
APPLIED RESEARCH ON FIELD CROP DISEASE CONTROL

2005

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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_{50}), (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 and Oct was 0.95 and 2.22 in. above normal and in Apr, Jun, Jul, Aug, and Sep was 0.92, 1.61, 0.71, 1.25, and 1.38 in. below normal, respectively. Rainfall during the period totaled 28.25 in. which was 2.7 in. below normal (Appendix Tables 128, 129). Minimum air temperatures averaged near normal ($\pm 1^{\circ}\text{F}$) in Apr and May, 2°F above normal in Jun, 3°F above normal in Sep, 4°F above normal in Jul and Aug, and 6°F above normal in Oct. Maximum air temperatures were near normal ($\pm 1^{\circ}\text{F}$) in Apr, Jun and Oct, 2°F below normal in May, 3°F above normal in Aug, 4°F above normal in Jul and 5°F above normal in Sep according to records from a NOAA station at the Tidewater AREC in Suffolk (Appendix tables 126, 127). Cool temperatures and frequent rainfall in May slowed the speed of emergence in field crops. However, most crops were planted in a timely manner and showed good emergence by two to three weeks after planting throughout Eastern Virginia. Seasonal heat units for peanut from May 1 to October 31 totaled 2932 in Suffolk, which was well above the 2500 to 2600 needed for maturity (Table 1). Cotton degree-days (DD_{60}) in the same period totaled 2297 which was 116 above the average for 1995 to 2004. As the harvest season approached, many fields exhibited normal maturity and good yield potential. No frost damage was observed in peanuts, since the first killing frost did not occur until the end of October.

Peanut yields in 2005 are projected to average 2900 lb/A (Table 2). Excesses of moisture in May were favorable for *Cylindrocladium* black rot (CBR), which was the most destructive disease of peanut in 2005 (Table 3). The second most damaging disease in peanut was northern root knot nematode. Early leaf spot and late leaf spot caused some defoliation in late September and early October, but the incidence of web blotch was generally low due to above normal temperatures from Jul through October. The incidence of tomato spotted wilt virus (TSWV) was considered low in 2005 and similar to levels seen in 2004. Southern stem rot appeared to be higher than in previous years, which may be attributed to warmer than normal temperatures in 2005. Certainly, the warmer temperatures helped in suppression of losses to *Sclerotinia* blight. Overall, the continued reduction in peanut acreage has resulted in many acres of peanut being planted at 4-year intervals after 3 years of cotton. This cropping system is likely to benefit peanut by reducing the incidence and severity of disease and yield losses caused by CBR, nematodes, leaf spots, and *Sclerotinia* blight.

Cotton yields in 2005 are projected to average 835 lb or 1.74 bales/A. Only a few diseases caused significant damage in cotton production. *Rhizoctonia* damping-off and other seedling diseases caused minor losses of stand and no impact on yield. Poor stands were often associated with soil compaction by heavy rainfall immediately after planting and/or planting seed too deep (deeper than 0.75 in.). The optimum depth of planting is usually 0.25 to 0.5 in. 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 2005. Instances of yield losses to stubby root were found, but overall were less destructive than southern root knot. Sting nematode continues to be highly damaging to cotton, but occurrences are usually confined to small portions of fields. As in previous years, the Columbia lance nematode was not detected in the region in 2005. Below normal rainfall in 2005 was thought to suppress development of hardlock in cotton since disease incidence was not observed to exceed one or only a few locules in up to 10% of open bolls.

Powdery mildew, *Stagonospora* leaf blotch, and tan spot were the most common diseases of wheat in southeastern Virginia. Leaf blotch and tan spot accounted for the greatest reductions of yield in the region. Stripe rust was widely scattered throughout southeastern Virginia, and only a few fields exhibited heavy disease pressure near the end of the growing season. Occurrences of scab on heads were minimal in 2005 and had little or no impact on yield.

Corn yields are forecast to be 124 bu/A or 22 bushels below the record set in 2000. Dry weather stress was likely the single most important factor that depressed yields in 2005. The widespread occurrence of stubby root nematode and isolated patches of sting nematode were thought to account for most of the yield losses to disease in corn. Stalk rots and foliar diseases caused minor damage in the Tidewater area in 2005.

The December forecast for soybean yield in 2005 was 29 bu/A with an expected harvest of 520,000 acres in Virginia. Nematodes were thought to have the greatest impact on yield of all soybean diseases in 2005 (Table 4). Soybean cyst, southern and northern root-knot and stubby root nematodes probably accounted for the greatest losses of yield. Frogeye leaf spot, anthracnose, and *Cercospora* blight appeared to be the most common foliar diseases of soybean. Frogeye leaf spot was the most aggressive and widespread during pod filling through the R₅ stage of reproductive growth, but leaves appeared to be able to tolerate high numbers of lesions with minimal defoliation. Thereafter, *Cercospora* blight appeared to be the most aggressive disease in the final four weeks of the growing season. Laboratory examinations of more than 350 leaf samples of soybeans from June through October in eastern Virginia failed to detect soybean rust in 2005. In addition, several samples of Kudzu were examined and none exhibited soybean rust.

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 those products named nor do they intend or imply discrimination against those not named.

The primary purpose of this book is to provide a summary of research for cooperators and contributors in various projects. Nineteen chapters from this book have been prepared for publication by the American Phytopathological Society in *Fungicide & Nematicide Tests*, and *Biological & Cultural Tests* in 2006. Reprints of these publications are available upon request.

Table 1. Comparison of rainfall, peanut heat units (DD₅₆) and cotton degree-days (DD₆₀) over the period from 1995 to 2005.

Month	Rainfall (in.)											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Normal*
May	4.92	4.00	2.54	2.78	1.04	5.52	4.19	3.98	7.14	4.77	4.78	3.83
Jun	5.20	4.50	0.69	2.80	2.72	6.09	8.78	1.66	4.10	5.10	2.64	4.25
Jul	2.95	9.12	10.74	5.07	5.39	4.33	3.04	5.53	4.98	12.53	5.19	5.90
Aug	3.03	4.73	1.24	5.29	9.33	7.13	4.07	2.22	3.50	11.00	4.50	5.75
Sep	2.96	7.98	1.99	5.97	23.47	4.17	1.64	2.96	11.81	5.15	3.08	4.46
Oct	4.78	5.10	2.89	3.03	7.76	0.03	1.00	4.89	4.40	4.52	5.68	3.46
Total	23.83	35.43	20.09	24.94	49.71	27.27	22.72	21.24	35.93	43.07	25.87	27.65

*Normal is the 73-yr mean of records maintained at the Tidewater AREC, Suffolk.

Month	Peanut Heat Units											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Avg.
May	339	340	279	373	347	425	351	365	313	508	248	353
Jun	524	569	509	581	503	583	589	627	537	544	549	556
Jul	731	624	667	680	722	592	605	731	667	647	710	671
Aug	665	545	576	630	652	564	689	681	660	548	680	626
Sep	374	422	416	507	399	396	403	488	446	429	506	435
Oct	272	189	202	203	187	210	240	242	184	168	240	212
Total	2905	2689	2649	2974	2810	2770	2877	3134	2807	2844	2932	2854

Month	Cotton Degree Days (DD ₆₀)											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Avg.
May	257	246	195	274	254	318	255	271	216	395	169	259
Jun	419	459	330	442	359	466	472	513	421	426	433	431
Jul	537	502	493	544	546	451	484	615	543	523	587	530
Aug	462	423	435	509	479	442	568	564	536	427	557	491
Sep	286	320	309	398	295	311	304	373	334	320	393	331
Oct	200	118	139	136	123	144	172	162	116	100	158	143
Total	2162	2068	1900	2303	2056	2132	2255	2498	2166	2191	2297	2184

Table 2. Crop production in record year for yield compared to 2005.

Crop	Statistics of record year for yield			2005 projection*	
	Year	Acreage	Yield/A	Acreage	Yield/A
Peanut.....	2004	32,000	3,250 lb	22,000	2,900 lb
Soybean.....	2004	530,000	39.0 bu	520,000	29 bu
Corn.....	2000	330,000	146 bu	360,000	124 bu
Cotton (lint)..	2004	81,000	956 lb	92,000	835 lb
Wheat	1997	260,000	67 bu	170,000	66 bu

* Based on crop production estimates in November and December 2005 by the Virginia Agricultural Statistics Service at <http://www.nass.usda.gov/va>.

Table 3. Estimated loss in yield as a result of peanut diseases in 2005.

Disease	Causal organism	Percent loss
Early leaf spot	<i>Cercospora arachidicola</i>	2.0
Late leaf spot.....	<i>Cercosporidium personatum</i>	0.2
Pepper spot & leaf scorch	<i>Leptosphaerulina crassiasca</i>	0
Web blotch.....	<i>Phoma arachidicola</i>	0.5
Botrytis blight	<i>Botrytis</i> sp.	0
Peanut rust.....	<i>Puccinia arachidis</i>	ND*
Sclerotinia blight.....	<i>Sclerotinia minor</i>	1.0
Sclerotinia blight.....	<i>Sclerotinia sclerotiorum</i>	ND*
Southern stem rot	<i>Sclerotium rolfsii</i>	1.0
Stem, root, & pod rot	<i>Rhizoctonia</i> spp.	0.1
Botrytis blight	<i>Botrytis</i> sp.	Trace
Pythium pod rot.....	<i>Pythium</i> spp.	Trace
Tomato spotted wilt virus	<i>Tospovirus</i>	1.0
Cylindrocladium black rot (CBR)....	<i>Cylindrocladium parasiticum</i>	6.0
Nematode damage.....	Root knot, sting, ring, etc.	3.0
Total		14.8**

* Not detected.

** The value of loss estimate equals 2.36 million dollars in farm income based on an estimated total production of 31,900 tons and a mean value of \$425 per ton in Virginia.

Table 4. Estimated loss in yield as a result of soybean diseases in 2005.

Disease	Causal agent(s)	Percent loss
Seedling diseases	---various---	0.5
Downy mildew.....	<i>Peronospora manshurica</i>	Trace
Frogeye leaf spot.....	<i>Cercospora sojina</i>	1.5
Phytophthora root & stem rot	<i>Phytophthora megasperma</i> f.sp. <i>glycinea</i>	0
Anthrachnose	<i>Colletotrichum truncatum</i>	1.0
Pod & stem blight	<i>Diaporthe phaseolorum</i> var. <i>sojae</i>	0.5
Stem canker.....	<i>Diaporthe phaseolorum</i> var. <i>caulivora</i>	0.1
Sclerotinia stem rot	<i>Sclerotinia sclerotiorum</i> and <i>S. minor</i>	0
Southern blight.....	<i>Sclerotium rolfsii</i>	0.2
Root & lower stem rot.....	<i>Rhizoctonia</i> spp.	Trace
Purple seed stain	<i>Cercospora kikuchii</i>	0.2
Cercospora blight.....	<i>Cercospora kikuchii</i>	0.8
Brown spot.....	<i>Septoria glycines</i>	0.5
Red crown rot.....	<i>Cylindrocladium parasiticum</i>	0.3
Brown stem rot.....	<i>Phialophora gregata</i>	0.3
Charcoal rot.....	<i>Macrophomina phaseolina</i>	Trace
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>	2.0
Other nematodes	various	1.9
Total loss (%).....		10.0*

* The loss estimate equals 1.71 million bushels based on production of 15.37 million bushels in 2005. At a value of \$5.50/bu, the loss in revenues at the farm gate would be 9.41 million dollars.

I. FUNGICIDES FOR DISEASE MANAGEMENT IN WHEAT (TAREC, Swine Unit Field)

A. PURPOSE: To compare the efficacy of fungicides in control of foliar and head diseases of wheat, and the yield response to various treatments

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 20-ft alleyways between blocks
2. Twenty, 30-ft rows per plot
3. Disease ratings and yield determined in the center, seven rows/plot

C. APPLICATION OF TREATMENTS: Treatments were applied in a foliar spray with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A.

D. TREATMENT, RATE/A AND APPLICATION TIMING: (GS=Growth Stage: GS 32 = 11 Apr; GS 45 = 9 May)

1. Untreated check
2. Quilt 10.5 fl oz (GS 32)
3. Quilt 5.25 fl oz (GS 32) + 5.25 fl oz (GS 45)
4. Quilt 10.5 fl oz (GS 45)
5. Quadris 2.08SC 6 fl oz (GS 32) + Coverall 2.4 fl oz
6. Quadris 2.08SC 3 fl oz (GS 32) + Coverall 2.4 fl oz
+ Quadris 2.08SC 3 fl oz (GS 45) + Coverall 2.4 fl oz
7. Quadris 2.08SC 6 fl oz (GS 45) + Coverall 2.4 fl oz
8. Headline 250EC 6 fl oz (GS 32) + Coverall 2.4 fl oz
9. Headline 250EC 3 fl oz (GS 32) + Coverall 2.4 fl oz
Headline 250EC 3 fl oz (GS 45) + Coverall 2.4 fl oz
10. Headline 250EC 6 fl oz (GS 45) + Coverall 2.4 fl oz

E. ADDITIONAL INFORMATION:

1. Location: TAREC Swine Unit Field, Suffolk
2. Crop history: peanut 2004; wheat/soybean 2003, peanut 2002
3. Land preparation: disk and field cultivate
4. Planting date and cultivar: 22 Nov 2004, USG 3209
5. Soil fertility report: (Dec 2004)

pH.....	6.1
Ca	585 ppm
Mg	71 ppm
P	32 ppm
K.....	113 ppm
Zn	1.0 ppm
Mn	3.7 ppm
Soil type	Nansemond fine sandy loam
6. Fertilizer: 9-15-36 350 lb/A (26 Oct 2004)

Liquid nitrogen (32%)	60 lb/A (12 Jan)
Liquid nitrogen (30%)	60 lb/A (22 Mar)
7. Herbicide: Harmony Extra 0.75 oz/A (12 Jan)
8. Harvest date: 21 Jun 2005

Table 5. Effect of fungicide treatments and timing on severity of foliar disease in wheat.

Treatment, rate/A and application timing	Powdery mildew* (May 18)		Tan spot*	Tan spot + Septoria*
	Top of plant	Mid- plant	(May 18)	(Jun 5)
Untreated check.....	1.0	3.0 a	3.3 a	41.3 a
Quilt 10.5 fl oz (GS 32).....	0.6	1.0 bc	0.8 cd	14.5 b
Quilt 5.25 fl oz (GS 32) + 5.25 fl oz (GS 45)	0.1	0.1 c	0.8 cd	3.3 b
Quilt 10.5 fl oz (GS 45).....	0.5	1.0 bc	1.0 b-d	2.5 b
Quadris 2.08SC 6 fl oz (GS 32) + Coverall 2.4 fl oz ...	0.8	2.3 ab	1.3 b-d	17.5 b
Quadris 2.08SC 3 fl oz (GS 32) + Coverall 2.4 fl oz + Quadris 2.08SC 3 fl oz (GS 45) + Coverall 2.4 fl oz	0.6	1.0 bc	1.5 bc	6.3 c
Quadris 2.08SC 6 fl oz (GS 45) + Coverall 2.4 fl oz ...	0.8	2.3 ab	1.5 bc	4.0 c
Headline 250EC 6 fl oz (GS 32) + Coverall 2.4 fl oz ..	1.3	2.0 ab	0.6 cd	17.5 b
Headline 250EC 3 fl oz (GS 32) + Coverall 2.4 fl oz Headline 250EC 3 fl oz (GS 45) + Coverall 2.4 fl oz ..	0.5	1.0 bc	0.3 d	3.0 c
Headline 250EC 6 fl oz (GS 45) + Coverall 2.4 fl oz ..	0.5	2.5 ab	2.0 b	2.3 c
LSD	n.s.	1.7	1.1	5.8

* Data represent percent of leaf area with disease symptoms. Tan spot and Septoria (*Stagonospora*) ratings on Jun 5 represent percent of leaf area on flag leaf with disease symptoms.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 6. Effect of fungicide treatments and timing on severity of leaf rust, yield and test weight in wheat.

Treatment, rate/A and application timing	Leaf rust* (Jun 5)	Yield** (bu/A)	Test weight (lb/bu)
Untreated check.....	2.0 a	76.2 c	59.5
Quilt 10.5 fl oz (GS 32).....	0.3 b	85.4 ab	59.7
Quilt 5.25 fl oz (GS 32) + 5.25 fl oz (GS 45)	0.0 b	86.5 ab	59.5
Quilt 10.5 fl oz (GS 45).....	0.0 b	88.3 ab	60.5
Quadris 2.08SC 6 fl oz (GS 32) + Coverall 2.4 fl oz	0.0 b	84.5 b	58.0
Quadris 2.08SC 3 fl oz (GS 32) + Coverall 2.4 fl oz + Quadris 2.08SC 3 fl oz (GS 45) + Coverall 2.4 fl oz.....	0.0 b	88.3 ab	59.9
Quadris 2.08SC 6 fl oz (GS 45) + Coverall 2.4 fl oz	0.1 b	84.6 b	58.7
Headline 250EC 6 fl oz (GS 32) + Coverall 2.4 fl oz	0.3 b	92.9 a	59.1
Headline 250EC 3 fl oz (GS 32) + Coverall 2.4 fl oz Headline 250EC 3 fl oz (GS 45) + Coverall 2.4 fl oz	0.0 b	89.1 ab	60.8
Headline 250EC 6 fl oz (GS 45) + Coverall 2.4 fl oz	0.0 b	91.1 ab	60.4
LSD	1.0	7.6	n.s.

* Data represent percent of leaf area on flag leaf with disease symptoms.

** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 21 Jun 2005.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05 except yield P=0.0627).
Arcsine transformation of percentage data was made in analysis to determine statistical significance.

II. THE EFFECT OF PLANTING DATE, WEATHER CONDITIONS AND IN-FURROW FUNGICIDE ON EMERGENCE AND GROWTH OF COTTON (TAREC Research farm)

A. PURPOSE: To determine the effect of planting date on seedling disease and the response to in-furrow fungicide in Virginia

B. EXPERIMENTAL DESIGN:

1. Split-plot with planting date in main plots and in-furrow fungicide in subplots
2. Subplots of two, 30-ft rows spaced 36 in. apart
3. Fifteen-ft alleyways between blocks
4. Seven replications in a randomized complete block

C. VARIETY, GERMINATION RATE AND PLANTING DATE (MAINPLOTS): DP449BR Lot 2B4E490621A, Treatment Code 2 (Allegiance + Lorsban 30FL + RTU Baytan + Thiram FL); warm germ 93%, cool germ 849%. Seed were planted at a rate of 3.5 seed/ft and 0.5 to 0.75 in. depth.

1. Apr 6
2. April 12
3. Apr 20
4. Apr 27
5. May 3
6. May 11
7. May 18

D. TREATMENT AND RATE/1000 ft of row

1. Quadris 2.08F 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row
2. Untreated check

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, 1045 Hare Rd., Suffolk
2. Crop history: peanut 2004, cotton 2003, peanut 2002
3. Land preparation: rip-strip tilled
4. Soil fertility report (Dec 2004):

pH.....	5.9	K	34 ppm
Ca	209 ppm	Zn.....	0.5 ppm
Mg.....	23 ppm	Mn.....	2.2 ppm
P	31 ppm	Soil type.....	Kenansville loamy sand
5. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (7 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 27 May, 14 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (12 Jul)
6. Insecticide: Temik 15G 5 lb/A (at planting)
Orthene 97S 6 oz/A (27 May, 14 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
7. Growth regulator: Pentia 8 fl oz/A (Plant dates 1-5: 7 Jul, Plant dates 1-7: 22 Jul)
Pix Plus 8 fl oz/A (Plant dates 1-7: 5 Aug)
8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (29 Sep)
9. Fertilization: 9-15-36 330 lb/A (31 Mar)
Liquid boron 1 qt/A (21 Jun, 5 Jul)
32% N 30 lb/A (21 Jun, 5 Jul)
10. Harvest date: 18 Oct 2005

Table 7. Weather conditions after planting.

Planting date	Days after planting								Total
	0	1	2	3	4	5	6	7	
Rainfall (in.)*									
Apr 6.....	0.00	0.11	0.35	0.01	0.00	0.00	0.06	0.37	0.90
Apr 12.....	0.06	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.43
Apr 20.....	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12
Apr 27.....	0.00	0.00	0.13	0.00	0.16	0.00	0.00	0.00	0.29
May 3.....	0.00	0.00	0.01	1.71	0.00	0.00	0.00	0.00	1.72
May 11.....	0.00	0.00	0.00	0.00	0.69	0.26	0.00	0.03	0.98
May 18.....	0.03	0.08	0.52	0.00	0.00	0.00	0.26	0.09	0.98
Soil Temp.									Ave
Apr 6.....	58.5	60.3	61.4	59.2	57.1	57.6	55.1	52.2	57.7
Apr 12.....	55.1	52.2	52.8	53.1	52.7	54.3	57.4	60.5	54.8
Apr 20.....	62.6	63.7	63.3	63.5	57.8	57.2	57.3	60.4	60.7
Apr 27.....	60.4	60.8	60.2	62.0	64.1	61.5	61.9	60.8	61.5
May 3.....	61.9	60.8	60.3	57.2	58.4	61.3	62.7	64.1	60.8
May 11.....	65.8	68.1	65.9	66.0	68.0	68.7	68.0	67.1	67.2
May 18.....	67.1	66.2	66.2	66.0	66.0	68.2	66.5	63.3	66.2

* Rainfall and soil temperature were recorded by an electronic weather monitor adjacent to the field site. Soil temperature was measured at 4-in. depth under managed turf.

Table 8. Accumulated degree days (DD₆₀) and rainfall from planting through harvest (Oct 18).

Planting date	DD ₆₀	Rainfall (in.)
Apr 6.....	2361	22.03
Apr 12.....	2337	21.56
Apr 20.....	2318	21.13
Apr 27.....	2284	21.01
May 3.....	2261	20.72
May 11.....	2236	19.00
May 18.....	2180	18.05

* Data from Peanut/Cotton InfoNet (www.ipm.vt.edu/InfoNet) weather station at TAREC Research farm.

Table 9. Effect of planting date and in-furrow fungicide on emergence and plant height of cotton.

Plant date, treatment and rate/1000 ft of row	Plants/ft ¹		Plant height (in.) ²		
	2 wk AP	4 wk AP	Jun 20	Jul 13	Aug 1
Apr 6					
Quadris + Ridomil Gold....	0.1	0.2	7.0	21.2	30.5*
Untreated check.....	0.0	0.6	7.1	20.9	32.4
April 12					
Quadris + Ridomil Gold....	0.1	0.6	7.1	21.6	30.2
Untreated check.....	0.1	0.7	7.3	21.8	29.7
Apr 20					
Quadris + Ridomil Gold....	0.9	1.4	8.2	23.8	30.8
Untreated check.....	0.7	1.3	7.8	23.6	30.8
Apr 27					
Quadris + Ridomil Gold....	1.2	1.9	7.1	22.0	29.3*
Untreated check.....	1.3	1.9	7.4	21.8	28.2
May 3					
Quadris + Ridomil Gold....	1.5	1.6	7.1	22.5	29.8
Untreated check.....	1.6	1.7	7.0	21.9	29.9
May 11					
Quadris + Ridomil Gold....	2.0	2.0	6.1	22.5	31.8
Untreated check.....	2.0	2.1	5.7	22.5	31.7
May 18					
Quadris + Ridomil Gold....	1.4*	1.5*	4.6*	20.5	31.0
Untreated check.....	1.0	1.1	3.9	19.5	30.9
Plant date mean					
Apr 6.....	0.0	0.2	6.7 b	21.1 c	31.4
April 12.....	0.1	0.6	7.2 b	21.7 bc	29.9
Apr 20.....	0.8	1.3	8.0 a	23.7 a	30.8
Apr 27.....	1.2	1.9	7.3 b	21.9 bc	28.8
May 3.....	1.6	1.7	7.1 b	22.2 b	29.8
May 11.....	2.0	2.0	5.9 c	22.5 b	31.8
May 18.....	1.2	1.3	4.3 d	20.0 d	30.9
Treatment mean					
Quadris + Ridomil Gold....	1.0	1.3	6.7	20.0	30.5
Untreated check.....	1.0	1.3	6.5	21.7	30.5
Split-plot analysis					
Plant date.....	.0001	.0001	.0001	.0125	.1044
Treatment.....	.3106	.5584	.3564	.1479	.9416
Plant date x treatment.....	.0085	.0135	.1395	.8782	.0177

¹ Determined from counts of two, 30-ft rows per plot (AP=after planting).

² Determined from measurement of six plants per plot (Jun 20) and four plants/plot (Jul 13, Aug 1).

Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date.

Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls test (P=0.05).

Table 10. Effect of planting date and in-furrow fungicide on flower counts, number of nodes and open bolls in cotton.

Plant date, treatment and rate/1000 ft of row	Flowers/12 ft of row ¹			Nodes/plant ²		Open bolls ³ (Sep 7)
	Jul 14	Jul 22	Aug 1	Jul 13	Aug 1	
Apr 6						
Quadris + Ridomil Gold .	0.7	3.3*	26.6	13.4	18.0	2.8
Untreated check	1.1	4.3	26.2	13.5	18.3	3.6
April 12						
Quadris + Ridomil Gold .	2.0	10.2	30.6	12.7	16.2	2.8
Untreated check	3.0	12.8	40.9	12.5	16.0	3.1
Apr 20						
Quadris + Ridomil Gold .	3.6	16.2	44.0	12.3	15.1	3.1
Untreated check	3.5	15.3	45.4	12.0	15.3	2.9
Apr 27						
Quadris + Ridomil Gold .	0.7	12.7*	31.7	10.7	13.5	1.9
Untreated check	1.0	15.6	35.0	10.8	13.3	2.0
May 3						
Quadris + Ridomil Gold .	0.4	11.8	34.3	11.2	14.0	1.0
Untreated check	0.2	12.0	34.4	10.9	13.5	1.0
May 11						
Quadris + Ridomil Gold .	0.0	7.2	33.0	10.5	13.3	0.7*
Untreated check	0.0	5.4	39.9	10.6	13.5	0.4
May 18						
Quadris + Ridomil Gold .	0.0	0.5	24.9	10.4	14.2	0.0
Untreated check	0.0	0.3	25.3	10.1	13.9	0.0
Plant date mean						
Apr 6	0.9 c	3.8 d	26.4 bc	13.4 a	18.2 a	3.2 a
April 12	2.5 b	11.5 b	35.7 b	12.6 b	16.1 b	2.9 a
Apr 20	3.5 a	15.8 a	44.7 a	12.1 b	15.2 c	3.0 a
Apr 27	0.9 c	14.1 a	33.4 bc	10.8 cd	13.4 d	2.0 b
May 3	0.3 d	11.9 b	34.4 bc	11.0 c	13.8 d	1.0 c
May 11	0.0 d	6.3 c	36.4 b	10.6 cd	13.4 d	0.6 cd
May 18	0.0 d	0.4 e	25.1 c	10.3 d	14.1 d	0.0 d
Treatment mean						
Quadris + Ridomil Gold .	1.0	8.9	32.1	11.6	14.9	1.8
Untreated check	1.2	9.4	35.3	11.5	14.8	1.9
Split-plot analysis						
Plant date .....	.0001	.0001	.0001	.0001	.0001	.0001
Treatment .....	.1324	.2636	.1023	.4992	.6281	.6248
Plant date x treatment .....	.1998	.0900	.7004	.8076	.7051	.6148

¹ Determined from counts of two, 6-ft sections in each row.

² Determined from measurement of six plants per plot (Jun 20) and four plant/plot (Jul 13, Aug 1).

³ Determined from counts of four plants per plot.

Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date.

Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls test (P=0.05).

Table 11. Effect of planting date and in-furrow fungicide on yield of cotton.

Plant date, treatment and rate/1000 ft of row	Yield	
	lb/A ¹	bales/A ²
Apr 6		
Quadris + Ridomil Gold	1737	1.48
Untreated check	1530	1.30
April 12		
Quadris + Ridomil Gold	2892	2.50
Untreated check	2842	2.46
Apr 20		
Quadris + Ridomil Gold	3751	3.32
Untreated check	3704	3.28
Apr 27		
Quadris + Ridomil Gold	3286	2.91
Untreated check	3321	2.94
May 3		
Quadris + Ridomil Gold	3542	3.14
Untreated check	3208	2.84
May 11		
Quadris + Ridomil Gold	3196	2.76
Untreated check	3041	2.63
May 18		
Quadris + Ridomil Gold	2432 *	1.98 *
Untreated check	2100	1.71
Plant date mean		
Apr 6	1634 e	1.39 e
April 12	2867 c	2.48 c
Apr 20	3728 a	3.30 a
Apr 27	3303 b	2.92 b
May 3	3375 b	2.99 b
May 11	3118 bc	2.70 bc
May 18	2266 d	1.84 d
Treatment mean		
Quadris + Ridomil Gold	2977 a	2.58 a
Untreated check	2821 b	2.45 b
Split-plot analysis		
Plant date .....	.0001	.0001
Treatment .....	.0479	.0500
Plant date x treatment .....	.7990	.8081

¹ Weight (lb/A) includes lint + seed.² Bales/A are based on weight of lint which was determined by ginning 1 lb samples from each variety. One bale = 480 lb of lint. Plots were harvested on 18 Oct 2005. Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date. Means followed by the same letter(s) in a column and group are not significantly different according to Student-Newman-Keuls test (P=0.05).

III. NATIONAL COTTON SEED TREATMENT TEST (TAREC Research farm)

A. PURPOSE: To determine the value of seed treatment fungicides for control of pre-and post-emergence damping-off diseases of cotton

B. EXPERIMENTAL DESIGN:

1. Four replications in randomized complete block
2. Two, 30-ft rows per plot with 36-in. row spacing
3. Fifteen-ft alleyways between blocks

C. APPLICATION OF TREATMENTS: Seed treatments were applied at the University of Arkansas under the direction of Dr. Craig Rothrock who is program coordinator for National Cottonseed Treatment Trials. Rates are product per cwt seed.

D. TREATMENT AND RATE:

1. RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz/cwt
2. RTU Baytan Thiram 3.0 oz + Trilex FL 0.64 oz + Allegiance FL 0.75 oz/cwt
3. L0037 0.5 oz + L1226 0.64 oz + L0020 0.75 oz +L1028 0.086 oz/cwt
4. Baytan 30 0.5 oz + Argent 30 1.5 oz + Allegiance FL 0.75 oz/cwt
5. L1480 1.7 oz + L0020 0.75 oz + L1028 0.086 oz/cwt
6. RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz + Systhane 40 WP 0.84 oz/cwt
7. RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz/cwt + Syn214D 6 g a.i./100 kg seed
8. RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz/cwt + Syn214T 10 g a.i./100 kg seed
9. Apron XL 0.32 oz + WECO 0257 0.65 oz + Nu-Flow M 2.5 oz + Nu-Flow ND 8.0 oz/cwt
10. Apron XL 0.32 oz + WECO 0257 0.65 oz + Nu-Flow ND 8.0 oz/cwt
11. Apron XL 0.32 oz + Nu-Flow ND 14.5 oz + Nu-Flow M 2.5 oz/cwt
12. WECO 4004 0.6 oz + WECO 0257 0.7 oz +Nu-Flow ND 8.0 oz/cwt
13. Vitavax-PCNB 6.0 oz + Allegiance 0.75 oz/cwt
14. RTU-PCNB 14.5 oz.cwt
15. Allegiance 1.5 oz/cwt
16. Untreated check

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2004
3. Land preparation: rip-strip tilled
4. Planting date and cultivar: 18 Apr; DP 451B/RR
5. Soil fertility report (Dec 2004):

pH.....	5.9
Ca	209 ppm
Mg	23 ppm
P	31 ppm
K.....	34 ppm
Zn	0.5 ppm
Mn	2.2 ppm
Soil type	Kenansville loamy sand

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6. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (7 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 27 May, 14 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (12 Jul)
7. Insecticide: Temik 15G 5 lb/A in furrow (18 Apr)
Orthene 97S 6 oz/A (27 May, 14 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul, 22 Jul)
Pix Plus 8 fl oz/A (5 Aug)
9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (22 Sep)
10. Fertilization: 9-15-36 330 lb/A (31 Mar)
Liquid boron 1 qt/A (21 Jun, 5 Jul)
32% N 30 lb/A (21 Jun, 5 Jul)
11. Harvest date: 17 Oct 2005

Table 12. Effect of seed treatment on emergence and yield of cotton.

Treatment and rate	Plants/ft* (May 16)	Yield**	
		lb/A	bales/A
RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz/cwt..	0.90 ab	2874 ab	2.38 ab
RTU Baytan Thiram 3.0 oz + Trilex FL 0.64 oz + Allegiance FL 0.75 oz/cwt.....	1.08 ab	3261 ab	2.70 ab
L0037 0.5 oz + L1226 0.64 oz + L0020 0.75 oz + L1028 0.086 oz/cwt.....	0.89 ab	2592 ab	2.15 ab
Baytan 30 0.5 oz + Argent 30 1.5 oz + Allegiance FL 0.75 oz/cwt	0.89 ab	2983 ab	2.47 ab
L1480 1.7 oz + L0020 0.75 oz + L1028 0.086 oz/cwt.....	1.25 ab	3461 ab	2.87 ab
RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz + Systhane 40 WP 0.84 oz/cwt	1.04 ab	3306 ab	2.74 ab
RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz/cwt + Syn214D 6 g a.i./100 kg seed	0.93 ab	3276 ab	2.72 ab
RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz + Dynasty CST 3.95 oz/cwt + Syn214T 10 g a.i./100 kg seed	0.86 ab	3128 ab	2.59 ab
Apron XL 0.32 oz + WECO 0257 0.65 oz + Nu-Flow M 2.5 oz + Nu-Flow ND 8.0 oz/cwt	1.04 ab	2589 ab	2.15 ab
Apron XL 0.32 oz + WECO 0257 0.65 oz + Nu-Flow ND 8.0 oz/cwt.....	1.34 a	3700 a	3.07 a
Apron XL 0.32 oz + Nu-Flow ND 14.5 oz + Nu-Flow M 2.5 oz/cwt	0.77 b	3086 ab	2.56 ab
WECO 4004 0.6 oz + WECO 0257 0.7 oz + Nu-Flow ND 8.0 oz/cwt.....	1.14 ab	3303 ab	2.74 ab
Vitavax-PCNB 6.0 oz + Allegiance 0.75 oz/cwt	1.06 ab	3412 ab	2.83 ab
RTU-PCNB 14.5 oz/cwt.....	1.04 ab	3162 ab	2.62 ab
Allegiance 1.5 oz/cwt.....	0.99 ab	3040 ab	2.52 ab
Untreated check	0.97 ab	2323 b	1.93 b

* Data are counts in two, 30-ft rows per plot.

**Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 39.8% of seed cotton according to ginned 1 lb samples (1 bale of lint=480 lb). Plots were harvested on 17 Oct 2005.

Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls test (P=0.05).

IV. IMPACT OF STAND REDUCTIONS ON GROWTH AND YIELD OF COTTON (TAREC Research farm)

A. PURPOSE: To determine the effect of reductions in populations of seedlings on growth and yield of cotton in Virginia

B. EXPERIMENTAL DESIGN:

1. Split-plot design with planting date in main plots and stand reductions in subplots
2. Subplots of two, 40-ft rows with 36-in. row spacing
3. Fifteen-ft alleyways between blocks
4. Four replications in randomized complete block

C. VARIETY AND PLANTING DATE (MAINPLOTS): DP449 BG/RR seed, Lot 2B4-E-406-21A (warm germ 93%, cool germ 84%); Treatment code 2 (Allegiance + Lorsban 30FL + RTU Baytan + Thiram FL). Seed were planted at 4 seed/ft and 0.5 to 0.75 in. depth.

1. Apr 19
2. May 3
3. May 18

D. STAND REDUCTION: plants in 4-ft sections were removed from each 40-ft row on 9 Jun

1. None
2. 20% = two 4-ft sections/row
3. 40% = four 4-ft sections/row
4. 60% = six 4-ft sections/row

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research farm, Hare Rd., Suffolk
2. Crop history: peanut 2004, corn 2003, peanut 2002
3. Land preparation: rip-strip tilled
4. Soil fertility report (Dec 2004):

pH.....	6.4	K	42 ppm
Ca	327 ppm	Zn.....	0.4 ppm
Mg	37 ppm	Mn.....	2.0 ppm
P	29 ppm	Soil type.....	Kenansville loamy sand
5. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (19 Apr)
 Roundup Ultra Max 22 fl oz/A (2 May, 27 May, 14 Jun)
 MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (12 Jul)
6. Insecticide: Temik 15G 5 lb/A (3 May)
 Orthene 97S 6 oz/A (27 May, 14 Jun)
 Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
7. Growth regulator: Pentia 8 fl oz/A (Plant dates 1 & 2: 7 Jul, Plant dates 1-3: 22 Jul)
 Pix Plus 8 fl oz/A (5 Aug)
8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (22 Sep)
9. Fertilization: 9-15-36 330 lb/A (17 Apr)
 Liquid boron 1 qt/A (21 Jun, 5 Jul)
 32% N 30 lb/A (21 Jun, 5 Jul)
10. Harvest date: 17 Oct 2005

Table 13. Effect of planting date and percent of stand reduction on plant populations, growth and yield of cotton

Planting date and stand reduction	Plants/ft ¹ (Jun 9)	Plant ht. ² (in.) (Aug 1)	Nodes/ plant ² (Aug 1)	Bolls/ plant ² (Aug 1)	Yield ³	
					lb/A	bales/A
Apr 19						
No reduction	0.95 ab	29.9	15.4 a	10.4	3047	2.60
20% reduction	1.03 a	30.2	15.1 a	9.6	3036	2.59
40% reduction	0.85 bc	30.6	16.1 a	10.8	3206	2.74
60% reduction	0.71 c	31.6	16.8 a	10.6	3297	2.82
May 3						
No reduction	1.70 a	28.8	14.5 a	7.1	3626	3.19
20% reduction	1.38 b	29.8	15.1 a	6.3	3408	3.00
40% reduction	1.16 c	30.1	15.0 a	7.9	3501	3.09
60% reduction	0.99 c	29.6	14.9 a	8.4	3408	3.00
May 18						
No reduction	1.50 a	29.3	14.1 b	3.6	3194	2.76
20% reduction	1.14 b	29.1	15.4 a	4.1	3154	2.72
40% reduction	1.15 b	28.8	14.9 ab	3.3	3287	2.84
60% reduction	1.01 b	28.8	15.4 a	3.0	2977	2.57
Plant date mean						
Apr 19	0.88	30.6 a	15.8	10.4 a	3146	2.69
May 3	1.31	29.5 b	14.9	7.4 b	3485	3.07
May 18	1.20	29.0 b	15.0	3.5 c	3153	2.72
LSD.....	--	0.9	n.s.	1.2	n.s.	n.s.
Stand reduction mean						
No reduction	1.38	29.3	14.7	7.0	3289	2.85
20% reduction	1.19	29.7	15.2	6.6	3199	2.77
40% reduction	1.05	29.8	15.4	7.3	3331	2.89
60% reduction	0.90	30.0	15.7	7.3	3227	2.80
LSD	--	n.s.	n.s.	n.s.	n.s.	n.s.
Split-plot analysis						
Plant date.....	.0002	.0378	.1639	.0001	.2235	.1214
Stand reduction .....	.0001	.6156	.0607	.6799	.8453	.8433
Plant date x reduction..	.0036	.5808	.3229	.5681	.8611	.8625

¹ Determined from counts of two, 40-ft rows per plot.² Data are measurements of four plants per plot.³ Weight (lb/A) includes lint + seed; bales/A are lint only. Lint yield was determined by ginning samples from each plant date and was 480 lb/bale. Plots were harvested on 17 Oct 2005.

Means followed by the same letter(s) in a column and within the same plant date are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." =not significant; "--" denotes LSD not valid because of significant plant date by stand reduction interaction.

V. RESPONSE OF COTTON TO IN-FURROW FUNGICIDE (TAREC Research farm)

- A. PURPOSE: To compare the efficacy and benefits of in-furrow treatments for control of seedling disease
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 15-ft alleyways between blocks
 2. Two, 30-ft rows per plot with 36-in. spacing
 3. Seeding rate of three seed/row ft
- C. APPLICATION OF TREATMENTS: All treatments were applied to the seed furrow when planting. Liquid in-furrow treatments were mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow. Granular in-furrow fungicides were delivered by a Noble-box applicator.
- D. TREATMENT AND RATE (per 1000 ft of row):
1. Untreated check
 2. Ridomil Gold PCGR 9.8 oz
 3. Rovral CF 0.5 fl oz + Reason 0.5 fl oz
 4. Rovral CF 0.5 fl oz + Ridomil Gold 0.15 fl oz
 5. Terraclor Super X 18.8G 6.6 oz
 6. Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.15 fl oz
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Farm, Suffolk, VA
 2. Crop history: Peanut 2004; Cotton 2003; Peanut 2002
 3. Land preparation: rip-strip tilled
 4. Planting date and cultivar: 3 May 2005, DP 449 BG/RR (Lot 2B4-E-4906-21A, cool germ 84%, warm germ 93%)
 5. Soil fertility report:

pH.....	6.4
Ca	327 ppm
Mg	37 ppm
P	29 ppm
K.....	42 ppm
Zn	0.4 ppm
Mn	2.0 ppm
Soil type	Kenansville loamy sand
 6. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (19 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 27 May, 14 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (12 Jul)
 7. Insecticide: Temik 15G 5 lb/A (3 May)
Orthene 97S 6 oz/A (27 May, 14 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
 8. Growth regulator: Pentia 8 fl oz/A (7 Jul, 22 Jul)
Pix Plus 8 fl oz/A (5 Aug)
 9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (22 Sep)
 10. Fertilization: 9-15-36 330 lb/A (17 Apr)
Liquid boron 1 qt/A (21 Jun, 5 Jul)
32% N 30 lb/A (21 Jun, 5 Jul)
 11. Harvest date: 17 Oct 2005

Table 14. Effect of in-furrow treatments on emergence and growth of cotton.

Treatment and in-furrow rate/1000 ft of row	Plants/ft of row*		Plant height (in.)** (Jul 5)
	May 17	May 31	
Untreated check	1.8	1.7	18.8
Ridomil Gold PCGR 9.8 oz.....	1.6	1.7	18.2
Rovral CF 0.5 fl oz + Reason 0.5 fl oz.....	1.3	1.3	16.4
Rovral CF 0.5 fl oz + Ridomil Gold 0.15 fl oz	1.3	1.4	16.6
Terraclor Super X 18.8G 6.6 oz	1.6	1.6	17.6
Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.15 fl oz	1.4	1.5	17.6
LSD	n.s.	n.s.	n.s.

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

** Data are measurements of six plants per plot.

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

Table 15. Effect of in-furrow treatments on flowering and yield of cotton.

Treatment and in-furrow rate/1000 ft of row	Flowers/ 12 ft of row * (Aug 1)	Yield**	
		lb/A	bales/A
Untreated check	30.1	3718	3.18
Ridomil Gold PCGR 9.8 oz.....	29.8	3917	3.35
Rovral CF 0.5 fl oz + Reason 0.5 fl oz.....	25.8	3125	2.67
Rovral CF 0.5 fl oz + Ridomil Gold 0.15 fl oz	28.8	3285	2.81
Terraclor Super X 18.8G 6.6 oz	26.0	3691	3.15
Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.15 fl oz	29.5	3745	3.20
LSD	n.s.	n.s.	n.s.

* Total number of flowers in 6-ft section from each row.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. One-pound samples were ginned and lint determined to be 41% of total weight and 480 lb/bale. Plots were harvested on 17 Oct 2005.

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

VI. RESPONSE OF COTTON TO NEMATOCIDES AND INSECTICIDES (Kenny Edwards Farm, Branchville, VA)

- A. PURPOSE: To determine the growth and yield response of cotton to treatments with nematocides and insecticides at planting
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks
 2. Alleyways between blocks of 15 ft planted to cotton
 3. Two, 30-ft rows spaced 36 in. apart per plot
- C. APPLICATION OF TREATMENTS: Soil fumigant was applied 8 in. deep with a single chisel per row (C) on 26 Apr and rows were bedded after application (24 in. wide and 4 in. high). Granular in-furrow treatments (F) were applied to the seed furrow at planting. Band treatments (B) were 8 in. wide and applied over rows during cultivation on 29 Jun. Seed treatments (S) were applied by Bayer CropScience.
- D. TREATMENT AND RATE:
1. Untreated check
 2. Gaucho FS 600 12.8 fl oz/cwt (S)
 3. Temik 15G 5 lb/A (F)
 4. Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (F)
 5. Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (B)
 6. Temik 15G 5 lb/A (F) + Temik 15G 5 lb/A (B)
 7. Vapam 42% 5 gal/A (C) + Gaucho 600FS 12.8 fl oz/cwt (S)
- E. ADDITIONAL INFORMATION:
1. Location: Kenny Edwards Farm, The Hall Rd., Branchville, VA
 2. Crop history: Cotton 2004-2001
 3. Planting date: 9 May 2005
 4. Herbicide:
 - Pre-emergence - Cotoran 1 pt + Prowl 1 pt/A (12 May)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (9 Jun)
 - Cotton Pro 1 pt + Roundup Ultra Max 1 pt/A under hood (1 Jul)
 5. Insecticide: Orthene 97S 6 oz/A (9 Jun)
 6. Cultivation: 30 Jun
 7. Growth regulator: Pix 10 fl oz (1 Jul)
 8. Defoliant/Boll opener: Finish 24 fl oz + Def 6 oz (30 Sep)
 9. Fertilization: 350 lb 6-18-36 (27 Apr), 350 lb 17-0-10 (15 Jun)
 10. Harvest date: 20 Oct 2005

Table 16. Effect of treatments on emergence and growth of cotton.

Treatment and rate ¹	Plants/ft ² (Jun 15)	Plant height (in.) ³ (Jul 26)	No. of flowers ⁴ (Jul 26)
Untreated check.....	1.94 b	23.6 d	34 c
Gaucho FS 600 12.8 fl oz/cwt (S).....	1.95 b	24.9 cd	43 bc
Temik 15G 5 lb/A (F)	2.03 ab	26.2 a-c	60 a
Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (F)	1.89 b	27.4 ab	62 a
Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (B).....	1.95 b	27.8 a	60 a
Temik 15G 5 lb/A (F) + Temik 15G 5 lb/A (B).....	2.11 a	25.9 bc	54 ab
Vapam 42% 5 gal/A (C) + Gaucho 600FS 12.8 fl oz/cwt (S).....	2.12 a	27.8 bc	60 a
LSD	0.1	1.7	13

¹ S=seed treatment, F=in furrow, B=band application (Jun 29), C=chisel application.

² Determined from counts of two, 30-ft rows per plot.

³ Data are measurements of four randomly-selected plants per plot.

⁴ Counts of flowers in a six-ft section of each row.

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

Table 17. Effect of treatments on nematode populations and root galling in cotton.

Treatment and rate ¹	Nematodes/500 cc soil ²				Root galling ³ (0-6)
	Root- knot	Stunt	Spiral	Stubby root	
Untreated check.....	1340	0	10	140	5.0 a
Gaucho FS 600 12.8 fl oz/cwt (S).....	2030	20	230	240	4.9 a
Temik 15G 5 lb/A (F)	780	30	20	140	3.2 c
Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (F)	2690	120	270	400	3.4 c
Gaucho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (B).....	490	0	100	50	1.8 d
Temik 15G 5 lb/A (F) + Temik 15G 5 lb/A (B).....	550	10	20	30	1.9 d
Vapam 42% 5 gal/A (C) + Gaucho 600FS 12.8 fl oz/cwt (S)...	930	40	20	560	4.2 b
LSD	--	--	--	--	0.5

¹ S=seed treatment, F=in furrow, B=band application (29 Jun), C=chisel application.

² Soil was sampled on 12 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

³ 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 13 Nov.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "--" denotes data is from a composite sample of four replications and no statistical analysis performed.

Table 18. Effect of treatments on earliness and yield of cotton.

Treatment and rate ¹	Open bolls ² (Sep 15)	Total bolls ² (Sep 15)	Yield ³	
			lb/A	bales/A
Untreated check.....	2.0	12.6	1739 b	1.38 b
Gaicho FS 600 12.8 fl oz/cwt (S).....	2.0	9.7	1951 b	1.55 b
Temik 15G 5 lb/A (F)	2.8	10.5	2662 a	2.11 a
Gaicho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (F)	2.7	11.6	2813 a	2.23 a
Gaicho FS 600 12.8 fl oz/cwt (S) + Temik 15G 5 lb/A (B).....	3.1	10.4	2662 a	2.11 a
Temik 15G 5 lb/A (F) + Temik 15G 5 lb/A (B).....	2.4	11.3	2617 a	2.08 a
Vapam 42% 5 gal/A (C) + Gaicho 600FS 12.8 fl oz/cwt (S)....	2.3	9.6	2768 a	2.20 a
LSD	n.s.	n.s.	435	0.35

¹ S=seed treatment, F=in furrow, B=band application (Jun 29), C=chisel application.

² Data are measurements of four randomly-selected plants per plot.

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. One pound samples were ginned and lint was determined to be 38% of total weight and 480 lb/bale. Plots were harvested on 19 Oct 2005.

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

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

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

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

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

¹ S=seed treatment, F=in furrow.² Determined from counts of two, 30-ft rows.³ Data represent measurement of four randomly-selected plants per plot.

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

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

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

¹ S=seed treatment, F=in furrow.

² Data represent counts of four randomly-selected plants per plot.

³ Data are number of flowers per 12 ft of row.

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

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

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

¹ S=seed treatment, F=in furrow.

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

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

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

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

* S=seed treatment, F=in furrow.

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

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

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

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

* S=seed treatment, F=in furrow.

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

VIII. EVALUATION OF SEED TREATMENTS FOR NEMATODE CONTROL IN COTTON
(Rick Morgan farm, Suffolk, VA)

- 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 with 36-in. row spacing
 3. Seeding rate of three seed/row ft
- C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under rows on 26 Apr with a chisel applicator (C). In-furrow treatments (F) were applied to the seed furrow at planting. Seed treatments (S) were applied by Syngenta Crop Protection.
- D. TREATMENT AND RATE (Main plots): seed treatments are expressed as active ingredient; in-furrow treatments are formulated product.
1. Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)
 2. Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)
 3. Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F)
 4. Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)
 5. Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S)
+ Temik 15G 5 lb/A (F)
 6. Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S)
 7. Vapam 42% 5 gal/A (Chisel, 2-wk preplant) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)
- E. VARIETIES (Subplots):
1. DP449 BG/BR (susceptible)
 2. ST5599 BR (partially resistant)
- F. ADDITIONAL INFORMATION:
1. Location: Rick Morgan Farm, Deer Forest Rd., Suffolk, VA
 2. Crop history: Cotton 2004-2001, Peanut 2000
 3. Land preparation: Rip and bed rows
 4. Planting date: 10 May 2005
 5. Herbicide: Cotoran 1 pt + Prowl 1 pt/A (12 May)
Roundup Ultra Max 22 fl oz/A (8 Jun)
Envoke 0.15 oz + MSMA 1 pt directed between rows (18 Jul)
 6. Insecticide: Orthene 97S 6 oz/A (8 Jun)
Karate Z 2.56 fl oz (30 Jul)
 7. Growth regulator: Mepex Gin Out 4 oz/A by wick applicator (18 Jul)
+ 16 oz/A broadcast spray (30 Jul)
 8. Defoliant/Boll opener: Cotton Quick 0.5 gal + Aim 0.5 oz/A
 9. Fertilization: 40 lb N, 30 lb P, 40 lb K broadcast (1 May)
50 lb N (32% liquid) + Valor 1 lb/A under hoods between rows (18 Jul)
 10. Harvest date: 8 November 2005

Table 24. Effect of treatments on emergence and growth of cotton.

Treatment and rate ¹	Plants/ft (Jun 14) ²		Plant ht. (in.) (Jul/27) ³	
	DP449 BG/BR	ST5599 BR	DP449 BG/BR	ST5599 BR
	Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.95 ab	1.65	27.4	30.6 a
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	1.91 ab	1.45	29.1	30.9 a
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	1.89 ab	1.45	28.0	31.0 a
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	2.10 a	1.61	28.1	30.7 a
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	1.78 b	1.57	27.1	30.4 a
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S) ..	1.96 ab	1.63	26.6	28.6 b
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	2.15 a	1.63	28.6	30.1 a
LSD	0.3	n.s.	n.s.	1.1
Treatment mean				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.80		29.3	
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	1.68		30.0	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	1.67		29.5	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	1.86		29.4	
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	1.68		28.8	
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S) ..	1.80		27.6	
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.89		29.3	
LSD	n.s.		n.s.	
Variety mean				
DP449 BG/BR.....	1.96 a		27.8 b	
ST5599 BR.....	1.57 b		30.3 a	
LSD	0.11		0.4	
Split-plot analysis				
Treatment.....	.1938		.2617	
Variety.....	.0001		.0001	
Treatment x variety .....	.6706		.1007	

¹ S=seed treatment, F=in-furrow, C=chisel applicator. ² Determined from counts of two, 30-ft rows per plot. ³ Data are measurement of four randomly-selected plants per plot. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05). "n.s."=not significant.

Table 25. Populations of southern root-knot nematode in soil during growing season.

Treatment, rate and variety*	Root knot nematodes/500 cc soil**			
	May 23	Jun 9	Jun 20	Jul 27
DP449 BG/BR				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	10	0	0	570
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	40	30	40	670
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	40	10	0	520
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	30	0	30	600
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	40	80	10	1760
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S)....	30	0	30	770
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	20	0	20	340
ST5599 BR				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	20	0	0	320
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	30	0	20	700
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	40	0	20	1140
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	40	10	10	1300
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	10	0	10	400
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S)....	40	0	0	230
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	0	0	20	250

* S=seed treatment, F=in-furrow, C=chisel applicator.

** Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 26. Effect of treatments on growth and flowering of cotton.

Treatment and rate ¹	Nodes/plant (Jul 27) ²		Flowers/12 ft (Jul/27) ³	
	DP449 BG/BR	ST5599 BR	DP449 BG/BR	ST5599 BR
	Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	10.9	12.8	15.3 bc	17.3
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	12.3	12.5	17.8 a-c	19.8
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	11.3	12.6	22.5 a	19.0
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	11.5	13.4	23.0 a	22.3
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	11.8	12.9	19.3 ab	18.5
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S) ..	11.6	11.8	13.0 c	10.8
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	11.8	12.1	21.0 ab	19.5
LSD	n.s.	n.s.	6.2	n.s.
Treatment mean				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	11.8		16.3 b	
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	12.4		18.8 ab	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	11.9		20.8 a	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	12.4		22.6 a	
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	12.3		18.9 ab	
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S) ..	11.7		11.9 c	
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	11.9		20.3 ab	
LSD	n.s.		4.3	
Variety mean				
DP449 BG/BR.....	11.6 b		18.8	
ST5599 BR.....	12.6 a		18.1	
LSD	0.5		n.s.	
Split-plot analysis				
Treatment.....	.7523		.0070	
Variety .....	.0008		.5491	
Treatment x variety .....	.3250		.8098	

¹ S=seed treatment, F=in-furrow, C=chisel applicator. ² Data are measurement of two plants per plot. ³ Counts of flowers from a 6-ft section in each plot row.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s."=not significant.

Table 27. Effect of treatments on root galling of cotton on 14 Nov.

Treatment and rate*	Root galling (0-6)**			
	Jun 8		Nov 14	
	DP449 BG/BR	ST5599 BR	DP449 BG/BR	ST5599 BR
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.9	0.5	4.4 a	2.5 a
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	1.7	1.1	3.5 b	1.9 a-c
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	0.2	0.0	3.2 bc	1.8 bc
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	0.0	0.0	3.3 bc	1.5 c
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	0.0	0.0	3.3 bc	1.4 c
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S) ..	0.8	0.4	3.3 bc	2.2 ab
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.3	0.2	2.7 c	1.3 c
LSD			0.7	0.6
Treatment mean				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)			3.4 a	
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)			2.7 b	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F)			2.5 b	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)			2.4 bc	
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F)			2.3 bc	
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S).....			2.8 b	
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)			2.0 c	
LSD			0.5	
Variety mean				
DP449 BG/BR.....			3.4 a	
ST5599 BR.....			1.8 b	
LSD			0.2	
Split-plot analysis				
Treatment .....			.0024	
Variety .....			.0001	
Treatment x variety .....			.6077	

* S=seed treatment, F=in-furrow, C=chisel applicator.

** Rating scale: 0=none, 1=10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls and females laying eggs. Data are measurement of four plants per plot. Ratings on Jun 8 are a composite sample of twelve plants per treatment. Means in groups followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05).

Table 28. Effect of treatments on earliness of cotton.

Treatment and rate*	Open bolls**		Total bolls**	
	DP449	ST5599	DP449	ST5599
	BG/BR	BR	BG/BR	BR
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.4	1.0 c	11.8	12.9
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	1.8	2.1 a	12.3	13.6
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	2.4	1.2 bc	13.7	11.9
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	2.3	1.1 bc	11.3	14.9
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	2.1	1.9 ab	14.6	14.1
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S).....	1.6	0.8 c	11.9	13.1
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	2.0	1.2 bc	10.8	12.7
LSD	n.s.	0.8	n.s.	n.s.
Treatment mean				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)		1.2		12.3
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)		1.9		13.0
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....		1.8		12.8
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....		1.7		13.1
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....		2.0		14.4
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S).....		1.2		12.5
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)		1.6		11.8
LSD		n.s.		n.s.
Variety mean				
DP449 BG/BR.....		1.9 a		12.3
ST5599 BR.....		1.3 b		13.3
LSD		0.3		n.s.
Split-plot analysis				
Treatment.....		.3857		.2648
Variety .....		.0001		.0706
Treatment x variety .....		.0734		.1918

* S=seed treatment, F=in-furrow, C=chisel applicator.

** Data represent counts of four plants per plot on 16 Sep.

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

Table 29. Effect of treatments on yield of cotton.

Treatment and rate*	lb/A**		bales/A**	
	DP449 BG/BR	ST5599 BR	DP449 BG/BR	ST5599 BR
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	3067	3098	2.65	2.71
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	3110	2987	2.69	2.55
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	3162	3041	2.73	2.69
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	3173	3196	2.68	2.83
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	2792	3159	2.38	2.80
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S).....	3116	2924	2.63	2.53
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	3055	3144	2.58	2.72
LSD	n.s.	n.s.	n.s.	n.s.
Treatment mean				
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	3083		2.68	
Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg + A14006 0.15 mg/seed (S)	3048		2.62	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 4 lb/A (F).....	3101		2.71	
Dynasty CST 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F).....	3184		2.75	
Allegiance-FL 15 g + RTU Baytan-Thiram 1.76FS 211 g/100 kg seed (S) + Temik 15G 5 lb/A (F).....	2975		2.59	
Dynasty CST 0.03 mg/seed + A14006 0.15 mg/seed (S).....	3020		2.58	
Vapam 5 gal/A (C) + Dynasty CST 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	3100		2.65	
LSD	n.s.		n.s.	
Variety mean				
DP449 BG/BR	3068		2.62	
ST5599 BR	3078		2.69	
LSD	n.s.		n.s.	
Split-plot analysis				
Treatment.....	.9629		.9381	
Variety .....	.8426		.1482	
Treatment x variety .....	.1517		.0647	

* S=seed treatment, F=in-furrow, C=chisel applicator.

** Weight (lb/A) includes lint + seed; bales/A are lint only. Lint of seed cotton was determined by ginning 1-lb. samples from each variety and was 480 lb/bale. Plots were harvested on 8 Nov 2005.

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

- IX. YIELD AND GROWTH RESPONSE OF COTTON VARIETIES TO TEMIK 15G FOR CONTROL OF SOUTHERN ROOT KNOT NEMATODE (Rick Morgan Farm, Suffolk, VA)
- A. PURPOSE: To compare the susceptibility of commercial cotton varieties to southern root-knot nematode (*Meloidogyne incognita*) and assess their response to treatment with Temik 15G 5 lb/A in the seed furrow
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with varieties in main plots and subplots with and without Temik 15G
 2. Four randomized complete blocks separated by 15-ft alleyways
 3. Two, 30-ft rows per plot with 38 in. row spacing
 4. Seeding rate of 3 to 3.5 seed/row ft
- C. VARIETY (Main plots):
1. DP 434 RR
 2. DP 444 BG/RR
 3. ST 5599 BR (partially-resistant standard)
 4. ST 5242 BR
 5. DP 451 B/RR
 6. ST 5303 R
 7. DP 455 BR
 8. DP 445 BR
 9. ST 4892 BR
 10. PHY 310R
 11. FM 989 BR
 12. DP 555 BG/RR
 13. ST 4575 BR
 14. DP 432 RR
- D. TREATMENT (Subplots):
1. Untreated
 2. Temik 15G 5 lb/A (in furrow at planting)
- E. ADDITIONAL INFORMATION:
1. Location: Rick Morgan Farm, Deer Forest Rd., Suffolk, VA
 2. Crop history: Cotton 2004-2001, Peanut 2000
 3. Land preparation: Rip and bed rows
 4. Planting date: 10 May 2005
 5. Herbicide: Cotoran 1 pt + Prowl 1 pt/A (12 May)
Roundup Ultra Max 22 fl oz/A (8 Jun)
Envoke 0.15 oz + MSMA 1 pt directed between rows (18 Jul)
 6. Insecticide: Orthene 97S 6 oz/A (8 Jun)
Karate Z 2.56 fl oz (30 Jul)
 7. Growth regulator: Mepex Gin Out 4 oz/A by wick applicator (18 Jul)
+ 16 oz/A broadcast spray (30 Jul)
 8. Defoliant/Boll opener: Cotton Quick 0.5 gal + Aim 0.5 oz/A
 9. Fertilization: 40 lb N, 30 lb P, 40 lb K broadcast (1 May)
50 lb N (32% liquid) + Valor 1 lb/A under hoods between rows (18 Jul)
 10. Harvest date: 8 November 2005

Table 30. Effect of variety selection and treatment on emergence, growth and earliness of cotton.

Treatment, variety and rate/A ¹	Plants/ft ² (Jun 14)	Plant height (in.) ³ (Jul 13)	Open bolls ⁴ (Sep 16)	Total bolls ⁴ (Sep 16)
Variety mean				
DP 434 RR	1.77 b	23.4 a-c	1.5	14.6
DP 444 BG/RR.....	1.61 c	24.3 a	2.4	14.0
ST 5599 BR.....	1.59 c	22.6 cd	0.8	14.1
ST 5242 BR.....	1.55 c	22.8 b-d	1.1	16.4
DP 451 B/RR.....	1.62 c	23.3 a-c	1.6	13.0
ST 5303 R	1.41 de	21.6 e	1.9	15.2
DP 455 BR	1.56 c	22.0 de	1.6	18.1
DP 445 BR	1.78 b	23.6 ab	1.0	14.0
ST 4892 BR.....	1.36 e	22.9 b-d	1.4	17.1
PHY 310R	1.66 bc	22.8 b-d	2.2	14.1
FM 989 BR.....	1.59 c	20.1 f	1.0	15.5
DP 555 BG/RR.....	1.91 a	21.6 e	1.2	15.0
ST 4575 BR.....	1.54 cd	22.0 de	1.3	14.9
DP 432 RR	1.78 ab	22.7 b-d	2.0	14.7
LSD.....	0.14	0.9	--	n.s.
Treatment mean				
Untreated	1.72 a	20.1 b	1.2	15.2
Temik 15G 5 lb (F)	1.53 b	25.0 a	1.8	14.9
LSD.....	0.05	0.4	--	n.s.
Split-plot analysis				
Variety .....	.0001	.0991	.0373	.4961
Treatment .....	.0001	.0001	.0003	.5573
Variety x treatment.....	.4882	.1263	.0345	.6949

¹ F=in furrow.² Determined from counts of two, 30-ft rows per plot.³ Data represent measurements of four randomly-selected plants per plot.⁴ Data represent counts of four plants per plot.

Means in groups followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." = not significant; "--" denotes LSD not valid due to significant variety by treatment interaction.

Table 31. Effect of variety selection and treatment on nematode populations and root galling of cotton.

Treatment, variety and rate/A	Root-knot nematodes/500 cc soil*		Root galling** (0-6)	
	Untreated	Temik 15G 5 lb/A	Untreated	Temik 15G 5 lb/A
DP 434 RR	3615	4113	2.6 de	1.6 ef
DP 444 BG/RR.....	3595	5113	3.1 cd	1.9 d-f
ST 5599 BR.....	1868	3925	2.3 e	1.3 f
ST 5242 BR.....	4245	3328	2.9 c-e	2.4 cd
DP 451 B/RR.....	3205	4883	2.8 c-e	1.9 d-f
ST 5303 R	2685	5673	2.6 de	2.6 cd
DP 455 BR	3073	3918	4.1 ab	2.5 cd
DP 445 BR	3945	3393	3.9 ab	3.0 bc
ST 4892 BR.....	3175	3823	3.4 bc	3.7 ab
PHY 310R	7015	7233	4.3 a	3.6 ab
FM 989 BR.....	6168	7083	2.8 c-e	2.1 de
DP 555 BG/RR.....	5343	4850	3.9 ab	3.9 a
ST 4575 BR.....	4983	2203	4.3 a	3.7 ab
DP 432 RR	1883	3383	4.3 a	3.9 a
LSD.....	n.s.	n.s.	0.8	0.7
<i>Treatment mean</i>				
Untreated.....		3914		3.4
Temik 15G 5 lb/A		4494		2.7
LSD.....		n.s.		--
<i>Split-plot analysis</i>				
Variety .....		.1063		.0001
Treatment .....		.0589		.0001
Variety x treatment.....		.7087		.0022

* Soil was sampled 19 Aug.

** Rating scale: 0=none, 1=10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls and females laying eggs. Data are from four randomly-selected plants per plot on 14 Nov.

Means in groups followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). Square root transformation of population data was made in analysis of nematode populations to determine statistical significance. "n.s." = not significant; "--" denotes LSD not valid due to significant variety by treatment interaction.

Table 32. Effect of variety selection and treatment on yield of cotton.

Treatment, variety and rate/A	Yield*			
	lb/A		bales/A	
	Untreated	Temik 15G 5 lb	Untreated	Temik 15G 5 lb
DP 434 RR	2640 d	3159 ab	2.34 cd	2.80 a-c
DP 444 BG/RR.....	2746 b-d	3176 ab	2.49 a-d	2.85 ab
ST 5599 BR.....	3090 a	3354 a	2.70 a	2.90 a
ST 5242 BR.....	3033 ab	3196 ab	2.59 a-c	2.76 a-c
DP 451 B/RR.....	3113 a	2969 bc	2.53 a-c	2.38 de
ST 5303 R	2694 cd	2600 d	2.25 d	2.19 e
DP 455 BR	2680 d	2709 cd	2.43 a-d	2.43 de
DP 445 BR	3015 a-c	3313 a	2.64 ab	2.97 a
ST 4892 BR.....	2752 b-d	2972 bc	2.41 b-d	2.63 b-d
PHY 310R	2646 d	3133 ab	2.40 b-d	2.81 a-c
FM 989 BR.....	2875 a-d	2998 bc	2.37 b-d	2.47 d
DP 555 BG/RR.....	2640 d	2815 cd	2.36 b-d	2.55 cd
ST 4575 BR.....	3012 a-c	3259 ab	2.64 ab	2.85 ab
DP 432 RR	3070 ab	3305 a	2.62 ab	2.93 a
LSD	331	298	0.28	0.26
<i>Treatment mean</i>				
Untreated.....	2857 b		2.48	
Temik 15G 5 lb/A	3068 a		2.68	
LSD.....	77		--	
<i>Split-plot analysis</i>				
Variety .....	.0001		.0001	
Treatment .....	.0001		.0001	
Variety x treatment.....	.0650		.0444	

* Weight (lb/A) includes lint + seed; bales/A are lint only. Lint weight (480 lb/bale) was determined by ginning 1-lb. samples of seed cotton from each variety. Plots were harvested on 8 Nov 2005.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "--" denotes LSD not valid due to significant variety by treatment interaction.

X. RESPONSE OF COTTON TO FOLIAR BAS500 FUNGICIDE WITH PENTIA FOR CONTROL OF HARDLOCK IN VIRGINIA (TAREC)

- A. PURPOSE: To evaluate the efficacy of foliar fungicide and growth regulator for suppression of hardlock.
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 10-ft alleyways
 2. Two, 30-ft rows per plot with 36-in. row spacing
 3. Seeding rate of four seed/row ft
- C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18-inches apart and delivering 16.5 gal/A. Pentia 8 fl oz/A was applied at the following times:
- 1st spray: Pin head-flower bud (GS51-55): 5 Jul
 - 2nd spray: Early-mid bloom (GS61-65): 21 Jul
 - 3rd spray: 10-50% full size bolls (GS71-75): 15 Aug
- D. TREATMENT AND RATE/A:
1. No fungicide
 2. BAS500 00F 6.14 fl oz (7/5, 7/21)
 3. BAS500 00F 9.2 fl oz (7/5, 7/21)
 4. BAS500 00F 3.07 fl oz (7/5, 7/21, 8/21)
 5. BAS500 00F 6.14 fl oz (7/5, 7/21, 8/21)
 6. BAS500 00F 9.2 fl oz (7/5, 7/21, 8/21)
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Center, Holland Rd., Suffolk, VA
 2. Crop history: Peanut 2004; Cotton 2003; Peanut 2002
 3. Land preparation: rip-strip tilled
 4. Planting date and cultivar: 4 May 2005, DP 555 RR
 5. Soil fertility report:

pH.....	5.9
Ca	621 ppm
Mg	50 ppm
P	38 ppm
K.....	107 ppm
Zn	0.5 ppm
Mn	4.1 ppm
Soil type	Nansemond fine sandy loam
 6. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (19 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 24 May, 13 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (11 Jul)
 7. Insecticide: Temik 15G 5 lb/A (4 May)
Orthene 97S 6 oz/A (24 May, 13 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
 8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (18 Oct)
 9. Fertilization: 9-15-36 330 lb/A (18 Apr)
Liquid boron 1 qt/A (24 Jun, 6 Jul)
32% N 30 lb/A (24 Jun, 6 Jul)
 10. Harvest date: 7 Nov 2005

Table 33. Height, number of nodes, squares and flowers in untreated plots at the time of application.

Rep	Jul 6			No. of flowers**	
	Plant height (in.)*	No. of nodes*	No. of squares*	Jul 21	Aug 15
I	24	11	6	48	139
II	21	13	10	90	126
II	19	10	5	18	137
IV	25	13	8	64	149
Mean	22	12	7	55	138

* Determined from measurements of six plants per plot.

** Data represent total number of flowers per plot.

Table 34. Effect of foliar sprays on incidence of hard lock and earliness of cotton on 4 Nov.*

Treatment and rate/A	Total number of locks	% hard lock	Open bolls
No fungicide	47.5	12.6	10.6
BAS500 00F 6.14 fl oz (7/5, 7/21)	55.1	10.7	12.3
BAS500 00F 9.2 fl oz (7/5, 7/21)	43.0	7.1	9.6
BAS500 00F 3.07 fl oz (7/5, 7/21, 8/21)	51.2	10.1	11.4
BAS500 00F 6.14 fl oz (7/5, 7/21, 8/21)	55.4	10.9	12.3
BAS500 00F 9.2 fl oz (7/5, 7/21, 8/21)	48.4	8.8	10.8
LSD	n.s.	n.s.	n.s.

* Counts represent the mean of four plants/plot, and percentage of hardlock is based on the number of open bolls with one or more locules showing symptoms of hardlock. The mean number of locks was 4.5 per boll.

"n.s." = not significant at P=0.05 according to Fisher's Protected LSD.

Table 35. Effect of foliar sprays on yield of cotton.

Treatment and rate/A	Yield*	
	lb/A	bales/A
No fungicide	3570	3.3
BAS500 00F 6.14 fl oz (7/5, 7/21)	3573	3.3
BAS500 00F 9.2 fl oz (7/5, 7/21)	3657	3.4
BAS500 00F 3.07 fl oz (7/5, 7/21, 8/21)	3781	3.5
BAS500 00F 6.14 fl oz (7/5, 7/21, 8/21)	3615	3.4
BAS500 00F 9.2 fl oz (7/5, 7/21, 8/21)	3642	3.4
LSD	n.s.	n.s.

* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 45% of total weight and 480 lb/bale. Plots were harvested on 7 Nov 2005.

"n.s." = not significant at P=0.05 according to Fisher's Protected LSD.

XI. RESPONSE OF COTTON TO FOLIAR QUADRIS FUNGICIDE WITH AND WITHOUT PIX PLUS FOR CONTROL OF HARDLOCK IN VIRGINIA (TAREC)

- A. PURPOSE: To evaluate the efficacy of foliar fungicide and growth regulator for suppression of hardlock.
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 10-ft alleyways
 2. Two, 30-ft rows per plot
 3. Seeding rate of four seed/row ft
- C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18-inches apart and delivering 16.5 gal/A. Pix Plus was applied as needed according to Virginia Tech recommendations. Applications of Quadris w/ and w/o Pix Plus were timed as close as possible to first bloom and 14 days later.
- D. TREATMENT AND RATE/A:
1. Pix Plus 10 fl oz alone as needed, but at least 3 days before or after Quadris (7/21, 8/4)
Quadris 2.08SC 6.2 fl oz at 1st bloom and 14 days later (7/18, 8/1)
 2. Pix Plus 10 fl oz + Quadris 2.08SC 6.2 fl oz at 1st bloom and 14 days later (7/18, 8/1)
 3. Pix Plus 10 fl oz alone at same timing as treatments 2 and 5 (7/18, 8/1)
 4. Pix Plus 10 fl oz alone as needed, but at least 3 days before or after Quadris (7/21, 8/4)
Quadris 2.08SC 9.2 fl oz at 1st bloom and 14 days later (7/18, 8/1)
 5. Pix Plus 10 fl oz + Quadris 2.08SC 9.2 fl oz at 1st bloom and 14 days later (7/18, 8/1)
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Center, Holland Rd., Suffolk, VA
 2. Crop history: Peanut 2004; Cotton 2003; Peanut 2002
 3. Land preparation: rip-strip tilled
 4. Planting date and cultivar: 4 May 2005, DP 555 RR
 5. Soil fertility report:

pH.....	5.9
Ca	621 ppm
Mg	50 ppm
P	38 ppm
K.....	107 ppm
Zn	0.5 ppm
Mn	4.1 ppm
Soil type	Nansemond fine sandy loam
 6. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (19 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 24 May, 13 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (11 Jul)
 7. Insecticide: Temik 15G 5 lb/A (4 May)
Orthene 97S 6 oz/A (24 May, 13 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
 8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (18 Oct)
 9. Fertilization: 9-15-36 330 lb/A (18 Apr)
Liquid boron 1 qt/A (24 Jun, 6 Jul)
32% N 30 lb/A (24 Jun, 6 Jul)
 10. Harvest date: 7 Nov 2005

Table 36. Number of flowers in untreated plots at the time of application.

Rep	Number of flowers*		
	Jul 19	Jul 21	Aug 1
I	55	99	144
II	22	58	150
II	10	52	145
IV	9	43	144
Mean	24	63	146

* Data represent total number of flowers per plot.

Table 37. Effect of foliar sprays on incidence of hard lock and earliness of cotton on 7 Nov.*

Treatment, rate/A and application date	Total	% hard	Open bolls
	number of locks	lock	
Pix Plus 10 fl oz (7/21, 8/4)			
Quadris 2.08SC 6.2 fl oz (7/18, 8/1).....	43.6	9.6	9.7
Pix Plus 10 fl oz + Quadris 2.08SC 6.2 fl oz (7/18, 8/1) ..	36.6	16.5	8.1
Pix Plus 10 fl oz (7/18, 8/1).....	46.4	10.9	10.3
Pix Plus 10 fl oz (7/21, 8/4)			
Quadris 2.08SC 9.2 fl oz (7/18, 8/1).....	47.3	11.4	10.5
Pix Plus 10 fl oz + Quadris 2.08SC 9.2 fl oz (7/18, 8/1) ..	40.5	9.2	9.0
LSD	n.s.	n.s.	n.s.

* Counts represent the mean of four plants/plot, and percentage of hardlock is based on the number of open bolls with one or more locules showing symptoms of hardlock. The mean number of locks was 4.5 per boll.

“n.s.” = not significant at P=0.05 according to Fisher’s Protected LSD.

Table 38. Effect of foliar sprays on yield of cotton.

Treatment, rate/A and application date	Yield*	
	lb/A	bales/A
Pix Plus 10 fl oz (7/21, 8/4)		
Quadris 2.08SC 6.2 fl oz (7/18, 8/1).....	3896	3.7
Pix Plus 10 fl oz + Quadris 2.08SC 6.2 fl oz (7/18, 8/1).....	3733	3.5
Pix Plus 10 fl oz (7/18, 8/1).....	3869	3.7
Pix Plus 10 fl oz (7/21, 8/4)		
Quadris 2.08SC 9.2 fl oz (7/18, 8/1).....	3954	3.7
Pix Plus 10 fl oz + Quadris 2.08SC 9.2 fl oz (7/18, 8/1).....	3784	3.6
LSD	n.s.	n.s.

* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 45% of total weight and 480 lb/bale. Plots were harvested on 7 Nov 2005.

“n.s.” = not significant at P=0.05 according to Fisher’s Protected LSD.

XII. RESPONSE OF COTTON TO FOLIAR TOPSIN FUNGICIDE TREATMENTS FOR CONTROL OF HARDLOCK IN VIRGINIA (TAREC)

A. PURPOSE: To evaluate the efficacy of foliar fungicide sprays in control of hardlock

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Two, 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of four seed/row ft

C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18-inches apart and delivering 16.5 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated check
2. Topsin M 4.5F 16 fl oz (1st bloom + 2-wk later – 7/18, 8/1)
3. Topsin M 4.5F 16 fl oz (1st bloom + 2-wk later + 2-wk later – 7/18, 8/1, 8/15)
4. Topsin M 4.5F 16 fl oz (Pea-head square + 2 wk later + 2 wk later + 2 wk later – 7/7, 7/21, 8/1, 8/15)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Suffolk, VA
2. Crop history: Peanut 2004; Cotton 2003; Peanut 2002
3. Land preparation: rip-strip tilled
4. Planting date and cultivar: 4 May 2005, DP 555 RR
5. Soil fertility report:

pH.....	5.9
Ca	621 ppm
Mg	50 ppm
P	38 ppm
K.....	107 ppm
Zn	0.5 ppm
Mn	4.1 ppm
Soil type	Nansemond fine sandy loam
6. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (19 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 24 May, 13 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (11 Jul)
7. Insecticide: Temik 15G 5 lb/A (4 May)
Orthene 97S 6 oz/A (24 May, 13 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
Pix Plus 8 fl oz/A (5 Aug)
9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (18 Oct)
10. Fertilization: 9-15-36 330 lb/A (18 Apr)
Liquid boron 1 qt/A (24 Jun, 6 Jul)
32% N 30 lb/A (24 Jun, 6 Jul)
11. Harvest date: 7 Nov 2005

Table 39. Number of flowers in untreated plots at the time of fungicide application.

Rep	Number of flowers*			
	Jul 19	Jul 21	Aug 1	Aug 15
I	35	64	149	137
II	30	70	177	173
II	22	57	176	152
IV	28	75	181	157
V	32	74	180	142
VI	8	44	131	156
Mean	26	64	166	153

* Data represent total number of flowers per plot.

Table 40. Effect of foliar sprays on incidence of hard lock and open bolls on 7 Nov.*

Treatment, rate/A and application date	Total number of locks	% hard lock	Open bolls
	Untreated check.....	37.9	15.3	8.4
Topsin M 4.5F 16 fl oz (7/18, 8/1).....	44.3	12.8	9.8
Topsin M 4.5F 16 fl oz (7/18, 8/1, 8/15).....	46.7	15.8	10.4
Topsin M 4.5F 16 fl oz (7/7, 7/21, 8/1, 8/15).....	47.8	12.6	10.6
LSD	n.s.	n.s.	n.s.

* Counts represent the mean of four plants/plot, and percentage of hardlock is based on the number of open bolls with one or more locules showing symptoms of hardlock. The mean number of locks was 4.5 per boll.

“n.s.” = not significant at P=0.05 according to Fisher’s Protected LSD.

Table 41. Effect of foliar sprays on yield of cotton.

Treatment, rate/A and application date	Yield*	
	lb/A	bales/A
Untreated check.....	3981	3.8
Topsin M 4.5F 16 fl oz (7/18, 8/1).....	3868	3.7
Topsin M 4.5F 16 fl oz (7/18, 8/1, 8/15).....	3918	3.7
Topsin M 4.5F 16 fl oz (7/7, 7/21, 8/1, 8/15).....	3933	3.8
LSD	n.s.	n.s.

* Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 46% of total weight and 480 lb/bale. Plots were harvested on 7 Nov 2005.

“n.s.” = not significant at P=0.05 according to Fisher’s Protected LSD.

XIII. EVALUATION OF SEED TREATMENTS FOR CONTROL OF SEEDLING DISEASES OF PEANUT (TAREC Research farm)

- A. PURPOSE: To compare the efficacy of seed and in-furrow treatments for control of seedling diseases of peanut
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 15-ft alleyways
 2. Two, 30-ft rows per plot
 3. Seeding rate of three seed/row ft
- C. APPLICATION OF TREATMENTS: Dust and liquid treatments were applied to seed with a Gustafson lab treater. The volume of liquid treatment was standardized at 12 fl oz/cwt by dilution with water. Seed were planted ca. 2 in. deep and spaced ca. 4 in. apart with a KMC planter.
- D. TREATMENT AND RATE:
1. Untreated check
 2. Vitavax PC 4 oz/cwt
 3. Allegiance FL 0.75 fl oz/cwt
 4. Dynasty PD 3 oz/cwt
 5. KNF 4332 3 oz/cwt
 6. KNF 4332 2.5 oz/cwt
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: Corn 2004; Peanut 2003, Corn 2002
 3. Planting date and cultivar: 2 May 2005, Perry, Seed Lot 313, 65% germination.
Biopsy of 50 seed prior to treatment found the following incidence of fungi in seed:
14% Rhizopus, 74% Pennicillium, 8% Fusarium, 52% Aspergillus (flavus group), 12% Trichoderma.
 4. Soil fertility report:

pH.....	6.9	K	28 ppm
Ca	301 ppm	Zn.....	0.4 ppm
Mg	67 ppm	Mn.....	2.3 ppm
P	29 ppm	Soil type.....	Kenansville loamy sand
 5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 6. Soil fumigation: Sectagon 42% 7.5 gal/A (18 Apr)
 7. Insecticide: Orthene 97S 6 oz/A (1 Jun, 14 Jun)
 - Lorsban 15G 13 lb/A (27 Jun)
 8. Acaricide: Danitol 6 fl oz/A (11 Aug, 22 Aug)
 9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
 10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 1 qt/A (6 Jun, 18 Jul, 2 Aug)
 - d. Irrigation: ca. 1 in. (24 Jun, 1 Sep, 6 Sep)
 - e. Cultivation: 27 Jun
 11. Harvest date: 5 Oct 2005

Table 42. Effect of seed treatment on emergence and disease incidence.

Treatment and rate/cwt seed	Plants/ft*		Diseased plants ** (Jun 13)
	May 16	May 31	
Untreated check	0.05	2.55 a	3.5 a-c
Vitavax PC 4 oz/cwt	0.05	2.10 c	2.0 bc
Allegiance FL 0.75 fl oz/cwt	0.02	2.13 bc	5.0 ab
Dynasty PD 3 oz/cwt	0.01	2.39 ab	1.5 c
KNF 4332 3 oz/cwt.....	0.05	2.17 bc	1.8 c
KNF 4332 2.5 oz/cwt.....	0.03	2.18 bc	6.0 a
LSD.....	n.s.	0.29	3.0

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

** Counts of symptomatic and/or dead plant per plot. Note: a random sample of 10 dying seedlings was assayed on Jun 13: 40% tested positive for *Cylindrocladium parasiticum*., 10% were positive for *Rhizoctonia solani*.

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

Table 43. Disease incidence in peanut.

Treatment and rate/cwt seed	TSWV*		CBR*		Stem rot**	
	Jun 21	Aug 29	Aug 29	Sep 26	Aug 29	Sep 26
Untreated check	2.3	13.5	2.3	10.3	0.0	0.3
Vitavax PC 4 oz/cwt	3.0	15.0	3.0	9.0	0.0	0.0
Allegiance FL 0.75 fl oz/cwt	2.3	11.0	3.5	7.0	0.5	0.5
Dynasty PD 3 oz/cwt	1.5	16.3	2.5	11.3	0.8	0.3
KNF 4332 3 oz/cwt.....	2.8	17.5	2.5	11.5	0.0	0.5
KNF 4332 2.5 oz/cwt.....	3.8	13.8	2.8	10.0	0.5	0.0
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

* Number of symptomatic plants per plot.

** Counts of infection centers in the two center rows of each plot or a total of 60 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

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

Table 44. Yield of peanut.

Treatment and rate/cwt seed	Yield* (lb/A)
Untreated check	2873
Vitavax PC 4 oz/cwt	2521
Allegiance FL 0.75 fl oz/cwt	3034
Dynasty PD 3 oz/cwt	2477
KNF 4332 3 oz/cwt.....	2961
KNF 4332 2.5 oz/cwt.....	2448
LSD.....	n.s.

* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 27 Sep and harvested on 1 Oct 2005.

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

XIV. EVALUATION OF SEED TREATMENTS FOR CONTROL OF EARLY SEASON DISEASES OF PEANUT (TAREC Research farm)

A. PURPOSE: To compare the efficacy of seed and in-furrow treatments.

B. EXPERIMENTAL DESIGN:

1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways
2. Two, 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of three seed/ft of row

C. APPLICATION OF TREATMENTS: Treatments were applied to seed with a Gustafson lab treater. Liquid treatment was 12 fl oz/cwt in water. In-furrow treatments were applied in a volume of 5 gal/A in water by a microtube to the seed furrow.

D. TREATMENT AND RATE (Main plots): S=seed treatment; F=in-furrow treatment

1. Untreated check
2. Dynasty PD 5.6DS 4 oz/cwt (S)
3. Dynasty PD 4 oz/cwt (S)+ Abound 2.08SC 3 fl oz/A (F)
4. Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F)
5. Vitavax PC 4 oz/cwt (S)
6. Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F)

E. SEED TYPE (Sub plots): Normal and speckled seed of Gregory. *Cylindrocladium parasiticum* was found in 58% of speckled seed and 0% of normal seed in April 2005

1. Normal seed
2. Speckled seed

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: Corn 2004; Peanut 2003, Corn 2002
3. Planting date and cultivar: 2 May 2005, Gregory
4. Soil fertility report:

pH.....	6.9	K	28 ppm
Ca	301 ppm	Zn.....	0.4 ppm
Mg.....	67 ppm	Mn.....	2.3 ppm
P	29 ppm	Soil type.....	Kenansville loamy sand
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
6. Soil fumigation: Sectagon 42% 7.5 gal/A (18 Apr)
7. Insecticide: Orthene 97S 6 oz/A (1 Jun, 14 Jun)
 - Lorsban 15G 13 lb/A (27 Jun)
8. Acaricide: Danitol 6 fl oz/A (11 Aug, 22 Aug)
9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 1 qt/A (18 Jul, 2 Aug)
 - d. Irrigation: ca. 1 in. (24 Jun, 1 Sep, 6 Sep)
 - e. Cultivation: 27 Jun
11. Harvest date: 5 Oct 2005

Table 45. Effect of seed type, seed treatment and in-furrow fungicide on emergence and seedling disease.

Treatment and rate ¹	Plants/ft ²				Diseased seedlings ³ (Jun 13)	
	May 16		May 31		Normal	Speckled
Untreated check	0.004 bc	0.011	2.06 ab	1.35 d	5.8 a	43.8 a
Dynasty PD 5.6DS 4 oz/cwt (S) ..	0.004 bc	0.004	2.14 a	1.90 bc	0.0 b	2.0 c
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F) ..	0.000 c	0.011	2.24 a	2.16 a	0.5 b	1.5 c
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ..	0.021 a	0.011	2.12 a	2.17 a	0.8 b	0.5 c
Vitavax PC 4 oz/cwt (S)	0.014 ab	0.014	1.84 b	1.83 c	1.0 b	16.8 b
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ..	0.021 a	0.004	1.84 b	2.07 ab	0.8 b	3.3 c
LSD	0.01	n.s.	0.23	0.21	2.9	8.4
<i>Treatment mean</i>						
Untreated check		0.007		1.71		24.8
Dynasty PD 5.6DS 4 oz/cwt (S) ..		0.004		2.02		1.0
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F) ...		0.005		2.20		1.0
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ...		0.016		2.15		0.6
Vitavax PC 4 oz/cwt (S)		0.014		1.83		8.9
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ...		0.013		1.95		2.0
LSD		n.s.		--		--
<i>Seed-type mean</i>						
Normal seed		0.011		2.04		1.5
Speckled seed		0.009		1.91		11.3
LSD		n.s.		--		--
<i>Split-plot analysis</i>						
Treatment .....		.0894		.0001		.0001
Seed type .....		.6367		.0064		.0001
Treatment x seed type .....		.2712		.0001		.0001

¹ S=seed treatment, F=in furrow.

² Determined from counts of two, 30-ft rows per plot. Note: no plants had emerged on 10 May (7 DAP).

³ Total number of dead and dying seedlings per plot. Note: a random sample of 12 dying seedlings was assayed for *Cylindrocladium parasiticum* on Jun 13 and all seedlings tested positive for the fungus.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05) "n.s." =not significant; "--" denotes LSD not valid because of significant treatment by seed type interaction.

Table 46. Effect of seed type, seed treatment and in-furrow fungicide on incidence of *Cylindrocladium* black rot.

Treatment and rate*	CBR**			
	Aug 29		Sep 26	
	Normal seed	Speckled seed	Normal seed	Speckled seed
Untreated check	3.5	0.8 b	14.5	10.0
Dynasty PD 5.6DS 4 oz/cwt (S) .	1.8	4.0 ab	14.5	21.8
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F) ..	4.3	3.0 ab	18.5	29.3
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ..	3.3	6.0 a	18.3	32.8
Vitavax PC 4 oz/cwt (S)	3.3	5.0 a	11.0	24.0
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ..	3.0	6.5 a	11.0	24.3
LSD	n.s.	3.6	n.s.	n.s.
<i>Treatment mean</i>				
Untreated check		2.1		12.3
Dynasty PD 5.6DS 4 oz/cwt (S) ..		2.9		18.1
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F) ...		3.6		23.9
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ...		4.6		25.5
Vitavax PC 4 oz/cwt (S)		4.1		17.5
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F) ...		4.8		17.6
LSD		--		n.s.
<i>Seed-type mean</i>				
Normal seed.....		3.2		14.6 b
Speckled seed		4.2		23.7 a
LSD		--		4.4
<i>Split-plot analysis</i>				
Treatment.....		.5877		.2318
Seed type .....		.0745		.0004
Treatment x seed type.....		.0255		.1367

* S=seed treatment, F=in furrow.

** 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). "n.s." =not significant; "--" denotes LSD not valid because of significant treatment by seed type interaction.

Table 47. Effect of seed type and seed treatment on percent of taproots infected with *Cylindrocladium parasiticum* and *Rhizoctonia solani*.

Treatment and rate*	Biopsy test (% +)**			
	<i>C. parasiticum</i>		<i>R. solani</i>	
	Normal	Speckled	Normal	Speckled
Dynasty PD 5.6DS 4 oz/cwt (S)	24.0	33.0	13.0	6.0
Vitavax PC 4 oz/cwt (S)	20.0	56.0	8.0	2.0
LSD	n.s.	n.s.	n.s.	n.s.
<i>Treatment mean</i>				
Dynasty PD 5.6DS 4 oz/cwt (S).....		28.5		9.5
Vitavax PC 4 oz/cwt (S).....		38.0		5.0
LSD.....		n.s.		n.s.
<i>Seed-type mean</i>				
Normal seed.....		22.0 b		10.5 a
Speckled seed		44.0 a		4.0 b
LSD.....		17.1		5.6
<i>Split-plot analysis</i>				
Treatment.....		.4298		.0780
Seed type .....		.0182		.0297
Treatment x seed type.....		.1018		.8345

* S=seed treatment.

** Data are percent recovery of each fungus from 25 taproots selected at random from each plot. Taproots were assayed with a selective medium on 28 Sep.

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

Table 48. Effect of seed type, seed treatment and in-furrow fungicide on yield of peanuts.

Treatment and rate*	Yield** (lb/A)	
	Normal	Speckled
Untreated check	2853	1770 c
Dynasty PD 5.6DS 4 oz/cwt (S)	2531	2194 ab
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F)	2370	2399 a
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F)	2326	2063 a-c
Vitavax PC 4 oz/cwt (S)	2531	1887 bc
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F)	2633	2355 a
LSD	n.s.	377
<i>Treatment mean</i>		
Untreated check		2311
Dynasty PD 5.6DS 4 oz/cwt (S).....		2363
Dynasty PD 4 oz/cwt + Abound 2.08SC 3 fl oz/A (F).....		2385
Dynasty PD 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F).....		2194
Vitavax PC 4 oz/cwt (S).....		2209
Vitavax PC 4 oz/cwt (S) + Abound 2.08SC 6 fl oz/A (F).....		2494
LSD		n.s.
<i>Seed-type mean</i>		
Normal seed.....		2541 a
Speckled seed		2111 b
LSD		218
<i>Split-plot analysis</i>		
Treatment.....		.5721
Seed type .....		.0006
Treatment x seed type.....		.0883

* S=seed treatment, F=in furrow

**Yields are weight of peanuts with 7% moisture. Peanuts were dug on 28 Sep and harvested on 5 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." =not significant.

XV. EVALUATION OF SEED TREATMENTS FOR CONTROL OF EARLY-SEASON DISEASES OF PEANUT (Duke farm)

- A. PURPOSE: To compare the efficacy of experimental fungicides to reference standard seed treatments for control of early season diseases of peanut.
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways
 2. Two, 30-ft rows per plot with 36-in. row spacing
 3. Seeding rate of three seed/ft of row
- C. APPLICATION OF TREATMENTS: Dust treatments were applied to seed with a Gustafson lab treater. Seed were planted 2 in. deep and spaced 4 in. apart with a KMC planter.
- D. TREATMENT AND RATE (Main plots): S=seed treatment
1. Untreated check
 2. Vitavax PC 4 oz/cwt (S)
 3. L1292-A 4 oz/cwt (S)
 4. L1294 4 oz/cwt (S)
 5. L1492-A 4 oz/cwt (S)
 6. L1493-A 4 oz/cwt (S)
 7. L1494-A 4 oz/cwt (S)
 8. Dynasty PD 4 oz/cwt (S)
- E. SEED TYPE (Sub plots): normal and speckled seed of Gregory
1. Normal seed
 2. Speckled seed (infested with *Cylindrocladium parasiticum*)
- F. ADDITIONAL INFORMATION:
1. Location: Duke Farm, Longstreet Lane, Suffolk
 2. Crop history: corn 2004; peanut 2003, corn 2002
 3. Planting date and cultivar: 28 April, Gregory
 4. Soil fertility report:

pH.....	6.3
Ca	436 ppm
Mg	61 ppm
P	28 ppm
K.....	87 ppm
Zn	0.8 ppm
Mn	3.1 ppm
Soil type	Suffolk loamy sand
 5. Herbicide:

Pre-plant - Prowl 1 pt/A (31 Mar)
Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (7 Apr)
Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 6. Cylindrocladium black rot control: Sectagon 7.5 gal/A (5 Apr)
 7. Insecticide: Temik 15G 7 lb/A in furrow (28 Apr)

Orthene 97S 6 oz/A (27 May)
Lorsban 15G 13 lb/A (28 Jun)

8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug), Headline 9 fl oz/A (22 Aug)
10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun, 2 Aug)
 - c. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - d. Cultivation: 28 Jun
11. Harvest date: 4 Oct 2005

Table 49. Percent recovery of *Cylindrocladium parasiticum* and *Rhizoctonia solani* in seed assays after application of seed treatment.

Seed type, treatment and rate/cwt seed*	<i>C. parasiticum</i> (% +)		<i>R. solani</i> (% +)	
	Normal seed	Speckled seed	Normal seed	Speckled seed
Untreated check	2	38	30	0
Vitavax PC 4 oz/cwt (S)	0	16	0	20
L1292-A 4 oz/cwt (S)	0	28	0	0
L1294 4 oz/cwt (S).....	0	0	0	6
L1492-A 4 oz/cwt (S)	0	18	2	6
L1493-A 4 oz/cwt (S)	0	2	2	0
L1494-A 4 oz/cwt (S)	0	8	0	2
Dynasty PD 4 oz/cwt (S).....	0	12	4	2

* Fifty seed from each treatment and type were assayed on a selective medium on 15 May 2005. Pre-treatment assay of seed resulted in 58% recovery of *C. parasiticum* in speckled seed (31 Mar) and 0% recovery in normal seed (11 Apr).

Table 50. Effect of seed type and treatment on emergence of peanuts.

Seed type, treatment and rate/cwt seed	Plants/ft* (May 26)		Diseased seedlings** (Jun 15)	
	Normal seed	Speckled seed	Normal seed	Speckled seed
Untreated check	0.7 c	0.7	13.5 a	30.0 ab
Vitavax PC 4 oz/cwt (S)	1.0 bc	1.0	6.0 b	34.8 ab
L1292-A 4 oz/cwt (S)	1.1 ab	1.0	2.3 b	23.0 b
L1294 4 oz/cwt (S).....	1.0 bc	1.0	2.8 b	2.3 c
L1492-A 4 oz/cwt (S)	1.1 ab	1.1	3.5 b	27.8 ab
L1493-A 4 oz/cwt (S)	1.1 ab	0.9	4.3 b	36.8 a
L1494-A 4 oz/cwt (S)	1.4 a	1.1	3.3 b	23.5 b
Dynasty PD 4 oz/cwt (S).....	0.9 bc	1.1	7.0 b	10.0 c
LSD	0.4	n.s.	4.9	11.8
Treatment mean				
Untreated check	0.8		21.7	
Vitavax PC 4 oz/cwt (S)	1.2		20.4	
L1292-A 4 oz/cwt (S)	1.2		12.6	
L1294 4 oz/cwt (S).....	1.1		2.5	
L1492-A 4 oz/cwt (S)	1.3		15.6	
L1493-A 4 oz/cwt (S)	1.2		20.5	
L1494-A 4 oz/cwt (S)	1.4		13.4	
Dynasty PD 4 oz/cwt (S).....	1.1		8.5	
LSD	n.s.		--	
Seed-type mean				
Normal seed	1.2		5.3	
Speckled seed.....	1.1		23.5	
LSD	n.s.		--	
Split-plot analysis				
Treatment .....	.1835		.0001	
Seed type.....	.3807		.0001	
Treatment by seed type .....	.6981		.0001	

* Determined from counts of two, 30-ft rows per plot. Note: no stand count was recorded at 14 DAP because seedlings had not emerged.

** Total number of dead and dying seedlings per plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05). "n.s." =not significant; "--" denotes LSD not valid because of significant treatment by seed type interaction.

Table 51. Effect of selected treatments on incidence of *Cylindrocladium parasiticum*, *Rhizoctonia solani* and *Sclerotium rolfsii* in taproots of peanuts.

Seed type, treatment and rate/cwt seed	Biopsy test (% +)*					
	<i>C. parasiticum</i>		<i>R. solani</i>		<i>S. rolfsii</i>	
	Normal seed	Speckled seed	Normal seed	Speckled seed	Normal seed	Speckled seed
Vitavax PC 4 oz/cwt (S)....	12.0	68.0	9.0	0.0	1.0	6.0
Dynasty PD 4 oz/cwt (S)...	2.0	47.0	3.0	0.0	1.0	19.0
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
<i>Treatment mean</i>						
Vitavax PC 4 oz/cwt (S)....	40.0		4.5		3.5	
Dynasty PD 4 oz/cwt (S)...	24.5		1.5		10.0	
LSD	n.s.		n.s.		n.s.	
<i>Seed-type mean</i>						
Normal seed.....	7.0 b		6.0 a		1.0	
Speckled seed	57.5 a		0.0 b		12.5	
LSD	14.0		5.9		n.s.	
<i>Split-plot analysis</i>						
Treatment.....	.1134		.4058		.5808	
Seed type .....	.0001		.0475		.2276	
Treatment by seed type.....	.3748		.2605		.4763	

* Data are percent recovery of each fungus from 25 taproots selected at random from each plot. Taproots were assayed with a selective medium on 28 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." =not significant.

Table 52. Incidence of *Cylindrocladium* black rot and yield of peanuts.

Seed type, treatment and rate/cwt seed	CBR* (Sep 26)		Yield** (lb/A)	
	Normal	Speckled	Normal	Speckled
Untreated check	13.3	17.0	2667	1773 d
Vitavax PC 4 oz/cwt (S)	16.3	27.0	2726	1979 cd
L1292-A 4 oz/cwt (S)	8.8	20.5	2990	2594 ab
L1294 4 oz/cwt (S).....	13.8	14.8	2667	2653 a
L1492-A 4 oz/cwt (S)	21.3	28.5	2462	2023 b-d
L1493-A 4 oz/cwt (S)	14.5	28.5	2697	1993 cd
L1494-A 4 oz/cwt (S)	11.8	27.0	2492	2316 a-d
Dynasty PD 4 oz/cwt (S).....	6.5	22.3	3092	2389 a-c
LSD	n.s.	n.s.	n.s.	598
Treatment mean				
Untreated check	15.1		2220	
Vitavax PC 4 oz/cwt (S)	21.6		2352	
L1292-A 4 oz/cwt (S)	14.6		2792	
L1294 4 oz/cwt (S).....	14.3		2660	
L1492-A 4 oz/cwt (S)	24.9		2242	
L1493-A 4 oz/cwt (S)	21.5		2345	
L1494-A 4 oz/cwt (S)	19.4		2404	
Dynasty PD 4 oz/cwt (S).....	14.4		2741	
LSD	--		n.s.	
Seed-type mean				
Normal seed	13.3		2724 a	
Speckled seed.....	23.2		2215 b	
LSD	--		162	
Split-plot analysis				
Treatment .....	.6400		.3439	
Seed type.....	.0001		.0001	
Treatment by seed type .....	.0006		.1158	

* Number of symptomatic plants per plot.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 28 Sep and harvested on 4 Oct 2005.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." =not significant; "--" denotes LSD not valid because of significant treatment by seed type interaction.

XVI. EVALUATION OF SEED TREATMENTS FOR CONTROL OF EARLY SEASON DISEASES OF PEANUT (TAREC Research farm)

- A. PURPOSE: To compare the efficacy of standard seed treatments
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways
 2. Two, 30-ft rows per plot with 36-in. row spacing
 3. Seeding rate of four seed/ft of row
- C. APPLICATION OF TREATMENTS: Dust treatments were applied with a Gustafson lab treater. Seed were planted ca. 2 in. deep and spaced 3 in. apart with a KMC planter.
- D. TREATMENT AND RATE (Main plots):
1. Vitavax PC 4 oz/cwt
 2. Dynasty PD 5.6DS 4 oz/cwt
- E. SEED TYPE (Sub plots): Normal and speckled seed of Virginia 98R. *Cylindrocladium parasiticum* was recovered from 96% of speckled seed and 2% of normal seed in April 2005.
1. Normal seed
 2. Speckled seed
- F. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: Corn 2004; Peanut 2003, Corn 2002
 3. Planting date and cultivar: May 11, 2005; VA 98R
 4. Soil fertility report:

pH.....	6.9	K	28 ppm
Ca	301 ppm	Zn.....	0.4 ppm
Mg	67 ppm	Mn.....	2.3 ppm
P	29 ppm	Soil type.....	Kenansville loamy sand
 5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 6. Soil fumigation: Sectagon 42% 7.5 gal/A (18 Apr)
 7. Insecticide: Orthene 97S 6 oz/A (1 Jun, 14 Jun)
 - Lorsban 15G 13 lb/A (27 Jun)
 8. Acaricide: Danitol 6 fl oz/A (11 Aug, 22 Aug)
 9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug), Headline 9 fl oz/A (22 Aug)
 10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - d. Irrigation: ca. 1 in. (24 Jun, 1 Sep, 6 Sep)
 - e. Cultivation: 27 Jun
 11. Harvest date: 5 Oct 2005

Table 53. Effect of seed treatment and seed type on emergence in peanut.

Treatment, rate/cwt seed and seed type	Plants/ft*				Diseased plants**	
	May 25		Jun 8		(Jun 13)	
	Normal	Speckled	Normal	Speckled	Normal	Speckled
Vitavax PC 4 oz	2.9	2.5	3.6	3.4	0.3	1.5
Dynasty PD 5.6DS 4 oz	3.0	2.7	3.7	3.5	0.0	1.0
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Treatment mean						
Vitavax PC 4 oz	2.7		3.5		0.9	
Dynasty PD 5.6DS 4 oz	2.9		3.6		0.5	
LSD	n.s.		n.s.		n.s.	
Seed-type mean						
Normal seed	2.9	a	3.7		0.1	b
Speckled seed.....	2.6	b	3.4		1.3	a
LSD	0.3		n.s.		0.9	
Split-plot analysis						
Treatment .....	.1987		.5038		.5195	
Seed type.....	.0373		.0948		.0240	
Treatment x seed type .....	.6464		.8742		.7502	

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

** Total number of dead and dying seedlings per plot.

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

Table 54. Effect of seed treatment and seed type on seedling disease and incidence of Cylindrocladium Black Rot (CBR) in peanut.

Treatment, rate/cwt seed and seed type	CBR*			
	Aug 29		Sep 26	
	Normal	Speckled	Normal	Speckled
Vitavax PC 4 oz	5.3	11.0	22.8	37.3
Dynasty PD 5.6DS 4 oz	7.5	11.0	29.5	39.8
LSD	n.s.	n.s.	n.s.	n.s.
Treatment mean				
Vitavax PC 4 oz	8.1		30.0	
Dynasty PD 5.6DS 4 oz	9.3		34.6	
LSD	n.s.		n.s.	
Seed-type mean				
Normal seed	6.4		26.1	
Speckled seed.....	11.0		38.5	
LSD	n.s.		7.1	
Split-plot analysis				
Treatment .....	.6302		.3803	
Seed type.....	.1375		.0052	
Treatment x seed type .....	.6913		.4893	

* 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). "n.s." =not significant.

Table 55. Effect of seed treatment and seed type on incidence of Southern stem rot and yield.

Treatment, rate/cwt seed and seed type	Southern stem rot (Aug 29)*		Yield (lb/A)**	
	Normal	Speckled	Normal	Speckled
Vitavax PC 4 oz	0.5	0.3	2614	2001
Dynasty PD 5.6DS 4 oz	1.0	1.0	2410	2235
LSD	n.s.	n.s.	n.s.	n.s.
Treatment mean				
Vitavax PC 4 oz	0.4		2308	
Dynasty PD 5.6DS 4 oz	1.0		2322	
LSD	n.s.		n.s.	
Seed*type mean				
Normal seed	0.8		2512 a	
Speckled seed.....	0.6		2118 b	
LSD	n.s.		254	
Split-plot analysis				
Treatment .....	.3416		.9508	
Seed type.....	.8770		.0089	
Treatment x seed type .....	.8770		.0789	

* Counts of infection centers in the two center rows of each plot or a total of 60 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 28 Sep and harvested on 5 Oct.

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

XVII. RESPONSE OF VIRGINIA- AND RUNNER-TYPE PEANUTS TO SOIL FUMIGATION WITH METAM SODIUM (TAREC Research farm)

A. PURPOSE: To compare the susceptibility of peanut cultivars with and without soil fumigation to *Cylindrocladium* black rot, nematodes, and tomato spotted wilt virus

B. EXPERIMENTAL DESIGN:

1. Split-plot design with treatments in main plots and cultivars in subplots
2. Four, randomized complete blocks
3. Two, 35-ft rows per plot with 36 in. row spacing
4. Fifteen-ft alleyways between blocks

C. APPLICATION OF TREATMENTS: Chisel applications of metam sodium 42% were applied 8 in. under each row on 18 Apr and rows were bedded (24 in. wide and 4 in. high) during application. Temik 15G was applied in-furrow at planting.

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

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

E. CULTIVAR: Sub-plots

Virginia-types

1. Perry
2. GA Hi/OL
3. NC-V 11
4. Gregory
5. N020006
6. VC 2

Runner-types

1. DP-1
2. Hull
3. GA Green
4. GA-02C
5. GA-03L
6. AP-3

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2004, peanut 2003, wheat/soybean 2002
3. Planting date: 5 May 2005
4. Soil fertility report:

pH.....	6.9	K	28 ppm
Ca	301 ppm	Zn.....	0.4 ppm
Mg.....	67 ppm	Mn.....	2.3 ppm
P	29 ppm	Soil type.....	Kenansville loamy sand

5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
6. Insecticide: Orthene 97S 6 oz/A (1 Jun, 14 Jun)
7. Acaricide: Danitol 6 fl oz/A (22 Aug)
8. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - d. Irrigation: ca. 1 in. (24 Jun, 1 Sep, 6 Sep)
10. Harvest date: 5 Oct 2005 (virginia-type); 26 Oct 2005 (runner-type)

Table 56. Effect of treatment and cultivar selection on emergence and incidence of Tomato Spotted Wilt Virus (TSWV) and *Cylindrocladium* black rot (CBR).

Treatment, rate/A and Cultivar	Plants/ft ¹ (Jun 6)	TSWV ²			CBR ³	
		Jun 21	Jul 22	Aug 29	Aug 29	Pre-harvest
Virginia-type						
Temik 15G 7 lb						
Perry	2.38 b	4.8	9.0	17.5	3.8 c	15.3 d
GA Hi/OL	2.48 ab	7.0	8.0	16.8	7.0 bc	44.5 b
NC-V 11	2.48 ab	6.8	7.0	13.5	20.0 a	63.8 a
Gregory	2.48 ab	3.8	9.3	19.0	7.3 bc	40.5 bc
N020006.....	1.85 c	18.3	11.5	17.0	5.0 c	31.5 c
VC 2	2.75 a	2.0	8.0	18.5	11.8 b	46.3 b
LSD.....	0.37	n.s.	n.s.	n.s.	5.6	12.9
Sectagon 7.5 gal + Temik 15G 7 lb						
Perry	2.04 bc	2.3	8.0	17.0 b	1.8	7.5 b
GA Hi/OL	2.18 a-c	3.5	8.5	15.5 b	0.8	4.5 b
NC-V 11	2.41 ab	4.5	11.8	32.5 a	1.3	25.5 a
Gregory	2.51 ab	1.8	9.0	16.5 b	1.3	9.5 b
N020006.....	1.78 c	4.5	6.0	11.0 b	2.5	8.8 b
VC 2	2.56 a	1.5	9.3	9.8 b	2.0	13.0 b
LSD.....	0.51	n.s.	n.s.	10.8	n.s.	8.8
Runner-type						
Temik 15G 7 lb						
DP-1	1.93 c	5.3	2.5 c	5.8	0.8 c	18.8 c
Hull	2.23 bc	3.8	5.0 ab	8.8	1.3 bc	15.3 c
GA Green.....	2.81 a	5.5	2.8 bc	10.0	3.0 a	31.5 b
GA-02C.....	2.57 ab	13.8	3.0 bc	7.3	1.3 bc	16.8 c
GA-03L.....	2.56 ab	3.0	3.8 a-c	6.3	3.0 a	32.3 b
AP-3	2.13 c	8.3	6.0 a	7.5	2.5 ab	48.5 a
LSD.....	0.43	n.s.	2.33	n.s.	1.7	12.0
Sectagon 7.5 gal + Temik 15G 7 lb						
DP-1	1.81 c	1.8	3.3	5.5	0.3 b	2.8 c
Hull	2.19 bc	3.0	4.8	10.5	0.5 b	5.0 bc
GA Green.....	3.36 a	1.3	4.0	9.0	3.0 a	9.5 ab
GA-02C.....	2.60 b	4.3	4.3	6.8	0.5 b	3.5 c
GA-03L.....	2.61 b	1.8	2.0	6.5	0.3 b	11.0 a
AP-3	2.20 bc	4.0	5.0	8.3	1.0 b	7.3 a-c
LSD.....	0.52	n.s.	n.s.	n.s.	1.1	5.7
Comparison of main effects						
Virginia-type, Temik 15G 7 lb	2.40	7.1 a	8.8 a	17.0 a	9.1 a	40.3 a
Virginia-type Sectagon 7.5 gal + Temik 15G 7 lb..	2.25	3.0 b	8.8 a	17.0 a	1.6 b	11.5 c
Runner-type, Temik 15G 7 lb.....	2.37	6.6 a	3.8 b	7.6 b	2.0 b	27.2 b
Runner-type Sectagon 7.5 gal + Temik 15G 7 lb..	2.46	2.7 b	3.9 b	7.8 b	0.9 b	6.5 c
LSD.....	n.s.	3.3	1.6	3.9	2.1	7.1

¹ Determined from counts of two, 35-ft rows per plot.

² Counts of plants per plot with symptoms of TSWV.

³ Number symptomatic and/or dead plants per plot, pre-harvest rating of virginia-type cultivars was 27 Sep; runner-type cultivars was 14 Oct.

Means followed by the same letter(s) within a group and column are not significantly different (LSD, $P \leq 0.05$). "n.s."=not significant.

Table 57. Effect of treatment and peanut type on populations of root-knot nematodes.

Cultivar type, treatment and rate/A	Root-knot nematodes/ 500 cc soil*
Virginia-type	
Temik 15G 7 lb.....	16,893 a
Sectagon 42% 7.5 gal + Temik 15G 7 lb.....	6,365 b
Runner-type	
Temik 15G 7 lb.....	20,640 a
Sectagon 42% 7.5 gal + Temik 15G 7 lb.....	7,775 b

* Soil samples were collected from all subplots within each treatment on 25 Aug.

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

Table 58. Effect of cultivar on incidence of *Cylindrocladium parasiticum* in taproots of peanut varieties treated with Temik 15G 7 lb/A.

Cultivar	Biopsy test (% +)*
Virginia-type	
Perry.....	18 e
GA Hi/OL.....	55 d
NC-V 11.....	72 a-d
Gregory.....	60 d
N020006.....	63 cd
VC 2.....	78 a-c
Runner-type	
DP-1.....	80 a-c
Hull.....	71 a-d
GA Green.....	82 ab
GA-02C.....	83 ab
GA-03L.....	69 b-d
AP-3.....	88 a
LSD.....	18

* Data are percent recovery of *Cylindrocladium parasiticum* from 25 taproots selected at random from each plot. Taproots were assayed with a selective medium on 29 Sep for virginia-types and 17 Oct for runner-types.

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

Table 59. Effect of treatment and cultivar selection on emergence, incidence of Tomato Spotted Wilt Virus (TSWV) and *Cylindrocladium* black rot (CBR), yield and value.

Treatment, rate/A and Cultivar	CBR Root rot index ¹ (0-10)	Stem rot ²	Root-knot gall index (0-10) ³	Yield (lb/A) ⁴	Value (\$/A) ⁵
Virginia-type					
Temik 15G 7 lb					
Perry	1.0 c	0.0 b	4.5 c	2851 a	446 a
GA Hi/OL	5.5 ab	11.5 a	9.0 a	1300 bc	199 cd
NC-V 11	6.3 a	4.8 b	5.8 c	1025 cd	149 de
Gregory	4.8 b	1.5 b	8.0 ab	1525 b	225 bc
N020006	5.0 ab	0.3 b	5.3 c	1701 b	271 b
VC 2	6.0 ab	3.3 b	7.3 b	863 d	121 e
LSD	1.4	6.1	1.4	435	66
Sectagon 7.5 gal + Temik 15G 7 lb					
Perry	1.5 b	0.5	2.0	2276 b	367 b
GA Hi/OL	1.5 b	0.0	2.8	2688 a	439 a
NC-V 11	3.8 a	0.8	2.3	2138 bc	329 b
Gregory	2.0 b	0.0	2.5	2438 ab	384 ab
N020006	2.0 b	0.0	2.3	2251 b	385 ab
VC 2	2.0 b	0.8	2.5	1788 c	268 c
LSD	1.4	n.s.	n.s.	365	58
Runner-type					
Temik 15G 7 lb					
DP-1	4.5 ab	1.0	4.5	1655 cd	239 d
Hull	3.3 c	0.3	4.3	2423 ab	368 b
GA Green	3.8 bc	1.5	3.5	1876 cd	296 cd
GA-02C	1.8 d	0.0	3.5	2658 a	442 a
GA-03L	4.0 a-c	0.3	3.3	2084 bc	329 bc
AP-3	5.0 a	3.0	4.3	1550 d	227 d
LSD	1.1	n.s.	n.s.	440	69
Sectagon 7.5 gal + Temik 15G 7 lb					
DP-1	1.8	0.0	3.8 a	2801	446 b
Hull	1.5	1.3	2.8 ab	3413	547 a
GA Green	1.5	0.5	3.0 a	3205	541 a
GA-02C	1.3	0.3	1.8 bc	3439	596 a
GA-03L	2.5	0.0	1.5 c	3335	551 a
AP-3	2.0	0.5	1.5 c	3322	530 a
LSD	n.s.	n.s.	1.0	n.s.	81
Comparison of main effects					
Virginia-type, Temik 15G 7 lb	4.8 a	3.5 a	6.6 a	1544 c	235 c
Virginia-type					
Sectagon 7.5 gal + Temik 15G 7 lb	2.1 c	0.3 b	2.4 c	2263 b	362 b
Runner-type, Temik 15G 7 lb	3.7 b	1.0 b	3.9 b	2041 b	317 b
Runner-type					
Sectagon 7.5 gal + Temik 15G 7 lb	1.8 c	0.4 b	2.4 c	3253 a	535 a
LSD	0.8	1.8	0.7	294	50

¹ Root rot rating scale: 0=none, 10=total necrosis.

² Counts of infection centers in the two center rows of each plot or a total of 70 ft of row on 29 Aug. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

³ Root-knot nematode galling scale: 0=none, 10=100% of roots with galls. Ratings were made after digging (virginia-type=28 Sep; runner-type=17 Oct).

⁴ Yields are based on weight of peanuts with 7% moisture.

⁵ Composite samples were graded to determine market value at loan rate, and multiplied by yield to estimate value at farm gate (\$/A). Means followed by the same letter(s) within a grouping are not significantly different (LSD, P≤0.05). "n.s."=not significant.

Table 60. Grade characteristics of peanut cultivars.

Treatment and cultivar	% ¹								Value ² (¢/lb)	
	FM	LSK	FAN	ELK	SS	OK	DK	Conc. RMD SMK		
Temik 15G 7 lb										
<i>Virginia-type</i>										
Perry.....	2	1	83	39	1	3	2	0.18	60	15.64807
GA Hi/OL.....	1	0	68	24	1	4	2	0.00	59	15.30992
NC-V 11.....	1	0	81	29	1	4	3	0.06	57	14.56989 ³
Gregory.....	1	0	96	47	1	3	2	1.28	58	14.73997 ³
N020006.....	1	2	53	44	3	2	6	0.00	62	15.95531 ³
VC 2.....	2	0	92	43	1	3	4	0.00	55	14.00000 ³
<i>Runner-type</i>										
DP-1.....	2	1	--	--	2	11	1	0.00	55	14.45327
Hull.....	1	1	--	--	5	8	1	0.08	56	15.16667
GA Green.....	1	1	--	--	8	8	1	0.08	56	15.76061
GA-02C.....	1	1	--	--	5	5	1	0.00	63	16.63172
GA-03L.....	1	1	--	--	4	6	1	0.00	60	15.78040
AP-3.....	1	1	--	--	3	7	1	0.00	56	14.66182
Sectagon 7.5 gal + Temik 15G 7 lb										
<i>Virginia-type</i>										
Perry.....	2	1	82	43	0	3	1	0.00	62	16.13293
GA Hi/OL.....	1	1	80	26	0	3	1	0.00	64	16.32849
NC-V 11.....	2	1	80	37	1	3	2	0.00	59	15.37979
Gregory.....	2	1	94	48	1	3	1	0.00	59	15.73704
N020006.....	1	1	64	51	2	3	3	0.00	67	17.09151 ³
VC 2.....	2	0	93	50	0	3	3	0.00	60	14.99000 ³
<i>Runner-type</i>										
DP-1.....	1	1	--	--	2	8	0	0.00	62	15.91899
Hull.....	1	1	--	--	3	6	0	0.00	62	16.01798
GA Green.....	0	2	--	--	8	5	1	0.00	62	16.88820
GA-02C.....	0	1	--	--	4	4	1	0.00	67	17.31580
GA-03L.....	0	0	--	--	4	5	0	0.00	63	16.53000
AP-3.....	1	1	--	--	4	5	1	0.00	61	15.94869

¹ 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, decay or mold, SMK=sound mature kernels. Data are from a composite sample from four reps of each cultivar.

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

³ Segregation 2 price due to damage>2.5% or concealed RMD >1.0%.

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

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

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

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

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

¹ F=in furrow, C=chisel application.

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

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

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

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

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

* F=in furrow, C=chisel application.

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

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

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

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

* F=in furrow, C=chisel application.

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

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

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

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

* F=in furrow, C=chisel application.

** Number of symptomatic plants per plot.

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

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

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

* F=in furrow, C=chisel application.

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

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

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

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

Split-split-plot analysis

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

* F=in furrow, C=chisel application.

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

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

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

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

Split-split-plot analysis

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

* F=in furrow, C=chisel application.

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

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

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

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

* F=in furrow, C=chisel application.

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

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

Table 69. Effect of soil treatment on nematode populations.

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

* F=in furrow, C=chisel application.

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

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

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

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

* F=in furrow, C=chisel application.

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

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

XIX. EVALUATION OF FUNGICIDES AND SOIL FUMIGATION FOR CONTROL OF SOILBORNE DISEASES OF PEANUT (TAREC Research farm)

A. PURPOSE: To compare the efficacy of in-furrow and foliar fungicides to soil fumigant for disease control

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Two, 35-ft rows per plot with 36-in. spacing
3. Seeding rate of four seed/ft of row

C. APPLICATION OF TREATMENTS: Sectagon 42% (metam sodium) was applied with a chisel (C) 8 in. deep on 18 Apr, and rows were bedded during application. In-furrow treatments (F) were applied in a volume of 5 gal/A through a microtube to the seed furrow. Foliar sprays were applied with three, D₃23 nozzles/row delivering 15 gal/A. The initial application was applied at flowering (R₁) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

D. TREATMENT AND RATE:

1. Echo 720SC 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
2. JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz/A (1st, 2nd, 3rd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)
3. JAU6476 480SC 5.7 fl oz/A (F)
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz/A (1st, 2nd, 3rd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)
4. Sectagon 42% 7.5 gal/A (C)
Echo 720SC 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
5. Sectagon 42% 7.5 gal/A (C)
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz/A (1st, 2nd, 3rd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)
6. Sectagon 42% 7.5 gal/A (C)
JAU6476 480SC 5.7 fl oz/A (F)
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz/A (1st, 2nd, 3rd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2004; peanut 2003, corn 2002
3. Planting date and cultivar: 11 May 2005, Gregory
4. Soil fertility report:

pH.....	6.9
Ca	301 ppm
Mg	67 ppm
P	29 ppm
K.....	28 ppm
Zn	0.4 ppm
Mn	2.3 ppm
Soil type	Kenansville loamy sand

5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
6. Insecticide: Orthene 97S 6 oz/A (1 Jun, 14 Jun)
- Lorsban 13 lb/A (27 Jun)
7. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - d. Irrigation: ca. 1 in. (24 Jun, 1 Sep, 6 Sep)
8. Harvest date: 18 Oct 2005

Table 71. Effect of in-furrow and foliar treatments on emergence of peanut.

Treatment, rate/A and application date*	Plants/ft**	
	May 25	Jun 8
Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7).....	1.9 bc	3.1 c
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)		
Echo 720SC 1.5 pt (9/7).....	2.1 ab	3.2 bc
JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)		
Echo 720SC 1.5 pt (9/7).....	1.6 c	3.2 bc
Sectagon 42% 7.5 gal (C) Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7).....	2.3 a	3.5 ab
Sectagon 42% 7.5 gal (C) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)		
Echo 720SC 1.5 pt (9/7).....	2.2 ab	3.4 a-c
Sectagon 42% 7.5 gal (C) JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)		
Echo 720SC 1.5 pt (9/7).....	2.1 ab	3.6 a
LSD	0.4	0.3

* F=in furrow, C=chisel application. Foliar treatments were applied beginning at R₁ (flowering) and thereafter according to the leaf spot advisory.

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

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

Table 72. Effect of in-furrow and foliar treatments on soilborne diseases of peanut.

Treatment, rate/A and application date ¹	Seedling disease ² (Jun 13)	CBR ³		Stem rot ⁴ (Aug 29)
		Aug 29	Sep 27	
Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	1.5	5.0 a	26.5 a	3.8
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	2.0	6.5 a	21.3 a	0.8
JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.8	1.3 b	12.5 b	2.3
Sectagon 42% 7.5 gal (C) Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	0.3	1.0 b	12.5 b	3.8
Sectagon 42% 7.5 gal (C) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.3	0.5 b	4.3 c	0.8
Sectagon 42% 7.5 gal (C) JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.0	1.0 b	1.3 c	0.3
LSD	n.s.	2.8	8.2	n.s.

¹ F=in furrow, C=chisel application. Foliar treatments were applied beginning at R₁ (flowering) and thereafter according to the leaf spot advisory.

² Number of dead or dying seedlings per plot. A random sample of seedlings was biopsied on Jun 13; *Cylindrocladium parasiticum* was recovered from 71% of plants tested.

³ Number of symptomatic and/or dead plants per plot.

⁴ Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

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

Table 73. Effect of in-furrow and foliar treatments on Tomato spotted wilt virus (TSWV), Cercospora leaf spot, and defoliation of peanut.

Treatment, rate/A and application date ¹	TSWV ² (Aug 29)	% leaf spot ³		% defoliation ⁴ (Sep 27)
		Aug 29	Sep 27	
Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	15.0	0.3	0.6	0.1
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	11.8	0.3	17.3	1.3
JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	13.0	0.3	2.0	0.1
Sectagon 42% 7.5 gal (C) Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	16.0	0.5	1.0	0.1
Sectagon 42% 7.5 gal (C) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	14.5	0.1	16.6	0.1
Sectagon 42% 7.5 gal (C) JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	12.3	0.8	13.3	0.1
LSD	n.s.	n.s.	n.s.	n.s.

¹ F=in furrow, C=chisel application. Foliar treatments were applied beginning at R1 (flowering) and thereafter according to the leaf spot advisory.

² Number of symptomatic and/or dead plants per plot.

³ Leaf spot rating scale: 0=none; 100=spots on all leaflets.

⁴ Defoliation rating scale: 0=none; 100=no leaves on plants.

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

Table 74. Effect of in-furrow and foliar treatments on incidence of fungi in taproots of peanut.

Treatment, rate/A and application date*	Biopsy test (% +)**				
	<i>Cylindrocladium parasiticum</i>	<i>Sclerotium rolfsii</i>	<i>Aspergillus flavus</i>	<i>Aspergillus niger</i>	<i>Rhizoctonia solani</i>
Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	71 a	3	3	5	5
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)					
Echo 720SC 1.5 pt (9/7).....	35 b	1	1	2	3
JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)					
Echo 720SC 1.5 pt (9/7).....	42 b	3	3	3	6
LSD	25	n.s.	n.s.	n.s.	n.s.

* F=in furrow. Foliar treatments were applied beginning at R1 (flowering) and thereafter according to the leaf spot advisory.

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

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

Table 75. Effect of in-furrow and foliar treatments on yield of peanuts.

Treatment, rate/A and application date*	Yield** (lb/A)
Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	1670 c
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)	
Echo 720SC 1.5 pt (9/7).....	2466 b
JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)	
Echo 720SC 1.5 pt (9/7)	2043 bc
Sectagon 42% 7.5 gal (C) Echo 720SC 1.5 pt (7/5, 7/20, 8/4, 8/19, 9/7)	2364 b
Sectagon 42% 7.5 gal (C) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)	
Echo 720SC 1.5 pt (9/7)	3212 a
Sectagon 42% 7.5 gal (C) JAU6476 480SC 5.7 fl oz (F) JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (7/5, 7/20, 8/4, 8/19)	
Echo 720SC 1.5 pt (9/7)	3366 a
LSD	409

* F=in furrow, C=chisel application. Foliar treatments were applied beginning at R1 (flowering) and thereafter according to the leaf spot advisory.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 3 Oct and harvested on 18 Oct 2005.

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

XX. EVALUATION OF IN-FURROW AND FOLIAR TREATMENTS FOR CONTROL OF SOILBORNE DISEASES OF PEANUT (TAREC Research farm)

A. PURPOSE: To determine the efficacy of in-furrow and foliar treatments for control of soilborne and foliar diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Two, 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of three seed/ft of row

C. APPLICATION OF TREATMENTS: In-furrow treatments (F) were mixed in water and applied in a volume of 5 gal/A through a microtube to the seed furrow when planting (Apr 28). Foliar sprays of fungicides were applied with three, D₃23 nozzles/row delivering 15 gal/A. The initial application was applied at flowering (R₁ – Jul 5) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇ – Sep 8).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Echo 720SC 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
3. JAU6476 480SC 5.7 fl oz (F)
Echo 720SC 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
4. JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)
5. JAU6476 480SC 5.7 fl oz (F)
JAU6476 480SC 2.38 fl oz + Folicur 432SC 5.3 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)
6. Headline 250EC 12 fl oz (1st, 3rd spray)
Echo 720SC 1.5 pt (2nd, 4th, 5th spray)
7. Folicur 3.6F 7.2 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)
8. Headline 250EC 12 fl oz (1st, 3rd spray)
Folicur 3.6F 7.2 fl oz (2nd spray)
Echo 720SC 1.5 pt (4th, 5th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: Corn 2004; Peanut 2003, Corn 2002
3. Planting date and cultivar: 28 April 2005; VA 98R
4. Soil fertility report:

pH.....	6.4
Ca	327ppm
Mg	37 ppm
P	29 ppm
K.....	42 ppm
Zn	0.4 ppm
Mn	2.0 ppm
Soil type	Kenansville loamy sand

5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (7 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 - Post-emergence – Poast Plus 2 pt + ChemOil 1 pt/A (21 Jul)
6. *Cylindrocladium* black rot control: Sectagon 15 gal/A (1 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow (28 Apr)
 - Orthene 97S 6 oz/A (27 May, 14 Jun)
 - Lorsban 13 lb/A (27 Jun)
8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - c. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - d. Cultivation: 27 Jun
 - e. Irrigation: ca. 1 in. (23 Jun, 10 Aug, 1 Sep, 13 Sep)
10. Harvest date: 18 Oct 2005

Table 76. Effect of treatments on emergence and disease incidence in peanut.

Treatment, rate/A and application date ¹	Plants/ft ² (Jun 13)	Seedling disease ³ (Jun 21)	% leaf spot ⁴		
			Aug 5	Aug 27	Oct 4
Untreated check	2.3	0.5	5.5 a	38.8 a	94.8 a
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8).	2.4	1.3	0.1 b	0.1 b	0.5 b
JAU6476 480SC 5.7 fl oz (F)					
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8).	2.6	0.0	0.1 b	0.0 b	0.8 b
JAU6476 480SC 2.38 fl oz					
+ Folicur 432SC 5.3 fl oz (7/5, 7/21, 8/4)					
Echo 720SC 1.5 pt (8/19, 9/8).....	2.2	0.8	0.0 b	0.1 b	0.5 b
JAU6476 480SC 5.7 fl oz (F)					
JAU6476 480SC 2.38 fl oz					
+ Folicur 432SC 5.3 fl oz (7/5, 7/21, 8/4)					
Echo 720SC 1.5 pt (8/19, 9/8).....	2.5	0.0	0.1 b	0.0 b	0.3 b
Headline 250EC 12 fl oz (7/5, 8/4)					
Echo 720SC 1.5 pt (7/21, 8/19, 9/8).....	2.4	1.0	0.1 b	0.0 b	0.6 b
Folicur 3.6F 7.2 fl oz (7/5, 7/21, 8/4)					
Echo 720SC 1.5 pt (8/19, 9/8).....	2.3	0.3	0.1 b	0.3 b	1.0 b
Headline 250EC 12 fl oz (7/5, 8/4)					
Folicur 3.6F 7.2 fl oz (7/21)					
Echo 720SC 1.5 pt (8/19, 9/8).....	2.4	0.5	0.0 b	0.3 b	0.5 b
LSD.....	n.s.	n.s.	3.4	11.9	2.0

¹ F=in furrow (Apr 28). Foliar fungicides were applied at R₁ growth stage (flowering) and thereafter according to the leaf spot advisory.

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

³ Number of dead or dying seedlings per plot.

⁴ Leaf spot rating scale: 0=none, 100=spots on all leaflets.

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

Table 77. Effect of selected treatments on percent colonization of taproots by *Cylindrocladium parasiticum*, *Aspergillus flavus*, *Aspergillus niger* and *Rhizoctonia solani*.

Treatment, rate/A and application date*	Biopsy test (%+)**			
	<i>C. parasiticum</i>	<i>A. flavus</i>	<i>A. niger</i>	<i>R. solani</i>
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8)	7 a	4	0 b	3
JAU6476 480SC 5.7 fl oz (F)				
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8)	1 b	5	10 a	5
JAU6476 480SC 5.7 fl oz (F)				
JAU6476 480SC 2.38 fl oz				
+ Folicur 432SC 5.3 fl oz (7/5, 7/21, 8/4)				
Echo 720SC 1.5 pt (8/19, 9/8)	2 b	15	1 b	6
LSD.....	5	n.s.	7	n.s.

* F=in furrow (28 Apr). Foliar fungicides were applied beginning at R₁ growth stage (flowering) and thereafter according to the leaf spot advisory.

** Data are percent recovery of *Cylindrocladium parasiticum* from 25 taproots selected at random from each plot. Taproots were assayed with a selective medium on 3 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." = not significant.

Table 78. Effect of treatments on disease incidence, severity of defoliation and the yield in peanut.

Treatment, rate/A and application date ¹	CBR ² (Oct 4)	% web blotch ³ (Oct 4)	% defoliation ⁴ (Oct 4)	Yield ⁵ (lb/A)
Untreated check	9.0	2.8 a	50.0 a	3557 c
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8)....	7.8	0.0 b	0.0 b	4031 bc
JAU6476 480SC 5.7 fl oz (F)				
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/8)....	5.8	0.0 b	0.0 b	4312 ab
JAU6476 480SC 2.38 fl oz				
+ Folicur 432SC 5.3 fl oz (7/5, 7/21, 8/4)				
Echo 720SC 1.5 pt (8/19, 9/8).....	8.0	0.0 b	0.0 b	4555 a
JAU6476 480SC 5.7 fl oz (F)				
JAU6476 480SC 2.38 fl oz				
+ Folicur 432SC 5.3 fl oz (7/5, 7/21, 8/4)				
Echo 720SC 1.5 pt (8/19, 9/8).....	7.3	0.0 b	0.0 b	4581 a
Headline 250EC 12 fl oz (7/5, 8/4)				
Echo 720SC 1.5 pt (7/21, 8/19, 9/8)	10.5	0.0 b	0.0 b	4517 a
Folicur 3.6F 7.2 fl oz (7/5, 7/21, 8/4)				
Echo 720SC 1.5 pt (8/19, 9/8).....	5.5	0.0 b	0.0 b	4478 ab
Headline 250EC 12 fl oz (7/5, 8/4)				
Folicur 3.6F 7.2 fl oz (7/21)				
Echo 720SC 1.5 pt (8/19, 9/8).....	9.5	0.0 b	0.0 b	4632 a
LSD.....	n.s.	0.9	7.3	475

¹ F=in furrow (28 Apr). Foliar fungicides were applied beginning at R₁ growth stage (flowering) and thereafter according to the leaf spot advisory.

² Number of symptomatic plants per plot.

³ Web blotch rating scale: 0=none, 100=blotches on all leaflets. Note: ratings were also made on 27 Aug for CBR, southern stem rot, web blotch and sclerotinia blight. Only traces of these diseases were noted at that time.

⁴ Defoliation rating scale: 0=none, 100=no leaves on plants.

⁵ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 3 Oct and harvested on 18 Oct.

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

XXI. EVALUATION OF FUNGICIDES FOR CONTROL OF FOLIAR AND SOILBORNE DISEASES OF PEANUT (TAREC Research farm)

A. PURPOSE: To determine the importance of fungicide selection and sequences in programs for disease management

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleyways
2. Two, 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of four seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays of fungicides were applied with three, D₃23 nozzles/row delivering 15 gal/A. The initial application was applied at flowering (R₁) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Echo 720SC 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
3. SA-120301 7 fl oz/A (1st, 2nd, 3rd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)
4. Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz/A (1st, 3rd spray)
Folicur 430SC 7.2 fl oz (2nd, 4th spray)
Echo 720SC 1.5 pt (5th spray)
5. Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz/A (1st, 3rd spray)
Folicur 430SC 7.2 fl oz + Echo 720SC 1 pt (2nd, 4th spray)
Echo 720SC 1.5 pt/A (5th spray)
6. Headline 250EC 9 fl oz (1st, 3rd spray)
Folicur 430SC 7.2 fl oz (2nd, 4th spray)
Echo 720SC 1.5 pt (5th spray)
7. Folicur 3.6F 7.2 fl oz (1st, 2nd spray)
Headline 250EC 9 fl oz (3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)
8. Abound 2.08SC 12 fl oz (1st, 3rd spray)
Folicur 3.6F 7.2 fl oz (2nd, 4th spray)
Echo 720SC 1.5 pt (5th spray)
9. Folicur 3.6F 7.2 fl oz (1st, 2nd spray)
Abound 2.08SC 12 fl oz (3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)
10. Stratego 14 fl oz (1st, 3rd spray)
Folicur 3.6F 7.2 fl oz (2nd, 4th spray)
Echo 720SC 1.5 pt (5th spray)
11. Folicur 3.6F 7.2 fl oz (1st, 2nd spray)
Stratego 14 fl oz (3rd spray)
Echo 720SC 1.5 pt (4th, 5th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: Corn 2004; Peanut 2003, Corn 2002
3. Planting date and cultivar: 18 May 2005, VA 98R

4. Soil fertility report:

pH.....	5.9
Ca	209ppm
Mg	23 ppm
P	31 ppm
K.....	34 ppm
Zn	0.5 ppm
Mn	2.2 ppm
Soil type	Kenansville loamy sand
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 May)
 - Post-emergence – Poast Plus 2 pt + ChemOil 1 pt/A (21 Jul)
6. *Cylindrocladium* black rot control: Vapam 7.5 gal/A (19 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow (18 May)
 - Orthene 97S 6 oz/A (7 Jun)
 - Lorsban 11 lb/A (27 Jun)
8. Acaricide: Danitol 6 fl oz/A (29 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun)
 - c. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - d. Irrigation: ca. 1 in. (24 Jun, 11 Aug, 2 Sep, 13 Sep)
10. Harvest date: 26 Oct 2005

Table 79. Incidence of early leaf spot in fungicide-treated plots.

Treatment, rate/A and application date *	% leaf spot **		
	Aug 5	Sep 1	Oct 10
Untreated check	0.5	16.3 a	85.0 a
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/7)	0.1	0.1 b	0.1 b
SA-120301 7 fl oz (7/5, 7/21, 8/4, 8/19)			
Echo 720SC 1.5 pt (9/7)	0.1	0.1 b	0.5 b
Folicur 430SC 5.2 fl oz			
+ Absolute 500SC 3.5 fl oz (7/5, 8/4)			
Folicur 430SC 7.2 fl oz (7/21, 8/19)			
Echo 720SC 1.5 pt (9/7)	0.0	0.3 b	0.6 b
Folicur 430SC 5.2 fl oz			
+ Absolute 500SC 3.5 fl oz/A (7/5, 8/4)			
Folicur 430SC 7.2 fl oz			
+ Echo 720SC 1 pt (7/21, 8/19)			
Echo 720SC 1.5 pt/A (9/7)	0.1	0.1 b	0.1 b
Headline 250EC 9 fl oz (7/5, 8/4)			
Folicur 430SC 7.2 fl oz (7/21, 8/19)			
Echo 720SC 1.5 pt (9/7)	0.1	0.1 b	0.4 b
Folicur 3.6F 7.2 fl oz (7/5, 7/21)			
Headline 250EC 9 fl oz (8/4)			
Echo 720SC 1.5 pt (8/19, 9/7)	0.1	0.0 b	0.1 b
Abound 2.08SC 12 fl oz (7/5, 8/4)			
Folicur 3.6F 7.2 fl oz (7/21, 8/19)			
Echo 720SC 1.5 pt (9/7)	0.1	0.3 b	1.0 b
Folicur 3.6F 7.2 fl oz (7/5, 7/21)			
Abound 2.08SC 12 fl oz (8/4)			
Echo 720SC 1.5 pt (8/19, 9/7)	0.0	0.3 b	0.1 b
Stratego 14 fl oz (7/5, 8/4)			
Folicur 3.6F 7.2 fl oz (7/21, 8/19)			
Echo 720SC 1.5 pt (9/7)	0.0	0.3 b	1.0 b
Folicur 3.6F 7.2 fl oz (7/5, 7/21)			
Stratego 14 fl oz (8/4)			
Echo 720SC 1.5 pt (8/19, 9/7)	0.0	0.1 b	0.1 b
LSD	n.s.	4.5	4.3

* Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

** Leaf spot rating scale: 0=none; 100=spots on all leaflets.

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

Table 80. The effect of fungicide treatments on incidence of *Cylindrocladium* Black Rot (CBR), numbers of yellowed/dead plants, severity of defoliation and the yield of peanut.

Treatment, rate/A and application date ¹	CBR ² (Aug 5)	Yellowed/ dead plants ² (Oct 10)	% defolia- tion ³ (Oct 10)	Yield ⁴ (lb/A)
Untreated check	0.3	27.3	53.8 a	2145 c
Echo 720SC 1.5 pt (7/5, 7/21, 8/4, 8/19, 9/7).....	0.3	29.0	0.1 b	2684 bc
SA-120301 7 fl oz (7/5, 7/21, 8/4, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.5	35.0	0.1 b	3316 ab
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (7/5, 8/4)				
Folicur 430SC 7.2 fl oz (7/21, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.5	29.0	0.1 b	3408 ab
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz/A (7/5, 8/4)				
Folicur 430SC 7.2 fl oz + Echo 720SC 1 pt (7/21, 8/19)				
Echo 720SC 1.5 pt/A (9/7)	0.0	29.8	0.1 b	3526 ab
Headline 250EC 9 fl oz (7/5, 8/4)				
Folicur 430SC 7.2 fl oz (7/21, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.0	26.8	0.3 b	3105 a-c
Folicur 3.6F 7.2 fl oz (7/5, 7/21)				
Headline 250EC 9 fl oz (8/4)				
Echo 720SC 1.5 pt (8/19, 9/7)	0.0	23.5	0.1 b	3105 a-c
Abound 2.08SC 12 fl oz (7/5, 8/4)				
Folicur 3.6F 7.2 fl oz (7/21, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.3	23.8	0.1 b	4079 a
Folicur 3.6F 7.2 fl oz (7/5, 7/21)				
Abound 2.08SC 12 fl oz (8/4)				
Echo 720SC 1.5 pt (8/19, 9/7)	0.0	30.0	0.1 b	3460 ab
Stratego 14 fl oz (7/5, 8/4)				
Folicur 3.6F 7.2 fl oz (7/21, 8/19)				
Echo 720SC 1.5 pt (9/7)	0.0	29.3	0.1 b	3250 ab
Folicur 3.6F 7.2 fl oz (7/5, 7/21)				
Stratego 14 fl oz (8/4)				
Echo 720SC 1.5 pt (8/19, 9/7)	0.0	24.0	0.1 b	3342 ab
LSD	n.s.	n.s.	6.5	1008

¹ Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

² Number of symptomatic plants per plot. Yellowed/dead plants were likely CBR but lacked distinguishing characteristics of the disease.

³ Defoliation rating scale: 0=none; 100=no leaves on plants.

⁴ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 26 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD test (P=0.05), except the LSD for yield (P=0.07). Arcsine transformation of percentage data was made in analysis to determine statistical significance. "n.s." = not significant.

XXII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF FOLIAR DISEASES OF PEANUT (TAREC Research farm)

A. PURPOSE: To determine the efficacy of fungicide programs in control of early leaf spot, web blotch, southern stem rot, and *Cylindrocladium* black rot

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleyways between blocks
2. Two, 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of four seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays of fungicides were applied with three, D₃23 nozzles/row delivering 15 gal/A. The initial application was at beginning pod (R₃) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (1st, 3rd spray)
Folicur 430SC 7.2 fl oz (2nd spray)
Echo 720SC 1.5 pt (4th spray)
3. Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (1st, 3rd spray)
Folicur 430SC 7.2 fl oz + Echo 720SC 1 pt (2nd spray)
Echo 720SC 1.5 pt (4th spray)
4. Folicur 430SC 7.2 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th spray)
5. Folicur 430SC 7.2 fl oz + Induce 0.125% v/v (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th spray)
6. Folicur 430SC 7.2 fl oz (1st, 2nd, 3rd spray)
Topsin M 4.5F 10 fl oz (4th spray)
7. Folicur 430SC 7.2 fl oz + Topsin M 4.5F 5 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th spray)
8. Folicur 430SC 4.8 fl oz + Topsin M 4.5F 5 fl oz (1st, 2nd, 3rd spray)
Echo 720SC 1.5 pt (4th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: Corn 2004; Peanut 2003, Corn 2002
3. Planting date and cultivar: 28 Apr, VA 98R
4. Soil fertility report:

pH.....	6.4
Ca	327ppm
Mg	37 ppm
P	29 ppm
K.....	42 ppm
Zn	0.4 ppm
Mn	2.0 ppm
Soil type	Kenansville loamy sand
5. Herbicide:

Pre-plant - Prowl 1 pt/A (31 Mar)
Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (7 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)

Post-emergence – Poast Plus 2 pt + ChemOil 1 pt/A (21 Jul)

6. Cylindrocladium black rot control: Sectagon 15 gal/A (1 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow at planting
Orthene 97S 6 oz/A (27 May, 14 Jun)
Lorsban 13 lb/A (27 Jun)
8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - c. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - d. Irrigation: ca. 1 in. (23 Jun, 10 Aug, 1 Sep, 13 Sep)
10. Harvest date: 26 Oct 2005

Table 81. Incidence of foliar disease and severity of defoliation in fungicide-treated plots.

Treatment, rate/A and application date ¹	% leaf spot ²			% web blotch ²	% defoliation ³
	Aug 5	Aug 27	Oct 11	(Oct 11)	(Oct 11)
Untreated check.....	1.0	31.3 a	96.5 a	25.0 a	81.3 a
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (7/18, 8/18) Folicur 430SC 7.2 fl oz (8/2)					
Echo 720SC 1.5 pt (9/8).....	0.1	0.5 b	2.8 d	1.0 c	1.0 b
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (7/18, 8/18) Folicur 430SC 7.2 fl oz + Echo 720SC 1 pt (8/2)					
Echo 720SC 1.5 pt (9/8).....	0.1	0.6 b	8.0 cd	1.3 c	1.0 b
Folicur 430SC 7.2 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	0.1	0.3 b	13.8 cd	4.0 bc	1.8 b
Folicur 430SC 7.2 fl oz + Induce 0.125% v/v (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	0.1	0.3 b	7.0 cd	1.5 c	1.0 b
Folicur 430SC 7.2 fl oz (7/18, 8/2, 8/18) Topsin M 4.5F 10 fl oz (9/8).....	0.1	0.8 b	58.8 b	20.0 a	5.8 b
Folicur 430SC 7.2 fl oz + Topsin M 4.5F 5 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	0.1	0.6 b	13.8 cd	3.8 bc	1.8 b
Folicur 430SC 4.8 fl oz + Topsin M 4.5F 5 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	0.1	3.0 b	21.3 c	10.8 b	6.8 b
LSD	n.s.	2.9	14.0	8.9	5.8

¹ Fungicides were applied at the R₃ growth stage (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

² Leaf spot/web blotch rating scale: 0=none; 100=spots or blotches on all leaflets.

³ 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). "n.s." = not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 82. The effect of treatments on *Cylindrocladium* black rot (CBR) and yield of peanuts.

Treatment, rate/A and application date ¹	CBR ² (Oct 11)	Yield ³ (lb/A)
Untreated check.....	7.0	2528 b
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (7/18, 8/18) Folicur 430SC 7.2 fl oz (8/2)		
Echo 720SC 1.5 pt (9/8).....	10.8	4900 a
Folicur 430SC 5.2 fl oz + Absolute 500SC 3.5 fl oz (7/18, 8/18) Folicur 430SC 7.2 fl oz + Echo 720SC 1 pt (8/2) Echo 720SC 1.5 pt (9/8).....	9.5	4589 a
Folicur 430SC 7.2 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	11.3	4848 a
Folicur 430SC 7.2 fl oz + Induce 0.125% v/v (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	11.3	4952 a
Folicur 430SC 7.2 fl oz (7/18, 8/2, 8/18) Topsin M 4.5F 10 fl oz (9/8).....	11.0	4420 a
Folicur 430SC 7.2 fl oz + Topsin M 4.5F 5 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	11.3	4887 a
Folicur 430SC 4.8 fl oz + Topsin M 4.5F 5 fl oz (7/18, 8/2, 8/18) Echo 720SC 1.5 pt (9/8).....	12.5	4407 a
LSD	n.s.	579

¹ Fungicides were applied at the R₃ growth stage (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

² Number of symptomatic plants per plot.

³ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 26 Oct 2005.

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

XXIII. SUSCEPTIBILITY OF VIRGINIA- AND RUNNER-TYPE PEANUTS TO FOLIAR DISEASES (TAREC Research farm, Suffolk)

A. PURPOSE: To assess disease and yield of cultivars in the absence of fungicide treatments

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Two, 20-ft rows per plot with 36 in. row spacing
3. Fifteen-ft alleyways between blocks

C. CULTIVAR: V=virginia-type; R=runner-type

1. Perry (V)
2. VA 98R (V)
3. Gregory (V)
4. GA Hi/OL (V)
5. DP-1 (R)
6. Hull (R)
7. GA Green (R)
8. GA-02C (R)
9. GA-03L (R)
10. C99R (R)

D. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2004, cotton 2003, peanut 2002
3. Planting date: 17 May
4. Soil fertility report:

pH.....	5.9
Ca	209ppm
Mg	23 ppm
P	31 ppm
K.....	34 ppm
Zn	0.5 ppm
Mn	2.2 ppm
Soil type	Kenansville loamy sand
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 May)
 - Post-emergence – Poast Plus 2 pt + ChemOil 1 pt/A (21 Jul)
6. *Cylindrocladium* black rot control: Vapam 7.5 gal/A (19 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow (17 May)
 - Orthene 97S 6 oz/A (7 Jun)
 - Lorsban 11 lb/A (27 Jun)
8. Acaricide: Danitol 6 fl oz/A (29 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun)
 - c. Irrigation: ca. 1 in. (24 Jun, 11 Aug, 2 Sep, 13 Sep)
 - d. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - e. Cultivation: 27 Jun, 22 Jul
10. Harvest date: 26 Oct 2005

Table 83. Plant emergence and incidence of Tomato Spotted Wilt Virus (TSWV) in peanut cultivars.

Cultivar	Plants/ft ¹ (Jun 13)	TSWV ²			CBR ³ (Aug 29)	Stem rot ⁴ (Aug 29)
		Jun 21	Aug 4	Aug 29		
Virginia type						
Perry	3.8 b	3.0	8.5	11.0 ab	1.0	0.5
VA 98R	3.4 c	2.0	6.0	10.5 a-c	2.3	1.8
Gregory	3.3 cd	2.0	7.3	11.3 a	1.8	1.0
GA Hi/OL	2.9 e	3.3	5.3	6.5 de	0.8	0.3
Runner type						
DP-1	3.0 de	1.3	4.3	4.5 de	0.0	1.3
Hull	3.3 cd	1.5	6.8	7.0 c-e	1.5	0.3
GA Green	4.2 a	0.5	3.3	5.0 de	2.3	1.5
GA-02C	3.8 b	2.0	4.8	3.8 e	1.8	0.8
GA-03L	3.4 c	1.5	6.5	7.5 b-d	0.5	1.3
C99R	3.8 b	2.0	3.0	4.5 de	1.0	0.5
LSD.....	0.3	n.s.	n.s.	3.5	n.s.	n.s.

¹ Determined from counts of two, 20-ft rows per plot.

² Number of symptomatic plants per plot.

³ Number of symptomatic plants per plot.

⁴ Counts of infection centers in the two center rows of each plot or a total of 40 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

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

Table 84. Incidence of Cercospora leaf spot in peanut cultivars.

Cultivar	% leaf spot*				
	Aug 4	Aug 29	Total (Oct 10)	Early (Oct 10)	Late (Oct 10)
Virginia type					
Perry	0.1 c	9.3 b-d	90.8 c	47.5 bc	52.5 bc
VA 98R	0.3 c	18.8 a	98.0 a	72.5 a	27.5 cd
Gregory	1.0 bc	16.5 ab	97.3 ab	17.5 d	82.5 a
GA Hi/OL	1.1 bc	3.5 de	93.8 bc	17.5 d	82.5 a
Runner type					
DP-1	0.0 c	1.5 e	82.5 d	77.5 a	22.5 d
Hull	1.0 bc	4.8 c-e	95.0 a-c	75.0 a	25.0 d
GA Green	0.6 c	14.3 ab	93.8 bc	68.8 ab	31.3 b-d
GA-02C	3.0 a	11.0 bc	93.3 bc	62.5 a-c	37.5 b-d
GA-03L	2.3 ab	9.8 b-d	92.5 c	45.0 cd	55.0 b
C99R	1.0 bc	6.5 c-e	83.8 d	70.0 ab	30.0 b-d
LSD.....	1.4	7.3	6.0	24.0	24.0

* Leaf spot rating scale: 0=none; 100=spots on all leaflets.

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

Table 85. Defoliation, yield and value of peanut cultivars.

Cultivar	% defoliation ¹ (Oct 10)	Yield ² (lb/A)	Value ³ (\$/A)
Virginia type			
Perry	57.5 b	2902 de	493 cd
VA 98R	77.5 a	1888 f	322 e
Gregory	82.5 a	2326 ef	407 de
GA Hi/OL	55.0 b	4099 ab	754 a
Runner type			
DP-1	16.3 e	3661 a-c	577 c
Hull	25.0 c-e	3661 a-c	554 c
GA Green	51.3 b	3224 cd	563 c
GA-02C	41.3 b-d	3477 b-d	607 c
GA-03L	43.8 bc	3754 a-c	608 bc
C99R	21.3 de	4237 a	724 ab
LSD.....	17.1	677	117

¹ Defoliation rating scale: 0=none; 100=no leaves on plants.

² Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 26 Oct 2005.

³ Composite samples of pods were graded to determine market value at the loan rate and multiplied by yield to estimate value at farm gate (\$/A).

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

Table 86. Grade characteristics of peanut cultivars.

Cultivar	%*						Value** (¢/lb)
	FAN	ELK	SS	OK	DK	SMK	
Virginia type							
Perry	81	39	2.2	3.6	1.7	63	16.99
VA 98R	77	39	3.9	3.1	2.9	63	17.02
Gregory	88	51	2.6	1	3.1	66	17.51
GA Hi/OL	73	49	8.9	1.9	3	64	18.40
Runner type							
DP-1	0	0	2.6	12.4	0.5	59	15.74
Hull	0	0	6.1	9.8	1	54	15.12
GA Green	0	0	5.7	10.1	0.5	64	17.47
GA-02C	0	0	5.4	7.3	0.8	65	17.45
GA-03L	0	0	4.1	6.8	0.9	61	16.19
C99R	0	0	3.6	7.4	1.2	65	17.08

* FAN=fancy sized in-shell, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Data are from a composite sample from four reps of each cultivar.

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

XXIV. EVALUATION OF FUNGICIDES FOR CONTROL OF SCLEROTINIA BLIGHT AND OTHER DISEASES OF PEANUT (TAREC)

A. PURPOSE: To compare the efficacy of fungicides for control of early leaf spot, web blotch, and Sclerotinia blight of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleyways
2. Four, 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of four to five seed/ft of row

C. APPLICATION OF TREATMENTS: Foliar sprays of fungicides were applied with three, D₃23 nozzles/row delivering 14.8 gal/A. The initial application was applied at flowering (R₁) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇). The Sclerotinia Advisory and scouting were used to determine timing of Omega and Endura (Trts 7, 8, 9, 10).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
3. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 2.56 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
4. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 3.42 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
5. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 4 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
6. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 5 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
7. Bravo 720 1.5 pt (1st, 2nd, 5th spray)
Bravo 720 1.5 pt + Omega 500 1 pt (3rd, 4th spray)
8. Bravo 720 1.5 pt (1st, 2nd, 5th spray)
Bravo 720 1.5 pt + Omega 500 1.5 pt (3rd, 4th spray)
9. Bravo 720 1.5 pt (1st, 2nd, 5th spray)
Bravo 720 0.75 pt + Endura 70WG 9 oz (3rd, 4th spray)
10. Bravo 720 1.5 pt (1st, 2nd, 5th spray)
Endura 70WG 9 oz (3rd, 4th spray)
11. Folicur 3.6EC 7.2 fl oz + Induce 1.2 fl oz (1st, 2nd spray)
Topsin M 4.5F 10 fl oz (3rd, 4th spray)
Bravo 720 1.5 pt/A (5th spray)
12. Folicur 3.6EC 4.8 fl oz + Topsin M 4.5F 5 fl oz (1st, 2nd, 3rd, 4th spray)
Bravo 720 1.5 pt/A (5th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Center, Holland Rd., Suffolk
2. Crop history: corn 2004; peanut 2003, corn 2002
3. Planting date and cultivar: 4 May 2005, NC 12C

4. Soil fertility report: (Dec 2004)
 - pH..... 5.9
 - Ca 534 ppm
 - Mg 42 ppm
 - P 53 ppm
 - K..... 126 ppm
 - Zn 0.8 ppm
 - Mn 3.8 ppm
 - Soil type Nansemond fine sandy loam
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (1 Apr)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
6. Insecticide: Temik 15G 7 lb/A in furrow (4 May)
 - Orthene 97S 6 oz/A (27 May)
 - Lorsban 15G 11 lb/A (28 Jun)
 - Danitol 6 oz/A (22 Aug)
7. Cylindrocladium black rot control: Vapam 7.5 gal/A (19 Apr)
8. Additional crop management:
 - a. Liquid boron 1 qt (1 Apr)
 - b. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - c. Liquid Mn 2 qt/A (20 Jun, 18 Jul)
 - d. Cultivation: 28 Jun
9. Harvest date: 27 Oct 2005

Table 87. Incidence of soilborne diseases in fungicide-treated plots.

Treatment, rate/A and application date*	Sclerotinia blight**		Stem rot**
	Aug 30	Oct 13	(Oct 13)
Untreated check	1.5 a-c	13.0 a-c	7.3 ab
Bravo 720 1.5 pt (7/5, 7/21, 8/5, 8/22, 9/22).....	1.8 ab	15.5 ab	8.8 a
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 2.56 oz + Induce 0.125% v/v (7/21, 8/5, 8/22)..	1.3 a-d	9.5 bc	5.0 a-d
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 3.42 oz + Induce 0.125% v/v (7/21, 8/5, 8/22)..	1.0 a-d	9.3 bc	2.5 c-e
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 4 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	0.0 d	9.5 bc	1.5 de
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 5 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	2.0 a	18.0 a	3.5 b-e
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 1.5 pt + Omega 500 1 pt (8/5, 8/22)	0.0 d	1.0 d	2.0 de
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 1.5 pt + Omega 500 1.5 pt (8/5, 8/22)	0.5 b-d	1.5 d	0.8 e
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 0.75 pt + Endura 70WG 9 oz (8/5, 8/22).....	0.3 cd	1.5 d	3.8 b-e
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Endura 70WG 9 oz (8/5, 8/22)	0.0 d	1.5 d	4.8 a-e
Folicur 3.6EC 7.2 fl oz + Induce 1.2 fl oz (7/5, 7/21)			
Topsin M 4.5F 10 fl oz (8/5, 8/22)			
Bravo 720 1.5 pt/A (9/22)	0.8 a-d	12.0 a-c	6.5 a-c
Folicur 3.6EC 4.8 fl oz			
+ Topsin M 4.5F 5 fl oz (7/5, 7/21, 8/5, 8/22)			
Bravo 720 1.5 pt/A (9/22)	1.0 a-d	7.5 cd	2.8 c-e
LSD	1.3	7.4	4.2

* Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

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

Table 88. Incidence of foliar diseases in fungicide-treated plots.

Treatment, rate/A and application date*	% leaf spot (Oct 13)**		
	total	early	late
Untreated check	99.0 a	3.3 b	96.8 ab
Bravo 720 1.5 pt (7/5, 7/21, 8/5, 8/22, 9/22).....	46.3 e	11.5 ab	88.5 ab
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 2.56 oz + Induce 0.125% v/v (7/21, 8/5, 8/22)..	96.5 b	2.0 b	98.0 ab
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 3.42 oz + Induce 0.125% v/v (7/21, 8/5, 8/22)..	97.3 ab	1.3 b	98.8 ab
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 4 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	85.0 d	2.0 b	98.0 ab
Bravo 720 1.5 pt (7/5, 9/22)			
V-10116 50WD 5 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	95.8 bc	25.5 a	74.5 b
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 1.5 pt + Omega 500 1 pt (8/5, 8/22)	4.5 f	3.0 b	97.0 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 1.5 pt + Omega 500 1.5 pt (8/5, 8/22)	4.3 f	2.8 b	96.8 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Bravo 720 0.75 pt + Endura 70WG 9 oz (8/5, 8/22).....	1.5 f	11.8 ab	88.3 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)			
Endura 70WG 9 oz (8/5, 8/22)	92.0 c	4.3 b	95.8 ab
Folicur 3.6EC 7.2 fl oz + Induce 1.2 fl oz (7/5, 7/21)			
Topsin M 4.5F 10 fl oz (8/5, 8/22)			
Bravo 720 1.5 pt/A (9/22)	94.5 bc	1.0 b	99.0 a
Folicur 3.6EC 4.8 fl oz			
+ Topsin M 4.5F 5 fl oz (7/5, 7/21, 8/5, 8/22)			
Bravo 720 1.5 pt/A (9/22)	95.8 bc	2.0 b	98.0 ab
LSD	4.6	n.s.	n.s.

* Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

** Total leaf spot is the percentage of leaflets with one or more spots. Leaf spot rating scale: 0=none; 100=spots on all leaflets. "early" and "late" report the percentage of total leaf spot caused by *Cercospora arachidicola* and *Cercosporidium personatum*, respectively.

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 89. Effect of fungicide treatments on defoliation and yield of peanuts.

Treatment, rate/A and application date ¹	% defoliation ² (Oct 13)	Yield ³ (lb/A)
Untreated check	90.0 a	3214 e
Bravo 720 1.5 pt (7/5, 7/21, 8/5, 8/22, 9/22).....	4.5 d-f	3606 de
Bravo 720 1.5 pt (7/5, 9/22)		
V-10116 50WD 2.56 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	16.3 b	4038 bc
Bravo 720 1.5 pt (7/5, 9/22)		
V-10116 50WD 3.42 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	8.0 cd	4469 a
Bravo 720 1.5 pt (7/5, 9/22)		
V-10116 50WD 4 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	6.0 de	4155 a-c
Bravo 720 1.5 pt (7/5, 9/22)		
V-10116 50WD 5 oz + Induce 0.125% v/v (7/21, 8/5, 8/22).....	16.3 b	3868 cd
Bravo 720 1.5 pt (7/5, 7/21, 9/22)		
Bravo 720 1.5 pt + Omega 500 1 pt (8/5, 8/22)	0.3 ef	4273 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)		
Bravo 720 1.5 pt + Omega 500 1.5 pt (8/5, 8/22)	0.3 ef	4403 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)		
Bravo 720 0.75 pt + Endura 70WG 9 oz (8/5, 8/22).....	0.1 f	4051 bc
Bravo 720 1.5 pt (7/5, 7/21, 9/22)		
Endura 70WG 9 oz (8/5, 8/22)	4.8 d-f	4090 a-c
Folicur 3.6EC 7.2 fl oz + Induce 1.2 fl oz (7/5, 7/21)		
Topsin M 4.5F 10 fl oz (8/5, 8/22)		
Bravo 720 1.5 pt/A (9/22)	12.5 bc	4011 bc
Folicur 3.6EC 4.8 fl oz		
+ Topsin M 4.5F 5 fl oz (7/5, 7/21, 8/5, 8/22)		
Bravo 720 1.5 pt/A (9/22)	9.3 cd	4194 a-c
LSD.....	4.6	401

¹ Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

² Defoliation rating scale: 0=none; 100=no leaves on plants.

³ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 19 Oct and harvested on 27 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.

XXV. EVALUATION OF FUNGICIDES FOR CONTROL OF EARLY LEAFSPOT AND SCLEROTINIA BLIGHT OF PEANUT (TAREC)

- A. PURPOSE: To determine the dosage effect of experimental fungicides for control of early leaf spot, web blotch, Sclerotinia blight, and other diseases of peanut
- B. EXPERIMENTAL DESIGN:
- Four randomized complete blocks separated by 10-ft alleyways
 - Four, 35-ft rows per plot with 36-in. row spacing
 - Seeding rate of four to five seed/ft of row
- C. APPLICATION OF TREATMENTS: Foliar sprays of fungicides were applied with three, D₃23 nozzles/row delivering 14.8 gal/A. The initial application of fungicide was applied at flowering (R₁) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇). Omega and Endura fungicide (Trt 3 and 4) were applied with Bravo 720 when recommended by Sclerotinia blight advisory.
- D. TREATMENT AND RATE/A:
- Untreated check
 - Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
 - Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
Substitute Bravo 720 1.5 pt + Omega 500 1 pt when recommended by Scl. Adv.
 - Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
Substitute Bravo 720 0.75 pt + Endura 70WG 9 oz when recommended by Scl. Adv.
 - Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (1st, 2nd, 3rd, 4th spray)
Bravo 720 1.5 pt (5th spray)
 - Bravo 720 1.5 pt (1st, 2nd, 5th spray)
Headline 250EC 9 fl oz (3rd, 4th spray)
- E. ADDITIONAL INFORMATION:
- Location: TAREC Research Farm, Hare Rd., Suffolk
 - Crop history: Corn 2004; Cotton 2003, Peanut 2002
 - Planting date and cultivar: 4 May 2005, NC 12C
 - Soil fertility report: (Dec. 2004)

pH.....	5.9	K.....	126 ppm
Ca	534 ppm	Zn	0.8 ppm
Mg	42 ppm	Mn	3.8 ppm
P	53 ppm	Soil type	Nansemond fine sandy loam
 - Herbicide:
 - Pre-plant - Prowl 1 pt/A (1 Apr)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (19 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 - Insecticide: Temik 15G 7 lb/A in furrow (4 May)
 - Orthene 97S 6 oz/A (27 May)
 - Lorsban 15G 11 lb/A (28 Jun)
 - Danitol 6 oz/A (22 Aug)
 - Cylindrocladium black rot control: Vapam 7.5 gal/A (19 Apr)
 - Additional crop management:
 - Liquid boron 1 qt (1 Apr)
 - Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 - Liquid Mn 2 qt/A (20 Jun, 18 Jul)
 - Cultivation: 28 Jun
 - Harvest date: 27 Oct 2005

Table 90. Incidence of soilborne diseases in fungicide-treated plots.

Treatment, rate/A and application date ¹	Sclerotinia blight ²		Stem rot ²	CBR ³
	Aug 30	Oct 14	(Oct 14)	(Oct 14)
Untreated check	0.8	7.5 b	6.0 ab	0.3
Bravo 720 1.5 pt (7/5, 7/21, 8/5, 8/22, 9/22).....	0.5	16.5 a	3.3 b	0.3
Bravo 720 1.5 pt (7/5, 7/21, 9/22)				
Bravo 720 1.5 pt + Omega 500 1 pt (8/5, 8/22)	0.0	1.8 c	2.3 b	1.5
Bravo 720 1.5 pt (7/5, 7/21, 9/22)				
Bravo 720 0.75 pt + Endura 70WG 9 oz (8/5, 8/22).....	0.0	0.8 c	2.0 b	1.8
Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (7/5, 7/21, 8/5, 8/22)				
Bravo 720 1.5 pt (9/22)	0.0	7.3 b	4.8 b	0.5
Bravo 720 1.5 pt (7/5, 7/21, 9/22)				
Headline 250EC 9 fl oz (8/5, 8/22)	0.8	4.3 bc	10.0 a	1.0
LSD	n.s.	5.3	4.5	n.s.

¹ Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

² 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.

³ Number of symptomatic plants per plot.

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

Table 91. Effect of fungicide treatments on disease incidence, defoliation, and yield of peanut.

Treatment, rate/A and application schedule ¹	% leaf spot (Oct 16) ²			% defoliation ³	Yield ⁴
	total	early	late	(Oct 16)	(lb/A)
Untreated check	99.0 a	2.5 c	97.5 a	97.3 a	2985 c
Bravo 720 1.5 pt (7/5, 7/21, 8/5, 8/22, 9/22)....	35.0 b	18.8 bc	81.3 ab	2.3 cd	4373 ab
Bravo 720 1.5 pt (7/5, 7/21, 9/22)					
Bravo 720 1.5 pt + Omega 500 1 pt (8/5, 8/22)	8.5 c	30.0 b	70.0 b	1.0 d	4255 b
Bravo 720 1.5 pt (7/5, 7/21, 9/22)					
Bravo 720 0.75 pt + Endura 70WG 9 oz (8/5, 8/22).....	5.0 c	55.0 a	45.0 c	1.0 d	4464 ab
Folicur 3.6F 7.2 fl oz + Induce 1.2 fl oz (7/5, 7/21, 8/5, 8/22)					
Bravo 720 1.5 pt (9/22)	92.5 a	8.8 bc	91.3 ab	15.0 b	4595 a
Bravo 720 1.5 pt (7/5, 7/21, 9/22)					
Headline 250EC 9 fl oz (8/5, 8/22)	57.5 b	17.5 bc	82.5 ab	6.0 c	4216 b
LSD	23.3	22.5	22.5	4.6	352

¹ Fungicides were applied at the R₁ growth stage (flowering) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

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

³ Defoliation rating scale: 0=none; 100=no leaves on plants.

⁴ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 19 Oct and harvested on 27 Oct 2005.

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.

XXVI. SUSCEPTIBILITY OF VIRGINIA- AND RUNNER-TYPE PEANUTS TO SCLEROTINIA BLIGHT (TAREC Research farm)

A. PURPOSE: To assess disease and yield of cultivars in the absence of fungicide treatments

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleys
2. Two, 20-ft rows per plot with 36 in. row spacing

C. CULTIVAR: V=virginia-type; R=runner-type

1. Perry (V)
2. VA 98R (V)
3. Gregory (V)
4. GA Hi/OL (V)
5. DP-1 (R)
6. Hull (R)
7. GA Green (R)
8. GA-02C (R)
9. GA-03L (R)
10. C99R (R)

D. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2004, cotton 2003, peanut 2002
3. Planting date: 1 Jun 2005
4. Soil fertility report: (Dec 2004)

pH.....	6.9	K.....	53 ppm
Ca.....	317 ppm	Zn.....	0.7 ppm
Mg.....	43 ppm	Mn.....	3.5 ppm
P.....	34 ppm	Soil type.....	Kenansville loamy sand
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (27 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (1 Jun)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (19 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow (1 Jun)
 - Orthene 97S 6 oz/A (28 Jun)
 - Lorsban 15G 13 lb/A (22 Jul)
8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Cercospora leaf spot control: Bravo WS 1.5 pt/A (18 Jul, 2 Aug, 22 Aug) according to leaf spot advisory program
10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (24 Jun)
 - c. Liquid Mn 1 qt/A (2 Aug)
 - d. Irrigation: ca. 1 in. (22 Jun, Aug, 31); ca. 0.75 in. (9 Aug, 1 Sep, 6 Sep)
 - e. Cultivation: 22 Jul
11. Harvest date: 1 Nov 2005

Table 92. Effect of cultivar on incidence of soilborne disease, yield and value of peanut.

Cultivar and type	Sclerotinia ¹			CBR/TSWV ² (Oct 21)	Yield ³ (lb/A)	Value ⁴ (\$/A)
	Sep 14	Oct 11	Oct 21			
Virginia type						
Perry.....	1.3 c	7.5 cd	12.0 d	5.5 ab	4887	865 ab
VA 98R	1.3 c	9.0 c	15.5 cd	6.5 a	4670	795 b
Gregory	0.8 c	11.3 c	18.8 bc	3.3 b-d	4887	575 c
GA Hi/OL	0.8 c	2.0 d	4.5 e	4.3 a-c	4735	876 ab
Runner type						
DP-1	2.3 bc	12.5 bc	22.5 ab	2.3 cd	3844	578 c
Hull	2.5 bc	17.0 ab	23.8 ab	2.3 cd	5039	837 ab
GA Green.....	4.5 a	18.3 a	24.8 ab	2.0 cd	5104	844 ab
GA-02C.....	0.8 c	10.5 c	18.5 bc	1.8 d	5017	885 ab
GA-03L.....	0.8 c	11.3 c	13.5 cd	3.3 b-d	4952	769 b
C99R.....	4.0 ab	19.5 a	28.3 a	2.0 cd	5538	958 a
LSD.....	1.8	5.6	6.4	2.3	n.s.	140

¹ Counts of infection centers in a total of 40 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.

² Number of symptomatic and/or dead plants per plot.

³ Yield of peanuts with 7% moisture. Peanuts were dug on 21 Oct and harvested on 1 Nov 2005.

⁴ Composite samples of pods were graded to determine market value at the loan rate, and multiplied by yield to estimate value at farm gate (\$/A).

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

Table 93. Grade characteristics of peanut cultivars.

Cultivar and type	%*						Value** (¢/lb)
	FAN	ELK	SS	OK	DK	SMK	
Virginia type							
Perry.....	74	44	0.9	1.9	2.1	68	17.70
VA 98R	75	41	2.1	2.4	2.5	64.5	17.03
Gregory	88	50	1	1.7	7.5	60.5	11.77
GA Hi/OL	52	43	0.9	1.7	2	71.4	18.51
Runner type							
DP-1	0	0	0.8	12.4	0.6	57.9	15.04
Hull	0	0	0.8	5.9	0.5	66.3	16.61
GA Green.....	0	0	2.3	10.6	1	63.1	16.53
GA-02C.....	0	0	2.7	6.1	1	68.6	17.64
GA-03L.....	0	0	1.4	7.7	0.4	60.7	15.53
C99R.....	0	0	0.9	6.7	0.1	68.8	17.30

* 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, SMK=sound mature kernels. Data are from a composite sample from four reps of each variety.

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

XXVII. EVALUATION OF FOLIAR TREATMENTS FOR CONTROL OF SOILBORNE DISEASES OF PEANUT (Duke farm)

A. PURPOSE: To compare the efficacy of fungicides against foliar and soilborne diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Two, 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of three seed/row ft

C. APPLICATION OF TREATMENTS: Fungicides were applied with three, D₃23 nozzles/row delivering 15 gal/A. The initial application was applied at beginning seed (R₃) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th, 5th spray)
3. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 2.56 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
4. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 3.42 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
5. Bravo 720 1.5 pt (1st, 5th spray)
V-10116 50WD 4 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
6. Bravo 720 1.5 pt (1st, 5th spray)
Folicur 3.6F 7.2 oz + Induce 0.125% v/v (2nd, 3rd, 4th spray)
7. Bravo 720 1.5 pt (1st, 3rd, 5th spray)
Abound 2.08SC 18 fl oz (2nd, 4th spray)
8. Bravo 720 1.5 pt (1st, 3rd, 5th spray)
Headline 250EC 12 fl oz (2nd, 4th spray)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Longstreet Lane, Suffolk
2. Crop history: Corn 2004, Peanut 2003, Corn 2002
3. Planting date and cultivar: 29 Apr 2005, VA 98R
4. Soil fertility report:

pH.....	6.3	K	87 ppm
Ca	436 ppm	Zn.....	0.8 ppm
Mg	61 ppm	Mn.....	3.1 ppm
P	28 ppm	Soil type.....	Suffolk loamy sand
5. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (7 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
6. Cylindrocladium black rot control: Sectagon 7.5 gal/A (5 Apr)
7. Insecticide: Temik 15G 7 lb/A in furrow (29 Apr)
 - Orthene 97S 6 oz/A (27 May)
 - Lorsban 13 lb/A (28 Jun)
8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)

- b. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 c. Landplaster: Peanut Maker 1500 lb/A (23 Jun)
 d. Cultivation: 28 Jun
 10. Harvest date: 20 Oct 2005

Table 94. Incidence of soilborne disease in fungicide-treated plots.

Treatment, rate/A and application date ¹	Stem rot ²		CBR ³ (Sep 1)	Yellowed/ dead plants ⁴ (Oct 6)
	Aug 4	Sep 1		
Untreated check	0.0	0.0	1.5	10.0
Bravo 720 1.5 pt (7/18, 8/2, 8/17, 9/8)	0.3	0.5	1.3	14.5
Bravo 720 1.5 pt (7/18, 9/22)				
V-10116 50WD 2.56 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.0	0.3	0.8	11.3
Bravo 720 1.5 pt (7/18, 9/22)				
V-10116 50WD 3.42 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.0	5.3	1.0	12.5
Bravo 720 1.5 pt (7/18, 9/22)				
V-10116 50WD 4 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.0	0.0	1.8	13.0
Bravo 720 1.5 pt (7/18, 9/22)				
Folicur 3.6F 7.2 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.0	0.8	1.8	15.0
Bravo 720 1.5 pt (7/18, 8/17, 9/22)				
Abound 2.08SC 18 fl oz (8/2, 9/8).....	0.0	0.8	2.0	13.0
Bravo 720 1.5 pt (7/18, 8/17, 9/22)				
Headline 250EC 12 fl oz (8/2, 9/8).....	0.0	0.0	2.5	17.5
LSD.....	n.s.	n.s.	n.s.	n.s.

¹ Treatments were applied at R₃ (beginning seed) and thereafter according to the leaf spot advisory.

² Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.

³ Number of symptomatic and/or dead plants per plot.

⁴ Plants had symptoms of CBR and TSWV, but lacked distinguishing characteristics of either disease.
Means are not significantly different (n.s.) according to Fisher's Protected LSD (P=0.05).

Table 95. Disease incidence in fungicide-treated plots.

Treatment, rate/A and application date ¹	% leaf spot ²			% defolia- tion ³ (Oct 6)	Yield ⁴ (lb/A)
	Aug 4	Sep 1	Oct 6		
Untreated check	0.8	35.0 a	89.0 a	47.5 a	3904
Bravo 720 1.5 pt (7/18, 8/2, 8/17, 9/8)	0.3	0.3 b	0.1 b	0.1 b	3653
Bravo 720 1.5 pt (7/18, 9/22) V-10116 50WD 2.56 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.1	0.0 b	0.3 b	0.1 b	4356
Bravo 720 1.5 pt (7/18, 9/22) V-10116 50WD 3.42 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.3	0.0 b	0.1 b	0.1 b	3452
Bravo 720 1.5 pt (7/18, 9/22) V-10116 50WD 4 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.1	0.0 b	0.1 b	0.1 b	4118
Bravo 720 1.5 pt (7/18, 9/22) Folicur 3.6F 7.2 oz + Induce 0.125% v/v (8/2, 8/17, 9/8).....	0.0	0.0 b	0.3 b	0.1 b	4093
Bravo 720 1.5 pt (7/18, 8/17, 9/22) Abound 2.08SC 18 fl oz (8/2, 9/8).....	0.3	0.1 b	0.3 b	0.1 b	4017
Bravo 720 1.5 pt (7/18, 8/17, 9/22) Headline 250EC 12 fl oz (8/2, 9/8).....	0.1	0.0 b	0.1 b	0.1 b	3641
LSD.....	n.s.	0.6	5.8	11.5	n.s.

¹ Treatments were applied at R₃ (beginning seed) and thereafter according to the leaf spot advisory.

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

³ Defoliation rating scale: 0=none, 100= no leaves on plants.

⁴ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 6 Oct and harvested on 20 Oct.

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

XXVIII. EFFECT OF PLANTING DATE AND CULTIVAR ON THE INCIDENCE OF TOMATO SPOTTED WILT VIRUS IN PEANUT (TAREC Research farm)

- A. PURPOSE: To assess the importance of planting date as a factor that governs the incidence and severity of tomato spotted wilt virus in peanut
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with main plots of planting date and subplots of varieties
 2. Five randomized complete blocks
 3. Two, 40-ft rows per plot with 36 in. row spacing
 4. Fifteen-ft alleyways between blocks
- C. PLANTING DATES: Main plots
1. April 15
 2. April 20
 3. April 27
 4. May 3
 5. May 11
 6. May 18
 7. May 23
- D. VARIETY: Sub-plots
1. Gregory
 2. Perry
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: corn 2004, corn 2003, peanut 2002
 3. Soil fertility report:

pH.....	6.4
Ca	327ppm
Mg	37 ppm
P	29 ppm
K.....	42 ppm
Zn	0.4 ppm
Mn	2.0 ppm
Soil type	Kenansville loamy sand
 4. Herbicide:
 - Pre-plant - Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (7 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (13 May)
 - Post-emergence – Poast Plus 2 pt + ChemOil 1 pt/A (21 Jul)
 5. Cylindrocladium black rot control: Sectagon 15 gal/A (1 Apr)
 6. Insecticide: Temik 15G 7 lb/A in furrow at planting
 - Orthene 97S 6 oz/A (27 May, 14 Jun)
 - Lorsban 13 lb/A (27 Jun)
 7. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
 8. Acaricide: Danitol 6 fl oz/A (22 Aug)

9. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - c. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - d. Irrigation: ca. 1 in. (23 Jun, 10 Aug, 1 Sep, 13 Sep)
10. Harvest date: 26 Oct 2005

Table 96. Effect of plant date on emergence and growth of peanut cultivars.

Planting date	Plants/ft* (4 wks AP)	
	Gregory	Perry
April 15	1.92 c	2.06 c
April 20	1.68 d	2.02 c
April 27	2.08 bc	2.11 c
May 3	2.11 b	2.38 b
May 11	2.58 a	2.91 a
May 18	2.65 a	3.02 a
May 23	2.56 a	2.83 a
LSD (P=0.05)	0.17	0.21
<i>Plant date mean</i>		
April 15	1.99 cd	
April 20	1.85 d	
April 27	2.09 c	
May 3	2.24 b	
May 11	2.74 a	
May 18	2.83 a	
May 23	2.69 a	
LSD (P=0.05)	0.14	
<i>Cultivar mean</i>		
Gregory	2.22 b	
Perry	2.48 a	
LSD (P=0.05)	0.08	
<i>Split-plot analysis</i>		
Plant date .....	.0001	
Cultivar .....	.0001	
Plant date x cultivar .....	.2011	

* Determined from counts of two, 40-ft rows per plot.

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

Table 97. Effect of plant date on incidence of TSWV in peanut cultivars.

Planting date	TSWV*							
	June 16		Jun 30		Jul 20		Aug 5	
	Gregory	Perry	Gregory	Perry	Gregory	Perry	Gregory	Perry
April 15	20.6 a	38.4 a	24.6 ab	24.6 a	10.4	11.6 a	13.2	8.8 bc
April 20	13.4 b	17.2 b	15.4 bc	14.4 bc	8.0	8.8 ab	8.8	8.2 bc
April 27	7.0 c	9.6 bc	7.8 bc	7.4 c	4.6	9.2 ab	7.8	10.2 ab
May 3	4.2 cd	6.8 c	7.6 c	7.0 c	4.8	8.2 a-c	9.0	13.0 a
May 11	1.6 cd	2.4 c	9.6 bc	12.8 bc	7.4	6.6 bc	12.0	9.0 bc
May 18	0.2 d	0.6 c	22.4 a-c	20.6 ab	6.4	4.8 bc	8.8	6.0 c
May 23	0.8 d	0.6 c	33.2 a	18.8 ab	9.0	3.8 c	7.4	7.8 bc
LSD (P=0.05)	6.0	9.1	16.9	9.8	n.s.	4.9	n.s.	3.3
<i>Plant date mean</i>								
April 15	29.5		24.6 a		11.0 a		11.0	
April 20	15.3		14.9 bc		8.4 ab		8.5	
April 27	8.3		7.6 c		6.9 b		9.0	
May 3	5.5		7.3 c		6.5 b		11.0	
May 11	2.0		11.2 c		7.0 b		10.5	
May 18	0.4		21.5 ab		5.6 b		7.4	
May 23	0.7		26.0 a		6.4 b		7.6	
LSD (P=0.05)	--		9.5		3.3		n.s.	
<i>Cultivar mean</i>								
Gregory	6.8		17.2		7.2		9.6	
Perry	10.8		15.1		7.6		9.0	
LSD (P=0.05)	--		n.s.		n.s.		n.s.	
<i>Split-plot analysis</i>								
Plant date.....	.0001		.0031		.0144		.6145	
Cultivar .....	.0001		.3965		.6963		.6483	
Plant date x cultivar	.0001		.6284		.0959		.5284	

* Number of symptomatic plants per two row plot.

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

Table 98. Effect of plant date on incidence of TSWV in peanut cultivars (Cont'd).

Planting date	TSWV*			
	Aug 26		Oct 11	
	Gregory	Perry	Gregory	Perry
April 15	8.2	13.0	29.8	36.4
April 20	11.8	11.8	31.8	35.6
April 27	10.2	14.2	24.0	37.0
May 3	8.8	17.0	27.8	35.6
May 11	14.0	12.6	30.2	38.2
May 18	10.0	8.6	25.8	29.0
May 23	9.8	10.0	19.2	26.8
LSD (P=0.05)	n.s.	n.s.	n.s.	n.s.
<i>Plant date mean</i>				
April 15	10.6		33.1	
April 20	11.8		33.7	
April 27	12.2		30.5	
May 3	12.9		31.7	
May 11	13.3		34.2	
May 18	9.3		27.4	
May 23	9.9		23.0	
LSD (P=0.05)	--		n.s.	
<i>Cultivar mean</i>				
Gregory	10.4		26.9 b	
Perry	12.5		34.1 a	
LSD (P=0.05)	--		3.0	
<i>Split-plot analysis</i>				
Plant date .....	.5521		.4332	
Cultivar .....	.0101		.0001	
Plant date x cultivar .....	.0111		.6465	

* Number of symptomatic plants per two row plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). "n.s." = not significant, "--" = denotes LSD not valid because of significant planting date by cultivar interaction.

Table 99. Incidence of tomato spotted wilt virus in taproots of Perry and effect of plant date on yield of peanut cultivars.

Planting date	TSWV	Yield (lb/A)**	
	taproot test* (% +)	Gregory	Perry
April 15	30	3848	3621
April 20	44	3857	3821
April 27	52	4084	3739
May 3	32	4029	3757
May 11	46	3939	3766
May 18	32	4193	3784
May 23	30	4147	3784
LSD (P=0.05)	n.s.	n.s.	n.s.
<i>Plant date mean</i>			
April 15		3734	
April 20		3839	
April 27		3911	
May 3		3893	
May 11		3852	
May 18		3988	
May 23		3966	
LSD (P=0.05)		n.s.	
<i>Cultivar mean</i>			
Gregory		4014	a
Perry		3753	b
LSD (P=0.05)		104	
<i>Split-plot analysis</i>			
Plant date .....		.1966	
Cultivar .....		.0001	
Plant date x cultivar .....		.5043	

* Based on 10 randomly selected taproots per plot of Perry on 17 Oct. Taproot tissue was assayed using Agdia TSWV immunoassay strips.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 17 Oct and harvested on 26 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." = not significant.

XXIX. SUSCEPTIBILITY OF VIRGINIA- AND RUNNER-TYPE CULTIVARS OF PEANUT TO TOMATO SPOTTED WILT VIRUS (Wyne Farm, Suffolk)

A. PURPOSE: To determine the value of TSWV resistance in new runner-type cultivars and compare the disease response and yield to virginia-type cultivars

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Ten-ft alleyways between blocks
3. Two, 35-ft rows per plot with 36-in. row spacing
4. Seeding rate of 3 to 4 seed/ft of row

C. CULTIVARS (V = virginia-type; R = runner-type)

1. Andru II (R)
2. ANorden (R)
3. Carver (R)
4. DP-1 (R)
5. Georgia Green (R)
6. Georgia-01R (R)
7. Georgia-02C (R)
8. Hull (R)
9. GA-03L (R)
10. AP-3 (R)
11. C99R (R)
12. AgraTech VC2 (V)
13. Georgia Hi O/L (V)
14. Gregory (V)
15. NC-V11 (V)
16. Champs (V)
17. VA 98R (V)
18. Perry (V)
19. NC 12C (V)
20. Wilson (V)
21. N00098 OL (V)
22. N01013 T (V)
23. N02006 (V)
24. GA 002506 (V)

D. ADDITIONAL INFORMATION:

1. Location: Wyne Farm, Lummis Rd., Suffolk
2. Crop history: Cotton 2004
3. Planting date: 5 May 2005
4. Soil fertility report (Dec. 2004)

pH.....	6.1
Ca	320 ppm
Mg	50 ppm
P	25 ppm
K.....	63 ppm
Zn	0.9 ppm
Mn	1.9 ppm
Soil type	Nansemond fine sandy loam

5. Herbicide:
 - Pre-plant - Dual II Magnum 1 pt + Prowl 1.5 pt/A (21 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.45 fl oz/A (13 May)
6. Insecticide: Temik 15G 7 lb/A in furrow (5 May)
 - Orthene 97S 6 oz/A (27 May, 7 Jun)
 - Lorsban 15G 13 lb/A (27 Jun)
7. Acaricide: Danitol 6 fl oz/A (22 Aug)
8. *Cylindrocladium* black rot control: Vapam 7.5 gal/A (21 Apr)
9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
10. Additional crop management:
 - a. Liquid Mn 1 qt/A (18 Jul, 2 Aug)
 - b. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - c. Cultivation: 27 Jun
11. Harvest date: 18 Oct (virginia-type); 29 Oct (runner-type)

Table 100. Plant populations and incidence of tomato spotted wilt virus (TSWV) in field plots of runner- and virginia-types cultivars of peanut

Cultivar and type	Plants/ft ¹ (Jun 7)	TSWV ²				TSWV taproot test ³ (% +)
		Jun 20	Jul 6	Jul 21	Aug 24	
Runner type						
Andru II	2.35 e-g	0.5	6.0	5.3 f-h	8.5 fg	--
ANorden	2.45 d-g	0.5	2.8	5.0 f-h	8.3 fg	--
Carver	2.54 c-f	1.8	4.0	8.3 c-g	21.0 a-d	--
DP-1	2.28 fg	1.3	2.0	5.3 f-h	13.5 c-g	--
Georgia Green	2.69 c-e	0.3	3.8	7.5 c-h	7.5 g	15 bc
Georgia-01R	2.18 g	1.0	2.5	2.5 h	10.5 e-g	--
Georgia-02C	2.48 d-g	1.8	4.0	7.5 c-h	9.3 e-g	--
Hull	2.48 d-g	1.5	5.8	7.0 d-h	7.8 g	9 c
GA-03L	2.23 fg	0.5	3.8	5.0 f-h	8.5 fg	18 bc
AP-3	2.63 c-e	1.0	6.0	4.3 gh	6.0 g	--
C99R	2.51 d-g	0.8	2.3	5.3 f-h	9.8 e-g	--
Virginia type						
AgraTech VC2	2.28 fg	0.3	4.5	8.3 c-g	12.0 d-g	--
Georgia Hi O/L ...	2.55 c-f	1.0	7.5	5.8 e-h	6.3 g	--
Gregory	2.49 d-g	2.0	6.0	10.3 b-f	18.5 b-e	16 bc
NC-V11	2.27 fg	2.5	4.3	13.0 a-c	22.0 a-c	--
Champs	3.35 a	0.8	4.3	9.3 b-g	18.0 b-f	--
VA 98R	2.86 bc	1.8	5.8	17.3 a	22.8 a-c	--
Perry	2.40 d-g	2.0	6.5	11.3 b-e	29.3 a	38 a
NC 12C	2.65 c-e	1.8	7.0	14.3 ab	23.8 ab	--
Wilson	3.12 ab	1.3	4.5	11.5 b-d	15.3 b-g	21 b
N00098 OL	2.54 c-f	1.3	4.3	9.0 b-g	20.5 a-d	--
N01013 T	2.47 d-g	1.0	3.3	7.5 c-h	13.8 c-g	--
N02006	2.71 cd	2.8	4.3	10.3 b-f	14.0 b-g	--
GA 002506	2.69 c-e	1.3	2.5	5.0 f-h	9.3 e-g	--
LSD.....	0.35	n.s.	n.s.	5.5	10.0	10

¹ Determined from counts of two, 35-ft rows per plot.

² Number of symptomatic plants per plot.

³ Three varieties each of virginia- and runner-types were selected for taproot assays. Taproots from 20 randomly selected plants per plot were subjected to an Agdia TSWV immunoassay test when plots were inverted into windrows (virginia-type: 6 Oct, runner-type: 20 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." =not significant.

Table 101. Main stem height, disease incidence and maturity in peanut cultivars.

Cultivar and type	Mainstem height (in.) ¹ (Aug 15)	Sclerotinia blight ² (Aug 24)	Stem rot ² (Aug 24)	CBR ³ (Pre-harvest)	% mature ⁴		
					Sep 9	Sep 28	Oct 10
Runner type							
Andru II	12.3 g-k	0.3	1.3	18.3 a-c	7.3	52.5	54.6
ANorden	12.2 g-k	0.5	1.8	25.3 a	43.9	70.9	70.6
Carver	12.4 f-k	0.8	1.8	16.5 b-d	8.6	44.5	48.5
DP-1	11.1 i-k	0.3	1.5	10.3 d-i	9.4	32.5	44.5
Georgia Green	11.5 h-k	0.0	5.3	23.5 ab	31.1	61.0	80.9
Georgia-01R	11.8 h-k	0.3	2.0	9.3 d-i	11.0	45.8	36.1
Georgia-02C	13.2 d-h	0.5	1.8	10.3 d-i	9.7	31.3	44.6
Hull	10.7 k	0.5	3.0	11.5 c-h	10.8	40.1	45.3
GA-03L	14.0 d-g	0.3	0.3	13.5 c-f	34.8	85.2	69.0
AP-3	15.0 cd	0.8	1.8	22.3 ab	13.6	59.0	55.6
C99R	12.8 e-j	0.5	2.0	13.8 c-e	16.3	50.0	69.6
Virginia type							
AgraTech VC2 ...	12.6 f-k	0.8	0.3	6.3 f-i	24.4	59.6	--
Georgia Hi O/L ..	10.8 jk	0.0	2.5	7.0 e-i	17.9	59.3	--
Gregory	16.1 bc	0.0	1.8	8.3 e-i	25.7	39.4	--
NC-V11	14.7 c-e	0.0	2.5	14.0 c-e	17.8	48.3	--
Champs	13.1 d-i	0.3	1.8	8.8 e-i	36.2	73.4	--
VA 98R	14.1 c-g	0.3	1.5	13.8 c-e	29.7	56.7	--
Perry	15.1 cd	0.0	0.5	4.0 i	27.0	45.1	--
NC 12C	18.7 a	1.0	2.0	5.5 g-i	15.6	48.7	--
Wilson	14.7 c-e	0.5	1.5	12.5 c-g	37.7	53.2	--
N00098 OL	14.4 c-f	0.8	2.8	9.8 d-i	25.6	51.6	--
N01013 T	16.1 bc	0.3	2.5	5.0 hi	19.2	49.6	--
N02006	17.6 ab	0.8	3.3	9.5 d-i	36.6	69.3	--
GA 002506	12.6 f-k	0.8	1.5	7.8 e-i	3.8	9.9	19.7
LSD.....	2.0	n.s.	n.s.	7.4	--	--	--

¹ Data represent measurements of four plants per plot.

² 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.

³ Number of symptomatic plants per plot. Virginia-type cultivars were rated on 5 Oct; runner-types were rated on 16 Oct.

⁴ Percentages of whole pods with mesocarp tissues either black or brown. Virginia types were dug on 5 Oct, except GA 002506 because of its late maturity.

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

Table 102 Yield and value of peanut cultivars.

Cultivar and type	Yield* (lb/A)	Value** (\$/A)
<i>Runner type</i>		
Andru II	3687 fg	633 hi
ANorden	3547 g	615 hi
Carver	4185 c-g	733 gh
DP-1	4042 e-g	606 i
Georgia Green	4056 e-g	725 f-i
Georgia-01R	4479 be	770 e-g
Georgia-02C	4431 b-e	808 c-g
Hull	4322 b-f	691 g-i
GA-03L	4691 b-e	793 d-g
AP-3	4126 d-g	684 g-i
C99R	4707 b-e	802 d-g
<i>Virginia type</i>		
AgraTech VC2	4688 b-e	803 d-g
Georgia Hi O/L	5014 ab	983 ab
Gregory	4826 a-d	865 b-e
NC-V11	4625 b-e	828 c-f
Champs	4537 b-e	836 c-f
VA 98R	4223 c-g	787 e-g
Perry	5492 a	1034 a
NC 12C	4537 b-e	817 c-f
Wilson	4524 b-e	793 d-g
N00098 OL	4311 b-f	765 e-g
N01013 T	5002 ab	911 a-d
N02006	4549 b-e	827 c-f
GA 002506	4858 a-c	928 a-c
LSD	704	125

* Yields of peanuts with 7% moisture. Virginia types were dug on 5 Oct, except for GA 002506 which was dug with the runner types on Oct 20. Virginia types were combined on 18 Oct, and runner-type peanuts were combined on 29 Oct.

** Composite samples of pods from four replications of each cultivar were graded to determine the loan market value which was multiplied by yield to estimate value at farm gate (\$/A).

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

Table 103. Grade characteristics of peanut cultivars.

Cultivar and type	%*								Value** (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	
Runner type									
Andru II	0	1	--	--	5	6	0	65	17.17720
ANorden	1	2	--	--	4	6	0	67	17.34667
Carver	0	2	--	--	3	5	1	69	17.51540
DP-1	1	2	--	--	1	13	0	58	14.99515
Georgia Green	0	1	--	--	3	5	0	70	17.87020
Georgia-01R	1	4	--	--	5	4	1	67	17.19091
Georgia-02C	0	1	--	--	5	4	1	70	18.23660
Hull	0	1	--	--	3	9	0	61	15.98920
GA-03L	0	1	--	--	2	5	0	67	16.91000
AP-3	1	1	--	--	2	7	0	65	16.57232
C99R	1	2	--	--	2	5	1	68	17.04303
Virginia type									
AgraTech VC2	1	0	59	29	1	4	2	66	17.11992
Georgia Hi O/L ...	1	3	77	66	3	1	2	74	19.60993
Gregory	1	2	95	58	2	2	1	67	17.91773
NC-V11	1	1	63	43	2	3	2	68	17.91393
Champs	0	1	54	91	1	2	2	68	18.43093
VA 98R	1	1	87	50	2	2	1	70	18.62894
Perry	1	0	92	54	2	2	0	70	18.82004
NC 12C	1	2	92	58	2	2	2	68	17.99856
Wilson	1	0	87	46	2	3	1	65	17.52010
N00098 OL	1	2	97	58	2	2	2	67	17.75366
N01013 T	1	1	85	51	1	3	1	69	18.22183
N02006	1	0	94	59	1	1	2	69	18.17003
GA 002506	1	2	81	54	9	2	1	66	19.11030

* Data are from a composite sample from four reps of each variety. 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, SMK=sound mature kernels. Fancy sized in-shell and extra large kernel grade characteristics do not apply to runner-type peanuts.

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

Table 104. Summary comparison of runner and virginia-type cultivars.

Type mean	Plants/ft ¹ (Jun 7)	TSWV ²		CBR ²		Yield ⁴ (lb/A)	Value ⁵	
		Jul 21	Aug 24	(Pre-harvest)	% mature ³ (Sep 28)		¢/lb	\$/A
Runner type.....	2.44 b	5.7 b	10.0 b	15.8 a	52.1	4207 b	16.99	715 b
Virginia type	2.64 a	10.2 a	17.3 a	8.6 b	51.1	4706 a	18.25	860 a
LSD.....	0.13	1.8	3.3	2.6	--	226	--	44

¹ Determined from counts of two, 35-ft rows per plot.

² Number of symptomatic plants per plot.

³ Percentages of whole pods with mesocarp tissues either black or brown.

⁴ Yield of peanuts with 7% moisture. Virginia types peanuts were dug on 5 Oct and harvested on 18 Oct; runner types were dug on 20 Oct and harvested on 29 Oct 2005.

⁵ Value (¢/lb) is market value based on the loan rate for peanuts and value (\$/A) = (lb/A) x (¢/lb).

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

XXX. EVALUATION OF T₃ GENERATION OF TRANSGENIC PEANUT LINES WITH THE OXALATE OXIDASE GENE (TAREC Research farm).

A. PURPOSE: To compare agronomic traits of parent cultivars to T₃ transgenic peanut lines, and levels of resistance to Sclerotinia blight

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks of entries in each group. Each cultivar group was separated by two border rows of VA 98R and 15-ft alleyways between replications
2. Two, 25-ft rows per plot with 36-in. row spacing
3. Seed were spaced 4 to 5 in. apart at planting

C. CULTIVAR AND TRANSGENIC LINES:

Wilson

1. W73-27
2. W171-17
3. W83-7
4. W59-10
5. W59-11
6. W51-9
7. WILSON (non-transformed)

Perry

1. P53-26
2. P53-4
3. P53-30
4. P53-28
5. P53-27
6. P39-7
7. P39-8
8. P60-4
9. PERRY (non-transformed)

NC-7

1. N6-2
2. N6-1
3. N6-4
4. N70-8
5. N70-6
6. NC7 (non-transformed)

D. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2004, cotton 2003, peanut 2002
3. Planting date: 31 May 2005
4. Soil fertility report: (Dec 2004)

pH.....	6.9	K	53 ppm
Ca	317 ppm	Zn.....	0.7 ppm
Mg	43 ppm	Mn.....	3.5 ppm
P	34 ppm	Soil type.....	Kenansville loamy sand

5. Herbicide:
 - Pre-plant- Prowl 1 pt/A (31 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (27 Apr)
 - Pre-emergence- Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (1 Jun)
6. CBR: Vapam 7.5 gal/A (21 Apr, 25 Apr)
7. Insecticide: Temik 15 G 7 lb/A in furrow (31 May)
 - Orthene 97S 6 oz/A (28 Jun)
 - Lorsban 15G 13 lb/A (22 Aug)
8. Acaricide: Danitol 6 fl oz/A (22 Aug)
9. Cercospora leaf spot control: Bravo WS 1.5 pt/A (18 Jul, 2 Aug) Headline 9oz/A (22 Aug)
according to leaf spot advisory program
10. Additional crop management:
 - a. Liquid boron 1 qt/A (31 Mar)
 - b. Landplaster: Peanut Maker 1500 lb/A (24 Jun)
 - c. Liquid Mn 1 qt/A (20 Jun, 18 Jul, 2 Aug)
 - d. Irrigation: ca 1 in. (22 Jun, 31 Aug); ca. 0.75 in. (9 Aug, 1 Sep, 6 Sep)
 - e. Cultivation: 27 Jun, 22 Jul
11. Harvest date: Dug 1 Nov

Table 105. Gene expression in parent variety and transgenic lines containing the barley oxalate oxidase gene.

Parent	Trt	T ₀ -T ₁	Oxalate oxidase expression*	
			17 Aug	29 Sep
NC-7				
	1	N6-2	0.241 a	0.387 a
	2	N6-1	0.045 cd	0.091 c
	3	N6-4	0.085 bc	0.153 bc
	4	N70-8	0.106 b	0.237 b
	5	N70-6	0.031 de	0.081 cd
	6	NC7 (non-transformed)	-0.005 e	-0.008 d
		LSD.....	0.049	0.093
Perry				
	1	P53-26	0.092 bcd	0.195 bc
	2	P53-4	0.075 bcd	0.300 ab
	3	P53-30	0.064 cd	0.212 bc
	4	P53-28	0.043 de	0.151 c
	5	P53-27	0.069 cd	0.213 bc
	6	P39-7	0.126 ab	0.320 ab
	7	P39-8	0.115 abc	0.230 bc
	8	P60-4	0.153 a	0.405 a
	9	Perry (non-transformed)	-0.005 e	-0.011 d
		LSD.....	0.054	0.089
Wilson				
	1	W73-27	0.037 b	0.087 bc
	2	W171-17	0.096 a	0.235 a
	3	W83-7	0.000 c	0.014 cd
	4	W59-10	0.000 c	0.018 cd
	5	W59-11	0.054 b	0.153 b
	6	W51-9	-0.012 c	-0.009 d
	7	Wilson (non-transformed)	-0.020 c	-0.008 d
		LSD.....	0.028	0.078

* Oxalate oxidase expression determined in leaf samples from 10 plants per plot using a colorimetric detection method to measure hydrogen peroxide released from oxalic acid using a microtiter plate reader at 540 nm (Livingstone et al. 2005, Plant Phys. 137:1354).

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

Table 106. Disease incidence and yield for non-transformed parent and T₃ transgenic lines with the barley oxalate oxidase gene.

Parent	Trt	T ₀ -T ₁	Sclerotinia blight*				Yield** (lb/acre)
			9 Sep	4 Oct	27 Oct	AUDPC	
NC-7							
	1	N6-2	0.0 b	1.0 d	1.0 c	35.5 d	4046 a
	2	N6-1	0.5 b	13.5 bc	19.8 b	557.4 bc	3997 a
	3	N6-4	2.8 b	17.8 b	18.8 b	676.0 b	3418 ab
	4	N70-8	0.3 b	4.5 cd	9.8 bc	223.3 cd	3661 a
	5	N70-6	0.5 b	6.3 cd	7.3 c	239.6 cd	3725 a
	6	NC7 (non-transformed)	9.3 a	33.0 a	35.8 a	1318.8 a	2619 b
		LSD.....	4.5	11.1	11.2	411.8	831
Perry							
	1	P53-26	0.0 b	1.3 bc	2.3 c	55.9 c	3732 d
	2	P53-4	0.5 b	4.5 bc	7.0 bc	194.8 bc	4368 ab
	3	P53-30	0.3 b	5.0 bc	4.8 bc	177.8 bc	3825 cd
	4	P53-28	0.0 b	0.5 c	2.5 bc	40.8 c	4068 b-d
	5	P53-27	0.0 b	3.3 bc	6.0 bc	147.0 bc	4146 a-c
	6	P39-7	0.8 b	2.3 bc	6.8 bc	141.0 bc	4503 a
	7	P39-8	0.3 b	3.8 bc	6.8 bc	170.8 bc	4332 ab
	8	P60-4	0.8 b	7.5 b	8.9 b	290.0 b	3683 d
	9	Perry (non-transformed)	2.8 a	20.0 a	25.8 a	810.5 a	3711 d
		LSD.....	1.3	6.4	6.4	228.9	407
Wilson							
	1	W73-27	0.3 b	2.5 c	3.8 c	106.3 d	4290 a
	2	W171-17	0.3 b	5.0 c	6.8 bc	200.8 dc	4141 a
	3	W83-7	2.0 b	19.5 b	26.3 a	794.9 b	2889 b
	4	W59-10	3.0 b	21.0 b	29.8 a	883.6 ab	2903 b
	5	W59-11	2.3 b	9.8 c	14.0 b	423.1 c	3187 b
	6	W51-9	3.0 b	30.3 a	33.3 a	1145.9 a	2654 b
	7	Wilson (non-transformed) ..	7.0 a	25.3 ab	31.3 a	1052.9 ab	3166 b
		LSD.....	2.9	7.6	7.8	276.1	636

* Counts of infection centers in two-row 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 = area under the disease progress curve from 9 Sep to 27 Oct.

** Yields are weights of peanuts with 7% moisture. Peanuts were dug on 1 Nov and harvested on 9 Nov.

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

XXXI. EVALUATION OF SEED TREATMENTS FOR NEMATODE CONTROL IN SOYBEAN
(TAREC Research farm)

- A. PURPOSE: To compare the efficacy and benefits of seed and in-furrow treatments for nematode control
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 15-ft alleyways
 2. Four, 30-ft rows in main plots and varieties in subplots of two rows
 3. Row spacing was 36 inches
 4. Seeding rate was ca. 7 seed/ft of row
- C. APPLICATION OF TREATMENTS: all rates are active ingredient. Syngenta Crop Protection applied seed treatments. Temik 15G was applied to the open seed furrow (F) at planting.
- D. TREATMENT AND RATE (MAIN PLOTS): all rates are product active ingredient
1. Apron Maxx RFC 6.25 g/100 kg seed
 2. Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed
 3. Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed
 4. Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed
 5. Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F)
- E. VARIETIES (SUBPLOTS): two rows of each variety
1. Pioneer 95B42 (Susceptible to soybean cyst and southern root-knot)
 2. Pioneer 95B43 (Partially resistant to soybean cyst and southern root-knot)
- F. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Farm, Hare Rd., Suffolk, VA
 2. Crop history: 2004 peanut, 2003 wheat/soybean, 2002 peanut
 3. Planting date: 23 May 2005
 4. Soil fertility report:

pH.....	6.6
Ca	297 ppm
Mg	46 ppm
P	31 ppm
K.....	42 ppm
Zn	0.9 ppm
Mn	2.0 ppm
Soil type	Goldsboro fine sandy loam
 5. Herbicide: Prowl 1 pt/A (23 May)
Roundup Ultra Max 22 fl oz/A (13 Jun, 19 Jul)
 6. Harvest date: 1 Nov, 12 Nov 2005 (combine breakdown and weather delay)

Table 107. Effect of seed treatments on emergence of soybeans.

Treatment and rate (a.i.)	Plants/ft*			
	Jun 10		Jun 24	
	Pioneer 95B42	Pioneer 95B43	Pioneer 95B42	Pioneer 95B43
Apron Maxx RFC 6.25 g/100 kg seed	4.3	4.3 a	3.8	3.8 a
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	4.2	3.6 b	3.9	3.4 ab
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	4.1	3.5 b	3.8	3.3 b
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed.....	4.2	3.5 b	3.6	3.3 b
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	4.1	4.4 a	3.8	3.9 a
LSD.....	n.s.	0.3	n.s.	0.5
Treatment mean				
Apron Maxx RFC 6.25 g/100 kg seed	4.3		3.8	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	3.9		3.6	
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	3.8		3.5	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed.....	3.8		3.5	
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	4.3		3.9	
LSD.....	--		n.s.	
Variety mean				
Pioneer 95B42.....	4.2		3.8 a	
Pioneer 95B43.....	3.9		3.6 b	
LSD.....	--		0.2	
Split-plot analysis				
Treatment .....	.0003		.1902	
Variety.....	.0002		.0095	
Treatment x variety .....	.0012		.1197	

* 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."=not significant; "--" = LSD not valid due to significant variety by treatment interaction.

Table 108. Effect of seed treatments on incidence of soybean cyst nematode (SCN) and northern root knot nematode on soybean roots.

Treatment and rate (a.i.)	Root ratings (0-6)*			
	Pioneer 95B42		Pioneer 95B43	
	SCN	Root knot	SCN	Root knot
Apron Maxx RFC 6.25 g/100 kg seed	0.4	2.6 a	0.3	2.9 a
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	0.1	2.4 ab	0.3	2.4 a
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	0.4	2.3 ab	0.6	2.6 a
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed.....	0.6	1.9 bc	0.8	2.3 a
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	0.3	1.3 c	0.3	1.1 b
LSD.....	n.s.	0.7	n.s.	0.9
<i>Treatment mean</i>	<u>SCN</u>		<u>Root knot</u>	
Apron Maxx RFC 6.25 g/100 kg seed	0.3		2.8 a	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	0.2		2.4 ab	
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	0.5		2.4 ab	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed.....	0.7		2.1 b	
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	0.3		1.2 c	
LSD.....	n.s.		0.49	
<i>Variety mean</i>				
Pioneer 95B42.....	0.4		2.1	
Pioneer 95B43.....	0.4		2.3	
LSD.....	n.s.		n.s.	
<i>Split-plot analysis</i>				
Treatment .....	.5694		.0156	
Variety.....	.5466		.2672	
Treatment x variety .....	.8987		.7913	

* Determined from observations of two plant samples from each plot or a total of 8 per treatment. Rating scale: 0=none, 1=10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with SCN females or root-knot galls with females laying eggs or SCN females. Ratings were made on 30 Jul. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD test (P=0.05).

Table 109. Effect of seed treatments on nematode populations in Pioneer 95B42 soybeans.

Treatment and rate (a.i.)	Nematodes/500 cc soil*				
	Root knot	Stunt	Stubby root	Cyst	Cyst larvae
Apron Maxx RFC 6.25 g/100 kg seed	5,710	275	70	14	25
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	8,373	355	83	13	35
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	11,728	280	108	7	30
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed.....	10,945	250	83	8	15
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F)	7,848	315	43	14	35
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.

* Soil was sampled on 25 Aug.

“n.s.” = means are not significantly different according to Fisher’s Protected LSD (P=0.05). Square root transformation of population data was made in analysis to determine statistical significance.

Table 110. Effect of seed treatments on yield of soybeans.

Treatment and rate (a.i.)	Yield (bu/A)*	
	Pioneer 95B42	Pioneer 95B43
Apron Maxx RFC 6.25 g/100 kg seed	26.1	27.4
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	25.1	24.3
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	26.1	25.2
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed	28.5	25.9
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	28.6	26.9
LSD	n.s.	n.s.
<i>Treatment mean</i>		
Apron Maxx RFC 6.25 g/100 kg seed	26.8	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed	24.7	
Apron Maxx RFC 6.26 g/100 kg seed + STAN 500FS 0.2 mg /seed	25.7	
Apron Maxx RFC 6.25 g/100 kg seed + STAN 500FS 0.1 mg/seed + Cruiser 5FS 50 g/100 kg seed	27.2	
Apron Maxx RFC 6.25 g/100 kg seed + Temik 15G 0.75 lb/A (F).....	27.7	
LSD	n.s.	
<i>Variety mean</i>		
Pioneer 95B42.....	26.9	
Pioneer 95B43.....	25.9	
LSD	n.s.	
<i>Split-plot analysis</i>		
Treatment .....	.1442	
Variety.....	.1493	
Treatment x variety .....	.4445	

* Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybean harvest began on 1 Nov and was finished on 12 Nov due to an equipment breakdown.

“n.s.” = means are not significantly different according to Fisher’s Protected LSD (P=0.05).

XXXII. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (TAREC, Swine Unit Field)

A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Fifteen-ft alleyways between blocks
3. Two, 30-ft rows at 36 in. spacing in each plot

C. APPLICATION OF TREATMENTS: Treatments were applied in a foliar spray with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A.

1st Preventative = Aug 16 (R₃)

2nd Preventative = Aug 29 (R₅)

1st Curative = Aug 29 (R₅)

D. TREATMENT AND RATE/A:

1. Untreated check
2. Folicur 432SC 4 fl oz (1st spray-preventative, 2nd spray-preventative)
3. Folicur 432SC 4 fl oz (1st spray-preventative)
Stratego 250EC 7 fl oz + Induce 0.125% v/v (2nd spray-preventative)
4. Folicur 432SC 4 fl oz (1st spray-preventative)
Stratego 250EC 10 fl oz + Induce 0.125% v/v (2nd spray-preventative)
5. Stratego 250EC 7 fl oz + Induce 0.125% v/v (1st spray-preventative)
Folicur 432SC 4 fl oz (2nd spray-preventative)
6. Stratego 250EC 10 fl oz + Induce 0.125% v/v (1st spray-preventative)
Folicur 432SC 4 fl oz (2nd spray-preventative)
7. Stratego 250EC 7 fl oz + Induce 0.125% v/v (1st spray-preventative)
8. Absolute 500SC 3.5 fl oz (1st spray-preventative, 2nd spray-preventative)
9. Absolute 500SC 5 fl oz (1st spray-preventative, 2nd spray-preventative)
10. Folicur 432SC 4 fl oz (1st spray-curative)
11. Stratego 250EC 7 fl oz + Induce 0.125% v/v (1st spray-curative)
12. Stratego 250EC 10 fl oz + Induce 0.125 v/v (1st spray-curative)
13. Absolute 500 SC 8.3 ml (1st spray-curative)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Suffolk
2. Crop history: corn 2004
3. Planting date and cultivar: 23 May 2005, Asgrow 5603 RR
4. Soil fertility report:

pH.....	6.1
Ca	585 ppm
Mg	71 ppm
P	32 ppm
K.....	113 ppm
Zn	1.0 ppm
Mn	3.7 ppm
Soil type	Nansemond fine sandy loam
5. Herbicide: Roundup Ultra Max 22 fl oz/A (13 Jun, 27 Jul)
6. Harvest date: 26 Oct & 11 Nov 2005 due to combine breakdown and weather

Table 111. Incidence of frogeye leaf spot in soybeans.

Treatment, rate/A and spray date	% frogeye leaf spot*				
	Top leaves (Sep 7)		Bottom leaves (Sep 7)		Top leaves (Sep 30)
	% incidence	% leaf area	% incidence	% leaf area	
Untreated check	1.1	1.5	0.4	0.6	11.3 a
Folicur 432SC 4 fl oz (8/16, 8/29).....	1.0	1.3	0.5	0.4	3.8 d
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	0.6	1.4	0.3	0.3	8.0 ab
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/29).....	0.6	0.9	0.1	0.4	5.5 b-d
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	0.6	1.4	0.5	0.0	6.0 b-d
Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	0.6	0.6	0.1	0.0	4.5 cd
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16).....	1.1	0.5	0.5	0.3	4.3 d
Absolute 500SC 3.5 fl oz (8/16, 8/29).....	0.6	0.8	0.4	0.1	6.3 b-d
Absolute 500SC 5 fl oz (8/16, 8/29).....	0.4	0.8	0.5	0.6	6.5 b-d
Folicur 432SC 4 fl oz (8/29).....	1.6	1.5	0.6	0.6	7.8 bc
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	0.9	1.0	0.4	0.0	4.5 cd
Stratego 250EC 10 fl oz + Induce 0.125 v/v (8/29).....	0.9	0.8	0.1	0.4	6.5 b-d
Absolute 500 SC 8.3 ml (8/29).....	0.8	1.6	0.5	0.9	7.0 b-d
LSD.....	n.s.	n.s.	n.s.	n.s.	3.4

* Data are percent leaf area with disease symptoms.

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

Table 112. Incidence of brown spot and Cercospora blight in soybeans.

Treatment, rate/A and spray date	Brown spot*			Cercospora blight*
	% incidence (Sep 7)	% leaf area		% leaf area (Sep 30)
		Sep 7	Sep 30	
Untreated check	2.3	2.0	7.0 a	22.5 a
Folicur 432SC 4 fl oz (8/16, 8/29).....	1.0	1.8	3.8 b-d	15.5 b
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	1.1	2.0	5.3 ab	13.8 bc
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/29).....	0.8	1.3	3.8 b-d	9.5 d
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	0.8	1.3	3.0 cd	8.3 d
Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	0.9	0.6	3.8 b-d	11.3 cd
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16).....	0.8	2.0	4.0 b-d	9.5 d
Absolute 500SC 3.5 fl oz (8/16, 8/29)...	1.1	1.3	3.5 b-d	11.8 b-d
Absolute 500SC 5 fl oz (8/16, 8/29).....	1.4	0.8	2.8 d	8.3 d
Folicur 432SC 4 fl oz (8/29).....	0.9	1.4	5.0 a-c	15.0 bc
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	1.0	0.9	4.0 b-d	8.8 d
Stratego 250EC 10 fl oz + Induce 0.125 v/v (8/29).....	0.8	0.5	3.8 b-d	15.5 b
Absolute 500 SC 8.3 ml (8/29).....	2.0	2.0	3.3 b-d	15.5 b
LSD.....	n.s.	n.s.	2.0	4.2

* Brown spot occurred mostly in the lower canopy only. Cercospora blight was most prevalent in the upper canopy. Means followed by the same letter(s) in a column are not significantly different at P=0.05 according to Fisher's Protected LSD. "n.s." = not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 113. Leaf area with foliar disease, defoliation, blackened pods and the yield of response of soybeans.

Treatment, rate/A and spray date	Total % leaf area w/disease ¹ (Sep 30)	% defoliation ²		% black pods ³ (Oct 16)	Yield ⁴ (bu/A)
		Sep 30	Oct 16		
Untreated check	40.8 a	26.3 a	97.0 a	61.3 a	38.4
Folicur 432SC 4 fl oz (8/16, 8/29).....	23.0 b-e	12.5 bc	89.3 ab	48.8 ab	36.2
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	27.0 b	15.0 b	97.5 a	42.5 b-e	39.5
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/29).....	19.0 de	9.5 cd	89.5 ab	31.3 ef	45.1
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	16.5 e	8.5 cd	90.0 ab	32.5 d-f	35.8
Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	19.5 c-e	10.3 b-d	83.8 bc	36.3 b-f	39.7
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16)	17.8 e	7.0 d	91.3 ab	30.0 ef	32.7
Absolute 500SC 3.5 fl oz (8/16, 8/29)..	21.5 b-e	8.5 cd	93.0 ab	30.0 ef	36.6
Absolute 500SC 5 fl oz (8/16, 8/29).....	17.5 e	9.8 cd	75.3 c	28.8 f	34.2
Folicur 432SC 4 fl oz (8/29).....	25.3 b-d	11.3 b-d	91.0 ab	46.3 bc	31.6
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	17.3 e	10.0 b-d	94.3 ab	45.0 b-d	37.1
Stratego 250EC 10 fl oz + Induce 0.125 v/v (8/29).....	25.0 b-d	12.5 bc	95.8 a	32.5 d-f	35.4
Absolute 500 SC 8.3 ml (8/29).....	26.0 bc	10.8 b-d	94.3 ab	33.8 c-f	46.9
LSD	6.7	5.0	11.0	13.4	n.s.

¹ Leaf area with symptoms of foliar disease in the upper canopy.

² Defoliation rating scale: 0=none, 100=no leaves on plants.

³ Percent of plants with blackened pods caused by growth of sooty molds in wet weather (4 Oct – 12 Oct).

⁴ Yields of soybeans with 13.5% moisture. One bushel equals 60 lb.

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

Table 114. Seed weight and grade characteristics in soybeans.

Treatment, rate/A and spray date	Wt./100 seed (g)	% purple seed stain*	% phomopsis seed blight*
Untreated check	12.46 e	8.8 ab	1.3
Folicur 432SC 4 fl oz (8/16, 8/29).....	13.07 c-e	11.8 a	0.5
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	13.04 de	11.3 a	0.5
Folicur 432SC 4 fl oz (8/16) Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/29).....	12.89 de	4.0 cd	1.0
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	13.05 de	8.8 ab	0.8
Stratego 250EC 10 fl oz + Induce 0.125% v/v (8/16) Folicur 432SC 4 fl oz (8/29).....	13.69 a-c	4.5 cd	0.8
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16).....	13.14 cd	7.0 bc	0.8
Absolute 500SC 3.5 fl oz (8/16, 8/29).....	13.98 a	2.3 d	0.5
Absolute 500SC 5 fl oz (8/16, 8/29).....	13.86 ab	2.5 d	0.8
Folicur 432SC 4 fl oz (8/29).....	13.04 de	12.3 a	0.3
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/29).....	13.25 b-d	4.0 cd	0.8
Stratego 250EC 10 fl oz + Induce 0.125 v/v (8/29)	13.10 cd	3.5 cd	1.5
Absolute 500 SC 8.3 ml (8/29).....	13.36 a-d	4.3 cd	0.5
LSD.....	0.62	4.2	n.s.

* Data are percent of 100 seed with symptoms of each disease.

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

XXXIII. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (TAREC, Swine Unit Field)

A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Fifteen-ft alleyways between blocks
3. Two, 32-ft rows at 36 in. spacing in each plot

C. APPLICATION OF TREATMENTS: Treatments were applied in a foliar spray with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A. Applications were made at beginning pod stage (R₃ - pods ca. 0.25 in. long at 4th node down from top of plant).

D. TREATMENT AND RATE/A:

1. Untreated check
2. Folicur 432SC 4 fl oz (R₃)
3. Quadris 6 fl oz + Crop Oil Conc. 21 fl oz (R₃);
4. Stratego 250EC 7 fl oz + Induce 0.125% v/v (R₃)
5. Domark 230ME 5 fl oz (R₃)
6. Domark 230ME 5 fl oz + Orthene 97 8 oz (R₃)
7. Laredo EC 7 fl oz + Induce 2.64 fl oz (R₃)
8. Laredo EC 7 fl oz + Induce 2.64 fl oz (R₃);
Laredo EC 5 fl oz + Headline 250EC 6 fl oz (R₅)
9. Laredo EC 7 fl oz + Induce 2.64 fl oz (R₃);
Laredo EC 7 fl oz + Dithane DF 2 lb (R₅)
10. A9901 400SC 1.03 fl oz (R₃)
11. A12910 280SC 4 fl oz (R₃)
12. A12910 280SC 4 fl oz + Crop Oil Conc. 21 fl oz (R₃ and R₅)
13. Quilt 200SC 14 fl oz + Crop Oil Conc. 21 fl oz (R₃)
14. Headline 250EC 4.7 fl oz + Folicur 432SC 3.1 fl oz (R₃)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Suffolk
2. Planting date and cultivar: 23 May 2005, Asgrow 5603 RR
3. Crop history: corn 2004
4. Soil fertility report:

pH.....	6.1
Ca	585 ppm
Mg	71 ppm
P	32 ppm
K.....	113 ppm
Zn	1.0 ppm
Mn	3.7 ppm
Soil type	Nansemond fine sandy loam
5. Herbicide: Roundup Ultra Max 22 fl oz/A (13 Jun, 27 Jul)
6. Harvest date: 11 Nov 2005

Table 115. Incidence of foliar diseases and defoliation in soybeans on October 1.*

Treatment, rate/A and application date	% frogeye leaf spot	% brown spot	% cercospora blight	Total % disease	% defoliation
Untreated check	8.3 a	7.8 a	35.0 a	51.0 a	25.0 a
Folicur 432SC 4 fl oz (8/16).....	2.8 c-e	5.0 b	20.0 b	27.8 bc	17.0 b
Quadris 6 fl oz + Crop Oil Conc. 21 fl oz (8/16).....	2.3 de	3.8 b-d	10.8 g	16.8 fg	9.8 d
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16).....	1.8 e	3.8 b-d	9.5 g	13.8 g	7.5 d
Domark 230ME 5 fl oz (8/16)	4.8 bc	2.8 d	16.3 b-f	23.8 b-f	11.8 b-d
Domark 230ME 5 fl oz + Orthene 97 8 oz (8/16).....	2.5 c-e	4.8 bc	14.0 c-g	21.3 c-f	10.0 d
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16)	4.3 b-d	3.8 b-d	17.5 b-d	25.5 b-d	12.5 b-d
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16) Laredo EC 5 fl oz + Headline 250EC 6 fl oz (8/29).....	2.8 c-e	3.3 b-d	11.8 e-g	17.8 fg	9.5 d
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16) Laredo EC 7 fl oz + Dithane DF 2 lb (8/29).....	2.3 de	4.5 b-d	13.0 d-g	19.8 d-g	11.5 cd
A9901 400SC 1.03 fl oz (8/16).....	5.3 b	5.0 b	19.0 bc	29.3 b	16.0 bc
A12910 280SC 4 fl oz (8/16).....	4.0 b-e	4.0 b-d	17.0 b-e	25.0 b-e	12.0 b-d
A12910 280SC 4 fl oz + Crop Oil Conc. 21 fl oz (8/16, 8/29)	3.3 b-e	3.0 cd	12.0 e-g	18.3 e-g	9.5 d
Quilt 200SC 14 fl oz + Crop Oil Conc. 21 fl oz (8/16).....	1.8 e	4.0 b-d	11.0 fg	16.8 fg	7.5 d
Headline 250EC 4.7 fl oz + Folicur 432SC 3.1 fl oz (8/16).....	2.3 de	3.5 b-d	13.0 d-g	17.3 fg	8.8 d
LSD.....	2.4	1.9	5.3	7.0	5.4

* Data represent percent leaf area with symptoms on entire plant. Total % disease represents sum of frogeye leaf spot, brown spot and Cercospora blight ratings. Defoliation 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)..

Table 116. Pod discoloration, defoliation, yield and grade characteristics of soybeans.

Treatment, rate/A and application date	% discolored pods ¹ (Oct 16)	% defol- iation ² (Oct 16)	Yield ³ (lb/A)	Weight/ 100 seed (g)	% purple seed stain ⁴	% phomop- sis seed blight ⁴
Untreated check	66.3 a	98.5	32.1	13.3 b-e	17.5 a-e	1.0
Folicur 432SC 4 fl oz (8/16).....	56.3 b	96.8	32.9	13.1 c-e	18.5 a-d	2.0
Quadris 6 fl oz + Crop Oil Conc. 21 fl oz (8/16).....	32.5 e-g	95.0	32.0	13.9 a	14.5 b-e	1.8
Stratego 250EC 7 fl oz + Induce 0.125% v/v (8/16).....	41.3 c-e	96.5	35.5	13.9 a	13.0 de	2.0
Domark 230ME 5 fl oz (8/16)	40.0 de	96.8	33.1	13.6 a-c	21.0 a	1.0
Domark 230ME 5 fl oz + Orthene 97 8 oz (8/16).....	50.0 bc	96.8	30.9	13.5 a-d	17.5 a-e	0.8
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16)	52.5 b	97.0	32.0	13.0 de	19.3 a-c	0.5
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16) Laredo EC 5 fl oz + Headline 250EC 6 fl oz (8/29).....	27.5 f-h	95.0	30.9	13.2 b-e	16.5 a-e	1.8
Laredo EC 7 fl oz + Induce 2.64 fl oz (8/16) Laredo EC 7 fl oz + Dithane DF 2 lb (8/29).....	48.8 b-d	96.8	33.4	13.5 a-e	17.5 a-e	1.5
A9901 400SC 1.03 fl oz (8/16).....	47.5 b-d	88.5	32.2	12.9 e	20.3 ab	1.8
A12910 280SC 4 fl oz (8/16).....	36.3 ef	95.3	34.0	13.5 a-d	17.0 a-e	1.5
A12910 280SC 4 fl oz + Crop Oil Conc. 21 fl oz (8/16, 8/29).	23.8 gh	94.8	32.9	13.8 ab	7.0 f	2.3
Quilt 200SC 14 fl oz + Crop Oil Conc. 21 fl oz (8/16).....	40.0 de	95.5	32.8	13.6 a-c	12.0 ef	2.5
Headline 250EC 4.7 fl oz + Folicur 432SC 3.1 fl oz (8/16)	20.0 h	93.0	31.5	13.3 b-e	13.5 c-e	1.0
LSD.....	10.0	n.s.	n.s.	0.6	5.9	n.s.

¹ Discolored pods caused by growth of sooty molds during wet weather from 4 Oct to 12 Oct.

² Defoliation rating scale: 0=none, 100=no leaves on plants.

³ Yields of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 11 Nov.

⁴ Data are percent of 100 seed with symptoms of each disease.

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

XXXIV. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (TAREC Research farm)

- A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks
 2. Ten-ft alleyways between blocks
 3. Two, 30-ft rows at 18 in. spacing in each plot
- C. APPLICATION OF TREATMENTS: Treatments were applied in a foliar spray with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16.5 gal/A.
- D. TREATMENT AND RATE/A: (single spray at R₃- Aug 18)
1. Untreated check
 2. Folicur 432SC 4 fl oz
 3. Fertilizer 5-0-20-13S 2.5 gal
 4. Fertilizer 4-0-16-7S-4Cl 2.5 gal
 5. Folicur 432SC 4 fl oz + Fertilizer 5-0-20-13S 2.5 gal
 6. Folicur 432SC 4 fl oz + Fertilizer 4-0-16-7S-4Cl 2.5 gal
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Farm, Hare Rd., Suffolk, VA
 2. Crop history: 2004 peanut, 2003 wheat/soybean, 2002 peanut
 3. Planting date and variety: 23 April 2005, DP5634 RR
 4. Soil fertility report:

pH.....	6.6
Ca	297 ppm
Mg	46 ppm
P	31 ppm
K.....	42 ppm
Zn	0.9 ppm
Mn	2.0 ppm
Soil type	Goldsboro fine sandy loam
 5. Herbicide: Prowl 1 pt/A (23 May)
Roundup Ultra Max 22 fl oz/A (13 Jun, 19 Jul)
 6. Harvest date: 12 Nov 2005

Table 117. Disease incidence and defoliation in soybeans on Sep 26.

Treatment and rate/A ¹	% cercospora blight ²	% phomopsis stem blight ²	% defoliation ³
Untreated check	26.3	28.8 a	53.8 a
Folicur 432SC 4 fl oz	16.3	20.0 bc	37.5 c
Fertilizer 5-0-20-13S 2.5 gal	26.3	21.3 b	46.3 a-c
Fertilizer 4-0-16-7S-4Cl 2.5 gal.....	25.0	21.3 b	51.3 ab
Folicur 432SC 4 fl oz + Fertilizer 5-0-20-13S 2.5 gal.....	22.5	15.0 c	43.8 a-c
Folicur 432SC 4 fl oz + Fertilizer 4-0-16-7S-4Cl 2.5 gal.....	20.0	23.8 ab	41.3 bc
LSD.....	n.s.	5.7	10.3

¹ Single spray at R₃- Aug 18.

² Data are percent leaf or stem area with disease symptoms.

³ 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). "n.s." = not significant.

Table 118. Yield and grade characteristics of soybeans.

Treatment and rate/A ¹	Yield ² (bu/A)	Weight/100 seed (g)	% purple seed stain ³	% phomopsis seed blight ³
Untreated check	34.0	13.80	6.8	4.0
Folicur 432SC 4 fl oz	32.6	13.70	6.0	4.0
Fertilizer 5-0-20-13S 2.5 gal	29.8	13.73	3.0	2.8
Fertilizer 4-0-16-7S-4Cl 2.5 gal.....	34.4	13.41	5.3	5.0
Folicur 432SC 4 fl oz + Fertilizer 5-0-20-13S 2.5 gal	34.1	13.81	5.8	3.0
Folicur 432SC 4 fl oz + Fertilizer 4-0-16-7S-4Cl 2.5 gal ...	33.6	13.64	3.8	4.0
LSD.....	n.s.	n.s.	n.s.	n.s.

¹ Single spray at R₃- Aug 18.

² Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 12 Nov 2005.

³ Data are percent of 100 seed with symptoms of each disease.

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

XXXV. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (Glenn Hawkins Farm, Skippers, VA)

- A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks
 2. Five-ft alleyways between blocks
 3. Four, 30-ft rows at 36 in. spacing in each plot
- C. APPLICATION OF TREATMENTS: Treatments were applied in a foliar spray with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A.
- D. TREATMENT AND RATE/A: (all treatments sprayed on 20 Jul at R₂- full bloom)
1. Untreated check
 2. Quilt 1.67SC 14 fl oz + COC 1% v/v
 3. Stratego 250EC 10 fl oz + Induce 0.125% v/v
 4. Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz
 5. Folicur 432SC 4 fl oz
 6. Quadris 2.08SC 6 fl oz + COC 1% v/v
 7. Headline 2.08EC 6 fl oz
 8. Laredo 2EC 7 fl oz + Induce 0.125% v/v
 9. Echo 720 20 fl oz
 10. Echo 720 20 fl oz
- E. ADDITIONAL INFORMATION:
1. Location: Glen Hawkins farm, Skippers, VA
 2. Harvest date: 16 Nov 2005

Note: Plant counts averaged near 18/ft of row which resulted in heavy vegetative growth, reduced pod fill, and poor yield. Test site was stressed heavily in July, August and early September due to lack of rainfall.

Table 119. Incidence of foliar disease in soybeans on Sep 23.

Treatment and rate/A*	Bacterial blight**	Cercospora blight + anthracnose **
Untreated check	4.8 a	47.5 a
Quilt 1.67SC 14 fl oz + COC 1% v/v	1.5 c	6.8 c-e
Stratego 250EC 10 fl oz + Induce 0.125% v/v	2.5 bc	6.0 c-e
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz.....	1.8 c	2.5 e
Folicur 432SC 4 fl oz.....	4.5 ab	13.3 b-d
Quadris 2.08SC 6 fl oz + COC 1% v/v.....	2.0 c	6.8 c-e
Headline 2.08EC 6 fl oz.....	2.0 c	5.2 de
Laredo 2EC 7 fl oz + Induce 0.125% v/v	3.0 a-c	22.0 b
Echo 720 20 fl oz	3.5 a-c	16.0 b
Echo 720 20 fl oz	2.5 bc	14.8 bc
LSD.....	2.0	8.4

* Treatments applied at R₂ (full bloom) on 20 Jul.

** Data are % leaf area w/disease.

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

Table 120. Yield and grade characteristics of soybeans.

Treatment and rate/A ¹	Yield ² (bu/A)	Weight/ 100 seed (g)	% purple seed stain ³	% phomopsis seed blight ³
Untreated check	9.4	12.12 e	18.0	2.8
Quilt 1.67SC 14 fl oz + COC 1% v/v	11.6	12.90 a-d	22.0	1.8
Stratego 250EC 10 fl oz + Induce 0.125% v/v	9.7	12.95 a-c	18.3	2.3
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz...	10.6	13.21 ab	23.8	2.0
Folicur 432SC 4 fl oz.....	9.2	12.40 de	22.3	1.5
Quadris 2.08SC 6 fl oz + COC 1% v/v.....	10.2	12.84 b-d	25.5	2.5
Headline 2.08EC 6 fl oz.....	11.0	13.44 a	18.8	3.8
Laredo 2EC 7 fl oz + Induce 0.125% v/v	9.3	12.51 c-e	21.3	1.8
Echo 720 20 fl oz	9.3	12.39 de	21.3	1.0
Echo 720 20 fl oz	9.6	11.99 e	22.3	1.5
LSD.....	n.s.	0.55	n.s.	n.s.

¹ Treatments applied at R₂ (full bloom) on 20 Jul.

² Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 16 Nov 2005.

³ Data are percent of 100 seed with symptoms of each disease.

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

XXXVI. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (Chappell Farm Sr. Farm, Carson, VA)

- A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia
- B. EXPERIMENTAL DESIGN:
1. Five randomized complete blocks
 2. Ten-ft alleyways between blocks
 3. Five, 30-ft rows at 36 in. spacing in each plot
- C. APPLICATION OF TREATMENTS: Treatments were applied at the beginning pod stage (R₃ – Sep 5) in foliar sprays with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A.
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. Quilt 1.67SC 14 fl oz + COC 1% v/v
 3. Stratego 250EC 10 fl oz + Induce 0.125% v/v
 4. Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz
 5. Folicur 432SC 4 fl oz
 6. Quadris 2.08SC 6 fl oz + COC 1% v/v
 7. Headline 2.08EC 6 fl oz
 8. Laredo 2EC 7 fl oz + Induce 0.125% v/v
- E. ADDITIONAL INFORMATION:
1. Location: Chappell farm, Carson, VA
 2. Crop history: wheat/soybean 2004-2005, corn 2004, wheat/soybean 2003
 3. Planting date and cultivar: 5 Jul 2005, FFR RT557
 4. Soil fertility report: (Feb 2005)

pH.....	6.0
Ca	897 ppm
Mg	153 ppm
P	77 ppm
K.....	229 ppm
Zn	1.3 ppm
Mn	6.4 ppm
Cu	0.2 ppm
Fe.....	32.0 pp.
B.....	0.2 ppm
 5. Herbicide: Gly Star Plus 1 qt/A (22 Jul)
 6. Insecticide: Baythroid 1.6 fl oz/A (8 Sep)
 7. Harvest date: 16 Nov 2005

Table 121. Disease incidence in soybeans on Sep 23.

Treatment and rate/A ¹	% frogeye leaf spot ²	% leaf area w/symptoms	No. spots/ leaflet ³
Untreated check	100.0 a	8.0 a	74.8 a
Quilt 1.67SC 14 fl oz + COC 1% v/v	95.2 f	2.8 cd	25.6 c
Stratego 250EC 10 fl oz + Induce 0.125% v/v	97.4 c-e	3.2 b-d	33.6 bc
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz	97.2 de	2.4 d	18.4 c
Folicur 432SC 4 fl oz	98.6 bc	5.2 b	55.6 a
Quadris 2.08SC 6 fl oz + COC 1% v/v	96.6 ef	2.6 d	26.0 c
Headline 2.08EC 6 fl oz	98.2 b-d	3.4 b-d	34.0 bc
Laredo 2EC 7 fl oz + Induce 0.125% v/v	99.0 b	4.8 bc	54.4 ab
LSD.....	1.7	2.1	21.5

¹ Treatments were applied at R₃ (beginning pod stage) on Sep 5.

² Percentage of leaflets with one or more frogeye leaf spots.

³ Number of frogeye leaf spots per leaflet samples from the fourth node.

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 122. Yield and seed weight of soybeans.

Treatment and rate/A*	Yield** (bu/A)	Weight/ 100 seed (g)
Untreated check	26.6	13.29
Quilt 1.67SC 14 fl oz + COC 1% v/v	26.5	13.16
Stratego 250EC 10 fl oz + Induce 0.125% v/v	27.4	13.45
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz	28.3	13.51
Folicur 432SC 4 fl oz	29.7	13.07
Quadris 2.08SC 6 fl oz + COC 1% v/v	28.0	13.36
Headline 2.08EC 6 fl oz	28.0	13.61
Laredo 2EC 7 fl oz + Induce 0.125% v/v	27.5	13.18
LSD.....	n.s.	n.s.

* Treatments were applied at R₃ (beginning pod stage) on Sep 5.

** Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 16 Nov 2005.

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

XXXVII. FUNGICIDES FOR CONTROL OF SOYBEAN RUST AND COMMON DISEASES OF SOYBEAN IN VIRGINIA (TAREC Research farm)

- A. PURPOSE: To collect data needed to recommend fungicides for control of soybean rust, brown spot, anthracnose, frogeye leaf spot, pod and stem blight, and other soybean diseases in Virginia
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks
 2. Fifteen-ft alleyways between blocks
 3. Five, 34-ft rows at 15 in. spacing in each plot
- C. APPLICATION OF TREATMENTS: Treatments were applied at beginning seed (R₃ – Aug 29) in a foliar spray with 8002VS nozzles spaced 18 in. apart and delivering a spray volume of 16 gal/A.
- D. TREATMENT AND RATE/A: (Applied)
1. Untreated check
 2. Quilt 1.67SC 14 fl oz + COC 1% v/v
 3. Stratego 250EC 10 fl oz + Induce 0.125% v/v
 4. Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz
 5. Folicur 432SC 4 fl oz
 6. Quadris 2.08SC 6.2 fl oz + COC 1% v/v
 7. Headline 2.08EC 6 fl oz
 8. Laredo 2EC 7 fl oz + Induce 0.125% v/v
 9. MFC Tebuconazole 3.6 F 4 fl oz
 10. MFC Tebuconazole 3.6F 4 fl oz + PGR-IV PLUS 1 oz/A
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research farm, Hare Rd., Suffolk
 2. Crop history: wheat/fallow 2004, winter wheat 2004-2005
 3. Planting date and cultivar: 1 Jul 2005, CL 54RR (double-cropped after wheat)
 4. Soil fertility report:

pH.....	6.3
Ca	340 ppm
Mg	59 ppm
P	40 ppm
K.....	50 ppm
Zn	0.6 ppm
Mn	2.3 ppm
Soil type	Eunola loamy fine sand
 5. Herbicide: Roundup Ultra Max 22 fl oz/A (19 Jul)
 6. Harvest date: 12 Nov 2005

Table 123. Disease incidence in fungicide-treated plots.

Treatment and rate ¹	Frogeye leaf spot ² (Sep 8)		Brown spot ² (Sep 8)	
	%	% leaf	%	% leaf
	leaflets	area	leaflets	area
Untreated check	1.3	0.1	11.3	6.3
Quilt 1.67SC 14 fl oz + COC 1% v/v	1.6	0.1	13.8	7.5
Stratego 250EC 10 fl oz + Induce 0.125% v/v .	0.8	0.1	5.0	5.0
Headline 2.08EC 4.7 fl oz				
+ Folicur 432SC 3.1 fl oz	26.4 ³	1.3	7.5	6.3
Folicur 432SC 4 fl oz /A	3.1	0.1	10.0	5.0
Quadris 2.08SC 6.2 fl oz/A + COC 1% v/v	1.6	0.1	11.3	6.3
Headline 2.08EC 6 fl oz /A.....	0.4	0.1	7.5	5.0
Laredo 2EC 7 fl oz/A + Induce 0.125% v/v	1.0	0.1	7.5	4.3
MFC Tebuconazole 3.6 F 4 fl oz/A	20.6 ³	0.3	8.8	5.0
MFC Tebuconazole 3.6F 4 fl oz				
+ PGR-IV PLUS 1 oz/A	25.8 ³	1.3	11.3	7.5
LSD.....	n.s.	n.s.	n.s.	n.s.

¹ Treatments applied at R₃ growth stage (beginning pod) on Aug 29.

² Frogeye leaf spot ratings in the upper third of canopy and Brown spot in the lower third of canopy.

³ Suspect chemical injury not related to treatment.

“n.s.” = not significantly different according to Fisher’s Protected LSD (P=0.05).

Table 124. Disease incidence in fungicide-treated plots.

Treatment and rate*	Frogeye leaf spot** (Oct 14)		Cercospora blight** (Oct 14)	
	%	% leaf	%	% leaf
	leaflets	area	leaflets	area
Untreated check	4.5	0.8	98.8 a	40.0 a
Quilt 1.67SC 14 fl oz + COC 1% v/v	3.0	0.6	33.8 cd	10.0 d
Stratego 250EC 10 fl oz + Induce 0.125% v/v	3.0	0.8	41.3 c	10.0 d
Headline 2.08EC 4.7 fl oz				
+ Folicur 432SC 3.1 fl oz	2.0	0.3	23.8 d	5.0 d
Folicur 432SC 4 fl oz /A	3.5	0.3	86.3 b	20.0 bc
Quadris 2.08SC 6.2 fl oz/A + COC 1% v/v	4.5	1.0	23.8 d	6.3 d
Headline 2.08EC 6 fl oz /A.....	2.3	0.3	25.0 d	7.5 d
Laredo 2EC 7 fl oz/A + Induce 0.125% v/v	3.3	0.6	80.0 b	23.8 b
MFC Tebuconazole 3.6 F 4 fl oz/A	5.0	1.0	81.3 b	17.5 c
MFC Tebuconazole 3.6F 4 fl oz				
+ PGR-IV PLUS 1 oz/A	3.8	0.8	82.5 b	21.3 bc
LSD.....	n.s.	n.s.	9.5	6.0

* Treatments applied at R₃ growth stage (beginning pod) on Aug 29.

** Ratings were made in the upper third of the canopy.

Means followed by the same letter(s) in a column are not significantly different at P=0.05 according to Fisher’s Protected LSD. “n.s.” = not significant. Arcsine transformation was used in analysis to determine statistical significance.

Table 125. Defoliation, pod discoloration and yield of soybeans in fungicide-treated plots.

Treatment and rate ¹	% defoliation ² (Oct 14)	Pod discoloration ³ (0-10)	Yield ⁴ (bu/A)
Untreated check	72.5 a	7.8 a	34.9
Quilt 1.67SC 14 fl oz + COC 1% v/v	26.3 d	2.0 c	37.4
Stratego 250EC 10 fl oz + Induce 0.125% v/v	25.0 d	1.8 c	33.5
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz	17.5 d	1.3 c	38.0
Folicur 432SC 4 fl oz /A	50.0 b	5.3 b	37.0
Quadris 2.08SC 6.2 fl oz/A + COC 1% v/v	23.8 d	1.8 c	33.4
Headline 2.08EC 6 fl oz /A.....	20.0 d	2.0 c	35.1
Laredo 2EC 7 fl oz/A + Induce 0.125% v/v	45.0 bc	5.5 b	34.1
MFC Tebuconazole 3.6 F 4 fl oz/A	40.0 c	5.5 b	35.1
MFC Tebuconazole 3.6F 4 fl oz + PGR-IV PLUS 1 oz/A	41.3 bc	6.0 b	33.5
LSD.....	9.8	1.1	n.s.

¹ Treatments applied at R₃ growth stage (beginning pod) on Aug 29.

² Defoliation rating scale: 0=none, 100=no leaves on plants.

³ Pod discoloration rating scale: 0=none, 10=all pods discolored with sooty mold. Ratings were made on 14 Oct.

⁴ Yield of soybeans with 13.5% moisture. Soybeans were harvested on 12 Nov 2005.

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

Table 126. Grade characteristics of soybeans in fungicide-treated plots.

Treatment and rate*	Weight/ 100 seed (g)	% purple seed stain**	% phomopsis seed blight**
Untreated check	15.19 c	39.3 a	1.0 d
Quilt 1.67SC 14 fl oz + COC 1% v/v	15.98 a	9.3 c	3.8 a
Stratego 250EC 10 fl oz + Induce 0.125% v/v	15.75 a-c	4.8 c	3.3 ab
Headline 2.08EC 4.7 fl oz + Folicur 432SC 3.1 fl oz	15.96 ab	7.0 c	2.0 b-d
Folicur 432SC 4 fl oz /A	15.56 a-c	25.3 b	2.0 b-d
Quadris 2.08SC 6.2 fl oz/A + COC 1% v/v	16.09 a	5.0 c	1.0 d
Headline 2.08EC 6 fl oz /A.....	15.89 ab	7.8 c	2.8 a-c
Laredo 2EC 7 fl oz/A + Induce 0.125% v/v	15.28 c	26.0 b	1.8 b-d
MFC Tebuconazole 3.6 F 4 fl oz/A	15.90 ab	21.8 b	2.5 a-d
MFC Tebuconazole 3.6F 4 fl oz + PGR-IV PLUS 1 oz/A	15.39 bc	25.0 b	1.5 cd
LSD.....	0.57	9.0	1.6

* Treatments applied at R₃ growth stage (beginning pod) on Aug 29.

** Data are percent of 100 seed with symptoms of each disease. Means followed by the same letter(s) in a column are not significantly different at P=0.05 according to Fisher's Protected LSD.

XXXVIII. CLIMATOLOGICAL SUMMARY OF THE 2005 GROWING SEASON. (Tidewater
 Agricultural Research & Extension Center, Suffolk, VA)

Day of month	NOV		DEC		JAN		FEB		MAR		APR	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	81	53	65	43	64	40	45	33	45	34	71	52
2	80	53	65	27	72	40	44	23	44	30	67	52
3	84	62	60	30	66	43	48	29	44	24	68	44
4	74	53	56	28	70	53	37	32	45	19	64	38
5	68	48	59	28	76	51	47	33	53	35	73	37
6	61	34	64	32	72	47	56	29	45	25	75	48
7	65	34	61	51	74	50	59	32	59	34	84	59
8	73	42	73	55	56	44	60	31	73	52	79	59
9	62	35	70	41	70	33	70	35	57	21	70	50
10	53	29	67	46	56	42	64	48	46	27	63	39
11	57	32	73	48	61	34	54	29	49	32	70	38
12	65	47	57	37	59	38	47	25	62	33	74	41
13	69	44	54	39	72	44	56	26	61	38	57	42
14	48	32	57	29	80	67	59	40	54	37	55	36
15	51	23	45	27	70	32	59	44	50	26	61	43
16	60	31	38	18	43	32	69	47	54	34	56	40
17	61	31	50	25	39	28	70	32	42	33	59	28
18	62	40	57	30	34	15	51	23	40	31	71	38
19	66	45	57	26	27	11	42	17	59	29	81	47
20	67	49	47	14	29	21	46	23	62	29	85	53
21	67	53	28	16	40	25	48	34	62	33	88	58
22	69	46	50	27	35	17	62	45	60	32	82	52
23	64	46	66	27	34	18	51	37	64	39	81	57
24	60	54	68	32	25	12	54	32	72	45	77	42
25	71	58	39	29	36	16	40	32	54	36	61	39
26	71	31	35	28	43	28	39	21	51	44	67	44
27	49	28	31	22	53	30	51	22	58	46	67	57
28	63	34	33	10	34	17	45	35	64	50	75	45
29	64	36	39	24	33	17			75	50	70	55
30	55	32	55	35	43	18			65	42	64	55
31			60	33	39	29			69	45		
Avg.	65	41	54	31	52	32	53	32	56	35	71	46
Normal	63	39	53	31	50	29	51	29	60	37	70	45
Deviation from normal	+2	+2	+1	0	+2	+3	+2	+3	-4	-2	+1	+1

Day of month	MAY		JUN		JUL		AUG		SEP		OCT	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	80	57	79	51	90	70	82	70	93	65	75	52
2	69	62	71	58	95	75	86	63	88	62	81	51
3	70	46	67	61	87	69	91	68	90	64	79	56
4	67	38	71	61	85	63	94	70	87	58	81	62
5	70	47	80	64	87	64	94	69	85	57	82	70
6	67	50	88	65	87	70	93	71	84	60	85	70
7	52	44	92	70	92	73	94	68	81	61	88	71
8	72	50	91	67	89	74	92	71	84	60	78	71
9	76	43	90	72	85	66	87	70	85	56	77	60
10	78	47	88	71	92	67	88	71	87	59	66	61
11	78	53	87	64	92	70	90	71	85	54	70	63
12	85	62	87	66	94	72	94	71	83	56	71	67
13	85	57	89	73	91	74	95	73	87	66	69	56
14	68	54	90	75	90	71	95	72	88	74	63	56
15	83	59	95	73	88	73	96	73	89	76	70	54
16	84	62	94	64	93	73	97	74	88	76	79	45
17	74	54	90	59	93	75	94	71	90	70	71	40
18	75	49	85	58	95	74	85	62	94	66	69	43
19	77	57	84	57	97	73	88	69	88	63	81	47
20	71	59	83	64	97	72	85	71	89	65	83	58
21	77	53	75	51	94	72	95	75	90	67	84	62
22	73	49	83	61	95	72	97	71	84	59	66	59
23	78	51	88	62	94	72	92	70	87	68	75	44
24	82	57	86	62	92	66	81	69	92	69	68	43
25	71	52	89	61	89	66	86	61	85	66	62	45
26	64	50	91	68	97	71	84	56	82	63	55	36
27	79	53	81	68	98	75	83	66	87	67	63	34
28	84	62	93	74	104	72	85	67	82	53	61	38
29	80	51	92	72	90	68	90	67	82	56	63	35
30	79	54	78	68	84	70	90	72	84	58	55	29
31	79	56			85	70	92	79			69	30
Avg.	75	53	85	65	92	71	90	69	87	63	72	52
Normal	77	54	84	63	88	67	87	65	82	60	71	46
Deviation from normal	-2	-1	+1	+2	+4	+4	+3	+4	+5	+3	+1	+6

Day of month	NOV	DEC	JAN	FEB	MAR	APR
1					0.22	
2		0.02				0.05
3	0.01	0.01				0.92
4	0.57			0.74		
5	0.11			0.02		
6						
7		0.12			0.11	
8					0.38	0.35
9			0.02			0.24
10		0.89			0.11	
11		0.05				
12	0.13	0.08			0.14	
13	1.41	0.03				0.40
14				0.07	0.05	0.12
15			1.79	0.03		
16					0.02	
17			0.05	0.01	0.53	
18					0.18	
19	0.02					
20			0.75		0.27	
21				0.05		
22						
23	0.10	0.03	0.37	0.03	0.13	
24	0.15	0.25		0.15	0.70	0.11
25	0.07			0.34		
26		0.23				
27						
28	0.86			0.68	0.26	
29					0.16	
30			0.80			0.19
31		0.28				
Total	3.43	1.99	3.78	2.12	3.26	2.38
Normal	3.08	3.26	3.95	3.45	3.88	3.30
Deviation from normal	+0.35	-1.27	-0.17	-1.33	-0.62	-0.92

Table 130. Daily precipitation (inches) May 2005 – October 2005.						
Day of month	MAY	JUN	JUL	AUG	SEP	OCT
1	0.09			.43		
2	0.09	0.44				
3		0.79	0.55			
4		0.37				0.01
5						0.02
6	0.55					0.01
7	1.35					0.49
8			0.20	0.02		1.42
9		0.02				3.47
10				0.09		0.04
11						0.05
12						0.06
13						
14						0.02
15			0.21		0.05	
16	1.40				0.33	
17				1.70		
18			0.50	0.04	0.42	
19	0.25		0.10		0.03	
20	0.23		0.67	1.65		
21	0.33				2.02	
22				0.21		0.04
23				0.15		0.02
24	0.01			0.17		
25	0.41		0.03			
26	0.05		0.26			0.02
27		0.02			0.23	
28	0.02	0.07	0.23	0.04		0.01
29		0.18	0.96			
30		0.75	0.71			
31			0.77			
Total	4.78	2.64	5.19	4.5	3.08	5.68
Normal	3.83	4.25	5.90	5.75	4.46	3.46
Deviation from normal	+0.95	-1.61	-0.71	-1.25	-1.38	+2.22