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Virginia Cooperative Extension

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VIRGINIA STATE UNIVERSITY

POLICY FOR ACCEPTANCE OF PESTICIDES FOR TESTING

Research on the synthesis and exploration of agricultural chemicals and biotechnology for use in pest control continues to provide new materials for field evaluation. Compounds are made available by universities and private companies 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) the overall need for a product in a particular crop or problem area and (ii) the 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 (LD50), (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 sponsor's responsibility 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 no more than 1.5 times the anticipated quantity needed to complete a test.

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INTRODUCTION

Rainfall in June, September, and October was 5.75, 4.64, and 4.62 inches above normal, and in May, July, and August was 0.96, 2.21, and 3.21 inches below normal, respectively (Table 1). Rainfall during the period totaled 36.4 inches, which was 8.7 inches above normal. Minimum air temperatures averaged near normal (±1°F) in June, July, and September, 2°F above normal in October, 3°F above normal in August, and 2°F below normal in May. Maximum air temperatures were near normal (±1°F) in May, June, July, and October, 2°F below normal in September, and 4°F above normal in August according to records from a NOAA (44-4044) station at the Tidewater Agricultural Research and Extension Center (AREC) in Suffolk. Cool temperatures in April and May slowed the speed of emergence in field crops. Below normal rainfall in March (-3.16 inches), April (-1.44 inches), and May (-0.96 inch) allowed land preparation and planting in 2006 to proceed in a timely manner. Most crops showed good emergence after planting throughout eastern Virginia. Periods of drought stress in July and August caused wilting and stunting of crops, especially in fields with sandy-textured soils and without irrigation. Seasonal heat units for peanut from 1 May to 31 October totaled 2,674 in Suffolk, 165 units below average (Table 1). A total of 2,450 to 2,600 heat units are needed for maturation of most commercial peanut varieties in Virginia. Cotton degree-days (DD60) in the same period totaled 2,053 or 120 below average. As the harvest season approached, many fields exhibited delayed maturity but good yield potential. Above normal rainfall in September (+4.64 inches), October (+4.62 inches), and November (+2.96 inches) caused major delays in completion of harvest. Frost damage was observed in the western counties of the Tidewater area following the first frost on 14 October. Freeze damage was noted after nighttime temperatures dropped into the mid to upper 20°F range on 26 October. Fortunately, the peanut harvest had been completed in most fields prior this event.

Peanut yields in 2006 are projected to average 3,100 pounds per acre (Table 2). Cool temperatures and excess moisture in May favored early development of Cylindrocladium black rot (CBR), which was the most destructive disease of peanut in 2006 (Table 3). The second most destructive disease in peanut was southern stem rot as a result of above normal temperatures and dry weather stress in July and August. The incidence of tomato spotted wilt virus (TSWV) was low in 2006 and it caused minimal damage. Early leaf spot and late leaf spot caused some defoliation in late September and early October, and late season epidemics of web blotch and Sclerotinia blight developed during periods of cool, wet weather. Peanut rust was detected in Surry County on 19 September, which was 21 days after the passage of Hurricane Ernesto. 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 benefits peanut by reducing incidence and severity of destructive diseases such as CBR, nematodes, leaf spots, and Sclerotinia blight.

Soybean yields are expected to average 31 bushels per acre in 2006 on an estimated 510,000 acres (Table 2). Nematodes had the greatest impact on yield based on diagnostic tests performed in the plant disease clinic at the Tidewater AREC and field observations (Table 4). Soybean cyst, southern and northern root-knot, and stubby root nematodes probably accounted for the greatest yield losses. Leaf spot diseases (frogeye leaf spot, anthracnose, Cercospora blight) showed lower incidence in 2006 as a result of dry weather stress in July and August. Weekly examinations of leaf samples from 10 sentinel plots and numerous commercial fields found the initial outbreak of soybean rust in Suffolk and Chesapeake on 14 October. Thereafter, intensive scouting up to 15 November confirmed incidence of the disease in a total of 18 counties (Suffolk, Chesapeake, Virginia Beach, Isle of Wight, Southampton, Greensville, Brunswick, Mecklenburg, Sussex, Surry, Prince George, King and Queen, New Kent, James City, Gloucester, Middlesex, Accomack, and Northampton). These findings represented the first report of soybean rust in Virginia.

Corn yields are averaged 120 bushels per acre in 2006 (Table 2). 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 were favored by the excess of rainfall in June across eastern Virginia in 2006.

Cotton yields in 2006 averaged 717 pounds or 1.5 bales per acre (Table 2). Rhizoctonia and Pythium damping-off were the most common cause of damping-off of seedlings and reduced plant populations (Table 5). Other factors that contributed to slow emergence and poor stands were periods with soil temperatures below 60°F after planting, heavy rainfall, and/or planting seed too deep (0.75 inch or deeper). The optimum depth of planting is usually 0.25 inch to no more than 0.5 inch. Crop damage by southern root-knot nematode, *Meloidogyne incognita*, accounted for the heaviest yield loss in fields planted continuously to cotton for 5 years or longer. No significant losses to reniform nematode, *Rotylenchulus reniformis*, were detected in 2006. Instances of yield losses to stubby root were found, but overall it was less destructive than southern root knot. Sting nematode continues to cause severe damage in cotton but occurrences are usually confined to localized areas with sandy-textured soil. As in previous years, the Columbia lance nematode was not detected in 2006. Below normal rainfall in July and August and below average accumulations of degree days (DD60) in May, June, September, and October were thought to account for cotton not achieving record yields in 2006.

Powdery mildew, Stagonospora leaf blotch, and tan spot were the most common diseases of wheat in southeastern Virginia. Stagonospora leaf blotch (Septoria leaf spot) and tan spot had the greatest impact in reducing yield. Stripe rust was widely scattered and caused minimal crop damage in southeastern Virginia. Occurrences of scab on heads was also minimal in 2006 as a result of below normal rainfall in January, February, March, and April.

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

The primary purpose of this book is for educational purposes and to provide cooperators and contributors a summary of field research. Fifteen chapters from this book have been prepared for publication by the American Phytopathological Society in Plant Disease Management Reports in 2006.

Table 1. Comparison of rainfall, peanut heat units (DD56), and cotton degree-days (DD60) in 2006 to records for the previous four years and averages of historical records.

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

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

	Peanut Heat Units (DD56)					
Month	**2002**	**2003**	**2004**	**2005**	**2006**	**Avg.****
May	365	313	508	248	307	350
Jun	627	537	544	549	504	551
Jul	731	667	647	710	665	670
Aug	681	660	548	680	664	629
Sep	488	446	429	506	363	429
Oct	242	184	168	240	171	209
Total	3134	2807	2844	2932	2674	2839

**Avg. is the 11-yr mean (1995-2005).

	Cotton Degree Days (DD60)					
Month	**2002**	**2003**	**2004**	**2005**	**2006**	**Avg.****
May	271	216	395	169	221	256
Jun	513	421	426	433	386	427
Jul	615	543	523	587	541	531
Aug	564	536	427	557	542	496
Sep	373	334	320	393	259	324
Oct	162	116	100	158	104	139
Total	2498	2166	2191	2297	2053	2173

**Avg. is the 11-yr mean (1995-2005).

Table 2. Crop production statistics in year of record yield compared to 2006.

	Statistics of record year for yield			2006*	
Crop	**Year**	**Acreage**	**Yield/A**	**Acreage**	Yield/A
Peanut	2004	32,000	3,250 lb	16,000	3,100 lb
Soybean	2004	530,000	39.0 bu	510,000	31 bu
Corn	2000	330,000	146 bu	345,000	120 bu
Cotton (lint)	2004	81,000	956 lb	104,000	717 lb
Wheat	1997	260,000	67 bu	155,000	68 bu

* Based on crop production estimates in November and December 2006 by the Virginia Agricultural Statistics Service at *www.nass.usda.gov/va*. Acreage based on estimate of harvested acres.

Table 3. Estimated loss in yield as a result of peanut diseases in 2006.

Disease	***Causal organism***	**Percent loss**
Early leaf spot	*Cercospora arachidicola*	2.0
Late leaf spot	*Cercosporidium personatum*	0.1
Pepper spot & leaf scorch	*Leptosphaerulina crassiasca*	0
Web blotch	*Phoma arachidicola*	1.0
Botrytis blight	*Botrytis* spp.	0
Peanut rust	*Puccinia arachidis*	Trace
Sclerotinia blight	*Sclerotinia minor*	2.0
Sclerotinia blight	*Sclerotinia sclerotiorum*	ND*
Southern stem rot	*Sclerotium rolfsii*	3.0
Stem, root, & pod rot	*Rhizoctonia* spp.	0.2
Botrytis blight	*Botrytis* spp.	Trace
Pythium pod rot	*Pythium* spp.	Trace
Tomato spotted wilt virus	*Tospovirus*	0.5
Cylindrocladium black rot (CBR)	*Cylindrocladium parasiticum*	4.0
Nematode damage	*Root knot, sting, ring, etc.*	2.0
Total		**14.8****

* Not detected.
** The value of loss estimate equals $1.766 million in farm income based on an estimated total production of 24,800 tons and a mean value of $410 per ton in Virginia.

Table 4. Estimated loss in yield as a result of soybean diseases in 2006.

Disease	Causal agent(s)	Percent loss
Seedling diseases	---various---	0.8
Downy mildew	*Peronospora manshurica*	Trace
Frogeye leaf spot	*Cercospora sojina*	0.4
Phytophthora root & stem rot	*Phytophthora megasperma f.sp. glycinea*	0
Anthracnose	*Colletotrichum truncatum*	0.5
Pod & stem blight	*Diaporthe phaseolorum var. sojae*	0.1
Stem canker	*Diaporthe phaseolorum var. caulivora*	Trace
Sudden death syndrome	*Fusarium solani f.sp. glycines*	Trace
Sclerotinia stem rot	*Sclerotinia sclerotiorum and S. minor*	0
Southern blight	*Sclerotium rolfsii*	0.1
Root & lower stem rot	*Rhizoctonia* spp.	Trace
Purple seed stain	*Cercospora kikuchii*	0.1
Cercospora blight	*Cercospora kikuchii*	0.6
Brown spot	*Septoria glycines*	0.2
Red crown rot	*Cylindrocladium parasiticum*	0.2
Brown stem rot	*Phialophora gregata*	0.1
Charcoal rot	*Macrophomina phaseolina*	Trace
Viruses	SMV, PMV, BPMV, etc.	0.1
Bacterial pustule	*Xanthomonas phaseoli*	Trace
Bacterial blight	*Pseudomonas glycinea*	0.2
Southern root knot nematode	*Meloidogyne incognita*	1.8
Soybean cyst nematode	*Heterodera glycines*	2.2
Other nematodes	---various---	0.5
Total loss (%)		8.1*

* The loss estimate equals 1.393 million bushels based on production of 15.81 million bushels in 2006. At a value of $6.20/bu, the loss in revenues at the farm gate would be $8.64 million in 2006.

Table 5. Estimated loss of yield to cotton diseases in 2006.

Disease	Causal agent(s)	Percent loss
Seedling disease	*Rhizoctonia solani, Pythium* spp.	0.75
Fusarium wilt	*Fusarium oxysporum f. sp. vasinfectum*	Trace
Verticillium wilt	*Verticillium dahliae*	0
Texas root rot	*Phymatotrichum omnivorum*	0
Ascochyta blight	*Ascochyta gossypii*	Trace
Bacterial blight	*Xanthomonas* spp.	0.1
Boll rots	*Diplodia* spp., *Fusarium* spp., *Xanthomonas* spp.	1.0
Leaf spots	---various---	0.1
Southern root-knot nematode	*Meloidogyne incognita*	2.0
Reniform nematode	*Rotylenchulus reniformis*	0.1
Other nematodes	*Trichodorus* spp., *Belonolaimus* spp., etc.	1.9
Total loss (%)		5.85*

* The loss estimate equals 5.261 million pounds in Virginia based on production of 74.568 million pounds of lint in 2006. At a value of $0.47 per pound, the loss in revenues at the farm gate would be $1.93 million in 2006.

I. EVALUATION OF FUNGICIDES FOR CONTROL OF FOLIAR DISEASES IN WHEAT (WHEAT106 - Tidewater AREC Research Farm, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Five randomized complete blocks with 10-ft alleys between blocks
2. Plots 12 ft wide and 30 ft long with 6.67 in. row spacing
3. Data collected from the center, 7 rows/plot

C. APPLICATION OF TREATMENTS: Treatments were applied at GS32 with a Lee Spider Sprayer having 8003 nozzles spaced 18 in. apart and delivering 23.2 gal/A, and at GS 50 with 8002VS nozzles spaced 18 in. apart and delivering 16.5 gal/A.

D. TREATMENTS: Applications of fungicide at GS 32 were tank-mixed with liquid N and applications at GS 50 were applied alone or with Coverall surfactant (GS 32 = 31 Mar; GS 50 = 20 Apr).

1. Untreated
2. Quilt 5.25 fl oz/A (GS 32, GS 50)
3. Quilt 10.5 fl oz/A (GS 50)
4. Quadris 2.08SC 3 fl oz (GS 32, GS 50 w/Coverall 2.4 fl oz)
5. Quadris 2.08SC 6 fl oz (GS 50 w/Coverall 2.4 fl oz)
6. Headline 250EC 3 fl oz/A (GS 32, GS 50 w/Coverall 2.4 fl oz)
7. Headline 250EC 6 fl oz/A (GS 50 w/Coverall 2.4 fl oz)
8. Headline 250EC 4 fl oz/A + Tilt 3.6EC 4 fl oz/A (GS 50)
9. Headline 250EC 3 fl oz/A + Tilt 3.6EC 4 fl oz/A (GS 50)
10. Headline 250EC 2 fl oz/A + Tilt 3.6EC 4 fl oz/A (GS 50)
11. Headline 250EC 4 fl oz/A + Tilt 3.6EC 3 fl oz/A (GS 50)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: Peanut 2005; wheat/soybean 2004; peanut 2003
3. Soil fertility report (Dec. 2005)

pH	6.4	K	51 ppm
Ca	302 ppm	Zn	0.4 ppm
Mg	43 ppm	Mn	1.8 ppm
P	33 ppm	Soil type	Kenansville loamy sand

4. Planting date and cultivar: 14 Nov 2005, Coker 9803
5. Fertilizer: 9-16-31 350 lb/A (4 Nov 2005)
   Liquid nitrogen (32%) 60 lb/A (28 Jan, 31 Mar)
6. Herbicide: Harmony Extra 0.75 oz/A (28 Jan)
7. Harvest date: 19 Jun 2006

Table 6. Effect of fungicide treatments on severity of foliar disease in wheat on 17 April.*

Treatment, rate/A and application timing**	% powdery mildew		% Septoria
	upper leaves	lower leaves	
Untreated	0.06	1.02	1.02
Quilt 5.25 fl oz (GS 32, GS 50)	0.04	0.66	0.46
Quilt 10.5 fl oz (GS 50)	0.02	0.86	0.84
Quadris 2.08SC 3 fl oz (GS 32) Quadris 2.08SC 3 fl oz + Coverall 2.4 fl oz (GS 50)	0.06	1.24	0.66
Quadris 2.08SC 6 fl oz + Coverall 2.4 fl oz (GS 50)	0.10	1.20	0.82
Headline 250EC 3 fl oz (GS 32) Headline 250EC 3 fl oz + Coverall 2.4 fl oz (GS 50)	0.02	1.02	1.00
Headline 250EC 6 fl oz + Coverall 2.4 fl oz (GS 50)	0.08	1.42	1.02
Headline 250EC 4 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	0.06	1.40	1.20
Headline 250EC 3 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	0.08	1.60	0.64
Headline 250EC 2 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	0.06	0.46	0.46
Headline 250EC 4 fl oz + Tilt 3.6EC 3 fl oz (GS 50)	0.08	0.82	0.64
LSD	**n.s.**	**n.s.**	**n.s.**

* Data represent percent of leaf area with disease symptoms.
** GS 32= 31 Mar; GS 50 = 20 Apr.
Arcsine transformation of percentage data was made in analysis to determine statistical significance, n.s. denotes that means are not significantly different (LSD, P=0.05).

Table 7. Effect of fungicide treatments on severity of foliar disease in wheat on 11 May.*

Treatment, rate/A and application timing**	% powdery mildew	% Septoria	% tan spot	Total % disease
Untreated	2.8 a	7.4	7.4	17.6 a
Quilt 5.25 fl oz (GS 32, GS 50)	1.2 b	4.4	6.2	11.8 b
Quilt 10.5 fl oz (GS 50)	1.0 b	5.0	4.6	10.6 b
Quadris 2.08SC 3 fl oz (GS 32) Quadris 2.08SC 3 fl oz + Coverall 2.4 fl oz (GS 50)	1.0 b	4.0	4.8	9.8 b
Quadris 2.08SC 6 fl oz + Coverall 2.4 fl oz (GS 50)	1.2 b	3.6	4.6	9.4 b
Headline 250EC 3 fl oz (GS 32) Headline 250EC 3 fl oz + Coverall 2.4 fl oz (GS 50)	1.4 b	3.8	5.0	10.2 b
Headline 250EC 6 fl oz + Coverall 2.4 fl oz (GS 50)	2.6 a	3.0	3.8	9.4 b
Headline 250EC 4 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	1.4 b	4.6	4.8	10.8 b
Headline 250EC 3 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	1.2 b	3.2	3.6	8.0 b
Headline 250EC 2 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	1.2 b	3.6	4.6	9.4 b
Headline 250EC 4 fl oz + Tilt 3.6EC 3 fl oz (GS 50)	1.2 b	4.2	4.2	9.6 b
LSD	**1.2**	**n.s.**	**n.s.**	**4.9**

* Data represent percent of leaf area (Flag -1, Flag -2, Flag -3) with disease symptoms.
** GS 32 = 31 Mar; GS 50 = 20 Apr.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), n.s. denotes means were not significantly different. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 8. Effect of fungicide treatments on severity of foliar disease in wheat on 24 May.*

Treatment, rate/A and application timing**	% powdery mildew	% Septoria	Total % disease	% glume blotch
Untreated	2.6 a	5.6 a	8.2 a	0.8
Quilt 5.25 fl oz (GS 32, GS 50)	0.3 c	1.2 c	1.5 c	0.3
Quilt 10.5 fl oz (GS 50)	0.6 bc	1.4 c	2.1 c	0.1
Quadris 2.08SC 3 fl oz (GS 32) Quadris 2.08SC 3 fl oz + Coverall 2.4 fl oz (GS 50)	0.5 c	1.4 c	1.9 c	0.3
Quadris 2.08SC 6 fl oz + Coverall 2.4 fl oz (GS 50)	0.6 bc	0.8 c	1.5 c	0.0
Headline 250EC 3 fl oz (GS 32) Headline 250EC 3 fl oz + Coverall 2.4 fl oz (GS 50)	0.4 c	2.0 bc	2.5 c	0.5
Headline 250EC 6 fl oz + Coverall 2.4 fl oz (GS 50)	1.8 ab	3.2 b	5.0 b	0.4
Headline 250EC 4 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	1.0 bc	1.6 bc	2.7 c	0.0
Headline 250EC 3 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	0.7 bc	1.4 c	2.1 c	0.3
Headline 250EC 2 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	0.7 bc	1.4 c	2.1 c	0.0
Headline 250EC 4 fl oz + Tilt 3.6EC 3 fl oz (GS 50)	1.2 bc	2.2 bc	3.4 bc	0.4
LSD	**1.2**	**1.7**	**2.3**	**n.s.**

* Data represent percent of leaf area (Flag, Flag -1) or glume with disease symptoms.
** GS 32 = 31 Mar; GS 50 = 20 Apr.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), n.s. denotes means were not significantly different. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 9. Effect of fungicide treatments on yield and test weight in wheat.

Treatment, rate/A and application timing*	Yield** (bu/A)	Test weight (lb/bu)
Untreated	62.1	62.7 a-c
Quilt 5.25 fl oz (GS 32, GS 50)	65.5	62.5 b-d
Quilt 10.5 fl oz (GS 50)	67.3	62.5 b-d
Quadris 2.08SC 3 fl oz (GS 32) Quadris 2.08SC 3 fl oz + Coverall 2.4 fl oz (GS 50)	63.1	62.3 cd
Quadris 2.08SC 6 fl oz + Coverall 2.4 fl oz (GS 50)	69.4	63.0 a
Headline 250EC 3 fl oz (GS 32) Headline 250EC 3 fl oz + Coverall 2.4 fl oz (GS 50)	62.4	62.8 ab
Headline 250EC 6 fl oz + Coverall 2.4 fl oz (GS 50)	72.0	63.1 a
Headline 250EC 4 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	69.0	62.7 a-c
Headline 250EC 3 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	63.8	62.2 d
Headline 250EC 2 fl oz + Tilt 3.6EC 4 fl oz (GS 50)	72.0	62.4 b-d
Headline 250EC 4 fl oz + Tilt 3.6EC 3 fl oz (GS 50)	72.4	61.4 e
LSD	**n.s.**	**0.5**

* GS 32= 31 Mar; GS 50 = 20 Apr.
** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 19 Jun 2006.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), n.s. denotes means were not significantly different.

II. BIOLOGICAL CONTROL OF FOLIAR DISEASES OF WHEAT WITH AND WITHOUT A REDUCED RATE OF FUNGICIDE (WHEAT206 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of a biological agent to a reduced rate of fungicide for foliar disease control in wheat

B. EXPERIMENTAL DESIGN:

1. Five randomized complete blocks with 10-ft alleys between blocks
2. Plots 12 ft wide and 30 ft long with 6.67-in. row spacing
3. Data collected from the center, 7 rows/plot

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

D. TREATMENTS: All treatments were applied at GS 45 (14 Apr) and GS 50 (20 Apr)

1. Untreated
2. QRD 288 Ballad 2 qt/A + QRD 602 Biotune (0.2% v/v)
3. QRD 288 Ballad 2 qt/A + QRD 602 Biotune (0.2% v/v) + Headline 250EC 2 fl oz/A
4. Headline 250EC 2 fl oz/A

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: Peanut 2005; wheat/soybean 2004; peanut 2003
3. Soil fertility report (Dec. 2005)

pH	6.4
Ca	302 ppm
Mg	43 ppm
P	33 ppm
K	51 ppm
Zn	0.4 ppm
Mn	1.8 ppm
Soil type	Kenansville loamy sand

4. Planting date and cultivar: 14 Nov 2005, Coker 9803
5. Fertilizer: 9-16-31 350 lb/A (4 Nov 2005)
   Liquid nitrogen (32%) 60 lb/A (28 Jan, 31 Mar)
6. Herbicide: Harmony Extra 0.75 oz/A (28 Jan)
7. Harvest date: 19 Jun 2006

Table 10. Effect of treatments on foliar disease in wheat on 17 Apr.*

Treatment, rate and application timing**	% powdery mildew		% septoria
	upper leaves	lower leaves	
Untreated	0.08	1.20	0.64
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v (GS 45, GS 50)	0.08	1.02	0.10
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v + Headline 250EC 2 fl oz/A (GS 45, GS 50)	0.08	0.82	0.46
Headline 250EC 2 fl oz/A (GS 45, GS 50)	0.10	0.82	0.28
LSD	**n.s.**	**n.s.**	**n.s.**

* Data represent percent of leaf area with disease symptoms.
** GS 45 = 14 Apr; GS 50 = 20 Apr.
Means in columns were not significantly different (LSD, P=0.05). Arcsine transformation of percentage data was made in analysis for statistical significance.

Table 11. Effect of treatments on foliar disease in wheat on 11 May.*

Treatment, rate and application timing**	% powdery mildew	% tan spot	% septoria	Total % disease
Untreated	3.2 a	4.6	4.8 a	12.6 a
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v (GS 45, GS 50)	1.4 b	2.8	3.8 b	8.0 b
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v + Headline 250EC 2 fl oz/A (GS 45, GS 50)	1.0 b	2.8	2.0 c	5.8 b
Headline 250EC 2 fl oz/A (GS 45, GS 50)	2.6 ab	4.6	2.0 c	9.2 ab
LSD	**1.7**	**n.s.**	**0.9**	**3.7**

* Data represent percent of leaf area (Flag -1, Flag -2, Flag -3) with disease symptoms.
** GS 45 = 14 Apr; GS 50 = 20 Apr.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), n.s. denotes means are not significantly different. Arcsine transformation of percentage data was made in data analysis for significance.

Table 12. Effect of treatments on foliar disease in wheat on 23 May.*

Treatment, rate and application timing**	% powdery mildew	% septoria	Total % foliar disease	% glume blotch
Untreated	1.0	3.8 ab	4.8 ab	0.1 a
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v (GS 45, GS 50)	0.5	5.0 a	5.5 a	0.1 a
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v + Headline 250EC 2 fl oz/A (GS 45, GS 50)	0.2	0.8 c	1.1 c	0.0 b
Headline 250EC 2 fl oz/A (GS 45, GS 50)	0.7	1.8 bc	2.5 bc	0.0 b
LSD	**n.s.**	**2.4**	**2.7**	**0.04**

* Data represent percent of leaf area (Flag, Flag -1) or glume with disease symptoms.
** GS 45 = 14 Apr; GS 50 = 20 Apr.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), n.s. denotes means are not significantly different. Arcsine transformation of percentage data was made in data analysis for significance.

Table 13. Effect of treatments on yield and test weight in wheat.

Treatment, rate and application timing*	Yield** (bu/A)	Test weight (lb/bu)
Untreated	67.3	61.9
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v (GS 45, GS 50)	63.8	62.0
QRD 288 Ballad 2 qt/A + QRD 602 Biotune 0.2% v/v + Headline 250EC 2 fl oz/A (GS 45, GS 50)	69.2	62.2
Headline 250EC 2 fl oz/A (GS 45, GS 50)	65.0	62.3
LSD	**n.s.**	**n.s.**

* GS 45 = 14 Apr; GS 50 = 20 Apr.

** Means in columns were not significantly different (LSD, P=0.05). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

III. THE EFFECT OF PLANTING DATE, WEATHER CONDITIONS AND IN-FURROW FUNGICIDE ON EMERGENCE AND GROWTH OF COTTON (COTPD06 - Tidewater AREC Research Farm, Suffolk)

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 design with planting date in main plots and in-furrow fungicide in subplots
2. Subplots of two 30-ft rows
3. Fifteen-ft alleyways between blocks
4. Seven replications in randomized complete block design

C. VARIETY, GERMINATION RATE AND PLANTING DATE (MAINPLOTS): DP 455 BG/RR (Lot # 489-E-5990-63E, 83% cool germ) planted at a rate of 3.5 seed/ft and 0.25 to 0.5 in. depth.

1. Apr 6	3. Apr 19	5. May 3	7. May 17
2. Apr 12	4. Apr 27	6. May 10	

D. TREATMENT AND RATE: Quadris/Ridomil was applied in seed furrow at planting

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: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2005, cotton 2004, peanut 2003
3. Land preparation: rip-and-strip tillage into wheat cover crop
4. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	298 ppm	Zn	0.6 ppm
Mg	25 ppm	Mn	2.8 ppm
P	41 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Prowl 1.0 pt + Cotoran 1.0 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (14 Apr, 19 May, 31 May)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1.0 qt/A directed spray (12 Jul)
   Poast Plus 1.0 qt/A direct spray (20 Jul)
6. Insecticide: Orthene 97S 6 oz/A (12 May, 18 May, 31 May)
   Baythroid XL 3 fl oz/A (7 Aug)
   Centric 40WG 2 oz/A (26 Jul)
7. Growth regulator: Pentia 8 fl oz/A (7 Jul)
8. Defoliant/Boll opener: Finish 1.0 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
9. Fertilization: 7.42-15-36, 330 lb/A (5 Apr)
   Liquid boron 2 qt/A (24 Jun, 7 Jul)
   32% N 30 lb/A (24 Jun, 7 Jul)
   Solu-U-Gro 5 lb/A (20 Jul)
10. Cultivation: 11 Jul
11. Harvest date: 21 Oct

Table 14. Rainfall and soil temperature after planting cotton.*

Planting date	Days after planting 0	1	2	3	4	5	6	7	
Rainfall (in.)									Total
Apr 6	0.00	0.00	0.38	0.14	0.00	0.00	0.00	0.00	0.52
Apr 12	0.00	0.00	0.00	0.13	0.00	0.05	0.00	0.00	0.18
Apr 19	0.00	0.00	0.02	0.05	0.02	0.00	0.00	0.75	0.84
Apr 27	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
May 3	0.02	0.00	0.00	0.05	0.70	0.78	0.00	0.00	1.55
May 10	0.00	0.58	0.00	0.00	0.35	0.01	0.00	0.00	0.94
May 17	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Soil temperature (F)									Mean
Apr 6	56.5	59.5	60.6	56.7	56.3	58.3	59.6	62.5	58.8
Apr 12	59.6	62.5	62.7	65.3	64.5	60.7	60.5	62.3	62.3
Apr 19	62.3	63.5	63.6	67.9	66.0	67.3	68.0	64.5	65.4
Apr 27	61.1	60.7	60.3	59.2	58.5	59.6	62.3	64.1	60.7
May 3	62.3	64.1	65.1	67.9	64.6	60.1	62.3	63.6	63.8
May 10	63.6	65.5	66.3	66.3	64.6	66.0	66.0	65.5	65.5
May 17	65.5	66.0	65.5	65.9	67.1	67.3	66.7	66.7	66.3
Max/Min Air temperature (F)									Mean
Apr 6	68/32	83/56	76/45	57/36	67/31	71/34	73/43	81/56	72/42
Apr 12	73/43	81/56	79/50	85/58	75/56	59/48	69/43	79/43	75/50
Apr 19	79/43	83/44	79/57	82/61	81/59	82/59	83/57	71/49	80/54
Apr 27	62/48	68/43	63/39	64/37	62/42	77/38	76/54	81/52	69/44
May 3	76/54	81/52	83/56	82/61	64/52	56/52	69/50	75/47	73/53
May 10	75/47	79/58	75/48	76/48	68/51	75/55	69/50	76/49	74/51
May 17	76/49	78/51	71/52	80/52	81/49	72/50	71/48	78/44	76/49

* Weather data from Peanut/Cotton InfoNet (www.ipm.vt.edu/InfoNet) weather station at Tidewater AREC research farm. Soil temperature was measured at 4-in. depth under managed turf near test site.

Table 15. Accumulated degree days (DD60)* and rainfall from planting to harvest (21 Oct).

Planting date	DD_{60}	Rainfall (in.)
Apr 6	2164	32.85
Apr 12	2142	32.85
Apr 19	2103	32.15
Apr 27	2043	31.31
May 3	2035	31.31
May 10	1999	29.76
May 17	1966	28.82

* Cotton degree day data from Peanut/Cotton InfoNet (www.ipm.vt.edu/InfoNet) weather station at Tidewater AREC Research farm.

Table 16. Effect of planting date and in-furrow fungicide on emergence and growth of cotton.

	Plants/ft[2]		Plant height (in.)[3]		
Plant date and treatment[1]	**2 wk AP**	**4 wk AP**	**22 Jun**	**14 Jul**	**29 Aug**
Apr 6					
Quadris + Ridomil Gold	1.41	1.89	12.0	21.6	24.6
Untreated check	1.42	1.75	11.8	21.0	23.8
Apr 12					
Quadris + Ridomil Gold	1.66	1.88	12.6	22.0	25.0
Untreated check	1.81	1.91	12.0	21.0	25.2
Apr 19					
Quadris + Ridomil Gold	1.69	1.74	10.5	20.3*	24.4*
Untreated check	1.65	1.57	9.9	18.4	22.2
Apr 27					
Quadris + Ridomil Gold	0.90	1.55	9.5	18.4*	24.8*
Untreated check	1.00	1.57	9.7	20.2	26.1
May 3					
Quadris + Ridomil Gold	2.43*	2.45*	9.5	19.4	24.8
Untreated check	2.30	2.24	9.7	19.8	25.3
May 10					
Quadris + Ridomil Gold	2.02	2.06	8.5	18.7*	23.8
Untreated check	2.00	2.02	8.4	19.9	24.3
May 17					
Quadris + Ridomil Gold	2.06*	2.11*	6.4	15.3	22.8
Untreated check	2.27	2.28	7.1	16.0	23.2
Plant date mean					
Apr 6	1.42 d	1.82 de	11.9	21.3	24.2
Apr 12	1.73 c	1.89 cd	12.3	22.0	25.1
Apr 19	1.67 c	1.66 ef	10.2	19.4	23.3
Apr 27	0.95 d	1.56 f	9.6	19.3	25.4
May 3	2.37 a	2.34 a	9.6	19.6	25.0
May 10	2.01 b	2.04 bc	8.4	19.3	24.0
May 17	2.17 b	2.20 ab	6.7	15.7	23.0
Treatment mean					
Quadris + Ridomil Gold	1.74	1.95	9.8	19.4	24.3
Untreated check	1.78	1.91	9.8	19.6	24.3
Split-plot analysis					
Plant date	.0001	.0001	.0001	.0001	.0317
Treatment	.3981	.2953	.7315	.2632	.9621
Plant date x treatment	.4931	.3124	.0259	.0002	.0007

1 Quadris 2.08F 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row was applied in the seed furrow at planting.
2 Determined from counts of two 30-ft rows per plot (AP=after planting).
3 Determined from measurement of six plants per plot on 22 Jun and 14 Jul and four plants per plot on 29 Aug.
* 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 Fisher's Protected LSD (P=0.05).

Table 17. Effect of planting date and in-furrow fungicide on flower counts and number of nodes and bolls.

	Flowers/12 ft[2]		Nodes/plant[3]		No. bolls[4] (12 Sep)	
Plant date and treatment[1]	14 Jul	31 Jul	14 Jul	29 Aug	Total	Open
Apr 6						
Quadris + Ridomil Gold	27.9	83.1	11.4	14.4	11.0*	4.3
Untreated check	27.6	74.9	11.2	14.3	13.8	5.0
Apr 12						
Quadris + Ridomil Gold	31.7	82.7	11.4	14.2	12.1	5.0
Untreated check	32.1	82.0	11.4	15.0	13.1	5.0
Apr 19						
Quadris + Ridomil Gold	22.4	77.1	10.1	14.1	12.1	3.8
Untreated check	23.0	72.7	10.6	14.1	12.0	3.9
Apr 27						
Quadris + Ridomil Gold	15.9	64.1*	10.3	14.4	14.7	2.9
Untreated check	19.0	78.7	11.0	14.7	14.1	2.5
May 3						
Quadris + Ridomil Gold	24.3	81.9	10.1	12.8	8.3*	2.6
Untreated check	25.0	81.3	10.1	13.4	9.8	3.1
May 10						
Quadris + Ridomil Gold	11.7	83.9	9.4*	13.1	10.3	2.1
Untreated check	9.0	75.7	10.2	12.8	10.8	1.6
May 17						
Quadris + Ridomil Gold	0.1	48.1	8.6	12.3	11.1	0.5
Untreated check	1.0	52.9	8.9	12.0	9.8	0.8
Plant date mean						
Apr 6	27.7 ab	79.0 ab	11.3 a	14.4 a	12.4 b	4.7 a
Apr 12	31.9 a	82.4 a	11.4 a	14.6 a	12.6 b	5.0 a
Apr 19	22.7 bc	74.9 ab	10.3 bc	14.1 a	12.0 bc	3.8 b
Apr 27	17.4 c	71.4 b	10.6 b	14.6 a	14.4 a	2.7 c
May 3	24.6 b	81.6 ab	10.1 cd	13.1 b	9.1 d	2.9 c
May 10	10.4 d	79.8 ab	9.8 d	12.9 b	10.6 cd	1.9 d
May 17	0.6 e	50.5 c	8.9 e	12.1 c	10.5 cd	0.6 e
Treatment mean						
Quadris + Ridomil Gold	19.1	74.4	10.2 b	13.6	11.4	3.0
Untreated check	19.5	74.2	10.5 a	13.8	11.9	3.1
Split-plot analysis						
Plant date	.0001	.0001	.0001	.0001	.0152	.0001
Treatment	.7958	.8871	.0138	.3049	.2478	.6597
Plant date x treatment	.9769	.3595	.3098	.4036	.2918	.2565

1 Quadris 2.08F 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row was applied in the seed furrow at planting.
2 Determined from counts of two 6-ft sections in each row.
3 Determined from measurement of six plants per plot on 22 Jun and 14 Jul and four plants per plot on 29 Aug.
4 Determined from counts of four plants per plot.
* 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 Fisher's Protected LSD (P=0.05).

Table 18. Effect of planting date and in-furrow fungicide on yield of cotton.

Plant date and treatment[1]	Yield[2] lb/A	Yield[2] bales/A
Apr 6		
Quadris + Ridomil Gold	2226	2.03
Untreated check	2218	2.02
Apr 12		
Quadris + Ridomil Gold	2424	2.21
Untreated check	2425	2.21
Apr 19		
Quadris + Ridomil Gold	2263	2.06
Untreated check	2017	1.84
Apr 27		
Quadris + Ridomil Gold	2045*	1.87*
Untreated check	2584	2.36
May 3		
Quadris + Ridomil Gold	2595	2.37
Untreated check	2607	2.38
May 10		
Quadris + Ridomil Gold	2335	2.13
Untreated check	2564	2.34
May 17		
Quadris + Ridomil Gold	1976	1.80
Untreated check	2000	1.82
Plant date mean		
Apr 6	2222 b-d	2.03 b-d
Apr 12	2424 ab	2.21 ab
Apr 19	2140 cd	1.95 cd
Apr 27	2315 bc	2.11 bc
May 3	2601 a	2.37 a
May 10	2449 ab	2.24 ab
May 17	1998 d	1.81 d
Treatment mean		
Quadris + Ridomil Gold	2266	2.07
Untreated check	2345	2.14
Split-plot analysis		
Plant date	.0001	.0001
Treatment	.2531	.2531
Plant date x treatment	.1110	.1110

1 Quadris 2.08F 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row was applied in the seed furrow at planting.
2 Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 43.8% of seed cotton according to gin samples (one bale of lint=480 lb). Plots were harvested on 21 Oct.
* 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 Fisher's Protected LSD (P=0.05).

IV. NATIONAL COTTON SEED TREATMENT TEST – VIRGINIA LOCATION (COTSEED106 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To evaluate seed treatment fungicides for control of damping-off diseases

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Seed treatments were applied at the University of Arkansas under the direction of Craig Rothrock, Program Coordinator, National Cottonseed Treatment Trials.

D. TREATMENT AND RATE/CWT SEED: Rates are expressed as formulated product.

1. WECO 4054 1.0 oz + WECO 0319 2.0 oz + NuFlow M 2.5 oz + Nusan 30 2.0 oz
2. WECO 4054 1.0 oz + WECO 0250 1.2 oz + Nuflow M 2.5 + Nusan 30 2.0 oz
3. WECO 4254 1.0 oz + WECO 0250 1.2 oz + Nuflow M 2.5 oz + NuFlow ND 8.0 oz
4. WECO 4054 1.0 oz + NuFlow ND 14.5 oz + Nuflow M 2.5 oz
5. RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz
6. Baytan 30 0.5 oz + Allegiance FL 0.75 oz + Argent 30 1.0 oz
7. Baytan 30 0.5 oz + Allegiance FL 0.75 oz + Vortex 0.08 oz + Trilex 0.64 oz
8. L0037 0.25 oz + Thiram 42S 1.5 oz + Allegiance FL 0.75 oz
9. Baytan 30 0.5 oz + Vortex 0.08 oz + Allegiance FL 0.75 oz
10. Dynasty CST 4 oz
11. Dynasty CST-M 4 oz
12. Dynasty CST-D 4 oz
13. ApronMaxx-M 3 oz
14. Vitavax-PCNB 6.0 oz + Allegiance 0.75 oz
15. RTU-PCNB 14.5 oz
16. Allegiance 1.5 oz
17. Argent 4.5 oz
18. Nontreated

E. ADDITIONAL INFORMATION:

1. Location:Tidewater AREC Research farm, Hare Road, Suffolk
2. Crop history: peanut 2005, cotton 2004, peanut 2003
3. Land preparation: rip-and-strip till into wheat cover crop
4. Planting date and cultivar: 19 Apr, DP 444 BG/RR (seed rate: 3 seed/ft of row)
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	298 ppm	Zn	0.6 ppm
Mg	25 ppm	Mn	2.8 ppm
P	41 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide: Prowl 1.0 pt + Cotoran 1.0 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (14 Apr, 19 May, 31 May)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1.0 qt/A directed spray (12 Jul)
   Poast Plus 1.0 qt/A direct spray (20 Jul)
7. Insecticide: Orthene 97S 6 oz/A (12 May, 18 May, 31 May)
   Baythroid XL 3 fl oz/A (7 Aug)
   Centric 40WG 2 oz/A (26 Jul)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
9. Defoliant/Boll opener: Finish 1.0 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
10. Fertilization: 7.42-15-36, 330 lb/A (5 Apr)
    Liquid boron 2 qt/A (24 Jun, 7 Jul)
    32% N 30 lb/A (24 Jun, 7 Jul)
    Solu-U-Gro 5 lb/A (20 Jul)
11. Cultivation: 11 Jul
12. Harvest date: 21 Oct

Table 19. Effect of seed treatment on emergence and yield of cotton.

Treatment and rate/cwt seed	Plants/ft* (18 May)	Yield** lb/A	Yield** bales/A
WECO 4054 1.0 oz + WECO 0319 2.0 oz + NuFlow M 2.5 oz + Nusan 30 2.0 oz	0.89 b-f	2759 ab	2.44 ab
WECO 4054 1.0 oz + WECO 0250 1.2 oz + Nuflow M 2.5 + Nusan 30 2.0 oz	0.91 b-e	2620 bc	2.32 bc
WECO 4254 1.0 oz + WECO 0250 1.2 oz + Nuflow M 2.5 oz + NuFlow ND 8.0 oz	1.06 a-c	2807 ab	2.49 ab
WECO 4054 1.0 oz + NuFlow ND 14.5 oz + Nuflow M 2.5 oz	1.08 a-c	2450 b-d	2.17 b-d
RTU Baytan Thiram 3.0 oz + Allegiance FL 0.75 oz	0.94 b-e	2396 b-e	2.12 b-e
Baytan 30 0.5 oz + Allegiance FL 0.75 oz + Argent 30 1.0 oz	1.28 a	2532 b-d	2.24 b-d
Baytan 30 0.5 oz + Allegiance FL 0.75 oz + Vortex 0.08 oz + Trilex 0.64 oz	1.17 ab	2605 bc	2.31 bc
L0037 0.25 oz Thiram 42S 1.5 oz + Allegiance FL 0.75 oz	1.04 a-c	2741 ab	2.43 ab
Baytan 30 0.5 oz + Vortex 0.08 oz + Allegiance FL 0.75 oz	1.13 ab	2680 a-c	2.37 a-c
Dynasty CST 4 oz	0.91 b-e	2471 b-d	2.19 b-d
Dynasty CST-M 4 oz	1.17 ab	3143 a	2.78 a
Dynasty CST-D 4 oz	0.60 g	1718 f	1.52 f
Apron Maxx-M 3 oz	1.00 a-d	2565 bc	2.27 bc
Vitavax-PCNB 6.0 oz + Allegiance 0.75 oz	0.75 d-g	2220 c-e	1.97 c-e
RTU-PCNB 14.5 oz	0.67 e-g	1927 ef	1.71 ef
Allegiance 1.5 oz	0.81 c-g	2441 b-d	2.16 b-d
Argent 4.5 oz	0.61 fg	2072 d-f	1.83 d-f
Nontreated	0.73 d-g	—	—
LSD	**0.28**	**491**	**0.43**

* Determined from counts of two 30-ft rows per plot.
** Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 42.5% of seed cotton according to gin samples (one bale of lint=480 lb). Plots were harvested on 21 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "—"=plots not harvested due to removal of seedlings for microbial assay.

V. BAYER COTTON SEED TREATMENT TEST (COTSEED 206 - Tidewater AREC Research farm)

A. PURPOSE: To evaluate seed treatment fungicides for control of damping-off diseases of cotton

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Seed treatments were applied by Bayer CropScience under the direction of Chip Graham for the Cotton Foundation Seedling Disease Research and Education Committee.

D. TREATMENT AND RATE (Main plots). B = base treatment; O = overcoat, F = in furrow. Rates are formulated product per cwt seed.

1. Untreated seed
2. RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz (B)
3. RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)
   Trilex 0.64 fl oz + Vortex 0.08 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz (O)
4. RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz (B)
   Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz (O)
5. RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz (B)
   Dynasty CST 3.95 fl oz (O)
6. RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz (B)
   Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)

E. PATHOGEN INOCULUM (Subplots): Millet seed colonized by *Rhizoctonia solani* and *Pythium ultimum* was applied to the seed furrow at 0.5 ml/ft of row when planting inoculated subplots.

1. Non-inoculated
2. Inoculated

F. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2005, cotton 2004, peanut 2003
3. Land preparation: rip-and-strip till into what cover crop
4. Planting date and cultivar: 24 Apr, DP 444 (Treatment code N) at 3 seed/ft of row
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	298 ppm	Zn	0.6 ppm
Mg	25 ppm	Mn	2.8 ppm
P	41 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide: Prowl 1.0 pt + Cotoran 1.0 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (14 Apr, 19 May, 31 May)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1.0 qt/A directed spray (12 Jul)
   Poast Plus 1.0 qt/A direct spray (20 Jul)
7. Insecticide: Orthene 97S 6 oz/A (12 May, 18 May, 31 May)
   Baythroid XL 3 fl oz/A (7 Aug)
   Centric 40WG 2 oz/A (26 Jul)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
9. Defoliant/Boll opener: Finish 1.0 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
10. Fertilization: 7.42-15-36, 330 lb/A (5 Apr)
    Liquid boron 2 qt/A (24 Jun, 7 Jul)
    32% N 30 lb/A (24 Jun, 7 Jul)
    Solu-U-Gro 5 lb/A (20 Jul)
11. Cultivation: 11 Jul
12. Harvest date: 21 Oct

Table 20. Effect of seed and in-furrow treatments on emergence of cotton.

	Plants/ft (22 May)**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	1.49 b	1.09	1.29 b
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)	1.77 a	1.53	1.65 a
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	1.77 a	1.69	1.73 a
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	1.75 a	1.65	1.70 a
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	1.86 a	1.74	1.80 a
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)	1.69 a	1.49	1.59 a
LSD	**0.19**	**n.s.**	**0.21**
Split-plot analysis			
Treatment			.0237
Inoculum			.0044
Treatment x inoculum			.6162

* B=base treatment; O=overcoat, F=in furrow.
** Determined from counts of two 30-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.

Table 21. Effect of seed and in-furrow treatments on seedling disease.

	Dead/diseased seedlings/plot (22 May)**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	26.3	30.8	28.5
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)	25.3	27.3	26.3
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz+ Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	25.3	27.8	26.5
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	24.3	26.0	25.1
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	27.5	28.0	27.8
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)	26.3	25.8	26.0
LSD	**n.s.**	**n.s.**	**n.s.**
Split-plot analysis			
Treatment			.9444
Inoculum			.1771
Treatment x inoculum			.9045

* B=base treatment; O=overcoat, F=in furrow.
** Determined from counts of two 30-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.

Table 22. Effect of seed and in-furrow treatments on growth of cotton.

	Plant height, in. (14 Jul)**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	18.0	17.6 c	17.8
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)	19.8	19.4 a-c	19.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	19.2	20.0 ab	19.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	18.6	19.3 bc	19.0
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	19.8	20.0 ab	19.9
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)	18.7	21.3 a	20.0
LSD	**n.s.**	**1.9**	**—**
Split-plot analysis			
Treatment			.6657
Inoculum			.0217
Treatment x inoculum			.0147

* B=base treatment; O=overcoat, F=in furrow.
** Determined from 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 (P=0.05), "n.s." = not significant, "—" denotes LSD not valid because of significant treatment by inoculum interaction.

Table 23. Effect of seed and in-furrow treatments on flowering of cotton.

	Flowers/12 ft of row (20 Jul)**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	28.3	17.0 b	22.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)	41.3	26.0 ab	33.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz+ Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	27.8	35.0 a	31.4
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	29.5	25.3 ab	27.4
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	24.3	34.0 a	29.1
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)	27.5	31.5 a	29.5
LSD	**n.s.**	**10.7**	**—**
Split-plot analysis			
Treatment			.2310
Inoculum			.4720
Treatment x inoculum			.0202

* B=base treatment; O= overcoat, F=in furrow.
** Determined from counts of two 6-ft sections 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, "—" denotes LSD not valid because of significant treatment by inoculum interaction.

Table 24. Effect of seed and in-furrow treatments on number of open bolls in cotton.

	Open bolls (15 Sep)**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	3.4	4.0	3.7
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B)	4.2	3.5	3.8
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz+ Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	4.2	3.7	3.9
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	3.3	3.8	3.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	3.8	3.4	3.6
RTU Baytan Thiram 3.0 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row (F)	3.6	4.6	4.1
LSD	**N.S.**	**N.S.**	**—**
Split-plot analysis			
Treatment			.7563
Inoculum			.5178
Treatment x inoculum			.0035

* B=base treatment; O= overcoat, F=in furrow.
** Determined from counts of four plants per plot.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "n.s." = not significant, "—" denotes LSD not valid because of significant treatment by inoculum interaction.

Table 25. Effect of seed and in-furrow treatments on yield of cotton.

	lb/A**			bales/A**		
Treatment and rate*	**Non-inoculated**	**Inoculated**	**Treatment mean**	**Non-inoculated**	**Inoculated**	**Treatment mean**
Untreated seed	2009	1606	1807	1.73	1.39	1.56
RTU Baytan Thiram 3 fl oz + Allegiance 0.4 fl oz/cwt (B)	2287	1939	2113	1.97	1.67	1.82
RTU Baytan Thiram 3 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Vortex 0.08 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	2021	2254	2137	1.74	1.94	1.84
RTU Baytan Thiram 3 fl oz + Allegiance 0.4 fl oz/cwt (B) Trilex 0.64 fl oz + Allegiance 0.75 fl oz + Baytan 0.25 fl oz/cwt (O)	2148	1900	2024	1.85	1.64	1.75
RTU Baytan Thiram 3 fl oz + Allegiance 0.4 fl oz/cwt (B) Dynasty CST 3.95 fl oz/cwt (O)	2115	2435	2275	1.82	2.10	1.96
RTU Baytan Thiram 3 fl oz + Allegiance 0.4 fl oz/cwt (B) Quadris 2.08SC 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft (F)	1830	2266	2048	1.58	1.95	1.77
LSD	**n.s.**	**n.s.**	**—**	**n.s.**	**n.s.**	**—**
Split-plot analysis						
Treatment			.7408			.7408
Inoculum			.9855			.9855
Treatment x inoculum			.0241			.0241

* B = base treatment; O = overcoat, F= in furrow.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.4% of total weight and 480 lb/bale. Plots were harvested on 21 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, "—" denotes LSD not valid because of significant treatment by inoculum interaction.

VI. IMPACT OF PLANTING DATE AND STAND REDUCTIONS ON GROWTH AND YIELD OF COTTON (COTSTAND06 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To evaluate the effect of planting date on crop compensation for reductions in populations of seedlings 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
3. Fifteen-ft alleyways between blocks
4. Four replications in randomized complete block design

C. PLANTING DATE (Main plots): seed were planted at 4 seed/ft and 0.25 to 0.5 in. depth.

1. Apr 19 2. May 3 3. May 17

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

1. None
2. 20% = 2 4-ft sections/row
3. 40% = 4 4-ft sections/row
4. 60% = 6 4-ft sections/row

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research farm, Hare Road, Suffolk
2. Crop history: peanut 2005, cotton 2004, peanut 2003
3. Land preparation: rip-and-strip till into wheat cover crop
4. Cultivar: ST 4575 BR, Lot # 3AFA37CFD, Treatment Code BTAL
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	298 ppm	Zn	0.6 ppm
Mg	25 ppm	Mn	2.8 ppm
P	41 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide: Prowl 1 pt + Cotoran 1 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (14 Apr, 19 May, 31 May)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1 qt/A directed spray (12 Jul)
   Poast Plus 1 qt/A direct spray (20 Jul)
7. Insecticide: Orthene 97S 6 oz/A (12 May, 18 May, 31 May)
   Baythroid XL 3 fl oz/A (7 Aug)
   Centric 40WG 2 oz/A (26 Jul)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
10. Fertilization: 7.42-15-36, 330 lb/A (5 Apr)
    Liquid boron 2 qt/A (24 Jun, 7 Jul)
    32% N 30 lb/A (24 Jun, 7 Jul)
    Solu-U-Gro 5 lb/A (20 Jul)
11. Cultivation: 11 Jul
12. Harvest date: 21 Oct

Table 26. Plant populations and growth of cotton.

Planting date and stand reduction	Plants/ft[1] (9 Jun)	Plant height[2] (in.) (19 Jul)	Nodes/ plant[3] (27 Sep)	Bolls/plant (27 Sep)[3]	
				Total	Open
Apr 19					
No reduction	1.56 a	16.7	14.8 a	14.5	6.0
20% reduction	1.23 b	16.3	14.1 ab	12.8	5.0
40% reduction	0.90 c	17.5	12.7 b	11.2	4.8
60% reduction	0.73 c	16.7	14.0 ab	15.1	7.2
May 3					
No reduction	2.24 a	16.5 c	13.3	9.6	4.3
20% reduction	1.87 b	17.9 ab	12.9	11.1	4.6
40% reduction	1.39 c	16.6 bc	11.8	8.3	4.3
60% reduction	1.18 c	18.7 a	11.8	10.4	4.2
May 18					
No reduction	2.17 a	14.0	13.7 a	12.8 a	1.2
20% reduction	1.78 b	12.8	13.4 a	10.3 b	2.2
40% reduction	1.29 c	13.4	11.3 b	9.5 b	2.5
60% reduction	1.16 d	14.0	11.1 b	8.1 b	2.4
Plant date mean					
Apr 19	1.11 b	16.8	13.9 a	13.5	5.8 a
May 3	1.67 a	17.4	12.4 b	9.8	4.3 b
May 18	1.60 a	13.6	12.4 b	10.2	2.1 c
LSD	**0.09**	**—**	**0.6**	**—**	**0.7**
Stand reduction mean					
No reduction	1.99 a	15.7	13.9 a	12.3	3.8
20% reduction	1.62 b	15.7	13.5 a	11.4	3.9
40% reduction	1.19 c	15.8	11.9 b	9.7	3.9
60% reduction	1.02 d	16.5	12.3 b	11.4	4.6
LSD	**0.11**	**—**	**0.7**	**—**	**n.s.**
Split-plot analysis					
Plant date (PD)	.0006	.0038	.0271	.0114	.0018
Stand reduction (SR)	.0001	.1155	.0001	.0111	.2640
PD x SR	.4113	.0075	.1952	.0122	.0600

1 Determined from counts of two 40-ft rows per plot.
2 Data are measurements of six plants per plot.
3 Data are measurements of four plants per plot.
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.

Table 27. Effect of planting date and stand reductions on yield of cotton.

Planting date and stand reduction	Yield*	
	lb/A	bales/A
Apr 19		
No reduction	2008	1.78
20% reduction	1747	1.55
40% reduction	1697	1.50
60% reduction	1531	1.36
May 3		
No reduction	2430	2.15
20% reduction	2382	2.11
40% reduction	1865	1.65
60% reduction	1931	1.71
May 18		
No reduction	2151	1.90
20% reduction	1749	1.55
40% reduction	1742	1.54
60% reduction	1643	1.45
Plant date mean		
Apr 19	1746 b	1.55 b
May 3	2152 a	1.91 a
May 18	1821 b	1.61 b
LSD	**210**	**0.19**
Stand reduction mean		
No reduction	2196 a	1.94 a
20% reduction	1959 ab	1.73 ab
40% reduction	1768 bc	1.57 bc
60% reduction	1702 c	1.51 c
LSD	**242**	**0.22**
Split-plot analysis		
Plant date	.0323	.0323
Stand reduction	.0012	.0012
Plant date x stand reduction	.6579	.6579

* Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 42.5% of total weight and 480 lb/bale.
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).

VII. RESPONSE OF COTTON TO NEMATICIDE TREATMENTS (COTNEMA606 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of nematicide treatments in nematode control

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 15-ft alleyways
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 30-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: Granular treatments were applied in-furrow (F) at planting (25 Apr) or 8-in. band over rows (B) with cultivation (10 Jul). Seed treatments (S) were applied by Syngenta Crop Protection.

D. TREATMENT, AND RATE (Main plots):

1. Untreated Check
2. Avicta Complete Pak (S)
3. Temik 15G 5 lb/A (F)
4. KC791230 5 lb/A (F)
5. Temik 15G 5 lb/A (F) + 5 lb/A (B)

E. VARIETY: Sub-plots

1. ST4575 BR (71.50% cool germ)
2. ST 5599 BR (68.50% cool germ)

F. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2005, cotton 2004, peanut 2003
3. Land preparation: rip-and-strip till into wheat cover crop
4. Planting date: 25 Apr 2006
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	298 ppm	Zn	0.6 ppm
Mg	25 ppm	Mn	2.8 ppm
P	41 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide: Prowl 1 pt + Cotoran 1 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (14 Apr, 19 May, 31 May)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1 qt/A directed spray (12 Jul)
   Poast Plus 1 qt/A direct spray (20 Jul)
7. Insecticide: Orthene 97S 6 oz/A (12 May, 31 May)
   Baythroid XL 3 fl oz/A (7 Aug); Centric 40WG 2 oz/A (26 Jul)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
10. Fertilization: 7.42-15-36, 330 lb/A (5 Apr)
    Liquid boron 2 qt/A (24 Jun, 7 Jul)
    32% N 30 lb/A (24 Jun, 7 Jul)
    Solu-U-Gro 5 lb/A (20 Jul)
11. Cultivation: 11 Jul
12. Harvest date: 21 Oct

Table 28. Effect of selected treatments on nematode populations.

Treatment	Nematodes/500 cc soil*		
	Root-knot	Stubby root	Ring
Untreated check	30	128	165
Avicta Complete Pak	58	78	303
LSD	**n.s.**	**n.s.**	**n.s.**

* Soil samples were collected from all subplots within each treatment on 26 Jul. "n.s." = not significantly different according to Fisher's Protected LSD (P=0.05). Square root transformation of data was made in analysis to determine statistical significance.

Table 29. Effect of treatment on emergence and growth in cotton.

Treatment and rate/A[1]	Plants/ft (23 May)[2]		Vigor (10 Jun)[3]		Plant height (in.)[4] (20 Jul)	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	1.67	1.58 bc	5.5 b	4.5 b	16.7 b	15.8 b
Avicta Complete Pak (S)	1.83	1.51 c	6.8 a	6.0 ab	17.8 ab	18.0 a
Temik 15G 5 lb/A (F)	1.97	1.89 a	7.3 a	6.3 a	18.8 a	17.4 ab
KC791230 5 lb/A (F)	1.81	1.64 bc	7.0 a	7.0 a	19.0 a	18.6 a
Temik 15G 5 lb/A (F) + 5 lb/A (B)	1.80	1.78 ab	7.5 a	7.3 a	17.8 ab	18.6 a
LSD	**n.s.**	**0.25**	**1.2**	**1.6**	**1.5**	**1.9**
Treatment mean						
Untreated Check	1.63		5.0 d		16.3	
Avicta Complete Pak (S)	1.67		6.4 c		17.9	
Temik 15G 5 lb/A (F)	1.93		6.8 bc		18.1	
KC791230 5 lb/A (F)	1.73		7.0 ab		18.8	
Temik 15G 5 lb/A (F) + 5 lb/A (B)	1.79		7.4 a		18.2	
LSD	**n.s.**		**0.5**		**n.s.**	
Variety mean						
ST4575 BG/RR	1.82 a		6.8 a		18.0	
ST 5599 BR	1.68 b		6.2 b		17.7	
LSD	**0.09**		**0.3**		**n.s.**	
Split-plot analysis						
Treatment	.1171		.0210		.1467	
Variety	.0098		.0018		.3732	
Treatment x variety	.3060		.2136		.2749	

1 S=seed treatment, F=in furrow (25 Apr), B=band application w/cultivation (10 Jul).
2 Determined from counts of two 30-ft rows per plot.
3 Plant vigor rating scale: 1=severely stunted, 10=healthy.
4 Data are measurements of six 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 30. Effect of treatment on thrips injury and flowering in cotton.

Treatment and rate/A1	Thrips injury[2] (10 Jun)		Flowers/12 ft [3] (20 Jul)		Open bolls[4] (15 Sep)	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	1.5 a	1.8 a	12.5	4.8	2.3 b	1.5 b
Avicta Complete Pak (S)	0.3 b	1.8 a	15.3	9.5	2.4 b	1.6 b
Temik 15G 5 lb/A (F)	0.0 b	0.3 b	26.0	17.3	3.4 a	2.1 ab
KC791230 5 lb/A (F)	0.5 b	0.0 b	23.3	16.5	3.4 a	2.2 ab
Temik 15G 5 lb/A (F) + 5 lb/A (B)	0.0 b	0.0 b	20.0	14.8	3.1 ab	2.4 a
LSD	**0.7**	**1.5**	**n.s.**	**n.s.**	**1.0**	**n.s.**
Treatment mean						
Untreated Check	1.6 a		8.6 c		1.9 b	
Avicta Complete Pak (S)	1.0 ab		12.4 bc		2.0 b	
Temik 15G 5 lb/A (F)	0.1 bc		21.6 a		2.8 a	
KC791230 5 lb/A (F)	0.3 bc		19.9 ab		2.8 a	
Temik 15G 5 lb/A (F) + 5 lb/A (B)	0.0 c		17.4 a-c		2.8 a	
LSD	**0.9**		**8.8**		**0.6**	
Variety mean						
ST 4575 BG/RR	0.5		19.4 a		2.9 a	
ST 5599 BR	0.8		12.6 b		2.0 b	
LSD	**n.s.**		**5.6**		**0.4**	
Split-plot analysis						
Treatment	.0011		.0076		.0238	
Variety	.2801		.0196		.0001	
Treatment x variety	.2472		.9927		.7430	

1 S=seed treatment, F=in furrow (25 Apr), B=band application w/cultivation (10 Jul).
2 Thrips injury scale: 0=no damage, 10=severe damage. All plots were over sprayed with Orthene 8 oz/A on 12 May and 31 May for supplemental thrips control.
3 Data are number of flowers per two 6-ft sections of row.
4 Determined from counts of four plants per plot.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "n.s." = not significant.

Table 31. Effect of treatments on yield of cotton.

	lb/A**		bales/A**	
Treatment and rate/A*	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**
Untreated Check	1785	1797	1.56	1.56
Avicta Complete Pak (S)	2329	2357	2.03	2.05
Temik 15G 5 lb/A (F)	2045	1954	1.79	1.70
KC791230 5 lb/A (F)	2205	2242	1.93	1.95
Temik 15G 5 lb/A (F) + 5 lb/A (B)	2178	2302	1.90	2.00
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Treatment mean				
Untreated Check	1791 c		1.56 c	
Avicta Complete Pak (S)	2343 a		2.04 a	
Temik 15G 5 lb/A (F)	2000 bc		1.74 bc	
KC791230 5 lb/A (F)	2223 ab		1.94 ab	
Temik 15G 5 lb (F) + 5 lb/A (B)	2240 ab		1.95 ab	
LSD	240		0.21	
Variety mean				
ST 4575 BR	2108		1.84	
ST 5599 BR	2130		1.86	
LSD	**n.s.**		**n.s.**	
Split-plot analysis				
Treatment	.0286		.0286	
Variety	.7644		.8179	
Treatment x variety	.9171		.9179	

* S=seed treatment, F=in furrow (25 Apr), B=band application (10 Jul).

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.9% of total weight for ST4575 BR and 41.8% for ST5599 BR. One bale was 480 lb. Plots were harvested on 21 Oct 2006.
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. RESPONSE OF COTTON VARIETIES TO AVICTA COMPLETE PAK ON SEED AND TEMIK 15G IN-FURROW (COTNEMA206 - Rick Morgan Farm, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Split-plot design with 4 randomized complete blocks separated by 15-ft alleyways
2. Two 30-ft rows per plot with 38-in. row spacing
3. Seeding rate of three seed/row ft

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

D. TREATMENT AND RATE: Main plots

1. Untreated Check 2. Avicta Complete Pak (S) 3. Temik 15G 5 lb/A (F)

E. VARIETY AND COOL GERM (Sub-plots):

1. ST 4575 BR (71.50%)
2. PHY 310 R (65.00%)
3. DP 432 RR (78.00%)
4. DP 445 BR (82.00%)
5. DP 444 BG/RR (82.00%)
6. ST 5599 BR (68.50%)

F. ADDITIONAL INFORMATION:

1. Location: Rick Morgan Farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2005-2001, Peanut 2000
3. Land preparation: Rip-and-bed rows over stale cotton beds from 2005 crop
4. Planting date: 10 May 2006
5. Soil type: Rumford loamy fine sand
6. Herbicide:

   Pre-plant – Prowl 12 fl oz/A soil incorporated (15 Apr)

   Pre-emergence – Prowl 1 pt/A (17 May)

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

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

   Evoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
8. Growth regulator: Pix bar, wick application 4 oz/A (10 Jul)
9. Defoliant/boll opener: Quick Pick 2 qt + Resource 2 oz/A (23 Oct)
10. Fertilization: 7-0-40 200 lb/A pre plant

    Liquid nitrogen 65 lb/A (10 Jul)
11. Harvest date: 15 Nov 2006

Table 32. Effect of treatments on emergence, growth, flowering, and number of bolls in cotton.

Variety, treatment and rate[1]	Plants/ft[2] (7 Jun)	Plant ht. (in.)[3] (25 Jul)	Flowers/12 ft[4] (25 Jul)	Number of bolls (18 Sep)[5]	
				Total	Open
ST 4575 BG/RR					
Untreated Check	1.73	21.1 c	5.5	11.2	0.6
Avicta Complete Pak (S)	1.91	24.2 b	19.8	13.1	1.0
Temik 15G 5 lb/A (F)	1.79	25.9 a	25.0	11.6	0.9
PHY 310 R					
Untreated Check	1.56	23.8 b	4.0	9.9	0.3
Avicta Complete Pak (S)	1.51	23.7 b	11.5	13.4	1.0
Temik 15G 5 lb/A (F)	1.50	27.5 a	9.8	9.6	0.9
DP 432 RR					
Untreated Check	1.74	24.0	10.0	12.0	1.1
Avicta Complete Pak (S)	1.83	24.7	16.8	12.8	1.1
Temik 15G 5 lb/A (F)	1.83	25.2	20.0	11.3	1.9
DP 445 BR					
Untreated Check	1.65 ab	24.1	8.8	13.9	0.9
Avicta Complete Pak (S)	1.54 b	25.6	14.5	12.6	1.1
Temik 15G 5 lb/A (F)	1.85 a	25.8	14.0	13.1	0.9
DP 444 BG/RR					
Untreated Check	1.64	24.4 b	6.0 b	13.8	1.1 b
Avicta Complete Pak (S)	1.67	26.9 a	16.0 a	13.3	2.8 a
Temik 15G 5 lb/A (F)	1.73	28.5 a	15.0 a	12.7	1.3 b
ST 5599 BR					
Untreated Check	1.50	22.6 b	6.3	11.7	0.1
Avicta Complete Pak (S)	1.51	27.0 a	15.0	14.4	0.3
Temik 15G 5 lb/A (F)	1.40	28.0 a	14.5	11.8	0.6
Variety mean					
ST 4575 BR	1.81 a	23.7	16.8	11.9	0.8
PHY 310 R	1.52 c	25.0	8.4	11.0	0.7
DP 432 RR	1.80 a	24.6	15.6	12.0	1.4
DP 445 BR	1.68 b	25.2	12.4	13.2	1.0
DP 444 BG/RR	1.68 b	26.8	12.3	13.2	1.7
ST 5599 BR	1.47 c	25.9	11.9	12.6	0.3
LSD	**0.10**	**—**	**n.s.**	**n.s.**	**—**
Treatment mean					
Untreated check	1.64	23.3	6.8	12.0	0.7
Avicta Complete Pak (S)	1.66	25.4	15.6	13.3	1.2
LSD	**n.s.**	**—**	**n.s.**	**n.s.**	**—**

Variety, treatment and rate[1]	Plants/ft[2] (7 Jun)	Plant ht. (in.)[3] (25 Jul)	Flowers/12 ft[4] (25 Jul)	Number of bolls (18 Sep)[5]	
				Total	Open
Split-plot analysis					
Treatment	.3688	.1289	.1902	.2838	.2715
Variety	.0001	.0001	.1272	.1494	.0001
Treatment x variety	.0650	.0001	.8743	.6834	.0319

1 S=seed treatment, F=in furrow.
2 Determined from counts of two 30-ft rows.
3 Data represent measurement of six randomly-selected plants per plot.
4 Data are number of flowers per two 6-ft sections of row.
5 Determined from counts of four plants per plot.
Means for plants/ft and flower counts followed by different letter(s) in a column and group are significantly different (LSD, P=0.05); plant height and boll counts followed by different letter(s) in a column and group are significantly different (Student-Newman-Keuls multiple range test, P=0.05), "n.s." = not significant, "—"=combined analysis not valid due to significant treatment by variety interaction.

Table 33. Effect of treatments on nematode populations in cotton.

Variety, treatment and rate *	Nematodes/500 cc soil**		
	Root-knot	Spiral	Stubby root
ST 4575 BR			
Untreated Check	2760	220	470
Avicta Complete Pak (S)	3480	30	170
Temik 15G 5 lb/A (F)	1040	100	230
PHY 310 R			
Untreated Check	5010	250	70
Avicta Complete Pak (S)	4440	60	280
Temik 15G 5 lb/A (F)	3750	40	210
DP 432 RR			
Untreated Check	2570	390	320
Avicta Complete Pak (S)	1420	160	30
Temik 15G 5 lb/A (F)	400	50	100
DP 445 BR			
Untreated Check	6880	110	320
Avicta Complete Pak (S)	2200	70	170
Temik 15G 5 lb/A (F)	1110	40	140
DP 444 BG/RR			
Untreated Check	4570	170	330
Avicta Complete Pak (S)	3430	20	80
Temik 15G 5 lb/A (F)	1710	70	140
ST 5599 BR			
Untreated Check	1150	50	220
Avicta Complete Pak (S)	3140	40	170
Temik 15G 5 lb/A (F)	4570	210	160

* S=seed treatment, F=in furrow.
** Soil was sampled on 5 Sep. Data are counts of nematodes in a composite sample from 4 reps of each treatment/variety combination.

Table 34. Effect of treatment and variety selection on root galling and yield in cotton.

Variety, treatment and rate [1]	Root galling (0-6)[2]		Yield[3]	
	28 Jun	5 Dec	lb/A	bales/A
ST 4575 BR				
Untreated Check	3.9 a	4.8	1611	1.46
Avicta Complete Pak (S)	3.3 a	4.6	1809	1.64
Temik 15G 5 lb/A (F)	2.1 b	4.5	2087	1.69
PHY 310 R				
Untreated Check	3.3 a	5.1 a	1264	1.15
Avicta Complete Pak (S)	3.3 a	3.7 c	1657	1.50
Temik 15G 5 lb/A (F)	2.6 b	4.4 b	1582	1.43
DP 432 RR				
Untreated Check	3.6	4.6 a	1364	1.18
Avicta Complete Pak (S)	3.4	3.8 b	1468	1.27
Temik 15G 5 lb/A (F)	2.9	3.6 b	1640	1.42
DP 445 BR				
Untreated Check	3.4 a	4.4	1476	1.35
Avicta Complete Pak (S)	3.4 a	4.3	1723	1.58
Temik 15G 5 lb/A (F)	2.4 b	3.8	1918	1.76
DP 444 BR				
Untreated Check	3.8 a	3.3 a	1207	1.10
Avicta Complete Pak (S)	3.8 a	2.6 b	1439	1.31
Temik 15G 5 lb/A (F)	2.2 b	2.4 b	1591	1.45
ST 5599 BR				
Untreated Check	2.9 a	2.2	1723 b	1.54 b
Avicta Complete Pak (S)	2.9 a	1.8	2067 ab	1.84 ab
Temik 15G 5 lb/A (F)	1.8 b	1.6	2305 a	2.05 a
Variety mean				
ST 4575 BR	3.1 a	4.6 a	1835 ab	1.66 ab
PHY 310 R	3.0 a	4.4 ab	1501 cd	1.36 cd
DP 432 RR	3.3 a	4.0 c	1491 cd	1.29 d
DP 445 BR	3.1 a	4.2 bc	1705 bc	1.56 bc
DP 444 BG/RR	3.3 a	2.8 d	1412 d	1.29 d
ST 5599 BR	2.5 b	1.9 e	2031 a	1.81 a
LSD	**0.4**	**0.4**	**222**	**0.20**
Treatment mean				
Untreated check	3.5 a	4.0 a	1441	1.30
Avicta Complete Pak (S)	3.3 a	3.5 b	1693	1.52
Temik 15G 5 lb/A (F)	2.3 b	3.4 b	1854	1.67
LSD	**0.3**	**0.3**	**n.s.**	**n.s.**
Split-plot analysis				
Treatment	.0085	.0001	.4105	.4091
Variety	.0051	.0300	.0001	.0001
Treatment x variety	.2940	.1558	.9894	.9887

1 S=seed treatment, F=in furrow.
2 Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls. Ratings were made on four randomly selected plants per plot.
3 Weight (lb/A) includes lint + seed; bales/A are lint only. Lint weight (480 lb/bale) was determined by ginning samples of seed cotton from each variety. Plots were harvested on 15 Nov.
Means followed by different letter(s) in a column and group of root gall ratings and yields were significantly different (LSD, P=0.05). The effect of treatment on yield was significant only in ST 5599 BR (LSD, P=0.10). "n.s."= not significant.

IX. EVALUATION OF BAYER NEMATICIDES ON COTTON SEED FOR NEMATODE CONTROL (COTNEMA306 - Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy of seed treatment and in-furrow nematicide in cotton

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 30-ft rows per plot with 38-in. row spacing
4. Fifteen-ft alleyways between blocks

C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting. Seed treatments (S) were applied by Bayer CropScience.

D. TREATMENT AND RATE (Main plots):

1. Untreated Check
2. Gaucho Grande 0.375 mg a.i./seed (S)
3. Gaucho Grande 0.375 mg a.i. + Compound A
4. Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)
5. Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)
6. Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)
7. BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)
8. Temik 15G 5 lb/A (F)

E. VARIETY: Sub-plots

1. ST 4575 BR (71.50% cool germ)
2. ST 5599 BR (68.50% cool germ)

F. ADDITIONAL INFORMATION:

1. Location: Rick Morgan Farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2005-2001, Peanut 2000
3. Land preparation: Rip-and-bed rows in wheat cover crop
4. Soil type: Rumsford loamy fine sand
5. Planting date: 10 May 2006
6. Herbicide: Pre-plant – Prowl 12 fl oz/A soil incorporated (15 Apr)
   Pre-emergence – Prowl 1 pt/A (17 May)
   Post-emergence –Roundup Ultra Max 22 fl oz/A (31 May, 22 Jun)
   Valor 1.3 fl oz/A directed between rows (10 Jul)
   Evoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
8. Growth regulator: Pix bar, wick application 4 oz/A (10 Jul)
9. Defoliant/Boll opener: Quick Pick 2 qt + Resource 2 oz/A (23 Oct)
10. Fertilization: 7-0-40 200 lb/A preplant
    Liquid nitrogen 65 lb/A (10 Jul)
11. Harvest date: 15 Nov 2006

Table 35. Effect of treatments on emergence and growth of cotton.

	Plants/ft (7 Jun)[2]		Plant height (in., 24 Jul)[3]	
Treatment and rate[1]	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**
Untreated Check	1.99	1.85	21.4 bc	24.4 bc
Gaucho Grande 0.375 mg a.i./seed (S)	1.99	1.90	21.3 c	25.7 b
Gaucho Grande 0.375 mg a.i. + Compound A (S)	2.10	1.90	22.7 bc	25.6 b
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	1.96	1.82	23.0 bc	25.6 b
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	1.89	1.76	23.0 bc	23.7 c
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	2.03	1.87	23.2 b	24.9 bc
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	2.05	1.82	25.8 a	27.7 a
Temik 15G 5 lb/A (F)	1.91	1.75	22.8 bc	24.1 c
LSD	**n.s.**	**n.s.**	**1.8**	**1.3**
Treatment mean				
Untreated Check	1.92		22.9	
Gaucho Grande 0.375 mg a.i./seed (S)	1.95		23.5	
Gaucho Grande 0.375 mg a.i. + Compound A (S)	2.00		24.2	
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	1.89		24.3	
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	1.83		23.3	
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	1.95		24.0	
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	1.94		26.7	
Temik 15G 5 lb/A (F)	1.83		23.5	
LSD	**n.s.**		**—**	
Variety mean				
ST 4575 BR	1.99 a		22.9	
ST 5599 BR	1.83 b		25.2	
LSD	**0.07**		**—**	
Split-plot analysis				
Treatment	.0503		.0462	
Variety	.0001		.0001	
Treatment x variety	.9794		.0028	

1 S=seed treatment, F=in furrow.
2 Determined from counts of two 30-ft rows.
3 Data represent measurement of six randomly-selected plants per plot.
Means followed by the same letter(s) in a column and group are not significantly different (LSD, P=0.05), "n.s." = not significant and "—" denotes LSD not valid because of significant treatment by variety interaction.

Table 36. Effect of treatments on number of flowers and number of total and open bolls.

Treatment and rate[1]	Flowers/12 ft (24 Jul)[2]		Number of bolls/plant (18 Sep)[3]			
			Total		Open	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	6.5	2.5	12.3	13.4 a	0.6	0.1
Gaucho Grande 0.375 mg a.i./seed (S)	6.8	9.5	10.4	13.4 a	0.9	0.5
Gaucho Grande 0.375 mg a.i. + Compound A (S)	6.5	4.5	11.1	12.9 ab	0.5	0.0
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	12.5	9.3	11.7	13.1 ab	0.4	0.2
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	11.5	2.3	13.4	13.8 a	1.3	0.6
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	9.3	7.8	12.9	10.8 b	0.4	0.3
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	9.0	10.5	11.8	15.2 a	0.4	0.7
Temik 15G 5 lb/A (F)	13.3	5.8	11.9	15.4 a	0.9	0.4
LSD	**n.s.**	**n.s.**	**n.s.**	**2.7**	**n.s.**	**n.s.**
Treatment mean						
Untreated Check	4.5		12.9		0.4	
Gaucho Grande 0.375 mg a.i./seed (S)	8.1		11.9		0.7	
Gaucho Grande 0.375 mg a.i. + Compound A (S)	5.5		12.0		0.3	
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	10.9		12.4		0.3	
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	6.9		13.6		0.9	
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	8.5		11.8		0.3	
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	9.8		13.5		0.6	
Temik 15G 5 lb/A (F)	9.5		13.7		0.7	
LSD	**n.s.**		**n.s.**		**n.s.**	
Variety mean						
ST 4575 BR	9.4 a		11.9		0.7 a	
ST 5599 BR	6.5 b		13.5		0.3 b	
LSD	**2.6**		**—**		**0.2**	
Split-plot analysis						
Treatment	.2700		.3361		.2312	
Variety	.0284		.0002		.0033	
Treatment x variety	.2739		.0130		.5490	

1 S=seed treatment, F=in furrow.
2 Data are number of flowers per two 6-ft sections of row.
3 Data are counts of four plants per plot.
Means followed by the same letter(s) in a column and group are not significantly different (LSD, P=0.05), "n.s."= not significant; "—" denotes LSD not valid because of significant treatment by variety interaction.

Table 37. Effect of treatment and variety selection on nematode populations in cotton.

	Nematodes/500 cc soil**					
	Root-knot		Spiral		Stubby root	
Treatment and rate*	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	2460	1540	20	50	170	140
Gaucho Grande 0.375 mg a.i./seed (S)	3280	2620	0	10	170	130
Gaucho Grande 0.375 mg a.i. + Compound A (S)	2170	2730	100	0	110	90
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	3900	2470	10	10	160	70
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	2980	2120	40	50	150	390
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	3630	2670	70	80	240	170
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	2930	900	60	90	180	140
Temik 15G 5 lb/A (F)	2950	3420	20	10	120	230

* S=seed treatment, F=in furrow.
** Soil was sampled on 7 Sep. Data are counts of nematodes in a composite sample from 4 reps of each treatment/variety combination.

Table 38. Effect of treatments on root galling of cotton.

	Root galling**			
	28 Jun		5 Dec	
Treatment and rate*	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**
Untreated Check	3.1 b	2.4 cd	4.9 ab	1.9 d
Gaucho Grande 0.375 mg a.i./seed (S)	4.2 a	3.6 a	5.1 a	3.0 ab
Gaucho Grande 0.375 mg a.i. + Compound A (S)	3.5 ab	2.4 cd	4.6 ab	2.4 b-d
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	3.7 ab	2.1 d	4.6 ab	2.6 a-c
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	3.6 ab	3.3 ab	4.9 ab	3.2 a
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	4.1 a	2.9 bc	4.8 ab	2.7 a-c
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	3.1 b	2.4 cd	4.3 bc	2.1 cd
Temik 15G 5 lb/A (F)	2.1 c	2.0 d	3.8 c	2.4 b-d
LSD	**0.7**	**0.6**	**0.6**	**0.7**
Treatment mean				
Untreated Check	2.8		3.4	
Gaucho Grande 0.375 mg a.i./seed (S)	3.9		4.1	
Gaucho Grande 0.375 mg a.i. + Compound A (S)	2.9		3.4	
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	2.9		3.6	
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	3.4		4.1	
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	3.5		3.7	
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	2.8		3.2	
Temik 15G 5 lb/A (F)	2.0		3.1	
LSD	—		—	
Variety mean				
ST 4575 BR	3.4		4.6	
ST 5599 BR	2.6		2.5	
LSD	—		—	
Split-plot analysis				
Treatment	.0059		.1990	
Variety	.0001		.0001	
Treatment x variety	.0110		.0189	

* S=seed treatment, F=in furrow.

** Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls. Ratings were made on four randomly selected plants per plot.

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

Table 39. Effect of treatments on yield of cotton.

	Yield**			
	lb/A		bales/A	
Treatment and rate*	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**
Untreated Check	2029	2084	1.81	1.88
Gaucho Grande 0.375 mg a.i./seed (S)	1470	2201	1.31	1.99
Gaucho Grande 0.375 mg a.i. + Compound A (S)	1645	2167	1.47	1.95
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	1800	2184	1.61	1.97
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	1918	1898	1.71	1.71
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	1952	2296	1.74	2.07
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	1834	2135	1.64	1.93
Temik 15G 5 lb/A (F)	2015	2067	1.80	1.86
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Treatment mean				
Untreated Check	2057		1.84	
Gaucho Grande 0.375 mg a.i./seed (S)	1836		1.65	
Gaucho Grande 0.375 mg a.i. + Compound A (S)	1906		1.71	
Gaucho Grande 0.375 mg a.i. + EXP3 250 g a.i./100 kg seed (S)	1992		1.79	
Gaucho Grande 0.375 mg a.i. + EXP3 375 g a.i./100 kg seed (S)	1908		1.71	
Gaucho Grande 0.375 mg a.i. + EXP3 500 g a.i./100 kg seed (S)	2124		1.91	
BCSTON 02100602 0.34 mg a.i. + L1505A 0.15 mg a.i./seed (S)	1985		1.78	
Temik 15G 5 lb/A (F)	2041		1.83	
LSD	**n.s.**		**n.s.**	
Variety mean				
ST 4575 BR	1833 b		1.63 b	
ST 5599 BR	2129 a		1.92 a	
LSD	**137**		**0.12**	
Split-plot analysis				
Treatment	.7328		.7364	
Variety	.0002		.0001	
Treatment x variety	.1160		.1163	

* S=seed treatment, F=in furrow.

** Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 42.8% of total weight for ST4575 BR and 43.3% of total weight for ST5599 BR. One bale equals 480 lb. Plots were harvested on 15 Nov.

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

X. EVALUATION OF SYNGENTA NEMATICIDES ON COTTON SEED FOR NEMATODE CONTROL (COTNEMA506 - Rick Morgan Farm, Suffolk)

A. PURPOSE: To compare the efficacy and benefits of experimental nematicides on seed for control of southern root-knot nematode

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 30-ft rows per plot with 38-in. row spacing

C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied by Syngenta Crop Protection. Granular treatments were applied in-furrow (F) at planting.

D. TREATMENT, AND RATE: Seed treatments (S) are expressed as active ingredient/seed, and in-furrow treatment is rate of formulated product/A

1. Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)
2. Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S)
3. A14905B 533.1FS 0.54 mg/seed (S)
4. A14905E 533.1FS 0.54 mg/seed (S)
5. A14905F 533.1FS 0.54 mg/seed (S)
6. A14905G 533.1FS 0.54 mg/seed (S)
7. A14905H 533.1FS 0.54 mg/seed (S)
8. A14905A 537.6FS 0.54 mg/seed (S)
9. Dynasty 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)
10. Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S) + Temik 15G (F) 5 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan Farm, Deer Forest Road, Suffolk
2. Crop history: Cotton 2005-2001, Peanut 2000
3. Land preparation: Rip-and-bed rows
4. Planting date and variety: 10 May 2006, DP 444BG/RR (90% cool germ) treated with Lorsban/Apron XL/Maxim/Systhane
5. Soil type: Rumford loamy fine sand
6. Herbicide: Pre-plant – Prowl 12 fl oz/A soil incorporated (15 Apr)
   Pre-emergence – Prowl 1 pt/A (17 May)
   Post-emergence – Roundup Ultra Max 22 fl oz/A (31 May, 22 Jun)
   Valor 1.3 fl oz/A directed between rows (10 Jul)
   Evoke 0.10 oz + MSMA 1 pt/A directed within rows (20 Jul)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
8. Growth regulator: Pix bar, wick application 4 oz/A (10 Jul)
9. Defoliant/Boll opener: Quick Pick 2 qt + Resource 2 oz/A (23 Oct)
10. Fertilization: 7-0-40 200 lb/A pre plant
    Liquid nitrogen 65 lb/A (10 Jul)
11. Harvest date: 15 Nov 2006

Table 40. Effect of treatments on emergence and growth of cotton.

Treatment and rate[1]	Plants/ft[2] (7 Jun)	Height (in.)[3] (24 Jul)	Flowers/12 ft[4] (24 Jul)
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	2.18 a	29.5	23.5
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S)	1.94 bc	29.5	29.0
A14905B 533.1FS 0.54 mg/seed (S)	1.99 bc	30.2	24.5
A14905E 533.1FS 0.54 mg/seed (S)	1.75 d	28.6	21.0
A14905F 533.1FS 0.54 mg/seed (S)	1.86 cd	29.3	21.5
A14905G 533.1FS 0.54 mg/seed (S)	1.78 d	29.0	31.8
A14905H 533.1FS 0.54 mg/seed (S)	2.08 ab	30.1	32.5
A14905A 537.6FS 0.54 mg/seed (S)	1.86 cd	29.3	29.0
Dynasty 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)	2.06 ab	29.1	19.8
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S) + Temik 15G (F) 5 lb/A (F)	1.90 cd	29.3	28.3
LSD	**0.15**	**n.s.**	**n.s.**

1 S=seed treatment at rate active ingredient/seed. F=in furrow at rate of formulated product/A.
2 Determined from counts of two 30-ft rows.
3 Data represent measurement of six randomly-selected plants per plot.
4 Data are number of flowers per two 6-ft sections of row.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), "n.s." = not significant.

Table 41. Effect of treatments on stunting and number of open bolls in cotton.

Treatment and rate[1]	% stunted[2] (26 Aug)	Open bolls[3] (19 Sep)
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	1.3 c	3.31 b-d
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S)	1.3 c	2.94 cd
A14905B 533.1FS 0.54 mg/seed (S)	3.8 bc	2.88 d
A14905E 533.1FS 0.54 mg/seed (S)	11.3 a	4.06 a
A14905F 533.1FS 0.54 mg/seed (S)	8.8 ab	3.81 ab
A14905G 533.1FS 0.54 mg/seed (S)	6.3 a-c	3.63 a-c
A14905H 533.1FS 0.54 mg/seed (S)	2.5 c	3.75 ab
A14905A 537.6FS 0.54 mg/seed (S)	6.3 a-c	3.50 a-d
Dynasty 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)	5.0 bc	4.00 ab
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S) + Temik 15G (F) 5 lb/A (F)	2.5 c	3.81 ab
LSD	**6.2**	**0.69**

1 S=seed treatment at rate active ingredient/seed. F=in furrow at rate of formulated product/A.
2 Percent of stunted plants per two 30-ft rows.
3 Data are counts of four plants per plot.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05).

Table 42. Effect of treatments on nematode populations in cotton.

Treatment and rate*	Nematodes/500 cc soil**		
	Root-knot	Spiral	Stubby root
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	8850	820	50
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S)	6050	270	140
A14905B 533.1FS 0.54 mg/seed (S)	5440	270	210
A14905E 533.1FS 0.54 mg/seed (S)	5710	800	70
A14905F 533.1FS 0.54 mg/seed (S)	7830	50	180
A14905G 533.1FS 0.54 mg/seed (S)	3230	10	110
A14905H 533.1FS 0.54 mg/seed (S)	6540	220	120
A14905A 537.6FS 0.54 mg/seed (S)	3910	160	110
Dynasty 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)	5600	150	220
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S) + Temik 15G (F) 5 lb/A (F)	5190	240	60

* S=seed treatment at rate of active ingredient/seed. F=in furrow at rate of formulated product/A.
** Soil was sampled on 7 Sep. Data are counts of nematodes in a composite sample from 4 reps of each treatment.

Table 43. Effect of treatments on root galling and yield of cotton.

Treatment and rate[1]	Root galling (0-6)[2]		Yield[3]	
	23 Jun	5 Dec	lb/A	bales/A
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg/seed (S)	2.0	3.0 de	2221 ab	1.98 ab
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S)	2.3	3.9 ab	2388 a	2.13 a
A14905B 533.1FS 0.54 mg/seed (S)	2.4	2.9 de	2038 bc	1.82 bc
A14905E 533.1FS 0.54 mg/seed (S)	2.6	4.2 a	1926 cd	1.72 cd
A14905F 533.1FS 0.54 mg/seed (S)	2.3	3.1 c-e	2118 a-c	1.89 a-c
A14905G 533.1FS 0.54 mg/seed (S)	2.4	3.3 b-d	2178 a-c	1.94 a-c
A14905H 533.1FS 0.54 mg/seed (S)	1.5	2.4 e	2216 a-c	1.98 a-c
A14905A 537.6FS 0.54 mg/seed (S)	2.0	3.3 b-d	2006 b-d	1.79 b-d
Dynasty 125FS 0.03 mg/seed (S) + Temik 15G 5 lb/A (F)	2.1	3.8 a-c	1740 d	1.55 d
Dynasty 125FS 0.03 mg + Cruiser 5FS 0.34 mg + Avicta 4.17FS 0.15 mg/seed (S) + Temik 15G (F) 5 lb/A (F)	1.4	2.7 de	2164 a-c	1.93 a-c
LSD	**n.s.**	**0.7**	**295**	**0.26**

1 S=seed treatment at rate of active ingredient/seed. F=in furrow at rate of formulated product/A.
2 Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls. Ratings were made on four randomly selected plants per plot.
3 Weight (lb/A) includes lint + seed; bales/A are lint only. Lint was 42.8% of total weight and 480 lb/bale. Plots were harvested on 15 Nov. Means followed by the same letter(s) in a column a are not significantly different (LSD, P=0.05).

XI. RESPONSE OF COTTON TO NEMATICIDE TREATMENTS (COTNEMA406 - Jason Holland Farm, Suffolk)

A. PURPOSE: To compare the efficacy and benefits of nematicide treatments for nematode control in cotton

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 30-ft rows per plot with 36-in. row spacing
4. Fifteen-ft alleyways between blocks

C. APPLICATION OF TREATMENTS: Avicta Complete Pak (S) was applied by Syngenta Crop Protection as an overcoat on top of the seed company's standard fungicide treatment. In-furrow treatment (F) was applied at planting.

D. TREATMENT, AND RATE (Main plots):

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

E. VARIETY (Sub-plots):

1. ST 4575 BR (71.50% cool germ)
2. ST 5599 BR (68.50% cool germ)

F. ADDITIONAL INFORMATION:

1. Location: Jason Holland Farm, Glenhaven Drive, Suffolk
2. Crop history: cotton 2005
3. Land preparation: rip-and-strip till into stale seed beds of previous cotton crop
4. Planting date: 16 May
5. Soil fertility report (Mar 2006):

pH	6.6	K	130 ppm
Ca	509 ppm	Zn	0.4 ppm
Mg	80 ppm	Mn	2.1 ppm
P	17 ppm	Soil type	Eunola loamy fine sand

6. Herbicide: Prowl 1 pt + Cotoran 1 qt/A (10 Apr)
   Roundup Ultra Max 22 fl oz/A (5 May, 21 Jun)
   Caparol 1.5 pt + Envoke 0.15 oz + Target 1 qt/A directed spray (13 Jul)
7. Insecticide: Orthene 97S 8 oz/A (30 May)
   Baythroid XL 3 fl oz/A (9 Aug)
8. Growth regulator: Pentia 8 fl oz/A (7 Jul)
9. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 1.6 oz/A (3 Oct)
10. Cultivation: 11 Jul
11. Fertilization: Liquid boron 2 qt/A (11 Jul)
    30% N 60 lb/A (11 Jul)
12. Harvest date: 1 Nov

Table 44. Effect of treatment on nematode populations.

Treatment and rate	Nematodes/500 cc soil*	
	Spiral	Stubby root
Untreated check	360	15
Temik 15G 5 lb (F)	633	10
Avicta Complete Pak (S)	478	30
LSD	n.s.	n.s.

* Soil samples were collected from all subplots within each treatment on 27 Jul. "n.s." = not significantly different according to Fisher's Protected LSD (P=0.05). Square root transformation of data was made in analysis to determine statistical significance.

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

Treatment and rate/A[1]	Plants/ft (13 Jun)[2]		Vigor (13 Jun)[3]		Plant height (in.)[4] (20 Jul)	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	2.02	2.03	7.8 b	7.8 b	18.6	18.3
Temik 15G 5 lb/A (F)	2.05	1.93	8.8 a	8.8 a	19.7	19.4
Avicta Complete Pak (S)	2.01	1.90	8.8 a	8.8 a	19.0	19.4
LSD	**n.s.**	**n.s.**	**0.01**	**0.8**	**n.s.**	**n.s.**
Treatment mean						
Untreated Check	2.02		7.8 b		18.5 b	
Temik 15G 5 lb/A (F)	1.99		8.8 a		19.5 a	
Avicta Complete Pak (S)	1.95		8.8 a		19.2 ab	
LSD	**n.s.**		**0.4**		**0.8**	
Variety mean						
ST4575 BR	2.03		8.4		19.1	
ST 5599 BR	1.95		8.4		19.0	
LSD	**n.s.**		**n.s.**		**n.s.**	
Split-plot analysis						
Treatment	.6093		.0014		.0431	
Variety	.2240		1.0000		.7979	
Treatment x variety	.5733		1.0000		.6080	

1 S=seed treatment, F=in furrow.
2 Determined from counts of two 30-ft rows per plot.
3 Plant vigor rating scale: 1=severely stunted, 10=healthy.
4 Data are measurements of six 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 46. Effect of treatment on thrips injury, flowering, and earliness in cotton.

	Thrips injury[2] (10 Jun)		Flowers/12 ft[3] (20 Jul)		Open bolls[4] (4 Oct)	
Treatment and rate/A1	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**	**ST4575 BR**	**ST 5599 BR**
Untreated Check	3.3 a	2.8 a	0.3	0.0	4.1	3.3
Temik 15G 5 lb/A (F)	1.0 b	1.0 b	1.3	0.3	4.4	3.5
Avicta Complete Pak (S)	1.0 b	0.5 b	0.8	0.0	4.1	2.9
LSD	**0.5**	**0.9**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Treatment mean						
Untreated Check	3.0 a		0.1		3.7	
Temik 15G 5 lb/A (F)	1.0 b		0.8		4.0	
Avicta Complete Pak (S)	0.8 b		0.4		3.7	
LSD	**0.4**		**n.s.**		**n.s.**	
Variety mean						
ST4575 BR	1.8 a		0.8 a		4.3 a	
ST5599 BR	1.4 b		0.1 b		3.2 b	
LSD	**0.3**		**0.5**		**0.5**	
Split-plot analysis						
Treatment	.0001		.1053		.8384	
Variety	.0368		.0161		.0004	
Treatment x variety	.2740		.4208		.6086	

1 S=seed treatment, F=in furrow.
2 Thrips injury scale: 0=no damage, 10=thrips damage on all plants.
3 Data are number of flowers per two 6-ft sections of row.
4 Data are number of open bolls from four plants per plot.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "n.s." = not significant.

Table 47. Effect of treatment on yield of cotton.

Treatment and rate/A*	lb/A**		bales/A**	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR
Untreated Check	2369	2357	2.19	2.18
Temik 15G 5 lb/A (F)	2402	2520	2.22	2.34
Avicta Complete Pak (S)	2704	2744	2.50	2.54
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Treatment mean				
Untreated Check	2363 b		2.19 b	
Temik 15G 5 lb/A (F)	2461 b		2.28 b	
Avicta Complete Pak (S)	2724 a		2.52 a	
LSD	**212**		**0.19**	
Variety mean				
ST4575 BR	2492		2.30	
ST5599 BR	2540		2.35	
LSD	**n.s.**		**n.s.**	
Split-plot analysis				
Treatment	.0646		.0645	
Variety	.6211		.5432	
Treatment x variety	.8545		.8539	

* S=seed treatment, F=in furrow.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 44.3% of total weight for ST 4575 BR and 44.5% for ST 5599 BR. One bale = 480 lb. Plots were harvested on 1 Nov 2006.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.10), "n.s." = not significant.

XII. RESPONSE OF COTTON TO NEMATICIDE TREATMENTS (COTNEMA106 - R.L. Smith Farm, Branchville)

A. PURPOSE: To compare the efficacy and benefits of nematicide treatments for nematode control

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 15 ft alleyways between blocks
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 30-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: Granular treatments were applied in-furrow (F) at planting or 8-in. band over rows (B) with cultivation on 10 Jul. Seed treatments (S) were applied by Syngenta Crop Protection as an overcoat on top of the seed company's standard fungicide treatment.

D. TREATMENT AND RATE (Main plots):
1. Untreated Check
2. Avicta Complete Pak (S)
3. Temik 15G 5 lb/A (F)
4. KC791230 (in-furrow) 5 lb/A (F)
5. Temik 15G 5 lb/A (F) + 5 lb/A (B)

E. VARIETY: Sub-plots
1. ST 4575 BR (71.50% cool germ)
2. ST 5599 BR (68.50% cool germ)

F. PLANTING DATE:

G. ADDITIONAL INFORMATION:
1. Location: R.L. Smith Farm, Branchville
2. Crop history: cotton 2005, 2004; soybean 2003
3. Land preparation: rip-and-strip till in wheat cover crop
4. Planting date: 3 May 2006
5. Soil fertility report (Mar 2006):

pH	5.7	K	32 ppm
Ca	234 ppm	Zn	1.2 ppm
Mg	34 ppm	Mn	3.5 ppm
P	53 ppm	Soil type	loamy sand

6. Herbicide: Pre-plant – Prowl 1.3 pt/A (20 Apr)
   Post-emergence - Roundup Ultra Max 22 fl oz/A (20 May, 10 Jun)
   Dual Magnum 12 fl oz/A (10 Jun)
   Envoke 0.1 oz/A (26 Jun)
7. Insecticide: Orthene 97S 4 oz/A (20 May); 8 oz/A (31 May)
   Baythroid 1.6 oz/A (1 Aug); 2.6 oz/A (8 Aug)
8. Growth regulator: Pix 8 oz/A (26 Jun, 10 Jul)
9. Defoliant/Boll opener: Dropp 1.6 oz + Finish 24 fl oz/A (16 Sep)
10. Cultivation: 10 Jul
11. Fertilization: 7-18-36 300 lb/A (1 Apr)
    Ammonium sulfate 300 lb/A (15 Jun)
12. Harvest date: 21 Oct

Table 48. Incidence of root galling in untreated plots in cotton.

Treatment	Root galling (9 Jun)*	
	ST4575 BR	ST5599 BR
Untreated Check	0.1	0.1

* 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 on two randomly selected plants per plot.

Table 49. Effect of treatment on emergence and growth in cotton.

Treatment and rate/A[1]	Plants/ft (31 May)[2]		Vigor (9 Jun)[3]		Plant height (in.)[4] (21 Jul)	
	ST4575 BR	ST5599 BR	ST4575 BR	ST5599 BR	ST4575 BR	ST5599 BR
Untreated Check	2.02	1.80	3.5 c	3.8 b	21.4 c	22.5 b
Avicta Complete Pak (S)	1.86	1.78	9.0 b	9.5 a	26.2 b	27.8 a
Temik 15G 5 lb (F)	1.61	1.64	9.5 ab	10.0 a	27.5 ab	27.5 a
KC791230 5 lb (F)	1.78	1.77	10.0 a	10.0 a	28.0 a	28.8 a
Temik 15G 5 lb (F) + 5 lb (B)	1.85	1.80	9.8 ab	9.5 a	26.9 ab	27.9 a
LSD	**n.s.**	**n.s.**	**0.8**	**0.7**	**1.6**	**1.6**
Treatment mean						
Untreated Check	1.91		3.6 d		21.9 c	
Avicta Complete Pak (S)	1.82		9.3 c		27.0 b	
Temik 15G 5 lb (F)	1.62		9.8 ab		27.5 b	
KC791230 5 lb (F)	1.77		10.0 a		28.4 a	
Temik 15G 5 lb (F) + 5 lb (B)	1.83		9.6 b		27.4 b	
LSD	**n.s.**		**0.4**		**0.9**	
Variety mean						
ST4575 BR	1.82		8.4		26.0 b	
ST5599 BR	1.76		8.6		26.9 a	
LSD	**n.s.**		**n.s.**		**0.5**	
Split-plot analysis						
Treatment	.2337		.0001		.0001	
Variety	.2024		.0839		.0013	
Treatment x variety	.5574		.1772		.4214	

1 S=seed treatment, F=in furrow, B=band application w/cultivation (10 Jul).
2 Determined from counts of two 30-ft rows per plot.
3 Plant vigor rating scale: 1=severely stunted, 10=healthy.
4 Data are measurements of six 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 50. Effect of treatment on thrips injury, flowering, and number of open bolls in cotton.

Treatment and rate/A[1]	Thrips injury[2] (9 Jun)		Flowers/12 ft[3] (21 Jul)		Open bolls[4] (15 Sep)	
	ST 4575 BR	ST 5599 BR	ST 4575 BR	ST 5599 BR	ST 4575 B BR	ST 5599 BR
Untreated Check	6.0 a	5.3 a	13.5 b	11.3	6.1 c	4.1
Avicta Complete Pak (S)	1.0 b	1.0 b	20.8 a	13.5	7.6 ab	5.5
Temik 15G 5 lb (F)	1.0 b	1.0 b	18.8 ab	18.0	8.5 a	5.4
KC791230 5 lb (F)	1.0 b	1.0 b	23.0 a	18.3	8.4 a	5.6
Temik 15G 5 lb (F) + 5 lb (B)	1.0 b	1.0 b	22.0 a	19.0	7.1 bc	5.6
LSD	**0.01**	**0.3**	**6.3**	**n.s.**	**1.3**	**n.s.**
Treatment mean						
Untreated Check	5.6		12.4 b		5.1	
Avicta Complete Pak (S)	1.0		17.1 a		6.6	
Temik 15G 5 lb (F)	1.0		18.4 a		7.0	
KC791230 5 lb (F)	1.0		20.6 a		7.0	
Temik 15G 5 lb (F) + 5 lb (B)	1.0		20.5 a		6.3	
LSD	**—**		**0.4**		**n.s.**	
Variety mean						
ST4575 BR	2.0		19.6 a		7.5 a	
ST5599 BR	1.9		16.0 b		5.2 b	
LSD	**—**		**2.7**		**0.5**	
Split-plot analysis						
Treatment	.0001		.0457		.0963	
Variety	.0090		.0128		.0001	
Treatment x variety	.0006		.5622		.2303	

1 S=seed treatment, F=in furrow, B=band application w/cultivation (10 Jul).
2 Thrips injury scale: 0=no damage, 10=thrips damage on all plants.
3 Data are number of flowers per two 6-ft sections of row.
4 Determined from counts of four plants per plot.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "n.s." = not significant, "—" denotes LSD not valid because of significant treatment by variety interaction.

Table 51. Effect of treatments on nematode populations in cotton.

	Nematodes/500 cc soil**					
	ST 4575 BR			ST 5599 BR		
Treatment *	**Lesion**	**Stunt**	**Stubby root**	**Lesion**	**Stunt**	**Stubby root**
Untreated Check	0	40	140	10	90	270
Avicta Complete Pak (S)	10	90	70	0	20	110
Temik 15G 5 lb (F)	0	30	50	0	60	210
KC791230 5 lb (F)	10	100	70	10	90	130
Temik 15G 5 lb (F) + 5 lb (B)	10	20	100	10	60	60

* S=seed treatment, F=in furrow (3 May), B=band application w/cultivation (10 Jul).
** Data are counts of nematodes in a composite sample from 4 reps of each treatment. Soil was sampled on 7 Sep.

Table 52. Effect of treatments on yield of cotton.

	lb/A**		bales/A**	
Treatment and rate/A*	**ST 4575 BR**	**ST 5599 BR**	**ST 4575 BR**	**ST 5599 BR**
Untreated Check	1165 c	1180	0.94 c	0.98
Avicta Complete Pak (S)	1497 bc	1513	1.21 bc	1.25
Temik 15G 5 lb (F)	1407 bc	1437	1.14 bc	1.19
KC791230 5 lb (F)	1679 ab	1437	1.36 ab	1.19
Temik 15G 5 lb (F) + 5 lb (B)	1936 a	1724	1.56 a	1.43
LSD	**374**	**n.s.**	**0.30**	**n.s.**
Treatment mean				
Untreated Check	1172 c		0.96 c	
Avicta Complete Pak (S)	1505 b		1.23 b	
Temik 15G 5 lb (F)	1422 bc		1.16 bc	
KC791230 5 lb (F)	1558 b		1.27 b	
Temik 15G 5 lb (F) + 5 lb (B)	1830 a		1.50 a	
LSD	**271**		**0.22**	
Variety mean				
ST 4575 BR	1537		1.24	
ST 5599 BR	1458		1.21	
LSD	**n.s.**		**n.s.**	
Split-plot analysis				
Treatment	.0702		.0722	
Variety	.4337		.6581	
Treatment x variety	.8151		.8319	

* S=seed treatment, F=in furrow at planting (3 May), B=band application w/cultivation (10 Jul).
** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.4% of total weight and 480 lb/bale. Plots were harvested on 21 Oct 2006.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.10), "n.s." = not significant.

XIII. RESPONSE OF COTTON TO PIX AND QUADRIS FOR CONTROL OF BOLL ROT AND HARDLOCK (HARDLOCK106 - Tidewater AREC, Suffolk)

A. PURPOSE: To evaluate mixtures of Quadris and plant growth regulator for disease control and improvement of yield in cotton

B. EXPERIMENTAL DESIGN:

1. Five randomized complete blocks separated by 10 ft alleyways
2. Four 30-ft rows per plot
3. Seeding rate of 4 to 5 seed/ft of row

C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18 in. apart and delivering 16.5 gal/A. Pix was applied at pinhead square and thereafter as needed according to Virginia Tech recommendations. Applications of Quadris were timed as close as possible to first bloom and 14 days later. Applications of Quadris alone are to be at least 3 days before or after any applications of Pix.

D. APPLICATION OF TREATMENTS:

1. Pix 42EC 8 fl oz/A (Pinhead square, 1st bloom + 14 days later and as needed thereafter)
2. Pix 42EC 8 fl oz/A (Pinhead square and as needed thereafter)
   Tank mix: Pix 42EC 8 fl oz + Quadris 250SC 6 fl oz/A (1st bloom + 14 days later)
3. Pix 42EC 8 fl oz/A (Pinhead square and as needed thereafter)
   Alone: Quadris 250SC 6 fl oz/A (1st bloom + 14 days later)
4. Pix 42EC 8 fl oz/A (Pinhead square and as needed thereafter)
   Tank mix: Pix 42EC 8 fl oz + Quadris 250SC 9 fl oz/A (1st bloom + 14 days later)
5. Pix 42EC 8 fl oz/A (Pinhead square and as needed thereafter)
   Alone: Quadris 250SC 9 fl oz/A (1st bloom + 14 days later)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC, Holland Road, Suffolk
2. Crop history: Corn 2005, Cotton 2004, Peanut 2003
3. Land preparation: rip-and-strip till into wheat cover crop (13 Apr)
4. Planting date and variety: 4 May 2006, DP555RR
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	499 ppm	Zn	0.4 ppm
Mg	30 ppm	Mn	2.0 ppm
P	30 ppm	Soil type	Nansemond fine sandy loam

6. Herbicide: Pre-plant – Roundup Ultra Max 22 fl oz/A (14 Apr)
   Prowl H20 1 pt + Cotoran 1 qt/A (18 Apr)
   Post-emergence –Roundup Ultra Max 22 fl oz/A (19 May, 31 May)
7. Insecticide: Temik 15G 5 lb/A (4 May)
   Orthene 97S 8 oz/A (12 May, 31 May)
8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 1.6 oz/A (16 Oct)
9. Fertilization: 7.42-15-36 330 lb/A (5 Apr)
10. Harvest date: 1 Nov

Table 53. Plant populations and number of flowers in untreated plots at the time of application of Quadris 250SC.

Rep	Plants/ft* (17 Jul)	Flowers/12 ft**	
		17 Jul	31 Jul
I	2.7	10	106
II	3.0	3	82
III	2.5	12	77
IV	2.3	14	97
V	3.3	9	96

* Data are counts of two 30-ft rows per plot.
** Data are number of flowers in two 6-ft sections of row per plot.

Table 54. Number of flowers/12 ft of row following application of Quadris 250SC, plant populations and number of bolls on 27 September and yield of cotton.

Treatment, rate/A and application date	Flowers/12 ft[1] (14 Aug)	Plants/6 ft[2] (27 Sep)	Number of bolls[2] (27 Sep)		Yield[3]	
			Open	Total	lb/A	bales/A
Pix 42EC 8 fl oz (6/30, 7/18, 8/1)	52.4	16.8	47.6	110.6	3265	3.1
Pix 42EC 8 fl oz (6/30) Pix 42EC 8 fl oz + Quadris 250SC 6 fl oz (7/18, 8/1)	46.8	16.4	50.2	118.2	3279	3.1
Pix 42EC 8 fl oz (6/30, 7/21, 8/4) Quadris 250SC 6 fl oz (7/18, 8/1)	44.4	16.0	51.8	112.2	3337	3.2
Pix 42EC 8 fl oz (6/30) Pix 42EC 8 fl oz + Quadris 250SC 9 fl oz (7/18, 8/1)	45.0	15.0	47.2	111.2	3146	3.0
Pix 42EC 8 fl oz (6/30, 7/21, 8/4) Quadris 250SC 9 fl oz (7/18, 8/1)	48.8	18.0	42.6	116.0	3473	3.3
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**

1 Number of flowers in two 6-ft sections of row per plot.
2 Number of plants or bolls in two 3-ft sections of row per plot.
3 Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 45.5% of total weight and 480 lb/bale. Plots were harvested on 1 Nov.
"n.s." = not significantly different according to Fisher's Protected LSD (P=0.05).

XIV. RESPONSE OF COTTON TO FUNGICIDES FOR CONTROL OF BOLL ROT AND HARDLOCK (HARDLOCK206 - Tidewater AREC, Suffolk)

A. PURPOSE: To evaluate foliar fungicide treatments for disease control and improvement of yield in cotton

B. EXPERIMENTAL DESIGN:

1. Five randomized complete blocks separated by 10 ft alleyways
2. Four 30-ft rows per plot
3. Seeding rate of 4 to 5 seed/ft of row

C. APPLICATION OF TREATMENTS: All treatments were applied with 8002VS nozzles spaced 18 in. apart on a 12-ft spray boom using a Lee Spider Sprayer that delivered 16.5 gal/A. Pentia was applied at pinhead square, 50% bloom and thereafter as needed according to Virginia Tech recommendations. Fungicide applications were timed as close as possible to early bloom, mid-bloom and late bloom. Approximate timing should be approximately 2 week intervals.

D. TREATMENTS [Early flowering, and thereafter at approximately 14-day intervals (8/1, 8/11)]:

1. Check
2. Headline 250EC 6.14 fl oz/A
3. Headline 250EC 9.2 fl oz/A
4. Caramba 90SL 8.2 fl oz/A
5. BAS 55601F 210EC 5.5 fl oz/A
6. BAS 55601F 210EC 6.8 fl oz/A
7. BAS 55601F 210EC 8.6 fl oz/A
8. BAS 50000F 250EC 4.4 fl oz + Caramba 90SL 5.3 fl oz/A
9. Quadris 250SC 9.2 fl oz/A

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC, Holland Road, Suffolk
2. Crop history: Corn 2005, Cotton 2004, Peanut 2003
3. Land preparation: rip-and-strip till into wheat cover crop (13 Apr)
4. Planting date and cultivar: 4 May 2006, DP555RR
5. Soil fertility report (Mar 2006):

pH	6.0	K	67 ppm
Ca	499 ppm	Zn	0.4 ppm
Mg	30 ppm	Mn	2.0 ppm
P	30 ppm	Soil type	Nansemond fine sandy loam

6. Herbicide: Pre-plant – Roundup Ultra Max 22 fl oz/A (14 Apr)
   Prowl H20 1 pt + Cotoran 1 qt/A (18 Apr)
   Post-emergence –Roundup Ultra Max 22 fl oz/A (19 May, 31 May)
7. Insecticide: Temik 15G 5 lb/A (4 May)
   Orthene 97S 8 oz/A (12 May, 31 May)
8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 1.6 oz/A (16 Oct)
9. Fertilization: 7.42-15-36 330 lb/A (5 Apr)
10. Harvest date: 1 Nov

Table 55. Plant populations and number of flowers in untreated plots at the time of application.

Rep	Plants/ft* (17 Jul)	Flowers/12 ft**		
		17 Jul	31 Jul	11 Aug
I	24	18	94	80
II	22	17	105	71
III	31	21	104	86
IV	35	24	87	83
V	33	8	92	60

* Data are counts of two 30-ft rows per plot.
** Data are number of flowers in two 6-ft sections of row per plot.

Table 56. Effect of treatments on stand counts, number of open and total bolls, and yield of cotton.

Treatment and rate/A[1]	Plants/6 ft[2] (27 Sep)	Bolls/6 ft (27 Sep)[3]		Yield[4]	
		Open	Total	lb/A	bales/A
Check	15.4	47.4	125.6 ab	3507	3.4
Headline 250EC 6.14 fl oz	17.0	53.0	126.8 ab	3386	3.3
Headline 250EC 9.2 fl oz	14.8	53.2	125.4 ab	3574	3.4
Caramba 90SL 8.2 fl oz	16.4	47.8	117.0 a-c	3335	3.2
BAS 55601F 210EC 5.5 fl oz	15.2	50.0	129.4 a	3584	3.5
BAS 55601F 210EC 6.8 fl oz	16.0	43.2	116.0 bc	3531	3.4
BAS 55601F 210EC 8.6 fl oz	17.0	44.6	109.8 c	3398	3.3
BAS 50000F 250EC 4.4 fl oz + Caramba 90SL 5.3 fl oz	16.2	47.4	115.4 bc	3292	3.2
Quadris 250SC 9.2 fl oz	17.4	55.8	125.4 ab	3260	3.1
LSD	**n.s.**	**n.s.**	**12.6**	**n.s.**	**n.s.**

1 All treatments were applied at early flowering (7/18), and repeated at approx. 14-day intervals (8/1, 8/11).
2 Number of plants in two 3-ft sections of row.
3 Number of bolls in two 3-ft sections of row.
4 Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 46.3% of total weight and 480 lb/bale. Plots were harvested on 1 Nov 2006.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), "n.s." = not significant.

XV. EFFECT OF PLANTING DATE AND CULTIVAR ON INCIDENCE OF TOMATO SPOTTED WILT VIRUS IN PEANUT (TSWVPD06 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To define the importance of planting date, cultivar selection and migrations of adult tobacco thrips on incidence and severity of spotted wilt virus in peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 15-ft alleys between blocks
2. Split-plot design with planting date in main plots and cultivar in subplots
3. Two 40-ft rows per plot with 36-in. row spacing
4. Seeding rate of ca. 3.5 seed/row ft

C. PLANT DATES: Main plots

1. April 12
2. April 19
3. April 27
4. May 3
5. May 10
6. May 17
7. May 24

D. VARIETY: Sub-plots

1. Gregory (partial resistance)
2. Perry (susceptible)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

4. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz A (18 Apr)
5. Cylindrocladium black rot control: Vapam 15 gal/A (29 Mar)
6. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
7. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
8. Leaf spot control: Folicur 3.6F + Induce 2.4 fl oz/A (30 Jun, 4 Aug), Headline 6 fl oz/A (18 Jul), 9 fl oz/A (23 Aug); Bravo WS 1.5 pt/A (8 Sep)
9. Sclerotinia blight control: Omega 1 pt/A (18 Jul, 9 Aug)
10. Additional crop management:
    a. Liquid boron 1 qt/A (27 Mar)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Cultivation: 29 Jun
    d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
    e. Sol-U-Gro 5 lb/A (20 Jul)
    f. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
11. Harvest date: 25 Oct 2006

Rainfall, soil temperature, and max./min. air temperatures up to 7 days after each planting.

	Days after planting								
Planting date	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
Rainfall (in.)									Total
Apr 12	0.00	0.00	0.00	0.13	0.00	0.05	0.00	0.00	0.18
Apr 19	0.00	0.00	0.02	0.05	0.02	0.00	0.00	0.75	0.84
Apr 27	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
May 3	0.02	0.00	0.00	0.05	0.70	0.78	0.00	0.00	1.55
May 10	0.00	0.58	0.00	0.00	0.35	0.01	0.00	0.00	0.94
May 17	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.14
May 24	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.44
Soil temperature (F)									Mean
Apr 12	59.6	62.5	62.7	65.3	64.5	60.7	60.5	62.3	62.3
Apr 19	62.3	63.5	63.6	67.9	66.0	67.3	68.0	64.5	65.4
Apr 27	61.1	60.7	60.3	59.2	58.5	59.6	62.3	64.1	60.7
May 3	62.3	64.1	65.1	67.9	64.6	60.1	62.3	63.6	63.8
May 10	63.6	65.5	66.3	66.3	64.6	66.0	66.0	65.5	65.5
May 17	65.5	66.0	65.5	65.9	67.1	67.3	66.7	66.7	66.3
May 24	66.7	67.8	71.6	72.5	73.3	74.4	74.7	76.0	72.1
Max/Min Air Temp. (F)									Mean
Apr 12	73/43	81/56	79/50	85/58	75/56	59/48	69/43	79/43	75/50
Apr 19	79/43	83/44	79/57	82/61	81/59	82/59	83/57	71/49	80/54
Apr 27	62/48	68/43	63/39	64/37	62/42	77/38	76/54	81/52	69/44
May 3	76/54	81/52	83/56	82/61	64/52	56/52	69/50	75/47	73/53
May 10	75/47	79/58	75/48	76/48	68/51	75/55	69/50	76/49	74/51
May 17	76/49	78/51	71/52	80/52	81/49	72/50	71/48	78/44	76/49
May 24	78/44	85/51	91/67	83/66	85/61	85/63	90/58	87/66	86/60

* Weather data from Peanut/Cotton InfoNet (www.ipm.vt.edu/InfoNet) weather station at Tidewater AREC research farm. Soil temperature was measured at 4-in. depth under managed turf near test site.

Table 57. Effect of plant date on emergence of peanut cultivars.

	Plants/ft (4 wks AP)*					
Planting date	**Gregory**		**Perry**		**Plant date mean**	
April 12	3.07	a	3.34	a	3.20	a
April 19	3.07	a	3.33	a	3.20	a
April 27	2.55	b	2.66	c	2.60	d
May 3	2.66	b	2.87	b	2.76	c
May 10	2.46	b	2.51	c	2.48	d
May 17	2.45	b	2.58	c	2.51	d
May 24	2.96	a	3.02	b	2.99	b
LSD	**0.21**		**0.20**		**0.13**	
Cultivar mean						
Gregory					2.74	b
Perry					2.90	a
LSD					**0.07**	
Split-plot analysis						
Plant date					.0001	
Cultivar					.0001	
Plant date x cultivar					.3693	

* 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 58. Effect of plant date on incidence of TSWV in peanut cultivars.

	TSWV*					
	8 Jun		29 Jun		18 Jul	
Planting date	**Gregory**	**Perry**	**Gregory**	**Perry**	**Gregory**	**Perry**
April 12	1.0 a	1.3 a	7.5	7.8	7.0 a	7.5 a
April 19	0.0 b	1.3 a	7.3	9.8	4.0 b	7.5 a
April 27	0.0 b	0.0 b	3.5	6.0	3.5 bc	4.0 b
May 3	0.0 b	0.0 b	6.5	12.5	3.3 bc	3.3 b
May 10	0.0 b	0.0 b	5.8	10.0	2.0 bc	4.3 b
May 17	0.0 b	0.0 b	2.8	10.8	2.0 bc	2.5 b
May 24	0.0 b	0.0 b	1.5	7.3	1.5 c	2.0 b
LSD	**0.5**	**0.9**	**n.s.**	**n.s.**	**2.3**	**3.1**
Plant date mean						
April 12	1.1 a		7.6		7.3 a	
April 19	0.6 b		8.5		5.8 ab	
April 27	0.0 c		4.8		3.8 bc	
May 3	0.0 c		9.5		3.3 c	
May 10	0.0 c		7.9		3.1 c	
May 17	0.0 c		6.8		2.3 c	
May 24	0.0 c		4.4		1.8 c	
LSD	**0.4**		**n.s.**		**2.2**	
Cultivar mean						
Gregory	0.1		5.0 b		3.3	
Perry	0.4		9.1 a		4.4	
LSD	**n.s.**		**1.3**		**n.s.**	
Split-plot analysis						
Plant date	.0009		.3040		.0002	
Cultivar	.0716		.0001		.0622	
Plant date x cultivar	.0606		.0603		.6282	

* Number of symptomatic plants per 2-row plot.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05). "n.s." = not significant.

Table 59. Effect of plant date on incidence of TSWV and CBR in peanut cultivars.

	TSWV*				CBR* (9 Sep)	
	9 Aug		9 Sep			
Planting date	**Gregory**	**Perry**	**Gregory**	**Perry**	**Gregory**	**Perry**
April 12	10.0	10.0	9.0 a	8.3	2.5	1.3
April 19	8.3	6.3	4.3 b	6.5	3.0	1.3
April 27	6.5	4.8	5.5 ab	4.5	0.3	1.3
May 3	7.8	5.8	8.5 a	5.8	1.5	1.3
May 10	8.3	9.0	5.3 ab	5.5	2.3	1.3
May 17	5.0	4.5	3.0 b	3.0	0.0	0.3
May 24	3.3	6.0	2.0 b	3.8	1.0	0.5
LSD	**n.s.**	**n.s.**	**4.0**	**n.s.**	**n.s.**	**n.s.**
Plant date mean						
April 12	10.0		8.6 a		1.9	
April 19	7.3		5.4 bc		2.1	
April 27	5.6		5.0 b-d		0.8	
May 3	6.8		7.1 ab		1.4	
May 10	8.6		5.4 bc		1.8	
May 17	4.8		3.0 cd		0.1	
May 24	4.6		2.9 d		0.8	
LSD	**n.s.**		**2.4**		**n.s.**	
Cultivar mean						
Gregory	7.0		5.4		1.5	
Perry	6.6		5.3		1.0	
LSD	**n.s.**		**n.s.**		**n.s.**	
Split-plot analysis						
Plant date	.0734		.0030		.2919	
Cultivar	.6874		.9552		.2052	
Plant date x cultivar	.8218		.4250		.5432	

* Number of symptomatic plants per 2-row plot.
Means followed by the same letter(s) in a column are not significantly different (LSD, P=0.05), "n.s." = not significant.

Table 60. Effect of plant date on disease incidence and yield in peanut cultivars.

	Sclerotinia (9 Sep)[1]		Stem rot (9 Sep)[1]		Yield (lb/A)[2]	
Planting date	**Gregory**	**Perry**	**Gregory**	**Perry**	**Gregory**	**Perry**
April 12	0.3	0.0	1.0	0.0	6080	6761
April 19	1.3	0.0	1.0	0.3	5853	6886
April 27	0.8	0.0	0.3	0.0	6239	6568
May 3	0.8	0.5	0.3	0.0	6262	6663
May 10	0.0	0.0	0.3	0.0	6455	6557
May 17	0.5	0.0	0.0	0.0	6659	6659
May 24	0.0	0.0	0.0	0.0	6504	6337
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Plant date mean						
April 12	0.1		0.5		6421	
April 19	0.6		0.6		6370	
April 27	0.4		0.1		6404	
May 3	0.6		0.1		6463	
May 10	0.0		0.1		6506	
May 17	0.3		0.0		6659	
May 24	0.0		0.0		6421	
LSD	**n.s.**				**n.s.**	
Cultivar mean						
Gregory	0.5 a		0.4 a		6285 b	
Perry	0.1 b		0.0 b		6644 a	
LSD	**0.3**		**0.3**		**—[3]**	
Split-plot analysis						
Plant date	.5016		.2862		.9630	
Cultivar	.0035		.0363		.0041	
Plant date x cultivar	.1704		.5808		.1246	

1 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 (LSD, P=0.05), "n.s." = not significant.

2 Yields are weight of peanuts with 7% moisture. Peanuts were dug on 16 Oct and harvested on 24 Oct 2006. Means followed by the same letter(s) in a column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s." = not significant.

3 LSD not calculated due to missing data.

XVI. EVALUATION OF SEED TREATMENTS FOR CONTROL OF EARLY SEASON DISEASES OF PEANUT (PSEED106 - Tidewater AREC Research Farm)

A. PURPOSE: To compare the efficacy and benefit of seed treatment fungicides for control of seedling diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleyways between blocks
2. Two 30-ft rows per plot
3. Seeding rate of 3 seed/row ft

C. APPLICATION OF TREATMENTS: Dust treatments were applied to seed with a Gustafson lab treater. Seed were planted ca. 1.5 to 2 in. deep.

D. TREATMENT AND RATE (Main plots):

1. Untreated check
2. Trilex Optimum DS 4 oz/cwt
3. Trilex Star DS 4 oz/cwt
4. Dynasty PD 4 oz/cwt
5. Vitavax PC 4 oz/cwt
6. L1492-A DS (22.8% prothioconazole) 4 oz/cwt
7. L1494-A DS (23.8% prothioconazole) 4 oz/cwt
8. L1138-A DS (confidential) 4 oz/cwt

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: wheat/soybean 2003, peanut 2004, wheat/soybean 2005
3. Planting date and cultivar: 25 Apr 2006, NC-V 11, Lot #244, 74% germ
4. Soil fertility report:

pH	6.5	K	42 ppm
Ca	344 ppm	Zn	0.8 ppm
Mg	71 ppm	Mn	2.6 ppm
P	33 ppm	Soil type	Goldsboro fine sandy loam

5. Herbicide: Pre-plant – Prowl H20 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1 pt/A (5 May)
   Post-emergence – Pursuit 70DG 1.44 oz/A (5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A (8 Aug)
9. Leaf spot control: Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (19 Jul, 4 Aug); Headline 9 fl oz/A (23 Aug); Bravo WS 1.5 pt/A (8 Sep)
10. Additional crop management:
    a. Liquid boron (9%) 1 qt/A (27 Mar)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Cultivation: 29 Jun
    d. Liquid Mn 3 pt/A (7 Jul, 20 Jul).
    e. Irrigation: ca. 0.75 in. (11 Aug, 14 Aug)
11. Harvest date: 11 Oct 2006

Table 61. Assay of untreated peanut seed on 26 Apr 2006.

Pathogen	Biopsy test (% +)*
Cylindrocladium parasiticum	0
Aspergillus niger	38
Aspergillus flavus	10

* Data are percent recovery of each fungus from 50 seed.

Table 62. Effect of seed treatments on emergence and growth of peanut.

Treatment and rate/cwt seed	Plants/ft*		Plant vigor (1-10)** (8 Aug)
	23 May	6 Jun	
Untreated check	1.03 d	1.27 c	7.3 b
Trilex Optimum DS 4 oz	1.61 a-c	2.13 ab	9.0 a
Trilex Star DS 4 oz	1.45 bc	2.10 ab	9.3 a
Dynasty PD 4 oz	1.67 ab	2.01 b	9.5 a
Vitavax PC 4 oz	1.71 ab	2.08 ab	9.0 a
L1492-A DS 4 oz	1.37 c	1.99 b	9.5 a
L1494-A DS 4 oz	1.47 bc	1.99 b	9.3 a
L1138-A DS 4 oz	1.84 a	2.25 a	9.3 a
LSD	**0.26**	**0.21**	**1.1**

* Determined from counts of two 30-ft rows per plot.
** Plant vigor rating scale: 1=severely stunted, 10=healthy.
Means followed by the same letter(s) in a column are not significantly different (Fisher's Protected LSD, P=0.05).

Table 63. Effect of seed treatments on incidence of Tomato spotted wilt virus (TSWV) and Cylindrocladium black rot (CBR).

Treatment and rate/cwt seed	TSWV*			CBR*		
	19 Jul	8 Aug	16 Sep	19 Jul	8 Aug	16 Sep
Untreated check	1.5	0.5	2.0	0.0	0.8	10.3
Trilex Optimum DS 4 oz	1.5	1.0	1.3	0.3	3.0	14.8
Trilex Star DS 4 oz	0.3	0.8	1.0	0.0	1.5	12.3
Dynasty PD 4 oz	2.0	0.5	1.3	0.0	0.8	4.8
Vitavax PC 4 oz	1.5	1.0	1.3	0.0	0.5	8.8
L1492-A DS 4 oz	2.0	1.3	2.0	0.0	0.5	5.3
L1494-A DS 4 oz	1.8	1.5	1.3	0.3	1.0	13.5
L1138-A DS 4 oz	2.5	1.3	1.8	0.0	1.0	8.5
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**

* 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 64. Effect of seed treatments on yield of peanuts.

Treatment and rate/cwt seed	Yield (lb/A)*
Untreated check	3604
Trilex Optimum DS 4 oz	3664
Trilex Star DS 4 oz	3857
Dynasty PD 4 oz	4379
Vitavax PC 4 oz	4245
L1492-A DS 4 oz	4275
L1494-A DS 4 oz	4126
L1138-A DS 4 oz	4260
LSD	**n.s.**

* Yields are weight of peanuts with 7% moisture. Peanuts were dug on 5 Oct and harvested on 11 Oct 2006.
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.

XVII. EVALUATION OF SEED TREATMENTS FOR CONTROL OF EARLY SEASON DISEASES OF PEANUT (PSEED206 - Duke Farm, Suffolk)

A. PURPOSE: To compare the efficacy and benefit of seed treatment fungicides for control of seedling diseases of peanut

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleyways between blocks
2. Two 30-ft rows per plot
3. Seeding rate of 3 to 4 seed/row ft

C. APPLICATION OF TREATMENTS: Dust treatments were applied to seed with a Gustafson lab treater. Seed were planted ca. 1.5 to 2 in. deep and spaced ca. 4 in. apart with a KMC planter.

D. TREATMENT AND RATE (Main plots):
1. Untreated check
2. Trilex Optimum DS 4 oz/cwt
3. Trilex Star DS 4 oz/cwt
4. Dynasty PD 4 oz/cwt
5. Vitavax PC 4 oz/cwt
6. L1492-A DS 4 oz/cwt
7. L1494-A DS 4 oz/cwt
8. L1138-A (confidential) DS 4 oz/cwt

E. SEED TYPE (Subplots): Normal and speckled seed of Wilson, Lot 510R.
1. Normal seed
2. Speckled seed (a sign of colonization by *Cylindrocladium parasiticum*)

F. ADDITIONAL INFORMATION:
1. Location: Duke Farm, Longstreet Lane, Suffolk
2. Crop history: cotton 2004, 2005
3. Planting date and cultivar: 28 Apr, Wilson
4. Soil fertility report:

pH	6.4	K	54 ppm
Ca	270 ppm	Zn	0.5 ppm
Mg	31 ppm	Mn	1.5 ppm
P	25 ppm	Soil type	Nansemond fine sandy loam

5. Herbicide: Pre-plant – Prowl H20 1 pt/A (13 Apr)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (18 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1 pt/A (5 May)
6. Cylindrocladium black rot control: Sectagon 7.5 gal/A (13 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun, 2 Aug), 10 oz/A (8 Aug)
9. Leaf spot control: Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (19 Jul, 4 Aug)
   Headline 9 fl oz/A (23 Aug); Bravo WS 1.5 pt/A (8 Sep)
10. Additional crop management:
    a. Liquid boron (9%) 1 qt/A (13 Apr)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Cultivation: 29 Jun
    d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
11. Harvest date: 11 Oct 2006

Table 65. Percent of seed colonized by *Cylindrocladium parasiticum*, *Aspergillus niger*, and *Sclerotium rolfsii* in assays after application of seed treatment.

	% +					
	C. parasiticum		*A. niger*		*S. rolfsii*	
Seed type, treatment and rate/cwt seed*	**Normal seed**	**Speckled seed**	**Normal seed**	**Speckled seed**	**Normal seed**	**Speckled seed**
Untreated check	0	6	20	6	0	0
Trilex Optimum DS 4 oz	0	10	0	6	0	2
Trilex Star DS 4 oz	0	6	0	0	0	2
Dynasty PD 4 oz	0	16	6	8	2	4
Vitavax PC 4 oz	0	16	4	10	0	0
L1492-A DS 4 oz	0	10	0	4	0	4
L1494-A DS 4 oz	0	2	0	0	0	6
L1138-A DS 4 oz	0	14	10	18	0	0

* Fifty seed from each treatment and type were assayed on a selective medium on 5 May 2006. Pre-treatment assay of seed resulted in 28% recovery of *C. parasiticum* in speckled seed and 0% recovery in normal seed (17 Mar).

Table 66. Effect of seed treatments on emergence and growth of peanut.

Seed type, treatment and rate/cwt seed*	Plants/ft* 26 May Normal seed	Plants/ft* 26 May Speckled seed	Plants/ft* 9 Jun Normal seed	Plants/ft* 9 Jun Speckled seed	Plant vigor (1-10)** (8 Aug) Normal seed	Plant vigor (1-10)** (8 Aug) Speckled seed
Untreated check	1.66 c	1.35 b	1.69 b	1.38	8.0	7.0
Trilex Optimum DS 4 oz	1.71 c	1.79 a	1.82 ab	1.73	9.3	8.3
Trilex Star DS 4 oz	1.87 b	1.79 a	1.93 a	1.85	9.3	8.8
Dynasty PD 4 oz	1.89 ab	1.66 a	1.98 a	1.73	9.3	8.3
Vitavax PC 4 oz	2.02 a	1.65 a	1.98 a	1.72	9.3	8.0
L1492-A DS 4 oz	1.89 ab	1.74 a	1.96 a	1.75	9.8	8.0
L1494-A DS 4 oz	1.78 bc	1.64 a	1.83 ab	1.68	9.0	7.5
L1138-A DS 4 oz	1.88 ab	1.83 a	2.02 a	1.81	8.8	8.8
LSD	**0.15**	**0.23**	**0.20**	**n.s.**	**n.s.**	**n.s.**
Treatment mean						
Untreated check	1.50 b		1.54 b		7.5 b	
Trilex Optimum DS 4 oz	1.75 a		1.77 a		8.8 a	
Trilex Star DS 4 oz	1.83 a		1.89 a		9.0 a	
Dynasty PD 4 oz	1.78 a		1.85 a		8.8 a	
Vitavax PC 4 oz	1.83 a		1.85 a		8.6 ab	
L1492-A DS 4 oz	1.81 a		1.85 a		8.9 a	
L1494-A DS 4 oz	1.71 a		1.75 a		8.3 ab	
L1138-A DS 4 oz	1.86 a		1.91 a		8.8 a	
LSD	**0.15**		**0.18**		**1.2**	
Seed type mean						
Normal seed	1.84 a		1.90 a		9.1 a	
Speckled seed	1.68 b		1.71 b		2.8 b	
LSD	**0.08**		**0.09**		**0.6**	
Split plot analysis						
Treatment	.0001		.0244		.0438	
Seed type	.0003		.0001		.0028	
Treatment x seed type	.1002		.8427		.8807	

* Determined from counts of two 30-ft rows per plot.
** Plant vigor rating scale: 1=severely stunted, 10=healthy.
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 67. Incidence of Cylindrocladium black rot (CBR) and yield of peanut.

Seed type, treatment and rate/cwt seed	CBR*				Yield (lb/A)**	
	8 Aug		17 Sep			
	Normal seed	Speckled seed	Normal seed	Speckled seed	Normal seed	Speckled seed
Untreated check	0.0	0.0	8.3	3.5	3643	3673
Trilex Optimum DS 4 oz	0.3	1.0	4.5	4.0	3985	3539
Trilex Star DS 4 oz	0.3	0.3	4.0	7.3	3821	3524
Dynasty PD 4 oz	0.5	0.3	6.8	4.8	4015	3703
Vitavax PC 4 oz	1.3	0.0	9.0	5.5	3747	3628
L1492-A DS 4 oz	0.3	0.5	5.5	7.0	4268	3569
L1494-A DS 4 oz	0.0	0.8	3.3	6.0	3955	3539
L1138-A DS 4 oz	0.5	1.5	3.5	4.0	4104	4089
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Treatment mean						
Untreated check	0.0		5.9		3658	
Trilex Optimum DS 4 oz	0.6		4.3		3762	
Trilex Star DS 4 oz	0.3		5.6		3673	
Dynasty PD 4 oz	0.4		5.8		3859	
Vitavax PC 4 oz	0.6		7.3		3688	
L1492-A DS 4 oz	0.4		6.3		3918	
L1494-A DS 4 oz	0.4		4.6		3747	
L1138-A DS 4 oz	1.0		3.8		4097	
LSD	**n.s.**		**n.s.**		**n.s.**	
Seed type mean						
Normal seed	0.4		5.6		3942 a	
Speckled seed	0.5		5.3		3658 b	
LSD	**n.s.**		**n.s.**		**196**	
Split plot analysis						
Treatment	.6269		.8382		.6536	
Seed type	.4497		.6479		.0064	
Treatment x seed type	.1946		.1142		.5816	

* Number of symptomatic plants per plot.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 16 Oct and harvested on 25 Oct 2006.
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.

XVIII. RESPONSE OF VIRGINIA- AND RUNNER-TYPE PEANUTS TO SOIL FUMIGATION WITH VAPAM (PNEMA106 - Tidewater AREC Research Farm, Suffolk)

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

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 10 ft alleyways
2. Split-plot design with main plots of treatments and subplots of varieties
3. Two 35-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: Chisel applications of Vapam were applied 8 in. under each row on 7 Apr. A single chisel was centered in each row 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, Vapam 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, Vapam 7.5 gal/A (2 wk pre-plant) + Temik 15G 7 lb/A (in-furrow)

E. CULTIVAR (Sub-plots):

Virginia-types				**Runner-types**			
1.	Perry	4.	NC-V 11	1.	GA Green	4.	GA-03L
2.	GA Hi O/L	5.	Champs	2.	GA-01R	5.	C99R
3.	Gregory	6.	VA 98R	3.	GA-02C	6.	AP-3

F. ADDITIONAL INFORMATION:
1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: wheat/soybean 2003, peanut 2004, wheat/soybean 2005
3. Planting date: 28 Apr 2006
4. Soil fertility report:

pH	6.5	K	42 ppm
Ca	344 ppm	Zn	0.8 ppm
Mg	71 ppm	Mn	2.6 ppm
P	33 ppm	Soil type	Goldsboro fine sandy loam

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1 pt/A (5 May)
6. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
7. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A (8 Aug)
8. Leaf spot control: Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (19 Jul, 4 Aug)
   Headline 9 fl oz/A (23 Aug); Bravo WS 1.5 pt/A (8 Sep)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Sol-U-Gro 5 lb/A (20 Jul)
   f. Irrigation: ca. 0.75 in. (11 Aug, 14 Aug)
10. Harvest date: 11 Oct 2006

Table 68. Effect of market type and treatment on populations of root-knot nematode.

Treatment	Root-knot juveniles/500 cc soil*
Virginia type varieties, Temik 15G 7 lb/A (F)	2278
Virginia-type varieties, Vapam 7.5 gal/A + Temik 15G 7 lb/A(F)	463
Runner-type varieties, Temik 15G 7 lb/A (F)	1535
Runner-type varieties, Vapam 7.5 gal/A + Temik 15G 7 lb/A (F)	1545
***P* value**	**n.s.**

* Soil samples were collected from all subplots within each treatment on 26 Jul.
"n.s." = not significantly different according to Student-Newman-Keuls test (P=0.05). Square root transformation of data was made in analysis to determine statistical significance.

Table 69. Effect of treatment and cultivar selection on emergence and incidence of Tomato Spotted Wilt Virus (TSWV) in peanut.

Treatment, rate/A and cultivar	Plants/ft* (26 May)	TSWV**				
		13 Jun	29 Jun	18 Jul	13 Aug	16 Sep
Virginia-type						
Temik 15G 7 lb						
Perry	1.63 cd	0.8	2.0	3.8	5.8	4.0 b
GA Hi/OL	1.86 bc	0.8	5.3	4.5	5.8	9.0 ab
Gregory	1.57 d	2.0	3.5	3.3	3.8	10.8 a
NC V-11	2.43 a	3.8	2.3	5.3	5.3	7.8 ab
Champs	1.80 cd	0.5	2.0	4.0	3.5	4.8 b
VA 98R	2.05 b	2.3	2.8	7.5	3.8	5.3 b
P value	**.0001**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**.0077**
Vapam 7.5 gal + Temik 15G 7 lb						
Perry	1.71 d	0.3	1.5	2.0	2.8	3.8
GA Hi/OL	2.05 b	0.3	1.3	2.0	2.0	4.3
Gregory	1.80 cd	0.5	1.5	3.5	4.8	4.8
NC V-11	2.27 a	0.3	2.5	2.5	2.3	4.3
Champs	1.95 bc	0.8	2.5	3.0	4.5	5.5
VA 98R	2.08 b	0.8	1.8	2.8	1.8	6.5
P value	**.0001**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Runner-type						
Temik 15G 7 lb						
GA Green	2.19 a	0.8	3.3	3.8	4.8	7.0 ab
GA 01R	1.21 c	0.0	0.3	1.5	3.0	4.0 b
GA-02C	2.25 a	0.3	1.8	2.8	2.8	5.8 ab
GA-03L	2.22 a	0.3	1.8	2.3	1.0	4.8 b
C99R	1.71 b	0.0	1.5	1.8	2.3	5.3 ab
AP-3	2.26 a	0.3	2.0	4.5	2.5	10.0 a
P value	**.0001**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**.0341**
Vapam 7.5 gal + Temik 15G 7 lb						
GA Green	2.29 a	0.3	1.3	4.3	3.3	5.8
GA 01R	1.57 c	0.0	0.3	0.8	2.8	2.5
GA-02C	2.16 a	0.3	2.3	1.8	4.0	3.5
GA-03L	2.33 a	0.0	1.3	2.5	3.3	3.0
C99R	1.84 b	0.0	0.3	1.3	2.0	3.3
AP-3	2.37 a	0.3	1.0	2.0	2.8	4.5
P value	**.0001**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Comparison of main effects						
Virginia-type, Temik 15G 7 lb	1.89	1.7 a	3.0 a	4.7 a	4.6 a	6.9 a
Virginia-type, Vapam 7.5 gal + Temik 15G 7 lb	1.98	0.5 b	1.8 b	2.6 b	3.0 b	4.8 bc
Runner-type, Temik 15G 7 lb	1.97	0.3 b	1.8 b	2.8 b	2.7 b	6.1 ab
Runner-type, Vapam 7.5 gal + Temik 15G 7 lb	2.09	0.1 b	1.0 b	2.1 b	3.0 b	3.8 c
P value	**n.s.**	**.0001**	**.0024**	**.0007**	**.0196**	**.0018**

* Determined from counts of two 35-ft rows per plot.
** Counts of plants per plot with symptoms of TSWV.
Means followed by the same letter(s) within a group and column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s."=not significant.

Table 70. Effect of treatment and cultivar selection on flowering and soil-borne disease.

Treatment, rate/A and cultivar	% flowering* (13 Jun)	CBR** 13 Aug	CBR** 16 Sep	CBR** 4 Oct
Virginia-type				
Temik 15G 7 lb				
Perry	18.8	2.8 b	4.8 b	11.5 c
GA Hi/OL	40.0	3.5 b	11.8 b	25.0 b
Gregory	21.3	5.0 ab	13.0 b	30.8 b
NC V-11	36.3	9.3 ab	27.0 a	40.0 ab
Champs	22.5	14.5 a	34.5 a	48.0 a
VA 98R	32.5	9.0 ab	34.0 a	48.3 a
P value	**n.s.**	**.0305**	**.0001**	**.0001**
Vapam 7.5 gal + Temik 15G 7 lb				
Perry	20.0 b	1.0	1.3 b	3.0 d
GA Hi/OL	47.5 a	1.5	5.3 ab	16.3 bc
Gregory	37.5 a	0.8	3.3 b	11.0 c
NC V-11	50.0 a	4.3	13.0 a	24.5 a
Champs	45.0 a	3.3	12.3 a	25.5 a
VA 98R	42.5 a	1.3	6.3 ab	20.3 ab
P value	**.0001**	**n.s.**	**.0039**	**.0001**
Runner-type				
Temik 15G 7 lb				
GA Green	40.0 a	5.3 b	30.0 a	40.5 a
GA 01R	5.0 b	1.5 b	6.0 b	20.8 b
GA-02C	8.8 b	1.8 b	23.3 a	35.5 ab
GA-03L	15.0 b	7.5 b	21.5 a	36.3 ab
C99R	12.5 b	8.0 b	21.5 a	34.5 ab
AP-3	22.5 b	15.3 a	31.3 a	44.8 a
P value	**.0026**	**.0002**	**.0051**	**.0334**
Vapam 7.5 gal + Temik 15G 7 lb				
GA Green	42.5 a	0.8 b	4.3 b	12.8 ab
GA 01R	8.8 c	0.3 b	3.5 b	7.0 b
GA-02C	23.8 a-c	0.0 b	3.0 b	7.5 b
GA-03L	36.3 a	0.3 b	9.3 ab	15.8 ab
C99R	11.3 bc	0.5 b	10.8 ab	16.3 ab
AP-3	32.5 ab	5.0 a	14.5 a	23.0 a
P value	**.0042**	**.0044**	**.0054**	**.0310**
Comparison of main effects				
Virginia-type, Temik 15G 7 lb	28.5 b	7.3 a	20.8 a	33.9 a
Virginia-type, Vapam 7.5 gal + Temik 15G 7 lb	40.4 a	2.0 b	6.9 b	16.8 b
Runner-type,Temik 15G 7 lb	17.3 c	6.5 a	22.3 a	35.4 a
Runner-type, Vapam 7.5 gal + Temik 15G 7 lb	25.8 b	1.1 b	7.5 b	13.7 b
P value	**.0001**	**.0001**	**.0001**	**.0001**

* Visual estimate of percent of plants with flowers in two 35-ft rows per plot.
** Number symptomatic and/or dead plants per plot.
Means followed by the same letter(s) within a group and column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s."=not significant.

Table 71. Effect of treatment and cultivar selection on soil-borne disease.

Treatment, rate/A and cultivar	Sclerotinia blight*		Stem rot*	
	16 Sep	4 Oct	16 Sep	4 Oct
Virginia-type				
Temik 15G 7 lb				
Perry	0.8	2.0 a	0.5	0.3
GA Hi/OL	0.3	0.5 b	0.3	0.3
Gregory	0.0	0.5 b	0.5	0.3
NC V-11	0.0	0.3 b	0.8	0.0
Champs	0.3	0.0 b	1.0	0.5
VA 98R	1.0	0.0 b	0.5	0.0
P value	**n.s.**	**.0271**	**n.s.**	**n.s.**
Vapam 7.5 gal + Temik 15G 7 lb				
Perry	0.5	1.5 a	0.3	0.0
GA Hi/OL	0.3	0.3 b	0.8	0.0
Gregory	0.3	0.8 ab	1.3	0.0
NC V-11	0.3	0.3 b	2.3	0.3
Champs	0.0	0.8 ab	1.3	0.0
VA 98R	0.0	0.3 b	0.5	0.0
P value	n.s.	.0223	n.s.	n.s.
Runner-type				
Temik 15G 7 lb				
GA Green	0.0	0.3 b	0.3 b	0.0
GA 01R	1.0	2.0 a	3.0 a	0.0
GA-02C	0.0	0.8 b	0.3 b	0.0
GA-03L	0.5	0.0 b	0.3 b	0.0
C99R	0.3	1.0 b	0.5 b	0.0
AP-3	0.3	0.3 b	0.0 b	0.0
P value	**n.s.**	**.0055**	**.0063**	**n.s.**
Vapam 7.5 gal + Temik 15G 7 lb				
GA Green	1.0	1.8	0.5	0.0
GA 01R	0.3	1.5	0.5	0.5
GA-02C	0.5	1.8	0.3	0.0
GA-03L	0.3	0.5	0.0	0.0
C99R	0.8	2.0	0.3	0.0
AP-3	0.3	1.0	0.0	0.0
P value	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Comparison of main effects				
Virginia-type, Temik 15G 7 lb	0.4	0.5 b	0.6	0.2
Virginia-type, Vapam 7.5 gal + Temik 15G 7 lb	0.2	0.6 b	1.0	0.0
Runner-type,Temik 15G 7 lb	0.3	0.7 b	0.7	0.0
Runner-type, Vapam 7.5 gal + Temik 15G 7 lb	0.5	1.4 a	0.3	0.1
P value	**n.s.**	**.0088**	**n.s.**	**n.s.**

* Counts of infection centers in 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) within a group and column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s."=not significant.

Table 72. Effect of treatment and cultivar selection on root rot, pod rot, root galling, maturity, yield, and value.

Treatment, rate/A and cultivar	CBR root rot [1] (0-10)	Pod rot[1] (0-10)	Root-knot gall index[2] (0-10)	% mature[3] (18 Sep)	Yield[4] (lb/A)	Value[5] ($/A)
Virginia-type						
Temik 15G 7 lb						
Perry	2.0 d	1.8 d	3.5	—	4250 a	779 a
GA Hi/OL	3.3 cd	3.8 c	5.3	—	3312 b	609 b
Gregory	4.3 bc	4.5 bc	5.3	—	2670 b	419 c
NC V-11	6.3 ab	5.5 ab	4.0	—	2583 b	455 bc
Champs	7.3 a	7.0 a	4.5	—	2268 b	385 c
VA 98R	6.0 ab	5.8 ab	3.5	—	2732 b	485 bc
P value	**.0001**	**.0001**	**n.s.**	**—**	**.0002**	**.0001**
Vapam 7.5 gal + Temik 15G 7 lb						
Perry	1.0 b	1.0 b	1.0	67	4930 a	880 a
GA Hi/OL	2.3 b	2.0 ab	1.3	70	4272 ab	795 ab
Gregory	1.8 b	2.0 ab	1.0	89	4818 ab	784 ab
NC V-11	3.8 a	3.5 a	1.3	76	3800 b	654 b
Champs	3.5 a	3.5 a	1.0	77	3825 b	709 ab
VA 98R	2.3 b	2.5 a	1.3	81	4085 ab	722 ab
P value	**.0002**	**.0008**	**n.s.**	**—**	**.0136**	**.0221**
Runner-type						
Temik 15G 7 lb						
GA Green	5.3 a	4.3	3.5	—	2903	530
GA 01R	2.0 b	3.3	6.0	—	3158	541
GA-02C	4.3 a	3.5	5.5	—	3183	579
GA-03L	3.5 ab	3.0	4.8	—	2903	514
C99R	4.8 a	4.3	5.0	—	3142	546
AP-3	5.3 a	4.5	4.0	—	2591	431
P value	**.0094**	**n.s.**	**n.s.**	**—**	**n.s.**	**n.s.**
V***apam 7.5 gal + Temik 15G 7 lb***						
GA Green	1.5	1.5	1.3	48	4592	850 ab
GA 01R	2.0	2.3	1.5	38	4519	776 ab
GA-02C	1.3	1.3	1.3	31	4847	883 a
GA-03L	1.8	1.5	1.0	69	4239	726 ab
C99R	2.5	2.0	1.3	23	3972	674 b
AP-3	3.0	2.5	1.0	37	4409	737 ab
P value	**n.s.**	**n.s.**	**n.s.**	**—**	**n.s.**	**.0353**
Comparison of main effects						
Virginia-type, Temik 15G 7 lb	4.8 a	4.7 a	4.3 a	—	3049 b	523 b
Virginia-type, Vapam 7.5 gal + Temik 15G 7 lb	2.4 b	2.4 c	1.1 b	—	4288 a	757 a
Runner-type,Temik 15G 7 lb	4.2 a	3.8 b	4.8 a	—	2990 b	527 b
Runner-type, Vapam 7.5 gal + Temik 15G 7 lb	2.0 b	1.8	1.2 b	—	4430 a	774 a
P value	**.0001**	**.0001**	**.0001**	**—**	**.0001**	**.0001**

1 Root and pod rot index: 0=none, 10=total necrosis. Ratings were made after digging on 5 Oct.
2 Root-knot nematode galling scale: 0=none, 10=100% of roots with galls. Ratings were made after digging on 5 Oct.
3 Based on percentage of pods with mesocarp color (orange + brown + black) after pod blasting.
4 Yields are based on weight of peanuts with moisture content of 7%. Peanuts were dug on 5 Oct and harvested on 11 Oct 2006.
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 group and column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s."=not significant, "—"=maturity not determined.

Table 73. Effect of treatment and cultivar on grade characteristics and value.

Treatment, rate/A and cultivar	%[1]									Value[2] (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK	Conc. RMD	SMK	
Virginia -type										
Temik 15G 7 lb										
Perry	0	0	74	42	3	4	1	0.22	63	17.23000
GA Hi/OL	0	0	60	44	11	2	2	0.00	62	18.39000
Gregory	0	0	90	48	1	3	3	0.00	60	15.68000[3]
NC V-11	0	0	76	40	3	3	1	0.00	65	17.61000
Champs	0	0	72	36	3	4	2	0.00	63	16.95000
VA 98R	0	0	67	34	3	3	1	0.00	66	17.75000
Vapam 7.5 gal + Temik 15G 7 lb										
Perry	0	0	75	42	7	4	0	0.00	62	17.84000
GA Hi/OL	0	0	60	40	14	2	1	0.00	60	18.61000
Gregory	0	0	88	44	2	3	2	0.24	61	16.28000
NC V-11	0	0	73	37	3	5	1	0.00	63	17.21002
Champs	0	0	78	41	3	2	0	0.00	69	18.54000
VA 98R	0	0	75	43	3	3	1	0.14	65	17.66000
Runner-type										
Temik 15G 7 lb										
GA Green	0	0	—	—	2	3	0	0.12	73	18.27002
GA 01R	0	0	—	—	1	4	1	0.00	69	17.13000
GA-02C	0	0	—	—	3	2	0	0.00	72	18.20000
GA-03L	0	0	—	—	4	2	0	0.00	69	17.71000
C99R	0	0	—	—	2	4	0	0.00	69	17.37000
AP-3	0	0	—	—	1	4	0	0.00	67	16.65002
Vapam 7.5 gal + Temik 15G 7 lb										
GA Green	0	0	—	—	1	3	0	0.00	75	18.51000
GA 01R	0	0	—	—	2	5	0	0.12	69	17.16522
GA-02C	0	0	—	—	1	3	0	0.00	75	18.22429
GA-03L	0	0	—	—	3	4	0	0.00	67	17.13000
C99R	0	0	—	—	1	5	1	0.00	68	16.96000
AP-3	0	0	—	—	0	5	0	0.00	68	16.72000

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, mold or decay, SMK=sound mature kernels. Data are from a composite sample from 4 reps of each cultivar.

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

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

XIX. MANAGEMENT OF TSWV AND NEMATODES IN PEANUTS (PNEMA206 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the response of peanut varieties and tomato spotted wilt virus to in-furrow treatments for control of nematodes and tobacco thrips

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 15-ft alleyways
2. Four 25-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: Chisel application of Vapam 42% was applied 8 in. under each row on 7 Apr. A single chisel was centered in each row and rows were bedded (24 in. wide and 4 in. high) during application. Granular treatments were applied in-furrow at planting.

D. TREATMENT AND RATE/A

1. Untreated Check
2. Temik 15G 5 lb/A (F)
3. Temik 15G 7 lb/A (F)
4. Thimet 20G 5 lb/A (F)
5. KC791230 15G 5 lb/A (F)
6. Vapam 7.5 gal/A (C) + Temik 15G 5 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: wheat/soybean 2003, peanut 2004, wheat/soybean 2005
3. Planting date and cultivar: 9 May, VA 98R
4. Soil fertility report:

pH	6.5	K	42 ppm
Ca	344 ppm	Zn	0.8 ppm
Mg	71 ppm	Mn	2.6 ppm
P	33 ppm	Soil type	Goldsboro fine sandy loam

5. Herbicide: Pre-plant: Prowl 1 pt/A (27 Mar);
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1 pt/A (5 May)
6. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
7. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A (8 Aug)
8. Leaf spot control: Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (19 Jul, 4 Aug)
   Headline 9 fl oz/A (23 Aug); Bravo WS 1.5 pt/A (8 Sep)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Sol-U-Gro 5 lb/A (20 Jul)
   f. Irrigation: ca. 0.75 in. (11 Aug, 14 Aug)
10. Harvest date: 11 Oct 2006

Table 74. Effect of treatment on populations of root-knot nematode.

Treatment, rate/A and application method*	Root-knot nematodes/500 cc soil**
Untreated check	4000
Temik 15G 5 lb (F)	1050
Temik 15G 7 lb (F)	50
Thimet 20G 5 lb (F)	5230
KC791230 15G 5 lb (F)	3550
Vapam 7.5 gal (C) + Temik 15G 5 lb (F)	50

* F=in furrow, C=chisel application.
** Soil was sampled on 26 Jul. Composite samples were taken from all 4 reps of each treatment.

Table 75. Effect of treatments on emergence and seedling disease in peanut.

Treatment, rate/A and application method[1]	Plants/ft^2 (6 Jun)	Dead/dying seedlings[3]	
		16 Jun	30 Jun
Untreated check	3.07	1.0	3.0
Temik 15G 5 lb (F)	3.19	1.0	8.5
Temik 15G 7 lb (F)	3.11	0.8	5.3
Thimet 20G 5 lb (F)	2.94	0.0	1.8
KC791230 15G 5 lb (F)	3.08	1.3	4.5
Vapam 7.5 gal (C) + Temik 15G 5 lb (F)	3.24	0.0	1.5
LSD	**n.s.**	**n.s.**	**n.s.**

1 F=in furrow, C=chisel application.
2 Determined from counts in four 25-ft rows per plot.
3 Number of dead/dying seedlings in four 25-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.

Table 76. Effect of treatments on incidence of tomato spotted wilt virus (TSWV) in peanut.

Treatment, rate/A and application method*	TSWV**				
	16 Jun	30 Jun	19 Jul	26 Aug	17 Sep
Untreated check	1.3	10.3 a	6.8 a	13.5 a	2.0
Temik 15G 5 lb (F)	2.3	3.5 b	3.3 b	11.0 a	4.3
Temik 15G 7 lb (F)	1.3	5.5 b	3.5 b	10.3 a	5.0
Thimet 20G 5 lb (F)	0.5	5.3 b	2.3 b	9.0 ab	2.0
KC791230 15G 5 lb (F)	1.0	3.5 b	2.0 b	11.8 a	5.5
Vapam 7.5 gal (C) + Temik 15G 5 lb (F)	1.3	4.5 b	2.5 b	5.0 b	1.3
LSD	**n.s.**	**3.1**	**2.4**	**4.6**	**n.s.**

* 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 (P=0.05), "n.s." = not significant.

Table 77. Effect of treatments on incidence of Cylindrocladium black rot (CBR) in peanut.

	CBR**			
Treatment, rate/A and application method*	**19 Jul**	**26 Aug**	**17 Sep**	**4 Oct**
Untreated Check	0.8	15.5 bc	42.0 a	115.0 a
Temik 15G 5 lb (F)	1.5	28.8 a	45.0 a	94.8 ab
Temik 15G 7 lb (F)	1.3	20.5 a-c	45.8 a	96.8 ab
Thimet 20G 5 lb (F)	0.5	23.0 ab	46.3 a	90.0 b
KC791230 15G 5 lb (F)	1.3	24.8 ab	44.5 a	90.0 b
Vapam 7.5 gal (C) + Temik 15G 5 lb (F)	0.3	8.0 c	21.3 b	49.3 c
LSD	n.s.	12.8	15.0	23.3

* 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 (P=0.05), "n.s." = not significant.

Table 78. Effect of treatments on yield of peanuts.

Treatment, rate/A and application method*	**Yield****
Untreated Check	2145 b
Temik 15G 5 lb (F)	2049 b
Temik 15G 7 lb (F)	2106 b
Thimet 20G 5 lb (F)	2106 b
KC791230 15G 5 lb (F)	2124 b
Vapam 7.5 gal (C) + Temik 15G 5 lb (F)	3535 a
P(F)	.0018

* F=in furrow, C=chisel application.
** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 5 Oct and harvested on 11 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls multiple range test (P=0.05).

XX. COMPARISON OF VIRGINIA- AND RUNNER-TYPE PEANUTS IN STRIP AND CONVENTIONAL TILLAGE (PTIL206 – B&W Farms, Suffolk)

A. PURPOSE: To compare the profitability of cultivars in production systems that have reduced input for crop and disease management

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Split-plot design with variety-type and tillage method in main plots
3. Cultivars in subplots of two 35-ft rows with 36-in. row spacing
4. Blocks separated by 10-ft alleyways

C. TILLAGE AND CULTIVAR TYPE (MAIN PLOTS):

1. Strip tillage, Virginia-type peanut
2. Conventional tillage, Virginia-type peanut
3. Strip tillage, Runner-type peanut
4. Conventional tillage, Runner-type peanut

D. CULTIVAR (SUB-PLOTS):

VIrginia-types			**Runner-types**		
1. Perry	3. Gregory	5. Champs	1. GA Green	3. GA-02C	5. C99R
2. GA Hi/OL	4. Wilson	6. VA 98R	2. GA-01R	4. GA-03L	6. AP-3

E. ADDITIONAL INFORMATION:

1. Location: Worrell farm, Hare Road, Suffolk
2. Crop history: wheat/soybean 2004, cotton 2005
3. Planting date: 1 May 2006
4. Soil fertility report:

pH	5.7	K	75 ppm
Ca	261 ppm	Zn	2.9 ppm
Mg	20 ppm	Mn	2.5 ppm
P	33 ppm	Soil type	Goldsboro fine sandy loam

5. Herbicide: Pre-plant – 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 + Gramoxone Inteon 1 pt/A (5 May)
6. Cylindrocladium black rot control: Sectagon 42% 7.5 gal/A (11 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A 10 Jul)
9. Leaf spot control: Headline 9 fl oz (20 Jul, 23 Aug); Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (4 Aug); Bravo WS 1.5 pt/A (8 Sep)
10. Additional crop management:
    a. Cultivation: 16 Mar, 29 Jun
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
11. Harvest date: 24 Oct 2006

Table 79. Nematode assay report (Mar 2006).

Nematode	Number/500 cc soil
Root-knot	250
Stunt	170
Spiral	20
Lance	290
Ring	10
Stubby root	220

Table 80. Effect of tillage and cultivar selection on emergence and incidence of tomato spotted wilt virus (TSWV) in peanut.

Market type, tillage method and cultivar	Plants/ft* (30 May)	TSWV**				
		16 Jun	30 Jun	19 Jul	13 Aug	14 Sep
Virginia-type						
Strip tillage						
Perry	1.53 bc	0.5	3.5 b	3.5	3.3	10.0
GA Hi/OL	2.04 a	0.3	4.3 b	6.3	5.3	20.3
Gregory	1.48 c	1.3	10.0 a	8.0	9.0	15.5
Wilson	1.77 a-c	0.5	3.5 b	5.8	7.0	15.3
Champs	1.79 ab	0.5	3.8 b	2.8	4.3	15.8
VA 98R	2.06 a	1.0	5.5 b	11.3	7.8	15.3
LSD	**0.30**	**n.s.**	**4.2**	**n.s.**	**n.s.**	**n.s.**
Conventional tillage						
Perry	1.73 b	0.0	2.0	3.5	3.8	7.0
GA Hi/OL	2.09 a	0.5	1.5	3.3	4.0	9.8
Gregory	1.73 b	1.0	1.5	4.3	3.0	8.8
Wilson	1.87 b	0.5	1.8	2.5	5.5	14.0
Champs	1.82 b	0.3	1.3	3.0	3.3	13.5
VA 98R	2.18 a	1.0	3.0	4.3	3.8	9.0
LSD	**0.22**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Runner-type						
Strip tillage						
GA Green	2.21 a	0.3	1.8	2.8	5.3	14.5 a
GA 01R	1.35 c	0.0	1.0	2.5	5.8	8.0 bc
GA-02C	2.12 a	0.8	2.0	2.0	1.8	6.0 c
GA-03L	2.32 a	0.0	1.5	1.5	1.5	6.3 c
C99R	1.72 b	0.5	0.8	3.8	5.3	7.3 bc
AP-3	2.16 a	1.0	1.3	3.5	2.3	11.5 ab
LSD	**0.26**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**4.8**
Conventional tillage						
GA Green	2.33 a	0.3	0.0	2.0	2.5	8.8 ab
GA 01R	1.69 b	0.0	0.5	1.3	2.0	5.8 b-d
GA-02C	2.30 a	0.3	2.0	2.0	2.3	5.0 cd
GA-03L	2.36 a	0.0	1.3	1.0	1.0	3.0 d
C99R	1.69 b	0.3	2.5	3.8	5.8	6.8 bc
AP-3	2.40 a	1.3	3.8	1.3	2.3	10.3 a
LSD	**0.26**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**3.1**
Comparison of main effects						
Virginia-type, Strip tillage	1.78 c	0.7	5.1 a	6.3 a	6.1 a	15.3 a
Virginia-type Conventional tillage	1.90 bc	0.5	1.8 b	3.5 b	3.9 b	10.3 b
Runner-type, Strip tillage	1.98 ab	0.4	1.4 b	2.7 b	3.6 b	8.9 bc
Runner-type Conventional tillage	2.13 a	0.3	1.7 b	1.9 b	2.6 b	6.6 c
LSD	**0.18**	**n.s.**	**1.4**	**1.6**	**1.9**	**2.5**

* Determined from counts of two 35-ft rows per plot.
** Counts of plants per plot with symptoms of TSWV.
Means followed by the same letter(s) within a group and column are not significantly different (LSD, P=0.05), "n.s."=not significant.

Table 81. Effect of tillage and cultivar selection on incidence of Cylindrocladium black rot (CBR) and Sclerotinia blight in peanut.

Market type, tillage method and cultivar	CBR*				Sclerotinia**	
	19 Jul	13 Aug	14 Sep	13 Oct	14 Sep	13 Oct
Virginia-type						
Strip tillage						
Perry	0.8	1.8	0.8 c	7.3 c	1.3	26.0 a
GA Hi/OL	0.0	3.5	5.3 bc	32.3 ab	0.0	6.5 c
Gregory	0.5	15.3	8.5 ab	20.0 bc	0.5	12.3 bc
Wilson	0.0	3.3	9.0 ab	33.0 ab	1.5	17.0 b
Champs	0.8	6.5	12.3 a	37.8 a	1.0	12.8 bc
VA 98R	0.5	6.5	12.3 a	39.8 a	0.3	10.0 bc
LSD	**n.s.**	**n.s.**	**0.3**	**14.9**	**n.s.**	**7.6**
Conventional tillage						
Perry	0.0	1.0	1.0	6.5 c	1.3	33.8 a
GA Hi/OL	0.0	1.0	1.5	15.5 bc	0.8	13.0 c
Gregory	0.3	2.5	4.3	15.3 bc	1.3	26.3 ab
Wilson	0.0	3.0	4.5	27.5 ab	2.3	17.8 bc
Champs	0.0	2.0	6.3	28.3 a	0.3	19.5 bc
VA 98R	0.0	2.8	3.8	22.8 ab	0.8	19.3 bc
LSD	**n.s.**	**n.s.**	**n.s.**	**12.6**	**n.s.**	**11.3**
Runner-type						
Strip tillage						
GA Green	0.0	3.5 b	8.3 b	26.8 b	1.0	16.5 bc
GA 01R	0.0	0.3 c	1.5 d	8.0 e	2.8	31.0 a
GA-02C	0.0	1.5 bc	2.8 cd	9.8 de	1.0	26.5 a
GA-03L	0.3	2.3 bc	7.3 bc	20.0 c	0.3	11.8 c
C99R	0.0	2.0 bc	5.3 b-d	14.3 cd	0.8	20.0 b
AP-3	0.5	7.8 a	17.3 a	36.5 a	1.0	12.5 c
LSD	**n.s.**	**2.8**	**5.5**	**6.1**	**n.s.**	**6.0**
Conventional tillage						
GA Green	0.5	2.5	2.5	15.0 ab	2.8	26.8 ab
GA 01R	0.0	0.3	0.8	5.5 c	2.5	31.8 a
GA-02C	0.0	0.5	1.5	9.5 bc	2.0	30.0 ab
GA-03L	0.0	1.0	4.0	11.8 bc	0.5	12.3 c
C99R	0.0	2.0	2.5	9.3 bc	3.0	21.3 bc
AP-3	0.5	1.3	5.8	21.8 a	2.0	22.0 a-c
LSD	**n.s.**	**n.s.**	**n.s.**	**8.3**	**n.s.**	**10.3**
Comparison of main effects						
Virginia-type, Strip tillage	0.4	6.1 a	8.0 a	28.3 a	0.8 b	14.1 b
Virginia-type, Conventional tillage	0.0	2.0 b	3.5 b	19.3 b	1.1 b	21.6 a
Runner-type, Strip tillage	0.1	2.9 b	7.0 a	19.2 b	1.1 b	19.7 a
Runner-type, Conventional tillage	0.2	1.3 b	2.8 b	12.1 c	2.1 a	24.0 a
LSD	**n.s.**	**2.4**	**2.7**	**6.4**	**0.9**	**5.2**

* Number symptomatic and/or dead plants per plot.

** Counts of infection centers in the 2 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.

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

Table 82. Effect of tillage and cultivar selection on maturity, yield, and value of peanuts.

Market type, tillage method and cultivar	% mature[1] (18 Sep)	Yield[2] (lb/A)	Value[3] ($/A)
Virginia-type			
Strip tillage			
Perry	—	3514 a	620 a
GA Hi/OL	—	3091 ab	537 ab
Gregory	—	2589 bc	424 bc
Wilson	—	2021 cd	314 c
Champs	—	1612 d	267 c
VA 98R	—	1823 cd	279 c
P value	**—**	**.0001**	**.0001**
Conventional tillage			
Perry	69	3302 a	549 a
GA Hi/OL	82	3355 a	561 a
Gregory	61	2563 b	411 b
Wilson	67	2298 b	365 b
Champs	64	1995 b	320 b
VA 98R	53	2246 b	365 b
P value	**—**	**.0010**	**.0003**
Runner-type			
Strip tillage			
GA Green	—	2463 b	416 c
GA 01R	—	2476 b	380 c
GA-02C	—	3095 ab	531 ab
GA-03L	—	3530 a	555 a
C99R	—	2779 b	457 bc
AP-3	—	1791 c	283 d
P value	**—**	**.0001**	**.0001**
Conventional tillage			
GA Green	80	2832 b	452 ab
GA 01R	48	2516 b	390 b
GA-02C	47	3214 ab	505 ab
GA-03L	88	3543 a	534 a
C99R	50	2621 b	414 b
AP-3	81	2516 b	390 b
P value	**—**	**.0036**	**.0069**
Comparison of main effects			
Virginia-type, Strip tillage	—	2428	405
Virginia-type, Conventional tillage	—	2626	429
Runner-type, Strip tillage	—	2689	437
Runner-type, Conventional tillage	—	873	448
P value	**—**	**n.s.**	**n.s.**

1 Based on mesocarp color (orange + brown + black) after pod blasting.
2 Yields are based on weight of peanuts with moisture content of 7%. Peanuts were dug on 16 Oct and harvested on 24 Oct.
3 Composite samples were graded to determine market value at loan rate and multiplied by yield to estimate value ($/A).
Means followed by the same letter(s) within a group and column are not significantly different according to Student-Newman-Keuls test (P=0.05), "n.s."=not significant, , "—"=maturity not assessed.

Table 83. Effect of treatment and cultivar on grade characteristics and value.

Market type, tillage method and cultivar	% [1]									Value[2] (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK	Conc. RMD	SMK	
Virginia-type										
Strip tillage										
Perry	0	0	59	33	8	4	1	0	61	17.64000
GA Hi/OL	0	0	52	37	14	4	3	0	56	17.37000[3]
Gregory	1	1	66	34	7	4	1	0	57	16.38424
NC V-11	0	0	57	21	6	7	1	0	54	15.51000
Champs	0	0	65	28	7	7	1	0	57	16.58000
VA 98R	0	0	45	22	11	8	3	0	50	15.30000[3]
Conventional tillage										
Perry	0	0	63	32	10	5	1	0	55	16.63000
GA Hi/OL	0	0	56	37	13	4	4	0	55	16.72000
Gregory	0	0	80	39	5	5	2	0	57	16.04000
NC V-11	0	0	53	23	8	6	1	0	54	15.88000
Champs	0	0	63	28	6	9	0	0	55	16.02000
VA 98R	0	0	48	27	10	7	2	0	54	16.27000
Runner-type										
Strip tillage										
GA Green	0	0	—	—	8	6	1	0	61	16.87000
GA 01R	0	0	—	—	14	7	2	0	50	15.33000
GA-02C	0	0	—	—	7	6	1	0	63	17.15000
GA-03L	0	0	—	—	7	6	1	0	57	15.71000
C99R	0	0	—	—	8	7	0	0	59	16.46000
AP-3	0	0	—	—	8	8	1	0	56	15.81000
Conventional tillage										
GA Green	0	0	—	—	8	10	1	0	56	15.95000
GA 01R	0	0	—	—	11	9	0	0	52	15.52000
GA-02C	0	0	—	—	6	9	1	0	57	15.72000
GA-03L	0	0	—	—	7	7	1	0	54	15.06000
C99R	0	0	—	—	14	8	1	0	51	15.81000
AP-3	0	0	—	—	5	9	1	0	57	15.52000

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, mold or decay, 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 due to damage >2.5% or concealed RMD >1.0%.

XXI. COMPARISON OF VIRGINIA- AND RUNNER-TYPE PEANUTS IN STRIP TILLAGE WITH AND WITHOUT SECTAGON (PTIL106 - Jason Holland Field, Suffolk)

A. PURPOSE: To compare the profitability of cultivars in production systems that have reduced input for crop and disease management

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 10-ft alleyways
2. Split-plot design with variety-type and fumigant in main plots
3. Varieties in subplots of two 35-ft rows with 36-in. row spacing

C. VARIETY TYPE, TREATMENT AND RATE/A (MAIN PLOTS):
1. Virginia type: Temik 15G 7 lb/A (in furrow)
2. Virginia-type: Sectagon 42% 7.5 gal + Temik 15G 7 lb/A(in furrow)
3. Runner-type: Temik 15G 7 lb/A (in furrow)
4. Runner-type: Sectagon 42% 7.5 gal + Temik 15G 7 lb/A (in furrow)

D. CULTIVARS (SUB-PLOTS):

Virginia-type:			**Runner-type:**		
1. Perry	3. Gregory	5. Champs	1. GA-Green	3. GA-02C	5. C99R
2. GA Hi/OL	4. Wilson	6. VA 98R	2. GA-01R	4. GA-03L	6. Andru II

E. ADDITIONAL INFORMATION:
1. Location: Jason Holland Farm, Glenhaven Drive, Suffolk
2. Crop history: cotton 2005
3. Land preparation: rip-and-strip till in stale beds of cotton
4. Planting date: 1 May
5. Soil fertility report (Mar 2006):

pH	6.6	K	130 ppm
Ca	509 ppm	Zn	0.4 ppm
Mg	80 ppm	Mn	2.1 ppm
P	17 ppm	Soil type	Eunola loamy fine sand

6. Herbicide: Pre-plant: Dual II Magnum 1 pt + Strongarm 0.45 fl oz/A (18 Apr)
Pre-emergence: Roundup 1 qt/A (5 May)
Post-emergence: Poast Plus 2 pt + Dash 1 pt + Basagran 2 pt/A (21 Jun)
Poast Plus 1.5 pt/A (22 Aug)
7. Insecticide: Orthene 97S 8 oz/A (30 May); Lorsban 15G 13 lb/A (29 Jun)
Baythroid XL 3 fl oz/A (9 Aug)
8. Acaricide: Danitol 6 oz/A (20 Jun), 10 oz/A (10 Jul)
9. Leaf spot control: Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (4 Aug)
Headline 9 fl oz/A (22 Aug); Bravo WS 1.5 pt/A (8 Sep, 21 Sep)
10. Additional crop management:
   a. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   b. Cultivation: 18 May, 30 May, 29 Jun, 10 Jul
   c. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
11. Harvest date: 25 Oct

Table 84. Effect of market type and treatment on populations of root-knot nematode.

Treatment	Root-knot juveniles/500 cc soil
Virginia type, Temik 15G 7 lb/A (F)	13
Virginia-type, Sectagon 42% 7.5 gal/A + Temik 15G 7 lb/A(F)	3
Runner-type, Temik 15G 7 lb/A (F)	0
Runner-type, Sectagon 42% 7.5 gal/A + Temik 15G 7 lb/A (F)	5

* Soil samples were collected from all subplots within each treatment on 27 Jul.

Table 85. Effect of treatment and cultivar on seedling emergence and incidence of tomato spotted wilt virus (TSWV) in peanut.

Treatment, rate/A and cultivar	Plants/ft* (30 May)	TSWV** 19 Jun	30 Jun	20 Jul	19 Aug	21 Sep
Virginia-type						
Temik 15G 7 lb						
Perry	1.60 b	9.5 ab	3.5	4.3	9.8 ab	5.3
GA Hi/OL	1.86 a	3.8 c	1.5	2.8	4.0 c	4.3
Gregory	1.66 b	13.8 a	3.5	6.3	11.3 ab	5.3
Wilson	1.83 a	6.3 bc	4.5	5.0	13.0 a	6.3
Champs	1.63 b	8.8 a-c	4.8	2.5	6.0 bc	3.0
VA 98R	1.86 a	4.0 c	3.8	5.3	11.0 ab	3.8
LSD	**0.16**	**2.3**	**n.s.**	**n.s.**	**5.3**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb						
Perry	1.60 c	10.3	4.5	5.3	10.8	8.0
GA Hi/OL	1.73 bc	1.3	2.3	1.5	2.3	2.3
Gregory	1.70 bc	4.5	3.8	4.0	6.3	5.5
Wilson	1.84 ab	3.8	3.0	3.8	12.0	5.0
Champs	1.59 c	3.3	8.0	5.8	13.3	6.5
VA 98R	1.92 a	4.5	1.8	4.3	12.0	4.5
LSD	0.19	n.s.	n.s.	n.s.	n.s.	n.s.
Runner-type						
Temik 15G 7 lb						
GA Green	1.93 b	1.5	1.8	4.0	7.3	5.5 a
GA 01R	1.37 d	0.5	1.0	2.5	8.5	3.5 ab
GA-02C	2.20 a	2.3	1.3	2.3	3.0	2.0 b
GA-03L	2.28 a	0.8	1.3	1.8	6.0	2.5 b
C99R	1.58 c	1.8	2.5	2.3	4.8	2.3 b
Andru II	1.68 c	2.0	3.5	3.8	7.8	3.8 ab
LSD	**0.15**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**2.3**
Sectagon 7.5 gal + Temik 15G 7 lb						
GA Green	1.94 c	0.3	0.8	2.5	5.0	5.3 a
GA 01R	1.30 f	0.8	0.8	1.3	4.5	2.3 bc
GA-02C	2.14 b	0.5	1.0	0.8	3.8	1.0 c
GA-03L	2.28 a	1.5	1.5	1.5	2.5	1.5 c
C99R	1.61 e	0.5	2.3	1.3	4.3	4.3 ab
Andru II	1.76 d	2.5	2.3	1.8	3.0	2.0 bc
LSD	**0.12**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**2.4**
Comparison of main effects						
Virginia-type, Temik 15G 7 lb	1.74	7.7 a	3.6 a	4.3 a	9.2 a	4.6 ab
Virginia-type, Sectagon 7.5 gal + Temik 15G 7 lb	1.73	4.6 b	3.9 a	4.1 a	9.4 a	5.3 a
Runner-type, Temik 15G 7 lb	1.84	1.5 c	1.9 b	2.8 b	6.2 b	3.3 bc
Runner-type, Sectagon 7.5 gal + Temik 15G 7 lb	1.84	1.0 c	1.4 b	1.5 c	3.8 b	2.7 c
LSD	**n.s.**	**2.3**	**1.3**	**1.2**	**2.5**	**1.4**

* Determined from counts of two 35-ft rows per plot.
** Counts of plants per plot with symptoms of TSWV.
Means followed by the same letter(s) within a group and column are not significantly different (LSD, P=0.05), "n.s."=not significant.

Table 86. Effect of treatment and cultivar on incidence of Cylindrocladium black rot (CBR).

Treatment, rate/A and cultivar	CBR*		
	19 Aug	21 Sep	11 Oct
Virginia-type			
Temik 15G 7 lb			
Perry	0.0	2.5	7.8
GA Hi/OL	0.0	3.5	11.3
Gregory	0.3	5.0	10.8
Wilson	0.3	2.8	9.8
Champs	0.5	2.0	6.5
VA 98R	1.5	4.5	12.5
LSD	**n.s.**	**n.s.**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb			
Perry	0.3	0.5	5.3
GA Hi/OL	0.8	2.3	6.5
Gregory	0.3	1.0	6.5
Wilson	1.0	4.3	8.5
Champs	1.5	6.3	10.0
VA 98R	1.0	8.3	16.0
LSD	**n.s.**	**n.s.**	**n.s.**
Runner-type			
Temik 15G 7 lb			
GA Green	1.0	5.5	12.3
GA 01R	0.3	1.3	1.0
GA-02C	0.3	0.3	1.3
GA-03L	0.3	1.8	4.5
C99R	1.5	2.8	6.0
Andru II	1.0	2.5	4.3
LSD	**n.s.**	**n.s.**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb			
GA Green	1.3	1.0	5.3 ab
GA 01R	0.3	0.0	1.0 c
GA-02C	0.0	1.5	2.3 bc
GA-03L	0.8	2.5	6.5 a
C99R	0.0	0.5	2.3 bc
Andru II	0.3	2.3	3.5 a-c
LSD	**n.s.**	**n.s.**	**3.7**
Comparison of main effects			
Virginia-type, Temik 15G 7 lb	0.4	3.4	9.8 a
Virginia-type, Sectagon 7.5 gal + Temik 15G 7 lb	0.8	3.8	8.8 a
Runner-type, Temik 15G 7 lb	0.7	2.3	4.9 b
Runner-type, Sectagon 7.5 gal + Temik 15G 7 lb	0.4	1.3	3.5 b
LSD	**n.s.**	**n.s.**	**3.5**

* Number symptomatic and/or dead plants per plot.
Means followed by the same letter(s) within a group and column are not significantly different (LSD, P=0.05), "n.s."=not significant.

Table 87. Effect of treatment and cultivar on incidence of Southern stem rot and Sclerotinia blight.

	Stem rot*			Sclerotinia*	
Treatment, rate/A and cultivar	**19 Aug**	**21 Sep**	**11 Oct**	**21 Sep**	**11 Oct**
Virginia-type					
Temik 15G 7 lb					
Perry	0.5	1.5	0.0	6.5	20.5
GA Hi/OL	1.0	0.3	0.8	4.0	13.3
Gregory	0.3	2.8	1.5	6.8	23.8
Wilson	0.3	2.8	1.3	5.0	22.0
Champs	1.5	3.5	2.3	6.5	28.3
VA 98R	2.0	4.5	2.3	4.5	23.5
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb					
Perry	0.0	1.5	0.5	3.5	17.3
GA Hi/OL	0.0	1.3	0.0	0.8	5.5
Gregory	0.3	2.3	0.5	1.3	8.8
Wilson	0.5	4.8	1.0	3.8	19.5
Champs	1.0	2.0	0.8	3.8	24.3
VA 98R	0.3	0.8	0.8	3.3	16.0
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Runner-type					
Temik 15G 7 lb					
GA Green	1.0	3.0	1.0	5.8	21.8 ab
GA 01R	1.8	4.3	0.3	8.8	32.5 a
GA-02C	0.0	1.8	0.3	12.8	33.3 a
GA-03L	0.5	1.0	1.8	1.5	12.0 b
C99R	0.0	1.5	0.0	10.3	28.8 a
Andru II	0.8	2.0	0.0	7.8	24.5 a
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**11.6**
Sectagon 7.5 gal + Temik 15G 7 lb					
GA Green	1.3	5.3 a	0.5	9.3	28.8
GA 01R	0.8	1.5 b	0.3	9.5	26.0
GA-02C	0.3	1.0 b	0.0	9.3	23.0
GA-03L	1.0	3.8 ab	0.3	4.0	21.5
C99R	0.8	1.8 b	1.0	4.3	17.5
Andru II	0.0	1.5 b	0.0	8.8	24.8
LSD	**n.s.**	**2.9**	**n.s.**	**n.s.**	**n.s.**
Comparison of main effects					
Virginia-type, Temik 15G 7 lb	0.9	2.5	1.3 a	5.5 a	21.9 a
Virginia-type, Sectagon 7.5 gal + Temik 15G 7 lb	0.3	2.1	0.6 b	2.7 b	15.2 b
Runner-type, Temik 15G 7 lb	0.7	2.3	0.5 b	7.8 a	25.5 a
Runner-type, Sectagon 7.5 gal + Temik 15G 7 lb	0.7	2.5	0.3 b	7.5 a	23.4 a
LSD	**n.s.**	**n.s.**	**0.6**	**2.4**	**5.2**

* Counts of infection centers in the 2 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) within a group and column are not significantly different (LSD, P=0.05), "n.s."=not significant.

Table 88. Effect of treatment and cultivar on maturity, yield, and value of peanuts.

Treatment, rate/A and cultivar	% mature[1] (18 Sep)	Yield[2] (lb/A)	Value[3] ($/A)
Virginia-type			
Temik 15G 7 lb			
Perry	—	2801	464
GA Hi/OL	—	3718	603
Gregory	—	3046	485
Wilson	—	3369	544
Champs	—	2724	450
VA 98R	—	3059	491
P(F)	**—**	**n.s.**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb			
Perry	70	2943	444
GA Hi/OL	64	3227	464
Gregory	65	3576	579
Wilson	45	3588	581
Champs	52	3253	553
VA 98R	60	3046	487
P(F)	**—**	**n.s.**	**n.s.**
Runner-type			
Temik 15G 7 lb			
GA Green	—	3567	608
GA 01R	—	3175	519
GA-02C	—	3463	595
GA-03L	—	4273	704
C99R	—	3319	540
Andru II	—	3371	505
P(F)	**—**	**n.s.**	**n.s.**
Sectagon 7.5 gal + Temik 15G 7 lb			
GA Green	33	2535	425
GA 01R	41	3149	493
GA-02C	12	3162	545
GA-03L	68	3711	610
C99R	44	3484	555
Andru II	52	3005	453
P(F)	**—**	**n.s.**	**n.s.**
Comparison of main effects			
Virginia-type, Temik 15G 7 lb	—	3119	506
Virginia-type, Sectagon 7.5 gal + Temik 15G 7 lb	—	3288	520
Runner-type, Temik 15G 7 lb	—	3528	578
Runner-type, Sectagon 7.5 gal + Temik 15G 7 lb	—	3161	512
P(F)	**—**	**n.s.**	**n.s.**

1 Based on mesocarp color (orange + brown + black) after pod blasting.
2 Yield based on weight of peanuts with moisture content of 7%. Peanuts were dug on 16 Oct and harvested on 24 Oct 2006.
3 Composite samples were graded to determine market value at loan rate and multiplied by yield to estimate value ($/A).
Means followed by the same letter(s) within a group and column are not significantly different (P=0.05) according to Student-Newman-Keuls test, "n.s."=not significant, "—"=not assessed for maturity.

Table 89. Grade characteristics and value of peanut cultivars.

Treatment, rate/A and cultivar	% [1]									Value[2] (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK	Conc. RMD	SMK	
Virginia-type										
Temik 15G 7 lb										
Perry	0	0	55	35	9	6	1	0	55	16.55000
GA Hi/OL	0	0	56	35	12	4	4	0	54	16.23000[3]
Gregory	0	0	85	40	5	4	1	0	56	15.92000
Wilson	1	0	72	35	5	5	1	0	57	16.14000
Champs	0	1	75	35	6	5	1	0	58	16.50400
VA 98R	0	0	65	37	4	6	1	0	57	16.05000
Sectagon 7.5 gal + Temik 15G 7 lb										
Perry	0	0	50	27	9	8	1	0	49	15.07000
GA Hi/OL	0	0	43	29	13	4	5	0	51	14.39000[3]
Gregory	1	0	85	43	6	3	2	0	57	16.18000
Wilson	0	0	80	35	4	5	1	0	58	16.18000
Champs	0	1	74	37	5	4	1	0	61	16.99900
VA 98R	0	0	76	33	10	5	2	0	53	15.99000
Runner-type										
Temik 15G 7 lb										
GA Green	0	0	—	—	7	8	1	0	62	17.05000
GA 01R	0	0	—	—	13	8	1	0	54	16.33000
GA-02C	0	0	—	—	6	6	0	0	64	17.19000
GA-03L	0	0	—	—	6	6	0	0	61	16.47000
C99R	0	0	—	—	9	5	1	0	58	16.28000
Andru II	0	0	—	—	5	8	0	0	55	14.97000
Sectagon 7.5 gal + Temik 15G 7 lb										
GA Green	0	0	—	—	8	8	0	0	60	16.77000
GA 01R	0	0	—	—	9	10	1	0	54	15.67000
GA-02C	0	0	—	—	7	7	0	0	63	17.22000
GA-03L	0	0	—	—	7	6	0	0	60	16.43000
C99R	0	0	—	—	5	8	1	0	59	15.93000
Andru II	0	0	—	—	3	9	0	0	57	15.08000

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, mold or decay, SMK=sound mature kernels. Data are from a composite sample from 4 reps of each cultivar.

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

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

XXII. EVALUATION OF FUNGICIDE TREATMENTS FOR CONTROL OF FOLIAR DISEASES OF PEANUT (LFSPOT106 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of registered and experimental fungicides in control of early and late leaf spot of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at early pegging (R2) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:

1. Untreated check
2. Bravo WeatherStik 1.5 pt/A (1st, and 5th spray)
   Folicur 3.6F 7.2 fl oz/A + Induce 4.8 fl oz (2nd, 3rd spray)
   Headline 2.09EC 9 fl oz/A (4th spray)
3. Bravo WeatherStik 1.5 pt/A (1st, and 5th spray)
   V-10116 50WD 4 oz/A + Induce 4.8 fl oz (2nd, 3rd spray)
   Headline 2.09EC 9 fl oz/A (4th spray)
4. Bravo WeatherStik 1.5 pt/A (1st and 5th spray)
   Headline 2.09EC 9 fl oz/A (2nd, 3rd, 4th spray)
5. Bravo WeatherStik 1.5 pt/A (1st and 5th spray)
   V-10116 50WD 4 oz/A + Induce 4.8 fl oz (2nd, 3rd, 4th spray)
6. V-10116 50WD 4 oz/A + Induce 4.8 fl oz (1st, 2nd, 5th spray)
   Headline 2.09EC 9 fl oz/A (3rd, 4th spray)
7. Bravo WeatherStik 1.5 pt/A (1st, 5th spray)
   V10135 50DW (DF-5) 16 oz/A (2nd, 3rd, 4th spray)
8. Echo 720 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
9. EchoPropiMax Co-Pack 1 pt + 2 fl oz /A (1st, 2nd, 3rd, 4th, 5th spray)
10. Echo 720 1 pt + Eminent 125SL 7.2 fl oz/A (1st, 2nd, 3rd, 4th, 5th spray)
11. SA-010903 a/ 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Planting date and cultivar: 4 May 2006, VA 98R
4. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz A (5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
10. Harvest date: 10 Oct 2006

Table 90. Incidence of early leaf spot in fungicide-treated plots.

	% leaf spot**		
Treatment, rate/A and application date*	**7 Aug**	**8 Sep**	**3 Oct**
Untreated check	23.3 a	71.3 a	96.5 a
Bravo WeatherStik 1.5 pt (6/29, 9/20) Folicur 3.6F 7.2 fl oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	0.0 b	2.5 bc	3.8 c
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	0.3 b	3.8 b	9.3 c
Bravo WeatherStik 1.5 pt (6/29, 9/20) Headline 2.09EC 9 fl oz (7/17, 8/2, 8/22)	0.0 b	0.8 c	3.0 c
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2, 8/22)	0.3 b	2.0 bc	9.0 c
V-10116 50WD 4 oz + Induce 4.8 fl oz (6/29, 7/17, 9/20) Headline 2.09EC 9 fl oz (8/2, 8/22)	0.0 b	1.8 bc	2.3 c
Bravo WeatherStik 1.5 pt (6/29, 9/20) V10135 50DW (DF-5) 16 oz (7/17, 8/2, 8/22)	2.0 b	2.0 bc	36.3 b
Echo 720 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	0.3 b	1.8 bc	9.5 c
EchoPropiMax Co-Pack 1 pt + 2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	0.5 b	1.3 c	11.3 c
Echo 720 1 pt + Eminent 125SL 7.2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	0.0 b	1.0 c	13.3 c
SA-010903 a/ 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	0.5 b	2.0 bc	3.0 c
LSD	**2.5**	**1.8**	**13.1**

* Fungicides were applied at R2 (early pegging) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program.
** 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). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 91. Incidence of web blotch and defoliation in fungicide-treated plots.

Treatment, rate/A and application date[1]	% web blotch[2] 8 Sep	% web blotch[2] 3 Oct	% defoliation[3] (3 Oct)
Untreated check	1.8 a	57.5 ab	88.8 a
Bravo WeatherStik 1.5 pt (6/29, 9/20) Folicur 3.6F 7.2 fl oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	0.0 b	2.5 c	1.0 d
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	0.3 b	6.5 c	1.3 cd
Bravo WeatherStik 1.5 pt (6/29, 9/20) Headline 2.09EC 9 fl oz (7/17, 8/2, 8/22)	0.0 b	0.8 c	1.0 d
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2, 8/22)	0.0 b	13.0 c	2.0 b-d
V-10116 50WD 4 oz + Induce 4.8 fl oz (6/29, 7/17, 9/20) Headline 2.09EC 9 fl oz (8/2, 8/22)	0.0 b	0.0 c	1.0 d
Bravo WeatherStik 1.5 pt (6/29, 9/20) V10135 50DW (DF-5) 16 oz (7/17, 8/2, 8/22)	0.3 b	63.8 a	8.0 bc
Echo 720 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	0.0 b	13.8 c	1.8 b-d
EchoPropiMax Co-Pack 1 pt + 2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	0.1 b	42.5 b	8.5 b
Echo 720 1 pt + Eminent 125SL 7.2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	0.0 b	43.8 b	4.3 b-d
SA-010903 a/ 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	0.0 b	3.3 c	1.0 d
LSD	**0.5**	**16.4**	**5.2**

1 Fungicides were applied at R2 (early pegging) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Web blotch rating scale: 0=none; 100= 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). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 92. Incidence of soil-borne diseases and yield of fungicide-treated plots.

Treatment, rate/A and application date[1]	Sclerotinia[2] (3 Oct)	CBR[3] (3 Oct)	Yield[4] (lb/A)
Untreated check	3.5 d	5.0	3637 c
Bravo WeatherStik 1.5 pt (6/29, 9/20) Folicur 3.6F 7.2 fl oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	7.5 b-d	4.3	5397 ab
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2) Headline 2.09EC 9 fl oz (8/22)	13.8 a-c	6.0	4724 ab
Bravo WeatherStik 1.5 pt (6/29, 9/20) Headline 2.09EC 9 fl oz (7/17, 8/2, 8/22)	7.8 b-d	6.0	4802 ab
Bravo WeatherStik 1.5 pt (6/29, 9/20) V-10116 50WD 4 oz + Induce 4.8 fl oz (7/17, 8/2, 8/22)	18.0 a	7.5	4750 ab
V-10116 50WD 4 oz + Induce 4.8 fl oz (6/29, 7/17, 9/20) Headline 2.09EC 9 fl oz (8/2, 8/22)	15.8 ab	6.8	4685 a-c
Bravo WeatherStik 1.5 pt (6/29, 9/20) V10135 50DW (DF-5) 16 oz (7/17, 8/2, 8/22)	6.3 cd	4.8	5682 a
Echo 720 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	16.8 a	7.5	4452 bc
EchoPropiMax Co-Pack 1 pt + 2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	14.5 a-c	7.5	4854 ab
Echo 720 1 pt + Eminent 125SL 7.2 fl oz (6/29, 7/17, 8/2, 8/22, 9/20)	5.3 d	3.5	5397 ab
SA-010903 a/ 1.5 pt (6/29, 7/17, 8/2, 8/22, 9/20)	11.5 a-d	5.0	4647 a-c
LSD	**8.4**	**n.s.**	**1064**

1 Fungicides were applied at R2 (early pegging) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Counts of infection centers in the 2 center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by the Sclerotinia minor and included 6 in. on either side of that point.
3 Number of symptomatic plants per plot.
4 Yields are weight of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 10 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.

XXIII. PERFORMANCE OF PEANUT FUNGICIDES WITH AND WITHOUT PREV-AM SPRAY ADJUVANT (LFSPOT206 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of recommended foliar fungicides with and without PREV-AM in control of early and late leaf spot

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: The rate of PREV-AM was equivalent to 0.4% of spray volume. Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at beginning seed (R5) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:

1. Untreated check
2. PREV-AM 7.68 fl oz/A (1st, 2nd, 3rd, 4th spray)
3. Bravo 720 1.5 pt/A (1st, 2nd, 3rd, 4th spray)
4. Bravo 720 1.5 pt + PREV-AM 7.68 fl oz/A (1st, 2nd, 3rd, 4th spray)
5. Headline 2.08EC 6 fl oz/A (1st, 3rd spray)
   TiltBravo 1.5 pt/A (2nd spray)
   Bravo 720 1.5 pt/A (4th spray)
6. Headline 2.08EC 6 fl oz + PREV-AM 7.68 fl oz/A (1st, 3rd spray)
   TiltBravo 1.5 pt/A + PREV-AM 7.68 fl oz/A (2nd spray)
   Bravo 720 1.5 pt + PREV-AM 7.68 fl oz/A (4th spray)
7. Abound 2.08SC 12 fl oz/A (1st, 3rd spray)
   TiltBravo 1.5 pt/A (2nd spray)
   Bravo 720 1.5 pt/A (4th spray)
8. Abound 2.08SC 12 fl oz + PREV-AM 7.68 fl oz/A (1st, 3rd spray)
   TiltBravo 1.5 pt/A + PREV-AM 7.68 fl oz/A (2nd spray)
   Bravo 720 1.5 pt + PREV-AM 7.68 fl oz/A (4th spray)
9. Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz/A (1st, 3rd spray)
   TiltBravo 1.5 pt/A (2nd spray)
   Bravo 720 1 pt/A (4th spray)
10. Folicur 3.6F 7.2 fl oz + PREV-AM 7.68 fl oz/A (1st, 3rd spray)
    TiltBravo 1.5 pt/A + PREV-AM 7.68 fl oz/A (2nd spray)
    Bravo 720 1.5 pt + PREV-AM 7.68 fl oz/A (4th spray)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Planting date and cultivar: 4 May 2006, VA 98R

4. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz A (5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
10. Harvest date: 10 Oct 2006

Table 93. Incidence of early leaf spot in fungicide-treated plots.

	% leaf spot**		
Treatment, rate/A and application date*	**7 Aug**	**9 Sep**	**3 Oct**
Untreated check	38.8 a	75.0 a	96.5 a
PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	28.8 a-c	71.3 a	96.5 a
Bravo 720 1.5 pt (7/26, 8/10, 8/25, 9/20)	28.8 a-c	12.5 bc	11.3 cd
Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	33.3 ab	13.8 bc	21.3 c
Headline 2.08EC 6 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	20.0 c	7.5 c	9.5 cd
Headline 2.08EC 6 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	18.3 c	10.0 bc	3.3 d
Abound 2.08SC 12 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	29.5 a-c	16.3 b	48.8 b
Abound 2.08SC 12 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	28.8 a-c	16.5 b	40.0 b
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1 pt (4th spray)	20.8 c	12.5 bc	8.8 cd
Folicur 3.6F 7.2 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	25.0 bc	13.8 bc	6.3 d
LSD	**12.3**	**5.7**	**12.8**

* Fungicides were applied at R5 (beginning seed) and thereafter according to the Virginia 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 (P=0.05). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

NOTE: mild symptoms of foliar burn occurred in the upper plant canopy following sprays of Headline with PREV-AM on 10 Aug.

Table 94. Incidence of foliar disease and defoliation in fungicide-treated plots.

Treatment, rate/A and application date[1]	% web blotch[2] 9 Sep	% web blotch[2] 3 Oct	% defoliation[3] (3 Oct)
Untreated check	1.3	52.5 ab	91.3 a
PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	1.3	57.5 a	92.8 a
Bravo 720 1.5 pt (7/26, 8/10, 8/25, 9/20)	0.5	17.5 de	1.5 b
Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	0.5	27.5 cd	4.0 b
Headline 2.08EC 6 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	0.0	6.8 e	1.3 b
Headline 2.08EC 6 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	0.1	3.3 e	1.0 b
Abound 2.08SC 12 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	0.8	45.0 a-c	7.3 b
Abound 2.08SC 12 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	0.0	36.3 bc	5.8 b
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1 pt (4th spray)	0.3	51.3 ab	7.0 b
Folicur 3.6F 7.2 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	0.6	51.3 ab	5.0 b
LSD	**n.s.**	**17.2**	**4.9**

1 Fungicides were applied at R5 (beginning seed) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Web blotch rating scale: 0=none, 100=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 95. Incidence of soil-borne diseases and yield in fungicide-treated plots.

Treatment, rate/A and application date[1]	Sclerotinia blight[2] (3 Oct)	CBR[3] (3 Oct)	Yield[4] (lb/A)
Untreated check	1.5 c	7.5	3042 c
PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	1.8 c	7.0	3250 c
Bravo 720 1.5 pt (7/26, 8/10, 8/25, 9/20)	7.5 a-c	6.5	4603 ab
Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (7/26, 8/10, 8/25, 9/20)	3.0 bc	4.8	5487 a
Headline 2.08EC 6 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	9.0 ab	7.8	4265 a-c
Headline 2.08EC 6 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	6.0 bc	13.0	4056 bc
Abound 2.08SC 12 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1.5 pt (9/20)	3.3 bc	3.8	5396 a
Abound 2.08SC 12 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	4.8 bc	5.8	4837 ab
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/26, 8/25) TiltBravo 1.5 pt (8/10) Bravo 720 1 pt (4th spray)	13.3 a	12.0	4069 bc
Folicur 3.6F 7.2 fl oz + PREV-AM 7.68 fl oz (7/26, 8/25) TiltBravo 1.5 pt + PREV-AM 7.68 fl oz (8/10) Bravo 720 1.5 pt + PREV-AM 7.68 fl oz (9/20)	7.5 a-c	6.5	4733 ab
LSD	**6.1**	**n.s.**	**1294**

1 Fungicides were applied at the R5 growth stage (beginning seed) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Counts of infection centers in the 2 center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by the Sclerotinia minor and included 6 in. on either side of that point.
3 Number of symptomatic plants per plot.
4 Yields are based on weight of peanuts with 7% moisture content. Peanuts were dug on 4 Oct and harvested on 10 Oct 2006.
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.

XXIV. CONTROL OF FOLIAR AND SOIL-BORNE DISEASES OF PEANUT WITH EXPERIMENTAL FUNGICIDES (LFSPOT306 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of foliar fungicides in control of early and late leaf spot, and southern stem rot of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. Spray applications began at R1 (flowering) or R3 (beginning pod) and were continued according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:

1. Untreated check
2. Bravo WeatherStik 1.5 pt/A (R3 spray, 2nd, 3rd, 4th spray)
3. Bravo WeatherStik 1.5 pt/A (R3 spray)
   Enable 2F 5.9 fl oz/A (2nd, 3rd, 4th spray)
4. Bravo WeatherStik 1.5 pt/A (R3 spray)
   Enable 2F 8 fl oz/A (2nd, 3rd, 4th spray)
5. Bravo WeatherStik 1.5 pt/A (R3 spray)
   Folicur 3.6F 7.2 fl oz/A (2nd, 3rd, 4th spray)
6. Evito 4FL 5.7 fl oz/A (R3 spray, 3rd spray)
   Bravo WeatherStik 1.5 pt/A (2nd, 4th spray)
7. Abound 2.08SC 18.3 fl oz/A (R3 spray, 3rd spray)
   Bravo WeatherStik 1.5 pt/A (2nd, 4th spray)
8. Evito 4FL 3.5 fl oz + Folicur 3.6F 3.6 fl oz/A (R3 spray, 3rd spray)
   Bravo WeatherStik 1.5 pt/A (2nd, 4th spray)
9. Evito 4FL 5.7 fl oz/A + Induce 4.8 fl oz (R3 spray, 3rd spray)
   Bravo WeatherStik 1.5 pt/A (2nd, 4th spray)
10. Bravo WeatherStik 1.5 pt/A (R1 spray, 3rd, 5th spray)
    Evito 4FL 5.7 fl oz/A (2nd, 4th spray)
11. Bravo WeatherStik 1.5 pt/A (R1 spray)
    Evito 4F 5.7 fl oz/A (2nd, 4th spray)
    Folicur 3.6F 7.2 fl oz/A (3rd, 5th spray)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Planting date and cultivar: 4 May 2006, VA 98R
4. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz A (5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
10. Harvest date: 10 Oct 2006

Table 96. Incidence of leaf spot in fungicide-treated plots.

	% leaf spot**		
Treatment, rate/A and application date*	**7 Aug**	**8 Sep**	**3 Oct**
Untreated check	21.3 a	71.3 a	98.5 a
Bravo WeatherStik 1.5 pt (7/17, 8/2, 8/22, 9/20)	3.3 cd	1.5 bc	6.0 d
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 5.9 fl oz (8/2, 8/22, 9/20)	3.8 b-d	2.3 bc	10.0 d
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 8 fl oz (8/2, 8/22, 9/20)	6.8 bc	1.3 bc	8.0 d
Bravo WeatherStik 1.5 pt (7/17) Folicur 3.6F 7.2 fl oz (8/2, 8/22, 9/20)	3.5 cd	3.5 bc	20.0 b-d
Evito 4FL 5.7 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	7.3 b	4.0 b	25.0 bc
Abound 2.08SC 18.3 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	3.0 d	2.5 bc	6.8 d
Evito 4FL 3.5 fl oz + Folicur 3.6F 3.6 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	1.3 d	2.3 bc	13.3 cd
Evito 4FL 5.7 fl oz + Induce 4.8 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	3.5 cd	2.5 bc	16.3 cd
Bravo WeatherStik 1.5 pt (6/28, 8/2, 9/20) Evito 4FL 5.7 fl oz (7/17, 8/22)	1.0 d	0.5 c	20.0 b-d
Bravo WeatherStik 1.5 pt (6/28) Evito 4F 5.7 fl oz (7/17, 8/22) Folicur 3.6F 7.2 fl oz (8/2, 9/20)	0.8 d	2.5 bc	31.3 b
LSD	**3.6**	**2.9**	**13.7**

* Fungicides were applied at the R1 (28 Jun) or R3 (17 Jul) and thereafter according to the Virginia 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 (P=0.05). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 97. Incidence of foliar disease in fungicide-treated plots.

Treatment, rate/A and application date[1]	% web blotch[2]		% defoliation[3]
	8 Sep	3 Oct	(3 Oct)
Untreated check	0.3	55.0 a	95.0 a
Bravo WeatherStik 1.5 pt (7/17, 8/2, 8/22, 9/20)	0.0	3.0 d	3.3 c
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 5.9 fl oz (8/2, 8/22, 9/20)	1.0	56.3 a	17.5 b
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 8 fl oz (8/2, 8/22, 9/20)	0.3	45.0 ab	5.3 c
Bravo WeatherStik 1.5 pt (7/17) Folicur 3.6F 7.2 fl oz (8/2, 8/22, 9/20)	0.0	40.0 b	7.5 c
Evito 4FL 5.7 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	0.5	7.5 cd	3.5 c
Abound 2.08SC 18.3 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	0.0	4.3 d	1.0 c
Evito 4FL 3.5 fl oz + Folicur 3.6F 3.6 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	0.0	9.5 cd	2.3 c
Evito 4FL 5.7 fl oz + Induce 4.8 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	0.0	6.3 d	1.3 c
Bravo WeatherStik 1.5 pt (6/28, 8/2, 9/20) Evito 4FL 5.7 fl oz (7/17, 8/22)	0.0	21.3 c	2.5 c
Bravo WeatherStik 1.5 pt (6/28) Evito 4F 5.7 fl oz (7/17, 8/22) Folicur 3.6F 7.2 fl oz (8/2, 9/20)	0.0	16.3 cd	4.3 c
LSD	**n.s.**	**13.1**	**6.6**

1 Fungicides were applied at the R1 (28 Jun) or R3 (17 Jul) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 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 98. Incidence of soil-borne disease and yield of peanuts in fungicide-treated plots.

Treatment, rate/A and application date[1]	Sclerotinia blight[2] (3 Oct)	CBR[3] (3 Oct)	Yield[4] (lb/A)
Untreated check	0.3 d	5.3	4156 d
Bravo WeatherStik 1.5 pt (7/17, 8/2, 8/22, 9/20)	5.5 ab	7.8	4368 d
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 5.9 fl oz (8/2, 8/22, 9/20)	4.5 a-c	7.8	5267 bc
Bravo WeatherStik 1.5 pt (7/17) Enable 2F 8 fl oz (8/2, 8/22, 9/20)	3.0 a-d	6.8	5281 bc
Bravo WeatherStik 1.5 pt (7/17) Folicur 3.6F 7.2 fl oz (8/2, 8/22, 9/20)	5.8 ab	7.0	5757 a-c
Evito 4FL 5.7 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	1.3 cd	5.3	5784 ab
Abound 2.08SC 18.3 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	2.0 b-d	6.5	6141 a
Evito 4FL 3.5 fl oz + Folicur 3.6F 3.6 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	6.5 a	5.0	5585 a-c
Evito 4FL 5.7 fl oz + Induce 4.8 fl oz (7/17, 8/22) Bravo WeatherStik 1.5 pt (8/2, 9/20)	5.0 a-c	7.0	5797 ab
Bravo WeatherStik 1.5 pt (6/28, 8/2, 9/20) Evito 4FL 5.7 fl oz (7/17, 8/22)	5.3 ab	8.5	5095 c
Bravo WeatherStik 1.5 pt (6/28) Evito 4F 5.7 fl oz (7/17, 8/22) Folicur 3.6F 7.2 fl oz (8/2, 9/20)	5.8 ab	11.5	5413 bc
LSD	3.9	n.s.	678

1 Fungicides were applied at the R1 (28 Jun) or R3 (17 Jul) and thereafter according to the Virginia 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 *Sclerotinia minor* and included 6 in. on either side of that point.
3 Number of symptomatic plants per plot.
4 Yields are based on weight of peanuts with 7% moisture content. Peanuts were dug on 4 Oct and harvested on 10 Oct 2006.
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.

XXV. CONTROL OF FOLIAR AND SOIL-BORNE DISEASES OF PEANUT WITH EXPERIMENTAL FUNGICIDES (LFSPOT406 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of foliar fungicides in control of early and late leaf spot, southern stem rot, and Cylindrocladium black rot of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at beginning pod (R3) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:

1. Untreated check
2. Bravo 720 1.5 pt/A (1st, 2nd, 3rd, 4th spray)
3. Topsin 4.5FL 10 fl oz/A (1st, 2nd, 3rd spray)
   Bravo 720 1.5 pt/A (4th spray)
4. MFC – T methyl 4.5AG 10 fl oz/A (1st, 2nd, 3rd spray)
   Bravo 720 1.5 pt/A (4th spray)
5. Topsin 4.5FL 10 fl oz + MFX-0650 0.5 oz/A (1st, 2nd, 3rd spray)
   Bravo 720 1.5 pt/A (4th spray)
6. MFC – T methyl 4.5AG 10 fl oz + MFX-0650 0.5 oz/A (1st, 2nd, 3rd spray)
   Bravo 720 1.5 pt/A (4th spray)
7. Abound 2.08SC 12 fl oz/A (1st, 3rd spray)
   Tilt 3.6EC 2 fl oz + Bravo 720 1 pt/A (2nd spray)
   Bravo 720 1.5 pt/A (4th spray)
8. Folicur 3.6F 7.2 fl oz/A + Induce 2.4 fl oz/A (1st, 2nd, 3rd spray)
   Bravo 720 1.5 pt/A (4th spray)
9. Folicur 3.6F 7.2 fl oz/A + Induce 2.4 fl oz/A (1st, 3rd spray)
   Tilt 3.6EC 2 fl oz + Bravo 720 1 pt/A (2nd spray)
   Bravo 720 1.5 pt/A (4th spray)
10. Headline 2.09EC 9 fl oz/A (1st, 3rd spray)
    Tilt 3.6EC 2 fl oz + Bravo 720 1 pt/A (2nd spray)
    Bravo 720 1.5 pt/A (4th spray)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Planting date and cultivar: 4 May 2006, VA 98R
4. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Pre-plant: Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence: Dual II Magnum 1 pt + Strongarm 0.23 fl oz A (5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
10. Harvest date: 10 Oct 2006

Table 99. Incidence of leaf spot and defoliation in fungicide-treated plots.

Treatment, rate/A and application date[1]	% leaf spot[2]			% defoliation[3]
	7 Aug	8 Sep	3 Oct	(3 Oct)
Untreated check	25.8 a	65.0 a	97.5 a	88.8 a
Bravo 720 1.5 pt (7/17, 8/2, 8/22, 9/20)	4.5 bc	8.8 c	2.0 de	1.0 d
Topsin 4.5FL 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	9.5 b	40.0 b	71.3 c	70.0 c
MFC – T methyl 4.5AG 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	8.5 b	46.3 b	71.3 c	81.3 b
Topsin 4.5FL 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	8.8 b	48.8 b	77.5 bc	71.3 c
MFC – T methyl 4.5AG 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	9.3 b	46.3 b	86.5 b	75.0 bc
Abound 2.08SC 12 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	3.0 c	4.5 c	20.0 d	6.3 d
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	1.8 c	3.5 c	7.5 de	4.0 d
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	0.8 c	2.5 c	8.8 de	2.5 d
Headline 2.09EC 9 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	1.0 c	2.3 c	1.0 e	0.3 d
LSD	**5.4**	**13.3**	**10.3**	**6.2**

1 Fungicides were applied at R3 (beginning pod) and thereafter according to the Virginia 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.
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 100. Incidence of web blotch, Sclerotinia blight, and Cylindrocladium black rot (CBR) in fungicide-treated plots.

Treatment, rate/A and application date[1]	%web blotch[2] 8 Sep	%web blotch[2] 3 Oct	Sclerotinia[3] (3 Oct)	CBR[4] (3 Oct)
Untreated check	1.0 cd	67.5 ab	1.3 d	13.0
Bravo 720 1.5 pt (7/17, 8/2, 8/22, 9/20)	0.1 d	5.0 d	14.8 a	9.5
Topsin 4.5FL 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	1.3 b-d	65.0 ab	2.8 b-d	12.0
MFC – T methyl 4.5AG 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	2.5 ab	63.8 ab	3.0 b-d	10.5
Topsin 4.5FL 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	3.3 a	70.0 a	3.5 b-d	10.3
MFC – T methyl 4.5AG 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	1.8 bc	66.3 ab	2.3 cd	10.8
Abound 2.08SC 12 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt x(8/2) Bravo 720 1.5 pt (9/20)	0.3 d	58.8 b	12.0 a	6.3
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	0.5 cd	36.3 c	9.3 a-c	8.0
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	0.5 cd	27.5 c	10.0 ab	6.5
Headline 2.09EC 9 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	0.0 d	0.6 d	7.8 ab	6.3
LSD	**1.4**	**11.7**	**7.6**	**n.s.**

1 Fungicides were applied at R3 (beginning pod) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Web blotch rating scale: 0 = none; 100 = blotches on all leaflets.
3 Number of symptomatic 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 *Sclerotinia minor* 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). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 101. Yield of peanuts in fungicide-treated plots.

Treatment, rate/A and application date*	Yield** (lb/A)
Untreated check	2798 d
Bravo 720 1.5 pt (7/17, 8/2, 8/22, 9/20)	3998 bc
Topsin 4.5FL 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	3721 cd
MFC – T methyl 4.5AG 10 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	3471 cd
Topsin 4.5FL 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	3497 cd
MFC – T methyl 4.5AG 10 fl oz + MFX-0650 0.5 oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	3880 bc
Abound 2.08SC 12 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	4658 ab
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/2, 8/22) Bravo 720 1.5 pt (9/20)	5133 a
Folicur 3.6F 7.2 fl oz + Induce 2.4 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	4948 a
Headline 2.09EC 9 fl oz (7/17, 8/22) Tilt 3.6EC 2 fl oz + Bravo 720 1 pt (8/2) Bravo 720 1.5 pt (9/20)	5239 a
LSD	**933**

* Fungicides were applied at R3 (beginning pod) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 10 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05).

XXVI. CONTROL OF FOLIAR AND SOIL-BORNE DISEASES OF PEANUT WITH EXPERIMENTAL FUNGICIDES (LFSPOT506 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of foliar fungicides in control of early and late leaf spot, southern stem rot, and Cylindrocladium black rot of peanut

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 40-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: The in-furrow (F) application was applied to the seed furrow in a volume of 5 gal/A at planting. Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. Treatments were applied at beginning pod (R3) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program (R7).

D. TREATMENTS:
1. Untreated check
2. Proline 480SC 5.7 fl oz/A (F)
   Provost 433SC 8 fl oz/A (1st, 2nd, 3rd spray)
   Echo 720 1.5 pt/A (4th spray)
3. Provost 433SC 8 fl oz/A (1st, 2nd, 3rd foliar spray)
   Echo 720 1.5 pt/A (4th spray)
4. Provost 433SC 5 fl oz/A (1st, 2nd, 3rd foliar spray)
   Echo 720 1.5 pt/A (4th spray)
5. Provost 433SC 10.7 fl oz/A (1st, 2nd, 3rd foliar spray)
   Echo 720 1.5 pt/A (4th spray)
6. Folicur 3.6F 7.2 fl oz/A (1st, 2nd, 3rd spray)
   Echo 720 1.5 pt/A (4th spray)

E. ADDITIONAL INFORMATION:
1. Location: Tidewater AREC Research Farm, Hare Rd., Suffolk
2. Crop history: peanut 2003, cotton 2004, corn 2005
3. Planting date and cultivar: 16 May 2006, VA 98R
4. Soil fertility report:

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy fine sand

5. Herbicide: Pre-plant: Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr, 5 May)
6. Cylindrocladium black rot control: Vapam 7.5 gal/A (7 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
10. Harvest date: 24 Oct 2006

Table 102. Incidence of foliar disease and defoliation in fungicide-treated plots.

Treatment, rate/A, application method and date[1]	% leaf spot[2] 7 Aug	% leaf spot[2] 19 Sep	% web blotch[2] (19 Sep)	% defoliation[3] (19 Sep)
Untreated check	31.3 a	82.5 a	21.3 a	18.8 a
Proline 480SC 5.7 fl oz (F, 5/16) Provost 433SC 8 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	1.5 b	5.8 b	2.8 b	0.3 b
Provost 433SC 8 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	1.5 b	6.3 b	3.0 b	0.0 b
Provost 433SC 5 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	3.0 b	5.8 b	3.5 b	0.3 b
Provost 433SC 10.7 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	2.0 b	7.0 b	3.0 b	0.5 b
Folicur 3.6F 7.2 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	1.3 b	5.0 b	5.0 b	0.3 b
LSD	**4.0**	**6.3**	**7.7**	**8.6**

1 F=in furrow. Fungicides were applied at R3 (beginning pod) and thereafter according to the Virginia 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). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 103. Incidence of soil-borne disease and yield in fungicide-treated plots.

Treatment, rate/A, application method and date[1]	CBR[2] (19 Sep)	Sclerotinia[3] (19 Sep)	Yield[4] (lb/A)
Untreated check	4.8	1.8	2562
Proline 480SC 5.7 fl oz (F, 5/16) Provost 433SC 8 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	1.5	16.8	3165
Provost 433SC 8 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	6.3	13.0	3571
Provost 433SC 5 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	10.0	13.5	3095
Provost 433SC 10.7 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	6.5	13.3	3977
Folicur 3.6F 7.2 fl oz (7/17, 8/3, 8/22) Echo 720 1.5 pt (9/20)	10.8	13.3	3548
LSD	**n.s.**	**n.s.**	**n.s.**

1 F=in furrow. Fungicides were applied at R3 (beginning pod) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Number of symptomatic plants per plot.
3 Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by the Sclerotinia minor and included 6 in. on either side of that point.
4 Yields are weight of peanuts with 7% moisture. Peanuts were dug on 16 Oct and harvested on 24 Oct.
Means in column are not significantly different according to Fisher's Protected LSD (P=0.05).

XXVII. RESPONSE OF PEANUTS TO FOLIAR SPRAYS OF FUNGICIDE WITH AND WITHOUT CALCIUM THIOSULFATE (LFSPOT606 - Duke Farm, Suffolk)

A. PURPOSE: To assess the benefit of using foliar applied calcium thiosulfate (CaTs) in substitution for landplaster in peanut production

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. TREATMENTS: Foliar applications were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at flowering (R1) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

1. Untreated check
2. Echo 720 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
3. Echo 720 1.5 pt + CaTs 1.25 gal/A (1st, 2nd, 3rd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
4. Echo 720 1.5 pt + CaTs 2.5 gal/A (1st, 2nd, 3rd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
5. Echo 720 1.5 pt + CaTs 5 gal/A (1st, 2nd, 3rd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
6. Folicur 3.6F 7.2 fl oz + CaTs 2.5 gal/A (1st, 2nd, 3rd spray)
   Echo 720 1.5 pt/A + CaTs 2.5 gal/A (4th spray)
   Echo 720 1.5 pt/A (5th spray)
7. Abound 2.08SC 18 fl oz + CaTs 2.5 gal/A (1st, 3rd spray)
   Echo 720 1.5 pt/A + CaTs 2.5 gal/A (2nd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
8. Headline 2.09EC 9 fl oz + CaTs 2.5 gal/A (1st, 3rd spray)
   Echo 720 1.5 pt/A + CaTs 2.5 gal/A (2nd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
9. Tilt 2 fl oz + Echo 720 1 pt + CaTs 2.5 gal/A (1st, 3rd spray)
   Echo 720 1.5 pt/A + CaTs 2.5 gal/A (2nd, 4th spray)
   Echo 720 1.5 pt/A (5th spray)
10. Echo 720 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
    Granular 420 Landplaster 1100 lb/A (Broadcast at R1 stage)

D. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Longstreet Lane, Suffolk
2. Crop history: cotton 2005, 2004
3. Planting date and cultivar: 5 May 2006, VA 98R
4. Soil fertility report:

pH	6.4	K	54 ppm
Ca	270 ppm	Zn	0.5 ppm
Mg	31 ppm	Mn	1.5 ppm
P	25 ppm	Soil type	Nansemond fine sandy loam

5. Herbicide: Pre-plant: Prowl H20 1 pt/A (13 Apr)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (18 Apr)
   Pre-emergence: Dual II Magnum 1.0 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1.0 pt/A (5 May)
6. Cylindrocladium black rot control: Sectagon 7.5 gal/A (13 Apr)
7. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun, 2 Aug), 10 oz/A (8 Aug)
9. Additional crop management:
   a. Liquid boron (9%) 1 qt/A (13 Apr)
   b. Cultivation: 29 Jun
   c. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
10. Harvest date: 25 Oct

Table 104. Incidence of early leaf spot and severity of phytotoxicity in fungicide-treated plots.

	% leaf spot[2]		Phytotoxicity[3] (0-10)	
Treatment, rate/A and application date[1]	**7 Aug**	**18 Sep**	**7 Aug**	**18 Sep**
Untreated check	0.3	6.0 a	0.0 c	0.0 c
Echo 720 1.5 pt (6/23, 7/7, 7/24, 8/8, 8/23, 9/20)	0.3	0.6 b	0.0 c	0.3 bc
Echo 720 1.5 pt + CaTs 1.25 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.5	0.1 b	0.0 c	0.0 c
Echo 720 1.5 pt + CaTs 2.5 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.6	1.8 b	1.8 b	0.5 bc
Echo 720 1.5 pt + CaTs 5 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.8	0.3 b	3.3 a	3.3 a
Folicur 3.6F 7.2 fl oz + CaTs 2.5 gal (6/23, 7/7, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (8/8) Echo 720 1.5 pt (8/23, 9/20)	6.9	0.3 b	2.0 b	0.6 bc
Abound 2.08SC 18 fl oz + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.5	0.3 b	1.3 b	0.5 bc
Headline 2.09EC 9 fl oz + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.6	0.6 b	1.3 b	0.8 b
Tilt 2 fl oz + Echo 720 1 pt + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	0.6	0.0 b	1.8 b	0.6 bc
Echo 720 1.5 pt (6/23, 7/7, 7/24, 8/8, 8/23, 9/20) Granular 420 Landplaster 1100 lb (6/23)	0.1	0.1 b	0.0 c	0.3 bc
LSD	**n.s.**	**2.5**	**0.8**	**0.7**

1 Fungicides were applied at the R1 (flowering) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Leaf spot rating scale: 0=none; 100=spots on all leaflets.
3 Phytotoxicity rating scale: 0=no damage, 10=severe damage.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD, (P=0.05), "n.s." = not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 105. Yield of peanuts in fungicide-treated plots.

Treatment, rate/A and application date*	Yield (lb/A)**
Untreated check	3276 b
Echo 720 1.5 pt (6/23, 7/7, 7/24, 8/8, 8/23, 9/20)	3710 ab
Echo 720 1.5 pt + CaTs 1.25 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	3366 b
Echo 720 1.5 pt + CaTs 2.5 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	3901 ab
Echo 720 1.5 pt + CaTs 5 gal (6/23, 7/7, 7/24, 8/8) Echo 720 1.5 pt (8/23, 9/20)	3315 b
Folicur 3.6F 7.2 fl oz + CaTs 2.5 gal (6/23, 7/7, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (8/8) Echo 720 1.5 pt (8/23, 9/20)	4271 a
Abound 2.08SC 18 fl oz + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	4437 a
Headline 2.09EC 9 fl oz + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	4207 a
Tilt 2 fl oz + Echo 720 1 pt + CaTs 2.5 gal (6/23, 7/24) Echo 720 1.5 pt + CaTs 2.5 gal (7/7, 8/8) Echo 720 1.5 pt (8/23, 9/20)	4156 a
Echo 720 1.5 pt (6/23, 7/7, 7/24, 8/8, 8/23, 9/20) Granular 420 Landplaster 1100 lb (6/23)	4373 a
LSD	**774**

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

** Yields are based on weight of peanuts with 7% moisture. Peanuts were dug on 16 Oct and harvested on 25 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD, (P=0.10).

XXVIII. EVALUATION OF IN-FURROW AND FOLIAR FUNGICIDES FOR DISEASE CONTROL IN PEANUT (CBRLFSPOT106 - Tidewater AREC, Suffolk)

A. PURPOSE: To compare the efficacy of in-furrow and foliar fungicides to soil fumigation for control of CBR and other diseases of peanut

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Two 35-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 4 seed/row ft

C. APPLICATION OF TREATMENTS: Vapam 42% (metam sodium) was applied with a chisel (C) 8 in. deep on 7 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 at planting. Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at pegging (R2) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:

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

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC, Holland Rd., Suffolk
2. Crop history: corn 2005, cotton 2004, peanut 2003
3. Planting date and cultivar: 2 May 2006, VA 98R
4. Soil fertility report (Dec. 2005)

pH	5.9	K	108 ppm
Ca	544 ppm	Zn	0.4 ppm
Mg	40 ppm	Mn	2.4 ppm
P	32 ppm	Soil type	Nansemond fine sandy loam

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Pursuit 70DG 1.44 oz/A (5 May)
6. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
7. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A (10 Jul)
8. Sclerotinia blight control: Omega 1 pt/A (20 Jul, 9 Aug); Endura 12 fl oz/A (21 Sep)
9. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
10. Harvest date: 3 Oct 2006

Table 106. Plant emergence and incidence of Cylindrocladium black rot (CBR).

Treatment, rate/A and application date[1]	Plants/ft[2] (30 May)	CBR[3]		
		21 Jul	8 Aug	19 Sep
Echo 720SC 1.5 pt (6/30, 7/18, 8/3, 8/23, 9/21)	2.91	3.5	17.8 a	57.3 a
Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	3.03	4.3	24.8 a	53.5 ab
Proline 480SC 5.7 fl oz (F, 5/2) Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	2.84	1.0	16.8 a	44.8 b
Vapam 42% 7.5 gal (C, 4/7) Proline 480SC 5.7 fl oz (F, 5/2) Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	2.92	0.8	1.5 b	22.3 c
LSD	**n.s.**	**n.s.**	**12.4**	**10.3**

1 C=chisel application, F=in furrow. Fungicides were applied at R2 (early pegging) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Determined from counts of two 35-ft rows per plot.
3 Number 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 107. Effect of treatments on incidence of other diseases and yield of peanuts.

Treatment, rate/A and application date[1]	TSWV[2] (21 Jul)	Sclerotinia blight[3] (21 Jul)	% leaf spot[4] (8 Aug)	Yield[5] (lb/A)
Echo 720SC 1.5 pt (6/30, 7/18, 8/3, 8/23, 9/21)	8.3	1.8	0.3	1026 b
Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	11.0	3.5	0.3	1410 b
Proline 480SC 5.7 fl oz (F, 5/2) Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	7.3	4.3	0.3	1897 ab
Vapam 42% 7.5 gal (C, 4/7) Proline 480SC 5.7 fl oz (F, 5/2) Provost 433SC 8 fl oz (6/30, 7/18, 8/3, 8/23) Echo 720SC 1.5 pt (9/21)	6.3	2.8	0.0	2679 a
LSD	**n.s.**	**n.s.**	**n.s.**	**907**

1 C=chisel application, F=in furrow. Fungicides were applied at R2 (early pegging) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).
2 Number symptomatic plants per plot.
3 Counts of infection centers in the two center rows of each plot or a total of 60 ft of row.
4 Leaf spot rating scale: 0=none; 100=spots on all leaflets.
5 Yields are weight of peanuts with 7% moisture. Peanuts were dug on 28 Sep and harvested 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. Arcsine transformation was performed for analysis of percentage data.

XXIX. EVALUATION OF IN-FURROW AND FOLIAR FUNGICIDES FOR DISEASE CONTROL IN PEANUT (CBRLFSPOT206 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare the efficacy of in-furrow and foliar fungicides to soil fumigation for control of CBR and other diseases of peanut

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
2. Two 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 3.5 seed/row ft

C. APPLICATION OF TREATMENTS: Vapam 42% was applied with a chisel (C) 8 in. under rows on 7 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 at planting. Foliar sprays were applied with three, $D_2$23 nozzles/row delivering 15 gal/A. The initial application was applied at flowering (R1) and thereafter according to the Virginia Peanut Leaf Spot Advisory Program until beginning maturity (R7).

D. TREATMENTS:
1. Echo 720SC 1.5 pt/A (1st, 2nd, 3rd, 4th, 5th spray)
2. Provost 433SC 8 fl oz/A (1st, 2nd, 3rd, 4th spray)
   Echo 720SC 1.5 pt/A (5th spray)
3. Proline 480SC 5.7 fl oz/A (F)
   Provost 433SC 8 fl oz/A (1st, 2nd, 3rd, 4th spray)
   Echo 720SC 1.5 pt/A (5th spray)
4. Vapam 7.5 gal/A (C)
   Proline 480SC 5.7 fl oz (F)
   Provost 433SC 8 fl oz/A (1st, 2nd, 3rd, 4th spray)
   Echo 720SC 1.5 pt/A (5th spray)

E. ADDITIONAL INFORMATION:
1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: wheat/soybean 2003, peanut 2004, wheat/soybean 2005
3. Planting date and cultivar: 27 Apr 2006, VA 98R
4. Soil fertility report:

pH	6.5	K	42 ppm
Ca	344 ppm	Zn	0.8 ppm
Mg	71 ppm	Mn	2.6 ppm
P	33 ppm	Soil type	Goldsboro fine sandy loam

5. Herbicide: Pre-plant – Prowl 1 pt/A (27 Mar)
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1 pt + Strongarm 0.23 fl oz + Gramoxone Inteon 1 pt/A (5 May)
   Post-emergence – Pursuit 70DG 1.44 oz/A (5 May)
6. Insecticide: Orthene 97S 8 oz/A (31 May)
   Lorsban 15G 13 lb/A (29 Jun)
7. Acaricide: Danitol 6 oz/A (30 Jun), 10 oz/A (10 Jul)
8. Additional crop management:
   a. Liquid boron 1 qt/A (27 Mar)
   b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
   c. Cultivation: 29 Jun
   d. Liquid Mn 3 pt/A (7 Jul, 20 Jul)
   e. Sol-U-Gro 5 lb/A (20 Jul)
   f. Irrigation: ca. 0.75 in. (11 Aug, 14 Aug)
9. Harvest date: 11 Oct 2006

Table 108. Effect of treatments on seedling emergence and incidence of Cylindrocladium black rot (CBR) in peanuts.

Treatment, rate/A and application timing[1]	Plants/ft[2] (25 May)	CBR[3] 8 Aug	CBR[3] 17 Sep	CBR[3] 4 Oct
Echo 720SC 1.5 pt/A (6/30, 7/17, 8/2, 8/22, 9/20)	2.52 b	13.8 b	35.5 a	40.8 a
Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	2.69 a	19.3 a	35.8 a	43.0 a
Proline 480SC 5.7 fl oz/A (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	2.41 b	3.5 c	18.0 b	29.0 b
Vapam 7.5 gal/A (C, 4/7) Proline 480SC 5.7 fl oz (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	2.50 b	0.5 c	7.3 c	15.0 b
LSD	**0.14**	**4.3**	**7.3**	**10.4**

1 F=in furrow, C=chisel application 2 weeks pre-plant (4/7). Fungicide sprays were applied at flowering (R1) and thereafter according to the Virginia Peanut Leaf Spot Advisory.
2 Determined from counts of two 35-ft rows per plot.
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 (P=0.05).

Table 109. Incidence of early leaf spot and tomato spotted wilt virus (TSWV) in peanuts.

Treatment, rate/A and application timing[1]	% leaf spot[2] 8 Aug	% leaf spot[2] 17 Sep	% leaf spot[2] 4 Oct	TSWV[3] (17 Sep)
Echo 720SC 1.5 pt/A (6/30, 7/17, 8/2, 8/22, 9/20)	1.3	0.1	1.0	2.0
Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	1.5	0.3	0.6	1.3
Proline 480SC 5.7 fl oz/A (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	1.0	0.3	0.6	2.0
Vapam 7.5 gal/A (C, 4/7) Proline 480SC 5.7 fl oz (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	0.5	0.3	0.8	1.0
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**

1 F=in furrow (4/27), C=chisel application (4/7). Fungicide sprays were applied at flowering (R1) and thereafter according to the Virginia Peanut Leaf Spot Advisory.
2 Leaf spot rating scale: 0=none; 100=spots on all leaflets.
3 Number of symptomatic plants per plot.
Means in columns were 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 110. Effect of treatments on web blotch, defoliation, and yield of peanuts.

Treatment, rate/A and application timing[1]	% web blotch[2] (4 Oct)	% defoliation[3] (4 Oct)	Yield[4] (lb/A)
Echo 720SC 1.5 pt/A (6/30, 7/17, 8/2, 8/22, 9/20)	0.3	0.3	1741 c
Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	2.1	0.0	1936 c
Proline 480SC 5.7 fl oz/A (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	0.6	0.0	2828 b
Vapam 7.5 gal/A (C, 4/7) Proline 480SC 5.7 fl oz (F, 4/27) Provost 433SC 8 fl oz/A (6/30, 7/17, 8/2, 8/22) Echo 720SC 1.5 pt/A (9/20)	0.8	0.0	4109 a
LSD	**n.s.**	**n.s.**	**777**

1 F=in furrow, C=chisel application 2 weeks pre-plant (4/7). Foliar sprays of fungicides began at flowering (R1) and were continued according to the Virginia Peanut Leaf Spot Advisory.
2 Web blotch rating scale: 0=none; 100=blotches 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 5 Oct and harvested on 11 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), "n.s."=not significant. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

XXX. EVALUATION OF THE T4 BULKED GENERATION OF GENETICALLY TRANSFORMED PEANUT LINES WITH THE OXALATE OXIDASE GENE FOR RESISTANCE TO LEAF SPOT (SCLTLFSPOT06 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare agronomic traits and levels of disease resistance in parent cultivars to T4 genetically transformed peanut lines

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks of entries in each group separated by 10-ft alleyways
2. Two 35-ft rows per plot
3. Seed were spaced 4 to 5 in. apart at planting

C. CULTIVARS (T0-T1-T2-T3), T4 SEED BULKED FROM 2005 SCLT105 PLOTS:

1. WILSON (non-transformed)
2. W73-27-B-B
3. W171-17-B-B
4. PERRY (non-transformed)
5. P53-28-B-B
6. P39-8-B-B
7. NC7 (non-transformed)
8. N70-8-B-B
9. N70-6-B-B

D. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: corn 2005, cotton 2004, peanut 2003
3. Planting date: 2 May 2006
4. Soil fertility report: (Dec 2005)

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy sand

5. Herbicide: Pre-plant – Prowl H20 1.0 pt/A (27 Mar);
   Dual II Magnum 1.0 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1.0 pt + Strongarm 0.23 fl oz/A + Gramoxone
   Inteon 1.0 pt/A (5 May)
   Post-emergence – Poast Plus 1 pt/A (20 Jul)
7. Cylindrocladium black rot control: Vapam 7.5 gal/A, two applications (29 Mar, 7 Apr)
8. Insecticide: Temik 7 lbs/A (2 May); Orthene 8 oz/A (31 May);
   Lorsban 15 G 13lb/A (29 Jun)
9. Acaricide: Danitol 6 oz/A (30 Jun); Danitol 10 oz/A (8 Jul)
10. Cercospora leaf spot control: Bravo 1.5 pt/A (28 Jul, 21 Sep)
11. Additional crop management:
    a. Liquid boron 1.0 qt/A (27 Mar)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Liquid Mn: 3.0 pt/A (7, 20 Jul)
    d. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
    e. Cultivation: 29 Jun
12. Harvest date: 12 Oct

Table 111. Stand count, flowering, and oxalate oxidase expression in the T4 generation of genetically transformed peanut lines containing the barley oxalate oxidase gene.

Trt	T_0-T_1-T_2-T_3	Stand Count (30 May)	% flower (16 Jun)	Oxalate oxidase expression (25 Jul)*	Oxalate oxidase expression (19 Sep)*
1	Wilson	149	53.8	0.024 cd	0.026 d
2	W73-27-B-B	151	47.5	0.075 b	0.173 bc
3	W171-17-B-B	151	43.8	0.045 b-d	0.147 c
4	Perry	140	30.0	0.015 d	0.019 d
5	P53-28-B-B	163	62.5	0.047 b-d	0.162 bc
6	P39-8-B-B	156	30.0	0.168 a	0.389 a
7	NC 7	160	28.8	0.023 cd	0.021 d
8	N70-8-B-B	129	45.0	0.055 bc	0.247 b
9	N70-6-B-B	136	36.3	0.066 b	0.175 bc

* Oxalate oxidase expression was measured in leaf samples of 8 plants/plot using a colorimetric detection method to measure hydrogen peroxide released from oxalic acid substrate 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 are not significantly different according to Student-Newman-Keuls test (P=0.05).

Table 112. Sclerotinia blight resistance of non-transformed parent and T4 generation of genetically transformed peanut lines containing the barley oxalate oxidase gene.

		Sclerotinia blight*				
Trt	T_0-T_1-T_2-T_3	20 Jul	23 Aug	20 Sep	4 Oct	AUDPC
1	Wilson	0.50	2.50 b	15.5 b	22.8 a	571 b
2	W73-27-B-B	0.00	0.00 b	2.5 c	5.0 c	88 c
3	W171-17-B-B	0.00	0.25 b	4.5 c	7.5 c	155 c
4	Perry	0.00	1.50 b	10.5 b	16.8 b	384 b
5	P53-28-B-B	0.00	0.00 b	1.5 c	3.8 c	58 c
6	P39-8-B-B	0.00	0.25 b	1.5 c	2.5 c	57 c
7	NC 7	0.25	5.75 a	21.3 a	25.8 a	809 a
8	N70-8-B-B	0.75	0.75 b	3.0 c	2.3 c	115 c
9	N70-6-B-B	0.00	0.25 b	3.0 c	2.5 c	88 c
	LSD	ns	2.81	5.8	5.7	228

* Counts of infection centers in 2-row plot or a total of 70 ft of row. An infection center was a point of active growth by Sclerotinia minor and included 6 in. on either side of that point. AUDPC is area under disease progress curve.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05).

Table 113. Susceptibility of non-transformed parent and T4 generation of genetically transformed peanut lines containing the barley oxalate oxidase gene to TSWV and foliar diseases.

	Tomato spotted wilt[1]		Yellowed[1]	Early leaf spot (%)[2]			Web blotch (%)[2]		Defoliation (%)[3]	
T_0-T_1-T_2-T_3	20 Jul	23 Aug	20 Sep	23 Aug	20 Sep	4 Oct	20 Sep	4 Oct	20 Sep	4 Oct
Wilson	7.00	5.25	0.5	6.75 ab	10.0 b	42.5	50.0 b	75.0 ab	3.0 cd	40.0 b
W73-27-B-B	4.00	3.50	0.0	3.25 cd	11.3 b	47.5	78.8 a	72.5 a-c	11.8 a	72.5 a
W171-17-B-B	4.25	4.00	0.8	3.50 cd	10.0 b	33.8	72.5 a	81.3 a	8.5 ab	63.8 a
Perry	3.25	5.75	1.3	6.00 a-c	18.8 a	52.5	20.0 cd	56.3 cd	0.1 d	20.0 d
P53-28-B-B	3.75	4.25	0.0	2.50 d	10.0 b	52.5	70.0 a	63.8 bc	12.0 a	68.8 a
P39-8-B-B	3.75	5.25	1.5	8.75 a	20.0 a	53.8	13.8 d	43.8 d	0.5 d	25.0 cd
NC 7	5.00	7.25	0.8	5.25 b-d	18.8 a	38.8	42.5 b	63.8 bc	6.3 bc	36.3 b
N70-8-B-B	5.00	6.25	1.8	4.50 b-d	23.8 a	42.5	38.8 bc	71.3 a-c	2.3 cd	38.8 b
N70-6-B-B	5.00	4.75	0.8	3.00 cd	21.3 a	47.5	33.8 bc	68.8 a-c	1.5 cd	32.5 bc
LSD	**n.s.**	**n.s.**	**n.s.**	**3.24**	**7.4**	**n.s.**	**19.6**	**16.7**	**5.3**	**11.1**

1 Counts of plants per plot with symptoms.
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).

Table 114. Yield and susceptibility to southern stem rot and Cylindrocladium black rot of non-transformed parent and T4 generation of genetically transformed peanut lines containing the barley oxalate oxidase gene.

		Southern stem rot[1]			Cylindrocladium black rot[2]			Yield[3]
Trt	T_0-T_1-T_2-T_3	23 Aug	20 Sep	4 Oct	23 Aug	20 Sep	4 Oct	(lb/A)
1	Wilson	2.5 ab	1.5 a	0.5	0.00	2.5	2.8 b	4192 bc
2	W73-27-B-B	0.8 bc	0.3 bc	0.0	0.50	3.3	2.8 b	4521 bc
3	W171-17-B-B	0.5 bc	0.0 c	0.0	1.25	7.3	7.8 a	4179 bc
4	Perry	2.0 a-c	0.5 bc	0.0	0.25	1.8	2.0 b	4642 a
5	P53-28-B-B	1.5 bc	1.5 a	1.0	1.00	4.5	5.5 ab	3814 c
6	P39-8-B-B	0.0 c	0.3 bc	0.0	0.00	3.3	2.0 b	4703 a
7	NC 7	3.8 a	1.5 a	0.3	0.75	6.0	5.8 ab	4021 c
8	N70-8-B-B	0.3 c	1.0 ab	0.0	0.25	4.0	5.0 ab	4703 a
9	N70-6-B-B	1.3 bc	1.5 a	0.0	0.00	4.5	5.8 ab	4630 a
	LSD	**2.0**	**0.9**	**n.s.**	**n.s.**	**n.s.**	**3.8**	**398**

1 Counts of infection centers in 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.
2 Number of symptomatic and/or dead plants per plot.
3 Yields are weights of peanuts with 7% moisture. Peanuts were dug on 4 Oct and harvested on 12 Oct.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05).

XXXI. EVALUATION OF THE T4 BULKED GENERATION OF GENETICALLY TRANSFORMED PEANUT LINES WITH THE OXALATE OXIDASE GENE (SCLT106 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare agronomic traits and Sclerotinia blight resistance of parent cultivars to T4 genetically transformed peanut lines

B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks of entries in each group with 10-ft alleyways between replications
2. Two 30-ft rows per plot
3. Seed were spaced 4 to 5 in. apart at planting.
4. Disease ratings taken counts of two 30-ft rows

C. CULTIVARS (T0-T1-T2-T3), T4 SEED BULKED FROM SCLT205/SCLT105 PLOTS

Wilson

1. WILSON (non-transformed)
2. W14-10-2-B
3. W59-8-2-B
4. W171-17-15-B
5. W73-27-B-B
6. W171-17-B-B

Perry

1. PERRY (non-transformed)
2. P98 (N6-1-10)-B
3. P97(N6-2-8)-B
4. P39-7-9-B
5. P53-30-21-B
6. P99(N6-4-14)-B
7. P53-28-B-B
8. P39-8-B-B

NC-7

1. NC7 (non-transformed)
2. N70-8-24-B
3. N99(P60-29-10)-B
4. N70-8-B-B
5. N70-6-B-B

D. ADDITIONAL INFORMATION:
1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: corn 2005, cotton 2004, peanut 2003
3. Planting date: May 2, 2006
4. Soil fertility report: (Dec 2005)

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy sand

5. Herbicide: Pre-plant – Prowl H20 1.0 pt/A (27 Mar);
Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
Pre-emergence – Dual II Magnum 1.0 pt + Strongarm 0.23 fl oz/A + Gramoxone
Inteon 1.0 pt/A (5 May)
Post-emergence – Poast Plus 1 pt/A (20 Jul)
6. CBR control: Vapam 7.5 gal/A, two applications (29 Mar, 7 Apr)
7. Insecticide: Temik 7 lbs/A (2 May); Orthene 8 oz/A (31 May);
Lorsban 15 G 13lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); Danitol 10 oz/A (8 Jul)
9. Leaf spot control: Folicur 7.2 fl oz/A + Induce 1.2 fl oz/A (19 Jul)
Bravo 1.5 pt/A (4 Aug, 23 Aug, 8 Sep)

10. Additional crop management:
    a. Liquid boron 1.0 qt/A (27 Mar)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Liquid Mn: 3.0 pt/A (7 Jul, 20 Jul)
    d. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
    e. Cultivation: 29 Jun
11. Harvest date:
    a. Single plants: Wilson 10 Oct; NC 7 and Perry 11 Oct
    b. Whole plots: Wilson 26 Oct; NC 7 26, 27 Oct; Perry 31 Oct rep 4, 1 Nov reps 1, 3, and 2 Nov rep 2

Table 115. Gene expression and Sclerotinia blight resistance in parent variety and T4 genetically transformed peanut lines containing the barley oxalate oxidase gene, individual plant evaluation.

			Oxalate oxidase expression*		Sclerotinia blight severity**	
Parent	**Trt**	**T_0-T_1-T_2-T_3**	**8 Aug**	**11 Sep**	**20 Sep**	**9 Oct**
NC-7	1	NC7 (non-transformed)	0.018 b	0.026 d	0.90 a	1.85 a
	2	N70-8-24-B	0.246 a	0.764 a	0.03 c	0.05 c
	3	N99(P60-29-10)-B	0.260 a	0.834 a	0.00 c	0.13 c
	4	N70-8-B-B	0.188 a	0.512 b	0.18 bc	0.38 bc
	5	N70-6-B-B	0.097 b	0.291 c	0.33 b	0.73 b
		LSD	**0.084**	**0.141**	**0.30**	**0.41**
Perry	1	Perry (non-transformed)	0.017 d	0.020 d	0.45 a	0.90 a
	2	P98(N6-1-10)-B	0.304 b	0.561 a	0.03 b	0.05 b
	3	P97(N6-2-8)-B	0.307 b	0.579 a	0.00 b	0.03 b
	4	P39-7-9-B	0.283 b	0.590 a	0.00 b	0.03 b
	5	P53-30-21-B	0.058 d	0.195 c	0.00 b	0.00 b
	6	P99(N6-4-14)-B	0.377 a	0.528 a	0.00 b	0.00 b
	7	P53-28-B-B	0.050 d	0.194 c	0.03 b	0.13 b
	8	P39-8-B-B	0.199 c	0.334 b	0.03 b	0.08 b
		LSD	**0.059**	**0.100**	**0.16**	**0.24**
Wilson	1	Wilson (non-transformed)	0.015 c	0.019 d	1.03 a	2.03 a
	2	W14-10-2-B	0.269 a	0.441 a	0.08 cd	0.38 c
	3	W59-8-2-B	0.087 b	0.299 b	0.33 bc	0.35 c
	4	W171-17-15-B	0.075 b	0.237 bc	0.40 b	1.00 b
	5	W73-27-B-B	0.064 b	0.183 c	0.03 d	0.25 c
	6	W171-17-B-B	0.061 b	0.222 bc	0.25 b-d	0.65 bc
		LSD	**0.038**	**0.101**	**0.30**	**0.43**

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

** Disease severity rating: 0 = no disease 1 = limited to no more than 10% of limbs with disease, 2 = 11 to 50% of limbs with disease, 3 = 51 to 100% of limbs with disease.

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

Table 116. Susceptibility of non-transformed parent and T4 genetically transformed peanut lines with the barley oxalate oxidase gene to tomato spotted wilt, whole plot evaluation.

Parent	Trt	T_0-T_1-T_2-T_3	Stand count (plants/ft) (31 May)	% flower (16 Jun)	TSWV* 19 Jun	TSWV* 28 Jul	TSWV* 23 Aug
NC-7	1	NC7 (non-transformed)	2.31 a	31.3	0.25	6.50	4.75
	2	N70-8-24-B	2.15 ab	42.5	1.00	5.75	4.00
	3	N99(P60-29-10)-B	2.00 bc	45.0	0.75	8.50	5.25
	4	N70-8-B-B	1.84 c	31.3	0.00	7.25	3.75
	5	N70-6-B-B	2.02 bc	35.0	0.75	4.25	3.25
		LSD	**0.20**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Perry	1	Perry (non-transformed)	2.06 bc	13.8 e	1.75 b	7.25	4.50
	2	P98(N6-1-10)-B	2.03 c	35.0 cd	1.25 b	6.75	5.50
	3	P97(N6-2-8)-B	2.28 a	36.3 cd	4.00 a	4.25	4.00
	4	P39-7-9-B	2.22 ab	30.0 d	0.50 b	4.50	2.75
	5	P53-30-21-B	2.38 a	55.0 ab	1.50 b	6.00	5.25
	6	P99(N6-4-14)-B	2.33 a	45.0 bc	2.00 ab	3.25	2.25
	7	P53-28-B-B	2.35 a	58.8 a	0.50 b	2.75	1.50
	8	P39-8-B-B	2.28 a	37.5 cd	0.75 b	6.00	2.50
		LSD	**0.18**	**13.17**	**2.13**	**n.s.**	**n.s.**
Wilson	1	Wilson (non-transformed)	2.16 bc	37.5 ab	0.25	7.25	5.00 ab
	2	W14-10-2-B	2.26 ab	20.0 c	1.25	5.25	5.75 a
	3	W59-8-2-B	2.06 c	26.3 bc	1.25	3.25	3.00 bc
	4	W171-17-15-B	2.33 a	42.5 a	0.50	4.00	2.50 bc
	5	W73-27-B-B	2.19 a-c	46.3 a	0.50	4.75	1.75 c
	6	W171-17-B-B	2.11 bc	43.8 a	0.25	5.50	4.25 a-c
		LSD	**0.15**	**13.4**	**n.s.**	**n.s.**	**2.62**

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

Table 117. Sclerotinia blight incidence and yield for non-transformed parent and T4 genetically transformed peanut lines containing the barley oxalate oxidase gene, whole plot evaluations.

			Sclerotinia blight*					Yield**
Parent	Trt	T_0-T_1-T_2-T_3	28 Jul	23 Aug	20 Sep	9 Oct	AUDPC	(lb/A)
NC-7	1	NC7 (non-transformed)	0.25	5.50 a	23.8 a	35.5 a	1047.1 a	3296 c
	2	N70-8-24-B	0.00	0.00 b	1.5 b	2.0 c	54.3 b	5518 a
	3	N99(P60-29-10)-B	0.00	0.25 b	1.3 b	3.5 bc	69.4 b	5009 b
	4	N70-8-B-B	0.00	0.00 b	2.8 b	7.5 bc	135.9 b	4966 b
	5	N70-6-B-B	0.00	0.25 b	6.0 b	8.8 b	230.9 b	4675 b
		LSD	**n.s.**	**2.57**	**5.3**	**6.7**	**241.5**	**455**
Perry	1	Perry (non-transformed)	0.25	1.50	9.8 a	18.8 a	451.0 a	5645 bc
	2	P98(N6-1-10)-B	0.00	0.25	0.3 b	1.5 b	26.9 b	5885 ab
	3	P97(N6-2-8)-B	0.00	0.00	0.0 b	1.5 b	14.3 b	6124 a
	4	P39-7-9-B	0.00	0.00	0.0 b	0.5 b	4.8 b	5960 ab
	5	P53-30-21-B	0.00	0.00	0.0 b	0.8 b	7.1 b	5406 c
	6	P99(N6-4-14)-B	0.00	0.00	0.0 b	0.3 b	2.4 b	6304 a
	7	P53-28-B-B	0.00	0.00	1.0 b	2.8 b	49.6 b	5286 c
	8	P39-8-B-B	0.00	0.00	0.8 b	4.5 b	60.4 b	5915 ab
		LSD	**n.s.**	**n.s.**	**3.9**	**4.7**	**162.2**	**423**
Wilson	1	Wilson (non-transformed)	0.25	2.75 a	31.5 a	48.0 a	1273.8 a	3036 e
	2	W14-10-2-B	0.00	0.25 b	2.0 c	9.0 d	139.3 d	4714 ab
	3	W59-8-2-B	0.00	0.75 b	9.5 b	11.8 d	355.1 c	3313 de
	4	W171-17-15-B	0.00	0.50 b	13.5 b	23.5 b	554.0 b	4247 bc
	5	W73-27-B-B	0.00	0.00 b	3.0 c	9.5 d	160.8 d	5138 a
	6	W171-17-B-B	0.00	0.50 b	10.5 b	18.0 c	431.3 bc	3999 cd
		LSD	**n.s.**	**1.01**	**5.9**	**5.2**	**180.1**	**699**

* Counts of infection centers in each plot or a total of 60 ft of row. An infection center was a point of active growth by *Sclerotinia minor* and included 6 in. on either side of that point. AUDPC= area under disease progress curve from 28 Jul to 9 Oct.

** Yields are weight of peanuts with 7% moisture. Peanuts were dug on 19 Oct and harvested on 31 Oct.

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).

Table 118. Cylindrocladium black rot (CBR) and southern stem rot incidence in non-transformed parents and T4 transformed peanut lines with the barley oxalate oxidase gene.

			CBR*			Southern stem rot**		
Parent	**Trt**		**23 Aug**	**20 Sep**	**9 Oct**	**23 Aug**	**20 Sep**	**9 Oct**
NC-7	1	NC7 (non-transformed)	0.00	1.8	5.0	0.75	1.8	1.8
	2	N70-8-24-B	0.75	6.5	13.8	0.00	0.3	10.9
	3	N99(P60-29-10)-B	1.25	7.5	15.0	0.25	0.0	6.4
	4	N70-8-B-B	1.25	4.8	13.5	0.25	1.5	6.6
	5	N70-6-B-B	0.75	7.8	18.3	0.25	1.0	9.6
		LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**n.s.**
Perry	1	Perry (non-transformed)	0.00	1.5 bc	3.5 c	0.25	0.0	0.0
	2	P98(N6-1-10)-B	0.25	0.8 c	6.0 bc	0.25	0.3	0.5
	3	P97(N6-2-8)-B	0.50	1.8 bc	4.8 bc	0.00	0.3	0.0
	4	P39-7-9-B	0.00	0.5 c	3.3 c	0.00	0.0	0.0
	5	P53-30-21-B	0.25	4.8 ab	11.3 ab	0.00	0.5	0.8
	6	P99(N6-4-14)-B	0.25	1.8 bc	5.5 bc	0.00	0.0	0.5
	7	P53-28-B-B	1.50	6.5 a	13.5 a	0.00	1.0	1.3
	8	P39-8-B-B	0.00	1.0 bc	4.3 c	0.00	0.0	0.0
		LSD	**n.s.**	**3.8**	**6.9**	**n.s.**	**n.s.**	**n.s.**
Wilson	1	Wilson (non-transformed)	0.25	1.3 c	6.3 d	1.00	0.3	0.0
	2	W14-10-2-B	0.25	8.5 b	23.0 b	0.00	0.0	0.3
	3	W59-8-2-B	2.00	16.5 a	39.5 a	0.00	0.3	0.0
	4	W171-17-15-B	0.50	2.5 bc	11.0 cd	0.00	0.3	0.5
	5	W73-27-B-B	0.00	1.5 c	10.3 cd	0.50	0.3	0.5
	6	W171-17-B-B	0.50	4.8 bc	19.3 bc	0.50	0.5	0.0
		LSD	**n.s.**	**n.s.**	**9.8**	**n.s.**	**n.s.**	**n.s.**

* Number of symptomatic and/or dead plants per plot.
** Counts of infection centers in 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 parent group and column are not significantly different according to Fisher's Protected LSD (P=0.05).

XXXII. EVALUATION OF THE T4 GENERATION OF GENETICALLY TRANSFORMED PEANUT LINES FROM SINGLE T3 PLANT SELECTIONS WITH THE OXALATE OXIDASE GENE (SCLT206 - Tidewater AREC Research Farm, Suffolk)

A. PURPOSE: To compare agronomic traits and resistance to Sclerotinia blight in parent cultivars to T4 transgenic peanut lines

B. EXPERIMENTAL DESIGN:

1. One 20-ft row, alternating with 1 border row of VA 98R
2. Seed were hand planted 6 in. apart
3. Disease severity ratings for each plant

C. CULTIVARS (T_0-T_1-T_2-T_3):

Perry (P)

1. PERRY (non-transformed)
2. P98(N6-1-10-15)
3. P98(N6-1-10-18)
4. P99(N6-4-14-13)
5. P99(N6-4-14-14)
6. P97(N6-2-8-5) - 20 plants
7. P97(N6-2-8-8) - 20 plants
8. P39-7-9-1
9. P39-7-9-43
10. P53-30-21-34 – 20 plants
11. P53-27-8-9
12. P53-27-8-20
13. P53-27-8-11

Wilson (W)

1. WILSON (non-transformed)
2. W14-10-2-27
3. W14-10-2-37
4. W59-8-2-12
5. W59-8-2-28
6. W171-17-15-3
7. W171-17-15-4

NC-7 (N)

1. NC7 (non-transformed)
2. N70-8-24-4
3. N70-8-24-5
4. N99(P60-29-10-2)
5. N99(P60-28-4-2)

D. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Hare Road, Suffolk
2. Crop history: corn 2005, cotton 2004, peanut 2003
3. Planting date: border rows 2 May, hand planted 3 May
4. Soil fertility report: (Dec 2005)

pH	6.2	K	60 ppm
Ca	269 ppm	Zn	0.7 ppm
Mg	38 ppm	Mn	3.3 ppm
P	40 ppm	Soil type	Kenansville loamy sand

5. Herbicide: Pre-plant – Prowl H20 1.0 pt/A (27 Mar);
   Dual II Magnum 1 pt + Strongarm 0.23 fl oz/A (10 Apr)
   Pre-emergence – Dual II Magnum 1.0 pt + Strongarm 0.23 fl oz/A + Gramoxone
   Inteon 1.0 pt/A (5 May)
   Post-emergence – Poast Plus 1.0 pt/A (20 Jul)
6. CBR: Vapam 7.5 gal/A, 2 applications (29 Mar, 7 Apr)
7. Insecticide: Temik 7 lbs/A (2 May); Orthene 8 oz/A (31 May)
   Lorsban 15 G 13lb/A (29 Jun)
8. Acaricide: Danitol 6 oz/A (30 Jun); Danitol 10 oz/A (8 Jul)
9. Cercospora leaf spot control: Folicur 7.2 fl oz/A + Induce 1.2 fl oz/A (19 Jul); Bravo 1.5 pt/A (4 Aug, 23 Aug, 8 Sep)

10. Additional crop management:
    a. Liquid boron 1.0 qt/A (27 Mar)
    b. Landplaster: Peanut Maker 1200 lb/A (20 Jun)
    c. Liquid Mn: 3.0 pt/A (7, 20 Jul)
    d. Irrigation: ca. 0.75 in. (31 Jul, 1 Aug, 24 Aug)
    e. Cultivation: 29 Jun
11. Harvest date:
    a. Single plants: 16, 18 and 19 Oct
    b. Whole plots: dug 19 Oct

Table 119. Gene expression, oxalic acid sensitivity, and Sclerotinia blight resistance of T4 genetically transformed peanut lines containing the barley oxalate oxidase gene, hand planted in the field 2005.

		Oxalate oxidase expression[1]		Oxalic acid lesion[2] (mm^2)	Sclerotinia blight severity (0-3)[3]		Sclerotinia blight incidence (40 plants)[4]	
Parent	T_0-T_1- T_2-T_3	8 Aug	11 Sep		11 Sep	12 Oct	11 Sep	12 Oct
Perry	PERRY (non-transformed)	0.019 f	0.021 d	7.79 a	0.09	0.97 a	2	21
	P98(N6-1-10-15)	0.187 ab	0.630 b	1.91 d	0.00	0.00 b	0	0
	P98(N6-1-10-18)	0.149 bc	0.566 b	2.33 d	0.00	0.13 b	0	4
	P99(N6-4-14-13)	0.239 a	0.614 b	2.59 d	0.00	0.03 b	0	1
	P99(N6-4-14-14)	0.230 a	0.627 b	2.09 d	0.00	0.08 b	0	0
	P97(N6-2-8-5)	0.198 ab	0.646 b	1.82 d	0.00	0.00 b	0	0
	P97(N6-2-8-8)	0.118 cd	0.618 b	2.49 d	0.00	0.00 b	0	0
	P39-7-9-1	0.199 ab	0.572 b	2.11 d	0.00	0.00 b	0	0
	P39-7-9-43	0.153 bc	0.897 a	2.09 d	0.00	0.05 b	0	1
	P53-30-21-34	0.053 ef	0.173 c	4.53 b	0.00	0.00 b	0	0
	P53-27-8-9	0.072 d-f	0.190 c	3.46 c	0.00	0.50 b	0	10
	P53-27-8-20	0.078 de	0.222 c	3.68 c	0.00	0.50 b	0	8
	P53-27-8-11	0.055 ef	0.145 c	3.35 c	0.00	0.18 b	0	4
Wilson	WILSON (non-transformed)	0.017 c	0.018 d	8.99 a	0.43 a	2.19 a	11	35
	W14-10-2-27	0.145 a	0.283 a	4.54 bc	0.00 b	0.20 c	0	7
	W14-10-2-37	0.135 a	0.237 ab	3.83 c	0.00 b	0.08 c	0	2
	W59-8-2-12	0.065 b	0.161 bc	5.59 b	0.00 b	0.31 c	0	8
	W59-8-2-28	0.085 b	0.207 bc	4.93 bc	0.00 b	0.00 c	0	0
	W171-17-15-3	0.076 b	0.188 bc	3.70 c	0.16 b	0.79 b	6	18
	W171-17-15-4	0.063 b	0.136 c	3.96 c	0.03 b	0.08 c	1	2
NC 7	NC7 (non-transformed)	0.007 c	0.018 b	8.94 a	0.21 a	1.44 a	6	28
	N70-8-24-4	0.278 a	0.513 a	3.84 b	0.00 b	0.10 b	0	3
	N70-8-24-5	0.185 b	0.385 a	3.44 b	0.00 b	0.00 b	0	0
	N99(P60-29-10-2)	0.159 b	0.442 a	3.29 b	0.00 b	0.15 b	0	4
	N99(P60-28-4-2)	0.165 b	0.529 a	2.49 c	0.05 b	0.00 b	2	0

1 Oxalate oxidase expression determined from leaf samples of 10 plants per plot using a colorimetric detection method to measure hydrogen peroxide released from oxalic acid substrate using a microtiter plate reader at 540 nm (Livingstone et al. 2005, Plant Phys. 137:1354).
2 Lesion size (mm^2) 6 hours following application of 15µl of 100 mM oxalic acid to leaflet wounded with a 18 gauge needle on abaxial surface.
3 Average disease severity ranging from 0=no disease 1=limited to no more than 10% of limbs with disease, 2=11 to 50% of limbs with disease, 3=51 to 100% of limbs with disease.
4 Counts of infection centers in each plot or a total of 20 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.
Means followed by the same letter(s) are not significantly different (P=0.05) according to Student-Newman-Keuls test.

XXXIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF FOLIAR DISEASES OF SOYBEAN (SOYRUST106 - Tidewater AREC, Swine Unit Field, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 30-ft rows per plot with 18 in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION OF TREATMENTS: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A. A single application was made with a Lee Spider Sprayer at R3 (beginning pod) on 21 Aug.

D. TREATMENTS:

1. Untreated
2. Topsin 4.5FL 20 fl oz/A (R3)
3. MFC-T methyl 4.5F 20 fl oz/A (R3)
4. MFC 4.5F 20 fl oz + MFX-0650 1 oz/A (R3)
5. MFC 4.5F 20 fl oz + MFX-0650 2 oz/A (R3)
6. Quadris 2.08SC 6 fl oz + COC 20.5 fl oz/A (R3)
7. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz/A (R3)
8. Stratego 250EC 10 fl oz/A with Induce 2.56 fl oz/A (R3)
9. Folicur 3.6F 4 fl oz/A (R3)
10. Absolute 500SC 5 fl oz/A (R3)
11. Headline 2.09SC 6 fl oz/A (R3)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Swine Unit Field, Suffolk
2. Crop history: soybean 2005
3. Planting date and cultivar: 25 May 2006, S57-P1
4. Soil fertility report (Dec 2005):

pH	5.8	K	126 ppm
Ca	501 ppm	Zn	0.7 ppm
Mg	54 ppm	Mn	2.6 ppm
P	37 ppm	Soil type	Nansemond fine sandy loam

5. Fertilizer: liquid Mn 3 pt/A (7 Jul)
6. Herbicide: Roundup Ultra Max 22 fl oz/A (10 Jul)
7. Harvest date: 6 Nov

Table 120. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A[1]	% leaf area with disease[2]					% defoliation[3] (10 Oct)
	Frog eye leaf spot (19 Sep)	Brown spot (19 Sep)	Bacterial blight (19 Sep)	Cercospora blight 19 Sep	Cercospora blight 10 Oct	
Untreated	0.03	2.25	0.25	1.53	32.5 b	48.8 a
Topsin 4.5FL 20 fl oz	0.00	1.53	0.00	0.53	28.8 bc	30.0 bc
MFC-T methyl 4.5F 20 fl oz	0.03	1.78	0.25	0.53	28.8 bc	28.8 b-d
MFC 4.5F 20 fl oz + MFX-0650 1 oz	0.00	1.00	0.25	0.55	23.8 cd	37.5 ab
MFC 4.5F 20 fl oz + MFX-0650 2 oz	0.03	1.28	0.25	1.25	22.5 d	23.8 cd
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	0.00	1.00	0.25	0.28	13.8 ef	16.3 de
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	0.03	1.30	0.00	0.50	16.3 e	23.8 cd
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	0.03	1.50	0.25	0.53	13.8 ef	25.0 b-d
Folicur 3.6F 4 fl oz	0.03	1.53	0.25	0.30	38.8 a	36.3 a-c
Absolute 500SC 5 fl oz	0.00	1.50	0.25	0.50	10.0 f	10.0 e
Headline 2.09SC 6 fl oz	0.00	0.33	0.25	0.03	8.8 f	10.0 e
LSD	**n.s.**	**n.s.**	**n.s.**	**n.s.**	**5.1**	**12.9**

1 All treatments applied on 21 Aug.
2 Foliar disease rating scale: 0=none; 100=symptoms 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 121. Yield and grade of soybeans.

Treatment and rate/A[1]	Yield[2] (bu/A)	P-value of yield[3]	Weight/100 seed (oz)	% purple seed stain[4]	% phomopsis seed blight[4]
Untreated	35.1	—	.5587	5.0 ab	1.5
Topsin 4.5FL 20 fl oz	34.3	.7901	.5721	3.5 b-e	1.8
MFC-T methyl 4.5F 20 fl oz	34.5	.8355	.5919	3.8 b-d	1.3
MFC 4.5F 20 fl oz + MFX-0650 1 oz	32.3	.3184	.5792	4.3 a-c	1.3
MFC 4.5F 20 fl oz + MFX-0650 2 oz	34.1	.7383	.5863	4.0 a-d	1.8
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	34.7	.8955	.5739	2.5 c-e	2.0
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	36.4	.6283	.5647	2.8 b-e	2.0
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	37.8	.3374	.5781	1.8 de	1.8
Folicur 3.6F 4 fl oz	36.9	.5178	.5827	6.3 a	1.0
Absolute 500SC 5 fl oz	35.6	.8461	.5785	1.8 de	2.5
Headline 2.09SC 6 fl oz	37.7	.3418	.5986	1.3 e	1.8
LSD	**n.s.**		**n.s.**	**2.3**	**n.s.**

1 All treatments applied on 21 Aug.
2 Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 6 Nov.
3 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
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. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF DISEASES OF SOYBEAN (SOYRUST206 - Tidewater AREC, Swine Unit Field, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 30-ft rows per plot with 18 in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION OF TREATMENTS: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A with a Lee Spider Sprayer on 21 Aug. Applications to treatments 2, 3, and 4 were to be at 1st alert for soybean rust (SBR) in Virginia and repeated at 21 days intervals to R5 for up to three applications. If no SBR alert occurred, the 1st application was applied at R3. A 2nd application would be applied 21 days later if SBR was present, but not later than R5.

D. TREATMENTS:

1. Untreated
2. Folicur 3.6F 4 fl oz/A (1st SBR alert; Otherwise R3 only)
3. Absolute 500SC 5 fl oz/A (same as above)
4. Stratego 250EC 10 fl oz/A + Induce 2.6 fl oz/A (same as above)
5. Domark 230ME 4 fl oz/A (1st alert, or R3)
6. Domark 230ME 5 fl oz/A (1st alert, or R3)
7. Folicur 3.6F 4 fl oz/A (1st alert, or R3)
8. Headline 2.09EC 6 fl oz/A (1st alert, or R3)
9. Laredo 2EC 7 fl oz/A (1st alert, or R3)
10. Quadris 2.08SC 6 fl oz/A (1st alert, or R3)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC Research Farm, Swine Unit Field, Suffolk
2. Crop history: soybean 2005
3. Planting date and cultivar: 25 May 2006, S57-P1
4. Soil fertility report (Dec 2005):

pH	5.8	K	126 ppm
Ca	501 ppm	Zn	0.7 ppm
Mg	54 ppm	Mn	2.6 ppm
P	37 ppm	Soil type	Nansemond fine sandy loam

5. Fertilizer: liquid Mn 3 pt/A (7 Jul)
6. Herbicide: Roundup Ultra Max 22 fl oz/A (10 Jul)
7. Harvest date: 27 Nov, 30 Nov, 7 Dec (delays caused by wet weather)

Table 122. Incidence of foliar disease and severity of defoliation in soybeans.

Treatment and rate/A[1]	% leaf area with disease[2]				% defoliation[3] (10 Oct)
	Frog eye leaf spot (19 Sep)	Brown spot (19 Sep)	Cercospora blight		
			19 Sep	10 Oct	
Untreated	0.10 a	1.00 a	0.6	30.0 a	31.3 a
Folicur 3.6F 4 fl oz	0.00 c	0.78 ab	0.3	18.8 c	26.3 a
Absolute 500SC 5 fl oz	0.00 c	0.78 ab	0.1	10.0 d	11.3 f
Stratego 250EC 10 fl oz + Induce 2.6 fl oz	0.00 c	0.55 a-c	0.3	11.3 d	13.8 ef
Domark 230ME 4 fl oz	0.00 c	0.55 a-c	0.3	18.8 c	20.0 cd
Domark 230ME 5 fl oz	0.00 c	0.55 a-c	0.6	17.5 c	18.8 c-e
Folicur 3.6F 4 fl oz	0.05 b	0.78 ab	0.1	25.0 ab	17.5 de
Headline 2.09EC 6 fl oz	0.00 c	0.10 c	0.0	6.3 d	11.3 f
Laredo 2EC 7 fl oz	0.00 c	0.33 bc	0.3	22.5 bc	23.8 bc
Quadris 2.08SC 6 fl oz	0.00 c	0.10 c	0.3	20.0 bc	23.8 bc
LSD	**0.03**	**0.54**	**n.s.**	**6.1**	**5.1**

1 All treatments applied on 21 Aug.
2 Foliar disease rating scale: 0=none; 100=symptoms 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 123. Yield and grade of soybeans.

Treatment and rate/A[1]	Yield[2] (bu/A)	P-value of yield[3]	Weight/ 100 seed (oz)	% purple seed stain[4]	% phomopsis seed blight[4]
Untreated	39.9	—	.5602	3.5 b-d	0.8 c
Folicur 3.6F 4 fl oz	41.1	.7195	.5676	4.0 a-d	2.0 a-c
Absolute 500SC 5 fl oz	39.0	.7955	.5806	2.8 b-d	1.3 bc
Stratego 250EC 10 fl oz + Induce 2.6 fl oz	39.3	.8757	.5750	2.0 cd	0.5 c
Domark 230ME 4 fl oz	44.8	.1481	.5915	1.8 cd	0.8 c
Domark 230ME 5 fl oz	42.1	.5120	.5841	6.0 ab	2.8 ab
Folicur 3.6F 4 fl oz	43.0	.3584	.5915	7.3 a	3.3 a
Headline 2.09EC 6 fl oz	39.5	.9057	.5930	1.0 d	1.8 a-c
Laredo 2EC 7 fl oz	42.8	.3918	.5845	4.5 a-c	3.5 a
Quadris 2.08SC 6 fl oz	39.8	.9820	.5810	2.5 cd	1.0 bc
LSD	**n.s.**		**n.s.**	**3.3**	**1.8**

1 All treatments applied on 21 Aug.
2 Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 27 and 30 Nov and 7 Dec.
3 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
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. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

XXXV. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF DISEASES OF SOYBEAN (SOYRUST306 - Duke Farm, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 30-ft rows per plot with 18-in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION: Treatments are to be applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A with a Lee Spider Sprayer on 21 Aug. A single application was intended for trts 2, 3, and 4 at R3 (beginning pod). The 1st application to trts 5, 6, 7, and 8 was to be applied whenever an alert for soybean rust (SBR) has been issued and plants are between R1 and R5. The 2nd application was to be applied 14 to 21 days later if soybean rust was within 100 miles of area and spray could be applied by R5.

D. TREATMENTS:

1. Untreated
2. Quadris 2.08SC 6 fl oz/A (R3)
3. Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz/A (R3)
4. Headline 2.09SC 6 fl oz/A (R3)
5. Quilt 1.67SC 14 fl oz/A + COC 20.5 fl oz (R1-5 and R3-5)
6. Alto 0.83SL 4 fl oz + Quadris 2.08SC 5.5 fl oz + Induce 5.12 fl oz/A (R1-5 and R3-5)
7. Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz + COC 20.5 fl oz/A (R1-5 and R3-5)
8. Headline 2.09SC 4.7 fl oz + Folicur 432SC 3.1 fl oz/A (R1-5 and R3-5)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2005
3. Planting date and cultivar: 24 May, S57-P1
4. Soil fertility report (Dec 2005):

pH	5.9	K	98 ppm
Ca	232 ppm	Zn	0.4 ppm
Mg	33 ppm	Mn	1.5 ppm
P	14 ppm	Soil type	Dragston fine sandy loam

5. Fertilizer: liquid Mn 3 pt/A (7 Jul)
6. Herbicide: Roundup Ultra Max 22 fl oz/A (10 Jul)
7. Harvest date: 20 Nov

Table 124. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A[1]	% leaf area with disease [2]				% defoliation[3] (10 Oct)
	Frog eye leaf spot (19 Sep)	Brown spot (19 Sep)	Cercospora blight		
			19 Sep	10 Oct	
Untreated	0.03	0.55	0.05	25.0 a	45.0 a
Quadris 2.08SC 6 fl oz	0.00	0.10	0.00	8.8 b	12.5 c
Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz	0.03	0.28	0.05	8.8 b	13.8 c
Headline 2.09SC 6 fl oz	0.00	0.33	0.03	13.8 b	23.8 bc
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	0.00	0.08	0.08	13.8 b	20.0 bc
Alto 0.83SL 4 fl oz + Quadris 2.08SC 5.5 fl oz + Induce 5.12 fl oz	0.03	0.33	0.05	13.8 b	32.5 ab
Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz + COC 20.5 fl oz	0.03	0.30	0.03	12.5 b	21.3 bc
Headline 2.09SC 4.7 fl oz + Folicur 432SC 3.1 fl oz	0.00	0.08	0.05	11.3 b	22.5 bc
LSD	**n.s.**	**n.s.**	**n.s.**	**7.6**	**15.6**

1 All treatments applied on 21 Aug.
2 Foliar disease rating scale: 0=none; 100=symptoms 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 for data analysis.

Table 125. Yield and grade of soybeans.

Treatment and rate/A[1]	Yield[2] (bu/A)	P-value[3] of yield	Weight/ 100 seed (oz)	% purple seed stain[4]	% phomopsis seed blight[4]
Untreated	40.1	—	.5739	6.8 a	1.5
Quadris 2.08SC 6 fl oz	40.8	.8020	.5852	1.8 b	1.3
Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz	40.5	.9092	.5714	1.0 b	1.8
Headline 2.09SC 6 fl oz	41.8	.5548	.5781	0.8 b	1.0
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	41.6	.6168	.5824	2.5 b	0.8
Alto 0.83SL 4 fl oz + Quadris 2.08SC 5.5 fl oz + Induce 5.12 fl oz	41.2	.7155	.5686	1.5 b	1.3
Quilt 1.67SC 14 fl oz + Quadris 2.08SC 1.5 fl oz + COC 20.5 fl oz	42.3	.4412	.5704	1.5 b	1.8
Headline 2.09SC 4.7 fl oz + Folicur 432SC 3.1 fl oz	47.6**	.0148	.5785	1.3 b	2.0
LSD	**n.s.**		**n.s.**	**2.5**	**n.s.**

1 All treatments applied on 21 Aug.
2 Yields are soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 20 Nov. **Denotes yield significantly different from untreated (P<0.05).
3 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
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.

XXXVI. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF DISEASES OF SOYBEAN (SOYRUST406 - Duke Farm, Suffolk)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 30-ft rows per plot with 18-in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION OF TREATMENTS: Treatments were applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A with a Lee Spider Sprayer.

D. TREATMENTS:

1. Untreated
2. Laredo 2EC 7 fl oz/A per SBR alert or growth stage (R3)
3. Laredo 2EC 5 fl oz/A per SBR alert or growth stage (R3)
4. Enable 2F 7.1 fl oz/A + Crop Oil 0.5% v/v (R1)
   Headline 2.08EC 7.1 fl oz/A (14 days later)
5. Laredo 2EC 7 fl oz/A per SBR alert or growth stage (R3)
6. Laredo 2WC 5 fl oz/A per SBR alert or growth stage (R1-R5)
7. Enable 2F 7.1 fl oz/A + Crop Oil 0.5% v/v (R1)
   Headline 2.08SC 7.1 fl oz/A (21 days later)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2005
3. Planting date and cultivar: 24 May, S57-P1
4. Soil fertility report (Dec 2005):

pH	5.9	K	98 ppm
Ca	232 ppm	Zn	0.4 ppm
Mg	33 ppm	Mn	1.5 ppm
P	14 ppm	Soil type	Dragston fine sandy loam

5. Fertilizer: liquid Mn 3 pt/A (7 Jul)
6. Herbicide: Roundup Ultra Max 22 fl oz/A (10 Jul)
7. Harvest date: 20 Nov

Table 126. Incidence of foliar disease and defoliation in soybeans.

Treatment, rate/A and application date	% leaf area with disease*				% defoliation**
	Frog eye leaf spot (19 Sep)	Brown spot (19 Sep)	Cercospora blight 19 Sep	Cercospora blight 10 Oct	
Untreated	0.00	1.00 a	0.55 a	22.5 a	53.8 a
Laredo 2EC 7 fl oz (8/21)	0.00	0.10 b	0.10 b	17.5 ab	32.5 b
Laredo 2EC 5 fl oz (8/21)	0.03	0.08 c	0.10 b	13.8 b	23.8 bc
Enable 2F 7.1 fl oz + Crop Oil 0.5% v/v (7/25) Headline 2.08EC 7.1 fl oz (8/8)	0.03	0.30 bc	0.03 b	7.5 c	15.0 c
Laredo 2EC 7 fl oz (8/21)	0.03	0.33 bc	0.50 a	13.8 b	32.5 b
Laredo 2WC 5 fl oz (8/21)	0.00	0.10 c	0.05 b	15.0 b	32.5 b
Enable 2F 7.1 fl oz + Crop Oil 0.5% v/v (7/25) Headline 2.08SC 7.1 fl oz (8/11)	0.00	0.08 c	0.05 b	7.5 c	20.0 bc
LSD	**n.s.**	**0.41**	**0.40**	**5.8**	**15.3**

* Foliar disease rating scale: 0=none; 100=symptoms on all leaflets.
** 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 127. Yield and grade of soybeans.

Treatment, rate/A and application date	Yield[1] (bu/A)	P-value of yield[2]	Weight/ 100 seed (oz)	% purple seed stain[3]	% phomopsis seed blight[3]
Untreated	38.8	—	.5644 c	12.0 a	2.5
Laredo 2EC 7 fl oz (8/21)	38.0	.8020	.5764 bc	10.0 ab	1.8
Laredo 2EC 5 fl oz (8/21)	39.0	.9092	.5827 ab	8.8 a-c	2.3
Enable 2F 7.1 fl oz + Crop Oil 0.5% v/v (7/25) Headline 2.08EC 7.1 fl oz (8/8)	43.1	.5548	.5940 a	3.0 de	2.8
Laredo 2EC 7 fl oz (8/21)	40.3	.6168	.5661 c	6.3 b-d	1.5
Laredo 2WC 5 fl oz (8/21)	40.1	.7155	.5799 a-c	5.0 c-e	2.3
Enable 2F 7.1 fl oz + Crop Oil 0.5% v/v (7/25) Headline 2.08SC 7.1 fl oz (8/11)	37.5	.4412	.5855 ab	1.8 e	2.8
LSD	**n.s.**	**.0148**	**.46**	**3.9**	**n.s.**

1 Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 20 Nov.
2 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
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), except seed weight means were analyzed at P=0.10 for significant differences. "n.s."=not significant.

XXXVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF DISEASES OF SOYBEAN (SOYRUST506 - Fox Hill Farms, Capron)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION OF TREATMENTS: Treatments were applied with three, 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A with a CO^2-pressurized, backpack sprayer. The 1st application was applied at R1, if an alert for soybean rust (SBR) was issued prior to R1 in Virginia. Otherwise, the application was applied as soon as possible after an alert was issued when soybeans were between R1 and R3. If no alert was issued, the 1st application was applied at R3. A second application could be applied 14 to 21 days later if SBR posed a threat to yield and the treatment could be applied by R5.

D. TREATMENTS:

1. Untreated
2. Quadris 2.08SC 6 fl oz + COC 20.5 fl oz/A
3. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz/A
4. Stratego 250EC 10 fl oz + Induce 2.56 fl oz/A
5. Absolute 500SC 5 fl oz/A
6. Headline 2.08EC 6 fl oz/A
7. Folicur 432SC 4 fl oz/A
8. Laredo 2EC 7 fl oz/A
9. Domark 230ME 5 fl oz/A

E. ADDITIONAL INFORMATION:

1. Location: Fox Hill Farms, Capron
2. Crop history: cotton 2005, 2004
3. Planting date and cultivar: 18 May 2006, DP 5634RR
4. Soil fertility report (Apr 2006)

pH	5.62
Ca	596 ppm
Mg	52 ppm
P	47 ppm
K	115 ppm
Zn	1.2 ppm
Mn	3.7ppm
Soil type	Slagle fine sandy loam

5. Fertilizer: 6-18-36 250 lbA (pre-plant)
6. Herbicide: Pre-plant: Gramoxone + 2, 4D (Apr)
   Post-emergence: Touchdown 1 qt + Synchrony 0.3 oz/A (3 Jul)
7. Insecticide: Temik 15G 5 lb/A (18 May)
8. Harvest date: 7 Dec

Table 128. Incidence of foliar disease and defoliation in soybeans.

Treatment and rate/A[1]	% leaf area with disease[2]				% defoliation[3] (11 Oct)
	Frogeye leaf spot (19 Sep)	Brown spot (19 Sep)	Cercospora blight 19 Sep	Cercospora blight 11 Oct	
Untreated	0.8 a	5.0 a	5.0 a	22.5 a	62.5 a
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	0.1 b	1.8 b	1.8 b	11.3 c-e	43.8 bc
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	0.3 b	2.0 b	2.0 b	8.8 d-f	38.8 c
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	0.1 b	2.0 b	2.0 b	8.8 d-f	38.8 c
Absolute 500SC 5 fl oz	0.1 b	1.3 b	1.3 b	7.5 ef	35.0 c
Headline 2.08EC 6 fl oz	0.1 b	1.8 b	1.8 b	6.3 f	37.5 c
Folicur 432SC 4 fl oz	0.3 b	2.5 b	2.5 b	12.5 b-d	51.3 b
Laredo 2EC 7 fl oz	0.1 b	1.5 b	1.5 b	16.3 b	51.3 b
Domark 230ME 5 fl oz	0.1 b	2.0 b	2.0 b	15.0 bc	51.3 b
LSD	**0.4**	**1.8**	**1.8**	**4.6**	**8.8**

1 All treatments applied on 17 Aug.
2 Foliar disease rating scale: 0=none; 100=spots 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). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 129. Yield and grade of soybeans.

Treatment and rate/A[1]	Yield[2] (bu/A)	P-value of yield[3]	Weight/ 100 seed (oz)	% purple seed stain[4]	% phomopsis seed blight[4]
Untreated	39.6	—	.6353	3.8 a	2.0
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	44.5	.2144	.6434	0.0 d	2.8
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	44.2	.2420	.6490	0.5 b-d	2.3
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	42.8	.4199	.6512	0.3 cd	2.0
Absolute 500SC 5 fl oz	46.8*	.0739	.6614	0.3 cd	2.5
Headline 2.08EC 6 fl oz	43.6	.3108	.6607	0.0 d	2.3
Folicur 432SC 4 fl oz	43.3	.3531	.6540	2.3 ab	2.0
Laredo 2EC 7 fl oz	41.7	.5922	.6533	2.8 a	2.5
Domark 230ME 5 fl oz	49.5**	.0171	.6529	2.0 a-c	2.5
LSD	**n.s.**		**n.s.**	**1.8**	**n.s.**

1 All treatments applied on 17 Aug.
2 Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 7 Dec. * and ** denote yields significantly different from untreated at P<0.10 and P<0.05, respectively.
3 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
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. Arcsine transformation of percentage data was performed for statistical significance.

XXXVIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF DISEASES OF SOYBEAN (SOYRUST606 - Glenn Hawkins Farms, Skippers)

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

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Eight 30-ft rows per plot with 15-in. row spacing
3. Seeding rate of ca. 6 seed/row ft

C. APPLICATION: Treatments were to be applied with 8002VS nozzles spaced 18 in. apart and delivered in a volume of 16 gal/A with a CO2-pressurized, backpack sprayer. The 1st application was applied at R1, if an alert for soybean rust (SBR) was issued prior to R1 in Virginia. Otherwise, the first application was applied as soon as possible after an alert was issued when soybeans were between R1 and R3. If no alert was issued, the 1st application was applied at R3. A second application could be applied 14 to 21 days later if SBR posed a threat to yield and the treatment could be applied by R5.

D. TREATMENTS:

1. Untreated
2. Quadris 2.08SC 6 fl oz + COC 20.5 fl oz/A
3. Quilt 1.67SC 14 fl oz + COC 20.5 fl oz/A
4. Stratego 250EC 10 fl oz + Induce 2.56 fl oz/A
5. Absolute 500SC 5 fl oz/A
6. Headline 2.08EC 6 fl oz/A
7. Folicur 432SC 4 fl oz/A
8. Laredo 2EC 7 fl oz/A
9. Domark 230ME 5 fl oz/A

E. ADDITIONAL INFORMATION:

1. Location: Glenn Hawkins Farm, Skippers
2. Crop history: soybean 2005, cotton 2004, 2003
3. Planting date and cultivar: 23 May 2006, Pioneer 95B96 RR
4. Fertilizer: 7-18-36 300 lb/A (30 Apr)
5. Herbicide: Pre-plant – Prowl 1.3 pt/A
   Post-emergence – Roundup 22 fl oz/A (10 Jun)
6. Harvest date: 7 Dec 2006

Table 130. Incidence of foliar disease in soybeans.

Treatment and rate/A*	% leaf area with disease**			
	Frogeye leaf spot (11 Sep)	Brown spot (11 Sep)	Cercospora blight	
			11 Sep	11 Oct
Untreated	3.5	6.0 a	6.0 a	36.3 a
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	1.8	3.0 bc	3.3 b	16.3 de
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	2.5	2.8 bc	2.8 b	12.5 ef
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	1.8	3.0 bc	2.3 b	13.8 d-f
Absolute 500SC 5 fl oz	3.8	3.0 bc	2.0 b	10.0 fg
Headline 2.08EC 6 fl oz	2.0	1.8 c	2.3 b	7.5 g
Folicur 432SC 4 fl oz	2.3	2.3 c	2.8 b	21.3 c
Laredo 2EC 7 fl oz	3.5	4.5 ab	3.0 b	26.3 b
Domark 230ME 5 fl oz	1.8	3.3 bc	3.0 b	17.5 cd
LSD	**n.s.**	**2.1**	**2.1**	**4.2**

* All treatments applied on 17 Aug.
** Foliar disease 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 used in analysis for significance.

Table 131. Severity of defoliation in soybeans.

Treatment and rate/A*	% defoliation**	
	11 Oct	19 Oct
Untreated	66.3 a	99.5 a
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	28.8 c	82.5 de
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	17.5 de	83.8 de
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	18.8 de	78.8 ef
Absolute 500SC 5 fl oz	16.3 e	78.8 ef
Headline 2.08EC 6 fl oz	15.0 e	68.8 f
Folicur 432SC 4 fl oz	30.0 c	94.5 bc
Laredo 2EC 7 fl oz	48.8 b	97.0 ab
Domark 230ME 5 fl oz	26.3 cd	88.8 cd
LSD	**8.4**	**6.7**

* All treatments applied on 17 Aug.
** Defoliation rating scale: 0=none; 100=no leaves on plants.
Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05). Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 132. Yield and grade of soybeans.

Treatment and rate/A[1]	Yield[2] (bu/A)	P-value of yield[3]	Weight/ 100 seed (g)	% purple seed stain[4]	% phomopsis seed blight[4]
Untreated	32.4	—	.5431	6.8	1.3
Quadris 2.08SC 6 fl oz + COC 20.5 fl oz	36.3	.4752	.5756	4.8	1.0
Quilt 1.67SC 14 fl oz + COC 20.5 fl oz	37.9	.3090	.5883	2.0	0.5
Stratego 250EC 10 fl oz + Induce 2.56 fl oz	32.7	.9658	.5826	1.3	1.0
Absolute 500SC 5 fl oz	40.7	.1295	.5848	1.8	2.0
Headline 2.08EC 6 fl oz	31.8	.9062	.5983	1.0	1.8
Folicur 432SC 4 fl oz	35.6	.5500	.5965	5.5	1.0
Laredo 2EC 7 fl oz	35.0	.6305	.5702	3.3	0.5
Domark 230ME 5 fl oz	38.1	.2944	.6022	5.8	1.3
LSD	**n.s.**		**n.s.**	**n.s.**	**n.s.**

1 All treatments applied on 17 Aug.
2 Yield of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 7 Dec.
3 P-values are for comparison of each treatment to untreated using orthogonal contrast procedure.
4 Data are percent of 100 seed with symptoms of each disease.
Means were compared for significant different by Fisher's Protected LSD (P=0.05), "n.s." = not significant.

XXXIX. CLIMATOLOGICAL SUMMARY OF THE 2006 GROWING SEASON. (Tidewater Agricultural Research and Extension Center, Suffolk)

Table 133. Daily maximum and minimum temperatures (°F) November 2005 – April 2006.

Day of month	NOV		DEC		JAN		FEB		MAR		APR	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	76	35	64	35	55	31	54	26	54	33	69	39
2	74	52	49	36	56	30	51	28	65	38	81	42
3	65	33	49	26	59	40	65	35	80	35	75	51
4	70	42	56	35	48	39	71	60	52	26	73	47
5	75	52	65	37	47	39	69	37	53	35	63	37
6	78	52	41	32	57	37	50	30	55	34	65	30
7	78	51	42	23	45	21	50	37	47	30	70	53
8	74	39	46	25	43	21	50	22	51	22	85	65
9	76	53	50	28	57	39	46	24	59	44	78	38
10	81	61	48	21	58	39	43	17	74	64	56	30
11	65	49	47	33	56	38	50	30	77	46	67	33
12	61	29	54	32	69	50	44	33	76	53	73	42
13	67	36	53	28	68	47	41	27	84	56	76	55
14	73	54	39	21	66	50	43	27	63	42	83	50
15	78	53	39	26	53	32	51	32	74	47	82	58
16	77	63	60	37	42	26	67	37	56	32	87	55
17	80	43	52	30	50	31	71	54	65	36	76	55
18	52	28	46	34	70	42	72	39	58	34	61	42
19	46	22	42	27	54	27	43	17	53	25	69	42
20	59	29	57	20	60	37	34	20	56	26	77	44
21	64	43	43	21	66	45	48	28	57	41	84	56
22	60	43	42	18	62	41	56	31	42	30	79	58
23	52	31	47	24	45	39	52	40	51	25	78	59
24	65	38	58	33	53	42	55	32	54	34	83	58
25	48	34	63	32	52	32	55	25	52	31	83	55
26	64	24	61	43	50	28	62	28	54	31	81	54
27	60	27	53	31	45	23	40	15	52	32	57	48
28	69	54	53	29	50	24	48	28	60	28	65	41
29	74	48	52	43	61	30			69	39	63	36
30	55	34	55	30	65	48			65	32	65	36
31			57	32	66	45			70	35		
Avg.	**67**	**42**	**51**	**30**	**56**	**36**	**53**	**31**	**61**	**36**	**73**	**47**
Normal	**63**	**39**	**53**	**31**	**50**	**29**	**51**	**29**	**60**	**37**	**70**	**45**
Deviation from normal	**+4**	**+3**	**-2**	**-1**	**+6**	**+7**	**+2**	**+2**	**+1**	**-1**	**+3**	**+2**

Table 134. Daily maximum and minimum temperatures (°F) May 2006 – October 2006.

Day of month	MAY		JUN		JUL		AUG		SEP		OCT	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	67	40	89	66	86	61	96	71	77	72	76	62
2	64	37	90	69	89	65	97	74	77	59	77	48
3	78	53	89	68	93	71	99	77	81	59	86	56
4	78	54	75	55	95	70	98	86	87	66	82	55
5	82	54	83	60	92	70	100	74	87	70	85	58
6	83	62	77	59	91	70	91	61	85	64	80	62
7	83	56	78	60	73	60	90	65	79	60	67	55
8	64	51	84	59	81	58	93	72	82	62	68	59
9	59	52	85	61	82	58	92	69	82	58	71	57
10	70	44	85	59	84	61	89	65	85	61	75	56
11	77	53	82	63	88	69	83	70	85	63	79	55
12	81	45	80	64	91	71	82	63	75	53	74	60
13	76	45	77	53	93	74	82	53	74	49	77	46
14	77	46	80	65	92	71	85	57	75	64	62	33
15	70	53	72	60	89	72	89	68	81	63	63	34
16	76	48	82	55	90	71	93	72	80	60	62	38
17	70	47	84	56	91	67	88	65	75	61	70	47
18	77	50	87	58	95	70	86	72	84	58	70	51
19	79	51	87	65	95	71	86	68	87	65	78	58
20	73	50	88	67	91	67	91	73	84	60	78	61
21	81	49	90	64	91	69	100	72	76	50	79	42
22	82	62	92	67	91	75	88	70	72	45	64	36
23	73	48	93	75	88	72	88	66	77	61	60	47
24	72	42	90	70	84	64	88	62	84	62	60	34
25	79	50	89	69	87	70	90	63	89	61	54	33
26	86	62	88	78	83	69	93	66	77	52	55	29
27	91	65	82	78	90	71	94	65	78	50	59	40
28	85	60	85	72	93	70	93	66	78	54	70	49
29	87	63	89	70	93	72	97	74	75	53	72	41
30	86	57	90	65	91	69	97	72	74	43	69	39
31	90	65			93	70	90	72			75	44
Avg.	**77**	**52**	**85**	**64**	**89**	**68**	**91**	**68**	**80**	**59**	**71**	**48**
Normal	**77**	**54**	**84**	**63**	**88**	**67**	**87**	**65**	**82**	**60**	**71**	**46**
Deviation from normal	**0**	**-2**	**+1**	**+1**	**+1**	**+1**	**+4**	**+3**	**-2**	**-1**	**0**	**+2**

Table 135. Daily precipitation (inches) November 2005 – April 2006.

Day of month	NOV	DEC	JAN	FEB	MAR	APR
1	0.00	0.00	0.00	0.05	0.00	0.04
2	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	1.07	0.00	0.00	0.08
4	0.00	0.00	0.00	0.37	0.00	0.04
5	0.00	0.18	0.00	0.01	0.00	0.00
6	0.00	0.89	0.04	0.04	0.00	0.00
7	0.00	0.90	0.03	0.00	0.17	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.62
10	0.27	0.00	0.00	0.00	0.00	0.02
11	0.00	0.03	0.00	0.00	0.00	0.00
12	0.00	0.00	0.02	0.25	0.00	0.00
13	0.00	0.00	0.00	0.01	0.00	0.00
14	0.00	0.01	0.30	0.00	0.00	0.00
15	0.02	0.00	0.00	0.00	0.00	0.20
16	0.07	0.00	0.05	0.00	0.00	0.00
17	0.37	1.05	0.00	0.00	0.00	0.00
18	0.00	0.00	0.60	0.00	0.01	0.01
19	0.00	0.12	0.00	0.00	0.00	0.02
20	0.00	0.15	0.00	0.00	0.00	0.00
21	1.23	0.00	0.00	0.13	0.16	0.00
22	1.78	0.00	0.13	0.00	0.27	0.05
23	0.03	0.00	0.12	0.17	0.00	0.67
24	0.00	0.00	0.07	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.03	0.00
27	0.00	0.00	0.00	0.00	0.00	0.09
28	0.03	0.00	0.00	0.00	0.00	0.00
29	0.72	0.00	0.00		0.04	0.00
30	0.00	0.00	0.00		0.00	0.00
31		0.00	0.44		0.00	
Total	**4.52**	**3.33**	**2.87**	**1.03**	**0.68**	**1.84**
Normal	**3.10**	**3.26**	**3.94**	**3.42**	**3.84**	**3.28**
Deviation from normal	**+1.42**	**+0.07**	**-1.07**	**-2.39**	**-3.16**	**-1.44**

Table 136. Daily precipitation (inches) May 2006 – October 2006.

Day of month	MAY	JUN	JUL	AUG	SEP	OCT
1	0.00	0.00	0.00	0.23	3.99	0.00
2	0.00	0.00	0.00	0.00	2.72	0.00
3	0.00	0.63	0.00	0.00	0.00	0.00
4	0.19	0.19	0.00	0.00	0.00	0.00
5	0.01	0.24	0.25	0.12	0.00	0.00
6	0.07	0.02	0.02	0.00	0.55	0.10
7	0.00	0.17	0.28	0.00	0.00	5.24
8	1.81	0.05	0.00	0.06	0.00	0.13
9	0.03	0.04	0.01	0.14	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.28	0.00	0.00
12	0.09	2.53	0.00	0.05	0.00	0.00
13	0.00	0.02	0.00	0.00	0.00	0.00
14	0.00	0.04	1.42	0.00	0.17	0.00
15	0.05	4.20	0.51	0.00	0.11	0.00
16	0.03	0.00	0.43	0.00	0.08	0.00
17	0.02	0.00	0.00	0.00	0.12	0.00
18	0.00	0.00	0.00	0.00	0.00	0.68
19	0.21	0.00	0.00	0.23	0.00	0.00
20	0.01	0.07	0.50	0.00	0.28	0.25
21	0.00	0.00	0.00	0.00	0.00	0.01
22	0.00	0.00	0.00	0.00	0.00	0.06
23	0.00	0.00	0.00	0.00	0.00	0.05
24	0.00	0.03	0.00	0.00	0.00	0.00
25	0.00	0.35	0.00	0.00	0.00	0.00
26	0.00	0.13	0.00	0.00	1.11	0.00
27	0.33	0.92	0.21	0.00	0.00	0.00
28	0.01	0.45	0.00	0.00	0.00	1.62
29	0.00	0.00	0.00	0.00	0.03	0.00
30	0.00	0.00	0.00	0.06	0.00	0.00
31	0.00		0.03	1.33		0.00
Total	**2.86**	**10.08**	**3.66**	**2.50**	**9.16**	**8.14**
Normal	**3.82**	**4.33**	**5.87**	**5.71**	**4.52**	**3.52**
Deviation from normal	**-0.96**	**+5.75**	**-2.21**	**-3.21**	**+4.64**	**+4.62**