 b
LSD.....	0.15	2.3	0.113	0.095
Wilson (non-transformed)...	1.70	19.0	0.013 c	0.009 c
W14-10-2-B-B.....	1.73	19.0	0.629 a	0.588 a
W73-27-B-B-B.....	1.68	20.7	0.264 b	0.245 b
LSD.....	n.s.	n.s.	0.072	0.043
Perry (non-transformed).....	1.74	18.0 b	0.013 c	0.011 c
P39-7-9-B-B.....	1.74	17.7 b	0.602 a	0.804 a
P53-30-21-B-B.....	1.76	19.9 a	0.172 b	0.148 b
LSD.....	n.s.	1.9	0.083	0.100

<sup>1</sup> Determined from counts in two, 25-ft rows per plot.

<sup>2</sup> Measured from soil surface to the growing point of main stem in 10 randomly-selected plants/plot of Bravo-treated plots.

<sup>3</sup> Oxalate oxidase expression determined by assay of leaflets from 10 plants/plot in Bravo-treated plots by a colorimetric detection method that measures hydrogen peroxide release from oxalic acid substrate with a microtiter plate reader at 540 nm wavelength (Livingstone et al. 2005, Plant Physiol. 137:1354).

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

Table 67. Incidence of early leaf spot, web blotch, dead plants and defoliation in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Variables	Dead plants <sup>1</sup> (10 Oct)	% leaf spot <sup>2</sup>			% web blotch <sup>2</sup> (10 Oct)	% defoliation <sup>3</sup>	
		3 Sep	21 Sep	10 Oct		21 Sep	10 Oct
<i>Non-treated</i>							
NC7 (non-transformed).....	1.5	12.5	34.5	81.3	0.8	4.5	35.0 b
N70-8-24-B-B.....	0.8	12.5	41.3	82.5	0.8	9.3	47.5 a
N70-6-B-B-B.....	1.5	8.8	38.3	76.3	0.5	3.5	31.3 b
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	11.2
Wilson (non-transformed).....	0.5	10.0	41.3	83.8	1.3	8.0	35.0
W14-10-2-B-B.....	0.3	18.8	37.5	75.0	3.3	5.5	31.3
W73-27-B-B-B.....	0.3	11.3	45.0	83.8	3.3	8.0	37.5
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed).....	0.3	25.0 a	47.5	86.3	0.5	9.3	36.3
P39-7-9-B-B.....	0.3	20.0 ab	47.0	88.8	0.5	4.3	36.3
P53-30-21-B-B.....	0.3	7.5 b	30.0	83.8	3.3	3.3	35.0
LSD.....	n.s.	12.6	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Treated with Bravo 720</i>							
NC7 (non-transformed).....	1.5	0.0	10.8	5.5	0.0	2.0	1.0
N70-8-24-B-B.....	1.5	0.0	8.8	6.8	0.3	1.3	2.5
N70-6-B-B-B.....	0.3	0.0	11.0	5.5	0.0	1.8	2.0
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed).....	0.5	0.0	12.8	4.5	0.3	2.0	2.0
W14-10-2-B-B.....	1.0	0.1	13.8	5.5	0.8	1.5	1.0
W73-27-B-B-B.....	0.3	0.0	13.3	6.3	1.8	1.5	2.0
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed).....	0.5	0.1 a	14.8	4.3	0.3	2.0	1.3
P39-7-9-B-B.....	0.5	0.1 a	9.8	6.0	0.0	1.0	1.0
P53-30-21-B-B.....	1.0	0.0 b	14.5	9.8	0.8	2.0	2.3
LSD.....	n.s.	0.05	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Fungicide</i>							
Non-treated control.....	0.6	4.8 a	0.1	82.4 a	1.6	6.2	36.1
Bravo 720 treated.....	0.8	0.0 b	0.3	6.0 b	0.4	1.7	1.7
LSD.....	n.s.	2.0	n.s.	2.3	n.s.	n.s.	--
<i>Split-plot analysis, P(F)</i>							
Cultivar.....	0.1363	0.9018	0.2012	0.0737	0.0001	0.5379	0.0019
Fungicide.....	0.6529	0.0001	0.1110	0.0001	0.0518	0.1942	0.0009
Fungicide x cultivar.....	0.4643	0.9057	0.1677	0.1049	0.3024	0.5199	0.0100

<sup>1</sup> Plants often lacked diagnostic signs or symptoms of disease, but were thought to be a result of *Cylindrocladium* black rot or southern stem rot.

<sup>2</sup> Leaf spot and web blotch rating scale: 0=none, 100=spots on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- LSD not reported due to significant cultivar by fungicide interaction. Arcsine transformation of percentage data was made in statistical analysis.

Table 68. Incidence of TSWV and *Cylindrocladium* black rot in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Variables	TSWV*		<i>Cylindrocladium</i> black rot**	
	14 Aug	3 Sep	14 Aug	3 Sep
<i>Cultivar</i>				
NC7 (non-transformed) .....	4.3	1.9 ab	0.1	1.8
N70-8-24-B-B .....	2.0	0.8 b	0.4	0.4
N70-6-B-B-B .....	3.1	2.9 a	0.0	0.5
LSD .....	n.s.	1.7	--	n.s.
Wilson (non-transformed).....	2.4	0.6	0.5	1.1
W14-10-2-B-B .....	2.3	1.0	0.3	0.8
W73-27-B-B-B .....	2.5	1.1	0.3	1.1
LSD .....	n.s.	n.s.	--	n.s.
Perry (non-transformed).....	1.5	0.1 b	0.1	0.6
P39-7-9-B-B .....	1.9	1.4 a	0.1	1.3
P53-30-21-B-B .....	2.4	0.8 ab	0.0	0.8
LSD .....	n.s.	0.8	--	n.s.
<i>Fungicide</i>				
Non-treated control.....	2.9	0.9	0.2	0.7
Bravo 720 1.5 pt .....	2.1	1.5	0.2	1.1
LSD .....	n.s.	n.s.	--	n.s.
<i>Split-plot analysis, P(F)</i>				
Cultivar .....	0.1424	0.0037	0.2589	0.2153
Fungicide .....	0.0886	0.1843	1.0000	0.1098
Fungicide x cultivar.....	0.5379	0.6290	0.0422	0.3846

\* Counts of plants per plot with symptoms of TSWV.

\*\* Number of symptomatic and/or dead plants per plot suspected of *Cylindrocladium* black rot.

Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- LSD not reported due to significant cultivar by fungicide interaction.

Table 69. Yield and incidence of Sclerotinia blight in parent lines (non-transformed) and genetically transformed lines containing the barley oxalate oxidase gene.

Variables	Sclerotinia blight*				Yield** (lb/A)
	3 Sep	23 Sep	10 Oct	AUDPC	
<i>Non-treated</i>					
NC7 (non-transformed).....	0.5	0.8	3.5 a	57 a	3998
N70-8-24-B-B .....	0.0	0.0	0.0 b	0 b	4104
N70-6-B-B-B.....	0.0	0.0	0.0 b	0 b	3715
LSD .....	n.s.	n.s.	1.0	15	n.s.
Wilson (non-transformed)....	0.3	0.3	2.5	33	4370
W14-10-2-B-B .....	0.0	0.0	0.0	0	4122
W73-27-B-B-B.....	0.0	0.5	0.0	9	3998
LSD .....	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed) .....	0.3	0.8	1.0 a	28	4440
P39-7-9-B-B.....	0.0	0.0	0.0 b	0	4122
P53-30-21-B-B.....	0.0	0.0	0.0 b	0	3874
LSD .....	n.s.	n.s.	0.8	n.s.	n.s.
<i>Treated with Bravo 720</i>					
NC7 (non-transformed).....	0.8	2.8 a	4.3 a	111 a	3874 b
N70-8-24-B-B .....	0.0	0.3 b	0.3 b	7 b	4989 a
N70-6-B-B-B.....	0.0	0.8 b	0.8 b	21 b	4511 a
LSD .....	n.s.	1.6	3.1	77	482
Wilson (non-transformed)....	0.3	0.5	3.8 a	50	4317
W14-10-2-B-B .....	0.0	0.0	0.3 b	2	4388
W73-27-B-B-B.....	0.0	0.5	0.5 b	14	5042
LSD .....	n.s.	n.s.	2.5	n.s.	n.s.
Perry (non-transformed) .....	1.5	2.8	8.8 a	163	5042
P39-7-9-B-B.....	0.0	0.0	0.5 b	5	4883
P53-30-21-B-B.....	0.0	0.3	0.3 b	7	4883
LSD .....	n.s.	n.s.	6.8	n.s.	n.s.
<i>Fungicide</i>					
Non-treated control .....	0.1	0.25	0.8	14	4083
Bravo 720 1.5 pt.....	0.3	0.86	2.1	42	4659
LSD .....	n.s.	n.s.	--	--	--
<i>Split-plot analysis, P(F)</i>					
Cultivar.....	0.0097	0.5380	0.0001	0.0001	0.0006
Fungicide.....	0.4444	0.1945	0.2271	0.2553	0.0257
Fungicide x cultivar.....	0.3532	0.5204	0.0034	0.0255	0.0030

\* Infection centers per plot or a total of 50 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. AUDPC is area under disease progress curve.

\*\* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 2 Nov.

Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- LSD for combined analysis not reported due to significant cultivar by fungicide interaction.

XXVI. EVALUATION OF SCLEROTINIA BLIGHT RESISTANCE IN TRANSGENIC PEANUTS WITH THE OXALATE OXIDASE GENE (SCLT107-VA, Tidewater Research Farm, Suffolk, Field 16)

A. PURPOSE: To compare agronomic traits, levels of Sclerotinia blight and the yield response of parent cultivars and transformed lines with and without Omega fungicide in Virginia

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 10-ft alleys between blocks
2. Split-plot design with Omega 500 applied in main plots and cultivar in subplots
3. Two border rows of VA 98R planted between main plots.
4. Two, 30-ft rows per plot with 36 in. row spacing and seed spaced 4 in. apart

C. FUNGICIDE TREATMENT: Main plots

1. Non-treated control
2. Omega 500 1 pt/A applied on 13 Aug and 11 Sep according to Sclerotinia blight advisory program.

D. VARIETY: Sub-plots

1. NC 7 (non-transformed)
2. N70-8-24-B-B (transformed)
3. N70-6-B-B-B (transformed)
  
4. WILSON (non-transformed)
5. W14-10-2-B-B (transformed)
6. W73-27-B-B-B (transformed)
  
7. PERRY (non-transformed)
8. P39-7-9-B-B (transformed)
9. P53-30-21-B-B (transformed)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2006, cotton 2005, peanut 2004
3. Planting date: 14 May
4. Soil fertility report (Jan 2007):

pH.....	6.31	K .....	46 ppm
Ca .....	235 ppm	Zn.....	0.5 ppm
Mg .....	37 ppm	Mn.....	1.5 ppm
P .....	35 ppm	Soil type.....	Kenansville loamy fine sand
5. *Cylindrocladium* black rot control: Vapam 42% 15 gal/A (19 Apr)
6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
  - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 oz/A (14 May)
  - Post-emergence – Poast Plus 2 pt + Crop Oil 2 pt/A (31 Jul)
7. Insecticide: Temik 15G 7 lb/A in furrow (14 May)
  - Orthene 97S 8 oz/A (30 May, 8 Jun); Lorsban 15G 13 lb/A (2 Jul)
8. Leaf spot control: Bravo 720 1.5 pt/A (16 Jul, 31 Jul, 21 Aug, 11 Sep)
9. Acaricide: Danitol 16 fl oz/A (13 Aug)

10. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: ca. 0.75 in. (1 Jun, 26 Jun, 27 Jul, 4 Sep, 15 Sep)  
ca. 1.0 in (15 Aug, 2 Oct)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
11. Harvest date: Rep I, 23 October; Rep II, 24 October;  
Rep III (except III-2-1, III-2-2, III-2-6), 29 October;  
Rep IV (and III-2-1, III-2-2, III-2-6), 2 Nov

Table 70. Stand count, plant height and oxalate oxidase expression in non-transformed cultivars and genetically transformed lines with the barley oxalate oxidase gene.

Cultivar	Stand count (plants/plot) <sup>1</sup> (11 Jun)	Plant ht. (cm) <sup>2</sup> (8 Aug)	Oxalate oxidase expression <sup>3</sup>	
			26 Jul	18 Sep
NC 7 (non-transformed).....	1.67 ab	18.8	0.009 c	0.011 c
N70-8-24-B-B.....	1.53 b	17.8	0.681 a	0.733 a
N70-6-B-B-B.....	1.80 a	19.2	0.230 b	0.283 b
LSD.....	0.15	n.s.	0.104	0.137
Wilson (non-transformed).....	1.73 b	17.6	0.011 c	0.017 c
W14-10-2-B-B.....	1.81 ab	19.1	0.559 a	0.585 a
W73-27-B-B-B.....	1.89 a	20.3	0.189 b	0.284 b
LSD.....	0.12	n.s.	0.081	0.135
Perry (non-transformed).....	1.78 c	16.0 b	0.010 c	0.007 c
P39-7-9-B-B.....	1.90 b	18.9 a	0.579 a	0.613 a
P53-30-21-B-B.....	2.03 a	20.1 a	0.186 b	0.227 b
LSD.....	0.11	1.4	0.075	0.128

<sup>1</sup> Determined from counts of two, 30-ft rows per plot.

<sup>2</sup> Measured from soil surface to the growing point of main stem of 10 randomly selected plants/plot.

<sup>3</sup> Oxalate oxidase expression determined by assay of leaflets from 10 plants/plot in non-treated main plots by a colorimetric detection method that measures hydrogen peroxide released from oxalic acid substrate using a microtiter plate reader at 540 nm (Livingstone et al. 2005, Plant Physiol. 137:1354).

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

Table 71. Susceptibility of non-transformed cultivars and transformed lines with the barley oxalate oxidase gene to TSWV and *Cylindrocladium* black rot.

Variables	TSWV*		<i>Cylindrocladium</i> black rot**	
	14 Aug	3 Sep	14 Aug	3 Sep
<i>Cultivar</i>				
NC7 (non-transformed).....	5.8	3.9	0.3	1.0
N70-8-24-B-B .....	4.8	2.5	0.3	2.5
N70-6-B-B-B.....	5.1	3.0	0.1	1.8
LSD .....	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed).....	5.6	2.1	1.3	1.8
W14-10-2-B-B .....	4.6	2.9	0.6	2.8
W73-27-B-B-B.....	2.8	1.4	0.4	1.0
LSD .....	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed).....	2.3 b	1.5	0.6	2.5
P39-7-9-B-B .....	2.6 b	1.3	0.8	1.3
P53-30-21-B-B.....	4.1 a	1.1	0.5	1.5
LSD .....	1.3	n.s.	n.s.	n.s.
<i>Fungicide</i>				
Non-treated control .....	4.3	2.3	0.7	2.2 a
Omega 500 l pt/A .....	4.0	2.0	0.3	1.4 b
LSD .....	n.s.	n.s.	n.s.	0.7
<i>Split-plot analysis, P(F)</i>				
Cultivar.....	0.0223	0.1380	0.1715	0.0901
Fungicide.....	0.5603	0.6802	0.1944	0.0457
Fungicide x cultivar.....	0.5058	0.7064	0.5400	0.6148

\* Counts of plants per plot with symptoms.

\*\* Number of symptomatic and/or dead plants per plot.

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

Table 72. Comparison of *Sclerotinia* blight incidence and yield in non-transformed cultivars and transgenic lines with the barley oxalate oxidase gene.

Variables	Sclerotinia blight*				Yield** (lb/A)
	3 Sep	23 Sep	10 Oct	AUDPC	
<i>Non-treated</i>					
NC7 (non-transformed).....	2.3 a	8.8 a	11.0	314 a	3532
N70-8-24-B-B .....	0.0 b	0.0 b	0.0	0 b	4297
N70-6-B-B-B.....	0.0 b	0.3 b	0.8	12 b	4651
LSD .....	1.7	7.3	n.s.	256	n.s.
Wilson (non-transformed).....	2.0	7.8	10.5	286	4513
W14-10-2-B-B .....	0.3	0.0	0.0	5	4866
W73-27-B-B-B.....	0.0	0.0	0.0	0	5063
LSD .....	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed) .....	0.8 a	4.8 a	8.3 a	181 a	4808
P39-7-9-B-B.....	0.0 b	0.0 b	0.0 b	0 b	4906
P53-30-21-B-B.....	0.0 b	0.0 b	0.3 b	2 b	4945
LSD .....	0.5	4.3	6.5	141	n.s.
<i>Treated with Omega 500</i>					
NC7 (non-transformed).....	0.5	4.5 a	6.8	162 a	4984
N70-8-24-B-B .....	0.0	0.0 b	0.0	5 b	5220
N70-6-B-B-B.....	0.8	0.8 b	0.3	31 b	5828
LSD .....	n.s.	3.6	n.s.	123	n.s.
Wilson (non-transformed).....	0.8	2.0 a	2.3	83	5023
W14-10-2-B-B .....	0.0	0.0 b	0.0	0	5612
W73-27-B-B-B.....	0.0	0.0 b	0.0	0	5965
LSD .....	n.s.	1.8	n.s.	n.s.	n.s.
Perry (non-transformed) .....	0.3	2.3	4.5	89	5102
P39-7-9-B-B.....	0.0	0.0	0.0	0	6387
P53-30-21-B-B.....	0.0	0.3	0.5	15	5141
LSD .....	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Fungicide</i>					
Non-treated control .....	0.6	2.4	3.4	34	4418
Omega 500 1 pt/A .....	0.3	1.1	1.6	17	4577
LSD .....	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Split-plot analysis, P(F)</i>					
Cultivar.....	0.0003	0.0001	0.0002	0.0001	0.0236
Fungicide.....	0.2908	0.1976	0.1889	0.3177	0.8074
Fungicide x cultivar.....	0.0724	0.3343	0.5755	0.2335	0.5492

\* Counts of infection centers in a total of 60 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. AUDPC is area under disease progress curve.

\*\* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 23-24 Oct. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.



XXVII. EVALUATION OF SCLEROTINIA BLIGHT RESISTANCE IN TRANSGENIC PEANUTS WITH THE OXALATE OXIDASE GENE (SCLT107-NC, Upper Coastal Plain Research Station, Rocky Mount, NC)

A. PURPOSE: To compare agronomic traits and levels of resistance to Sclerotinia blight in parent cultivars and their transformed lines

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 10-ft alleys between blocks
2. Split-plot design with Omega treatment in main plots and cultivar in subplots.
3. Two, 30-ft rows per subplot with 36 in. row spacing and seeding rate of 3.5 seed/ft

C. FUNGICIDE TREATMENT: Main plots

1. Non-treated control
2. Omega 500 l pt/A (16 Jul, 15 Aug according to Sclerotinia blight advisory program)

D. VARIETY: Sub-plots

1. NC 7 (non-transformed)
2. N70-8-24-B-B (transformed)
3. N70-6-B-B-B (transformed)
  
4. WILSON (non-transformed)
5. W14-10-2-B-B (transformed)
6. W73-27-B-B-B (transformed)
  
7. PERRY (non-transformed)
8. P39-7-9-B-B (transformed)
9. P53-30-21-B-B (transformed)

E. ADDITIONAL INFORMATION:

1. Location: Upper Coastal Plain Research Station, Rocky Mount, NC
2. Crop history: peanut 2006, cotton 2005
3. Planting date: 16 May
4. Soil fertility report (Oct 2006): NC Dept. of Agriculture Lab  
pH..... 6.3      K-I..... 55  
Ca %..... 61      Zn-I..... 35 (Zn: AI=35)  
Mg %..... 23      Mn-I..... 35 (Mn: AI-1=33; AI-2=26)  
Cu-I ..... 52      S-I ..... 26  
P-I..... 31      Soil type: Aycock very fine loamy sand and Norfolk loamy sand
5. Herbicide:  
Pre-plant - Dual 1.3 pt + Prowl 2.4 pt/A (16 May);  
Pre-emergence – Dual 1.3 pt + Valor 2 fl oz/A (16 May)
6. Insecticide: Orthene 97S 4 oz/A (13 Jun); Lorsban 15G 14 lb/A (9 Jul)  
Asana XL 9.6 fl oz/A (13 Aug, 13 Sep)
7. Fungicide: Bravo WeatherStik 1.5 pt/A (12 Jul, 19 Jul, 3 Aug, 13 Aug, 29 Aug, 13 Sep)
8. Additional crop management:
  - a. Fertilizer: 18-46-0 100 lb/A (3 Apr); 0-0-60 50 lb/A (9 Apr)
  - b. Landplaster: 800 lb/A with cultivation (9 Jul)
  - c. Solubor 2.5 lb/A (12 Jul); Techmangam 2 lb/A (19 Jul)
  - d. Irrigation: ca. 1.0 in (3 Jul, 16 Aug, 4 Sep, 11 Sep)
9. Harvest date: 22 October

Table 73. Oxalate oxidase expression, Sclerotinia blight resistance and yield in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Variables	Oxalate oxidase <sup>1</sup> 1 Jul	Sclerotinia blight <sup>2</sup>				Yield <sup>3</sup> (lb/A)
		31 Aug	14 Sep	15 Oct	AUDPC	
<i>Non-treated</i>						
NC 7 (non-transformed).....	0.010 c	0.0	0.5	12.0	191	3335 a
N70-8-24-B-B.....	0.560 a	0.0	0.0	0.0	0	2737 b
N70-6-B-B-B.....	0.163 b	0.5	0.8	6.0	117	3081 ab
LSD.....	0.122	n.s.	n.s.	n.s.	n.s.	379
Wilson (non-transformed)...	0.006 b	0.0	0.0	5.5	83	3410 a
W14-10-2-B-B.....	0.334 a	0.0	0.0	1.5	23	2587 b
W73-27-B-B-B.....	0.239 a	0.0	0.0	0.5	8	3365 a
LSD.....	0.101	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed).....	0.009 c	0.0	0.0	9.3	139	3141 a
P39-7-9-B-B.....	0.272 a	0.0	0.0	0.5	8	2064 b
P53-30-21-B-B.....	0.095 b	0.0	0.0	0.3	4	3410 a
LSD.....	0.060	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Treated with Omega 500</i>						
NC 7 (non-transformed).....	--	1.0	1.0	13.5	248	3560
N70-8-24-B-B.....	--	0.0	0.0	0.5	8	2692
N70-6-B-B-B.....	--	0.0	0.0	4.0	60	2901
LSD.....	--	n.s.	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed)....	--	0.0	0.0	19.3	289	3395 a
W14-10-2-B-B.....	--	0.3	0.3	0.3	16	2533 b
W73-27-B-B-B.....	--	0.3	0.5	1.3	36	3440 a
LSD.....	--	n.s.	n.s.	n.s.	n.s.	517
Perry (non-transformed).....	--	0.0	0.0	7.5	113	3156
P39-7-9-B-B.....	--	0.3	0.3	0.5	17	2513
P53-30-21-B-B.....	--	0.0	0.0	1.0	15	3604
LSD.....	--	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Fungicide</i>						
Non-treated control.....	--	0.2	0.4	3.9	103	2955
Omega 500 l pt/A.....	--	0.3	0.3	5.3	105	2976
LSD.....	--	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Split-plot analysis, P(F)</i>						
Cultivar.....	--	0.6920	0.2974	0.0006	0.0010	0.0001
Fungicide.....	--	0.1942	0.0577	0.3772	0.3131	0.9417
Fungicide x cultivar.....	--	0.4431	0.6963	0.6123	0.5893	0.8077

<sup>1</sup> Oxalate oxidase expression determined by assay of leaflets from 10 plants/plot in non-treated main plots by a colorimetric detection method that measures hydrogen peroxide released from oxalic acid substrate using a microtiter plate reader at 540 nm (Livingstone et al. 2005, Plant Physiol. 137:1354).

<sup>2</sup> Counts of infection centers per two row plot. An infection center was a point of active growth by *Sclerotinia minor* and included 6 in. on either side of that point.

<sup>3</sup> Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 22 Oct. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

XXVIII. RESPONSE OF VIRGINIA- AND RUNNER-TYPE PEANUTS TO SOIL FUMIGATION WITH METAM SODIUM (PNEMA107, Tidewater Research Farm, Suffolk, Field 28)

A. PURPOSE: To compare the response of peanut varieties to soil fumigation with metam sodium and susceptibility to *Cylindrocladium* black rot, nematodes, and tomato spotted wilt virus

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleyways
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two, 35-ft rows per plot with 36 in. row spacing

C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row by a single chisel on 20 Apr. Rows were bedded (24 in. wide and 4 in. high) during application. Temik 15G was applied in-furrow at planting on 9 May.

D. PEANUT TYPE, TREATMENT, AND RATE/A (Main plots):

1. Virginia-type peanut, Temik 15G 7 lb/A (in-furrow)
2. Virginia-type peanut, Vapam 42% 7.5 gal + Temik 15G 7 lb/A (in-furrow)
3. Runner-type peanut, Temik 15G 7 lb/A (in-furrow)
4. Runner-type peanut, Vapam 42% 7.5 gal/A + Temik 15G 7 lb/A (in-furrow)

E. VARIETY (Sub-plots):

<u>Virginia-types</u>	<u>Runner-types</u>
1. Perry	1. GA Green
2. GA Hi O/L	2. GA 01R
3. Gregory	3. GA-02C
4. Wilson	4. GA-03L
5. Florida Fancy	5. Florida 07-R
6. Georgia 05E	6. McCloud

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2006, peanut 2005, wheat/soybean 2004
3. Planting date: 9 May
4. Soil fertility report (Jan 2007):

pH.....	6.68	K.....	27 ppm
Ca.....	288 ppm	Zn.....	0.3 ppm
Mg.....	37 ppm	Mn.....	0.9 ppm
P.....	26 ppm	Soil type.....	Kenansville loamy fine sand
5. Nematode assay report: 10 May 2007

<u>Nematodes/500 cc soil:</u>	
Root knot.....	530
Stunt.....	130
Ring.....	310
Stubby root.....	10

6. Herbicide:
  - Pre-plant - Prowl 1 pt/A (26 Mar)
    - Dual II Magnum 1 pt + Pursuit 2.0 fl oz/A (26 Apr)
  - Pre-emergence - Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (11 May)
  - Post-emergence - Basagran 1.5 pt + Pursuit 2.0 fl oz (5 Jun)
    - Basagran 1.5 pt + COC 1.5 pt/A (24 Jul)
7. Insecticide: Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
8. Acaricide: Danitol 16 fl oz/A (13 Aug)
9. Leaf spot control: Provost 433SC 8 fl oz/A (12 Jul, 31 Jul)
  - Headline 9 fl oz/A (20 Aug); Bravo WS 1.5 pt/A (12 Sep)
10. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Irrigation: ca. 0.75 in. (27 Jun, 16 Aug, 4 Sep)
  - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
11. Harvest date: 15 Oct 2007

Table 74. Effect of market type and treatment on nematode populations.

Market type and treatment	Nematodes/500 cc soil*	
	Root-knot juveniles	Ring
Virginia-type varieties, Temik 15G 7 lb/A (F) .....	1347 ab	157
Virginia-type varieties, Vapam 7.5 gal/A + Temik 15G 7 lb/A(F) .....	420 b	117
Runner-type varieties, Temik 15G 7 lb/A (F).....	2453 a	147
Runner-type varieties, Vapam 7.5 gal/A + Temik 15G 7 lb/A (F).....	2037 a	62
<i>P</i> value .....	.0476	.4934

\* Soil samples were collected from all subplots within each treatment on 21 Aug.  
 Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ). Square root transformation of data was made in analysis to determine statistical significance.

Table 75. Plant populations and vigor, thrips damage, and incidence of tomato spotted wilt and *Cylindrocladium* black rot (CBR) in cultivars with and without Vapam treatment.

Treatment, rate/A and cultivar	Plants/ft <sup>1</sup> (26 May)	Vigor <sup>2</sup> (25 Jun)	Thrips <sup>3</sup> (25 Jun)	TSWV <sup>4</sup>		CBR <sup>5</sup> (28 Aug)
				25 Jun	25 Jul	
<b>Virginia-type</b>						
<b>Temik 15G 7 lb</b>						
Perry .....	3.17 b	6.0	1.8	0.8	3.5	2.0 ab
GA Hi/OL.....	3.00 b	5.8	1.3	1.0	1.8	1.8 a-c
Gregory .....	2.98 b	6.3	2.0	1.0	3.0	1.0 bc
Wilson .....	3.02 b	6.0	1.8	1.3	4.3	3.3 a
Florida Fancy .....	3.54 a	6.3	1.3	1.0	1.5	0.0 c
GA 05E.....	3.60 a	5.5	1.8	0.5	0.3	0.3 bc
<i>P</i> value.....	.0028	.1242	.3847	.8655	.0819	.0125
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>						
Perry .....	3.48 ab	5.8	2.5	0.3	2.5	1.8
GA Hi/OL.....	3.19 b	5.8	2.0	0.0	1.8	0.8
Gregory .....	2.73 c	5.5	2.3	0.0	1.3	1.5
Wilson .....	3.35 ab	5.5	3.3	0.3	4.0	0.8
Florida Fancy .....	3.52 ab	5.5	1.8	0.3	2.5	0.8
GA 05E.....	3.73 a	5.0	2.0	0.3	1.3	0.0
<i>P</i> value.....	.0020	.0815	.0756	.7716	.2072	.4869
<b>Runner-type</b>						
<b>Temik 15G 7 lb</b>						
GA Green .....	4.13 a	6.5 a	0.8 c	0.3	1.0 b	1.3
GA 01R .....	2.29 d	5.0 c	2.0 b	0.3	3.5 a	0.8
GA-02C .....	3.40 bc	5.0 c	2.3 b	0.0	1.0 b	0.0
GA-03L .....	3.25 bc	5.8 b	2.3 b	0.5	1.5 b	0.3
Florida 07-R.....	3.63 b	6.0 b	1.8 b	0.3	0.8 b	0.3
McCloud.....	3.17 c	5.8 b	3.3 a	1.0	1.5 b	0.8
<i>P</i> value.....	.0001	.0001	.0008	.2206	.0388	.4779
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>						
GA Green .....	4.04 a	6.0 a	1.3 d	0.3	3.0	0.3
GA 01R .....	2.81 c	5.0 bc	2.5 bc	0.0	1.0	0.3
GA-02C .....	3.17 bc	4.8 c	3.3 ab	0.0	0.8	0.0
GA-03L .....	3.25 b	5.0 bc	3.0 a-c	0.0	1.3	1.3
Florida 07-R.....	3.96 a	5.3 b	2.3 c	0.0	1.0	0.3
McCloud.....	3.40 b	5.3 b	3.5 a	0.0	1.0	0.0
<i>P</i> value.....	.0001	.0010	.0003	.4509	.4954	.2823
<b>Comparison of main effects</b>						
Virginia-type, Temik 15G 7 lb .....	3.22	5.9 a	1.6 c	0.9 a	2.4	1.4 a
Virginia-type Vapam 7.5 gal + Temik 15G 7 lb .....	3.33	5.5 bc	2.3 ab	0.2 bc	2.2	0.9 ab
Runner-type, Temik 15G 7 lb.....	3.31	5.7 ab	2.0 bc	0.4 b	1.5	0.5 b
Runner-type Vapam 7.5 gal + Temik 15G 7 lb .....	3.43	5.2 c	2.6 a	0.0 c	1.3	0.3 b
<i>P</i> value.....	.5168	.0001	.0005	.0001	.1225	.0125

<sup>1</sup> Determined from counts of two, 35-ft rows per plot.

<sup>2</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy

<sup>3</sup> Thrips rating scale: 0=no damage, 10=severe thrips damage.

<sup>4</sup> Counts of plants per plot with symptoms of TSWV.

<sup>5</sup> Number of plants per plot with symptoms of CBR.

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

Table 76. Effect of treatment and cultivar selection on root and pod disease.

Treatment, rate/A and cultivar	Plants with dead branches <sup>1</sup> (4 Oct)	Dead plants <sup>1</sup> (4 Oct)	Soilborne disease <sup>1</sup> (4 Oct)	Root-knot gall index <sup>2</sup> (0-10)	Root disease <sup>3</sup> (0-10) (6 Oct)	Pod rot <sup>4</sup> (0-10) (6 Oct)
<b>Virginia-type</b>						
<b>Temik 15G 7 lb</b>						
Perry .....	13.0 b	2.8 b	15.8 c	5.0	2.3 b	2.5
GA Hi/OL.....	12.3 b	4.3 b	16.5 c	4.0	2.5 b	2.8
Gregory .....	19.5 a	7.3 b	26.8 b	4.8	3.8 a	3.0
Wilson .....	23.3 a	18.0 a	41.3 a	5.5	4.5 a	3.5
Florida Fancy .....	8.5 b	0.8 b	9.3 c	4.5	2.0 b	2.3
GA 05E.....	10.3 b	1.8 b	12.0 c	3.8	1.8 b	3.0
<i>P</i> value.....	.0005	.0011	.0001	.1413	.0002	.7791
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>						
Perry .....	12.0	2.0	14.0	1.8	1.5	1.5
GA Hi/OL.....	10.0	2.3	12.3	1.0	1.3	1.5
Gregory .....	7.8	1.5	9.3	1.0	1.5	2.3
Wilson .....	11.8	3.8	15.5	1.5	1.5	1.3
Florida Fancy .....	6.5	0.0	6.5	1.0	1.0	1.8
GA 05E.....	5.0	0.8	5.8	1.0	1.5	1.3
<i>P</i> value.....	.1096	.1643	.0650	.0061	.6570	.2812
<b>Runner-type</b>						
<b>Temik 15G 7 lb</b>						
GA Green .....	12.3 a-c	1.3 bc	13.5 a-c	5.5	1.5	2.3
GA 01R .....	8.3 bc	2.8 ab	11.0 bc	6.3	1.5	1.8
GA-02C .....	5.5 c	0.0 c	5.5 c	4.8	1.3	1.0
GA-03L .....	12.8 ab	1.0 bc	13.8 ab	4.5	1.8	2.3
Florida 07-R.....	11.5 a-c	0.5 c	12.0 bc	5.0	1.3	2.5
McCloud.....	17.3 a	3.5 a	20.8 a	4.8	2.3	2.0
<i>P</i> value .....	.0450	.0297	.0285	.5780	.0839	.0655
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>						
GA Green .....	7.0	1.3	8.3	1.5	1.3	1.3
GA 01R .....	2.3	0.3	2.5	2.0	1.0	1.0
GA-02C .....	4.8	0.3	5.0	1.5	1.0	1.0
GA-03L .....	5.3	1.5	6.8	1.0	1.3	1.0
Florida 07-R.....	5.3	1.0	6.3	1.0	1.3	1.0
McCloud.....	7.3	1.8	9.0	1.3	1.3	1.3
<i>P</i> value.....	.2580	.1195	.1585	.0208	.8217	.5988
<b>Comparison of main effects</b>						
Virginia-type, Temik 15G 7 lb .....	14.5 a	5.8 a	20.3 a	4.6 a	2.8 a	2.8 a
Virginia-type Vapam 7.5 gal + Temik 15G 7 lb .....	8.8 b	1.7 b	10.5 bc	1.2 b	1.4 b	1.6 b
Runner-type, Temik 15G 7 lb.....	11.3 b	1.5 b	12.8 b	5.1 a	1.6 b	2.0 b
Runner-type Vapam 7.5 gal + Temik 15G 7 lb .....	5.3 c	1.0 b	6.3 c	1.4 b	1.2 b	1.1 c
<i>P</i> value .....	.0001	.0001	.0001	.0001	.0001	.0001

<sup>1</sup> Plants with dead branches and dead plants were thought to be a result of *Cylindrocladium* black rot or southern stem rot.

Soilborne disease is the sum of dead plants and plants with dead branches.

<sup>2</sup> Root-knot nematode galling scale: 0=none, 10=100% of roots with galls. Ratings were made after digging on 6 Oct.

<sup>3</sup> Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 10=100% of roots decayed.

<sup>4</sup> Pod rot index: 0=none, 10=total necrosis.

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

Table 77. Maturity of peanut varieties on 5 Oct based on color of pod mesocarp.

Market type and cultivar	Number of pods				% mature *		
	Total	White/ yellow	Orange	Brown/ black	damaged	Brown/ black	Orange/ brown/ black
<b><i>Virginia-type</i></b>							
Perry .....	163	22	10	128	3	79	85
GA Hi O/L .....	159	40	0	117	2	74	74
Gregory .....	165	14	3	139	9	84	86
Wilson .....	160	16	5	139	0	87	90
Florida Fancy .....	158	36	4	109	9	69	72
GA 05E .....	142	67	20	50	5	35	49
<b><i>Runner-type</i></b>							
GA Green .....	159	14	12	128	5	81	88
GA-01R .....	157	71	19	62	5	39	52
GA-02C .....	163	36	8	119	0	73	78
GA-03L .....	156	10	0	146	0	94	94
Florida 07-R .....	161	29	5	123	4	76	80
McCloud .....	169	37	0	131	1	78	78

\* Pods with brown to black mesocarp tissue were considered mature for harvest. Orange mesocarp color indicates that kernels were beginning to ripen. Yellow to white mesocarp identifies immature pods that may be lost during harvest due to light weight after drying in windrows. Peanuts from plots treated with Temik 15G 7 lb/A + Vapam 7.5 gal/A were used in maturity assessment.

Table 78. Effect of treatment and cultivar selection on yield and value of peanuts.

Treatment, rate/A and cultivar	Yield* (lb/A)	Value** (\$/A)
<b>Virginia-type</b>		
<b>Temik 15G 7 lb</b>		
Perry .....	3597 a	--
GA Hi/OL.....	2987 bc	--
Gregory .....	3000 bc	--
Wilson .....	2885 c	--
Florida Fancy .....	3737 a	--
GA 05E.....	3521 ab	--
<i>P</i> value.....	.0148	--
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>		
Perry .....	3750 b	676
GA Hi/OL.....	3724 b	706
Gregory .....	3851 b	698
Wilson .....	3979 ab	687
Florida Fancy .....	4360 a	760
GA 05E.....	3597 b	700
<i>P</i> value.....	.0160	.2829
<b>Runner-type</b>		
<b>Temik 15G 7 lb</b>		
GA Green .....	3673 ab	--
GA 01R .....	3082 d	--
GA-02C .....	3421 b-d	--
GA-03L .....	3271 cd	--
Florida 07-R.....	3887 a	--
McCloud.....	3585 a-c	--
<i>P</i> value.....	.0051	--
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>		
GA Green .....	3899 ab	715 a
GA 01R .....	3157 c	569 c
GA-02C .....	3610 b	669 ab
GA-03L .....	3635 b	625 bc
Florida 07-R.....	4050 a	717 a
McCloud.....	3761 ab	670 ab
<i>P</i> value.....	.0005	.0004
<b>Comparison of main effects</b>		
Virginia-type, Temik 15G 7 lb .....	3288 c	--
Virginia-type, Vapam 7.5 gal + Temik 15G 7 lb .....	3877 a	704 a
Runner-type, Temik 15G 7 lb.....	3486 bc	--
Runner-type, Vapam 7.5 gal + Temik 15G 7 lb .....	3686 ab	661 b
<i>P</i> value.....	.0001	.0147

\* Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 5 Oct and harvested on 15 Oct.

\*\* Composite samples were graded to determine market value at loan rate and multiplied by yield to estimate value at farm gate (\$/A), -- denotes that treatment/variety combination was not graded.

Means followed by the same letter(s) in column and group are not significantly different (Fisher's Protected LSD,  $P=0.05$ ).



Table 79. Effect of treatment and cultivar on grade characteristics and value.

Treatment, rate/A and cultivar	%*								Conc. RMD	SMK	Value** (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK				
<b>Vapam 7.5 gal + Temik 15G 7 lb</b>											
<i>Virginia -type</i>											
Perry .....	0	0	77	45	8	1	2	0.00	63	18.02000	
GA Hi/OL.....	0	0	99	44	15	1	2	0.00	61	18.95000	
Gregory .....	0	0	88	49	5	1	1	0.00	65	18.13000	
Wilson .....	0	0	83	34	8	1	1	0.00	60	17.26000	
Florida Fancy ....	0	0	90	42	13	1	1	0.00	56	17.44000	
GA 05E.....	0	1	71	52	7	1	0	0.00	69	19.45420	
<i>Runner-type</i>											
GA Green .....	0	1	--	--	7	3	0	0.00	69	18.32560	
GA 01R .....	1	1	--	--	5	1	1	0.02	70	18.02747	
GA-02C .....	0	1	--	--	6	2	0	0.00	71	18.53350	
GA-03L .....	0	0	--	--	6	2	0	0.00	65	17.20000	
Florida 07-R .....	0	0	--	--	10	1	0	0.00	64	17.70000	
McCloud.....	0	0	--	--	7	1	1	0.10	67	17.82000	

\* FM=foreign material, LSK=loose shelled kernels, FAN=large whole pods, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, Conc. RMD=concealed damage from rancidity, mold or decay, SMK=sound mature kernels. Data are from a composite sample of four reps of each cultivar.

\*\* Value (¢/lb) represents the market value of peanuts based on the loan rate.

XXIX. BIOLOGICAL CONTROL OF NEMATODES IN PEANUT (PNEMA207, Tidewater Research Farm, Suffolk, Field 28)

A. PURPOSE: To compare the response of peanut to synthetic chemicals and a biological agent for nematode control

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 10-ft alleyways between blocks
2. Four, 35-ft rows per plot with the center, two rows treated
3. Rows spaced 36 in. apart

C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row with a single chisel and rows were bedded (24 in. wide and 4 in. high) during application. Treatments with Temik 15G were applied in-furrow (F) at planting. NemOut as a seed treatment was applied with a Gustafson seed treater. NemOut in-furrow was mixed in water and applied in a volume of 5 gal/A with a microtube to each seed furrow at planting. Band treatments (B) were applied with a single 8004VS nozzle in a 12-in. band over rows and incorporated with a rolling cultivator ahead of planters at planting. Chisel treatments with NemOut were mixed in water and applied in a volume of 5 gal/A with a chisel shank to a depth of 3- to 4-in. under rows at planting.

D. TREATMENT AND RATE:

1. Untreated check
2. Temik 15G 7 lb/A (in-furrow)
3. Vapam 42% 7.5 gal (C) + Temik 15G 7 lb/A (in furrow)
4. NemOut SP 8 oz/cwt seed (S)
5. NemOut SP 0.3 lb/A (F)
6. NemOut SP 0.3 lb/A (B)
7. NemOut SP 0.3 lb/A (C)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2003, peanut 2004, wheat/soybean 2005
3. Planting date: 10 May, VA 98R
4. Soil fertility report:

pH.....	6.68	K.....	27 ppm
Ca .....	288 ppm	Zn .....	0.3 ppm
Mg .....	37 ppm	Mn .....	0.9 ppm
P .....	26 ppm	Soil type .....	Kenansville loamy fine sand
5. Nematode assay report: 10 May 2007

Nematodes/500 cc soil	
Root knot.....	530
Stunt .....	130
Ring .....	310
Stubby root.....	10
6. Herbicide:

Pre-plant -	Prowl 1 pt/A (26 Mar)
	Dual II Magnum 1 pt + Pursuit 2.0 fl oz/A (26 Apr)
Pre-emergence -	Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (11 May)

- Post-emergence – Basagran 1.5 pt + Pursuit 2.0 fl oz (5 Jun)  
 Basagran 1.5 pt + COC 1.5 pt/A (24 Jul)
7. Insecticide: Orthene 97S 8 oz/A (30 May, 13 Jun)  
 Lorsban 15G 13 lb/A (2 Jul)
  8. Acaricide: Danitol 16 fl oz/A (13 Aug)
  9. Leaf spot control: Provost 433SC 8 fl oz/A (12 Jul, 31 Jul)  
 Headline 9 fl oz/A (20 Aug); Bravo WS 1.5 pt/A (12 Sep)
  10. Additional crop management:
    - a. Liquid boron 1 qt/A (26 Mar)
    - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
    - c. Cultivation: 2 Jul
    - d. Irrigation: ca. 0.75 in. (27 Jun, 16 Aug, 4 Sep)
    - e. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
    - f. Crop Booster (12-4-6) 1 qt/A (19 Jul)
  11. Harvest date: 4 Oct 2007

Table 80. Effect of treatment on emergence, plant vigor, and severity of thrips injury.

Treatment, rate/A and application method <sup>1</sup>	Plants/ft <sup>2</sup> (7 Jun)	Vigor <sup>3</sup> (13 Jun)	Thrips injury <sup>4</sup> (13 Jun)
Untreated check .....	3.3	5.0 b	6.3 a
Temik 15G 7 lb (F) .....	3.0	6.0 a	2.8 b
Vapam 42% 7.5 gal (C) + Temik 15G 7 lb (F).	3.3	5.8 a	3.3 b
NemOut SP 8 oz/cwt seed (S).....	3.1	4.5 b	6.5 a
NemOut SP 0.3 lb (F) .....	3.2	5.0 b	7.0 a
NemOut SP 0.3 lb (B).....	3.2	5.0 b	6.5 a
NemOut SP 0.3 lb (C).....	3.4	4.8 b	6.8 a
LSD.....	n.s.	0.6	1.1

<sup>1</sup> F=in furrow, S=seed treatment, B=12-in. band at planting, and C=chisel 4 in. under rows.

<sup>2</sup> Determined from counts of two, 35-ft rows per plot.

<sup>3</sup> Plant vigor rating scale: 1=severely stunted, 10=healthy

<sup>4</sup> Thrips rating scale: 0=no damage, 10=severe thrips damage.

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. denotes not significant.

Table 81. Effect of treatment on incidence of *Cylindrocladium* Black Rot (CBR) of peanut and nematode populations.

Treatment, rate/A and application method <sup>1</sup>	CBR <sup>2</sup>		Nematodes/ 500 cc soil <sup>3</sup>	
	27 Aug	22 Sep	Root-knot	Ring
Untreated check .....	1.0 bc	25.3 b	670	0
Temik 15G 7 lb (F) .....	2.5 bc	28.5 b	5480	0
Vapam 42% 7.5 gal (C) + Temik 15G 7 lb (F).....	0.5 c	5.8 c	370	0
NemOut SP 8 oz/cwt seed (S).....	2.8 a-c	29.3 b	500	100
NemOut SP 0.3 lb (F) .....	2.5 bc	30.0 b	690	10
NemOut SP 0.3 lb (B).....	3.0 ab	40.5 a	9290	0
NemOut SP 0.3 lb (C).....	5.0 a	27.3 b	2930	0
LSD.....	2.4	9.6	--	--

<sup>1</sup> F=in furrow, C=chisel, S=seed treatment, B=12-in. band at planting.

<sup>2</sup> Number of symptomatic plants per plot.

<sup>3</sup> Composite samples were taken from all four reps of each treatment. Soil was sampled on 22 Aug.

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

Table 82. Effect of treatment on root galling, pod rot and yield of peanut.

Treatment, rate/A and application method <sup>1</sup>	Root-knot index <sup>2</sup>	Pod rot (0-10) <sup>3</sup>	Yield <sup>4</sup>
	(0-10)	(28 Sep)	(lb/A)
Untreated check .....	6.3 a	3.8 a	3033 b
Temik 15G 7 lb (F) .....	4.3 a	3.8 a	3289 b
Vapam 42% 7.5 gal (C) + Temik 15G 7 lb (F)..	2.0 b	1.8 b	4467 a
NemOut SP 8 oz/cwt seed (S).....	5.3 a	3.5 a	3097 b
NemOut SP 0.3 lb (F) .....	5.3 a	3.8 a	3059 b
NemOut SP 0.3 lb (B).....	5.3 a	4.8 a	2828 b
NemOut SP 0.3 lb (C).....	4.8 a	4.8 a	3008 b
LSD.....	2.1	1.6	461

<sup>1</sup> F=in furrow, C=chisel, S=seed treatment, B=12-in. band at planting.

<sup>2</sup> Root-knot nematode galling scale: 0=none, 10=100% of roots with galls. Ratings were made after digging on 28 Sep.

<sup>3</sup> Pod rot index: 0=none, 10=total necrosis.

<sup>4</sup> Yields are base on weight of peanuts with moisture content of 7%. Peanuts were dug on 28 Sep and harvested on 4 Oct. Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), except root-knot gall index was analyzed at  $P=0.10$ .

XXX. COMPARISON OF VIRGINIA- AND RUNNER-TYPE PEANUT CULTIVARS IN STRIP-TILLAGE WITH AND WITHOUT SOIL FUMIGATION (PTIL107, Field 63A, Wyne Farm, Suffolk)

A. PURPOSE: To compare the profitability of cultivars in reduced tillage systems

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 10-ft alleyways
2. Randomized strips of tillage and market-type
3. Varieties in subplots of two, 35-ft rows with 36-in. row spacing

C. MARKET-TYPE OF VARIETIES AND TILLAGE: Tillage was performed in a field planted to cover crop of wheat. Conventional tillage included disking followed by chisel plowing, disking and leveling with a field cultivator. Vapam 42% 7.5 gal/A was applied with a coulter and trailing single chisel centered in each row of both tillage treatments. In conventional tillage, the rows were bedded (24 in. wide and 4 in. high) during application. Strip tillage and Vapam application were performed in one step using fluted coulters and soil crumbler baskets to level 12-in. tillage strips.

1. Virginia type varieties: Strip tillage
2. Virginia-type varieties: Conventional tillage
3. Runner-type varieties: Strip tillage
4. Runner-type varieties: Conventional tillage

D. VARIETIES:

Virginia-types

1. Perry
2. GA Hi O/L
3. Gregory
4. Wilson
5. Florida Fancy
6. Georgia 05E

Runner-types

1. GA Green
2. GA 01R
3. GA-02C
4. GA-03L
5. Florida 07-R
6. McCloud

E. ADDITIONAL INFORMATION:

1. Location: Wyne Farm, Box Elder Rd., Suffolk
2. Crop History: corn 2006, cotton 2005, peanut 2004
3. Planting date: 7 May
4. Soil fertility report:

pH.....	6.09	K .....	57 ppm
Ca .....	272 ppm	Zn.....	0.4 ppm
Mg .....	22 ppm	Mn.....	0.5 ppm
P .....	18 ppm	Soil type .....	Nansemond fine sandy loam

5. Nematode Assay report:

Nematodes/500 cc soil (10 May)

Root knot .....	10
Lesion .....	10
Stunt.....	30
Spiral.....	190
Ring .....	10
Stubby root .....	370

6. Cylindrocladium black rot control: Vapam 42% 7.5 gal/A (19 Apr)
7. Herbicide:
  - Pre-plant –Roundup 22 oz/A (20 Apr)
    - Strongarm 0.23 oz + Dual II Magnum 1 pt/A (27 Apr)
  - Pre-emergence - Strongarm 0.23 oz + Dual II Magnum 1 pt/A + Gramoxone Inteon 1 pt/A (11 May)
8. Insecticide: Temik 15G 7 lb/A (7 May)
  - Orthene 97S 8 oz/A (30 May)
  - Lorsban 15G 13 lb/A (2 Jul)
9. Acaricide: Danitol 16 fl oz/A (13 Aug)
10. Leaf spot control: Provost 433SC 8 fl oz/A (12 Jul, 31 Jul)
  - Headline 9 fl oz/A (20 Aug); Bravo WS 1.5 pt/A (12 Sep)
11. Additional crop management:
  - a. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - b. Cultivation: 2 Jul
  - c. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - d. Crop Booster (12-4-6) 1 qt/A (19 Jul)
12. Harvest date: 16 Oct 2007

Table 83. Effect of treatment and cultivar selection on emergence, incidence of Tomato Spotted Wilt Virus (TSWV) and *Cylindrocladium* Black Rot (CBR) in peanut.

Market type, tillage and cultivar	Plants/ft <sup>1</sup> (1 Jun)	TSWV <sup>2</sup>		CBR <sup>3</sup> (29 Aug)
		29 Jun	3 Aug	
<b>Virginia-type</b>				
<b>Strip tillage</b>				
Perry .....	1.98 bc	0.8	5.0 ab	3.8 bc
GA Hi/OL.....	1.50 d	2.0	4.8 a-c	2.5 c
Gregory .....	1.77 c	0.3	3.0 b-d	1.3 c
Wilson .....	1.98 bc	0.8	6.0 a	9.3 a
Florida Fancy .....	2.19 ab	1.0	1.8 d	7.0 ab
Georgia 05E .....	2.35 a	0.0	2.3 cd	3.3 c
<i>P</i> (F) .....	.0001	.1421	.0263	.0013
<b>Conventional tillage</b>				
Perry .....	1.96 b	1.3	5.3	1.5 a-c
GA Hi/OL.....	1.50 c	0.8	4.8	0.8 bc
Gregory .....	1.88 b	1.3	5.5	1.0 bc
Wilson .....	1.85 b	0.5	4.8	3.0 a
Florida Fancy .....	2.15 ab	0.8	1.5	2.0 ab
Georgia 05E .....	2.35 a	0.5	3.3	0.0 c
<i>P</i> (F) .....	.0020	.7237	.1549	.0263
<b>Runner-type</b>				
<b>Strip tillage</b>				
GA Green .....	2.27 a	1.3	5.5	4.3
GA 01R .....	1.63 b	1.5	3.5	0.8
GA-02C .....	1.88 b	1.0	1.8	0.8
GA-03L .....	1.88 b	1.0	1.8	4.0
Florida 07-R .....	2.23 a	1.3	1.3	3.0
McCloud.....	2.33 a	2.0	4.5	1.8
<i>P</i> (F) .....	.0005	.7533	.0527	.1724
<b>Conventional tillage</b>				
GA Green .....	2.04 ab	1.3	3.3	2.5
GA 01R .....	1.21 c	0.5	2.8	1.0
GA-02C .....	1.96 b	0.8	2.0	0.3
GA-03L .....	1.81 b	0.5	1.8	3.8
Florida 07-R .....	2.31 a	0.5	0.8	1.3
McCloud.....	2.00 b	0.5	3.3	1.3
<i>P</i> (F) .....	.0001	.8292	.0797	.1462
<b>Comparison of main effects</b>				
Virginia-type, strip till .....	1.96	0.8	3.8 a	4.5 a
Virginia-type, conventional till .....	1.95	0.8	4.2 a	1.4 b
Runner-type, strip till.....	2.03	1.3	3.0 ab	2.4 b
Runner-type, conventional till .....	1.89	0.7	2.3 b	1.7 b
<i>P</i> (F) .....	.5252	.0927	.0296	.0001

<sup>1</sup> Determined from counts in 6-ft sections in each row per plot.

<sup>2</sup> Counts of plants per plot with symptoms of TSWV.

<sup>3</sup> Number of symptomatic plants per plot.

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

Table 84. Effect of treatment and cultivar selection on disease incidence in peanut on 10 Oct.

Market type, tillage and cultivar	Sclerotinia blight <sup>1</sup>	Plants with dead branches <sup>2</sup>	Dead plants <sup>2</sup>	Total disease <sup>3</sup>
<b>Virginia-type</b>				
<b>Strip tillage</b>				
Perry .....	0.0	15.3	10.3 b	25.5 b
GA Hi/OL.....	0.3	11.5	8.5 b	20.3 b
Gregory .....	0.8	10.5	9.0 b	20.3 b
Wilson .....	0.0	15.8	30.0 a	45.8 a
Florida Fancy .....	0.0	10.8	17.0 b	27.8 b
Georgia 05E .....	1.5	9.0	7.3 b	17.8 b
<i>P</i> (F) .....	.3178	.2333	.0050	.0053
<b>Conventional tillage</b>				
Perry .....	0.3	11.8 a-c	6.3 ab	18.3 a-c
GA Hi/OL.....	0.0	10.3 b-d	3.0 b	13.3 c
Gregory .....	0.0	12.8 ab	11.0 a	23.8 ab
Wilson .....	0.0	15.8 a	10.5 a	26.3 a
Florida Fancy .....	0.3	7.3 cd	7.5 ab	15.0 bc
Georgia 05E .....	0.3	6.3 d	4.8 b	11.3 c
<i>P</i> (F) .....	.6813	.0631	.0391	.0586
<b>Runner-type</b>				
<b>Strip tillage</b>				
GA Green .....	1.0	14.3 a	12.8	28.0 a
GA 01R .....	1.0	6.3 bc	5.3	12.5 bc
GA-02C .....	0.3	5.0 c	6.8	12.0 c
GA-03L .....	0.3	10.3 ab	12.0	22.5 ab
Florida 07-R.....	0.5	6.5 bc	12.8	19.8 a-c
McCloud.....	1.3	10.8 a	11.3	23.3 a
<i>P</i> (F) .....	.2305	.0095	.4891	.0817
<b>Conventional tillage</b>				
GA Green .....	0.0	9.5	11.5 a	21.0 a
GA 01R .....	0.5	7.0	6.5 a-c	14.0 bc
GA-02C .....	0.0	8.0	2.0 c	10.0 c
GA-03L .....	0.0	8.0	10.0 ab	18.0 ab
Florida 07-R.....	1.5	8.5	2.5 c	12.5 bc
McCloud.....	0.5	12.5	4.5 bc	17.8 ab
<i>P</i> (F) .....	.3382	.1466	.0175	.0389
<b>Comparison of main effects</b>				
Virginia-type, strip till .....	0.4	12.1 a	13.7 a	26.2 a
Virginia-type, conventional till .....	0.1	10.7 ab	7.2 b	18.0 b
Runner-type, strip till.....	0.7	8.8 b	10.1 a	19.7 b
Runner-type, conventional till .....	0.4	9.0 b	6.2 b	15.5 b
<i>P</i> (F) .....	.1761	.0281	.0023	.0014

<sup>1</sup> Counts of infection centers/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.

<sup>2</sup> Plants with dead branches often lacked diagnostic signs or symptoms, but were thought to be a result of *Cylindrocladium* black rot, southern stem rot and/or tomato spotted wilt virus. Data are the mean number of affected plants/plot.

<sup>3</sup> Total disease is sum of plants showing symptoms or signs of disease.

Means followed by the same letter(s) within a group and column are not significantly different at  $P=0.05$  according to Fisher's Protected LSD, except plants with dead branches and total disease were analyzed at  $P=0.10$ .



Table 85. Maturity of peanut varieties in 2007 based on color of pod mesocarp after pod blasting.

Market type, sample date, and cultivar	Number of pods					% mature *	
	Total	White/ yellow	Orange	Brown/ black	damaged	Brown/ black	Orange/ brown/ black
<b>Virginia-type, Sep 18</b>							
Perry .....	166	49	34	78	5	47	67
GA Hi O/L .....	225	75	39	107	4	48	65
Gregory .....	207	32	39	130	6	63	82
Wilson .....	192	53	47	89	3	46	71
Florida Fancy .....	138	44	42	47	5	34	64
GA 05E .....	168	103	53	7	5	4	36
<b>Runner-type, Sep 18</b>							
GA Green .....	244	47	53	139	5	57	79
GA-01R .....	256	191	47	13	5	5	23
GA-02C .....	173	81	42	46	4	27	51
GA-03L .....	174	52	27	89	6	51	67
Florida 07-R .....	179	61	63	50	5	28	63
McCloud .....	170	57	35	73	5	43	64
<b>Virginia-type, Oct 1</b>							
Perry .....	236	52	51	133	0	56	78
GA Hi O/L .....	206	23	26	157	0	76	89
Gregory .....	188	27	19	142	0	76	86
Wilson .....	184	44	27	113	0	61	76
Florida Fancy .....	208	33	69	106	0	51	84
GA 05E .....	196	103	40	53	0	27	47
<b>Runner-type, Oct 1</b>							
GA Green .....	292	36	72	184	0	63	88
GA-01R .....	273	79	94	100	0	37	71
GA-02C .....	170	48	21	101	0	59	72
GA-03L .....	212	44	31	137	0	65	79
Florida 07-R .....	180	34	61	85	0	47	81
McCloud .....	221	55	39	127	0	57	75

\* Pods with brown to black mesocarp tissue were considered mature for harvest. Orange mesocarp color indicated that kernels were beginning to ripen. Yellow to white mesocarp identified immature pods that may be lost during harvest due to light weight after drying in windrows. Samples were taken from strip tillage plots on 18 Sep and from conventional tillage plots on 1 Oct.

Table 86. Effect of treatment and cultivar selection on yield and value of peanuts.

Market type, tillage and cultivar	Yield* (lb/A)	Value** (\$/A)
<b>Virginia-type</b>		
<b>Strip tillage</b>		
Perry .....	4702 ab	908 ab
GA Hi/OL.....	4136 a-c	675 cd
Gregory .....	3671 bc	610 cd
Wilson .....	3055 c	518 d
Florida Fancy .....	4426 ab	762 bc
Georgia 05E .....	4979 a	1010 a
<i>P</i> (F) .....	.0369	.0020
<b>Conventional tillage</b>		
Perry .....	4727	--
GA Hi/OL.....	4589	--
Gregory .....	4664	--
Wilson .....	4828	--
Florida Fancy .....	5469	--
Georgia 05E .....	5620	--
<i>P</i> (F) .....	.2768	--
<b>Runner-type</b>		
<b>Strip tillage</b>		
GA Green .....	4524	835
GA 01R .....	4549	809
GA-02C .....	4951	934
GA-03L .....	5240	901
Florida 07-R.....	5089	883
McCloud.....	4876	900
<i>P</i> (F) .....	.5336	.6317
<b>Conventional tillage</b>		
GA Green .....	4763 bc	--
GA 01R .....	4323 c	--
GA-02C .....	4549 c	--
GA-03L .....	4750 bc	--
Florida 07-R.....	5642 a	--
McCloud.....	5278 ab	--
<i>P</i> (F) .....	.0154	--
<b>Comparison of main effects</b>		
Virginia-type, strip till .....	4161 b	747 b
Virginia-type, conventional till .....	4983 a	--
Runner-type, strip till.....	4871 a	877 a
Runner-type, conventional till .....	4884 a	--
<i>P</i> (F) .....	.0009	.0120

\* Yields are based on weight of peanuts with moisture content of 7%. Peanuts were dug on 10 Oct and harvested on 16 Oct.  
\*\* Composite samples of cultivars from four replications were graded to determine market value at loan rate, and multiplied by yield to estimate value at farm gate (\$/A), -- denotes that tillage/variety combination was not graded.  
Means followed by the same letter(s) within a group and column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

Table 87. Effect of treatment and cultivar on grade characteristics and value.

Market type, tillage method and cultivar	% <sup>1</sup>								Conc. RMD	SMK	Value <sup>2</sup> (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK				
<b><i>Strip tillage</i></b>											
<b><u>Virginia-type</u></b>											
Perry .....	0	0	83	53	3	1	2	0.14	72	19.30000	
GA Hi/OL.....	0	2	75	52	11	1	5	1.53	62	16.32960 <sup>3</sup>	
Gregory .....	1	1	93	53	2	1	4	0.00	64	16.61192 <sup>3</sup>	
Wilson .....	0	0	88	41	4	1	3	0.37	63	16.94000 <sup>4</sup>	
Florida Fancy ..	1	0	97	54	4	1	4	0.00	64	17.22000 <sup>3</sup>	
Georgia 05E ....	1	1	86	65	4	1	1	0.39	74	20.28308	
<b><u>Runner-type</u></b>											
GA Green .....	0	2	--	--	5	2	1	0.00	72	18.45620	
GA 01R .....	1	2	--	--	3	1	2	0.06	72	17.78533	
GA-02C .....	0	2	--	--	5	1	1	0.02	74	18.85800	
GA-03L .....	0	0	--	--	6	2	1	0.00	65	17.20000	
Florida 07-R ....	0	0	--	--	8	2	1	0.00	64	17.36000	
McCloud.....	0	1	--	--	6	1	1	0.00	71	18.46420	

<sup>1</sup> FM=foreign material, LSK=loose shelled kernels, FAN=fancy sized in-shell, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, Conc. RMD=internal damage from rancidity, mold or decay, SMK=sound mature kernels. Data are from a composite sample of four reps of each cultivar.

<sup>2</sup> Value (¢/lb) represents the market value of peanuts based on the loan rate.

<sup>3</sup> Segregation 2 due to damage >2.5% or concealed RMD >1.0%.

<sup>4</sup> Segregation 3 due to presence of *Aspergillus flavus* in seed.

XXXI. BAYER PEANUT SEED TREATMENT TEST (PSEEDFUN107, Wyne farm, Suffolk, Field 68)

A. PURPOSE: To compare the efficacy and benefit of seed treatment and in-furrow fungicide treatments for control of seedling disease and *Cylindrocladium* black rot of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Two, 35-ft rows/plot planted to 4 seed/ft of row

C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied to seed with a Gustafson lab treater. Seed were planted ca. 1.5 to 2 in. deep and spaced 3 in. apart with a KMC planter. Proline was applied in the seed furrow (F) in a volume of 5 gal/A at planting.

D. TREATMENT AND RATE:

1. Untreated
2. Trilex Optimum 4 oz/cwt (S)
3. Trilex Star 4 oz/cwt (S)
4. Dynasty PD 4 oz/cwt (S)
5. Vitavax PC 4 oz/cwt (S)
6. Trilex Optimum 4 oz/cwt + Proline 480SC 5.7 fl oz/A (F)
7. Trilex Star 4 oz/cwt + Proline 480SC 5.7 fl oz/A (F)
8. Dynasty PD 4 oz/cwt + Proline 480SC 5.7 fl oz/A (F)
9. Vitavax PC 4 oz/cwt + Proline 480SC 5.7 fl oz/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Wyne Farm, Lummis Rd., Suffolk
2. Crop History: corn 2006, peanut 2005, corn 2004
3. Planting date and cultivar: 25 Apr, Phillips (lot P50IR, 66% germ)
4. Soil fertility report:

pH.....	6.32	K.....	49 ppm
Ca.....	348 ppm	Zn.....	0.3 ppm
Mg.....	35 ppm	Mn.....	0.5 ppm
P.....	10 ppm	Soil type.....	Nansemond fine sandy loam
5. Herbicide:
  - Pre-plant –Prowl 1 pt/A (26 Mar)
  - Pre-emergence - Dual II Magnum 1 pt + Pursuit 2 fl oz/A (26 Apr)
  - Dual II Magnum 1 pt + Gramoxone Inteon 1 pt/A (30 Apr)
  - Post-emergence - Basagran 1.5 pt + Pursuit 2 fl oz/A (5 Jun)
6. Insecticide: Temik 15G 7 lb/A (25 Apr); Orthene 97S 8 oz/A (25 May)
  - Lorsban 15G 13 lb/A (2 Jul)
7. Acaricide: Danitol 16 fl oz/A (13 Aug)
8. Leaf spot control: Provost 433SC 8 fl oz/A (12 Jul, 31 Jul)
  - Headline 9 fl oz/A (20 Aug); Bravo WS 1.5 pt/A (12 Sep)
9. Additional crop management:
  - a. Liquid boron 1 qt/A (26 Mar)
  - b. Landplaster: Peanut Maker 1200 lb/A (18 Jun)
  - c. Cultivation: 2 Jul
  - d. Liquid Mn 3 pt/A (21 Jun); 1 qt/A (19 Jul)
  - e. Crop Booster (12-4-6) 1 qt/A (19 Jul)
10. Harvest date: 4 Oct 2007

Table 88. Effect of seed treatments on emergence and growth of peanut.

Treatment and rate/cwt seed or acre in furrow <sup>1</sup>	Plants/ft <sup>2</sup>		Skip index <sup>3</sup>
	17 May	30 May	(26 Jun)
Untreated.....	0.92 c	1.00 e	4.3 a
Trilex Optimum 4 oz (S).....	1.65 ab	1.90 cd	1.5 bc
Trilex Star 4 oz (S).....	1.78 a	2.13 a	1.3 bc
Dynasty PD 4 oz (S) .....	1.73 ab	2.03 ab	1.8 b
Vitavax PC 4 oz (S) .....	1.68 ab	1.86 cd	1.3 bc
Trilex Optimum 4 oz (S) + Proline 480SC 5.7 fl oz (F)..	1.80 a	2.14 a	1.0 c
Trilex Star 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	1.58 b	1.82 d	1.5 bc
Dynasty PD 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	1.71 ab	1.95 bc	1.3 bc
Vitavax PC 4 oz (S) + Proline 480SC 5.7 fl oz (F) .....	1.65 ab	1.91 b-d	1.5 bc
LSD.....	0.18	0.11	0.7

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

<sup>2</sup> Determined from counts of two, 35-ft rows per plot.

<sup>3</sup> Rating scale: 0=no missing plants, 10=10 row ft missing.

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

Table 89. Disease incidence and yield in peanuts.

Treatment and rate/cwt seed or acre in furrow <sup>1</sup>	CBR <sup>2</sup> (23 Aug)	Sclerotinia <sup>3</sup> (23 Aug)	Dead plants <sup>4</sup> (28 Sep)	Yield <sup>5</sup> (lb/A)
Untreated.....	2.3 c	0.3	23.0	3254 d
Trilex Optimum 4 oz (S).....	7.0 a	0.3	23.3	3850 bc
Trilex Star 4 oz (S).....	3.3 bc	0.5	16.3	4291 ab
Dynasty PD 4 oz (S) .....	3.8 bc	1.3	18.5	4174 ab
Vitavax PC 4 oz (S) .....	5.5 ab	1.3	28.8	3500 cd
Trilex Optimum 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	3.0 bc	2.5	23.5	4459 a
Trilex Star 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	2.0 c	2.0	20.8	4031 ab
Dynasty PD 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	3.8 bc	2.0	25.3	4031 ab
Vitavax PC 4 oz (S) + Proline 480SC 5.7 fl oz (F).....	4.5 a-c	0.8	20.8	3798 bc
LSD.....	2.5	n.s.	n.s.	522

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

<sup>2</sup> Number of symptomatic plants per plot.

<sup>3</sup> Counts of infection centers in two-row 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.

<sup>4</sup> Dead plants often lacked diagnostic signs or symptoms, but were mostly a result of *Cylindrocladium* black rot or southern stem rot. Data are mean number of affected plants in two, 35-ft rows per plot.

<sup>5</sup> Yields are weight of peanuts with 7% moisture content. Peanuts were dug on 28 Sep and harvested on 4 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD at  $P=0.05$ , except CBR rating on 23 Aug was analyzed at  $P=0.10$ .

XXXII. EVALUATION OF DISEASE PROBLEMS IN VIRGINIA- AND RUNNER-TYPE PEANUTS IN STRIP TILLAGE (PTIL207, Rountree Farm, Old Myrtle Rd., Suffolk)

A. PURPOSE: To compare susceptibility of varieties to disease in reduced tillage

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleyways
2. Varieties planted in two, 35-ft rows with 36-in. row spacing

C. TILLAGE: All plots prepared by strip tillage with fluted coulters running into a cover crop of rye. Sectagon 42% 7.5 gal/A was applied to all plots with a coulters and trailing chisel to a depth of 8- to 10-in. below the original soil surface. The chisel streak was closed with fluted coulters on each side of row and 12-in. wide beds were smoothed with soil crumblers.

D. VARIETY:

- |                          |                     |
|--------------------------|---------------------|
| 1. <u>Virginia-types</u> | <u>Runner-types</u> |
| 2. Perry                 | 10. GA Green        |
| 3. GA Hi O/L             | 11. GA 01R          |
| 4. Gregory               | 12. GA 02C          |
| 5. Brantley              | 13. GA 03L          |
| 6. Phillips              | 14. Florida 07-R    |
| 7. Florida Fancy         | 15. McCloud         |
| 8. GA-05E                | 16. York            |
| 9. Champs                |                     |
| 10. VA 98R               |                     |

E. ADDITIONAL INFORMATION:

1. Location: Tommy Rountree farm, Old Myrtle Rd., Suffolk
2. Crop History: Continuous cotton for at least 8 years
3. Land preparation: strip-tilled (24 Apr, 16 May)
4. Planting date: 17 May
5. Soil fertility report (11 Jul):

pH.....	6.42	K .....	112 ppm
Ca .....	532 ppm	Zn.....	1.6 ppm
Mg .....	86 ppm	Mn.....	3.3 ppm
P .....	53 ppm	Soil type.....	Suffolk loamy sand
6. Nematode assay report: 11 July 2007  
Nematodes/500 cc soil  

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Spiral .....	210
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7. Cylindrocladium black rot control: Vapam 7.5 gal/A (24 Apr)
8. Herbicide:
  - Pre-plant - Roundup Ultra Max 22 oz/A (Apr)
  - Pre-emerge - Strongarm 0.23 oz + Pursuit 2 fl oz + Dual II Magnum 1 pt/A (21 May)
  - Post-emerge - Tough 2 pt/A (21 Jun); Poast 2 pt + Crop Oil 2 pt/A (20 Jul)
9. Insecticide: Temik 15G 7 lb/A (17 May); Orthene 97S 8 oz/A (6 Jun, 21 Jun)
10. Acaricide: Danitol 1 pt/A (13 Aug)
11. Leaf spot control: Provost 433SC 8 fl oz/A (20 Jul, 6 Aug)  
Headline 9 fl oz/A (24 Aug); Bravo WS 1.5 pt/A (13 Sep)

12. Additional crop management:
  - a. Landplaster: Peanut Maker 1200 lb/A (Jun)
  - b. Liquid Mn 3 pt/A (21 Jun)
13. Harvest date: 17 Oct

Table 90. Effect of strip tillage on emergence and disease incidence in peanut cultivars.

Market type and cultivar	Plants/ft <sup>1</sup> (6 Jun)	TSWV <sup>2</sup> (26 Jul)	CBR <sup>3</sup> (28 Aug)
<b><i>Virginia-type</i></b>			
Perry .....	3.13 c-f	3.3 a-c	2.0 a
GA Hi/OL .....	2.79 f-h	2.0 a-d	0.5 bc
Gregory .....	2.52 gh	1.8 a-d	0.0 c
Brantley .....	3.15 c-f	3.5 ab	1.0 a-c
Phillips .....	3.60 a-d	4.0 a	1.3 ab
Florida Fancy .....	3.38 a-e	1.0 cd	0.3 bc
GA 05E .....	3.67 a-c	1.8 a-d	0.0 c
Champs .....	3.04 d-g	2.5 a-d	0.3 bc
VA 98R .....	2.81 e-g	3.8 a	0.5 bc
<b><i>Runner-type</i></b>			
GA Green .....	3.83 a	1.3 b-d	0.5 bc
GA 01R .....	2.23 h	0.8 d	0.0 c
GA 02C .....	3.85 a	0.3 d	0.0 c
GA 03L .....	3.06 d-g	2.0 a-d	0.3 bc
Florida 07-R .....	3.81 ab	0.8 d	0.0 c
McCloud .....	3.25 b-f	2.0 a-d	0.0 c
York .....	3.67 a-c	0.8 d	0.0 c
LSD .....	0.57	2.3	1.1

<sup>1</sup> Determined from counts of two, 6-ft sections of row per plot.

<sup>2</sup> Counts of plants per plot with symptoms of TSWV.

<sup>3</sup> 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 ( $P=0.05$ ).

Table 91. Disease incidence on 11 Oct, and yield and value for peanut cultivars.

Market type and cultivar	Plants with dead branches <sup>1</sup>	Dead plants <sup>1</sup>	Total disease <sup>2</sup>	Yield <sup>3</sup> (lb/A)	Value <sup>4</sup> (\$/A)
<b>Virginia-type</b>					
Perry .....	14.8 bc	4.0 a	18.8 a-c	3796 h	572 gh
GA Hi/OL .....	10.8 c-f	3.3 a-c	14.0 cd	4421 d-g	850 cd
Gregory .....	9.0 d-g	0.8 de	9.8 d-f	4134 gh	513 h
Brantley .....	19.5 ab	1.3 c-e	20.8 ab	4746 b-f	727 ef
Phillips .....	20.8 a	3.5 ab	24.3 a	4820 a-e	893 c
Florida Fancy .....	9.0 d-g	0.5 de	9.5 d-f	5295 a	990 ab
GA 05E .....	4.5 gh	0.0 e	4.5 fg	5233 ab	1055 a
Champs .....	12.8 cd	1.8 b-e	14.5 cd	4870 a-e	897 bc
VA 98R .....	20.0 ab	2.5 a-d	22.5 ab	4046 gh	718 ef
<b>Runner-type</b>					
GA Green .....	8.8 d-g	1.3 c-e	10.0 d-f	4508 c-g	845 cd
GA 01R .....	6.3 e-h	0.3 e	6.5 e-g	4358 e-g	765 de
GA 02C .....	5.5 f-h	1.3 c-e	6.8 e-g	4546 c-g	852 cd
GA 03L .....	16.0 a-c	2.0 a-e	18.0 bc	4271 f-h	735 ef
Florida 07-R .....	11.3 c-e	0.5 de	11.8 de	4933 a-d	878 c
McCloud .....	16.3 a-c	1.5 b-e	17.8 bc	5045 a-c	922 bc
York .....	1.3 h	0.0 e	1.3 g	3734 b	644 fg
LSD .....	5.5	2.0	6.0	543	97

<sup>1</sup> Plants often lacked diagnostic signs or symptoms of disease, but were mostly a result of *Cylindrocladium* black rot, southern stem rot and/or tomato spotted wilt virus. Data are the mean of diseased plants in two, 35-ft rows per plot.

<sup>2</sup> Total disease is sum of plants showing symptoms or signs of disease.

<sup>3</sup> Yields are based on weight of peanuts with moisture content of 7%. Peanuts were dug on 12 Oct and harvested on 17 Oct.

<sup>4</sup> Composite samples were graded to determine market value at loan rate, and multiplied by yield to estimate value (\$/A). Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).



Table 93. Maturity of peanut varieties in 2007 based on color of pod mesocarp after pod blasting.

Market type, sample date, and cultivar	Number of pods					% mature *	
	Total	White/ yellow	Orange	Brown/ black	damaged	Brown/ black	Orange/ brown/ black
<b>Virginia-type, Oct 3</b>							
Perry .....	154	55	10	86	3	56	62
GA Hi O/L .....	170	35	5	124	6	73	76
Gregory .....	154	15	7	125	7	81	86
Brantley .....	170	27	12	127	4	75	82
Phillips .....	154	32	22	96	4	62	77
Florida Fancy .....	169	24	25	112	8	66	81
GA 05E .....	167	137	15	9	6	5	14
Champs .....	157	23	8	118	7	75	80
VA 98 .....	180	38	10	129	3	72	77
<b>Runner-type, Oct 3</b>							
GA Green .....	176	39	17	114	6	65	74
GA 01R .....	200	75	37	74	14	37	56
GA 02C .....	144	53	20	64	7	44	58
GA 03L .....	218	64	31	118	5	54	68
Florida 07-R .....	183	79	20	73	11	40	51
McCloud .....	178	52	10	112	4	63	69
York .....	179	71	27	78	3	44	59

\* Pods with brown to black mesocarp tissue were considered mature for harvest. Orange mesocarp color indicates that kernels are ripening for harvest. Yellow to white mesocarp identifies immature pods that may be lost during harvest due to light weight after drying in windrows.

Table 94. Grade characteristics and value of cultivars.

Market type and cultivar	% <sup>1</sup>								Conc. RMD	SMK	Value <sup>2</sup> (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK				
<b>Virginia-type</b>											
Perry .....	1	0	82	43	4	1	5	0	62	15.08000 <sup>3</sup>	
GA Hi/OL .....	0	0	74	51	5	1	2	0	70	19.22000	
Gregory .....	0	0	94	52	1	2	7	0	61	12.41000 <sup>3</sup>	
Brantley .....	0	0	91	52	2	1	5	0	65	15.32000 <sup>3</sup>	
Phillips .....	0	0	89	55	1	1	1	0	70	18.52000	
Florida Fancy .....	0	0	95	55	3	0	1	0	69	18.69000	
GA 05E .....	1	0	72	55	4	0	1	0	74	20.16999	
Champs .....	0	0	92	49	3	0	2	0	69	18.42000	
VA 98R .....	0	0	79	45	3	1	3	0	67	17.75000 <sup>3</sup>	
<b>Runner-type</b>											
GA Green .....	1	1	--	--	5	1	0	0	73	18.74020	
GA 01R .....	1	2	--	--	3	1	2	0	71	17.55242	
GA 02C .....	0	0	--	--	8	1	0	0	70	18.74000	
GA 03L .....	0	0	--	--	3	1	1	0	68	17.21000	
Florida 07-R .....	1	1	--	--	5	1	0	0	69	17.78990	
McCloud .....	0	1	--	--	5	1	0	0	71	18.26620	
York .....	1	1	--	--	2	3	0	0	69	17.24545	

<sup>1</sup> FM=foreign material, LSK=loose shelled kernels, FAN=fancy sized in-shell, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, Conc. RMD=internal damage from rancidity, mold or decay, SMK=sound mature kernels. Data are from a composite sample from four reps of each cultivar.

<sup>2</sup> Value (¢/lb) represents the market value of peanuts based on the loan rate.

<sup>3</sup> Segregation 2 due to damage >2.5% or concealed RMD >1.0%.

XXXIII. SYNGENTA SOYBEAN SEED TREATMENT NEMATICIDE TEST  
(SOYSEEDNEMA107, Tidewater Research Farm, Suffolk, Field 30)

- A. PURPOSE: To evaluate seed treatment nematicides on soybean
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks with 15-ft alleyways between blocks
  2. Four, 30-ft rows/plot spaced 18 in. apart.
- C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied by personnel with Syngenta Crop Protection. Granular treatments were applied in-furrow (F) at planting.
- D. TREATMENT: All seed treated with Apron Maxx RFC 6.25 g a.i./100 kg seed.
1. Cruiser 5 FS 50 g a.i./100 kg seed (S)
  2. Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S)
  3. Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S)
  4. Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S)
  5. Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S)
  6. Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F)
  7. Check
- E. VARIETY:
1. AG4903 (SCN susceptible)
  2. AG4801 (SCN resistant)
- F. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm
  2. Crop history: soybean 2006-2004
  3. Land preparation: disk, land conditioner
  4. Planting date: 29 May
  5. Soil fertility report (Jan 2007):

pH.....	6.09	K .....	55 ppm
Ca .....	201 ppm	Zn.....	0.9 ppm
Mg .....	26 ppm	Mn.....	1.1 ppm
P .....	18 ppm	Soil type.....	Goldsboro fine sandy loam
  6. Nematode assay report (30 Mar):

<hr/> Nematodes/500 cc soil			
Root knot.....	310	Lance .....	160
Cyst larvae.....	20	Ring .....	10
Stunt .....	30	Stubby root .....	70
Spiral .....	920		
  7. Herbicide: Basagran 1.5 pt + Pursuit 2 fl oz/A (5 Jun)  
Roundup Ultra Max 28 fl oz/A (20 Jun), 22 fl oz/A (16 Jul, 7 Aug)  
Basagran 1.5 pt/A (12 Jul)
  8. Fertilizer: Liquid Mn 1 qt/A (20 Jun, 19 Jul); Crop Booster (12-4-6) 1 qt/A (19 Jul)
  9. Insecticide: Baythroid XL 3 fl oz/A (14 Aug)
  10. Harvest date: 4 Oct

Table 95. Effect of seed and in-furrow treatments on emergence and growth of soybeans.

Treatment and rate <sup>1</sup>	Plants/ft (26 Jun) <sup>2</sup>		Vigor (26 Jun) <sup>3</sup>	
	AG4903	AG4801	AG4903	AG4801
Cruiser 5 FS 50 g a.i./100 kg seed (S) .....	3.90	3.19 a-c	5.5	6.0
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S) .....	3.40	2.61 d	6.3	5.0
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S) .....	3.47	3.33 a-c	6.3	6.5
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S) .....	3.43	2.94 b-d	6.0	6.0
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S).....	3.40	2.87 cd	6.0	6.0
Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F).....	3.38	3.53 a	6.3	7.0
Untreated.....	3.57	3.46 ab	6.3	6.3
LSD .....	n.s.	0.58	n.s.	n.s.
<b>Treatment mean</b>				
Cruiser 5 FS 50 g a.i./100 kg seed (S) .....	3.54	a	5.8	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S).....	3.01	c	5.6	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S).....	3.40	ab	6.4	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S) .....	3.18	a-c	6.0	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S).....	3.13	bc	6.0	
Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F) .....	3.45	ab	6.6	
Untreated.....	3.51	ab	6.3	
LSD.....	0.39		n.s.	
<b>Variety mean</b>				
AG4903.....	3.51	a	6.1	
AG4801.....	3.13	b	6.1	
LSD.....	0.21		n.s.	
<b>Split plot analysis, P(F)</b>				
Treatment.....	.0201		.1413	
Variety .....	.0012		.8592	
Treatment x variety.....	.1587		.2389	

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

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

<sup>3</sup> Vigor rating scale: 1=severely stunted, 10=healthy.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

Table 96. Effect of seed and in-furrow treatments on nematode populations.

Treatment and rate*	Nematodes/500 cc soil**							
	Root-knot		Cyst larvae		Lance		Stubby root	
	AG4903	AG4801	AG4903	AG4801	AG4903	AG4801	AG4903	AG4801
Cruiser 5 FS 50 g a.i./100 kg seed (S) .....	360	160	20	40	160	310	150	120
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S) .....	50	70	0	20	20	40	100	30
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S) .....	110	100	10	160	20	40	40	50
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S)	200	60	0	80	180	80	100	80
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S)..	120	120	0	0	40	10	160	60
Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F).....	90	70	0	0	50	10	70	0
Untreated .....	0	50	30	0	30	50	30	60

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

\*\* Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 97. Effect of seed and in-furrow treatments on growth, yield and grade of soybeans.

Treatment and rate <sup>1</sup>	Plant height, (in.) (26 Jun) <sup>2</sup>		Yield (bu/A) <sup>3</sup>		Weight/100 seed (oz)	
	AG	AG	AG	AG	AG	AG
	4903	4801	4903	4801	4903	4801
Cruiser 5 FS 50 g a.i./100 kg seed (S) .....	19.4	20.4	21.9	19.9	.4820	.5124
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S) .....	19.5	21.8	21.0	26.2	.4656	.5535
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S) .....	20.3	21.1	24.5	19.8	.4697	.5423
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S)	19.6	20.6	22.4	19.6	.4678	.5333
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S) ..	20.4	20.6	25.0	18.9	.4558	.5321
Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F) .....	20.8	20.9	26.3	23.5	.4497	.5337
Untreated .....	19.8	20.8	27.5	20.0	.4605	.5356
LSD .....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
<b>Treatment mean</b>						
Cruiser 5 FS 50 g a.i./100 kg seed (S) .....	19.9		20.5		.4972	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.1 mg a.i./seed (S) .....	20.7		23.6		.5096	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed (S) .....	20.7		22.1		.5060	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Mertect 340-F 20.0 g a.i./100 kg seed (S)	20.1		21.0		.5006	
Cruiser 5 FS 50 g a.i./100 kg seed + Avicta 4.17 FS 0.15 mg a.i./seed + Actigard 50 WG 0.6 a.i./100 kg seed (S)	20.5		22.0		.4940	
Cruiser 5 FS 50 g a.i./100 kg seed (S) + Temik 15G 3.3 oz/1000 row ft (F) .....	20.8		24.9		.4917	
Untreated .....	20.3		23.8		.4980	
LSD .....	n.s.		n.s.		n.s.	
<b>Variety mean</b>						
AG4903 .....	20.0 b		24.0		.4645	
AG4801 .....	20.9 a		21.1		.5347	
LSD .....	0.4		n.s.		.0153	
<b>Split plot analysis, P(F)</b>						
Treatment .....	.9634		.7647		.5825	
Variety .....	.0001		.0869		.0001	
Treatment x variety .....	.1626		.4631		.4781	

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

<sup>2</sup> Determined from counts of four randomly selected plants per plot.

<sup>3</sup> Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 4 Oct.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

XXXIV. BAYER SOYBEAN SEED TREATMENT NEMATICIDE TEST (SOYSEEDNEMA207, Tidewater Research Farm, Suffolk, Field 30)

A. PURPOSE: To evaluate seed treatment nematicides on soybean

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 15-ft alleyways between blocks
2. Four, 30-ft rows/plot spaced 18 in. apart

C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied by personnel with Bayer CropScience. Granular treatments were applied in-furrow (F) at planting.

D. TREATMENT AND RATE:

1. Untreated
2. Trilex Allegiance conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 3.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S)
3. Trilex Allegiance conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 2.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S)
4. Trilex Allegiance conc. #2 1.0 fl oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S)
5. Trilex Allegiance conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + GB 126+ Pro-ized red colorant 0.3 oz/cwt (S)
6. Trilex Allegiance conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S)
7. Trilex Allegiance conc. #2 1.0 fl oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S)
8. Temik 15G 3.3 oz/1000 row ft (F)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm
2. Crop history: soybean 2006-2004
3. Land preparation: disk, land conditioner
4. Planting date and variety: 29 May, AG 4903, lot 2546ESP2A
5. Soil fertility report (Jan 2007):

pH.....	6.09	K .....	55 ppm
Ca .....	201 ppm	Zn.....	0.9 ppm
Mg .....	26 ppm	Mn.....	1.1 ppm
P .....	18 ppm	Soil type.....	Goldsboro fine sandy loam

6. Nematode assay report: 30 Mar 2007

Nematodes/500 cc soil

Root knot.....	310	Lance .....	160
Cyst larvae.....	20	Ring .....	10
Stunt .....	30	Stubby root .....	70
Spiral .....	920		

7. Herbicide: Basagran 1.5 pt + Pursuit 2 fl oz/A (5 Jun)  
Roundup Ultra Max 28 fl oz/A (20 Jun), 22 fl oz/A (16 Jul, 7 Aug)  
Basagran 1.5 pt/A (12 Jul)
8. Fertilizer: Liquid Mn 1 qt/A (20 Jun, 19 Jul); Crop Booster (12-4-6) 1 qt/A (19 Jul)
9. Insecticide: Baythroid XL 3 fl oz/A (14 Aug)
10. Harvest date: 4 Oct

Table 98. Effect of seed and in-furrow treatments on emergence and growth of soybeans.

Treatment and rate <sup>1</sup>	Plants/ft (21 Jun) <sup>2</sup>	Vigor (29 Jun) <sup>3</sup>	Plant ht. (in.) <sup>4</sup> (9 Aug)
Untreated.....	4.10 a	5.5	19.3
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 3.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	3.39 c	5.3	20.4
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 2.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	3.98 ab	5.8	20.0
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S).....	4.22 a	5.8	19.8
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S).....	3.62 bc	5.8	19.5
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	3.98 ab	5.8	19.9
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	4.11 a	5.8	19.4
Temik 15G 3.3 oz/1000 row ft (F).....	3.99 ab	5.8	20.6
LSD.....	0.41	n.s.	n.s.

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

<sup>2</sup> Determined from counts of plants in 6-ft sections of each row per plot.

<sup>3</sup> Vigor rating scale: 1=severely stunted, 10=healthy.

<sup>4</sup> Determined from measurements of four, randomly selected plants per plot.

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

Table 99. Effect of seed and in-furrow treatments on nematode populations in soybeans.

Treatment and rate*	Nematodes/500 cc soil**			
	Root-knot	Cyst larvae	Lance	Stubby root
Untreated.....	190	60	60	20
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 3.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	60	80	60	40
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 2.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	130	150	150	60
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S)	750	130	220	30
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S).....	1820	140	90	100
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	510	110	180	90
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	230	40	50	40
Temik 15G 3.3 oz/1000 row ft (F).....	150	10	70	30

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

\*\* Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.



Table 100. Effect of seed and in-furrow treatments on yield and grade of soybeans.

Treatment and rate*	Yield** (bu/A)	Wt./100 seed (oz)
Untreated.....	24.1	0.4375
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 3.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	27.3	0.4510
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Aeris Seed Applied System 2.0 oz a.i./cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	24.7	0.4365
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S).....	26.9	0.4342
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + GB 126 + Pro-ized red colorant 0.3 oz/cwt (S).....	25.0	0.4376
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Gaucho 600 FS 1.6 oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	25.4	0.4439
Trilex Allegiance Conc. #2 1.0 fl oz/cwt + Pro-ized red colorant 0.3 oz/cwt (S).....	25.6	0.4336
Temik 15G 3.3 oz/1000 row ft (F).....	31.6	0.4429
LSD.....	n.s.	n.s.

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

\*\* Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 4 Oct. Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant.

XXXV. EVALUATION OF SEED TREATMENTS FOR NEMATODE CONTROL IN SOYBEAN (SOYNEMA307, Brian Harrup Farm, Capron)

- A. PURPOSE: To determine the response of soybean to synthetic chemicals on seed for nematode control
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks with 15-ft alleyways between blocks
  2. Four, 30-ft rows/plot spaced 18 in. apart
- C. APPLICATION OF TREATMENTS: Treatments with Temik 15G were applied in-furrow (F) at planting and seed treatments were applied to seed (S).
- D. TREATMENT AND RATE (Main plots):
1. Untreated seed
  2. Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F)
  3. Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S)
  4. Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S)
- E. VARIETY (Sub-plots):
1. AG4903 (SCN susceptible)
  2. AG4801 (SCN resistant)
- F. ADDITIONAL INFORMATION:
1. Location: Brian Harrup Farm, Capron, VA
  2. Crop history: corn 2006, soybean 2005
  3. Planting date: 24 May
  4. Soil fertility report (21 May)

pH.....	5.62	K .....	39 ppm
Ca .....	120 ppm	Zn.....	0.9 ppm
Mg .....	30 ppm	Mn.....	2.3 ppm
P .....	32 ppm	Soil type.....	Emporia fine sandy loam
  5. Nematode assay report

<hr/> Nematodes/500 cc soil (21 May)	
Stunt .....	10
Ring.....	10
Root knot.....	10
  6. Herbicide:
    - Pre-emergence – Dual II Magnum 1 pt + Prowl 1 pt/A (24 May)
    - Post-emergence - Roundup Ultra Max 28 fl oz/A (5 Jul), 22 fl oz/A (15 Aug)
  7. Fertilizer: Crop Booster (12-4-6) 1 qt/A (5 Jul)
  8. Insecticide: Baythroid 3 fl oz/A (15 Aug)
  9. Harvest date: 8 Oct

Table 101. Effect of seed and in-furrow treatments on emergence and growth of soybeans.

Treatment and rate <sup>1</sup>	Plants/ft (21 Jun) <sup>2</sup>		Vigor (29 Jun) <sup>3</sup>	
	AG4903	AG4801	AG4903	AG4801
Untreated seed.....	4.21	3.98 ab	5.8	5.8
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	3.98	4.17 a	6.0	6.0
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	3.21	3.17 c	5.3	5.8
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	3.75	3.40 bc	5.5	5.5
LSD .....	n.s.	0.70	n.s.	n.s.
<b>Treatment mean</b>				
Untreated seed.....	4.09 a		5.8	
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	4.07 a		6.0	
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	3.19 b		5.5	
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	3.57 b		5.5	
LSD.....	0.49		n.s.	
<b>Variety mean</b>				
AG4903.....	3.79		5.6	
AG4801.....	3.68		5.8	
LSD.....	n.s.		n.s.	
<b>Split plot analysis, P(F)</b>				
Treatment .....	.0018		.8831	
Variety.....	.5059		.3370	
Treatment x variety .....	.6595		.4262	

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

<sup>2</sup> Determined from counts of plants in 6-ft section of row in each plot.

<sup>3</sup> Vigor rating scale: 1=severely stunted, 10=healthy.

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

Table 102. Effect of seed and in-furrow treatments on growth of soybeans.

Treatment and rate*	Plant height (in.)**		Growth stage	
	(13 Aug)		(19 Sep)	
	AG4903	AG4801	AG4903	AG4801
Untreated seed.....	16.7 bc	17.7	7.0	7.0
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	19.0 a	19.3	6.3	7.0
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	15.4 c	18.7	6.5	7.0
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	17.8 ab	19.9	6.8	6.8
LSD .....	2.2	n.s.	n.s.	n.s.
<b>Treatment mean</b>				
Untreated seed.....	17.2		7.0	
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	19.1		6.6	
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	17.0		6.8	
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	18.8		6.8	
LSD .....	--		n.s.	
<b>Variety mean</b>				
AG4903.....	17.2		6.6 b	
AG4801.....	18.9		6.9 a	
LSD.....	--		0.3	
<b>Split plot analysis, P(F)</b>				
Treatment.....	.5573		.1482	
Variety .....	.0001		.0451	
Treatment x variety.....	.0271		.2008	

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

\*\* Determined from measurements of four, randomly selected plants in the two center rows of each plot..

Means in a column and group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ), n.s. denotes not significant, -- indicates LSD not valid because of significant treatment by variety interaction.

Table 103. Effect of seed and in-furrow treatments on nematode populations in soybean.

Treatment and rate*	Nematodes/500 cc soil**							
	AG4903				AG4801			
	Root-knot	Lesion	Stubby root	Sting	Root-knot	Lesion	Stubby root	Sting
Untreated seed.....	10	0	0	0	0	0	10	10
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	0	10	130	0	0	10	0	0
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	0	0	0	0	0	10	0	0
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	10	0	10	0	480	10	20	0

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

\*\* Soil was sampled on 13 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 104. Effect of seed and in-furrow treatments on defoliation and yield of soybeans.

Treatment and rate <sup>1</sup>	% defoliation (19 Sep) <sup>2</sup>		Yield (bu/A) <sup>3</sup>	
	AG4903	AG4801	AG4903	AG4801
Untreated seed.....	77.5 a	82.5	8.1	6.8
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	45.0 b	73.8	9.4	9.5
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	45.0 b	71.3	8.3	8.0
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S).....	62.5 ab	71.3	11.0	7.3
LSD .....	24.6	n.s.	n.s.	n.s.
<b>Treatment mean</b>				
Untreated seed.....	80.0 a		7.4	
Untreated seed + Temik 15G 5.5 oz/1000 ft of row (F) .....	59.4 b		9.5	
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	58.1 b		8.2	
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed (S)...	66.9 b		9.2	
LSD.....	12.3		n.s.	
<b>Variety mean</b>				
AG4903.....	57.5 b		9.2	
AG4801.....	74.7 a		7.9	
LSD.....	8.7		n.s.	
<b>Split plot analysis, P(F)</b>				
Treatment.....	.0789		.7285	
Variety .....	.0048		.1849	
Treatment x variety.....	.2930		.4820	

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

<sup>2</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

<sup>3</sup> Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 8 Oct.

Means in a column and group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ( $P=0.10$ ), n.s. denotes not significant. Arcsine transformation of percentage data was made in statistical analysis.

Table 105. Effect of seed and in-furrow treatments on grade of soybeans.

Treatment and rate*	Weight/100 seed (oz)	
	AG4903	AG4801
Untreated seed.....	.4462	.4959
Untreated seed + Temik 15G 5.5 oz/ 1000 ft of row (F) .....	.5132	.5020
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	.4847	.5149
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed.....	.4928	.5216
LSD .....	n.s.	n.s.
<b>Treatment mean</b>		
Untreated seed.....	.4811	
Untreated seed + Temik 15G 5.5 oz/ 1000 ft of row (F) .....	.5076	
Apron Maxx 6.25 g a.i. + Cruiser 5FS 50 g a.i./100 kg seed + Avicta 4.17FS 0.15 mg a.i./seed (S) .....	.4998	
Trilex Allegiance 138.5FS 65 ml + Aeris Seed Applied System 186 g a.i./100 kg seed + Pro-ized red colorant FS 19.6 ml/100 kg seed .....	.5072	
LSD.....	.0363	
<b>Variety mean</b>		
AG4903.....	.4892	
AG4801.....	.5086	
LSD.....	n.s.	
<b>Split plot analysis, P(F)</b>		
Treatment.....	.0754	
Variety .....	.1253	
Treatment x variety.....	.5447	

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

Means in a column and group are not significantly different according to Fisher's Protected LSD ( $P=0.10$ ), n.s. denotes not significant.

XXXVI. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON FOLIAR DISEASES (SOYRUST107, Tidewater Research Center, Suffolk, Field 62C)

A. PURPOSE: To compare LEM17 to other fungicides for foliar disease control and impact on soybean yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleys between blocks
2. Plots 13-ft wide planted to eight, 30-ft rows
3. Rows spaced 18-in. apart except for 24-in. tramlines between rows 2-3 and 6-7
4. Data collected from the four center rows of each plot

C. APPLICATION: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. The 1<sup>st</sup> application was to be applied at R<sub>2</sub> (full flowering), if an alert for soybean rust (SBR) had been issued. Since no alert was issued, a single application was applied at R<sub>3</sub> (beginning pod). If rust appeared in the region of plots, a second application would be applied 14 days later or during stage R<sub>4</sub>.

D. TREATMENT AND RATE/A:

1. Untreated
2. LEM17 200SC 9.6 fl oz
3. LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz + Induce (0.125% v/v)
4. LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz
5. YT669 2.08SC 6 fl oz + Induce (0.125% v/v)
6. Punch 3.3EC 4 fl oz
7. Punch 3.3EC 3 fl oz + Headline 2.09EC 4.5 fl oz + Induce (0.125% v/v)
8. Absolute 500SC 5 fl oz
9. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v)
10. Headline 2.08EC 4.7 fl oz + Folicur 3.6SC 3.1 fl oz/A

E. ADDITIONAL INFORMATION:

1. Location: Swine Lagoon, Field 62C, Tidewater AREC, Suffolk
2. Crop history: soybean 2006, 2005, 2004
3. Planting date and variety: 24 May, RT 5450N
4. Soil fertility report : Jan 2007
  - pH..... 6.40
  - Ca ..... 522 ppm
  - Mg ..... 71 ppm
  - P ..... 24 ppm
  - K..... 90 ppm
  - Zn ..... 0.6 ppm
  - Mn ..... 1.6 ppm
  - Soil type ..... Nansemond fine sandy loam
5. Herbicide: Roundup Ultra Max 28 fl oz/A (20 Jun)
6. Fertilizer: Liquid Mn 1 qt/A (20 Jun, 19 Jul)  
Crop Booster (12-4-6) 1 qt/A (19 Jul)
7. Insecticide: Baythroid XL 3 fl oz/A (14 Aug)
8. Harvest date: 3 Oct



Table 106. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A <sup>1</sup>	% leaf area with disease (18 Sep) <sup>2</sup>			% defoliation <sup>3</sup> (18 Sep)
	Brown spot	Cercospora blight	Downy mildew	
Untreated.....	15.0	6.5 a	1.3	37.5
LEM17 200SC 9.6 fl oz	11.5	3.5 bc	0.3	40.0
LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz + Induce 2.56 fl oz .....	11.0	3.5 bc	0.5	40.0
LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz .....	7.3	2.3 cd	0.0	31.3
YT669 2.08SC 6 fl oz + Induce 2.56 fl oz .....	10.8	4.5 b	0.3	35.0
Punch 3.3EC 4 fl oz .....	8.5	2.8 b-d	0.3	43.8
Punch 3.3EC 3 fl oz + Headline 2.09EC 4.5 fl oz + Induce 2.56 fl oz .....	3.0	1.5 d	0.0	32.5
Absolute 500SC 5 fl oz.....	21.5	4.5 b	0.5	48.8
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v).....	6.5	3.3 b-d	0.5	33.8
Headline 2.08EC 4.7 fl oz + Folicur 3.6SC 3.1 fl oz.....	5.8	2.0 cd	0.3	31.3
<i>P</i> -value .....	.3886	.0003	.1034	.2430

<sup>1</sup> All treatments applied on 22 Aug.

<sup>2</sup> Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

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

Table 107. Effect of treatment on yield and grade of soybeans.

Treatment and rate/A <sup>1</sup>	Yield <sup>2</sup> (bu/A)	Wt./100 seed (oz)	% purple seed stain <sup>3</sup>
Untreated.....	27.7	.4857	1.0
LEM17 200SC 9.6 fl oz	28.1	.4887	0.5
LEM17 200SC 9.6 fl oz + YT669 2.08SC 4 fl oz + Induce 2.56 fl oz .....	24.2	.4643	0.0
LEM17 200SC 9.6 fl oz + Punch 3.3EC 3 fl oz .....	23.2	.4824	1.3
YT669 2.08SC 6 fl oz + Induce 2.56 fl oz .....	26.4	.4699	0.3
Punch 3.3EC 4 fl oz .....	22.1	.4873	1.0
Punch 3.3EC 3 fl oz + Headline 2.09EC 4.5 fl oz + Induce 2.56 fl oz .....	24.6	.4741	0.3
Absolute 500SC 5 fl oz.....	20.2	.4596	0.0
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v) .....	25.4	.4893	0.3
Headline 2.08EC 4.7 fl oz + Folicur 3.6SC 3.1 fl oz.....	27.3	.5024	0.5
<i>P</i> -value .....	.6126	.3331	.2059

<sup>1</sup> All treatments applied on 22 Aug.

<sup>2</sup> Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 3 Oct.

<sup>3</sup> Data are percent of 100 seed with symptoms of each disease.

Means were not significantly different according to Fisher's Protected LSD ( $P=0.05$ ).

XXXVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON FOLIAR DISEASES (SOYRUST207, Tidewater Research Center, Suffolk, Field 62C)

A. PURPOSE: To compare fungicides for foliar disease control and impact on soybean yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleys between blocks
2. Plots 13-ft wide planted to eight, 30-ft rows
3. Rows spaced 18-in. apart except for 24-in. tramlines between rows 2-3 and 6-7
4. Data collected from the four center rows of each plot

C. APPLICATION: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. The 1<sup>st</sup> application was to be applied at R<sub>2</sub> (full flowering), if an alert for soybean rust (SBR) had been issued. Since no alert was issued, a single application was applied at R<sub>3</sub> (beginning pod). If rust appeared in the region of plots, a second application would be applied 14 days later or during stage R<sub>4</sub> or R<sub>5</sub>.

D. TREATMENT AND RATE/A:

1. Untreated
2. Domark 1.9ME 3 fl oz
3. Domark 1.9ME 4 fl oz
4. Domark 1.9ME 5 fl oz
5. Laredo 2EC 7 fl oz
6. Folicur 3.6SC 4 fl oz
7. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v)
8. Headline 2.08EC 6 fl oz + Folicur 432SC 3.1 fl oz
9. Absolute 500SC 5 fl oz
10. Stratego 250EC 10 fl oz + Induce 2.56 fl oz (0.125 % v/v)

E. ADDITIONAL INFORMATION:

1. Location: Swine Lagoon, Field 62C, Tidewater AREC, Suffolk
2. Crop history: soybean 2006 - 2004
3. Planting date and variety: 24 May, RT 5450N
4. Soil fertility report : Jan 2007
  - pH..... 6.40
  - Ca ..... 522 ppm
  - Mg ..... 71 ppm
  - P ..... 24 ppm
  - K..... 90 ppm
  - Zn ..... 0.6 ppm
  - Mn ..... 1.6 ppm
  - Soil type ..... Nansemond fine sandy loam
5. Herbicide: Roundup Ultra Max 28 fl oz/A (20 Jun)
6. Fertilizer: Liquid Mn 1 qt/A (20 Jun, 19 Jul)  
Crop Booster (12-4-6) 1 qt/A (19 Jul)
7. Insecticide: Baythroid XL 3 fl oz/A (14 Aug)
8. Harvest date: 3 Oct

Table 108. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A <sup>1</sup>	% leaf area with disease (19 Sep) <sup>2</sup>			% defoliation <sup>3</sup> (19 Sep)
	Brown spot	Cercospora blight	Downy mildew	
Untreated.....	18.8 a	8.3 a	2.3 ab	46.3 a
Domark 1.9ME 3 fl oz .....	6.3 bc	5.3 b	1.8 bc	28.8 bc
Domark 1.9ME 4 fl oz .....	6.3 bc	4.0 b-d	1.8 bc	40.0 ab
Domark 1.9ME 5 fl oz .....	4.3 cd	3.3 c-e	1.0 c	40.0 ab
Laredo 2EC 7 fl oz.....	7.0 bc	4.8 bc	1.5 bc	31.3 bc
Folicur 3.6SC 4 fl oz .....	8.8 b	4.5 bc	2.0 ab	46.3 a
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz ..	4.0 cd	2.0 e	1.5 bc	17.5 c
Headline 2.08EC 6 fl oz				
+ Folicur 432SC 3.1 fl oz.....	4.0 cd	2.5 de	2.8 a	31.3 bc
Absolute 500SC 5 fl oz.....	2.0 d	2.3 de	1.8 bc	28.8 bc
Stratego 250EC 10 fl oz				
+ Induce 2.56 fl oz .....	4.0 cd	3.3 c-e	1.5 bc	27.5 bc
<i>P</i> -value .....	.0001	.0001	.0778	.0055

<sup>1</sup> All treatments applied on 22 Aug.

<sup>2</sup> Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD at  $P=0.05$ , except downy mildew was analyzed at  $P=0.10$ . Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 109. Yield and grade of soybeans.

Treatment and rate/A*	Yield <sup>2</sup> (bu/A)	Wt./100 seed (oz)	% purple seed stain <sup>3</sup>
Untreated.....	30.0	.4915 bc	1.8 a
Domark 1.9ME 3 fl oz .....	36.1	.4964 a-c	0.3 bc
Domark 1.9ME 4 fl oz .....	32.0	.4986 ab	0.8 a-c
Domark 1.9ME 5 fl oz .....	29.2	.4852 bc	0.0 c
Laredo 2EC 7 fl oz.....	31.1	.5087 ab	1.3 ab
Folicur 3.6SC 4 fl oz .....	26.6	.4643 c	1.0 a-c
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	34.7	.4929 bc	0.0 c
Headline 2.08EC 6 fl oz + Folicur 432SC 3.1 fl oz....	29.0	.4777 bc	1.0 a-c
Absolute 500SC 5 fl oz.....	35.5	.5270 a	0.5 bc
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	34.0	.5071 ab	0.5 bc
<i>P</i> -value .....	.2399	.0323	.0398

<sup>1</sup> All treatments applied on 22 Aug.

<sup>2</sup> Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 4 Oct.

<sup>3</sup> Data are percent of 100 seed with symptoms of disease.

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

XXXVIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON FOLIAR DISEASES (SOYRUST307, Duke Farm, Suffolk, Field 40)

A. PURPOSE: To compare fungicides for foliar disease control and impact on soybean yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleys between blocks
2. Plots 13-ft wide planted to eight, 30-ft rows
3. Rows spaced 18-in. apart except for 24-in. tramlines between rows 2-3 and 6-7
4. Data collected from the four center rows of each plot

C. APPLICATION: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. The 1<sup>st</sup> application was to be applied at R<sub>2</sub> (full flowering), if an alert for soybean rust (SBR) had been issued. Since no alert for SBR was issued, a single application was applied at R<sub>3</sub> (beginning pod). If rust appeared in the region of plots, a second application would be applied 14 days later or during stage R<sub>5</sub> (beginning seed) or prior to R<sub>6</sub> (full seed).

D. TREATMENT AND RATE/A:

1. Untreated
2. Folicur 3.6SC 4 fl oz
3. Quadris 2.08SC 14 fl oz + COC 20.5 fl oz (1% v/v)
4. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v)
5. Absolute 500SC 5 fl oz
6. Stratego 250EC 10 fl oz + Induce 2.56 fl oz (0.125% v/v)
7. Headline 2.08EC 6 fl oz + Folicur 432SC 3.1 fl oz
8. Laredo 2EC 7 fl oz
9. Domark 1.9ME 5 fl oz

E. ADDITIONAL INFORMATION:

1. Location: Duke farm, Field 40, Tidewater AREC, Suffolk
2. Crop history: cotton, 2006, peanut 2005, corn 2004
3. Planting date and variety: 24 May, Pioneer 95M50
4. Soil fertility report (Jan 2007)

pH.....	6.54
Ca .....	382 ppm
Mg .....	44 ppm
P .....	19 ppm
K.....	59 ppm
Zn .....	0.5 ppm
Mn .....	1.7 ppm
Soil type .....	Suffolk loamy sand
5. Herbicide: Roundup Ultra Max 28 fl oz/A (20 Jun), 22 fl oz/A (12 Jul)
6. Fertilizer: Liquid Mn 1 qt/A (20 Jun, 19 Jul)  
Crop Booster (12-4-6) 1 qt/A (19 Jul)
7. Insecticide: Baythroid XL 3 fl oz/A (14 Aug)
8. Harvest date: 10 Oct

Table 110. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A <sup>1</sup>	% leaf area with disease (19 Sep) <sup>2</sup>				% defoliation <sup>3</sup> (19 Sep)
	Brown spot	Cercospora blight	Frogeye leaf spot	Downy mildew	
Untreated.....	13.8 a	3.0 a	1.8	2.0	23.5
Folicur 3.6SC 4 fl oz.....	3.8 b	1.3 b	1.3	2.0	1.5
Quadris 2.08SC 14 fl oz + COC 20.5 fl oz .....	2.0 b	1.5 b	1.0	1.5	3.5
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	3.5 b	1.8 b	0.8	1.8	4.8
Absolute 500SC 5 fl oz.....	3.0 b	1.5 b	1.5	2.8	1.3
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	2.3 b	1.3 b	1.0	2.0	1.0
Headline 2.08EC 6 fl oz + Folicur 432SC 3.1 fl oz .....	2.5 b	1.3 b	1.3	2.3	1.3
Laredo 2EC 7 fl oz.....	5.3 b	2.0 b	1.0	1.5	10.5
Domark 1.9ME 5 fl oz.....	2.0 b	1.5 b	1.3	1.8	11.5
<i>P</i> -value .....	.0001	.0753	.2699	.2689	.2454

<sup>1</sup> All treatments applied on 22 Aug.

<sup>2</sup> Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD at  $P=0.05$ , except Cercospora blight was analyzed at  $P=0.10$ . Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 111. Yield and grade of soybeans.

Treatment and rate/A <sup>1</sup>	Yield** (bu/A)	Wt./100 seed (oz)
Untreated.....	37.1	.4833 c
Folicur 3.6SC 4 fl oz.....	49.2	.5169 ab
Quadris 2.08SC 14 fl oz + COC 20.5 fl oz .....	33.6	.4850 bc
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	36.4	.4909 bc
Absolute 500SC 5 fl oz.....	44.1	.5266 a
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	41.2	.5259 a
Headline 2.08EC 6 fl oz + Folicur 432SC 3.1 fl oz .....	42.6	.5238 a
Laredo 2EC 7 fl oz.....	38.7	.4966 a-c
Domark 1.9ME 5 fl oz.....	36.6	.4947 a-c
<i>P</i> -value .....	.1865	.0279

\* All treatments applied on 22 Aug.

\*\* Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 11 Oct.

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

XXXIX. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON FOLIAR DISEASES (SOYRUST407, Glenn Carr Farm, Spiveytown Road, Isle of Wight County)

A. PURPOSE: To compare fungicides for foliar disease control and impact on soybean yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleys between blocks
2. Plots 9-ft wide planted to six, 30-ft rows
3. Row spacing 18-in. apart
4. Data collected from the four center rows of each plot

C. APPLICATION: Treatments applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. The 1<sup>st</sup> application was to be applied at R<sub>2</sub> (full flowering), if an alert for soybean rust (SBR) has been issued. Since no alert for SBR was issued, a single application was applied at R<sub>3</sub> (beginning pod). If rust appeared in the region, a second application would be applied 14 days later or during stage R<sub>5</sub> (beginning seed) or prior to R<sub>6</sub> (full seed).

D. TREATMENT AND RATE/A:

1. Untreated
2. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v)
3. Stratego 250EC 10 fl oz + Induce 2.56 fl oz (0.125% v/v)
4. Absolute 500SC 5 fl oz
5. Headline 2.08EC 4.7 fl oz + Folicur 3.1 fl oz
6. Domark 1.9ME 5 fl oz

E. ADDITIONAL INFORMATION:

1. Location: Glenn Carr Farm, Spivey Town Rd., Isle of Wight County
2. Crop history: corn 2006, soybean 2005, corn 2004
3. Planting date and variety: 24 May, DP94M80

4. Soil fertility report (19 Jul):

pH.....	5.46	K .....	63 ppm
Ca .....	279 ppm	Zn.....	0.9 ppm
Mg .....	45 ppm	Mn.....	3.0 ppm
P .....	16 ppm	Soil type .....	Slagle fine sandy loam

5. Nematode assay report (30 Apr):

Nematode	Nematodes/500 cc soil
Root knot larvae.....	170
Lesion .....	170
Stunt.....	240
Spiral.....	10
Ring .....	10
Stubby root .....	110
Dagger .....	120

6. Herbicide: Roundup Ultra Max 22 fl oz/A (15 Aug)

7. Insecticide: Baythroid 3 fl oz/A (15 Aug)

8. Harvest date: 2 Oct

Table 112. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A <sup>1</sup>	% leaf area with disease(18 Sep) <sup>2</sup>			% defoliation <sup>3</sup> (18 Sep)
	Brown spot	Cercospora blight	Downy mildew	
Untreated.....	9.5 a	3.5 a	0.8	88.8 a
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	1.5 c	0.3 b	0.3	66.3 b
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	1.8 c	0.5 b	0.5	67.5 b
Absolute 500SC 5 fl oz.....	2.5 c	0.3 b	0.3	70.0 b
Headline 2.08EC 4.7 fl oz + Folicur 3.1 fl oz .....	1.5 c	0.8 b	0.5	65.0 b
Domark 1.9ME 5 fl oz .....	5.3 b	1.0 b	0.8	82.5 a
<i>P</i> -value .....	.0001	.0042	.3891	.0001

<sup>1</sup> All treatments applied on 1 Aug.

<sup>2</sup> Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 113. Yield and grade of soybeans.

Treatment and rate/A <sup>1</sup>	Yield <sup>2</sup> (bu/A)	Weight/100	
		seed (oz)	% purple seed stain <sup>3</sup>
Untreated.....	20.1	.5294	2.5 a
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	21.6	.5391	1.0 bc
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	22.6	.5403	1.3 a-c
Absolute 500SC 5 fl oz.....	24.5	.5545	0.8 c
Headline 2.08EC 4.7 fl oz + Folicur 3.1 fl oz.....	23.9	.5528	0.0 c
Domark 1.9ME 5 fl oz .....	18.1	.5490	2.3 ab
<i>P</i> -value .....	.2572	.1951	.0541

<sup>1</sup> All treatments applied on 1 Aug.

<sup>2</sup> Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 2 Oct.

<sup>3</sup> Data are percent of 100 seed with symptoms of disease.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD at  $P=0.05$ , except purple seed stain was analysed at  $P=0.10$ . Arcsine transformation of percentage data was made in analysis to determine statistical significance.



**XL. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON FOLIAR DISEASES (SOYRUST507, Glenn Hawkins Farms, Skippers)**

**A. PURPOSE:** To compare fungicide treatments for foliar disease control and impact on soybean yield

**B. EXPERIMENTAL DESIGN:**

1. Four, randomized complete blocks with 10-ft alleys between blocks
2. Plots 13-ft wide planted to eight, 30-ft rows
3. Rows spaced 18-in. apart except for 24-in. tramlines between rows 2-3 and 6-7
4. Data collected from the four center rows of each plot

**C. APPLICATION:** Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. The 1<sup>st</sup> application was to be applied at R<sub>1</sub> (early flowering), if an alert for soybean rust (SBR) was issued prior to the crop reaching that stage. Otherwise, the application would be applied as soon as possible if an alert was issued prior to R<sub>3</sub> (beginning pod). Since no alert was issued, the 1<sup>st</sup> application was applied at R<sub>3</sub>. A second application was to be applied 14 to 21 days later if SBR posed a threat to yield and the treatment could be completed through R<sub>5</sub>.

**D. TREATMENT AND RATE/A:**

1. Untreated
2. Quadris 2.08SC 6 fl oz + COC 20.5 fl oz (1% v/v)
3. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz (1% v/v)
4. Stratego 250EC 10 fl oz + Induce 2.56 fl oz (0.125% v/v)
5. Absolute 500SC 5 fl oz
6. Folicur 432SC 4 fl oz
7. Headline 250EC 6 fl oz
8. Headline 2.08EC 4.7 fl oz+ Folicur 3.1 fl oz
9. Laredo 2EC 7 fl oz
10. Domark 1.9ME 5 fl oz

**E. ADDITIONAL INFORMATION:**

1. Location: Glenn Hawkins Farm, Skippers, VA
2. Crop history: soybean 2006 and 2005
3. Planting date and variety: 23 May, RT 5450N
4. Soil fertility report: 30 Apr 2007
  - pH..... 6.33
  - Ca ..... 1000 ppm
  - Mg ..... 107 ppm
  - P ..... 141 ppm
  - K..... 85 ppm
  - Zn ..... 5.2 ppm
  - Mn ..... 6.1 ppm
  - Soil type ..... Craven clay loam
5. Herbicide: Prowl 1 pt + Dual 1 pt/A (23 May)  
Roundup Ultra Max 28 fl oz/A (18 Jun), 22 fl oz/A (15 Aug)
6. Insecticide: Baythroid 3 fl oz/A (15 Aug)
7. Harvest date: 8 Oct

Table 114. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A <sup>1</sup>	% leaf area with disease(19 Sep) <sup>2</sup>			% defoliation <sup>3</sup> (19 Sep)
	Brown spot	Cercospora blight	Downy mildew	
Untreated.....	15.0 a	4.3 a	1.5	32.5
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz .....	3.0 d	1.0 cd	1.0	20.0
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	1.8 d	0.3 d	1.3	25.0
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	6.0 bc	2.0 bc	1.0	12.5
Absolute 500SC 5 fl oz.....	4.3 cd	1.8 c	1.0	16.3
Folicur 432SC 4 fl oz.....	6.0 bc	2.3 bc	1.0	18.8
Headline 250EC 6 fl oz.....	4.0 cd	1.8 c	1.0	13.8
Headline 2.08EC 4.7 fl oz + Folicur 3.1 fl oz.....	2.8 d	1.3 cd	0.8	22.5
Laredo 2EC 7 fl oz.....	7.5 b	3.3 ab	1.0	17.5
Domark 1.9ME 5 fl oz .....	4.3 cd	1.5 cd	1.0	23.8
<i>P</i> -value .....	.0001	.0007	.9536	.1237

<sup>1</sup> All treatments applied on 23 Aug.

<sup>2</sup> Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.

<sup>3</sup> Defoliation rating scale: 0=none, 100=no leaves on plants. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ( $P=0.05$ ). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 115. Yield and grade of soybeans.

Treatment and rate/A <sup>1</sup>	Yield <sup>2</sup> (bu/A)	Wt./100 seed (oz)	% purple seed stain <sup>3</sup>
Untreated.....	15.8	.4349 cd	1.8 b
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz .....	16.0	.4270 d	0.3 cd
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz .....	16.3	.4320 d	1.3 bc
Stratego 250EC 10 fl oz + Induce 2.56 fl oz .....	17.4	.4589 ab	0.0 d
Absolute 500SC 5 fl oz.....	16.3	.4622 a	0.0 d
Folicur 432SC 4 fl oz.....	16.2	.4375 b-d	1.0 b-d
Headline 250EC 6 fl oz.....	13.4	.4547 a-c	0.5 cd
Headline 2.08EC 4.7 fl oz + Folicur 3.1 fl oz.....	17.8	.4302 d	0.5 cd
Laredo 2EC 7 fl oz.....	16.3	.4475 a-d	1.8 b
Domark 1.9ME 5 fl oz .....	13.4	.4318 d	3.0 a
<i>P</i> -value .....	.6071	.0177	.0003

<sup>1</sup> All treatments applied on 23 Aug.

<sup>2</sup> Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 8 Oct.

<sup>3</sup> Data are percent of 100 seed with symptoms of disease.

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

XLI. CLIMATOLOGICAL SUMMARY OF THE 2007 GROWING SEASON AT THE  
TIDEWATER AGRICULTURAL RESEARCH & EXTENSION CENTER, SUFFOLK, VA.

Table 116. Daily maximum and minimum temperatures (°F) November 2006 - April 2007.												
Day of month	NOV		DEC		JAN		FEB		MAR		APR	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	75	55	79	60	67	55	38	21	56	35	78	52
2	78	56	77	42	72	35	38	33	72	66	79	53
3	62	33	55	38	64	39	46	30	72	38	83	46
4	49	27	55	39	63	42	44	24	68	35	84	51
5	52	26	56	40	72	54	52	20	48	28	83	37
6	58	32	50	25	72	59	35	10	61	28	59	26
7	65	38	58	42	73	43	37	18	43	22	54	32
8	68	60	60	44	69	50	42	19	65	25	45	25
9	73	56	39	15	62	26	42	15	50	24	53	25
10	71	45	59	24	55	30	41	19	68	31	55	27
11	76	49	62	28	43	23	42	16	70	50	60	44
12	78	54	63	27	49	30	45	22	66	29	61	55
13	61	47	65	43	63	45	57	26	60	36	76	43
14	64	48	67	41	71	52	60	34	73	47	64	40
15	73	51	69	46	73	56	49	22	82	55	64	48
16	70	59	67	34	73	54	38	17	82	43	74	47
17	75	45	65	30	63	28	36	14	49	30	57	47
18	61	44	69	44	38	22	49	32	45	25	64	43
19	56	32	74	42	42	30	44	20	48	21	58	39
20	55	33	56	27	54	31	52	28	61	41	71	33
21	54	41	53	28	44	23	65	48	76	45	71	39
22	54	44	54	30	38	30	60	43	52	38	77	43
23	53	42	61	50	46	25	69	35	77	48	83	36
24	48	42	69	34	42	33	51	25	72	63	85	60
25	65	32	58	45	52	42	51	35	63	54	85	58
26	63	33	69	46	45	18	56	48	65	37	89	52
27	63	38	58	38	50	26	53	29	74	49	73	55
28	64	42	52	27	62	46	62	32	65	37	82	55
29	72	45	58	29	54	32			62	52	75	53
30	70	50	62	31	36	20			67	48	77	46
31			60	38	49	25			76	57		
<b>Avg.</b>	<b>64</b>	<b>43</b>	<b>61</b>	<b>36</b>	<b>57</b>	<b>36</b>	<b>48</b>	<b>26</b>	<b>64</b>	<b>40</b>	<b>71</b>	<b>44</b>
<b>Normal</b>	<b>63</b>	<b>39</b>	<b>53</b>	<b>31</b>	<b>50</b>	<b>29</b>	<b>51</b>	<b>29</b>	<b>60</b>	<b>37</b>	<b>70</b>	<b>45</b>
<b>Deviation from normal</b>	<b>+1</b>	<b>+4</b>	<b>+8</b>	<b>+5</b>	<b>+7</b>	<b>+7</b>	<b>-3</b>	<b>-3</b>	<b>+4</b>	<b>+3</b>	<b>+1</b>	<b>-1</b>

Table 117. Daily maximum and minimum temperatures (°F) May 2007 – October 2007.

Day of month	MAY		JUN		JUL		AUG		SEP		OCT	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	87	55	88	56	88	68	89	66	77	64	80	49
2	87	66	87	63	85	55	91	62	85	56	83	60
3	90	56	84	65	82	53	92	64	83	54	83	67
4	61	53	84	64	84	63	92	71	88	58	90	65
5	68	55	88	64	89	67	97	72	92	59	89	65
6	69	52	88	60	93	66	98	70	93	62	84	67
7	63	44	81	59	94	64	95	73	91	82	87	64
8	54	48	90	71	96	66	98	77	89	56	91	64
9	67	56	95	68	96	72	104	70	90	88	92	65
10	77	63	88	64	99	72	100	74	89	67	95	65
11	81	59	77	55	97	71	97	70	93	72	85	57
12	86	62	84	58	95	69	85	57	97	70	71	44
13	84	59	86	61	76	69	89	64	89	56	73	42
14	69	39	82	58	74	59	93	65	87	59	75	42
15	74	42	70	55	79	70	88	59	87	63	77	40
16	81	62	78	54	81	73	94	72	78	51	78	44
17	85	58	87	58	78	70	96	67	75	46	81	52
18	72	56	89	62	95	68	93	63	76	49	84	58
19	60	48	97	68	80	72	85	61	77	62	83	70
20	71	46	98	71	90	69	91	70	75	64	85	63
21	85	52	85	59	70	61	93	72	76	68	79	43
22	79	55	87	60	70	57	95	71	84	69	82	49
23	80	63	87	54	80	76	97	73	90	64	83	57
24	86	72	84	58	86	59	85	67	90	53	87	71
25	80	51	89	66	88	60	92	71	82	51	85	65
26	84	56	92	71	90	60	95	72	88	56	72	63
27	89	61	94	72	94	66	91	67	90	62	75	68
28	90	62	92	71	95	65	88	66	87	67	74	51
29	88	73	92	71	93	67	88	62	85	48	65	39
30	89	72	86	71	91	69	87	59	80	54	61	30
31	90	82			87	68	85	59			67	36
<b>Avg.</b>	<b>78</b>	<b>57</b>	<b>87</b>	<b>63</b>	<b>87</b>	<b>66</b>	<b>92</b>	<b>67</b>	<b>85</b>	<b>61</b>	<b>81</b>	<b>55</b>
<b>Normal</b>	<b>77</b>	<b>54</b>	<b>84</b>	<b>63</b>	<b>88</b>	<b>67</b>	<b>87</b>	<b>65</b>	<b>82</b>	<b>60</b>	<b>71</b>	<b>46</b>
<b>Deviation from normal</b>	<b>+1</b>	<b>+3</b>	<b>+3</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>+5</b>	<b>+2</b>	<b>+3</b>	<b>+1</b>	<b>+10</b>	<b>+9</b>

Table 118. Daily precipitation (inches) November 2006 - April 2007.

Day of month	NOV	DEC	JAN	FEB	MAR	APR
1	0	0	0	0	0	0
2	0	0.1	0.23	0.37	0.71	0.08
3	0	0	0	0.05	0	0
4	0	0.4	0	0	0	0.06
5	0	0	0.03	0	0	0
6	0	0	1.90	0	0	0
7	0	0	0	0	0	0.34
8	1.28	0	0.26	0	0	0.01
9	0.99	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0.1	0	0	0	0	0.42
13	2.5	0	0	0.06	0	0
14	0	0	0	0.65	0	0.02
15	0	0	0	0	0	0.51
16	0.05	0	0	0	0.34	1.25
17	1.8	0	0.05	0	1.2	0
18	0.01	0	0.02	0	0	0
19	0	0	2.80	0	0	0
20	0	0	0.01	0	0	0
21	0	0	0	0	0	0
22	0.82	0	0.63	0.93	0	0
23	1.03	0.64	0	0	0	0
24	0.05	0	0	0	0	0
25	0	0	0	0	0	0
26	0	1.52	0	0.5	0	0
27	0	0.02	0	0	0	0
28	0	0	0	0	0	0.09
29	0.02	0	0	0	0	0
30	0	0	0	0	0	0
31		0	0		0	
<b>Total</b>	<b>8.65</b>	<b>2.68</b>	<b>5.93</b>	<b>2.56</b>	<b>2.25</b>	<b>2.78</b>
<b>Normal</b>	<b>3.18</b>	<b>3.25</b>	<b>3.94</b>	<b>3.42</b>	<b>3.84</b>	<b>3.28</b>
<b>Deviation from normal</b>	<b>+5.47</b>	<b>-0.57</b>	<b>+1.99</b>	<b>-0.86</b>	<b>-1.59</b>	<b>-0.50</b>

Table 119. Daily precipitation (inches) May 2007 – October 2007.						
Day of month	MAY	JUN	JUL	AUG	SEP	OCT
1	0	0	0	0	0.02	0
2	0	0	0	0	0	0
3	0.34	0.51	0	0	0	0
4	0.39	0.34	0	0	0	0
5	0.01	0.57	0	0	0	0
6	0.02	0.84	0	0	0	0.07
7	0	0	0	0.22	0	0.02
8	0	0	0	0.08	0	0
9	0.14	0.05	0	0	0.05	0
10	0.07	0	0	0.05	0	0
11	0	0	0.39	0.9	0	0
12	0.15	0.62	0.38	0	0	0
13	0.03	0	0	0	0	0
14	0	0.07	0	0	0	0
15	0	0	0	0	0.15	0
16	0	0	0	0	0	0
17	0.99	0	0	2.64	0	0
18	0	0	0	0.01	0	0
19	0.02	0	0	0	0	0.64
20	0	0	0.32	0	0	0.02
21	0	0	0	0	0.15	0
22	0	0	0	0.94	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0.04	2.20
26	0	0	0	0	0	0.04
27	0	0	0	0.16	0.02	2.26
28	0	0	0	0	0	0.01
29	0	0	0	0	0	0
30	0	0	0.62	0	0	0
31	0		0	0		0
<b>Total</b>	<b>2.16</b>	<b>3.00</b>	<b>1.71</b>	<b>5.00</b>	<b>0.43</b>	<b>5.26</b>
<b>Normal</b>	<b>3.82</b>	<b>4.33</b>	<b>5.87</b>	<b>5.71</b>	<b>4.47</b>	<b>3.54</b>
<b>Deviation from normal</b>	<b>-1.66</b>	<b>-1.33</b>	<b>-4.16</b>	<b>-0.71</b>	<b>-4.09</b>	<b>+1.74</b>