
APPLIED RESEARCH ON FIELD CROP DISEASE CONTROL 2011

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POLICY FOR ACCEPTANCE OF PESTICIDES FOR TESTING

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

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

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

INTRODUCTION

Rainfall in May and Oct was 1.57 and 0.14 in. below normal, respectively. Rainfall in June, July, August and September was 0.06, 2.17, 8.41, and 4.37 in. above normal, respectively. Rainfall during the period totaled 40.98 in., which was 13.3 in. above normal. Average minimum air temperatures were normal (± 1 °F) in May, June, July, August and October and 3°F above normal in September. Maximum air temperatures were normal in October, 6 °F above normal in July, 5°F above normal in May and June, 3°F above normal in August, and 2°F above normal in September according to records from a NOAA station at the Tidewater AREC in Suffolk. Normal represented the mean for the past 78 yrs of records.

Cotton and peanut planting began as early as 22 April when soil temperatures at the 4 in. depth averaged above 60° F. Below normal rainfall in May and the continued rise in soil temperatures allowed completion of planting in May (Table 1). Good seedling emergence and vigor were observed after planting. A dry period from 12 July until 26 August resulted in crop stress, especially in corn, and brief periods of stress in cotton, peanut and soybean. Heavy rainfall from Hurricane Irene brought high winds and 13.7 in. of rainfall in eastern Virginia on 27 and 28 August. This category-1 hurricane produced winds in excess of 75 MPH which caused lodging of corn and tangling of yield-bearing limbs of peanut, cotton and soybean. Harvesting of peanut was completed in October and cotton harvest continued until completion in early November. The progress of soybean harvest was delayed by periods of rainfall in November and December. The first killing frost in the Tidewater area was on 30 and 31 October when night-time temperatures ranged from a low of 28 to 31 °F.

Seasonal heat units for peanut from 1 May to 31 October totaled 3227 in Suffolk which was 328 units above the previous 16-yr average (Table 1). A total of 2450 to 2600 heat units are needed in seasons with normal rainfall for maturation of most commercial peanut varieties in Virginia. Cotton degree days (DD_{60}) from 1 May to 31 October totaled 2593 and were 353 above the 15-yr average (Table 1). Although vegetative growth was reduced, first flower and first open boll in 2011 occurred on the same day as the 16-yr average, 10 July and 5 September, respectively.

Peanut was harvested on 16,000 acres in 2011 and yields are estimated to average 3900 lb/A which is 200 lb above the previous record yield of 3700 lb/A in 2009 (Table 2). Disease losses in peanuts were below that of previous seasons because of drought and high temperature stress in July and August. *Cylindrocladium* black rot, southern stem rot and nematode damage were the most common causes of root, stem and pod disease in peanuts (Table 3). Leaf spot disease was low until an outbreak of late leaf spot occurred following the wet period after Hurricane Irene. *Sclerotinia* blight was low throughout the growing season. Incidence of tomato spotted wilt virus (TSWV) was low to moderate even in highly susceptible varieties such as Perry in 2011. Northern root-knot, stubby root and sting nematodes caused moderate to severe damage to roots and pods in fields having moderate to high populations of these pests.

Cotton was harvested on 115,000 acres and yields in Virginia are expected to average 793 lb/A which is 73 lb below the 16-yr average for Suffolk (Table 2). Stand losses due to seedling diseases were caused by *Rhizoctonia* and *Pythium* damping-off, but incidence and impact on production were low in 2011 (Table 5). Most plantings of cotton exhibited rapid

emergence of seedlings and good vigor because of warm soil temperatures and adequate soil moisture. Sand blasting of seedlings during periods of high winds caused minor damage to emerging plants and stunting. Other factors that contributed to reduced stands were planting seed too shallow or too deep and placement of starter fertilizer too close to seed. Southern root-knot, stubby root, and sting nematodes resulted in the heaviest losses of yield in cotton. Reniform nematode caused minor yield losses in a few fields, but no occurrences of Columbia lance nematode were detected.

Soybean yields are expected to average 39 bu/A in 2011 on 540,000 acres (Table 2). Soybean cyst, southern and northern root-knot, sting, and stubby root nematodes accounted for the greatest losses of yield (Table 4). Leaf spot diseases (brown spot, frogeye leaf spot, and anthracnose) showed low to moderate incidence. Pod and stem blight caused losses of yield in some fields. Cercospora blight was the most prevalent foliar disease and caused some losses of yield and seed quality. Soybean rust (SBR) was not detected in Virginia in 2011.

Corn yields are estimated to average 119 bu/A in 2011 on 340,000 acres (Table 2). Seedling disease caused minimal losses of stand. The widespread occurrence of stubby root nematode and patches of southern root-knot and sting nematodes were thought to account for most of the yield losses to disease in corn. Foliar diseases caused only minor damage in widely scattered areas. As a whole, stalk rots and foliar diseases of corn showed low incidence and did not cause significant losses of yield in 2011.

Wheat yields were estimated to average 71 bu/A on 250,000 acres (Table 2). Stagonospora leaf blotch (Septoria leaf blotch) and tan spot were the most common diseases of wheat in southeastern Virginia. Stripe rust was not detected in 2011, and only low levels of powdery mildew and common rust were observed. Occurrences of scab on heads were low in the Tidewater Area, but caused some damage in areas that were north of the James River and especially in fields with a history of minimum tillage and double cropping of wheat/soybean.

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

The primary purpose of this book is to provide cooperators and contributors a summary of the results of field research. Data summaries and conclusions in thirteen chapters from this book have been submitted to the American Phytopathological Society for publication in *Plant Disease Management Reports* in 2012. Reprints of these publications are available upon request.

Table 1. Comparison of rainfall, peanut heat units (DD₅₆) and cotton degree-days (DD₆₀) in 2011 to an average of historical records at the Tidewater AREC.

Rainfall (in.)								
Month	2005	2006	2007	2008	2009	2010	2011	Normal*
May	4.78	2.86	2.16	3.43	4.60	6.77	2.23	3.80
Jun	2.64	10.08	3.00	1.56	3.40	0.83	4.28	4.22
Jul	5.19	3.66	1.71	5.58	4.86	1.01	7.96	5.79
Aug	4.50	2.50	5.00	2.18	3.38	2.04	14.21	5.80
Sep	3.08	9.16	0.43	6.01	7.69	8.75	8.96	4.59
Oct	5.68	8.14	5.26	0.87	1.72	8.24	3.34	3.48
Total	25.87	36.40	17.56	19.63	25.65	27.64	40.98	27.68

*Normal is mean of previous 78 yrs (1933-2010).

Peanut Heat Units (DD₅₆)

Month	2005	2006	2007	2008	2009	2010	2011	Avg.**
May	248	307	319	321	424	457	433	357
Jun	549	504	547	695	580	738	645	574
Jul	710	665	629	663	635	783	776	672
Aug	680	664	664	610	685	703	675	638
Sep	506	363	455	482	402	539	503	439
Oct	240	171	368	186	204	232	195	219
Total	2933	2674	2982	2957	2930	3453	3227	2899

**Avg. is mean of previous 16 yrs (1995-2010).

Cotton Degree Days (DD₆₀)

Month	2005	2006	2007	2008	2009	2010	2011	Avg.**
May	169	221	230	229	318	346	332	262
Jun	433	386	431	585	460	624	529	452
Jul	587	541	508	540	513	676	665	538
Aug	557	542	541	488	561	580	551	508
Sep	393	259	351	367	292	430	385	333
Oct	158	104	273	126	136	160	131	148
Total	2297	2053	2334	2335	2280	2816	2593	2240

**Avg. is mean of previous 16 yrs (1995-2010).

Table 2. Crop production statistics in year of record yield compared to 2011.

Crop	Statistics of record year for yield*			2011 projection*	
	Year	Acreage	Yield/A	Acreage	Yield/A
Peanut	2009	12,000	3,700 lb	16,000	3,900 lb
Soybean.....	2004	540,000	39 bu	540,000	39 bu
Corn	2000	330,000	146 bu	340,000	119 bu
Cotton (lint)	2004	81,000	956 lb	115,000	793 lb
Wheat.....	2008	280,000	71 bu	250,000	71 bu

* Crop production estimates issued in December 2011 by the National Agricultural Statistics Service at <http://www.nass.usda.gov/va>.

Table 3. Estimated loss in yield as a result of peanut diseases in 2011.

Disease	Causal organism	Percent loss
Early leaf spot.....	<i>Cercospora arachidicola</i>	1.0
Late leaf spot.....	<i>Cercosporidium personatum</i>	1.5
Pepper spot & leaf scorch.....	<i>Leptosphaerulina crassiasca</i>	0.0
Web blotch.....	<i>Phoma arachidicola</i>	0.1
Botrytis blight.....	<i>Botrytis</i> sp.	0.0
Peanut rust.....	<i>Puccinia arachidis</i>	0.0
Sclerotinia blight.....	<i>Sclerotinia minor</i>	0.5
Southern stem rot.....	<i>Sclerotium rolfsii</i>	2.0
Stem, root, & pod rot.....	<i>Rhizoctonia</i> spp.	0.1
Pythium pod rot.....	<i>Pythium</i> spp.	0.0
Tomato spotted wilt virus.....	tomato spotted wilt virus	1.0
Cylindrocladium black rot (CBR).....	<i>Cylindrocladium parasiticum</i>	2.0
Nematode damage.....	Northern root knot, sting, lesion, etc.	2.0
Total loss (%).....		10.2*

* The loss estimate equals 3,544 tons of peanuts or \$2.48 million in farm income based on an estimated total production of 31,200 tons and an estimated value of \$700/ton.

Table 4. Estimated loss in yield as a result of soybean diseases in 2011.

Disease	Causal agent(s)	Percent loss
Seedling diseases.....	<i>Rhizoctonia</i> spp., <i>Pythium</i> spp., etc.	0.3
Seed rot.....	<i>Diaporthe/Phomopsis</i> complex	0.1
<i>Cercospora</i> blight.....	<i>Cercospora kikuchii</i>	0.5
Purple seed stain.....	<i>Cercospora kikuchii</i>	0.5
Downy mildew.....	<i>Peronospora manshurica</i>	0.0
Anthrachnose.....	<i>Colletotrichum truncatum</i>	0.2
Brown spot.....	<i>Septoria glycines</i>	0.2
Pod & stem blight.....	<i>Diaporthe phaseolorum</i> var. <i>sojae</i>	0.1
Soybean rust.....	<i>Phakopsora pachyrhizi</i>	0.0
Frogeye leaf spot.....	<i>Cercospora sojae</i>	0.0
Southern blight.....	<i>Sclerotium rolfsii</i>	0.01
Brown stem rot.....	<i>Phialophora gregata</i>	0.1
Charcoal rot.....	<i>Macrophomina phaseolina</i>	0.01
Stem canker.....	<i>Diaporthe phaseolorum</i> var. <i>caulivora</i>	0.01
Sudden death syndrome.....	<i>Fusarium solani</i> f.sp. <i>glycines</i>	0.01
Phytophthora root & stem rot.....	<i>Phytophthora megasperma</i> f.sp. <i>glycinea</i>	0.0
Sclerotinia stem rot.....	<i>Sclerotinia sclerotiorum</i> and <i>S. minor</i>	0.0
Viruses.....	SMV, PMV, BPMV, etc.	0.1
	<i>Pseudomonas syringae</i> , <i>P. syringae</i> pv. <i>Tabaci</i> ,	
Bacterial diseases.....	<i>Xanthomonas campestris</i> pv. <i>glycines</i>	0.01
Soybean cyst nematode.....	<i>Heterodera glycines</i>	3.0
Southern root-knot nematode.....	<i>Meloidogyne incognita</i>	1.5
Other nematodes.....	---various---	0.5
Total loss (%).....		7.15*

* The loss estimate equals 1.62 million bushels based on production of 21.06 million bushels in 2011. At a value of \$11/bu, the loss would be \$17.8 million in farm revenue.

Table 5. Estimated loss of yield to cotton diseases in 2011

Disease	Causal agent(s)	Percent loss
Seedling disease	<i>Rhizoctonia solani</i> , <i>Pythium</i> spp.	2.0
Fusarium wilt	<i>Fusarium oxysporum</i> f. sp. <i>vasinfectum</i>	0
Verticillium wilt.....	<i>Verticillium dahlia</i>	0
Texas root rot	<i>Phymatotrichum omnivorum</i>	0
Ascochyta blight	<i>Ascochyta gossypii</i>	0
Bacterial blight.....	<i>Xanthomonas</i> spp.	trace
Boll rots.....	<i>Diplodia</i> spp., <i>Fusarium</i> spp., <i>Xanthomonas</i> spp.	0.10
Leaf spots	---various---	trace
Southern root-knot nematode.....	<i>Meloidogyne incognita</i>	2.50
Reniform nematode.....	<i>Rotylenchulus reniformis</i>	trace
Other nematodes	<i>Trichodorus</i> spp., <i>Belonolaimus</i> spp., etc.	1.5
Total loss (%).....		6.1*

* The loss estimate equals 12,343 bales (480 lb/bale) in Virginia based on production of 190,000 bales of lint in 2011. At a value of \$0.93 per pound, the loss in revenues at the farm gate would total 5.5 million dollars.

I. WHEAT SEED TREATMENT FUNGICIDE TEST (WHEATSEED111, TAREC, Field 61B)

A. PURPOSE: To compare seed treatment fungicides for disease control and impact on yield

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 10-ft alleys between blocks
2. Plots were 7 rows (5-ft wide), 15-ft long with 7.5-in row spacing
3. Data collected from all seven rows in each plot

C. APPLICATION OF TREATMENTS: Seed treatment applied by personnel with Chemtura Corporation.

D. SEED TREATMENT AND RATE (ML/100 KG SEED):

1. Untreated seed
2. Rancona Pinnacle 325 ml
3. Rancona Crest 325 ml
4. Raxil MD 325 ml
5. Dividend Extreme 130 ml

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC, Rt. 58, Suffolk
2. Crop history: corn 2008, 2010, wheat/soybean 2009
3. Planting date and variety: 2 Nov 2010, Sisson
4. Soil fertility report (25 Jan):

pH.....	6.28
Ca	584 ppm
Mg	83 ppm
P	61 ppm
K.....	128 ppm
Soil type	Rains fine sandy loam
5. Fertilizer: 6-16-36 300 lb/A (22 Oct 2010)
Liquid nitrogen (30%) 60 lb/A (17 Feb, 17 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz (17 Feb)
7. Harvest date: 3 Jun 2011

Table 6. Effect of seed treatment fungicides on emergence, vigor and disease incidence in wheat.

Treatment and rate /100 kg seed	Plants/ft ¹ (19 Nov)	Plant vigor ²	% septoria ³
		(0-10) (4 Apr)	(23 Apr)
Untreated seed.....	20.2	7.8 b	1.3
Rancona Pinnacle 325 ml.....	19.5	8.0 b	0.3
Rancona Crest 325 ml.....	21.5	8.0 b	2.6
Raxil MD 325 ml.....	20.7	8.0 b	0.6
Dividend Extreme 130 ml.....	18.9	8.5 a	2.8
<i>P</i> (F).....	.1986	.0625	.5816

¹ Counts of two, 3-ft samples per plot.

² Vigor rating: 0=dead plant, 10=healthy plant.

³ Data represent percent of leaf area with disease symptoms.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$), except if $P \geq 0.05$ and $P \leq 0.10$, analysis was at $P=0.10$. Arcsine transformation of percentage data was made in analysis to determine statistical significance.

Table 7. Effect of seed treatment fungicides on disease incidence in wheat on 16 May.

Treatment and rate /100 kg seed	% mildew*	% septoria *	
	upper leaves	upper leaves	lower leaves
Untreated seed.....	0.1	2.8	8.8 a
Rancona Pinnacle 325 ml.....	0.1	1.0	3.8 b
Rancona Crest 325 ml.....	0.1	1.5	3.5 b
Raxil MD 325 ml.....	0.1	0.8	2.5 b
Dividend Extreme 130 ml.....	0.1	1.0	3.0 b
<i>P</i> (F).....	.9335	.1304	.0403

* Data represent percent of leaf area with disease symptoms.

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

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

Table 8. Effect of seed treatment fungicides on yield and test weight in wheat.

Treatment and /100 kg seed	Yield* (bu/A)	Test weight (lb/bu)
Untreated seed.....	126.0	65.4
Rancona Pinnacle 325 ml.....	129.4	65.6
Rancona Crest 325 ml.....	137.2	65.3
Raxil MD 325 ml.....	132.5	65.1
Dividend Extreme 130 ml.....	123.8	65.9
<i>P</i> (F).....	.2675	.8956

* Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 3 Jun.

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

II. WHEAT FUNGICIDE TEST (WHEATFUN211, TAREC Res. farm, Field 29)

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

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.8 gal/A. Sprays were applied at GS 31 on 22 Mar, GS 39 on 18 Apr, and GS 59 on 25 Apr.

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated
2. Stratego YLD 500SC 1.5 fl oz + Induce 3.2 fl oz (GS 31)
3. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (GS 39)
4. Absolute 500SC 5 fl oz + Induce 3.2 fl oz (GS 39)
5. Prosaro 421SC 5 fl oz + Induce 3.2 fl oz (GS 39)
6. Prosaro 421SC 6.5 fl oz + Induce 3.2 fl oz (GS 59)
7. Headline 2.09EC 3 fl oz (GS 31); Caramba 0.75EC 13.5 fl oz (GS 59)
8. Headline 2.09EC 3 fl oz (GS 31); Twinline 9 fl oz (GS 39)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: peanut 2008, 2010, wheat/fallow 2009
3. Planting date and variety: 2 Nov 2010, USG3209
4. Soil fertility report (17 Jan 2011):

pH.....	5.98	K.....	79 ppm
Ca	340 ppm	Zn	1.0 ppm
Mg	32 ppm	Mn	3.8 ppm
P	35 ppm	Soil type	Goldsboro fine sandy loam

5. Fertilizer: 6-16-36 300 lb/A (22 Oct 2010)
Liquid nitrogen (30%) 60 lb/A (17 Feb, 17 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz (17 Feb)
7. Harvest date: 3 Jun 2011

Table 9. Effect of fungicide treatments on foliar diseases in wheat on 30 Apr.

Treatment, rate/A and application timing*	% septoria**		% mildew**	
	upper leaves	lower leaves	upper leaves	lower leaves
Untreated.....	0.6	8.8 a	1.3	1.8
Stratego YLD 500SC 1.5 fl oz + Induce 3.2 fl oz (3/22)	0.8	6.5 ab	2.8	1.5
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (4/18) ...	0.1	3.5 bc	0.0	0.0
Absolute 500SC 5 fl oz + Induce 3.2 fl oz (4/18)	0.1	1.1 c	0.0	0.0
Prosaro 421SC 5 fl oz + Induce 3.2 fl oz (4/18)	0.0	2.0 bc	0.0	0.0
Prosaro 421SC 6.5 fl oz + Induce 3.2 fl oz (4/25).....	1.3	5.8 ab	0.0	0.3
Headline 2.09EC 3 fl oz (3/22)				
Caramba 0.75EC 13.5 fl oz (4/25)	0.1	2.5 bc	0.0	0.0
Headline 2.09EC 3 fl oz (3/22)				
Twinline 9 fl oz (4/18).....	0.0	0.0 c	0.0	0.0
P(F)	.5201	.0093	.3294	.2071

* GS 31= 22 Mar; GS 39= 18 Apr; GS 59= 25 Apr.

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

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

Table 10. Effect of fungicide treatments on foliar disease on upper leaves in wheat on 19 May.

Treatment, rate/A and application timing*	% septoria**	% mildew**	% rust**
Untreated.....	40.0 a	0.5 a	12.5 a
Stratego YLD 500SC 1.5 fl oz + Induce 3.2 fl oz (3/22)	11.3 b	0.0 b	4.0 b
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (4/18) ...	3.0 bc	0.0 b	0.1 b
Absolute 500SC 5 fl oz + Induce 3.2 fl oz (4/18)	0.3 c	0.0 b	0.0 b
Prosaro 421SC 5 fl oz + Induce 3.2 fl oz (4/18)	1.5 bc	0.0 b	0.0 b
Prosaro 421SC 6.5 fl oz + Induce 3.2 fl oz (4/25).....	2.8 bc	0.0 b	3.8 b
Headline 2.09EC 3 fl oz (3/22)			
Caramba 0.75EC 13.5 fl oz (4/25)	11.3 b	0.0 b	2.5 b
Headline 2.09EC 3 fl oz (3/22)			
Twinline 9 fl oz (4/18).....	0.5 bc	0.0 b	0.3 b
P(F)	.0001	.0251	.0043

* GS 31= 22 Mar; GS 39= 18 Apr; GS 59= 25 Apr.

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

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

Table 11. 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.....	88.4	63.5
Stratego YLD 500SC 1.5 fl oz + Induce 3.2 fl oz (3/22)	85.7	64.9
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (4/18)	93.0	64.5
Absolute 500SC 5 fl oz + Induce 3.2 fl oz (4/18)	87.7	64.1
Prosaro 421SC 5 fl oz + Induce 3.2 fl oz (4/18)	89.9	64.4
Prosaro 421SC 6.5 fl oz + Induce 3.2 fl oz (4/25).....	84.7	64.5
Headline 2.09EC 3 fl oz (3/22)		
Caramba 0.75EC 13.5 fl oz (4/25)	93.0	65.2
Headline 2.09EC 3 fl oz (3/22)		
Twinline 9 fl oz (4/18).....	91.4	64.7
<i>P</i> (F)	.9561	.7333

* GS 31= 22 Mar; GS 39= 18 Apr; GS 59= 25 Apr.

** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 3 Jun 2011.

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

III. WHEAT FUNGICIDE TEST (WHEATFUN311, TAREC Res. farm, Field 29)

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

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.8 gal/A. Sprays were applied at GS 39 on 18 Apr and GS 59 on 25 Apr. All sprays were applied with Coverall 3.2 fl oz/A (0.125% v/v).

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated
2. Priaxor SC 4 fl oz (GS 39)
3. Twinline 1.7EC 9 fl oz (GS 39)
4. Quilt Xcel 10.5 fl oz (GS 39)
5. Headline 2.09EC 5.3 fl oz (GS 39)
6. BAS 700 2.2 fl oz (GS 39)
7. Tilt 3.6EC 3 fl oz (GS 39)
8. Caramba 0.75EC 8 fl oz (GA 39)
9. Twinline 1.75 EC 9 fl oz (GS39); Caramba 0.75 EC 8 fl oz (GS 59)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: peanut 2008, 2010, wheat/fallow 2009
3. Planting date and variety: 2 Nov 2010, USG 3209
4. Soil fertility report (17 Jan 2011):

pH.....	5.98	K.....	79 ppm
Ca	340 ppm	Zn	1.0 ppm
Mg	32 ppm	Mn	3.8 ppm
P	35 ppm	Soil type	Goldsboro fine sandy loam

5. Fertilizer: 6-16-36 300 lb/A (22 Oct 2010)
Liquid nitrogen (30%) 60 lb/A (17 Feb, 17 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz (17 Feb)
7. Harvest date: 3 Jun 2011

Table 12. Effect of fungicide treatments on foliar diseases in wheat on 30 Apr.

Treatment, rate/A and application timing*	% septoria**		% mildew**	
	upper leaves	lower leaves	upper leaves	lower leaves
Untreated.....	1.0 a	9.0 a	0.8 a	5.3 a
Priaxor SC 4 fl oz (4/18)	0.3 b	1.5 bc	0.0 b	0.3 c
Twinline 1.7EC 9 fl oz (4/18)	0.0 b	2.5 b	0.0 b	0.0 c
Quilt Xcel 10.5 fl oz (4/18)	0.3 b	1.3 bc	0.0 b	0.0 c
Headline 2.09EC 5.3 fl oz (4/18)	0.0 b	0.6 c	0.0 b	0.1 c
BAS 700 2.2 fl oz (4/18)	1.0 a	7.8 a	1.0 a	3.8 b
Tilt 3.6EC 3 fl oz (4/18)	0.3 b	2.3 b	0.0 b	0.0 c
Caramba 0.75EC 8 fl oz (4/18)	0.0 b	0.8 c	0.0 b	0.1 c
Twinline 1.75 EC 9 fl oz (4/18)				
Caramba 0.75 EC 8 fl oz (4/25)	0.1 b	1.8 bc	0.0 b	0.0 c
P(F)	.0071	.0001	.0001	.0001

* GS 39= 18 Apr; GS 59= 25 Apr.

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

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

Table 13. Effect of fungicide treatments on foliar disease on upper leaves in wheat on 17 May.

Treatment, rate/A and application timing*	% septoria**	% mildew**	% rust**
Untreated.....	15.0 a	1.8	6.3 a
Priaxor SC 4 fl oz (4/18)	2.0 c	0.3	0.0 c
Twinline 1.7EC 9 fl oz (4/18)	0.0 c	0.0	0.0 c
Quilt Xcel 10.5 fl oz (4/18)	0.3 c	0.0	0.0 c
Headline 2.09EC 5.3 fl oz (4/18)	1.3 c	0.3	0.0 c
BAS 700 2.2 fl oz (4/18)	8.3 b	0.8	1.5 b
Tilt 3.6EC 3 fl oz (4/18)	0.3 c	0.0	0.0 c
Caramba 0.75EC 8 fl oz (4/18)	0.5 c	0.3	0.0 c
Twinline 1.75 EC 9 fl oz (4/18)			
Caramba 0.75 EC 8 fl oz (4/25)	0.1 c	0.0	0.0 c
P(F)	.0001	.1432	.0001

* GS 39= 18 Apr; GS 59= 25 Apr.

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

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

Table 14. 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.....	77.4	63.5
Priaxor SC 4 fl oz (4/18)	78.9	65.0
Twinline 1.7EC 9 fl oz (4/18)	74.2	64.3
Quilt Xcel 10.5 fl oz (4/18)	80.8	64.7
Headline 2.09EC 5.3 fl oz (4/18)	84.8	63.6
BAS 700 2.2 fl oz (4/18)	82.6	63.9
Tilt 3.6EC 3 fl oz (4/18)	83.7	64.1
Caramba 0.75EC 8 fl oz (4/18)	89.1	53.8
Twinline 1.75 EC 9 fl oz (4/18)		
Caramba 0.75 EC 8 fl oz (4/25)	88.7	63.9
<i>P</i> (F)	.5319	.8242

* GS 39= 18 Apr; GS 59= 25 Apr.

** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 3 Jun 2011.
Means are not significantly different according to Fisher's Protected LSD ($P=0.05$).

IV. WHEAT FUNGICIDE TEST (WHEATFUN411, TAREC Research Center, Field 61B)

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

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.8 gal/A. Sprays were applied at GS 32 on 28 Mar, GS 39 on 18 Apr and GS 45 on 25 Apr.

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated
2. Headline 2.09EC 3 fl oz (GS 32); Twinline 1.7EC 9 fl oz (GS 39)
3. Headline 2.09EC 3 fl oz (GS 32); 4 fl oz (GS 45)
4. Quilt 1.66EC 7 fl oz (GS 32); 14 fl oz (GS45)
5. Quilt 1.66EC 14 fl oz (GS 45)
6. Quilt Xcel 7 fl oz + COC 25.3 fl oz (GS 32); Quilt Xcel 14 fl oz + COC 25.3 fl oz (GS 45)
7. Quilt Xcel 14 fl oz (GS 45)
8. Stratego Pro 500SC 4 fl oz (GS 32); 4 fl oz (GS 45)
9. Stratego Pro 500SC 2 fl oz (GS 32); Prosaro 421SC 6.5 fl oz (GS 45)
10. Prosaro 421SC 6.5 fl oz (GS 45)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: corn 2008, 2010, wheat/soybean 2009
3. Planting date and variety: 3 Nov 2010, USG3209
4. Soil fertility report (25 Jan 2011):

pH.....	6.28	K.....	128 ppm
Ca	584 ppm	Zn	0.6 ppm
Mg	83 ppm	Mn	2.0 ppm
P	61 ppm	Soil type	Rains fine sandy loam

5. Fertilizer: 6-16-36 300 lb/A (22 Oct 2010)
Liquid nitrogen (30%) 60 lb/A (17 Feb, 17 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz (17 Feb)
7. Harvest date: 9 Jun 2011

Table 15. Effect of fungicide treatments on foliar diseases in wheat.

Treatment, rate/A and application timing*	% septoria leaf blotch**			% rust**
	lower leaves (23 Apr)	upper leaves (15 May)	lower leaves (16 May)	upper leaves (16 May)
Untreated	0.5	17.8 a	31.0 a	4.0 a
Headline 2.09EC 3 fl oz (3/28)				
Twinline 1.7EC 9 fl oz (4/18).....	0.0	0.0 b	0.2 c	0.0 b
Headline 2.09EC 3 fl oz (3/28); 4 fl oz (4/25).	0.0	0.2 b	1.8 bc	0.0 b
Quilt 1.66EC 7 fl oz (3/28); 14 fl oz (4/25)	0.1	0.2 b	0.6 c	0.0 b
Quilt 1.66EC 14 fl oz (4/25).....	0.1	0.4 b	1.4 bc	0.0 b
Quilt Xcel 7 fl oz + COC 25.3 fl oz (3/28)				
Quilt Xcel 14 fl oz + COC 25.3 fl oz (4/25) ..	0.1	0.0 b	0.6 c	0.0 b
Quilt Xcel 14 fl oz (4/25).....	0.1	0.0 b	1.0 bc	0.0 b
Stratego Pro 500SC 4 fl oz (3/28, 4/25)	0.0	0.6 b	4.6 b	0.0 b
Stratego Pro 500SC 2 fl oz (3/28)				
Prosaro 421SC 6.5 fl oz (4/25).....	0.1	0.6 b	2.2 bc	0.0 b
Prosaro 421SC 6.5 fl oz (4/25).....	0.1	0.8 b	1.6 bc	0.0 b
<i>P</i> (F)	.2879	.0001	.0001	.0001

* GS 32= 28 Mar; GS 39= 18 Apr; GS 45= 25 Apr.

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

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

Table 16. 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	108.5	63.5
Headline 2.09EC 3 fl oz (3/28)		
Twinline 1.7EC 9 fl oz (4/18).....	108.8	63.9
Headline 2.09EC 3 fl oz (3/28); 4 fl oz (4/25).....	117.3	64.3
Quilt 1.66EC 7 fl oz (3/28); 14 fl oz (4/25)	116.6	64.5
Quilt 1.66EC 14 fl oz (4/25).....	108.9	64.0
Quilt Xcel 7 fl oz + COC 25.3 fl oz (3/28)		
Quilt Xcel 14 fl oz + COC 25.3 fl oz (4/25).....	110.9	64.1
Quilt Xcel 14 fl oz (4/25).....	109.9	63.3
Stratego Pro 500SC 4 fl oz (3/28, 4/25)	107.3	64.1
Stratego Pro 500SC 2 fl oz (3/28)		
Prosaro 421SC 6.5 fl oz (4/25).....	107.4	63.9
Prosaro 421SC 6.5 fl oz (4/25).....	106.5	63.8
<i>P</i> (F)	.1195	.3950

* GS 32= 28 Mar; GS 39= 18 Apr; GS 45= 25 Apr.

** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 9 Jun 2010.
Means are not significantly different according to Fisher's Protected LSD ($P=0.05$).

V. WHEAT FUNGICIDE TEST (WHEATFUN511, TAREC Research Center, Field 61B)

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

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.8 gal/A. Sprays were applied at GS 32 on 28 Mar and GS 39 on 18 Apr.

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated
2. Aproach 2.08SC 3 fl oz + Induce 6.4 fl oz (GS 32);
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (GS 39)
3. Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (GS 39)
4. Aproach 2.08SC 6 fl oz + Induce 6.4 fl oz (GS 39)
5. Aproach 2.08SC 9 fl oz + Induce 6.4 fl oz (GS 39)
6. Priaxor SC 4 fl oz + Induce 3.2 fl oz (GS 39)
7. Twinline 1.7EC 9 fl oz + Induce 3.2 fl oz (GS 39)
8. Priaxor SC 2 fl oz + Induce 3.2 fl oz (GS 32)
9. Headline 2.09EC 3 fl oz + Induce 3.2 fl oz (GS 32)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Center, Rt. 58, Suffolk
2. Crop history: corn 2008, 2010, wheat/soybean 2009
3. Planting date and variety: 2 Nov 2010, USG 3209
4. Soil fertility report (25 Jan 2011):

pH.....	6.28	K.....	128 ppm
Ca	584 ppm	Zn	0.6 ppm
Mg	83 ppm	Mn	2.0 ppm
P	61 ppm	Soil type	Rains fine sandy loam

5. Fertilizer: 6-16-36 300 lb/A (22 Oct 2010)
Liquid nitrogen (30%) 60 lb/A (17 Feb, 17 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz (17 Feb)
7. Harvest date: 9 Jun 2011

Table 17. Effect of fungicide treatments on septoria leaf blotch in wheat.

Treatment, rate/A and application timing*	% septoria**		
	lower leaves (23 Apr)	upper leaves (17 May)	lower leaves (17 May)
Untreated	0.3	10.0 a	36.0 a
Approach 2.08SC 3 fl oz + Induce 6.4 fl oz (3/28)			
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	0.1	2.2 cd	8.0 c
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	0.1	7.6 b	25.0 b
Approach 2.08SC 6 fl oz + Induce 6.4 fl oz (4/18).....	0.1	0.1 d	0.8 e
Approach 2.08SC 9 fl oz + Induce 6.4 fl oz (4/18).....	0.1	0.2 cd	1.2 e
Priaxor SC 4 fl oz + Induce 3.2 fl oz (4/18)	0.3	0.0 d	0.4 e
Twinline 1.7EC 9 fl oz + Induce 3.2 fl oz (4/18).....	0.1	0.0 d	0.2 e
Priaxor SC 2 fl oz + Induce 3.2 fl oz (3/28)	0.0	2.4 c	6.0 cd
Headline 2.09EC 3 fl oz + Induce 3.2 fl oz (3/28)	0.0	1.0 cd	2.4 de
P(F)	.2668	.0001	.0001

* GS 32 = 28 Mar; GS 39 = 18 Apr.

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

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

Table 18. Effect of fungicide treatments on foliar disease in wheat on 17 May.

Treatment, rate/A and application timing*	% mildew**		% rust**
	upper leaves	lower leaves	
Untreated	1.6 a	1.8 a	1.4 a
Approach 2.08SC 3 fl oz + Induce 6.4 fl oz (3/28)			
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	0.4 b	0.0 b	0.0 b
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	0.4 b	0.8 ab	0.2 b
Approach 2.08SC 6 fl oz + Induce 6.4 fl oz (4/18).....	0.0 b	0.0 b	0.0 b
Approach 2.08SC 9 fl oz + Induce 6.4 fl oz (4/18).....	0.2 b	0.0 b	0.0 b
Priaxor SC 4 fl oz + Induce 3.2 fl oz (4/18)	0.0 b	0.0 b	0.0 b
Twinline 1.7EC 9 fl oz + Induce 3.2 fl oz (4/18).....	0.0 b	0.0 b	0.0 b
Priaxor SC 2 fl oz + Induce 3.2 fl oz (3/28)	0.5 b	0.4 b	0.2 b
Headline 2.09EC 3 fl oz + Induce 3.2 fl oz (3/28)	0.2 b	0.2 b	0.0 b
P(F)	.0003	.0136	.0001

* GS 32 = 28 Mar; GS 39 = 18 Apr.

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

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

Table 19. 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	104.1 cd	63.1
Approach 2.08SC 3 fl oz + Induce 6.4 fl oz (3/28)		
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	106.9 b-d	63.8
Vertisan 1.67EC 1 pt + Induce 6.4 fl oz (4/18).....	102.5 d	63.4
Approach 2.08SC 6 fl oz + Induce 6.4 fl oz (4/18).....	106.5 b-d	63.9
Approach 2.08SC 9 fl oz + Induce 6.4 fl oz (4/18).....	109.5 a-c	64.3
Priaxor SC 4 fl oz + Induce 3.2 fl oz (4/18)	114.1 a	64.8
Twinline 1.7EC 9 fl oz + Induce 3.2 fl oz (4/18).....	110.4 a-c	64.4
Priaxor SC 2 fl oz + Induce 3.2 fl oz (3/28)	112.9 ab	64.6
Headline 2.09EC 3 fl oz + Induce 3.2 fl oz (3/28)	110.6 a-c	64.3
<i>P</i> (F)	.0901	.1303

* GS 32 = 28 Mar; GS 39 = 18 Apr.

** Yields are weight of wheat with 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 9 Jun 2011.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$), except if $P \geq 0.05$ and $P \leq 0.10$, analysis was at $P=0.10$.

VI. EVALUATION OF SYNGENTA SEED TREATMENTS ON CORN FOR NEMATODE CONTROL (CORNSEEDNEMA111, Morgan farm, Suffolk)

A. PURPOSE: To evaluate Avicta Complete Corn on early season nematodes in corn

B. EXPERIMENTAL DESIGN:

1. Two, 35-ft rows per plot with 36-in. row spacing
2. Eight-ft alleyways between blocks
3. Four replications in a randomized complete block design

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

D. TREATMENT AND RATE (a.i.):

1. A14918 FS 0.064 mg + Cruiser 500FS 0.25 mg/seed
2. Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + Cruiser 500FS 0.25 mg/seed
3. A14918 FS 0.064 mg + A16115 SC 0.72 mg/seed
4. Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + A16115 SC 0.72 mg/seed
5. Allegiance FL 4.0 g + Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP15201 0.5 mg/seed
6. Allegiance FL 4.0 g + Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP20282 FS 0.6 mg/seed
7. Allegiance FL 4.0 g + Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + A16115 SC 0.72 mg/seed

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan Farm, Suffolk
2. Crop history: Cotton 2001-2007, corn 2008-2010
3. Planting date and variety: 22 Apr, NP3000
4. Soil fertility report: (3 May)

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type	Rumford loamy fine sand

5. Nematode assay report (9 Mar):

Nematodes/500 cc soil	
Root knot.....	1909
Lesion.....	10
Stunt	70
Spiral	60

6. Fertilization: 11-25-25 300 lb/A (25 Mar)
N (30%) 60 lb/A (26 Apr, 19 May)
7. Herbicide: Atrazine 1 qt + Intro 2 qt/A (26 Apr)
Roundup 22 fl oz/A (19 May)
8. Harvest date: 22 Aug

Table 20. Effect of seed treatments on emergence and growth of corn.

Treatment and rate (a.i.) ¹	Plants/ft ²		Plant height (in.) ³	
	12 May	26 May	12 May	26 Jun
A14918 FS 0.064 mg + Cruiser 500FS 0.25 mg/seed.....	1.47 b-d	1.50 a-c	8.5 ab	22.7 bc
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + Cruiser 500FS 0.25 mg/seed.....	1.68 a	1.66 a	8.3 bc	23.0 a-c
A14918 FS 0.064 mg + A16115 SC 0.72 mg/seed	1.62 a-c	1.60 ab	8.7 a	22.7 bc
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + A16115 SC 0.72 mg/seed	1.43 cd	1.43 bc	8.0 c	22.4 c
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP15201 0.5 mg/seed	1.36 d	1.35 c	8.6 ab	22.6 bc
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP20282 FS 0.6 mg/seed.....	1.64 ab	1.63 a	8.5 ab	23.5 a
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + A16115 SC 0.72 mg/seed	1.50 a-d	1.53 a-c	8.9 a	23.2 ab
<i>P</i> (F)	.0288	.0274	.0021	.0238

¹ All seed treatments applied by personnel with Syngenta Crop Protection.

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

³ Data are measurements of five 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 21. Effect of seed treatments on growth and root galling in corn.

Treatment and rate (a.i.) ¹	Vigor (0-10) ²		Root galling ³ (0-6) (15 Jul)	Height (in.) to 1 st ear ⁴ (19 Jul)
	20 May	14 Jun		
A14918 FS 0.064 mg + Cruiser 500FS 0.25 mg/seed.....	5.0	6.0 a	2.9 b	33.4
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + Cruiser 500FS 0.25 mg/seed.....	5.3	6.0 a	3.1 ab	33.5
A14918 FS 0.064 mg + A16115 SC 0.72 mg/seed	5.5	6.0 a	3.5 a	34.3
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + A16115 SC 0.72 mg/seed	5.3	5.5 b	2.3 c	34.1
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP15201 0.5 mg/seed	5.0	6.0 a	2.9 b	33.5
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP20282 FS 0.6 mg/seed.....	5.0	5.5 b	2.9 b	33.1
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + A16115 SC 0.72 mg/seed	5.3	6.3 a	3.2 ab	34.1
<i>P</i> (F)	.8503	.0924	.0021	.1119

¹ All seed treatments applied by personnel with Syngenta Crop Protection.

² Vigor rating scale: 0=dead, 10=healthy.

³ Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of root system with galls caused by southern root-knot nematode. Ratings were made on two randomly selected plants per row in each plot on 15 Jul.

⁴ Data are measurements of five 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 ($P=0.05$), except if $P \geq 0.05$ and $P \leq 0.10$, analysis was at $P=0.10$.

Table 22. Effect of seed treatments on nematode populations and yield of corn.

Treatment and rate (a.i.) ¹	Nematodes/500 cc soil ²			Yield ³ (bu/A)
	Root knot	Lesion	Stunt	
A14918 FS 0.064 mg + Cruiser 500FS 0.25 mg/seed.....	235	3	153	88.4
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + Cruiser 500FS 0.25 mg/seed.....	170	8	25	94.3
A14918 FS 0.064 mg + A16115 SC 0.72 mg/seed	265	10	5	104.5
Maxim XL 2.7FS 0.0063 mg + Apron XL 3LS 0.005 mg + Dynasty 100FS 0.0025 mg + A16115 SC 0.72 mg/seed	278	5	65	93.9
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP15201 0.5 mg/seed	348	10	45	91.6
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + STP20282 FS 0.6 mg/seed.....	248	43	135	91.3
Allegiance FL 4.0 g +Trilex Flowable 5 g + Vortex 3.77FS 5 g/100 kg seed + A16115 SC 0.72 mg/seed	298	25	48	98.9
<i>P</i> (F)	.7999	.4835	.2522	.2210

¹ All seed treatments applied by personnel with Syngenta Crop Protection.

² Soil was sampled on 29 Jun.

³ Yields are weight of corn with moisture content of 15.5%. Corn was harvested on 22 Aug. One bushel=56 lbs of grain. Means are not significantly different according to Fisher's Protected LSD ($P=0.05$). Square root transformation of population data was made in statistical analysis.

VII. EVALUATION OF FUNGICIDES FOR FOLIAR DISEASE CONTROL (CORNFOLFUN111, Tidewater Research Farm, Suffolk, Field 63C)

- A. PURPOSE: to assess the efficacy of treatments for control of foliar diseases in corn
- B. EXPERIMENTAL DESIGN:
1. Six, 30-ft rows per plot
 2. Eight-ft alleyways between blocks
 3. Five replications in a randomized complete block design
- C. APPLICATION OF TREATMENTS: Foliar sprays were applied with a Lee Spider sprayer at 38 psi with three, 8002VS nozzles/row delivering 19.88 gal/A at V5 (5 collars, 1 Jun) or VT (tassel emergence, 16 Jun).
- D. TREATMENT, RATE/A AND APPLICATION TIMING:
1. Untreated check
 2. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5)
 3. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)
 4. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5, VT)
 5. Prosaro 421SC 6.5 fl oz (VT)
 6. Headline 250EC 6 fl oz (VT)
 7. Headline AMP 10 fl oz (VT)
 8. Quilt 10.5 fl oz (VT)
 9. Quilt Xcel 10.5 fl oz (VT)
 10. Evito T 5 fl oz + Induce 3.2 fl oz/A (V5)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: corn 2008, cotton 2009, soybean 2010
 3. Planting date and variety: 11 Apr, DK 61-35
 4. Soil fertility report:

pH.....	6.30	K.....	112 ppm
Ca	431 ppm	Zn	0.3 ppm
Mg	77 ppm	Mn	1.9 ppm
P	26 ppm	Soil type	Kenansville loamy sand
 5. Fertilization: 8-15-36 300 lb/A (23 Mar)
 10-34-0 10 gal + N (24-0-0) 60 lb/A (11 Apr)
 N (24-0-3) 60 lb/A (17 May)
 6. Herbicide: Roundup 1 qt/A(29 Mar, 20 May)
 Lariat 3 qt/A (11 Apr)
 7. Irrigation: ca. 1 in. (24 Jun)
 8. Harvest date: 24 Aug

Table 23. Disease incidence in corn.

Treatment and rate/A ¹	% leaf blight ²		% ear blight ³
	15 Jul	4 Aug	(15 Jul)
Untreated check	0.8 a	14.0	4.4 a
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5)	0.2 b	8.8	3.4 ab
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)	0.2 b	9.2	1.8 c
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5, VT)	0.0 b	10.4	1.8 c
Prosaro 421SC 6.5 fl oz (VT)	0.1 b	12.0	2.8 bc
Headline 250EC 6 fl oz (VT)	0.0 b	11.6	3.2 ab
Headline AMP 10 fl oz (VT)	0.0 b	10.6	3.4 ab
Quilt 10.5 fl oz (VT)	0.1 b	10.0	2.4 bc
Quilt Xcel 10.5 fl oz (VT)	0.0 b	12.0	3.4 ab
Evito T 5 fl oz + Induce 3.2 fl oz/A (V5)	0.0 b	11.0	3.6 ab
P(F)	.0002	.1044	.0106

¹ V5=five-collar stage (6/1), VT=tasseling (6/16).² Percent leaf area with symptoms of Northern leaf blight on the ear leaf.³ Percent area of husk with necrosis.Means followed by the same letter(s) are significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 24. Plant health, lodging and yield of corn.

Treatment and rate/A ¹	% greening ²		% lodging ³	Yield ⁴
	15 Jul	4 Aug	(4 Aug)	(bu/A)
Untreated check	8.8 bc	38.0	6.8 ab	120.7
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5)	8.6 c	43.6	2.8 c	119.7
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)	9.4 ab	43.6	2.4 c	125.2
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V5, VT)	8.8 bc	40.6	2.8 c	121.1
Prosaro 421SC 6.5 fl oz (VT)	8.6 c	35.0	4.8 a-c	108.9
Headline 250EC 6 fl oz (VT)	8.4 c	37.0	7.0 a	106.8
Headline AMP 10 fl oz (VT)	8.8 bc	37.0	4.4 a-c	118.4
Quilt 10.5 fl oz (VT)	8.8 bc	41.0	2.2 c	119.9
Quilt Xcel 10.5 fl oz (VT)	9.0 a-c	37.0	7.6 a	122.9
Evito T 5 fl oz + Induce 3.2 fl oz/A (V5)	9.6 a	37.0	3.6 bc	118.5
P(F)	.0137	.1650	.0086	.7578

¹ V5=five-collar stage (6/1), VT=tasseling (6/16).² Percent of foliage with green tissue.³ % of plants lodged.⁴ Yields are weight of corn with moisture content of 15.5%. Corn was harvested on 24 Aug. One bushel=56 lbs of grain. Means are not significantly different according to Fisher's Protected LSD ($P=0.05$).

VIII. NATIONAL COTTONSEED TREATMENT TEST – VIRGINIA LOCATION (COTSEEDFUN111, TAREC Res. farm, Field 9B)

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

B. EXPERIMENTAL DESIGN:

1. Two, 30-ft rows per plot with 36 in row spacing
2. Four randomized complete blocks separated by 8-ft alleyways

C. APPLICATION OF TREATMENTS: Treatments were applied by Dr. Craig Rothrock, Coordinator of National Cottonseed Treatment Trials at the University of Arkansas.

D. TREATMENT AND RATE: Rates are fl oz/cwt of seed.

1. Baytan 30 0.75 fl oz + Allegiance FL 1.5 fl oz + Vortex FL 0.08 + SP1020 0.32 fl oz
2. Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz
3. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz
4. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Dynasty CST 4.13 fl oz
5. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Dynasty CST 4.13 fl oz + Bion 0.03 fl oz
6. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Apron XL 0.32 fl oz + Maxim 4FS 0.30 fl oz + Dynasty 100FS 1.53 fl oz
7. Confidential EXP
8. Vitavax-PCNB 6.0 fl oz + Allegiance 0.75 fl oz
9. RTU Baytan Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz
10. RTU-PCNB 14.5 fl oz
11. Allegiance FL 1.5 fl oz
12. Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl (no Cruiser)
13. Nontreated

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: cotton 2008, corn 2009, peanut 2010
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 14 Apr, DP 0935 B2RF
5. Soil fertility report (17 Jan):

pH.....	5.84	K	52 ppm
Ca	341 ppm	Zn.....	0.5 ppm
Mg	26 ppm	Mn.....	2.6 ppm
P	41 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (17 Mar)

Prowl H₂O 1.5 pt + Cotoran 1.0 qt/A (16 Apr)

Post-emergence - Roundup Ultra Max 22 fl oz/A (5 May, 19 May, 11 Aug)

MSMA 1 qt + Envoke 0.1 oz + Cotton Pro 1.5 pt/A directed spray (30 Jun)

7. Fertilization: 6-16-39 330 lb/A (25 Mar)
Liquid (30%) N 30 lb/A (8 Jun, 23 Jun)
Liquid boron 1 qt/A (8 Jun, 23 Jun)
8. Insecticide: Temik 15G 5 lb/A (14 Apr)
Orthene 97S 6 oz/A (2 May); 8 oz/A (19 May)
Brigade 4 fl oz/A (19 Jul)
Baythroid XL 3 fl oz/A (30 Jul, 10 Aug)
9. Acaricide: Dicofol 4E 1.5 pt/A (13 Jul)
10. Growth regulator: Pentia 8 fl oz/A (1 Jul, 30 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz
+ Super Boll 6 fl oz/A (21 Sep)
12. Harvest date: 10 Oct

Table 25. Effect of seed treatment on emergence, seedling disease and yield in cotton.

Treatment and rate/cwt seed	Dead plants/ plot* (12 May)	Plants/ ft* (16 May)	Yield**	
			lb/A	bales/A
Baytan 30 0.75 fl oz + Allegiance FL 1.5 fl oz + Vortex FL 0.08 + SP1020 0.32 fl oz	8.8	1.91	1258	1.19
Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl oz	8.5	1.93	1355	1.28
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz	6.3	1.85	1258	1.19
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Dynasty CST 4.13 fl oz	12.3	1.85	1363	1.29
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Dynasty CST 4.13 fl oz + Bion 0.03 fl oz	6.5	1.80	1299	1.23
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Systhane 40 WP 0.84 oz + Apron XL 0.32 fl oz + Maxim 4FS 0.30 fl oz + Dynasty 100FS 1.53 fl oz	9.5	1.74	1299	1.23
Confidential EXP	8.5	1.80	1186	1.12
Vitavax-PCNB 6.0 fl oz + Allegiance 0.75 fl oz	10.3	1.62	1307	1.24
RTU Baytan Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz	16.0	1.69	1137	1.08
RTU-PCNB 14.5 fl oz	9.3	1.91	1283	1.22
Allegiance FL 1.5 fl oz	8.8	1.71	1129	1.07
Baytan 30 0.5 fl oz + Allegiance FL 0.75 fl oz + Vortex FL 0.08 fl (no Cruiser)	11.0	1.74	1202	1.14
Nontreated	7.3	1.62	1218	1.15
<i>P</i> (F)	.8827	.4594	.8985	.8985

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

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 45.5% of weight and 480 lb/bale. Plots were harvested on 10 Oct.

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

IX. COTTON SEED TREATMENT FUNGICIDE TEST (COTSEEDFUN211, TAREC Res. Farm, Field 9B)

- A. PURPOSE: To evaluate sedaxane for control of early season diseases in cotton
- B. EXPERIMENTAL DESIGN:
1. Seed treatments in main plots of four, 30-ft rows spaced 36 in. apart
 2. Subplots of two rows with and without *Rhizoctonia* inoculum in seed furrow
 3. Four randomized complete blocks separated by 8-ft alleyways
- C. APPLICATION OF TREATMENTS: Seed (S) and overcoat (O) treatments were applied by Syngenta Crop Protection.
- D. TREATMENT AND RATE (A.I.): Main plots
1. Cruiser 5FS 0.34 mg/seed
 2. Cruiser 5FS 0.34 mg/seed + Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + Systhane 40 WP 21 g/100 kg seed (S)
 3. Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + Systhane 40 WP 21 g/100 kg seed (S)
Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + A16148 500FS 10 g/100 kg seed + Cruiser 5FS 0.34 mg/seed (O)
 4. Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + Systhane 40 WP 21 g/100 kg seed (S)
Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + A16148 500FS 15 g/100 kg seed + Cruiser 5FS 0.34 mg/seed (O)
 5. Apron XL 3LS 7.5 g + Maxim 4FS 2.5 g + Systhane 40 WP 21 g/100 kg seed (S)
Dynasty CST 125FS 18 g/100 kg seed + Cruiser 5FS 0.34 mg/seed (O)
 6. Baytan 30FS 10 g + Vortex 3.77FS 2.5 g + Allegiance LS 15 g/100 kg seed (S)
Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 30FS 5 mg + STP15273 0.375 mg/seed (O)
 7. Allegiance LS 30 g + STP15199 10 g + STP17170 40 g/100 kg seed (S)
A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)
- E. INOCULUM: Inoculum was prepared in the Plant Pathology Lab at the Tidewater AREC using seed of brown top millet moistened with a 2:1 ratio of seed to distilled water and autoclaved twice. The seed was then inoculated with *Rhizoctonia solani* cultures that had been isolated from peanut seed and allowed to incubate at room temperature for 10 days. Subsequently, seed was dried at room temperature for 4 days and then screened to ensure uniform size. Inoculum was applied to the seed furrow at 0.2 ml/ft of row.
1. Non-inoculated
 2. Inoculated (Millet seed infested with *Rhizoctonia solani*)
- F. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: cotton 2008, corn 2009, peanut 2010
 3. Land preparation: rip and strip till into wheat cover crop
 4. Planting date and variety: 10 May, PHY 367 WRF
 5. Soil fertility report (17 Jan):

pH.....	5.84	K	52 ppm
Ca	341 ppm	Zn.....	0.5 ppm
Mg	26 ppm	Mn.....	2.6 ppm
P	41 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:
 - Pre-plant - Roundup Ultra Max 22 fl oz/A (17 Mar)
Prowl H₂O 1.5 pt + Cotoran 1.0 qt/A (16 Apr)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (5 May, 19 May, 11 Aug)
MSMA 1 qt + Envoke 0.1 oz + Cotton Pro 1.5 pt/A
directed spray (30 Jun)
7. Fertilization: 6-16-39 300 lb/A (25 Apr)
 - liquid (30%) N 30 lb/A (8 Jun, 23 Jun)
 - Liquid boron 1 qt/A (8 Jun, 28 Jun)
8. Insecticide: Temik 15G 10 lb/A band in front of rolling cultivator (10 May)
 - Orthene 97S 6 oz/A (2 May, 19 May)
 - Brigade 4 oz/A (19 Jul)
 - Baythroid XL 3 fl oz/A (30 Jul, 10 Aug)
9. Acaricide: Dicofol 4E 1.5 pt (13 Jul)
10. Growth regulator: Pentia 8 fl oz/A (1 Jul, 30 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 6 oz/A (21 Sep)
 - Super Boll 1 fl oz/A (4 Oct)
12. Harvest date: 10 Oct

Table 26. Effect of seed treatment on emergence of cotton.

Treatment and rate (a.i./100 kg seed)*	Plants/ft**			
	24 May		7 Jun	
	non-inoc.	inoc.	non-inoc.	inoc.
Cruiser 0.34 mg/seed	2.13	1.98 c	2.12	1.98 c
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	2.15	2.23 ab	2.18	2.25 ab
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.16	2.09 bc	2.15	2.10 bc
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.28	2.10 bc	2.29	2.05 c
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.23	2.32 a	2.21	2.28 a
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	2.30	2.22 ab	2.31	2.24 ab
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	2.13	2.12 bc	2.08	2.11 bc
P(F).....	.8263	.0025	.7717	.0042
Treatment mean				
Cruiser 0.34 mg/seed	2.05 b		2.05	
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	2.19 ab		2.21	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.12 ab		2.12	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.19 ab		2.17	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.28 a		2.24	
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	2.26 a		2.28	
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	2.12 ab		2.10	
Inoculum mean				
Non-inoculated.....	2.20		2.19	
Inoculated	2.15		2.14	
Split-plot analysis				
Treatment.....	.0825		.1026	
Inoculum	.3151		.3394	
Treatment x inoculum.....	.5719		.6046	

* (S) = seed treatment. O = overcoat treatment on top of base seed treatment.

** 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). Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

Table 27. Effect of seed treatment on emergence and vigor of cotton.

Treatment and rate (a.i./100 kg seed) ¹	Plants/ft ² (20 Jun)		Vigor ³ 7 Jun	
	non-inoc.	inoc.	non-inoc.	inoc.
Cruiser 0.34 mg/seed	2.11	2.02 c	6.5 ab	5.8 c
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	2.14	2.24 a	6.0 b	6.0 c
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.18	2.10 a-c	6.3 b	6.3 bc
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.26	2.05 c	6.3 b	6.3 bc
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.23	2.23 ab	7.0 a	6.8 ab
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	2.28	2.23 ab	7.0 a	7.0 a
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	2.07	2.09 bc	6.3 b	6.8 bc
P(F).....	.7647	.0166	.0541	.0026
Treatment mean				
Cruiser 0.34 mg/seed	2.06		6.1	cd
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	2.19		6.0	d
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.14		6.3	cd
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.16		6.3	cd
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	2.23		6.9	ab
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	2.26		7.0	a
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	2.08		6.5	bc
Inoculum mean				
Non-inoculated.....	2.18		6.5	
Inoculated	2.14		6.4	
Split-plot analysis				
Treatment.....	.1780		.0057	
Inoculum	.3588		.5043	
Treatment x inoculum.....	.6536		.1462	

¹ S = seed treatment. O = overcoat treatment on top of base seed treatment.

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

³ Plant vigor rating scale: 0=dead, 10=healthy.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

Table 28. Effect of seed treatment on growth of cotton.

Treatment and rate (a.i./100 kg seed) ¹	Plant height (in.) ² (7 Jul)		Flowers/12 ft ³ (12 Jul)	
	non-inoc.	inoc.	non-inoc.	inoc.
Cruiser 0.34 mg/seed	26.1	23.4 c	24.5	24.3
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	26.3	26.3 ab	22.5	28.0
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	26.0	25.5 c	28.8	29.5
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	26.3	25.7 bc	24.8	25.0
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	26.7	26.8 a	21.3	21.3
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	26.5	25.9 bc	25.0	27.5
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	25.7	25.8 bc	19.8	21.5
P(F).....	.3611	.0575	.1991	.1499
Treatment mean				
Cruiser 0.34 mg/seed	25.8		24.4	bc
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	26.3		25.3	b
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	25.7		29.1	a
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	26.0		24.9	b
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	26.8		21.3	cd
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	26.2		26.3	ab
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	25.7		20.6	d
Inoculum mean				
Non-inoculated.....	26.2	a	23.8	
Inoculated	25.9	b	25.3	
Split-plot analysis				
Treatment.....	.2944		.0591	
Inoculum	.0616		.1876	
Treatment x inoculum.....	.6531		.8149	

¹ S = seed treatment. O = overcoat treatment on top of base seed treatment.

² Data are measurements of three plants per row in each plot.

³ Determined from counts of two, 6-ft sections of row per plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

Table 29. Effect of seed treatment on earliness of cotton.

Treatment and rate (a.i./100 kg seed)*	Open bolls (6 Sep)**	
	non-inoc.	inoc.
Cruiser 0.34 mg/seed	4.8	5.0
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	4.8	4.9
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.7	4.8
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.9	5.0
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.7	4.4
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	4.7	4.8
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	4.8	5.0
Treatment mean		
Cruiser 0.34 mg/seed	4.9	
Cruiser 0.34 mg/seed + Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	4.9	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.7	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Apron XL 7.5 g + Maxim 2.5 g + A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.9	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S) Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	4.6	
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S) Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed + Baytan 5 mg + STP15273 0.375 mg/seed (O)	4.7	
Allegiance LS 30 g + STP15199 10 g +STP17170 40 g/100 kg seed (S) A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	4.9	
Inoculum mean		
Non-inoculated	4.8	
Inoculated	4.8	
Split-plot analysis		
Treatment	.4911	
Inoculum	.3191	
Treatment x inoculum	.6986	

* S = seed treatment. O = overcoat treatment on top of base seed treatment.

** Data are the mean of four plants per plot.

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

Table 30. Effect of seed treatment on yield of cotton.

Treatment and rate (a.i./100 kg seed)*	Yield**			
	lb/A		bales/A	
	non-inoc.	inoc.	non-inoc.	inoc.
Cruiser 0.34 mg/seed	1652	1742	1.39	1.45
Cruiser 0.34 mg/seed + Apron XL 7.5 g				
+ Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	1839	1742	1.55	1.45
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Apron XL 7.5 g + Maxim 2.5 g				
+ A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1313	1603	1.11	1.33
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Apron XL 7.5 g + Maxim 2.5 g				
+ A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1815	1670	1.53	1.39
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1658	1736	1.40	1.44
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S)				
Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed				
+ Baytan 5 mg + STP15273 0.375 mg/seed (O)	1434	1398	1.21	1.16
Allegiance LS 30 g + STP15199 10 g				
+STP17170 40 g/100 kg seed (S)				
A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	1791	1688	1.51	1.40
P(F).....	.1235	.6710	.1235	.6710
Treatment mean				
Cruiser 0.34 mg/seed	1697		1.42	
Cruiser 0.34 mg/seed + Apron XL 7.5 g				
+ Maxim 2.5 g + Systhane 21 g/100 kg seed (S)	1791		1.50	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Apron XL 7.5 g + Maxim 2.5 g				
+ A16148 10 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1458		1.22	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Apron XL 7.5 g + Maxim 2.5 g				
+ A16148 15 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1742		1.46	
Apron XL 7.5 g + Maxim 2.5 g + Systhane 21 g/100 kg seed (S)				
Dynasty CST 18 g/100 kg seed + Cruiser 0.34 mg/seed (O)	1697		1.42	
Baytan 10 g + Vortex 2.5 g + Allegiance LS 15 g/100 kg seed (S)				
Trilex Flowable 10 g + Allegiance LS 15 g/100 kg seed				
+ Baytan 5 mg + STP15273 0.375 mg/seed (O)	1416		1.18	
Allegiance LS 30 g + STP15199 10 g				
+STP17170 40 g/100 kg seed (S)				
A17823 21 g/100 kg seed + STP15273 0.375 mg/seed (O)	1739		1.46	
Inoculum mean				
Non-inoculated.....	1643		1.38	
Inoculated	1654		1.38	
Split-plot analysis				
Treatment.....	.3899		.3877	
Inoculum	.7422		.7863	
Treatment x inoculum.....	.0306		.0299	

* (S) = seed treatment. O = overcoat treatment on top of base seed treatment.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint weight (480 lb/bale) was determined by ginning samples from each inoculum group. Plots were harvested on 10 Oct.
Means are not significantly different according to Fisher's Protected LSD ($P=0.05$).

X. COTTON FOUNDATION SEEDLING DISEASE COMMITTEE - COTTON SEED TREATMENT AND IN-FURROW FUNGICIDE TEST (COTSEEDFUN311, TAREC Res. farm, Field 9B)

A. PURPOSE: To evaluate seed treatments for control of pre- and post-emergence damping-off of cotton when applied to low and high vigor seed lots

B. EXPERIMENTAL DESIGN:

1. Split-plot design with seed treatments in main plots of four, 30-ft rows
2. Sub-plots of two rows with low- or high-vigor seed planted to 3 seed/ft of row
3. Four replications in randomized complete block design separated by 8-ft alleyways

C. APPLICATION OF TREATMENTS: S=seed treatment (oz/cwt seed), F=in furrow (fl oz/A). Seed treatments (S) were applied to “black” seed by personnel with Bayer CropScience. Liquid in-furrow fungicides (F) were mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow at planting.

D. TREATMENT AND RATE:

1. Untreated
2. Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S)
3. Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S)
4. Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S)
5. Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S)
Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F)

E. SEED LOT: High vigor seed were subjected to hot-water bath treatment to reduce cool germ and vigor

1. Low vigor: ST 4554 B2RF
2. High vigor: ST 4554 B2RF

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: cotton 2008, corn 2009, peanut 2010
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 14 Apr, ST 4554 B2RF
5. Soil fertility report (17 Jan):

pH.....	5.84	K	52 ppm
Ca	341 ppm	Zn.....	0.5 ppm
Mg	26 ppm	Mn.....	2.6 ppm
P	41 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (17 Mar)

Prowl H₂O 1.5 pt + Cotoran 1.0 qt/A (16 Apr)

Post-emergence - Roundup Ultra Max 22 fl oz/A (5 May, 19 May, 11 Aug)

MSMA 1 qt + Envoke 0.1 oz + Cotton Pro 1.5 pt/A directed spray (30 Jun)

7. Fertilization: 6-16-39 330 lb/A (25 Mar)
Liquid (30%) N 30 lb/A (8 Jun, 23 Jun)
Liquid boron 1 qt/A (8 Jun, 23 Jun)
8. Insecticide: Temik 15G 5 lb/A (14 Apr)
Orthene 97S 6 oz/A (2 May); 8 oz/A (19 May)
Brigade 4 fl oz/A (19 Jul)
Baythroid XL 3 fl oz/A (30 Jul, 10 Aug)
9. Acaricide: Dicofol 4E 1.5 pt/A (13 Jul)
10. Growth regulator: Pentia 8 fl oz/A (1 Jul, 30 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (21 Sep)
12. Harvest date: 10 Oct

5.

Table 31. Effect of seed treatment and vigor on emergence of cotton.

Treatment and rate/cwt seed*	Plants/ft**			
	29 Apr		12 May	
	Low vigor seed	High vigor seed	Low vigor seed	High vigor seed
Untreated	0.40 c	1.95 b	0.45 c	2.05 bc
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	1.51 a	2.22 a	1.52 a	2.34 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	1.62 a	2.25 a	1.66 a	2.34 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	0.94 b	1.71 c	0.95 b	1.89 c
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	1.41 a	2.17 a	1.43 a	2.21 ab
P(F).....	.0001	.0003	.0001	.0021
Treatment mean				
Untreated	1.78		1.25	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	1.86		1.93	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	1.94		2.00	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	1.33		1.42	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	1.79		1.82	
Seed lot mean				
Low vigor.....	1.18		1.20	
High vigor	2.06		2.17	
Split-plot analysis				
Treatment	.0001		.0001	
Seed lot.....	.0001		.0001	
Treatment x seed lot.....	.0002		.0003	

* S=seed treatment, F=in furrow.

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

Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. LSD letters are not reported when there is a significant treatment by seed lot interaction.

Table 32. Effect of seed treatment on plant survival and vigor of cotton.

Treatment and rate/cwt seed ¹	Dead plants ² (12 May)		Vigor ³ (0-10) (20 May)	
	Low vigor seed	High vigor seed	Low vigor seed	High vigor seed
Untreated	1.8	1.0	2.5 c	5.0 c
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	2.3	0.8	3.0 bc	5.3 bc
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	1.8	0.3	3.8 ab	6.0 ab
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	2.0	2.8	2.8 c	5.3 bc
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	2.8	1.0	4.3 a	6.5 a
P(F)	.8566	.1506	.0072	.0123
Treatment mean				
Untreated		1.38		3.8 b
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....		1.50		4.1 b
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....		1.00		4.8 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....		2.38		4.0 b
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....		1.88		5.4 a
Seed lot mean				
Low vigor		2.1		3.3 b
High vigor		1.2		5.6 a
Split-plot analysis				
Treatment		.0761		.0017
Seed lot.....		.1073		.0001
Treatment x seed lot.....		.6172		.9663

¹ S=seed treatment, F=in furrow.² Determined from counts of two, 30-ft rows per plot.³ Vigor rating scale: 0= dead, 10=healthy.Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means followed by letters in groups with $P \geq 0.05$ and $P \leq 0.10$ were based on analysis at $P=0.10$.

Table 33. Effect of seed treatment on plant vigor and flowering of cotton.

Treatment and rate/cwt seed ¹	Vigor ² (0-10) (13 Jun)		Flowers/12 ft ³ (28 Jun)	
	Low vigor seed	High vigor seed	Low vigor seed	High vigor seed
Untreated	5.0 c	7.0	4.5 d	14.5 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	6.3 b	7.5	9.5 bc	15.0 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	7.3 a	7.5	14.3 a	15.0 a
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	6.5 ab	7.5	7.0 cd	7.5 b
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	6.5 ab	8.0	11.5 ab	15.5 a
P(F).....	.0049	.3784	.0037	.0977
Treatment mean				
Untreated	6.0		9.5	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	6.9		12.3	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	7.4		14.6	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	7.0		7.3	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	7.3		13.5	
Seed lot mean				
Low vigor.....	6.3		9.4	
High vigor.....	7.5		13.5	
Split-plot analysis				
Treatment	.0279		.0172	
Seed lot.....	.0001		.0006	
Treatment x seed lot.....	.0237		.0369	

¹ S=seed treatment, F=in furrow.² Vigor rating scale: 0= dead, 10=healthy.³ Number of flowers in two, 6-ft sections/row in each plot.Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$. Treatment and seed lot means were significant but not assigned letters due to significant interaction of treatment and seed lot.

Table 34. Effect of seed treatment and vigor on growth of cotton.

Treatment and rate/cwt seed ¹	Plant height ² (in.)		Open bolls ³ (6 Sep)	
	(11 Jul)			
	Low vigor seed	High vigor seed	Low vigor seed	High vigor seed
Untreated	28.7 a	26.9 a	10.6 a	7.2
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	26.2 c	25.8 b	8.0 b	7.9
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	27.6 ab	25.7 b	8.1 b	7.9
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	26.4 bc	26.7 ab	7.9 b	7.8
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	26.6 bc	27.0 a	7.7 b	7.8
P(F).....	.0024	.0846	.0008	.4228
Treatment mean				
Untreated	27.8		8.9	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	26.0		7.9	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	26.7		7.9	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	26.5		7.8	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	26.8		7.8	
Seed lot mean				
Low vigor.....	27.1		8.5	
High vigor	26.4		7.7	
Split-plot analysis				
Treatment	.5143		.2940	
Seed lot.....	.0006		.0019	
Treatment x seed lot.....	.0002		.0001	

¹ S=seed treatment, F=in furrow.² Data are measurements of six plants per plot.³ Mean of four randomly selected plants in each plot.Means followed by the same letter(s) in a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Seed lot means were significant but not assigned letters due to significant interaction of treatment and seed lot

Table 35. Effect of seed treatment and vigor on yield of cotton.

Treatment and rate/cwt seed*	Yield**			
	lb/A		bales/A	
	Low vigor seed	High vigor seed	Low vigor seed	High vigor seed
Untreated	938 c	1591	0.86 c	1.46
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	1398 ab	1615	1.28 ab	1.48
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	1507 a	1579	1.38 a	1.45
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	1180 bc	1573	1.08 bc	1.44
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	1246 ab	1700	1.14 ab	1.56
P(F).....	.0511	.8472	.0511	.8472
Treatment mean				
Untreated	1264		1.16	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S).....	1506		1.38	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz (S).....	1543		1.41	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Trilex Advanced 1.64 fl oz + Poncho Votivo 12.7 fl oz (S).....	1376		1.26	
Baytan 0.5 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz (S) Quadris2.08F 8.7 fl oz + Ridomil Gold 1.7 fl oz/A (F).....	1473		1.35	
Seed lot mean				
Low vigor.....	1254 b		1.15 b	
High vigor	1612 a		1.48 a	
Split-plot analysis				
Treatment	.1868		.1868	
Seed lot.....	.0001		.0001	
Treatment x seed lot.....	.0544		.0544	

* S=seed treatment, F=in furrow.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only and was determined by ginning samples from each seed lot/variety combination. One bale is 480 lb/bale. Plots were harvested on 10 Oct.

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

XI. BAYER COTTON SEED TREATMENT NEMATICIDE TEST (COTSEEDNEMA111, Morgan farm, Suffolk)

A. PURPOSE: To compare combinations of Aeris Seed Applied System (SAS), Admire Pro, Poncho/VOTiVO, and Fluopyram for control of thrips and nematodes in cotton

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 8-ft alleys
2. Two, 30-ft rows per plot with 36-in. row spacing and three seed/ft of row

C. APPLICATION OF TREATMENTS: all treatments received Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.8555 fl oz/cwt seed as a base seed treatment. All seed treatments (S) were applied by Bayer CropScience. Liquid in-furrow (F) treatments were applied through a microtube to each furrow in a volume of 5 gal/A. Layby (L) treatments were applied at the time of nitrogen fertilization (14 Jun) with an 8002 nozzle on each side of the row delivering a volume of 16 gal/A.

D. TREATMENT AND RATE:

1. Gaucho 600FS 0.375 mg a.i./seed (S)
2. Gaucho 600FS 0.375 mg a.i./seed (S)
+ BCS-AR83685 500SC 6.84 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)
3. Gaucho 600FS 0.375 mg a.i./seed (S)
+ BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)
4. Gaucho 600FS 0.375 mg a.i./seed (S)
+ BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)
+ BCS-AR83685 500SC 3.42 fl oz/A (L)
5. Gaucho 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S)
6. Aeris SAS 0.75 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S)
7. Aeris SAS 0.75 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)
8. Gaucho 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: continuous cotton since 2001
3. Land preparation: disk in early spring followed by rip and strip till
4. Planting date and variety: 10 May, ST 5458 B2F
5. Soil fertility report (18 Jan):

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type	Rumford loamy fine sand

6. Nematode assay report (9 Mar):

Nematodes/500 cc soil	
Root knot.....	160
Stunt	10
Spiral	30

7. Herbicide:
 - Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)
 - Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt + Roundup Ultra Max 22 fl oz/A (12 May)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)
8. Fertilization: 11-25-25 300 lb/A (25 Mar)
 - Liquid (30%) N 25 lb/A (14 Jun)
 - Liquid boron 2 qt/A (14 Jun)
9. Insecticide: Orthene 97S 6 oz/A (26 May); 8 oz/A (14 Jun)
 - Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul)
 - Pentia 12 fl oz + Induce 2 fl oz/A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

Table 36. Effect of treatments on emergence, plant vigor and thrips injury in cotton.

Treatment, rate and application method ¹	Plants/ft ²		Vigor ³ (13 Jun)	Thrips injury ⁴ (13 Jun)
	25 May	7 Jun		
Gauche 600FS 0.375 mg a.i./seed (S).....	1.78	1.83	4.8	2.3
Gauche 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 6.84 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	1.76	1.77	5.8	2.0
Gauche 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	1.64	1.70	5.0	1.5
Gauche 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F) + BCS-AR83685 500SC 3.42 fl oz/A (L).....	1.85	1.85	5.5	1.3
Gauche 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.77	1.80	5.5	2.0
Aeris SAS 0.75 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.55	1.61	5.0	2.0
Aeris SAS 0.75 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	1.78	1.76	6.0	2.0
Gauche 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	1.68	1.70	5.8	1.8
<i>P</i> (F)	.3466	.4431	.2542	.1003

¹ S=seed treatment, F=in furrow, L=layby. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.8555 fl oz/cwt seed as a base seed treatment.

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

³ Plant vigor rating scale: 0=dead, 10=healthy.

⁴ Thrips injury rating scale: 0= no damage, 10=severe damage.

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

Table 37. Effect of treatments on growth of cotton.

Treatment, rate and application method ¹	Biomass ² (g) (15 Jun)		Plant height ³ (in.) (7 Jul)	Flowers/ 12 ft ⁴ (13 Jul)	Open bolls ⁵ (8 Sep)
	roots	tops			
Gaucha 600FS 0.375 mg a.i./seed (S).....	1.6	13.3	19.3 b	15.8	4.1 d
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 6.84 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	1.8	14.7	20.8 a	14.3	5.3 a-c
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	1.7	14.3	18.9 b	13.3	4.5 cd
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F) + BCS-AR83685 500SC 3.42 fl oz/A (L).....	2.0	16.4	21.3 a	19.5	5.4 ab
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.8	15.3	21.1 a	18.8	5.3 a-c
Aeris SAS 0.75 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.7	15.3	20.8 a	13.5	4.7 b-d
Aeris SAS 0.75 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	1.9	16.0	22.0 a	19.3	5.6 a
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	2.1	16.7	21.4 a	18.0	5.8 a
<i>P</i> (F)	--	--	.0001	.4063	.0008

¹ S=seed treatment, F=in furrow, L=layby. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.8555 fl oz/cwt seed as a base seed treatment.

² Data are the mean of a composite sample of ten plants from four reps of each treatment.

³ Measurements of three, randomly selected plants per row in each plot.

⁴ Number of flowers in two, 6-ft sections of row per plot.

⁵ Data are counts of two randomly-selected plants per row in each plot.

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

Table 38. Effect of treatments on nematode populations.

Treatment, rate and application method*	Nematodes/500 cc soil**			
	Root knot	Lesion	Stunt	Stubby root
Gaucha 600FS 0.375 mg a.i./seed (S)	130	0	20	0
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 6.84 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	60	0	0	20
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	50	0	30	20
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F) + BCS-AR83685 500SC 3.42 fl oz/A (L)	10	0	10	20
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S)	30	0	0	10
Aeris SAS 0.75 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S)	40	10	0	10
Aeris SAS 0.75 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S).....	30	10	0	10
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S).....	20	10	0	30

* S=seed treatment, F=in furrow, L=layby. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.8555 fl oz/cwt seed as a base seed treatment.

** Soil was sampled on 27 Jul and was a composite of four reps per treatment.

Table 39. Effect of treatments on root galling and yield of cotton.

Treatment and application method ¹	Root galling ² (0-6) (22 Sep)	Yield ³	
		lb/A	bales/A
Gaucha 600FS 0.375 mg a.i./seed (S).....	2.1 a	956	0.83
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 6.84 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	1.8 ab	1382	1.20
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F)	0.5 c	868	0.75
Gaucha 600FS 0.375 mg a.i./seed (S) + BCS-AR83685 500SC 3.42 fl oz + Admire Pro 550SC 5.2 fl oz/A (F) + BCS-AR83685 500SC 3.42 fl oz/A (L).....	0.9 bc	1116	0.97
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.3 a-c	1174	1.02
Aeris SAS 0.75 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed (S).....	1.8 ab	1038	0.90
Aeris SAS 0.75 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	1.3 a-c	1286	1.11
Gaucha 600FS 0.375 mg a.i./seed + L1940-A 500SC 0.375 mg a.i./seed + Poncho VOTiVO 0.424 mg a.i./seed (S)	1.7 ab	1222	1.06
P(F)	.0094	.1087	.1087

¹ S=seed treatment, F=in furrow, L=layby. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.8555 fl oz/cwt seed as a base seed treatment.

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 weight of lint only. Lint was 43.3% of total weight and 480 lb/bale. Plots were harvested on 27 Oct.

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

XII. BAYER COTTON SEED TREATMENT NEMATICIDE TEST (COTSEEDNEMA211, Morgan farm, Suffolk)

A. PURPOSE: To evaluate Aeris Seed Applied System (SAS) and VOTiVO for control of insects and southern root-knot nematode in cotton

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 8-ft alleys
2. Two, 30-ft rows per plot with 36-in. row spacing

C. APPLICATION OF TREATMENTS: All treatments received Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.08555 fl oz/cwt seed as a base seed treatment. All seed treatments were applied by Bayer CropScience. O=overcoat on top of base seed treatment.

D. TREATMENT AND RATE:

1. Untreated
2. Gaucho 600FS 9.49 fl oz/cwt (O)
3. Gaucho 600FS 9.49 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)
4. Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)
5. Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz + BYF14182 240FS 0.3195 fl oz/cwt (O)
6. Avicta Duo (O)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Rd., Suffolk
2. Crop history: continuous cotton since 2001
3. Land preparation: disk in early spring followed by rip and strip till
4. Planting date and variety: 9 May, ST 5458 B2F
5. Soil fertility report (18 Jan):

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type.....	Rumford loamy fine sand

6. Nematode assay report (9 Mar):

Nematodes/500 cc soil	
Root knot.....	160
Stunt	10
Spiral	30

7. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)

Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt + Roundup Ultra Max 22 fl oz/A (12 May)

Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)

8. Fertilization: 11-25-25 300 lb/A (25 Mar)

Liquid (30%) N 25 lb/A (14 Jun); Liquid boron 2 qt/A (14 Jun)

9. Insecticide: Orthene 97S 6 oz/A (26 May); 8 oz/A (14 Jun)
Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul)
Pentia 12 fl oz + Induce 2 fl oz/A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

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

Treatment and rate ¹	Plants/ft ²			Vigor ³ (14 Jun)	Thrips injury ⁴ (14 Jun)
	18 May	25 May	15 Jun		
Untreated.....	1.69	1.81	1.85	5.0	1.8
Gauche 600FS 9.49 fl oz/cwt (O)	1.53	1.75	1.75	5.5	1.5
Gauche 600FS 9.49 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	1.59	1.72	1.71	5.3	1.8
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	1.80	1.84	1.84	5.3	2.0
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz + BYF14182 240FS 0.3195 fl oz/cwt (O).....	1.53	1.78	1.81	5.0	2.3
Avicta Duo (O)	1.53	1.74	1.76	5.0	2.0
P(F)	.3908	.8089	.5833	.7008	.5636

¹ O=overcoat on top of base seed treatment. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.08555 fl oz/cwt seed as a base seed treatment.

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

³ Plant vigor rating scale: 0=dead, 10=healthy.

⁴ Thrips damage 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 ($P=0.05$).

Table 41. Effect of treatments on growth in cotton.

Treatment and rate ¹	Plant height (in.) ² (7 Jul)	Flowers/ 12 ft ³ (13 Jul)	Open bolls ⁴ (8 Sep)
Untreated.....	21.2 ab	20.8	6.1
Gauche 600FS 9.49 fl oz/cwt (O)	20.9 b	21.0	6.7
Gauche 600FS 9.49 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	21.3 ab	19.8	6.3
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	21.9 a	21.5	6.1
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz + BYF14182 240FS 0.3195 fl oz/cwt (O).....	21.8 a	25.0	6.3
Avicta Duo (O)	20.7 b	20.8	6.6
P(F)	.0371	.7424	.2454

¹ O=overcoat on top of base seed treatment. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.08555 fl oz/cwt seed as a base seed treatment.

² Measurements of three, randomly selected plants per row in each plot.

³ Number of flowers in two, 6-ft sections of row per plot.

⁴ Data are counts of two randomly-selected plants per row in each plot.

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

Table 42. Effect of treatments on nematode populations.

Treatment and application method ¹	Nematodes/500 cc soil ²			
	Root knot	Stunt	Spiral	Stubby root
Untreated.....	0	20	0	10
Gaucha 600FS 9.49 fl oz/cwt (O)	60	0	10	0
Gaucha 600FS 9.49 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	80	20	40	10
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	40	20	20	0
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz				
+ BYF14182 240FS 0.3195 fl oz/cwt (O).....	30	10	40	0
Avicta Duo (O)	60	0	70	20

¹ O=overcoat on top of base seed treatment. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.08555 fl oz/cwt seed as a base seed treatment.

² Soil was sampled on 26 Jul and was a composite of four reps per treatment.

Table 43. Effect of treatments on yield of cotton.

Treatment and application method ¹	Root galling ² (0-6) (20 Sep)	Yield ³	
		lb/A	bales/A
Untreated.....	2.5	1346	1.24
Gaucha 600FS 9.49 fl oz/cwt (O)	3.1	1331	1.23
Gaucha 600FS 9.49 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	3.1	1268	1.17
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz/cwt (O)	2.5	1431	1.32
Aeris SAS 18.98 fl oz + Poncho Votivo 10.76 fl oz			
+ BYF14182 240FS 0.3195 fl oz/cwt (O).....	2.2	1352	1.25
Avicta Duo (O)	2.6	1271	1.17
P(F)	.3740	.6349	.6349

¹ O=overcoat on top of base seed treatment. All seed were treated with Baytan 30 0.4823 fl oz + Allegiance FL 0.7524 fl oz + Vortex FL 0.08555 fl oz/cwt seed as a base seed treatment.

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 weight of lint only. Lint was 45.8% of total weight and 480 lb/bale. Plots were harvested on 27 Oct.

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

XIII. COMPARISON OF SEED AND IN-FURROW TREATMENTS FOR NEMATODE CONTROL IN COTTON (COTNEMA111, Morgan Farm, Suffolk)

A. PURPOSE: To compare abamectin and thiodicarb as seed and in-furrow treatments for nematode control

B. EXPERIMENTAL DESIGN:

1. Treatments in four randomized complete blocks separated by 8-ft alleyways
2. Two, 30-ft rows per plot and 36-in. row spacing
3. Seeding rate of three seed/ft of row

C. APPLICATION OF TREATMENTS: O=seed overcoat; F=in furrow at planting.

Treatments were applied to seed of the same lot at planting. All seed were treated with a base treatment of Baytan/Vortex/Allegiance. Nematicide/insecticide treatments were applied to seed by personnel with Bayer or Syngenta. Temik 15G was applied to the seed furrow with a Noble Box. Liquid in-furrow treatments were applied through a microtube to each furrow in a volume of 5 gal/A.

D. TREATMENT:

1. Gaucho 600FS 6.39 fl oz/cwt (O)
2. Cruiser 600FS 0.34 mg a.i./seed (O)
3. Gaucho 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)
4. Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)
5. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 1.92 fl oz (F)
6. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)
7. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)
8. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)
9. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)
10. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)
11. Temik 15G 5 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: continuous cotton since 2001
3. Land preparation: disk in early spring followed by rip and strip till
4. Planting date and variety: 13 May, PHY 375WRF
5. Soil fertility report (18 Jan):

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type	Rumford loamy fine sand

6. Nematode assay report (9 Mar):

Nematodes/500 cc soil	
Root knot.....	160
Stunt	10
Spiral	30

7. Herbicide :
 - Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)
 - Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt + Roundup Ultra Max 22 fl oz/A (12 May)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)
8. Fertilization: 11-25-25 300 lb/A (25 Mar)
 - Liquid (30%) N 25 lb/A (14 Jun)
 - Liquid boron 2 qt/A (14 Jun)
9. Insecticide: Orthene 97S 6 oz/A (26 May)
 - Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul)
 - Pentia 12 fl oz + Induce 2 fl oz/A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

Table 44. Effect of treatments on emergence and growth in cotton.

Treatment and rate ¹	Plants/ft ² (10 Jun)	Thrips injury ³ (14 Jun)	Vigor ⁴ (14 Jun)	Plant height (in.) ⁵ (7 Jul)	Flowers/ 12 ft ⁶ (13 Jul)
Gauche 600FS 6.39 fl oz/cwt (O)	1.85	2.0 b	5.5	25.7 a	23.5
Cruiser 600FS 0.34 mg a.i./seed (O)	2.21	2.5 ab	6.0	24.0 c	24.3
Gauche 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	1.70	2.3 ab	6.0	24.7 bc	21.5
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)...	1.82	2.5 ab	5.8	24.9 ab	25.5
Gauche 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 1.92 fl oz (F)	1.86	2.3 ab	6.3	24.3 bc	20.0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	1.85	2.3 ab	6.3	24.6 bc	22.8
Gauche 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	1.98	2.3 ab	5.8	24.5 bc	27.0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	1.93	2.8 a	5.8	24.3 bc	22.5
Gauche 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	1.87	2.5 ab	6.0	24.5 bc	22.8
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)	1.88	2.5 ab	5.5	24.2 bc	19.3
Temik 15G 5 lb/A (F)	2.00	1.0 c	6.5	24.8 bc	22.3
<i>P</i> (F)	.2287	.0028	.1322	.0916	.3871

¹ All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Measurements of three, randomly selected plants per row in each plot.

⁶ Number of flowers in two, 6-ft sections of row per plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

Table 45. Effect of treatments on earliness and nematode populations in cotton.

Treatment and rate ¹	Open bolls ² (9 Sep)	Nematodes/500 cc soil ³				
		Root knot	Lesion	Stunt	Spiral	Sting
Gaucha 600FS 6.39 fl oz/cwt (O)	6.3	70	0	30	10	0
Cruiser 600FS 0.34 mg a.i./seed (O)	6.6	100	0	50	20	0
Gaucha 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	6.6	50	0	70	20	0
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O).....	6.3	30	0	80	20	0
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 1.92 fl oz (F)	6.4	150	0	210	10	0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	6.3	0	20	80	0	10
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	6.3	110	0	40	10	10
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	6.6	20	0	20	10	0
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	6.7	30	0	10	0	0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)	6.3	50	0	20	0	0
Temik 15G 5 lb/A (F)	6.4	0	0	30	0	0
<i>P</i> (F)	.8424					

¹ All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

² Counts of two randomly-selected plants per row in each plot.

³ Soil was sampled on 27 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment. Means of open boll counts are not significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 46. Effect of treatments on root galling and yield.

Treatment and rate ¹	Root galling ² (22 Sep)	Yield ³	
		lb/A	bales/A
Gaucha 600FS 6.39 fl oz/cwt (O)	3.88 a-d	1317	1.23
Cruiser 600FS 0.34 mg a.i./seed (O)	4.31 a	1131	1.06
Gaucha 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	3.63 b-d	1234	1.15
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)	4.19 ab	1152	1.08
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 1.92 fl oz (F)	3.94 a-c	1367	1.28
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	3.75 a-d	1295	1.21
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	4.31 a	1102	1.03
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	4.19 ab	1266	1.18
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	3.25 d	1366	1.27
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)	4.19 ab	1319	1.23
Temik 15G 5 lb/A (F)	3.31 cd	1065	0.99
<i>P</i> (F)	.0665	.3373	.3373

¹ All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

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 caused by southern root-knot nematode. Ratings were made on two, randomly-selected plants per row in each plot on 20 Sep.

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 44.8% of total weight and 480 lb/bale. Plots were harvested on 27 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means followed by letters with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

XIV. CONTROL OF NEMATODES IN COTTON (COTNEMA211, Morgan farm)

A. PURPOSE: To determine the efficacy of Counter 20G in controlling nematodes and thrips in cotton

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 8-ft alleys
2. Two, 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of 3 seed/ft of row

C. APPLICATION OF TREATMENTS: Treatments with Counter 20G and Temik 15G were applied in-furrow (F) at planting. Avicta Duo was applied as an overcoat treatment (O) on the commercial fungicide seed treatment. All seed were treated with Apron XL 0.32 oz + Maxim 0.08 oz + NuFlow M 1.75 oz + Nusan 30 1.25 oz + Lorsban 0.10 oz/cwt seed as a base seed treatment.

D. TREATMENT AND RATE:

1. Untreated check
2. Counter 20G 4 lb/A (F)
3. Counter 20G 5.25 lb/A (F)
4. Counter 20G 6.5 lb/A (F)
5. Temik 15G 3.5 lb/A (F)
6. Temik 15G 7 lb/A (F)
7. Avicta Duo (O)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: continuous cotton since 2001
3. Land preparation: disk in early spring followed by rip and strip till
4. Planting date and variety: 13 May, PHY 375WRF
5. Soil fertility report (18 Jan):

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type	Rumford loamy fine sand

6. Nematode assay report (9 Mar):

Nematodes/500 cc soil

Root knot.....	160
Stunt	10
Spiral	30

7. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)

Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt + Roundup Ultra Max 22 fl oz/A (12 May)

Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)

8. Fertilization: 11-25-25 300 lb/A (25 Mar)

Liquid (30%) N 25 lb/A (14 Jun)

Liquid boron 2 qt/A (14 Jun)

9. Insecticide: Orthene 97S 6 oz/A (26 May); 8 oz/A (14 Jun)
Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul)
Pentia 12 fl oz + Induce 2 fl oz/A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

Table 47. Effect of treatments on emergence and growth in cotton.

Treatment and rate ¹	Plants/ft ² (10 Jun)	Thrips injury ³ (13 Jun)	Vigor ⁴ (13 Jun)	Plant height (in.) ⁵ (7 Jul)	Flowers/ 12 ft ⁶ (13 Jul)
Untreated check	2.15 a	3.0 a	5.5 c	25.2	14.5 a
Counter 20G 4 lb/A (F).....	2.09 a	2.3 bc	6.3 ab	25.3	9.0 c
Counter 20G 5.25 lb/A (F).....	2.23 a	1.8 cd	5.8 bc	24.3	9.5 bc
Counter 20G 6.5 lb/A (F).....	2.22 a	1.8 cd	5.8 bc	24.5	9.0 c
Temik 15G 3.5 lb/A (F)	2.24 a	1.5 d	6.3 ab	25.0	12.8 a-c
Temik 15G 7 lb/A (F)	2.12 a	1.5 d	6.5 a	25.1	16.3 a
Avicta Duo (O)	1.85 b	2.5 ab	6.0 a-c	24.9	14.0 ab
P(F)	.0447	.0001	.0599	.3175	.0624

¹ F=in furrow, O=overcoat on top of base seed treatment. All seed were treated with Apron XL 0.32 oz + Maxim 0.08 oz + NuFlow M 1.75 oz + Nusan 30 1.25 oz + Lorsban 0.10 oz/cwt seed as a base seed treatment.

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Measurements of three, randomly selected plants per row in each plot.

⁶ Number of flowers in a 6-ft sections per row in each plot.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means followed by letters in groups with $P \geq 0.05$ and ≤ 0.10 were based on analysis at $P=0.10$.

Table 48. Effect of treatments on earliness of cotton and nematode populations.

Treatment and application method ¹	Open bolls ² (8 Sep)	Nematodes/500 cc soil ³		
		Stunt	Spiral	Lance
Untreated check	4.2	40	0	0
Counter 20G 4 lb/A (F).....	4.4	0	0	0
Counter 20G 5.25 lb/A (F).....	4.3	10	0	10
Counter 20G 6.5 lb/A (F).....	4.2	30	10	0
Temik 15G 3.5 lb/A (F)	4.1	50	10	0
Temik 15G 7 lb/A (F)	4.7	10	40	0
Avicta Duo (O)	4.6	10	40	0
P(F)	.1326			

¹ F=in furrow, O=overcoat on top of base seed treatment. All seed were treated with Apron XL 0.32 oz + Maxim 0.08 oz + NuFlow M 1.75 oz + Nusan 30 1.25 oz + Lorsban 0.10 oz/cwt seed as a base seed treatment.

² Data are counts of two randomly-selected plants per row in each plot.

³ Soil was sampled on 27 Jul and was a composite of four reps per treatment.

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

Table 49. Effect of treatments on root galling and yield of cotton.

Treatment and application method ¹	Root galling ² (0-6) (20 Sep)	Yield ³	
		lb/A	bales/A
Untreated check	2.0 a	859	0.82
Counter 20G 4 lb/A (F).....	1.4 a-c	738	0.70
Counter 20G 5.25 lb/A (F).....	1.0 bc	566	0.54
Counter 20G 6.5 lb/A (F).....	0.9 c	699	0.67
Temik 15G 3.5 lb/A (F)	0.1 d	590	0.56
Temik 15G 7 lb/A (F)	0.8 cd	908	0.87
Avicta Duo (O)	1.7 ab	738	0.70
<i>P</i> (F)	.0001	.1563	.1563

¹ F=in furrow, O=overcoat on top of base seed treatment. All seed were treated with Apron XL 0.32 oz + Maxim 0.08 oz + NuFlow M 1.75 oz + Nusan 30 1.25 oz + Lorsban 0.10 oz/cwt seed as a base seed treatment.

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 two randomly-selected plants per row in each plot.

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.6% 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 ($P=0.05$).

XV. COMPARISON OF SEED AND IN-FURROW TREATMENTS FOR NEMATODE CONTROL IN COTTON (COTNEMA311, Tidewater Res. farm, Suffolk, Field 16B)

A. PURPOSE: To compare abamectin and thiodicarb as seed and in-furrow treatments for nematode control

B. EXPERIMENTAL DESIGN:

1. Treatments in four randomized complete blocks separated by 8-ft alleyways
2. Two, 30-ft rows per plot and 36-in. row spacing
3. Seeding rate of three seed/ft of row

C. APPLICATION OF TREATMENTS: Treatments were applied to seed of the same lot at planting. All seed were treated with a base treatment of Baytan/Vortex/Allegiance. Nematicide/insecticide treatments were applied to seed by personnel with Bayer or Syngenta. Temik 15G was applied to the seed furrow with a Noble box. Liquid in-furrow treatments were applied through a microtube to each furrow in a volume of 5 gal/A.

D. TREATMENT: O=seed overcoat; F=in furrow at planting.

1. Gaucho 600FS 6.39 fl oz/cwt (O)
2. Cruiser 600FS 0.34 mg a.i./seed (O)
3. Gaucho 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)
4. Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)
5. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 1.92 fl oz (F)
6. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)
7. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)
8. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)
9. Gaucho 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)
10. Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)
11. Temik 15G 5 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: cotton 2008, corn 2009, peanut 2010
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 13 May, PHY 375 WRF
5. Soil fertility report (18 Jan):

pH.....	5.72	K	48 ppm
Ca	227 ppm	Zn.....	0.5 ppm
Mg	20 ppm	Mn.....	2.8 ppm
P	39 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (22 Apr)

Prowl H₂O 1.0 pt + Cotoran 1.0 qt/A (12 May)

Post-emergence - Roundup Ultra Max 22 fl oz/A (22 Jun)

MSMA 1 qt + Envoke 0.1 oz + Cotton Pro 1.5 pt/A directed spray (14 Jul)

7. Fertilization: 6-16-39 330 lb/A (25 Mar)

Liquid (30%) N 30 lb/A (8 Jun, 23 Jun)

Liquid boron 1 qt/A (8 Jun, 23 Jun)

8. Insecticide: Orthene 97S 8 oz/A (26 May)

Brigade 4 fl oz/A (19 Jul)

Baythroid XL 3 fl oz/A (30 Jul, 10 Aug)

9. Growth regulator: Pentia 8 fl oz/A (7 Jul, 30 Jul); 1 pt/A (14 Jul)
10. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 6 oz/A (21 Sep)
11. Harvest date: 10 Oct

Table 50. Effect of treatments on emergence, thrips damage and growth in cotton.

Treatment and rate ¹	Plants/ft ² (10 Jun)	Thrips injury ³ (12 Jun)	Vigor ⁴ (12 Jun)	Plant height (in.) ⁵ (7 Jul)	Flowers/ 12 ft ⁶ (12 Jul)
Gaucha 600FS 6.39 fl oz/cwt (O)	1.84 b-d	1.5	5.5	25.2	13.3
Cruiser 600FS 0.34 mg a.i./seed (O)	2.37 a	1.5	6.0	25.4	14.5
Gaucha 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	1.83 b-d	1.0	6.3	25.4	11.5
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)...	1.73 d	1.0	5.8	25.5	11.3
Gaucha 600FS 6.39 fl oz/cwt(O) + Larvin 3.2F 1.92 fl oz (F)	1.82 cd	1.3	6.0	25.6	14.3
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	1.81 cd	1.3	5.8	25.9	13.0
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	2.06 b	1.0	6.5	25.4	17.3
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	1.97 bc	1.3	5.8	25.8	13.5
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	1.89 b-d	1.0	6.5	25.3	12.5
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)	1.91 b-d	1.5	6.3	24.3	13.0
Temik 15G 5 lb/A (F)	1.81 cd	1.0	6.0	25.6	11.3
<i>P</i> (F)	.0008	.3367	.5178	.2004	.7634

¹ O=overcoat on top of base seed treatment, F=in furrow. All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Measurements of three, randomly-selected plants per row in each plot.

⁶ Number of flowers in two, 6-ft sections of row 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 51. Effect of treatments on earliness and nematode populations in cotton.

Treatment and rate ¹	Open bolls ² (6 Sep)	Nematodes/500 cc soil ³					
		Root knot	Spiral	Lance	Ring	Stubby root	Dagger
Gauche 600FS 6.39 fl oz/cwt (O)	4.4	0	0	0	20	40	10
Cruiser 600FS 0.34 mg a.i./seed (O)	4.5	170	0	0	20	90	10
Gauche 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	4.4	0	0	10	30	70	0
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O)...	4.8	80	0	10	10	70	0
Gauche 600FS 6.39 fl oz/cwt(O) + Larvin 3.2F 1.92 fl oz (F)	4.6	0	20	0	0	70	0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	4.9	0	0	0	10	0	10
Gauche 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	4.7	0	0	0	50	20	10
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	4.2	0	0	0	10	20	10
Gauche 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	4.8	0	0	0	20	30	0
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F)	4.7	0	0	0	10	40	0
Temik 15G 5 lb/A (F)	4.6	0	10	0	40	30	0
<i>P</i> (F)	.3584						

¹ O=overcoat on top of base seed treatment, F=in furrow. All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

² Data are the mean of two plants per row in each plot.

³ Soil was sampled on 27 Jul and was a composite from four reps of each treatment.

Means for open bolls are not significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 52. Effect of treatments on yield of cotton.

Treatment and rate*	Yield**	
	lb/A	bales/A
Gaucha 600FS 6.39 fl oz/cwt (O)	1428 cd	1.24 cd
Cruiser 600FS 0.34 mg a.i./seed (O)	1464 b-d	1.27 b-d
Gaucha 600FS 6.39 fl oz/cwt + Aeris 0.75 mg a.i./seed (O)	1428 cd	1.24 cd
Cruiser 600FS 0.34 mg a.i./seed + Avicta 500FS 0.15 mg a.i./seed (O).....	1646 a-c	1.43 a-c
Gaucha 600FS 6.39 fl oz/cwt(O) + Larvin 3.2F 1.92 fl oz (F)	1682 a-c	1.46 a-c
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 3.51 fl oz (F)	1549 a-d	1.34 a-d
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 3.84 fl oz (F)	1749 a-c	1.52 a-c
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 7.02 fl oz (F)	1277 d	1.11 d
Gaucha 600FS 6.39 fl oz/cwt (O) + Larvin 3.2F 7.68 fl oz (F)	1761 ab	1.53 ab
Cruiser 600FS 0.34 mg a.i./seed (O) + AgriMek 0.15 EC 14.04 fl oz (F).....	1876 a	1.63 a
Temik 15G 5 lb/A (F)	1761 ab	1.53 ab
<i>P</i> (F)	.0977	.0977

* O=overcoat on top of base seed treatment, F=in furrow. All seed were treated with Baytan/Vortex/Allegiance as a base seed treatment.

** Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.6% of total weight and 480 lb/bale. Plots were harvested on 10 Oct.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means in a column with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$

XVI. CONTROL OF NEMATODES IN COTTON (COTNEMA411, TAREC Res. farm, Field 16B)

A. PURPOSE: To determine the efficacy of Counter 20G in controlling nematodes and thrips in cotton

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 8-ft alleys
2. Two, 30-ft rows per plot with 36-in. row spacing
3. Seeding rate of 3 seed/ft of row

C. APPLICATION OF TREATMENTS: Treatments with Counter 20G and Temik 15G were applied in-furrow (F) at planting. Avicta Duo was applied as an overcoat treatment (O) on the commercial fungicide seed treatment.

D. TREATMENT AND RATE:

1. Untreated check
2. Counter 20G 4 lb/A (F)
3. Counter 20G 5.25 lb/A (F)
4. Counter 20G 6.5 lb/A (F)
5. Temik 15G 3.5 lb/A (F)
6. Temik 15G 7 lb/A (F)
7. Avicta Duo (O)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: cotton 2008, corn 2009, peanut 2010
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 12 May, PHY 375 WRF
5. Soil fertility report (18 Jan):

pH.....	5.72	K	48 ppm
Ca	227 ppm	Zn.....	0.5 ppm
Mg	20 ppm	Mn.....	2.8 ppm
P	39 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:
 - Pre-plant - Roundup Ultra Max 22 fl oz/A (22 Apr)
 - Prowl H₂O 1.0 pt + Cotoran 1.0 qt/A (12 May)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (22 Jun)
 - MSMA 1 qt + Envoke 0.1 oz + Cotton Pro 1.5 pt/A directed spray (14 Jul)
7. Fertilization: 6-16-39 330 lb/A (25 Mar)
 - Liquid (30%) N 30 lb/A (8 Jun, 23 Jun)
 - Liquid boron 1 qt/A (8 Jun, 23 Jun)
8. Insecticide: Orthene 97S 8 oz/A (26 May)
 - Brigade 4 fl oz/A (19 Jul)
 - Baythroid XL 3 fl oz/A (30 Jul, 10 Aug)
9. Growth regulator: Pentia 8 fl oz/A (7 Jul, 30 Jul); 1 pt/A (14 Jul)
10. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 6 oz/A (21 Sep)
11. Harvest date: 10 Oct

Table 53. Effect of treatments on emergence and growth in cotton.

Treatment and rate ¹	Plants/ft ² (9 Jun)	Thrips injury ³ (8 Jun)	Vigor ⁴ (8 Jun)	Phyto- toxicity ⁵ (8 Jun)	Plant height (in.) ⁶ (7 Jul)	Flowers/ 12 ft ⁷ (12 Jul)
Untreated check	2.36 bc	3.5 a	4.3 b	0.8	24.3 c	17.3
Counter 20G 4 lb/A (F)	2.84 a	1.0 bc	6.5 a	1.0	25.6 ab	16.5
Counter 20G 5.25 lb/A (F)	2.73 a	1.0 bc	6.3 a	1.0	25.9 a	13.0
Counter 20G 6.5 lb/A (F)	2.86 a	0.8 c	6.5 a	1.0	24.7 bc	14.0
Temik 15G 3.5 lb/A (F)	2.39 b	0.8 c	6.0 a	0.8	25.4 ab	14.5
Temik 15G 7 lb/A (F)	2.36 bc	0.5 c	6.0 a	0.8	24.8 a-c	14.0
Avicta Duo (O)	2.22 c	1.5 b	5.5 a	1.3	24.7 bc	20.8
<i>P</i> (F)	.0001	.0001	.0027	.3872	.0433	.1082

¹ F=in furrow, O=overcoat on top of base seed treatment.. All seed were treated with Dynasty CST + Cruiser as a base seed treatment.

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Phytotoxicity rating scale: 0=none, 10=severe phytotoxicity.

⁶ Measurements of three, randomly-selected plants per row in each plot.

⁷ Number of flowers in two, 6-ft sections of row 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 54. Effect of treatments on earliness of cotton, nematode populations and yield.

Treatment and application method ¹	Open bolls ² (7 Sep)	Nematodes/500 cc soil ³			Yield ⁴	
		Root knot	Ring	Stubby root	lb/A	bales/A
Untreated check	4.7	0	30	10	1319 bc	1.15 bc
Counter 20G 4 lb/A (F)	4.4	0	10	0	1319 bc	1.15 bc
Counter 20G 5.25 lb/A (F)	4.5	0	20	0	1640 a	1.43 a
Counter 20G 6.5 lb/A (F)	4.4	0	90	10	1531 ab	1.34 ab
Temik 15G 3.5 lb/A (F)	4.2	90	60	20	1422 ab	1.24 ab
Temik 15G 7 lb/A (F)	4.4	10	0	0	1428 ab	1.25 ab
Avicta Duo (O)	4.9	20	10	0	1168 c	1.02 c
<i>P</i> (F)	.3634				.0186	.0186

¹ F=in furrow, O=overcoat on top of base seed treatment.. All seed were treated with Dynasty CST + Cruiser as a base seed treatment.

² Data are counts of two randomly-selected plants per row in each plot.

³ Soil was sampled on 27 Jul and was a composite of four reps per treatment.

⁴ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.9% of total weight and 480 lb/bale. Plots were harvested on 10 Oct.

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

XVII. RESPONSE OF COTTON VARIETIES TO NEMATODE CONTROL (COTVARNEMA111, Morgan Farm)

- A. PURPOSE: To compare the efficacy and benefits of nematicide treatment and variety selection for control of southern root-knot and other nematodes
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 8-ft alleyways
 2. Main plots of varieties and treatments in subplots
 3. Two, 30-ft rows per plot, 36-in. row spacing and seeding rate of three seed/ft of row
- C. APPLICATION OF TREATMENTS: Temik 15G was applied in-furrow (F) at planting.
- D. VARIETY AND COOL GERM % (Main plots): 4 rows/variety
1. DP 1028 B2RF (81)
 2. DP 1032 B2RF (66)
 3. ST 5288 B2RF (90)
 4. ST 5458 B2RF (89)
 5. PHY 367 WRF (88)
 6. PHY 375 WRF (79)
 7. AM 1550 B2RF (83)
 8. DG 2570 B2RF (78)
- E. TREATMENT (Sub-plots): 2 rows/treatment; F=in-furrow at planting
1. Untreated check
 2. Temik 15G 5 lb/A (F)
- F. ADDITIONAL INFORMATION:
1. Location: Rick Morgan farm, Deer Forest Rd., Suffolk
 2. Crop history: Continuous cotton since 2001
 3. Land preparation: disk in early spring followed by rip and strip till rows
 4. Planting date: 9 May
 5. Soil fertility report (1 May):
- | | | | |
|----------|---------|-----------------|-------------------------|
| pH..... | 6.57 | Mn..... | 2.7 ppm |
| Ca | 594 ppm | Zn..... | 1.3 ppm |
| Mg | 55 ppm | Cu..... | 0.3 ppm |
| P | 42 ppm | Fe | 10.0 ppm |
| K..... | 96 ppm | B..... | 0.2 ppm |
| | | Soil type | Rumford loamy fine sand |
6. Nematode assay report (9 Mar):
- | Nematodes/500 cc soil | |
|-----------------------|-----|
| Root knot..... | 160 |
| Spiral | 30 |
| Stunt | 10 |
| Dagger | 10 |
7. Herbicide:
- Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)
- Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt/A (12 May)
- Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)

8. Fertilization: 6-16-39 330 lb/A (15 Apr)
Liquid (30%) N 25 lb/A (14 Jun); Liquid boron 2 qt/A (14 Jun)
9. Insecticide: Orthene 97S 6 oz/A (26 May); 8 oz/A (14 Jun)
Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul);
Pentia 12 fl oz + Induce 2 fl oz /A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

Table 55. Effect of treatments on emergence and growth of cotton.

Variety and treatment ¹	Plants/ft ² (6 Jun)	Thrips injury ³ (14 Jun)	Vigor ⁴ (14 Jun)	Plant ht. (in.) ⁵ (8 Jul)	Flowers/ 12 ft ⁶ (14 Jul)	Open bolls ⁷ (13 Sep)
DP 1028 B2RF						
Untreated Check	1.85	2.5 a	5.3 b	28.0	14.5	6.6 a
Temik 15G 5 lb/A (F)...	2.02	1.5 b	6.0 a	28.2	12.5	6.3 b
DP 1032 B2RF						
Untreated Check	2.02	2.5 a	5.0 b	27.1 b	19.0	6.9
Temik 15G 5 lb/A (F)...	2.27	1.5 b	6.0 a	28.4 a	22.8	6.8
ST 5288 B2RF						
Untreated Check	2.46	1.5	5.8	26.5	24.0	6.8
Temik 15G 5 lb/A (F)...	2.52	1.0	6.3	26.5	26.3	7.0
ST 5458 B2RF						
Untreated Check	2.17	2.0 a	5.8	25.3 b	18.3	6.5
Temik 15G 5 lb/A (F)...	2.02	1.0 b	6.3	26.2 a	19.5	6.6
PHY 367 WRF						
Untreated Check	2.56	2.0 a	5.5 b	25.8 b	21.5	6.8
Temik 15G 5 lb/A (F)...	2.79	1.3 b	6.5 a	28.0 a	29.3	6.9
PHY 375 WRF						
Untreated Check	2.02	2.0 a	5.3 b	27.3	20.5	6.7
Temik 15G 5 lb/A (F)...	2.08	1.3 b	6.5 a	28.0	27.0	6.5
AM 1550 B2RF						
Untreated Check	2.13 b	2.5 a	5.5 b	25.6 b	15.5 b	7.1 a
Temik 15G 5 lb/A (F)...	2.73 a	1.3 b	6.5 a	27.0 a	23.0 a	6.8 b
DG 2570 B2RF						
Untreated Check	2.29	2.8 a	5.3 b	26.1	15.8	6.9
Temik 15G 5 lb/A (F)...	2.31	1.5 b	6.0 a	26.8	17.8	7.0
Variety mean						
DP 1028 B2RF	1.94 d	2.0	5.6	28.1	13.5 e	6.4
DP 1032 B2RF	2.15 cd	2.0	5.5	27.8	20.9 bc	6.9
ST 5288 B2RF	2.49 ab	1.3	6.0	26.5	25.1 a	6.9
ST 5458 B2RF	2.09 cd	1.5	6.1	25.7	18.9 cd	6.6
PHY 367 WRF	2.68 a	1.6	6.0	26.9	25.4 a	6.9
PHY 375 WRF	2.05 cd	1.6	5.9	27.7	23.8 ab	6.6
AM 1550 B2RF	2.43 ab	1.9	6.0	26.3	19.3 cd	6.9
DG 2570 B2RF	2.30 bc	2.1	5.6	26.5	16.8 de	7.0
Treatment mean						
Untreated check	2.19 b	2.2 a	5.4 b	26.5	18.9 b	6.8
Temik 15G 5 lb/A (F)...	2.34 a	1.3 b	6.3 a	27.4	22.0 a	6.7
Split plot analysis, P(F)						
Variety	.0002	.1963	.2053	.0416	.0009	.7105
Treatment	.0234	.0001	.0001	.0001	.0022	.3533
Variety x treatment	.2261	.4112	.7164	.0373	.0567	.0750

¹ F=in furrow.² Determined from counts of two, 30 ft rows per plot.³ Thrips damage rating scale: 0=no damage, 10=severe damage.⁴ Plant vigor rating scale: 0=dead, 10=healthy.⁵ Determined from measurements of three, randomly-selected plants per row in each plot.⁶ Number of flowers in a 6-ft section per row in each plot.⁷ Ratings were made on four randomly selected plants per plot.

Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means in a column and group with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$. LSD letters were not reported for plant height treatment and variety means due to a significant treatment by variety interaction.

Table 56. Effect of treatments on nematode populations in cotton.

Variety and treatment*	Nematodes/500 cc soil**		
	Root knot	Stunt	Spiral
DP 1028 B2RF			
Untreated Check.....	0	80	30
Temik 15G 5 lb/A (F)	0	0	60
DP 1032 B2RF			
Untreated Check.....	0	0	0
Temik 15G 5 lb/A (F)	190	20	20
ST 5288 B2RF			
Untreated Check.....	0	0	20
Temik 15G 5 lb/A (F)	110	20	60
ST 5458 B2RF			
Untreated Check.....	20	0	20
Temik 15G 5 lb/A (F)	0	0	30
PHY 367 WRF			
Untreated Check.....	10	50	10
Temik 15G 5 lb/A (F)	60	50	30
PHY 375 WRF			
Untreated Check.....	60	40	10
Temik 15G 5 lb/A (F)	10	0	40
AM 1550 B2RF			
Untreated Check.....	90	10	60
Temik 15G 5 lb/A (F)	20	50	20
DG 2570 B2RF			
Untreated Check.....	10	60	30
Temik 15G 5 lb/A (F)	330	30	30
Variety mean			
DP 1028 B2RF.....	0	40	45
DP 1032 B2RF.....	95	10	10
ST 5288 B2RF	55	10	40
ST 5458 B2RF	10	0	25
PHY 367 WRF	35	50	20
PHY 375 WRF.....	35	20	25
AM 1550 B2RF	55	30	40
DG 2570 B2RF	170	45	30
P(F)	.7611	.5470	.3670
Treatment mean			
Untreated check	24	30	23 b
Temik 15G 5 lb/A (F)	90	21	36 a
P(F)	.2534	.7520	.0950

* F=in furrow.

** Soil was sampled on 28 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment/variety combination.

Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Square root transformation of population data was made in analysis to determine statistical significance. Means in a column and group with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$.

Table 57. Effect of treatments on root galling and yield of cotton.

Variety and treatment ¹	Root galling ² (28 Sep)	Yield ³	
		lb/A	bales/A
DP 1028 B2RF			
Untreated Check.....	1.3 a	1080	1.01
Temik 15G 5 lb/A (F)	0.6 b	1125	1.06
DP 1032 B2RF			
Untreated Check.....	2.9	965	0.90
Temik 15G 5 lb/A (F)	1.7	1035	0.97
ST 5288 B2RF			
Untreated Check.....	1.4	1147	1.05
Temik 15G 5 lb/A (F)	2.0	1189	1.09
ST 5458 B2RF			
Untreated Check.....	0.9	1053	0.94
Temik 15G 5 lb/A (F)	0.6	1113	1.00
PHY 367 WRF			
Untreated Check.....	1.1	1310	1.17
Temik 15G 5 lb/A (F)	1.1	1298	1.16
PHY 375 WRF			
Untreated Check.....	2.2	947	0.88
Temik 15G 5 lb/A (F)	2.5	865	0.80
AM 1550 B2RF			
Untreated Check.....	1.8	1261	1.14
Temik 15G 5 lb/A (F)	1.6	1198	1.09
DG 2570 B2RF			
Untreated Check.....	1.5 b	1228	1.11
Temik 15G 5 lb/A (F)	2.5 a	1389	1.26
Variety mean			
DP 1028 B2RF.....	0.9	1102	1.03
DP 1032 B2RF.....	1.9	1000	0.94
ST 5288 B2RF	1.7	1168	1.07
ST 5458 B2RF	0.8	1083	0.97
PHY 367 WRF	1.1	1304	1.17
PHY 375 WRF.....	2.3	906	0.84
AM 1550 B2RF	1.7	1230	1.11
DG 2570 B2RF	2.0	1308	1.19
Treatment mean			
Untreated check	1.5	1124	1.03
Temik 15G 5 lb/A (F)	1.6	1151	1.05
Split plot analysis, P(F)			
Variety.....	.3279	.2260	.3381
Treatment	.7808	.6702	.6701
Variety x treatment	.0510	.9856	.9857

¹ 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 caused by southern root-knot nematode. Ratings were made on two randomly selected plants per row in each plot on 28 Sep.³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint weight (480 lb/bale) was determined by ginning samples of seed cotton from each variety. Plots were harvested on 27 Oct.Means followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means in a column and group with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$.

XVIII. YIELD AND GROWTH RESPONSE OF COTTON VARIETIES TREATED WITH VARIOUS COMBINATIONS OF SEED AND/OR FOLIAR NEMATICIDE COMPARED TO TEMIK 15G IN-FURROW (COTVARNEMA211, Morgan farm, Suffolk)

- A. PURPOSE: To compare the efficacy and benefits of nematicide treatments and variety selection for control of southern root-knot nematode in cotton production
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with four randomized complete blocks separated by 8-ft alleyways
 2. Main plots of varieties and treatments in subplots
 3. Two, 30-ft rows per plot at 36-in. row spacing and seeding rate of three seed/ft of row
- C. APPLICATION OF TREATMENTS: S=seed treatment, SP=foliar spray. Foliar applications of CMT4586 were applied at 21 days after emergence (DAE, 8 Jun) and pinhead square (PHS, 23 Jun) with UAN 2.5% (v/v) + Dyne-Amic 0.25%. Sprays were applied over each row at 8 gal/A on 8 Jun with one 8002 nozzle/row and at 16 gal/A on 23 Jun with two 8002 nozzles/row. Temik 15G was applied in-furrow (F) at planting. Baytan/Vortex/Allegiance was applied to all seed as a base fungicide treatment.
- D. VARIETY (Main plots):
1. ST 5458 B2F
 2. ST 4288 B2F
 3. FM 1740 B2R
- E. TREATMENT (Sub-plots):
1. Gaucho 600 0.5 mg a.i./seed (S)
 2. Gaucho 600 0.5 mg a.i. + Poncho/Votivo 0.424 mg a.i./seed (S)
 3. Aeris 0.75 mg a.i. + Poncho/Votivo 0.424 mg a.i./seed (S)
 4. Aeris 0.75 mg a.i. + Poncho/Votivo 0.424 mg a.i./seed (S)
 5. CMT4586 8 fl oz/A (SP) 21 DAE + PHS
 6. Temik 15G 5 lb/A (F)
- F. ADDITIONAL INFORMATION:
1. Location: Rick Morgan farm, Deer Forest Rd., Suffolk
 2. Crop history: continuous cotton since 2001
 3. Land preparation: disk in early spring followed by rip and strip till rows
 4. Planting date: 9 May
 5. Soil fertility report (1 May):
- | | | | |
|----------|---------|----------------|-------------------------|
| pH..... | 6.57 | Mn..... | 2.7 ppm |
| Ca | 594 ppm | Zn..... | 1.3 ppm |
| Mg | 55 ppm | Cu..... | 0.3 ppm |
| P | 42 ppm | Fe | 10.0 ppm |
| K..... | 96 ppm | B..... | 0.2 ppm |
| | | Soil type..... | Rumford loamy fine sand |
6. Nematode assay report (9 Mar):
- | | |
|-----------------------|-----|
| Nematodes/500 cc soil | |
| Root knot..... | 160 |
| Spiral | 30 |
| Stunt | 10 |
| Dagger | 10 |

7. Herbicide:
 - Pre-plant - Roundup Ultra Max 22 fl oz/A (26 Apr)
 - Pre-emergence - Prowl H₂O 1.0 pt + Cotoran 1.0 qt/A (12 May)
 - Post-emergence - Roundup Ultra Max 22 fl oz/A (26 May, 14 Jun, 28 Jun, 15 Aug)
8. Fertilization: 6-16-39 330 lb/A (15 Apr)
 - Liquid (30%) N 25 lb/A (14 Jun); Liquid boron 2 qt/A (14 Jun)
9. Insecticide: Orthene 97S 6 oz/A (26 May); 8 oz/A (14 Jun)
 - Baythroid XL 4 fl oz/A (15 Aug)
10. Growth regulator: Pentia 8 fl oz + Induce 2 fl oz/A (8 Jul);
 - Pentia 12 fl oz + Induce 2 fl oz /A (15 Jul)
11. Defoliant/boll opener: Finish 1 qt + Dropp 3 oz + Folex 10 oz + Super Boll 6 fl oz/A (8 Oct)
12. Harvest date: 27 Oct

Table 58. Effect of variety selection and treatment on emergence, thrips injury and growth in cotton.

Variety and treatment ¹	Plants/ft ² (6 Jun)	Thrips injury ³ (13 Jun)	Vigor ⁴ (13 Jun)	Plant ht. (in.) ⁵ (7 Jul)	Flowers/ 12 ft ⁶ (14 Jul)	Open bolls ⁷ (13 Sep)
ST 5458 B2F						
Gaucha 600 0.5 mg a.i./seed (S)	1.65	1.8 a	5.5	21.8 b	22.8 bc	7.1
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ..	1.73	1.8 a	6.0	22.1 b	23.0 b	7.1
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ...	1.56	2.0 a	5.5	21.9 b	19.3 c	6.9
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	1.54	1.8 a	6.0	22.4 ab	23.5 ab	7.4
Temik 15G 5 lb/A (F)	1.72	1.0 b	5.8	22.9 a	26.8 a	7.0
ST 4288 B2F						
Gaucha 600 0.5 mg a.i./seed (S)	1.60	2.0 a	6.0	24.1	28.3	7.0
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ..	1.66	2.3 a	6.0	23.3	26.8	7.0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ...	1.63	2.0 a	6.0	24.2	24.0	7.1
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	1.58	2.0 a	6.0	23.4	23.0	6.5
Temik 15G 5 lb/A (F)	1.59	1.0 b	6.0	23.8	25.5	6.9
FM 1740 B2R						
Gaucha 600 0.5 mg a.i./seed (S)	1.69	2.0	6.0	22.6 ab	24.5	7.5
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ..	1.68	2.3	6.0	23.1 a	25.5	7.6
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ...	1.65	2.0	6.0	22.0 b	25.0	8.0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	1.63	2.0	6.0	23.3 a	22.3	7.8
Temik 15G 5 lb/A (F)	1.63	1.5	6.0	22.6 ab	25.3	7.5
Variety mean						
ST 5458 B2F	1.64	1.7	5.8 b	22.2	23.1 b	7.1 b
ST 4288 B2F	1.61	1.9	6.0 a	23.0	25.5 a	6.9 b
FM 1740 B2R	1.66	2.0	6.0 a	22.7	24.5 ab	7.7 a
Treatment mean						
Gaucha 600 0.5 mg a.i./seed (S)	1.65	1.9 a	5.8	22.8	25.2	7.2
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ..	1.69	2.1 a	6.0	22.8	25.1	7.3
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) ...	1.61	2.0 a	5.8	22.7	22.8	7.3
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	1.58	1.9 a	6.0	23.0	22.9	7.2
Temik 15G 5 lb/A (F)	1.65	1.2 b	5.9	23.1	25.8	7.1
Split-plot analysis, P(F)						
Variety	.5046	.1780	.0285	.0699	.0920	.0301
Treatment	.4489	.0001	.2658	.5239	.1248	.8424
Treatment x variety	.8833	.7331	.2454	.0061	.3469	.2989

¹ S=seed treatment, F=in furrow, SP=foliar spray. ² Determined from counts of two, 30-ft rows per plot. ³ Thrips damage rating scale: 0=no damage, 10=severe damage. ⁴ Plant vigor rating scale: 0=dead, 10=healthy. ⁵ Determined from measurements of three plants per row in each plot. ⁶ Number of flowers in a 6-ft section of each row per plot. ⁷ Mean of four randomly-selected plants per plot. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD (P=0.05). Means in a column and group with P≥0.05 and ≤0.10 were analyzed at P=0.10. LSD letters for plant height variety and treatment means were not reported due to a significant variety by treatment interaction.

Table 59. Effect of variety selection and treatment on nematode populations in cotton.

Variety and treatment*	Nematodes/500 cc soil**			
	Root knot	Stunt	Spiral	Stubby root
ST 5458 B2F				
Gaucha 600 0.5 mg a.i./seed (S)	10	0	0	0
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	0	30	0	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	20	20	10	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	30	40	0	0
Temik 15G 5 lb/A (F)	0	10	10	0
ST 4288 B2F				
Gaucha 600 0.5 mg a.i./seed (S)	0	0	10	0
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	0	20	0	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	0	0	0	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	0	10	10	0
Temik 15G 5 lb/A (F)	0	20	0	10
FM 1740 B2R				
Gaucha 600 0.5 mg a.i./seed (S)	20	0	30	0
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	90	0	20	10
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	0	10	0	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	0	0	50	0
Temik 15G 5 lb/A (F)	60	10	10	0
Variety mean				
ST 5458 B2F	12	20	4	0
ST 4288 B2F	0	10	4	2
FM 1740 B2R	34	4	22	2
P(F)	.1990	.1736	.1450	.6561
Treatment mean				
Gaucha 600 0.5 mg a.i./seed (S)	10	0	13	0
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	30	17	7	3
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	7	10	3	0
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S) CMT4586 8 fl oz/A (SP, 6/8, 6/23)	10	17	20	0
Temik 15G 5 lb/A (F)	20	13	7	3
P(F)	.9756	.2569	.7077	.6328

* S=seed treatment, F=in furrow, SP=foliar spray.

** Soil was sampled on 28 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment/variety combination.

Means are not significantly different according to Fisher's Protected LSD ($P=0.05$). Square root transformation of population data was made in analysis to determine statistical significance.

Table 60. Effect of variety selection and treatment on root galling and yield of cotton.

Table 66: Effect of variety selection and treatment on root galling and yield of cotton.			
Variety and treatment ¹	Root galling ²	Yield ³	
		lb/A	bales/A
ST 5458 B2F			
Gaucha 600 0.5 mg a.i./seed (S)	2.5	1301	1.17
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	2.5	1249	1.12
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	1.6	1174	1.05
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)			
CMT4586 8 fl oz/A (SP, 6/8, 6/23)	2.6	1137	1.02
Temik 15G 5 lb/A (F)	2.0	1292	1.16
ST 4288 B2F			
Gaucha 600 0.5 mg a.i./seed (S)	1.1 b	1195	1.05
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	1.1 b	1307	1.14
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	2.0 a	1319	1.15
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)			
CMT4586 8 fl oz/A (SP, 6/8, 6/23)	0.8 b	1156	1.01
Temik 15G 5 lb/A (F)	1.1 b	1180	1.03
FM 1740 B2R			
Gaucha 600 0.5 mg a.i./seed (S)	3.3	1216	1.12
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	3.2	1062	0.98
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	3.7	1207	1.11
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)			
CMT4586 8 fl oz/A (SP, 6/8, 6/23)	3.0	1089	1.01
Temik 15G 5 lb/A (F)	3.0	1162	1.07
Variety mean			
ST 5458 B2F	2.2 b	1231	1.01
ST 4288 B2F	1.2 c	1231	1.08
FM 1740 B2R	3.2 a	1147	1.06
Treatment mean			
Gaucha 600 0.5 mg a.i./seed (S)	2.3	1237	1.11
Gaucha 600 0.5 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	2.3	1206	1.08
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)	2.4	1233	1.11
Aeris 0.75 mg a.i. + Poncho Votivo 0.424 mg a.i./seed (S)			
CMT4586 8 fl oz/A (SP, 6/8, 6/23)	2.1	1127	1.01
Temik 15G 5 lb/A (F)	2.0	1211	1.09
Split-plot analysis, P(F)			
Variety	.0599	.8700	.9651
Treatment	.6833	.5632	.5514
Treatment x variety	.2050	.7490	.7416

¹ S=seed treatment, F=in furrow, SP=foliar spray.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 caused by southern root-knot nematode. Ratings were made on two randomly selected plants per row in each plot on 20 Sep.³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was determined by ginning a sample from each variety and was 480 lb/bale. Plots were harvested on 27 Oct.

Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD (P=0.05). Means in a column and group with P≥0.05 and ≤0.10 were analyzed at P=0.10.

XIX. RESPONSE OF PEANUTS TO SOIL FUMIGATION WITH METAM SODIUM AND IN-FURROW INSECTICIDES (PNEMA111, TAREC Res. farm, Field 28)

A. PURPOSE: To compare the response of peanuts to soil fumigation with Vapam and in-furrow insecticides for control of nematodes and thrips.

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 10-ft alleyways
2. Two, 35-ft rows per plot with 36 in. row spacing

C. APPLICATION OF TREATMENTS: F = application to seed furrow at planting; C = application 8 in. under each row by a single chisel during strip tillage on 19 Apr. Temik 15G was applied to the seed furrow by a Noble box. Tank mixtures with AgriMek, Larvin, and Proline were mixed in water and applied by a microtube to the seed furrow in a volume of 5 gal/A (F) at planting on 3 May. All plots were treated with Orthene 97S 8 oz/A on 25 May.

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

1. Untreated
2. AgriMek 0.15 EC 3.51 fl oz (F)
3. AgriMek 0.15 EC 7.02 fl oz (F)
4. AgriMek 0.15 EC 14.04 fl oz (F)
5. Larvin 3.2F 1.92 fl oz (F)
6. Larvin 3.2F 3.84 fl oz (F)
7. Larvin 3.2F 7.68 fl oz (F)
8. Temik 15G 7 lb (F)
9. Vapam 42% 7.5 gal (C)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2008; peanut 2009; wheat/soybean 2010
3. Land preparation: strip tillage
4. Planting date: 3 May, CHAMPS
5. Soil fertility report (17 Jan):

pH.....	6.29	K	54 ppm
Ca	333 ppm	Zn.....	0.3 ppm
Mg	35 ppm	Mn.....	3.7 ppm
P	34 ppm	Soil type	Kenansville loamy fine sand

6. Nematode assay report: (9 Mar)

Nematodes/500 cc soil	
Root knot.....	0
Stunt	270
Spiral	30

7. Herbicide: Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.22 oz + Prowl H₂O 1 pt + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (5 May)
 - Post-emergence - Pursuit 4 oz/A (19 May)
 - Basagran 2 pt + ChemOil 2 pt/A (15 Jun)
8. Insecticide: Orthene 97S 8 oz/A (25 May)
- Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
9. Acaricide: Danitol 6 fl oz/A (30 Jun)
10. Leaf spot control: Provost 433SC 8 fl oz/A (7 Jul, 29 Jul, 17 Aug)
- Bravo 720 1.5 pt/A (11 Sep)
11. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (7 Jul)
 - d. Irrigation: ca. 1 in. (22 Jun)
12. Harvest date: 11 Oct

Table 61. Effect of treatment on plant populations, thrips injury, vigor and TSWV incidence.

Treatment, rate/A and application method ¹	Plants/ft ² (27 May)	Thrips injury ³ (3 Jun)	Vigor ⁴ (3 Jun)	TSWV ⁵		
				3 Jun	11 Jul	15 Aug
Untreated	1.93	5.0 a	5.0 b	1.3	7.8	14.8
AgriMek 0.15 EC 3.51 fl oz (F)....	2.06	4.5 b	5.0 b	0.8	8.5	15.0
AgriMek 0.15 EC 7.02 fl oz (F)....	1.97	5.0 a	5.0 b	1.8	8.8	14.5
AgriMek 0.15 EC 14.04 fl oz (F) ..	2.05	5.0 a	5.0 b	1.5	11.0	13.8
Larvin 3.2F 1.92 fl oz (F)	2.08	4.5 b	5.0 b	1.5	8.0	13.3
Larvin 3.2F 3.84 fl oz (F)	2.06	4.5 b	5.0 b	1.5	10.5	15.5
Larvin 3.2F 7.68 fl oz (F)	2.19	5.0 a	5.0 b	1.3	9.3	13.0
Temik 15G 7 lb (F)	2.03	1.0 c	6.3 a	0.5	7.0	11.8
Vapam 42% 7.5 gal (C)	1.93	5.0 a	5.0 b	1.8	9.5	16.3
<i>P</i> (F)	.4571	.0001	.0001	.7208	.7191	.7584

¹ F=in furrow, C=chisel application.

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Number of symptomatic plants with tomato spotted wilt virus (TSWV).

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

Table 62. Effect of treatment on nematode populations.

Treatment, rate/A, and application method *	Nematodes/500 cc soil (31 Aug)**		
	Root knot juveniles	Stunt	Stubby root
Untreated	2830	70	70
AgriMek 0.15 EC 3.51 fl oz (F)	1520	20	10
AgriMek 0.15 EC 7.02 fl oz (F)	280	20	0
AgriMek 0.15 EC 14.04 fl oz (F)	1070	0	40
Larvin 3.2F 1.92 fl oz (F)	970	10	0
Larvin 3.2F 3.84 fl oz (F)	320	0	0
Larvin 3.2F 7.68 fl oz (F)	1770	0	30
Temik 15G 7 lb (F)	1160	70	10
Vapam 42% 7.5 gal (C)	250	10	0

* F=in furrow, C=chisel application.

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

Table 63. Incidence of foliar and soilborne disease.

Treatment, rate/A and application method ¹	% leaf spot ² (11 Jul)	Stem rot ³ (15 Aug)	Yellowed/ dead plants ⁴ (9 Sep)
Untreated	0.3	0.5	8.8
AgriMek 0.15 EC 3.51 fl oz (F)	0.0	0.0	8.5
AgriMek 0.15 EC 7.02 fl oz (F)	0.0	0.0	8.0
AgriMek 0.15 EC 14.04 fl oz (F)	0.0	0.0	6.5
Larvin 3.2F 1.92 fl oz (F)	0.0	0.3	9.3
Larvin 3.2F 3.84 fl oz (F)	0.0	0.0	8.0
Larvin 3.2F 7.68 fl oz (F)	0.1	0.5	8.5
Temik 15G 7 lb (F)	0.1	0.3	7.3
Vapam 42% 7.5 gal (C)	0.0	0.0	4.8
<i>P</i> (F)	.1505	.1997	.7143

¹ F=in furrow, C=chisel application.

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

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 *Sclerotium rolfsii* and included 6 in. on either side of that point.

⁴ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of *Cylindrocladium black rot* (CBR).

Means 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 64. Effect of treatment on root galling, root disease, pod rot and yield of peanut.

Treatment, rate/A and application method ¹	Root galling ²	Root disease ³	Pod rot ⁴	Yield ⁵ (lb/A)
Untreated	2.5 a	2.5	2.5	2239 b
AgriMek 0.15 EC 3.51 fl oz (F)	2.0 a-c	2.3	2.3	2360 b
AgriMek 0.15 EC 7.02 fl oz (F)	2.0 a-c	2.5	2.3	2257 b
AgriMek 0.15 EC 14.04 fl oz (F)	1.8 b-d	2.3	2.3	2327 b
Larvin 3.2F 1.92 fl oz (F)	2.3 ab	2.5	2.0	2409 b
Larvin 3.2F 3.84 fl oz (F)	2.0 a-c	2.5	2.3	2425 b
Larvin 3.2F 7.68 fl oz (F)	1.5 cd	2.5	2.3	2409 b
Temik 15G 7 lb (F)	1.8 b-d	2.5	2.8	2347 b
Vapam 42% 7.5 gal (C)	1.3 d	1.5	1.5	3390 a
<i>P</i> (F)	.0269	.5028	.6226	.0003

¹ F=in furrow, C=chisel application.

² Root-knot nematode galling scale: 0=none, 5=100% of roots with galls. Ratings were made after digging on 4 Oct.

³ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 5=100% of roots decayed.

⁴ Pod rot index: 0=none, 5=total necrosis.

⁵ Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 4 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 ($P=0.05$).

XX. RESPONSE OF PEANUT VARIETIES TO SOIL FUMIGATION WITH METAM SODIUM AND IN-FURROW FUNGICIDES (PNEMA211, TAREC Res. farm, Field 28)

- A. PURPOSE: To compare the response of peanuts to soil fumigation with VAPAM and in-furrow insecticides and fungicides for control of nematodes, thrips and CBR
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks separated by 10-ft alleyways
 2. Split-plot design with main plots of treatments and market type of peanut, and subplots of cultivars
 3. Two, 35-ft rows per plot with 36 in. row spacing
- C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row by a single chisel (C) during strip tillage on 19 Apr. Orthene, Propulse, Proline and Q8Y78 were mixed in water and applied by a microtube to the seed furrow in a volume of 5 gal/A (F) at planting on 6 May.

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

Virginia types

1. Orthene 97S 12 oz/A (F)
2. Orthene 97S 12 oz + Proline 480SC 5.7 fl oz/A (F)
3. Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz/A (F)
4. Orthene 97S 12 oz + Q8Y78 23 fl oz (F)
5. Vapam 7.5 gal (C) + Orthene 97S 12 oz/A (F)

Runner-types

6. Orthene 97S 12 oz/A (F)
7. Orthene 97S 12 oz + Proline 480SC 5.7 fl oz/A (F)
8. Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz/A (F)
9. Orthene 97S 12 oz + Q8Y78 23 fl oz (F)
10. Vapam 7.5 gal (C) + Orthene 97S 12 oz/A (F)

E. CULTIVAR (Sub-plots):

Virginia-types

1. Bailey
2. Sugg
3. CHAMPS

Runner-types

1. AP-4
2. GA-06G
3. Tifguard

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2008, peanut 2009, wheat/soybean 2010
3. Land preparation: strip tillage
4. Planting date: 6 May
5. Soil fertility report (17 Jan):

pH.....	6.29	K	54 ppm
Ca	333 ppm	Zn.....	0.3 ppm
Mg	35 ppm	Mn.....	3.7 ppm
P	34 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report: (9 Mar)

Nematodes/500 cc soil	
Root knot.....	0
Stunt	270
Spiral	30

7. Herbicide: Herbicide:

Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Mar)

Dual II Magnum 1 pt + Strongarm 0.22 oz + Prowl H₂O 1 pt
+ Gramoxone Inteon 1 pt/A (22 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz
+ Gramoxone Inteon 1 pt/A (5 May)

Post-emergence - Pursuit 4 oz/A (19 May)
Basagran 2 pt + ChemOil 2 pt/A (15 Jun)

8. Insecticide: Orthene 97S 8 oz/A (25 May)

Steward EC 8 fl oz + Baythroid XL/A (12 Aug)

9. Acaricide: Danitol 6 fl oz/A (30 Jun)

10. Leaf spot control: Provost 433SC 8 fl oz/A (7 Jul, 21 Jul, 17 Aug)

Bravo 720 1.5 pt/A (11 Sep)

11. Additional crop management:

a. Liquid boron 1 qt/A (22 Apr)

b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)

c. Liquid Mn 1 qt/A (7 Jul)

d. Irrigation: ca. 1 in. (22 Jun)

12. Harvest date: 13 Oct

Table 65. Plant populations, thrips injury, and TSWV incidence in cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A application method and cultivar ¹	Plants/ft ² (6 Jun)	Thrips injury ³ (4 Jun)	TSWV ⁴		
			4 Jun	12 Jul	18 Aug
VIRGINIA-TYPE					
Treatment mean					
Orthene 97S 12 oz (F)	3.38	1.3	0.1 b	4.4	10.8
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F)	3.10	1.3	0.3 ab	4.2	11.3
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F)	3.31	1.2	0.5 ab	4.5	9.1
Orthene 97S 12 oz + Q8Y78 23 fl oz (F)	3.38	1.1	0.8 a	5.7	11.0
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F)	3.17	1.3	0.3 ab	3.8	9.8
LSD	n.s.	n.s.	0.5	n.s.	n.s.
Cultivar mean					
Bailey	3.33 a	1.0 b	0.3	1.9 c	4.7 c
Sugg	3.37 a	1.0 b	0.4	5.0 b	10.2 b
CHAMPS	3.17 b	1.7 a	0.5	6.7 a	16.4 a
LSD	0.16	0.3	n.s.	1.3	1.8
Split plot analysis					
Treatment	.6621	.3945	.0199	.4467	.7074
Cultivar	.0037	.0001	.5874	.0001	.0001
Treatment by cultivar	.1670	.7115	.1882	.5292	.5765
RUNNER-TYPE					
Treatment mean					
Orthene 97S 12 oz (F)	3.63	1.0	0.3	3.4	5.1
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F)	3.47	1.0	0.0	1.6	3.4
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F)	3.85	0.9	0.2	3.7	4.0
Orthene 97S 12 oz + Q8Y78 23 fl oz (F)	3.72	1.0	0.2	2.8	3.8
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F)	3.58	1.0	0.1	2.6	4.3
LSD	--	n.s.	n.s.	n.s.	n.s.
Cultivar mean					
AP-4	3.93	1.0	1.0	2.7	4.2
GA-06G	3.75	1.0	1.0	2.7	3.8
Tifguard	3.28	1.0	1.0	3.1	4.4
LSD	--	n.s.	n.s.	n.s.	n.s.
Split plot analysis					
Treatment	.4416	.4449	.3945	.1972	.5650
Cultivar	.0001	.3798	.2640	.7616	.6079
Treatment by cultivar	.0426	.4564	.3012	.9191	.3411

¹ F=in furrow, C=chisel application.² Determined from counts of two, 35-ft rows per plot.³ Thrips damage rating scale: 0=no damage, 10=severe damage.⁴ Number of symptomatic plants with tomato spotted wilt virus (TSWV).

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

Table 66. Disease incidence in cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A application method and cultivar ¹	Stem rot ²		Sclero- tinia ² (8 Sep)	Yellowed/ dead plants ³	CBR ⁴ (8 Sep)	% web blotch ⁵
	18 Aug	8 Sep		(8 Sep)		(8 Sep)
VIRGINIA-TYPE						
Treatment mean						
Orthene 97S 12 oz (F).....	0.1	1.5	0.1	8.2	0.0	0.3
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	0.1	1.4	1.3	6.8	0.3	0.0
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	0.1	1.7	2.5	4.1	0.1	0.0
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	0.2	1.2	1.9	5.8	0.1	0.0
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	0.2	0.8	0.5	3.2	0.3	0.0
LSD.....	n.s.	n.s.	n.s.	--	n.s.	n.s.
Cultivar mean						
Bailey.....	0.0 b	0.4 b	0.9 b	1.2	0.1 b	0.1
Sugg.....	0.1 b	0.3 b	0.6 b	6.1	0.0 b	0.1
CHAMPS.....	0.3 a	3.3 a	2.3 a	10.0	0.4 a	0.0
LSD.....	0.2	0.7	1.1	--	0.3	n.s.
Split plot analysis						
Treatment.....	.9683	.5337	.3575	.0100	.8110	.4449
Cultivar.....	.0318	.0001	.0100	.0001	.0612	.3798
Treatment by cultivar.....	.9671	.5079	.5906	.0043	.8590	.4564
RUNNER-TYPE						
Treatment mean						
Orthene 97S 12 oz (F).....	2.2	4.2	1.2	2.8	0.1	1.1
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	1.6	4.4	0.3	1.5	0.0	1.3
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	1.9	4.4	3.5	3.1	0.2	0.8
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	1.5	5.8	1.8	2.3	0.3	0.9
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	1.9	4.4	0.5	1.7	0.4	0.8
LSD.....	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Cultivar mean						
AP-4.....	1.7	3.6 b	1.1 b	2.7	0.1 b	1.2 a
GA-06G.....	1.8	5.0 a	1.2 b	2.0	0.1 b	0.2 b
Tifguard.....	2.1	5.4 a	2.1 a	2.1	0.4 a	1.6 a
LSD.....	n.s.	1.3	0.8	n.s.	0.3	0.8
Split plot analysis						
Treatment.....	.9523	.7849	.3035	.2123	.6383	.8210
Cultivar.....	.6500	.0618	.0447	.1658	.0966	.0026
Treatment by cultivar.....	.6720	.6782	.5860	.2061	.5201	.8781

¹ F=in furrow, C=chisel application.² Counts of infection centers in the two rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by the causal fungus and included 6 in. on either side of that point.³ Yellowed/dead plants are number of 1-ft sections/plot that lacked diagnostic signs, but showed symptoms indicative of *Cylindrocladium black rot* (CBR).⁴ Number of symptomatic plants with perithecia.⁵ Web blotch rating scale: 0=none, 100=web blotch symptoms on all leaves.Means followed by the same letter(s) within a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means in a column and group with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$, -- indicates LSD not reported due to a significant treatment by cultivar interaction.

Table 67. Nematode populations, root-knot galling and disease incidence in cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A application method and cultivar ¹	Nematodes/500 cc soil ²			Root galling ³	Root Disease ⁴	Pod rot ⁵
	Root knot	Stunt	Ring			
VIRGINIA-TYPE						
Treatment mean						
Orthene 97S 12 oz (F).....	1220	27	93	2.9 ab	1.6	1.7
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	1154	30	240	3.1 ab	1.3	1.1
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	2030	20	293	2.8 b	1.2	1.3
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	2003	37	163	3.3 a	1.1	1.2
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	1113	40	37	1.8 c	0.5	0.7
LSD.....	n.s.	n.s.	n.s.	0.4	--	--
Cultivar mean						
Bailey.....	794 b	18	106	3.3 a	0.1	0.1
Sugg.....	2252 a	40	296	2.6 b	0.7	0.8
CHAMPS.....	1466 ab	34	94	2.4 b	2.6	2.7
LSD.....	996	n.s.	n.s.	0.3	--	--
Split plot analysis						
Treatment.....				.0003	.0225	.0187
Cultivar.....				.0001	.0001	.0001
Treatment by cultivar.....				.0568	.0034	.0041
RUNNER-TYPE						
Treatment mean						
Orthene 97S 12 oz (F).....	1273 ab	20 bc	50 b	2.6 ab	0.8	1.0
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	1933 a	20 bc	73 b	2.3 b	0.5	0.3
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	1207 ab	103 a	82 b	2.5 a	0.5	0.7
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	1787 a	50 ab	347 a	2.8 a	0.4	0.7
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	457 b	3 c	33 b	1.5 c	0.1	0.2
LSD.....	1038	49	176	0.4	n.s.	n.s.
Cultivar mean						
AP-4.....	1616 a	50	6	2.9 a	0.6	0.7
GA-06G.....	1626 a	40	5	2.9 a	0.5	0.5
Tifguard.....	752 b	28	4	1.3 b	0.4	0.6
LSD.....	648	n.s.	n.s.	0.3	n.s.	n.s.
Split plot analysis						
Treatment.....				.0012	.2534	.1196
Cultivar.....				.0001	.2640	.5146
Treatment by cultivar.....				.1001	.3012	.5355

¹ F=in furrow, C=chisel application.² Data are composite samples from four reps of each treatment/variety combination.³ Root-knot nematode galling scale: 0=none, 5=100% of roots with galls. Ratings were made after digging on 4 Oct.⁴ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 5=100% of roots decayed.⁵ Pod rot index: 0=none, 5=total necrosis.Means followed by the same letter(s) within a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means in a column and group with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$, -- indicates LSD not reported due to a significant treatment by cultivar interaction.

Table 68. Maturity of peanut cultivars based on color of pod mesocarp after pod blasting on 22 Sep.

Mmarket type and cultivar	Number of pods					% mature*	
	Total	White/ yellow	Orange	Brown/ black	damaged	Brown/ black	Orange/ brown/ black
Virginia-type							
Bailey.....	230	121	11	98	0	42	47
Sugg.....	182	85	13	84	0	46	53
CHAMPS.....	237	80	28	129	0	54	66
Runner-type							
AP-4.....	241	92	22	127	0	53	62
GA-06G.....	212	75	12	125	0	59	65
Tifguard.....	291	179	64	48	0	16	38

* Pods with brown to black mesocarp tissue were considered mature for harvest. Orange mesocarp color indicated that kernels were approaching maturity. Yellow to white mesocarp identified immature pods that may be lost during harvest due to light weight after drying in windrows.

Table 69. Yield and value of cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A application method and cultivar ¹	Yield ² (lb/A)	Value ³ (\$/A)	
		100%	commercial
VIRGINIA-TYPE			
Treatment mean			
Orthene 97S 12 oz (F).....	3749 b	662 b	590
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	4054 b	703 b	618
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	4059 b	722 b	722
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	3990 b	696 b	525
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	4915 a	857 a	857
LSD.....	347	61	--
Cultivar mean			
Bailey.....	5061 a	885 a	885 a
Sugg.....	4739 b	840 a	737 b
CHAMPS.....	2661 c	459 b	365 c
LSD.....	269	47	--
Split plot analysis			
Treatment.....	.0003	.0003	.0001
Cultivar.....	.0001	.0001	.0001
Treatment by cultivar.....	.3047	.0628	.0001
RUNNER-TYPE			
Treatment mean			
Orthene 97S 12 oz (F).....	4561	815 bc	815 bc
Orthene 97S 12 oz + Proline 480SC 5.7 fl oz (F).....	4813	862 ab	862 ab
Orthene 97S 12 oz + Propulse 400SC 13.69 fl oz (F).....	4692	833 bc	833 bc
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	4460	790 c	790 c
Vapam 7.5 gal (C) + Orthene 97S 12 oz (F).....	5114	919 a	919 a
LSD.....	n.s.	61	61
Cultivar mean			
AP-4.....	4783 ab	847 a	847 a
GA-06G.....	4925 a	896 a	896 a
Tifguard.....	4476 b	788 b	788 b
LSD.....	319	57	57
Split plot analysis			
Treatment.....	.1122	.0735	.0735
Cultivar.....	.0227	.0023	.0023
Treatment by cultivar.....	.9063	.8044	.8044

¹ F=in furrow, C=chisel application.² Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 4 Oct and harvested on 13 Oct.³ Composite samples were graded to determine market value at loan rate and multiplied by yield to estimate value (\$/A). The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels $\geq 2.5\%$; producers receive 35% of value for these peanuts.Means followed by the same letter(s) within a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Means with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$. -- indicates that LSD not reported due to significant treatment by cultivar interaction.

Table 70. Effect of treatment and cultivar on grade characteristics and value.

Treatment, rate/A application method and cultivar ¹	% ²								Value (¢/lb) ³	
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	100%	commer- cial
VIRGINIA-TYPE										
Treatment mean										
Orthene 12 oz (F).....	2	0.6	85	41	4.0	2.8	2	62 b	17.056	13.578
Orthene 12 oz + Proline 5.7 fl oz (F)	1	0.4	88	44	3.9	3.1	2	61 b	16.975	13.466
Orthene 12 oz + Propulse 13.69 fl oz (F)	1	0.3	84	44	3.2	3.5	1	63 ab	17.390	17.390
Orthene 12 oz + Q8Y78 23 fl oz (F)	1	0.5	85	42	3.4	3.1	2	62 b	17.117	13.428
Vapam 7.5 gal (C) + Orthene 12 oz (F)	1	0.6	87	47	2.5	2.6	1	65 a	17.211	17.211
P(F).....	.1895	.5844	.6052	.4535	.2970	.4809	.3559	.0381	.8583	.7374
Cultivar mean										
Bailey.....	0 b	0.4	86 ab	46 a	3.3 ab	2.5 b	1	64 a	17.409 a	17.409
Sugg.....	1 ab	0.4	89 a	47 a	4.1 a	3.1 ab	2	63 ab	17.405 a	15.191
CHAMPS.....	2 a	0.6	83 b	38 b	2.7 b	3.5 a	2	62 b	16.636 b	12.443
P(F).....	.0124	.1256	.0717	.0100	.0880	.0744	.2233	.0227	.0585	.3550
RUNNER-TYPE										
Treatment mean										
Orthene 12 oz (F).....	0	0.7			2.4	3.4	1	68	17.382	17.382
Orthene 12 oz + Proline 5.7 fl oz (F)	0	1.0			3.6	3.0	1	68	17.492	17.492
Orthene 12 oz + Propulse 13.69 fl oz (F).	0	0.8			2.7	3.4	1	68	17.264	17.264
Orthene 97S 12 oz + Q8Y78 23 fl oz (F).....	0	0.9			2.6	3.4	1	67	17.309	17.309
Vapam 7.5 gal (C) + Orthene 12 oz (F)	0	0.7			2.8	3.1	1	69	17.578	17.578
P(F).....	.9086	.7816			.2175	.8481	.6979	.7912	.6075	.6075
Cultivar mean										
AP-4.....	0	0.5 b			3.7 a	3.2 ab	1	67	17.355 b	17.355 b
GA-06G	0	1.1 a			3.4 a	2.6 b	1	69	17.756 a	17.756 a
Tifguard	0	0.9 ab			1.4 b	4.0 a	1	67	17.103 b	17.103 b
P(F).....	.4920	.0897			.0006	.0109	.8876	.2923	.0140	.0140

¹ F=in furrow, C=chisel application.² FM=foreign material, LSK=loose shelled kernels, FAN=large pods, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Data are from a composite sample of four reps of each treatment/cultivar combination.³ Value (¢/lb) represents the market value of peanuts based on the loan rate. The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels $\geq 2.5\%$; producers receive 35% of value for these peanuts.Means followed by the same letter(s) within a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD, except if $P \geq 0.05$ and ≤ 0.10 , analysis was based on $P \leq 0.10$.

XXI. COMPARISON OF SEED AND IN-FURROW TREATMENTS FOR NEMATODE AND THRIPS CONTROL IN PEANUT (PNEMA311, TAREC RES. FARM)

- A. PURPOSE: To determine the benefit and efficacy of soil fumigation versus nematicides applied in the seed furrow or at emergence
- B. EXPERIMENTAL DESIGN:
1. Treatments in four randomized complete blocks separated by 15-ft alleyways
 2. Two, 35-ft rows per plot and 36-in. row spacing
 3. Seeding rate of three seed/ft of row
- C. APPLICATION OF TREATMENTS: Larvin, Agri-Mek, and Propulse were applied with a microtube to the seed furrow at planting (F, 3 May) in a volume of 5 gal/A. Propulse was also applied at 2 wks after emergence (E, 25 May) in an 8-inch band over rows with two 8004E nozzles/row delivering 20 gal/A. Vapam 42% was applied with a chisel shank at 8- to 10-in. under rows at 2 weeks prior to planting (C, 19 Apr). All plots were treated with Orthene 97S 8 oz/A at 2 weeks after emergence.
- D. TREATMENT: F=in furrow at planting, C=chisel application
1. Untreated
 2. AgriMek0.15 EC 7.02 fl oz (F)
 3. AgriMek 0.15 EC 7.02 fl oz (F) + Propulse 400SC 13.69 fl oz (F)
 4. AgriMek 0.15 EC 7.02 fl oz (F) + Propulse 400SC 13.69 fl oz (E)
 5. Larvin 3.2F 3.84 fl oz (F)
 6. Larvin 3.2F 3.84 fl oz (F) + Propulse 400SC 13.69 fl oz (F)
 7. Larvin 3.2F 3.84 fl oz (F) + Propulse 400SC 13.69 fl oz (E)
 8. Propulse 400SC 13.69 fl oz (F)
 9. Vapam 42% 7.5 gal (C)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: wheat/soybean 2008; peanut 2009; wheat/soybean 2010
 3. Land preparation: strip tillage
 4. Planting date: 3 May, CHAMPS
 5. Soil fertility report (17 Jan):
- | | | | |
|----------|---------|-----------------|-----------------------------|
| pH..... | 6.29 | K | 54 ppm |
| Ca | 333 ppm | Zn..... | 0.3 ppm |
| Mg | 35 ppm | Mn..... | 3.7 ppm |
| P | 34 ppm | Soil type | Kenansville loamy fine sand |
6. Nematode assay report: (9 Mar)
- | | |
|-----------------------|-----|
| Nematodes/500 cc soil | |
| Root knot..... | 0 |
| Stunt | 270 |
| Spiral | 30 |

7. Herbicide: Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.22 oz + Prowl H₂O 1 pt + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (5 May)
 - Post-emergence - Pursuit 4 oz/A (19 May)
 - Basagran 2 pt + ChemOil 2 pt/A (15 Jun)
8. Insecticide: Orthene 97S 8 oz/A (25 May)
- Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
9. Acaricide: Danitol 6 fl oz/A (30 Jun)
10. Leaf spot control: Provost 433SC 8 fl oz/A (7 Jul, 29 Jul, 17 Aug)
- Bravo 720 1.5 pt/A (11 Sep)
11. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (7 Jul)
 - d. Irrigation: ca. 1 in. (22 Jun)
12. Harvest date: 7 Oct

Table 71. Effect of treatment on plant populations, thrips injury, plant vigor and TSWV incidence.

Treatment, rate/A and application method ¹	Plants/ft ² (27 May)	Thrips injury ³ (3 Jun)	Vigor ⁴ (3 Jun)	TSWV ⁵		
				3 Jun	11 Jul	15 Aug
Untreated	2.15	5.5	4.8	1.5	12.8	22.0
AgriMek 0.15 EC 7.02 fl oz (F) ..	2.18	5.3	5.5	1.5	11.0	21.8
AgriMek 0.15 EC 7.02 fl oz + Propulse 400SC 13.69 fl oz (F)	2.28	5.5	5.0	1.0	7.3	20.3
AgriMek 0.15 EC 7.02 fl oz (F) Propulse 400SC 13.69 fl oz (E)...	2.09	5.0	5.0	1.3	10.8	23.0
Larvin 3.2F 3.84 fl oz (F)	2.05	5.3	5.3	1.3	8.5	19.5
Larvin 3.2F 3.84 fl oz + Propulse 400SC 13.69 fl oz (F)	2.16	5.3	5.0	1.5	7.0	15.0
Larvin 3.2F 3.84 fl oz (F) Propulse 400SC 13.69 fl oz (E)...	2.18	5.8	5.0	1.5	14.0	22.3
Propulse 400SC 13.69 fl oz (F)...	2.17	5.5	5.0	1.8	9.8	18.3
Vapam 42% 7.5 gal (C)	2.06	5.8	5.0	0.8	9.8	22.3
P(F)	.1994	.1021	.1392	.9816	.1161	.4662

¹ C=chisel application (4/19), F=in furrow (5/3), E=2 wks after emergence (5/25).

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Number of symptomatic plants with tomato spotted wilt virus (TSWV).

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

Table 72. Nematode populations in treated plots on 19 August.

Treatment, rate/A and application method*	Nematodes/500 cc soil**		
	Root knot	Stunt	Ring
Untreated	0	0	0
AgriMek 0.15 EC 7.02 fl oz (F)	0	20	0
AgriMek 0.15 EC 7.02 fl oz + Propulse 400SC 13.69 fl oz (F)	120	10	20
AgriMek 0.15 EC 7.02 fl oz (F) Propulse 400SC 13.69 fl oz (E)	180	50	60
Larvin 3.2F 3.84 fl oz (F)	70	30	10
Larvin 3.2F 3.84 fl oz + Propulse 400SC 13.69 fl oz (F)	430	20	40
Larvin 3.2F 3.84 fl oz (F) Propulse 400SC 13.69 fl oz (E)	260	10	50
Propulse 400SC 13.69 fl oz (F)	400	0	0
Vapam 42% 7.5 gal (C)	90	0	10

* C=chisel application (4/19), F=in furrow (5/3), E=2 wks after emergence (5/25).

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

Table 73. Effect of treatment on disease incidence, root galling, root disease, pod rot and yield of peanut.

Treatment, rate/A and application method ¹	Yellowed/ dead plants ² (9 Sep)	Root galling ³ (4 Oct)	Root disease ⁴ (4 Oct)	Pod rot ⁵ (4 Oct)	Yield ⁶ (lb/A)
Untreated	7.5	3.0 a	3.0 a	3.8 a	2135 d
AgriMek 0.15 EC 7.02 fl oz (F)	8.3	3.0 a	2.3 ab	3.3 ab	2273 d
AgriMek 0.15 EC 7.02 fl oz + Propulse 400SC 13.69 fl oz (F) ...	5.5	3.0 a	2.0 bc	2.8 bc	2675 b-d
AgriMek 0.15 EC 7.02 fl oz (F) Propulse 400SC 13.69 fl oz (E)	8.5	2.5 b	2.0 bc	2.8 bc	2836 a-c
Larvin 3.2F 3.84 fl oz (F)	6.5	3.0 a	3.0 a	3.0 a-c	2429 cd
Larvin 3.2F 3.84 fl oz + Propulse 400SC 13.69 fl oz (F) ...	5.8	3.0 a	1.3 c	2.3 c	3047 ab
Larvin 3.2F 3.84 fl oz (F) Propulse 400SC 13.69 fl oz (E)	5.3	2.8 ab	1.5 bc	2.3 c	3283 a
Propulse 400SC 13.69 fl oz (F)	4.5	3.0 a	1.8 bc	2.3 c	2919 a-c
Vapam 42% 7.5 gal (C)	7.8	2.0 c	2.0 bc	2.3 c	3175 ab
P(F)	.3296	.0001	.0041	.0042	.0014

¹ C=chisel application (4/19), F=in furrow (5/3), E=2 wks after emergence (5/25).

² Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of *Cylindrocladium* black rot (CBR).

³ Root-knot nematode galling scale: 0=none, 5=100% of roots with galls. Ratings were made after digging on 4 Oct.

⁴ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 5=100% of roots decayed.

⁵ Pod rot index: 0=none, 5=total necrosis.

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

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

XXII. RESPONSE OF PEANUT TO SEED AND IN-FURROW NEMATOCIDES AND INSECTICIDES (PNEMA411, TAREC Res. farm, Field 28)

A. PURPOSE: To assess the response of peanuts to seed- and in-furrow treatments for control of nematodes and thrips

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks separated by 10-ft alleyways
2. Two, 35-ft rows per plot with 36 in. row spacing

C. APPLICATION OF TREATMENTS: All seed were treated with Trilex Star 4 oz/cwt seed. Treatments with Votivo and BCS-AR83685 were applied to seed (S) by Bayer CropScience. Admire Pro Systemic and/or SP102000025914 were mixed in water and applied as follows: by a microtube to the seed furrow in volume of 5 gal/A (F, 2 May) at planting, by delivering a volume of 20 gal/A using two 8004E nozzles in an 8- to 12-in. band behind press wheel at planting (B, 2 May), in an 8-in. band at 100% emergence (E, 25 May), or in a 12-in. band at pegging (P, 28 Jun).

D. TREATMENT AND RATE/A:

1. Admire Pro Systemic 7.4 fl oz (F)
2. Temik 15G 7 lb/A (F)
3. Admire Pro Systemic 7.4 fl oz + SP102000025914 13.69 fl oz (F)
SP102000025914 13.69 fl oz (P)
4. Admire Pro Systemic 7.4 fl oz (F)
SP102000025914 13.69 fl oz (B)
SP102000025914 13.69 fl oz (P)
5. Admire Pro Systemic 7.4 fl oz (F)
SP102000025914 13.69 fl oz (E)
SP102000025914 13.69 fl oz (P)
6. Admire Pro Systemic 7.4 fl oz (F)
SP102000025914 13.69 fl oz (P)
7. BCS-AR83685 10.92 oz/cwt (S)
Admire Pro Systemic 7.4 fl oz (F)
SP102000025914 13.69 fl oz (P)
8. Votivo 240ES 1.1 oz/cwt (S)
Admire Pro Systemic 7.4 fl oz (F)
SP102000025914 13.69 fl oz (P)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean 2008; peanut 2009; wheat/soybean 2010
3. Land preparation: strip tillage
4. Planting date: 2 May, Phillips
5. Soil fertility report (17 Jan):

pH.....	6.29	K	54 ppm
Ca	333 ppm	Zn.....	0.3 ppm
Mg	35 ppm	Mn.....	3.7 ppm
P	34 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report: (9 Mar)

Nematodes/500 cc soil	
Root knot.....	0
Stunt	270
Spiral	30

7. Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Mar)
 - Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (5 May)
 - Post-emergence - Pursuit 4 oz/A (19 May)
 - Basagran 2 pt + ChemOil 2 pt/A (15 Jun)
8. Insecticide: Orthene 97S 8 oz/A (25 May)
- Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
9. Acaricide: Danitol 6 fl oz/A (30 Jun)
10. Leaf spot control: Provost 433SC 8 fl oz/A (7 Jul, 29 Jul, 17 Aug)
- Bravo 720 1.5 pt/A (11 Sep)
11. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (7 Jul)
 - d. Irrigation: ca. 1 in. (22 Jun)
12. Harvest date: 7 Oct

Table 74. Effect of treatments on plant populations, thrips injury and TSWV incidence.

Treatment, rate/A and application method ¹	Plants/ft ² (27 May)	Thrips injury ³ (3 Jun)	TSWV ⁴		
			3 Jun	11 Jul	15 Aug
Admire Pro Systemic 7.4 fl oz (F)	2.73	1.8 ab	0.5	5.8	15.0
Temik 15G 7 lb/A (F)	2.66	2.0 a	0.5	3.5	14.5
Admire Pro Systemic 7.4 fl oz + SP102000025914 13.69 fl oz (F)					
SP102000025914 13.69 fl oz (P)	2.99	1.0 c	1.3	5.3	13.3
Admire Pro Systemic 7.4 fl oz (F)					
SP102000025914 13.69 fl oz (B)					
SP102000025914 13.69 fl oz (P)	2.87	1.5 a-c	1.0	3.8	13.8
Admire Pro Systemic 7.4 fl oz (F)					
SP102000025914 13.69 fl oz (E)					
SP102000025914 13.69 fl oz (P)	2.67	1.8 ab	1.3	5.0	18.3
Admire Pro Systemic 7.4 fl oz (F)					
SP102000025914 13.69 fl oz (P)	2.84	1.3 bc	0.8	6.3	16.0
BCS-AR83685 10.92 oz/cwt (S)					
Admire Pro Systemic 7.4 fl oz (F)					
SP102000025914 13.69 fl oz (P)	2.70	1.0 c	0.5	7.0	15.5
Votivo 240ES 1.1 oz/cwt (S)					
Admire Pro Systemic 7.4 fl oz (F)					
SP102000025914 13.69 fl oz (P)	2.86	1.5 a-c	0.0	4.5	13.8
P(F)	.6617	.0293	.5912	.2104	.7506

¹ S=seed treatment, F=in furrow (5/2), B=8-in. band behind planter press wheel (5/2), E=8-in. band at 100% emergence (5/25), P=12-in. band at pegging (6/28).

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Number of symptomatic plants with tomato spotted wilt virus (TSWV).

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

Table 75. Effect of treatments on number of yellow or dead plants and nematode populations.

Treatment, rate/A and application method ¹	Yellowed/ dead plants ² (9 Sep)	Nematodes/500 cc soil ³		
		Root knot	Stunt	Ring
Admire Pro Systemic 7.4 fl oz (F)	9.8 a	330	30	50
Temik 15G 7 lb/A (F)	5.0 b	510	10	20
Admire Pro Systemic 7.4 fl oz + SP102000025914 13.69 fl oz (F)				
SP102000025914 13.69 fl oz (P)	2.5 b	530	20	10
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (B)				
SP102000025914 13.69 fl oz (P)	3.3 b	300	90	10
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (E)				
SP102000025914 13.69 fl oz (P)	4.3 b	500	40	10
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (P)	4.0 b	810	80	0
BCS-AR83685 10.92 oz/cwt (S) Admire Pro Systemic 7.4 fl oz (F)				
SP102000025914 13.69 fl oz (P)	3.3 b	300	60	40
Votivo 240ES 1.1 oz/cwt (S) Admire Pro Systemic 7.4 fl oz (F)				
SP102000025914 13.69 fl oz (P)	2.5 b	180	60	0
<i>P</i> (F)	.0009			

¹ S=seed treatment, F=in furrow (5/2), B=8-in. band behind planter press wheel (5/2), E=8-in. band at 100% emergence (5/25), P=12-in. band at pegging (6/28).

² Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of *Cylindrocladium black rot* (CBR).

³ Soil was sampled on 19 Aug. Data are a composite sample from four reps of each treatment. Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 76. Effect of treatments on root galling, root disease, pod rot and yield of peanut.

Treatment, rate/A and application method ¹	Root galling ² (4 Oct)	Root disease ³ (4 Oct)	Pod rot ⁴ (4 Oct)	Yield ⁵ (lb/A)
Admire Pro Systemic 7.4 fl oz (F)	3.0	2.8 a	2.0 a	2853 d
Temik 15G 7 lb/A (F)	2.5	1.3 b	1.8 ab	3401 c
Admire Pro Systemic 7.4 fl oz + SP102000025914 13.69 fl oz (F)				
SP102000025914 13.69 fl oz (P)	3.3	0.8 bc	0.8 c	4354 ab
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (B)				
SP102000025914 13.69 fl oz (P)	3.3	0.5 c	0.8 c	4608 a
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (E)				
SP102000025914 13.69 fl oz (P)	3.5	0.8 bc	1.0 bc	4440 a
Admire Pro Systemic 7.4 fl oz (F) SP102000025914 13.69 fl oz (P)	3.3	1.3 b	1.5 a-c	3851 bc
BCS-AR83685 10.92 oz/cwt (S) Admire Pro Systemic 7.4 fl oz (F)				
SP102000025914 13.69 fl oz (P)	3.3	0.5 c	0.8 c	4216 ab
Votivo 240ES 1.1 oz/cwt (S) Admire Pro Systemic 7.4 fl oz (F)				
SP102000025914 13.69 fl oz (P)	3.0	0.5 c	0.8 c	4120 ab
P(F)	.1718	.0001	.0303	.0001

¹ S=seed treatment, F=in furrow (5/2), B=8-in. band behind planter press wheel (5/2), E=8-in. band at 100% emergence (5/25), P=12-in. band at pegging (6/28).

² Root-knot nematode galling scale: 0=none, 5=100% of roots with galls. Ratings were made after digging on 4 Oct.

³ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 5=100% of roots decayed.

⁴ Pod rot index: 0=none, 5=total necrosis.

⁵ Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 4 Oct and harvested on 7 Oct.

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

XXIII. EVALUATION OF MULTIPURPOSE CHEMICALS FOR MANAGING DISEASES CAUSED BY FUNGI AND NEMATODES (PFunNema111, TAREC Res. farm, Field 34B)

- A. PURPOSE: To evaluate new chemistries with broad-spectrum activity against diseases and pests in peanut
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
 2. Two, 40-ft rows/plot
 3. Seeding rate of ca. 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: F= applied to the seed furrow at planting either as granules delivered by a Noble Box or liquid mixture with water in a volume of 5 gal/A applied through microtubes; C/B= chemigation/irrigation broadcast simulated by treatment spray (20 gal/A) preceded and followed by irrigation (0.25 to 0.30 in.). Sprays were applied with 8004E nozzles either in an 8-inch band spray (20 gal/A) at 100% emergence (E) when seedlings are about 3 in. across and developing secondary limbs at cotyledon nodes or in a 12 in. band at pegging (P). Leaf spot sprays were applied with three, D₃23 nozzles/row delivering 14.85 gal/A. The initial application was at beginning seed (R₅, 28 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT AND RATE/A:
1. Thimet 10G 5 lb (F)
Bravo WeatherStik 1.5 pt (R₅-7/28, 8/17, 9/11)
 2. Admire Pro 550SC 7.5 fl oz (F)
SP102000025914 400SC 13.69 fl oz (C/B-E)
SP102000025914 400SC 13.69 fl oz (C/B-P)
Bravo WeatherStik 1.5 pt (R₅-7/28, 8/17, 9/11)
 3. Admire Pro 550SC 7.5 fl oz + SP102000025914 400SC 13.69 fl oz (F)
SP102000014342 480SC 5.7 fl oz (E)
SP102000025914 400SC 13.69 fl oz (C/B-P)
Bravo WeatherStik 1.5 pt (R₅-7/28, 8/17, 9/11)
 4. Thimet 10G 5 lb/A (F)
SP102000025914 400SC 13.69 fl oz (C/B-E)
SP102000025914 400SC 13.69 fl oz (C/B-P)
Bravo WeatherStik 1.5 pt (R₅-7/28, 8/17, 9/11)
 5. Thimet 10G 5 lb + SP102000025914 400SC 13.69 fl oz (F)
SP102000014342 480SC 5.7 fl oz (E)
SP102000025914 400SC 13.69 fl oz (C/B-P)
Bravo WeatherStik 1.5 pt (R₅-7/28, 8/17, 9/11)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: peanut 2008, corn 2009, cotton 2010
 3. Land preparation: strip tillage into wheat cover crop
 4. Planting date and cultivar: 11 May, CHAMPS

5. Soil fertility report:
- | | | | |
|----------|---------|----------------|-----------------------------|
| pH..... | 6.44 | K | 57 ppm |
| Ca | 243 ppm | Zn..... | 0.5 ppm |
| Mg | 35 ppm | Mn..... | 2.9 ppm |
| P | 31 ppm | Soil type..... | Kenansville loamy fine sand |
6. Herbicide:
- Pre-plant – Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (22 Apr)
- Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz/A (18 May)
- Post-emergence - Select Max 16 fl oz + Induce 4 fl oz/A (13 Jun)
7. Insecticide: Orthene 97S 8 oz/A (25 May, 13 Jun)
- Steward EC 8 fl oz + Baythroid XL 2 oz/A (12 Aug)
8. Acaricide: Danitol 6 fl oz/A (30 Jun)
9. Leaf spot control: Bravo 720 1.5 pt/A (28 Jul, 17 Aug, 11 Sep)
10. Additional crop management:
- Liquid boron 1 qt/A (22 Apr)
 - Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - Liquid Mn 1 qt/A (22 Jun)
 - Irrigation: ca. 1 in. (18 Jul)
11. Harvest date: 11 Oct

Table 77. Effect of treatments on emergence, thrips injury and plant vigor in peanut.

Treatment, rate/A and application timing ¹	Plants/ft ² (8 Jun)	Thrips injury ³ (8 Jun)	Vigor ⁴ (8 Jun)
Thimet 10G 5 lb (F, 5/11).....	1.88	2.3 a	5.8
Admire Pro 550SC 7.5 fl oz (F, 5/11)			
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)....	1.89	1.3 b	6.3
Admire Pro 550SC 7.5 fl oz			
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)			
SP102000014342 480SC 5.7 fl oz (E, 6/2)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)....	1.85	1.0 b	6.3
Thimet 10G 5 lb/A (F, 5/11)			
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)....	1.74	1.5 ab	5.8
Thimet 10G 5 lb			
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)			
SP102000014342 480SC 5.7 fl oz (E, 6/2)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)....	1.88	1.3 b	6.0
<i>P</i> (F).....	.7899	.0383	.3784

¹ F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11).

² Determined from counts of two, 40-ft rows per plot.

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

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

Table 78. Effect of treatments on phytotoxicity and incidence of tomato spotted wilt virus in peanut.

Treatment, rate/A and application timing ¹	Phytotoxicity ²		TSWV ³		
	8 Jun	15 Jul	8 Jun	15 Jul	15 Aug
Thimet 10G 5 lb (F, 5/11).....	2.0 a	0.3	0.5	9.5	12.8 b
Admire Pro 550SC 7.5 fl oz (F, 5/11)					
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)					
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).. Admire Pro 550SC 7.5 fl oz	0.3 c	0.3	0.5	9.8	16.0 ab
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)					
SP102000014342 480SC 5.7 fl oz (E, 6/2)					
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).. Thimet 10G 5 lb/A (F, 5/11)	0.0 c	0.1	0.3	11.3	19.5 a
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)					
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).. Thimet 10G 5 lb	2.0 a	0.3	0.3	9.8	14.0 b
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)					
SP102000014342 480SC 5.7 fl oz (E, 6/2)					
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).. P(F)	1.0 b	0.1	0.8	9.3	13.5 b
	.0001	.6881	.8430	.9234	.0391

¹ F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11). ²Phytotoxicity rating scale: 0=none, 10=severe phytotoxicity. ³Number of symptomatic plants with tomato spotted wilt virus (TSWV).

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

Table 79. Effect of treatments on foliar disease incidence in peanut.

Treatment, rate/A and application timing*	% leaf spot**		
	15 Jul	15 Aug	6 Sep
Thimet 10G 5 lb (F, 5/11)	0.3	9.0 a	21.3 a
Admire Pro 550SC 7.5 fl oz (F, 5/11)			
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	0.1	0.1 b	2.3 b
Admire Pro 550SC 7.5 fl oz			
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)			
SP102000014342 480SC 5.7 fl oz (E, 6/2)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	0.1	0.1 b	2.3 b
Thimet 10G 5 lb/A (F, 5/11)			
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	0.1	0.3 b	3.0 b
Thimet 10G 5 lb			
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)			
SP102000014342 480SC 5.7 fl oz (E, 6/2)			
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	0.3	0.6 b	3.0 b
P(F).....	.6881	.0001	.0004

* F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11). **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 performed in analysis to determine statistical significance.

Table 80. Nematode populations in treatments on 19 August.

Treatment, rate/A and application timing*	Nematodes/500 cc soil**	
	Root knot juveniles	Ring
Thimet 10G 5 lb (F, 5/11).....	330	1070
Admire Pro 550SC 7.5 fl oz (F, 5/11)		
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)		
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	420	740
Admire Pro 550SC 7.5 fl oz		
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)		
SP102000014342 480SC 5.7 fl oz (E, 6/2)		
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	670	610
Thimet 10G 5 lb/A (F, 5/11)		
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)		
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	210	550
Thimet 10G 5 lb		
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)		
SP102000014342 480SC 5.7 fl oz (E, 6/2)		
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27).....	540	460

* F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11).

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

Table 81. Effect of treatments on soilborne disease incidence in peanut.

Treatment, rate/A and application timing ¹	Stem rot ²			Sclerotinia ²		CBR ³
	15 Aug	6 Sep	5 Oct	6 Sep	5 Oct	(5 Oct)
Thimet 10G 5 lb (F, 5/11).....	0.8	2.8	0.3	3.0	11.5	9.5 a
Admire Pro 550SC 7.5 fl oz (F, 5/11)						
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)	0.5	1.0	0.0	4.0	16.0	4.8 b
Admire Pro 550SC 7.5 fl oz						
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)						
SP102000014342 480SC 5.7 fl oz (E, 6/2)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)	0.0	1.5	0.0	3.3	16.8	2.5 b
Thimet 10G 5 lb/A (F, 5/11)						
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)	0.5	0.5	0.3	2.5	19.3	2.8 b
Thimet 10G 5 lb						
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)						
SP102000014342 480SC 5.7 fl oz (E, 6/2)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27)	0.3	1.3	0.5	4.5	17.8	1.8 b
P(F).....	.7570	.5065	.2338	.9280	.6594	.0119

¹ F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11).

² Counts of infection centers in the two center rows of each plot or a total of 80 ft of row. An infection center was a point of active growth by the causal fungus and included 6 in. on either side of that point.

³ Number of plants per plot with symptoms and signs of *Cylindrocladium* black rot (CBR).

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

Table 82. Effect of treatments on root galling, root and pod disease, yield and value of peanut.

Treatment, rate/A and application timing ¹	Root- knot gall index ² (0-5) (8 Oct)	Root disease ³ (0-10) (8 Oct)	Pod disease ⁴ (0-10) (8 Oct)	Yield ⁵ (lb/A)	Value ⁶ (\$/A)	
					100%	com- mercial
Thimet 10G 5 lb (F, 5/11).....	2.0	2.5 a	1.5	3765	675	236
Admire Pro 550SC 7.5 fl oz (F, 5/11)						
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27) ..	2.5	1.0 b	0.5	3978	688	241
Admire Pro 550SC 7.5 fl oz						
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)						
SP102000014342 480SC 5.7 fl oz (E, 6/2)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27) ..	2.0	0.8 b	1.0	4450	807	283
Thimet 10G 5 lb/A (F, 5/11)						
SP102000025914 400SC 13.69 fl oz (C/B-E, 6/1)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27) ..	2.5	1.0 b	0.8	4370	738	258
Thimet 10G 5 lb						
+ SP102000025914 400SC 13.69 fl oz (F, 5/11)						
SP102000014342 480SC 5.7 fl oz (E, 6/2)						
SP102000025914 400SC 13.69 fl oz (C/B-P, 6/27) ..	2.3	1.3 b	0.5	4377	785	275
<i>P</i> (F).....	.5539	.0427	.2923	.1606	.1010	.1010

¹ F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11).

² Root-knot nematode galling scale: 0=none, 5=100% of roots with galls. Ratings were made after digging on 8 Oct.

³ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 5=100% of roots decayed.

⁴ Pod rot index: 0=none, 5=total necrosis.

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

⁶ Composite samples were graded to determine market value at loan rate and multiplied by yield to estimate value (\$/A). The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels $\geq 2.5\%$; producers receive 35% of value for these peanuts. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$).

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

Treatment, rate/A and application method ¹	% ²								Value (¢/lb) ³	
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	100%	commer- cial
Thimet 5 lb (F, 5/11).....	6	1	89	43	4	2	4	62	16.51574	5.78051
Admire Pro 7.5 fl oz (F, 5/11)										
SP102000025914 13.69 fl oz (C/B-E, 6/1)										
SP102000025914 13.69 fl oz (C/B-P, 6/27).	4	1	84	43	4	3	4	61	16.43977	5.75392
Admire Pro 7.5 fl oz										
+ SP102000025914 13.69 fl oz (F, 5/11)										
SP102000014342 5.7 fl oz (E, 6/2)										
SP102000025914 13.69 fl oz (C/B-P, 6/27).	6	1	85	42	2	2	3	64	16.70358	5.84625
Thimet 5 lb/A (F, 5/11)										
SP102000025914 13.69 fl oz (C/B-E, 6/1)										
SP102000025914 13.69 fl oz (C/B-P, 6/27).	6	1	83	37	2	3	3	60	15.70553	5.49694
Thimet 10G 5 lb										
+ SP102000025914 13.69 fl oz (F, 5/11)										
SP102000014342 5.7 fl oz (E, 6/2)										
SP102000025914 13.69 fl oz (C/B-P, 6/27).	5	0	87	43	3	3	3	62	16.69012	5.84154

¹ F=in furrow (5/11), C/B-E=8-in. band spray at 100% emergence preceded and followed by 0.25 in. irrigation (6/1), E=8-in. band spray at 100% emergence (6/2), C/B-P=12-in. band spray at pegging preceded by 0.18 in. rainfall and followed by 0.25 in. irrigation (6/27). Bravo WeatherStik was applied to all plots beginning at R₅ (7/28) and thereafter according to the Virginia Leaf Spot Advisory (8/17, 9/11).

² FM=foreign material, LSK=loose shelled kernels, FAN=large pods, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Data are from a composite sample of four reps of each treatment/cultivar combination.

³ Value (¢/lb) represents the market value of peanuts based on the loan rate. The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels $\geq 2.5\%$; producers receive 35% of value for these peanuts.

XXIV. CHEMTURA PEANUT SEED TREATMENT TEST (PSEED111, TAREC, Field 46A)

- A. PURPOSE: To evaluate new seed treatments for control of diseases of peanut
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 10-ft alleyways
 2. Main plots of four 30-ft rows of seed treatments planted to 4 seed/ft of row
 3. Two-row subplots of inoculum
- C. APPLICATION OF TREATMENTS: Treatments (S) were applied to seed by tumbling with seed treatment in a plastic bag until thorough coverage was achieved.
- D. TREATMENT AND RATE/CWT SEED:
1. Untreated check
 2. UBI 4381 4 oz
 3. Trilex Star 4 oz
 4. Dynasty PD 4 oz
 5. UBI 4379 4 oz
 6. UBI 4382 4 oz
- E. INOCULUM: Inoculum was prepared in the Plant Pathology Lab at the Tidewater AREC using seed of brown top millet moistened with a 2:1 ratio of seed to distilled water and autoclaved twice. The seed was then inoculated with *Rhizoctonia solani* cultures that had been isolated from peanut seed and allowed to incubate at room temperature for 10 days. Subsequently, seed was dried at room temperature for 4 days and then screened to ensure uniform size. Inoculum was banded over rows at planting in front of a rolling cultivator at 0.2 ml/ft of row.
1. Non-inoculated
 2. Inoculated (Millet seed infested with *Rhizoctonia solani*)
- F. ADDITIONAL INFORMATION:
1. Location: TAREC, Rt. 58, Suffolk
 2. Crop history: peanut 2008, cotton 2009, corn 2010
 3. Planting date and cultivar: 11 May, CHAMPS (66% germ.)
 4. Land preparation: strip tillage into wheat cover crop
 5. Soil fertility report: (25 Jan)
- | | | | |
|----------|---------|----------------|---------------------------|
| pH..... | 6.06 | K | 81 ppm |
| Ca | 482 ppm | Zn..... | 0.5 ppm |
| Mg | 41 ppm | Mn..... | 2.4 ppm |
| P | 16 ppm | Soil type..... | Nansemond fine sandy loam |
6. Herbicide:
 - Pre-plant –Roundup Ultra Max 22 fl oz/A (17 Mar, 12 Apr)
 - Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz (21 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz/A (12 May)
 - Post-emergence - Select Max 1 pt + Induce 4 fl oz/A (6 Jun, 15 Jun)
 7. Insecticide: Temik 15G 10 lb/A 8-in. band (12 May)
 - Orthene 97S 8 oz/A (25 May, 6 Jun)
 - Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
 8. Acaricide: Danitol 6 fl oz (30 Jun)
 9. Leaf spot control: Provost 433SC 8 fl oz/A (12 Jul, 29 Jul, 18 Aug);
Bravo 720 1.5 pt/A (14 Sep)

10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr, 12 Jul)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun)
11. Harvest date: 10 Oct

Table 84. Effect of seed treatments on emergence of peanut in plots with and without inoculum of *Rhizoctonia solani*.

Treatment and rate/cwt seed	Plants/ft*			
	23 May		7 Jun	
	Non- inoculated	Inoculated	Non- inoculated	Inoculated
Untreated check	0.87 b	0.76 d	1.06 c	1.16 b
UBI 4381 4 oz.....	2.41 a	2.33 b	2.57 ab	2.53 a
Trilex Star 4 oz.....	2.23 a	2.04 c	2.34 b	2.28 a
Dynasty PD 4 oz	2.43 a	2.8 bc	2.68 a	2.48 a
UBI 4379 4 oz.....	2.26 a	2.60 a	2.38 b	2.56 a
UBI 4382 4 oz.....	2.18 a	2.45 ab	2.37 b	2.47 a
<i>P</i> (F)	.0001	.0001	.0001	.0001
Treatment mean				
Untreated check	0.81		1.11 d	
UBI 4381 4 oz.....	2.37		2.55 ab	
Trilex Star 4 oz.....	2.13		2.31 c	
Dynasty PD 4 oz	2.35		2.58 a	
UBI 4379 4 oz.....	2.43		2.47 ab	
UBI 4382 4 oz.....	2.31		2.42 bc	
LSD	--		0.13	
Inoculum mean				
Non-inoculated.....	2.06		2.23	
Inoculated	2.08		2.24	
LSD	--		n.s.	
Split-plot analysis				
Treatment	.0001		.0001	
Inoculum	.7905		.7294	
Treatment x inoculum	.0385		.0660	

* 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 ($P=0.05$); -- indicates that LSD not reported due to a significant treatment by inoculum interaction.

Table 85. Effect of seed treatments on emergence and vigor of peanut in plots with and without inoculum of *Rhizoctonia solani*.

Treatment and rate/cwt seed	Plants/ft (15 Jun)*		Vigor (8 Jun)**	
	Non-inoculated	Inoculated	Non-inoculated	Inoculated
Untreated check	1.00 d	1.02 b	5.3	4.0 b
UBI 4381 4 oz.....	2.35 ab	2.36 a	6.0	6.0 a
Trilex Star 4 oz.....	2.23 bc	2.17 a	6.0	5.5 a
Dynasty PD 4 oz	2.48 a	2.35 a	6.3	6.0 a
UBI 4379 4 oz.....	2.14 c	2.29 a	5.8	6.0 a
UBI 4382 4 oz.....	2.16 bc	2.35 a	6.0	5.8 a
<i>P</i> (F)	.0001	.0001	.1579	.0001
Treatment mean				
Untreated check	1.01 d		4.6	
UBI 4381 4 oz.....	2.35 ab		6.0	
Trilex Star 4 oz.....	2.20 c		5.8	
Dynasty PD 4 oz	2.42 a		6.1	
UBI 4379 4 oz.....	2.21 c		5.9	
UBI 4382 4 oz.....	2.26 bc		5.9	
LSD	0.11		--	
Inoculum mean				
Non-inoculated.....	2.06		5.9	
Inoculated	2.09		5.5	
LSD	n.s.		--	
Split-plot analysis				
Treatment	.0001		.0014	
Inoculum	.3539		.0028	
Treatment x inoculum	.0789		.0058	

* Determined from counts of two 6-ft sections of row per plot.

** Vigor rating scale: 0=dead, 10=healthy.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$); -- indicates that LSD not reported due to a significant treatment by inoculum interaction.

Table 86. Effect of seed treatments on disease incidence and yield in plots with and without inoculum of *Rhizoctonia solani*.

Treatment and rate/cwt seed	% dead/diseased*(8 Oct)		Yield (lb/A)**	
	Non-inoculated	Inoculated	Non-inoculated	Inoculated
Untreated check	51.3	36.3	1691	2290
UBI 4381 4 oz.....	18.8	36.3	2825	1987
Trilex Star 4 oz.....	23.8	28.8	2420	2453
Dynasty PD 4 oz	31.3	28.8	2045	1770
UBI 4379 4 oz.....	38.8	41.3	1782	2102
UBI 4382 4 oz.....	22.5	37.5	2142	2027
<i>P</i> (F)	.2188	.9045	.1587	.6232
<i>Treatment mean</i>				
Untreated check	43.8		1991	
UBI 4381 4 oz.....	27.5		2406	
Trilex Star 4 oz.....	26.3		2437	
Dynasty PD 4 oz	30.0		1907	
UBI 4379 4 oz.....	40.0		1942	
UBI 4382 4 oz.....	30.0		2084	
LSD	n.s.		n.s.	
<i>Inoculum mean</i>				
Non-inoculated.....	31.0		2151	
Inoculated	34.8		2105	
LSD	n.s.		n.s.	
<i>Split-plot analysis</i>				
Treatment	.6213		.4493	
Inoculum	.2808		.7537	
Treatment x inoculum	.0414		.1281	

* Disease caused primarily by *Cylindrocladium* black rot (CBR) and tomato spotted wilt virus in all plots.

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

XXV. EVALUATION OF PROPULSE 400SC AND PROLINE 480SC (IN-FURROW OR AFTER EMERGENCE), AND PROVOST 433SC (FOLIAR SPRAYS) FOR CONTROL OF CYLINDROCLADIUM BLACK ROT (CBR) AND EARLY LEAF SPOT OF PEANUT (CBRLFSPOT111, TAREC Res. farm, Field 16A)

A. PURPOSE: To compare in-furrow and foliar sprays of new fungicide chemistry for control of early leaf spot and CBR

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Four, 33-ft rows per plot with 36 in. row spacing and four seed/ft of row.

C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row by a single chisel at least 2 weeks prior to planting (C, 19 Apr). Proline and Propulse in-furrow were applied to the two center rows of plots in a volume of 5 gal/A with a microtube to each seed furrow at planting (F, 2 May). Sprays of Proline and Propulse were applied at 100% emergence (E, 25 May) with two, 8004E nozzles per row at 20 gal/A in an 8-in. band over rows. The first spray of Provost 433SC 8 fl oz (1st spray, etc.) was delayed until 17 Aug to allow for assessment of treatments in suppression of leaf spot diseases. The reference standard Vapam 7.5 gal/A was treated with Provost on 11 Aug. Thereafter, foliar sprays were applied according to the Va. Peanut Leaf spot Advisory Program until beginning maturity (R₇). Sprays were applied to the two center rows of plots with three, D₃23 nozzles/row delivering 14.8 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated check
2. Proline 480SC 5.7 fl oz (F)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
3. Propulse 400SC 13.69 fl oz (F)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
4. Proline 480SC 5.7 fl oz (E)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
5. Propulse 400SC 13.69 fl oz (E)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
6. Proline 480SC 5.7 fl oz (P)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
7. Propulse 400SC 13.69 fl oz (P)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)
8. Vapam 42% 7.5 gal (C)
Provost 433SC 8 fl oz (1st spray, etc.); Bravo 720 1.5 pt (Sep 15)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: peanut 2008, cotton 2009, corn 2010
3. Land preparation: strip tillage into wheat cover crop
4. Planting date and cultivar: 2 May, CHAMPS
5. Soil fertility report (17 Jan):

pH	6.34	K.....	60 ppm
Ca.....	302 ppm	Zn	0.6 ppm
Mg.....	50 ppm	Mn	3.4 ppm
P	59 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide:
 - Pre-plant –Roundup Ultra Max 22 fl oz/A (17 Mar)
 - Dual II Magnum 1 pt + Strongarm 0.22 oz + Prowl H20 1 pt + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (3 May)
 - Post-emergence - Select Max 2EC 1 pt + Induce 4 fl oz/A (13 Jun, 21 Jun)
7. Insecticide: Temik 15G 7 lb/A (2 May); Orthene 97S 8 oz/A (25 May, 13 Jun)
- Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
8. Acaricide: Danitol 6 fl oz/A (30 Jun)
9. Leaf spot control: Provost 433SC 8 fl oz/A (Trt. #8, 11 Aug; Trts. 2-7, 17 Aug)
- Bravo Weather Stik 1.5 pt/A (11 Sep)
10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)
 - d. Irrigation: ca. 1 in. (20 Jul)
11. Harvest date: 7 Oct

Table 87. Effect of treatment on emergence and incidence of Tomato spotted wilt virus (TSWV) in peanut.

Treatment, rate/A and application method ¹	Plants/ft ² (24 May)	Thrips damage ³ (3 Jun)	Vigor ⁴ (3 Jun)	TSWV ⁵	
				3 Jun	8 Jul
Untreated check	1.61	4.0	6.8	0.3	3.3
Proline 480SC 5.7 fl oz (F)	1.64	3.3	6.5	0.0	2.5
Propulse 400SC 13.69 fl oz (F)	1.68	3.5	7.0	0.0	2.8
Proline 480SC 5.7 fl oz (E)	1.64	3.5	7.0	0.5	1.5
Propulse 400SC 13.69 fl oz (E)	1.63	3.8	7.0	0.3	2.0
Proline 480SC 5.7 fl oz (P)	1.73	3.5	6.8	0.0	2.0
Propulse 400SC 13.69 fl oz (P)	1.75	3.8	7.0	0.0	2.3
Vapam 42% 7.5 gal (C)	1.73	3.5	7.0	0.0	2.3
<i>P</i> (F)	.6715	.4812	.1598	.3454	.5505

¹ C=chisel application (19 Apr), F=in furrow at planting (2 May); E=emergence spray (25 May); P=pegging spray (28 Jun). Fungicide sprays of Provost 433SC 8 fl oz (17 Aug) and Bravo 720 1.5 pt (11 Sep) for foliar disease control were delayed until 17 Aug to allow for assessment of treatments in suppression of leaf spot diseases. The reference standard Vapam 7.5 gal/A was treated with Provost on 11 Aug. Thereafter, foliar sprays were applied according to the Va. Peanut Leaf spot Advisory Program until beginning maturity (R₇).

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

³ Thrips damage rating scale: 0=no damage, 10=severe damage.

⁴ Plant vigor rating scale: 0=dead, 10=healthy.

⁵ Number of symptomatic plants per plot.

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

Table 88. Effect of treatment on foliar disease incidence in peanut..

Treatment, rate/A and application method ¹	% leaf spot ²				% defoliation ³	
	8 Jul	9 Aug	9 Sep	27 Sep	9 Sep	27 Sep
Untreated check	0.1 b	2.5 ab	77.5 a	98.5 a	30.0 a	85.0 a
Proline 480SC 5.7 fl oz (F)	0.1 b	1.5 a-c	5.3 b	90.0 cd	0.8 b	35.0 cd
Propulse 400SC 13.69 fl oz (F)	0.1 b	0.6 c	4.3 b	85.0 de	1.0 b	20.0 d
Proline 480SC 5.7 fl oz (E)	1.1 b	0.1 c	9.3 b	91.3 b-d	2.0 b	36.3 cd
Propulse 400SC 13.69 fl oz (E)	0.1 b	1.0 bc	2.5 b	78.8 e	0.5 b	43.8 bc
Proline 480SC 5.7 fl oz (P)	2.5 a	0.8 c	4.3 b	92.5 bc	0.5 b	40.0 cd
Propulse 400SC 13.69 fl oz (P)	0.3 b	0.3 c	12.8 b	88.8 cd	3.8 b	23.8 cd
Vapam 42% 7.5 gal (C)	0.1 b	3.0 a	10.0 b	96.5 ab	2.0 b	61.3 b
P(F)	.0157	.0166	.0001	.0001	.0001	.0001

¹ C=chisel application (19 Apr), F=in furrow at planting (2 May); E=emergence spray (25 May); P=pegging spray (28 Jun). Fungicide sprays of Provost 433SC 8 fl oz (17 Aug) and Bravo 720 1.5 pt (11 Sep) for foliar disease control were delayed until 17 Aug to allow for assessment of treatments in suppression of leaf spot diseases. The reference standard Vapam 7.5 gal/A was treated with Provost on 11 Aug and Bravo 720 1.5 pt on 11 Sep.

² Leaf spot rating scale: 0=none, 100=spots on all leaves.

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 statistical analysis.

Table 89. Effect of treatment on soilborne disease incidence and yield of peanut.

Treatment, rate/A and application method ¹	CBR ² (9 Sep)	Yellowed/ dead plants ³ (9 Sep)	Sclero- tinia ⁴ (9 Sep)	Stem rot ⁴		Yield ⁵ (lb/A)
				9 Aug	9 Sep	
Untreated check	0.0	6.5	0.0	1.5	3.3	1661 c
Proline 480SC 5.7 fl oz (F)	0.0	6.0	0.5	0.8	3.0	2865 b
Propulse 400SC 13.69 fl oz (F)	0.0	5.8	1.0	0.3	2.5	3297 ab
Proline 480SC 5.7 fl oz (E)	0.3	5.0	0.5	0.5	1.0	3116 ab
Propulse 400SC 13.69 fl oz (E)	0.0	4.8	0.3	0.0	0.3	3330 ab
Proline 480SC 5.7 fl oz (P)	0.0	6.5	1.0	1.5	2.0	3566 a
Propulse 400SC 13.69 fl oz (P)	0.5	5.5	0.8	0.3	2.5	3105 ab
Vapam 42% 7.5 gal (C)	0.0	4.0	0.8	1.3	3.5	2967 ab
P(F)	.0937	.6606	.4116	.1718	.3555	.0001

¹ C=chisel application (19 Apr), F=in furrow at planting (2 May); E=emergence spray (25 May); P=pegging spray (28 Jun). Fungicide sprays of Provost 433SC 8 fl oz (17 Aug) and Bravo 720 1.5 pt (11 Sep) for foliar disease control were delayed until 17 Aug to allow for assessment of treatments in suppression of leaf spot diseases. The reference standard Vapam 7.5 gal/A was treated with Provost on 11 Aug and Bravo 720 1.5 pt on 11 Sep.

² Number of plants with symptoms and signs of *Cylindrocladium* black rot (CBR).

³ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of CBR.

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 the causal fungus and included 6 in. on either side of that point.

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

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

XXVI. EVALUATION OF PRE-PLANT, IN-FURROW, AND PRE-EMERGENCE AND FOLIAR SPRAYS FOR CONTROL OF CYLINDROCLADIUM BLACK ROT (CBR) AND EARLY LEAF SPOT OF PEANUT (CBRLFSPOT211, TAREC Res. farm, Field 16A)

- A. PURPOSE: To evaluate new fungicide chemistry for control of early leaf spot, CBR and other diseases of peanut
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
 2. Four, 33-ft rows per plot with 36 in. row spacing and four seed/ft of row
- C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row by a single chisel 2 weeks prior to planting on (C, 19 Apr). Proline 480SC was applied prior to planting in an 8-in. band and incorporated (PPI, 2 May). Proline, Fontelis and Q8Y78 in-furrow (F, 2 May) were applied to the two center rows of plots in a volume of 5 gal/A with a microtube to each seed furrow at planting. Sprays of Proline were applied at 100% emergence (E, 25 May) with two, 8004E nozzles per row at 20 gal/A in an 8-in. band over rows. Foliar sprays were applied to the two center rows with three, D₃23 nozzles/row delivering 14.8 gal/A. The initial application was at beginning pod (R₃) or beginning seed (R₅) and thereafter according to the Va. Peanut Leaf spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. Provost 433SC 10.7 fl oz (R₃-1st, 2nd, 3rd spray); Bravo 720 1.5 pt (4th spray)
 3. Proline 480SC 5.7 fl oz (E)
Provost 433SC 10.7 fl oz (R₃-1st, 2nd, 3rd spray); Bravo 720 1.5 pt (4th spray)
 4. Proline 480SC 5.7 fl oz (F)
Provost 433SC 10.7 fl oz (R₃-1st, 2nd, 3rd spray); Bravo 720 1.5 pt (4th spray)
 5. Proline 480SC 5.7 fl oz (E)
Provost 433SC 10.7 fl oz (R₅-1st, 2nd spray); Bravo 720 1.5 pt (3rd spray)
 6. Bravo 720 1.5 pt (R₃-1st, 2nd, 3rd, 4th spray)
 7. Proline 480SC 5.7 fl oz (E)
Bravo 720 1.5 pt (R₃-1st, 2nd, 3rd, 4th spray)
 8. Proline 480SC 5.7 fl oz (PPI-8 in. band)
Bravo 720 1.5 pt (R₃-1st, 2nd, 3rd, 4th spray)
 9. Fontelis 1.67SC 23.2 fl oz (F)
Fontelis 1.67SC 16 fl oz (R₃-1st, 3rd spray); Bravo 720 1.5 pt (2nd, 4th spray)
 10. Q8Y78 240SC 23.2 fl oz (F)
Fontelis 1.67SC 16 fl oz (R₃-1st, 3rd spray); Bravo 720 1.5 pt (2nd, 4th spray)
 11. Fontelis 1.67SC 16 fl oz (R₃-1st, 3rd spray); Bravo 720 1.5 pt (2nd, 4th spray)
 12. Vapam 42% 7.5 gal (C)
Provost 433SC 10.7 fl oz (R₃-1st, 2nd, 3rd spray); Bravo 720 1.5 pt (4th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: peanut 2008, cotton 2009, corn 2010
 3. Land preparation: strip tillage into wheat cover crop
 4. Planting date and variety: 2 May, CHAMPS

5. Soil fertility report (17 Jan):

pH	6.16	K.....	60 ppm
Ca.....	302 ppm	Zn	0.6 ppm
Mg.....	50 ppm	Mn	3.4 ppm
P.....	59 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide:

Pre-plant –Roundup Ultra Max 22 fl oz/A (17 Apr)

Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz +
Gramoxone Inteon 1 pt/A (22 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Prowl H₂O 1 pt +
Gramoxone Inteon 1 pt/A (3 May)

Post-emergence - Select Max 2EC 1 pt + Induce 4 fl oz/A (13 Jun, 21 Jun)

7. Insecticide: Temik 15G 7 lb/A (2 May); Orthene 97S 8 oz/A (25 May, 13 Jun)
Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)

8. Acaricide: Danitol 6 fl oz/A (30 Jun)

9. Additional crop management:

a. Liquid boron 1 qt/A (22 Apr)

b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)

c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)

d. Irrigation: ca. 1 in. (20 Jul)

10. Harvest date: 7 Oct

Table 90. Effect of treatment on emergence and incidence of tomato spotted wilt virus (TSWV) in peanut.

Treatment, rate/A and application date ¹	Plants/ft ² (24 May)	TSWV ³	
		3 Jun	8 Jul
Untreated check	1.81	0.0	3.3
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)			
Bravo 720 1.5 pt (9/11)	1.78	0.5	2.0
Proline 480SC 5.7 fl oz (E, 5/25)			
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)			
Bravo 720 1.5 pt (9/11)	1.80	0.5	3.5
Proline 480SC 5.7 fl oz (F, 5/2)			
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)			
Bravo 720 1.5 pt (9/11)	1.83	0.3	4.0
Proline 480SC 5.7 fl oz (E, 5/25)			
Provost 433SC 10.7 fl oz (R ₅ -7/28, 8/17)			
Bravo 720 1.5 pt (9/11)	1.84	0.5	4.3
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	1.78	0.5	1.5
Proline 480SC 5.7 fl oz (E, 5/25)			
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	1.89	1.5	3.0
Proline 480SC 5.7 fl oz (PPI-8 in. band, 5/2)			
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	1.88	0.3	4.3
Fontelis 1.67SC 23.2 fl oz (F, 5/2)			
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)			
Bravo 720 1.5 pt (8/2, 9/11)	1.98	0.5	3.8
Q8Y78 240SC 23.2 fl oz (F, 5/2)			
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)			
Bravo 720 1.5 pt (8/2, 9/11)	1.84	0.5	2.8
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)			
Bravo 720 1.5 pt (8/2, 9/11)	1.84	0.5	4.0
Vapam 42% 7.5 gal (C, 4/19)			
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)			
Bravo 720 1.5 pt (9/11)	1.95	0.3	4.8
<i>P</i> (F)	.6800	.7326	.5002

¹ C=chisel application (19 Apr), PPI=8-in. band pre-plant incorporated (2 May); F=in furrow at planting (2 May); E=100% emergence spray (25 May). Fungicide sprays were applied at R₃ (beginning pod) or R₅ (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Determined from counts of two, 33-ft rows in each plot.

³ Number of symptomatic plants per plot.

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

Table 91. Effect of treatment on thrips injury and plant vigor in peanut.

Treatment, rate/A and application date ¹	Thrips injury ² (3 Jun)	Vigor ³ (3 Jun)
Untreated check	3.8	7.0
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)		
Bravo 720 1.5 pt (9/11)	3.5	7.0
Proline 480SC 5.7 fl oz (E, 5/25)		
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)		
Bravo 720 1.5 pt (9/11)	3.5	6.8
Proline 480SC 5.7 fl oz (F, 5/2)		
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)		
Bravo 720 1.5 pt (9/11)	3.5	6.8
Proline 480SC 5.7 fl oz (E, 5/25)		
Provost 433SC 10.7 fl oz (R ₅ -7/28, 8/17)		
Bravo 720 1.5 pt (9/11)	3.3	6.8
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	3.5	7.0
Proline 480SC 5.7 fl oz (E, 5/25)		
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	3.8	6.5
Proline 480SC 5.7 fl oz (PPI-8 in. band, 5/2)		
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	3.5	7.0
Fontelis 1.67SC 23.2 fl oz (F, 5/2)		
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)		
Bravo 720 1.5 pt (8/2, 9/11)	3.3	7.0
Q8Y78 240SC 23.2 fl oz (F, 5/2)		
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)		
Bravo 720 1.5 pt (8/2, 9/11)	3.8	6.8
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)		
Bravo 720 1.5 pt (8/2, 9/11)	3.3	6.5
Vapam 42% 7.5 gal (C, 4/19)		
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)		
Bravo 720 1.5 pt (9/11)	3.8	7.0
<i>P</i> (F)	.6944	.4401

¹ C=chisel application (19 Apr), PPI=8-in. band pre-plant incorporated (2 May); F=in furrow at planting (2 May); E=100% emergence spray (25 May). Fungicide sprays were applied at R₃ (beginning pod) or R₅ (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Thrips damage rating scale: 0=no damage, 10=severe damage.

³ Plant vigor rating scale: 0=dead, 10=healthy.

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

Table 92. Effect of treatment on leaf spot incidence and severity of defoliation in peanut.

Treatment, rate/A and application date ¹	% leaf spot ²				% defoliation ³	
	8 Jul	10 Aug	9 Sep	27 Sep	9 Sep	27 Sep
Untreated check	0.1	11.8 a	86.3 a	98.8 a	41.5a	88.8 a
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)						
Bravo 720 1.5 pt (9/11)	0.0	0.3 b	2.0 b	91.3 b	0.3 b	8.8 c
Proline 480SC 5.7 fl oz (E, 5/25)						
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)						
Bravo 720 1.5 pt (9/11)	0.0	0.6 b	1.0 b	90.0 b	0.0 b	7.5 c
Proline 480SC 5.7 fl oz (F, 5/2)						
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)						
Bravo 720 1.5 pt (9/11)	0.0	1.0 b	1.3 b	91.3 b	0.0 b	10.0 bc
Proline 480SC 5.7 fl oz (E, 5/25)						
Provost 433SC 10.7 fl oz (R ₅ -7/28, 8/17)						
Bravo 720 1.5 pt (9/11)	0.1	1.1 b	4.0 b	91.3 b	0.5 b	16.3 b
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.1	0.6 b	1.3 b	81.3 d	0.0 b	4.0 c
Proline 480SC 5.7 fl oz (E, 5/25)						
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.0	0.6 b	2.0 b	73.8 e	0.3 b	2.8 c
Proline 480SC 5.7 fl oz (PPI-8 in. band, 5/2)						
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.3	1.1 b	2.3 b	78.8 de	0.3 b	5.0 c
Fontelis 1.67SC 23.2 fl oz (F, 5/2)						
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)						
Bravo 720 1.5 pt (8/2, 9/11)	0.1	0.1 b	4.8 b	82.5 cd	0.8 b	6.0 c
Q8Y78 240SC 23.2 fl oz (F, 5/2)						
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)						
Bravo 720 1.5 pt (8/2, 9/11)	0.1	1.0 b	1.3 b	81.3 d	0.0 b	7.8 c
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)						
Bravo 720 1.5 pt (8/2, 9/11).....	0.0	1.3 b	6.3 b	83.8 cd	1.0 b	10.0 bc
Vapam 42% 7.5 gal (C, 4/19)						
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)						
Bravo 720 1.5 pt (9/11)	0.1	1.1 b	1.0 b	86.3 bc	0.0 b	8.8 c
P(F)	.7033	.0001	.0001	.0001	.0001	.0001

¹ C=chisel application (19 Apr), PPI=8-in. band pre-plant incorporated (2 May); F=in furrow at planting (2 May); E=100% emergence spray (25 May). Fungicide sprays were applied at R₃ (beginning pod) or R₅ (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

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).

Table 93. Effect of treatment on soilborne disease incidence of peanut.

Treatment, rate/A and application date ¹	CBR ² (9 Sep)	Yellowed/ dead plants ³ (9 Sep)	Sclero- tinia ⁴ (9 Sep)	Stem rot ⁴	
				10 Aug	9 Sep
Untreated check	0.0	6.5	0.5	0.5 bc	1.8
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)					
Bravo 720 1.5 pt (9/11)	0.5	5.0	1.5	1.5 a	2.5
Proline 480SC 5.7 fl oz (E, 5/25)					
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)					
Bravo 720 1.5 pt (9/11)	0.0	5.8	2.0	0.0 c	2.3
Proline 480SC 5.7 fl oz (F, 5/2)					
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)					
Bravo 720 1.5 pt (9/11)	0.0	5.3	1.5	0.3 bc	1.5
Proline 480SC 5.7 fl oz (E, 5/25)					
Provost 433SC 10.7 fl oz (R ₅ -7/28, 8/17)					
Bravo 720 1.5 pt (9/11)	0.0	4.0	0.8	0.0 c	1.5
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.0	5.5	2.3	0.8 a-c	2.5
Proline 480SC 5.7 fl oz (E, 5/25)					
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.0	3.8	2.0	0.0 c	3.5
Proline 480SC 5.7 fl oz (PPI-8 in. band, 5/2)					
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	0.3	5.8	0.8	1.0 ab	3.5
Fontelis 1.67SC 23.2 fl oz (F, 5/2)					
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)					
Bravo 720 1.5 pt (8/2, 9/11)	0.0	4.5	1.0	0.0 c	1.5
Q8Y78 240SC 23.2 fl oz (F, 5/2)					
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)					
Bravo 720 1.5 pt (8/2, 9/11)	0.0	5.3	1.5	0.0 c	2.0
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)					
Bravo 720 1.5 pt (8/2, 9/11)	0.8	3.8	1.3	0.8 a-c	1.3
Vapam 42% 7.5 gal (C, 4/19)					
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)					
Bravo 720 1.5 pt (9/11)	0.0	4.5	1.5	0.5 bc	2.3
P(F)	.5433	.7726	.6278	.0154	.4322

¹ C=chisel application (19 Apr), PPI=8-in. band pre-plant incorporated (2 May); F=in furrow at planting (2 May); E=100% emergence spray (25 May). Fungicide sprays were applied at R₃ (beginning pod) or R₅ (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Number of plants with symptoms and signs of *Cylindrocladium* black rot (CBR).

³ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of CBR.

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 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 at $P=0.05$ according to Fisher's Protected LSD.

Table 94. Effect of treatment on yield of peanut.

Treatment, rate/A and application date*	Yield** (lb/A)
Untreated check	1294 c
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)	
Bravo 720 1.5 pt (9/11)	2942 ab
Proline 480SC 5.7 fl oz (E, 5/25)	
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)	
Bravo 720 1.5 pt (9/11)	3434 ab
Proline 480SC 5.7 fl oz (F, 5/2)	
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)	
Bravo 720 1.5 pt (9/11)	3140 ab
Proline 480SC 5.7 fl oz (E, 5/25)	
Provost 433SC 10.7 fl oz (R ₅ -7/28, 8/17)	
Bravo 720 1.5 pt (9/11)	3186 ab
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	3620 a
Proline 480SC 5.7 fl oz (E, 5/25)	
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	3590 a
Proline 480SC 5.7 fl oz (PPI-8 in. band, 5/2)	
Bravo 720 1.5 pt (R ₃ -7/11, 8/2, 8/18, 9/11)	2690 b
Fontelis 1.67SC 23.2 fl oz (F, 5/2)	
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)	
Bravo 720 1.5 pt (8/2, 9/11)	3333 ab
Q8Y78 240SC 23.2 fl oz (F, 5/2)	
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)	
Bravo 720 1.5 pt (8/2, 9/11)	3180 ab
Fontelis 1.67SC 16 fl oz (R ₃ -7/11, 8/18)	
Bravo 720 1.5 pt (8/2, 9/11)	3480 ab
Vapam 42% 7.5 gal (C, 4/19)	
Provost 433SC 10.7 fl oz (R ₃ -7/11, 8/2, 8/18)	
Bravo 720 1.5 pt (9/11)	3676 a
P(F)	.0001

* C=chisel application (19 Apr), PPI=8-in. band pre-plant incorporated (2 May); F=in furrow at planting (2 May); E=100% emergence spray (25 May). Fungicide sprays were applied at R₃ (beginning pod) or R₅ (beginning seed) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

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

XXVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (LFSPOT111, TAREC Res. farm, Field 9A)

- A. PURPOSE: To compare efficacy of registered and experimental fungicides for control of leaf spots, southern stem rot and other soilborne diseases.
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
 2. Four, 35-ft rows per plot with treatments applied to the two center rows
 3. Seeding rate of ca. 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D₃23 nozzles/row delivering 14.8 gal/A. The initial application was at beginning pod (R₃, 11 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th spray)
 3. Provost 3.6SC 8 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 4. Abound 2.08SC 18 fl oz (1st, 3rd spray)
Bravo 720 1.5 pt (2nd, 4th spray)
 5. Abound 2.08SC 15 fl oz + Alto 0.83SL 5.5 fl oz (1st, 3rd spray)
Bravo 720 1.5 pt (2nd, 4th spray)
 6. Abound 2.08SC 18 fl oz + Alto 0.83SL 5.5 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 7. Abound 2.08SC 12 fl oz + Folicur 3.6F 7.2 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 8. Folicur 3.6F 7.2 fl oz + Bravo 720 1.5 pt (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: 2008 peanut, 2009 cotton, 2010 corn
 3. Land preparation: strip tillage into wheat cover crop
 4. Planting date and cultivar: 29 Apr, CHAMPS
 5. Soil fertility report: (17 Jan)
- | | | | |
|----------|---------|-----------------|-----------------------------|
| pH | 6.16 | K..... | 46 ppm |
| Ca..... | 214 ppm | Zn | 0.5 ppm |
| Mg..... | 22 ppm | Mn | 2.1 ppm |
| P | 35 ppm | Soil type | Kenansville loamy fine sand |
6. Cylindrocladium black rot control: Metam 42% 7.5 gal/A (15 Apr)
 7. Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (17 Apr)
 - Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 qt/A (3 May)
 - Post-emergence - Select Max 1 pt + Induce 4 fl oz/A (13 Jun, 21 Jun)

8. Insecticide: Temik 15G 7 lb/A (29 Apr); Orthene 97S 8 oz/A (25 May)
Steward EC 6 fl oz + Baythroid XL 7 fl oz/A (12 Aug)
9. Acaricide: Danitol 6 fl oz/A (30 Jun)
10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)
 - d. Irrigation: ca. 1 in. (19 Jul)
11. Harvest date: 10 Oct

Table 95. Effect of treatments on leaf spot and defoliation in peanut.

Treatment, rate/A and application timing ¹	% leaf spot ²			% defoliation ³	
	19 Aug	10 Sep	27 Sep	10 Sep	27 Sep
Untreated check.....	33.8 a	81.3 a	98.3 a	23.8 a	77.5 a
Bravo 720 1.5 pt (7/11, 8/1, 8/17, 9/11).....	0.3 b	1.0 b	38.8 d	0.0 b	1.5 bc
Provost 3.6SC 8 fl oz (7/11, 8/1, 8/17)					
Bravo 720 1.5 pt (9/11).....	0.1 b	1.0 b	57.5 bc	0.0 b	1.8 bc
Abound 2.08SC 18 fl oz (7/11, 8/17)					
Bravo 720 1.5 pt (8/1, 9/11).....	1.1 b	1.0 b	63.8 b	0.0 b	4.5 b
Abound 2.08SC 15 fl oz + Alto 0.83SL 5.5 fl oz (7/11, 8/17)					
Bravo 720 1.5 pt (8/1, 9/11).....	0.3 b	1.0 b	53.8 bc	0.0 b	1.3 c
Abound 2.08SC 18 fl oz + Alto 0.83SL 5.5 fl oz (7/11, 8/1, 8/17)					
Bravo 720 1.5 pt (9/11).....	0.0 b	1.0 b	47.5 cd	0.0 b	1.3 c
Abound 2.08SC 12 fl oz + Folicur 3.6F 7.2 fl oz (7/11, 8/1, 8/17)					
Bravo 720 1.5 pt (9/11).....	0.3 b	1.0 b	43.8 cd	0.0 b	1.3 c
Folicur 3.6F 7.2 fl oz + Bravo 720 1.5 pt (7/11, 8/1, 8/17)					
Bravo 720 1.5 pt (9/11).....	0.3 b	1.0 b	18.8 e	0.0 b	1.0 c
P(F)	.0001	.0001	.0001	.0001	.0001

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

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 96. Effect of treatments on soilborne disease incidence and yield in peanut.

Treatment, rate/A and application timing ¹	Stem rot ² (19 Aug)	Yellowed/ dead ³ (10 Sep)	Yield (lb/A) ⁴
Untreated check.....	3.3 a	5.8 ab	2617 f
Bravo 720 1.5 pt (7/11, 8/1, 8/17, 9/11).....	1.5 ab	6.3 a	3920 e
Provost 3.6SC 8 fl oz (7/11, 8/1, 8/17)			
Bravo 720 1.5 pt (9/11).....	1.0 b	3.3 c	4078 de
Abound 2.08SC 18 fl oz (7/11, 8/17)			
Bravo 720 1.5 pt (8/1, 9/11).....	1.8 ab	3.8 bc	4518 cd
Abound 2.08SC 15 fl oz			
+ Alto 0.83SL 5.5 fl oz (7/11, 8/17)			
Bravo 720 1.5 pt (8/1, 9/11).....	1.0 b	4.3 a-c	4984 bc
Abound 2.08SC 18 fl oz			
+ Alto 0.83SL 5.5 fl oz (7/11, 8/1, 8/17)			
Bravo 720 1.5 pt (9/11).....	0.3 b	3.5 c	5322 ab
Abound 2.08SC 12 fl oz			
+ Folicur 3.6F 7.2 fl oz (7/11, 8/1, 8/17)			
Bravo 720 1.5 pt (9/11).....	0.3 b	2.5 c	5584 a
Folicur 3.6F 7.2 fl oz			
+ Bravo 720 1.5 pt (7/11, 8/1, 8/17)			
Bravo 720 1.5 pt (9/11).....	1.5 ab	3.8 bc	4185 de
<i>P</i> (F)	.0625	.0299	.0001

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

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

³ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of CBR.

⁴ Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 3 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 ($P=0.05$), except if $P \geq 0.05$ and ≤ 0.10 , analysis was based on $P=0.10$.

XXVIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (LFSPOT311, TAREC Res. farm, Field 9A)

- A. PURPOSE: To compare efficacy of registered and experimental fungicides for control of leaf spots, southern stem rot and other soilborne diseases
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
 2. Four, 35-ft rows per plot with treatments applied to the two center rows
 3. Seeding rate of ca. 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D₃23 nozzles/row delivering 14.85 gal/A. The initial application was at beginning pod (R₃, 11 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. CHA-026 6F 24 fl oz (1st, 4th spray)
Topguard 1.04SC 14 fl oz + CHA-026 16 fl oz (2nd, 3rd spray)
 3. Bravo 720 1.5 pt (1st, 4th spray)
Folicur 3.6F 7.2 fl oz + CHA-026 16 fl oz (2nd, 3rd spray)
 4. Fontelis 1.67SC 16 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 5. AMV4550 20WP 17.84 oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 6. AMV4550 20WP 24.98 oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 7. AMV4550 25% EM 13.72 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 8. AMV4550 25% EM 19.21 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 9. AMV4550 15% EC 22.65 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 10. AMV4550 15% EC 31.72 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 11. Provost 433SC 8 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
 12. Folicur 3.6F 7.2 fl oz (1st, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Crop history: 2008 peanut, 2009 cotton, 2010 corn
 3. Land preparation: strip tillage into wheat cover crop
 4. Planting date and cultivar: 29 Apr, CHAMPS
 5. Soil fertility report: (18 Jan)

pH	6.16	K.....	46 ppm
Ca.....	214 ppm	Zn	0.5 ppm
Mg.....	22 ppm	Mn	2.1 ppm
P	35 ppm	Soil type	Kenansville loamy fine sand

6. Cylindrocladium black rot control: Metam 42% 10 gal/A (15 Apr)
7. Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (17 Mar)
 - Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 qt/A (3 May)
 - Post-emergence - Select Max 1 pt + Induce 4 fl oz/A (13 Jun, 21 Jun)
8. Insecticide: Temik 15G 7 lb/A (29 Apr); Orthene 97S 8 oz/A (25 May)
 - Steward EC 6 fl oz + Baythroid XL 7 fl oz/A (12 Aug)
9. Acaricide: Danitol 6 fl oz/A (30 Jun)
10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)
 - d. Irrigation: ca. 1 in. (19 Jul)
11. Harvest date: 10 Oct

Table 97. Effect of treatments on leaf spot and defoliation in peanut.

Treatment, rate/A and application timing ¹	% leaf spot ²			% defoliation ³	
	19 Aug	10 Sep	27 Sep	10 Sep	27 Sep
Untreated check.....	27.5 a	70.0 a	96.0 a	21.3 a	68.8 a
CHA-026 6F 24 fl oz (7/11, 9/11)					
Topguard 1.04SC 14 fl oz + CHA-026 16 fl oz (8/1, 8/18).....	0.1 b	1.0 b	25.0 e	0.0 b	1.0 c
Bravo 720 1.5 pt (7/11, 9/11)					
Folicur 3.6F 7.2 fl oz + CHA-026 16 fl oz (8/1, 8/18).....	0.1 b	1.0 b	23.4 e	0.0 b	1.3 c
Fontelis 1.67SC 16 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11)	1.1 b	1.0 b	33.8 e	0.0 b	1.3 c
AMV4550 20WP 17.84 oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.1 b	1.0 b	78.8 b	0.0 b	6.3 bc
AMV4550 20WP 24.98 oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.1 b	1.0 b	75.0 bc	0.0 b	5.0 c
AMV4550 25% EM 13.72 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.3 b	1.3 b	75.0 bc	0.3 b	4.3 c
AMV4550 25% EM 19.21 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.1 b	2.0 b	77.0 b	0.3 b	21.8 b
AMV4550 15% EC 22.65 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.1 b	1.3 b	80.0 b	0.3 b	7.0 bc
AMV4550 15% EC 31.72 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.3 b	1.0 b	78.8 b	0.0 b	4.3 c
Provost 433SC 8 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.3 b	1.3 b	56.3 d	0.3 b	3.0 c
Folicur 3.6F 7.2 fl oz (7/11, 8/1, 8/18)					
Bravo 720 1.5 pt (9/11).....	0.1 b	1.3 b	62.5 cd	0.3 b	1.8 c
P(F).....	.0001	.0001	.0001	.0001	.0001

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

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 98. Effect of treatments on soilborne disease incidence and yield in peanut.

Treatment, rate/A and application timing ¹	Stem rot ² (26 Aug)	Yellowed/dead ³ (10 Sep)	Yield ⁴ (lb/A)
Untreated check.....	3.0	2.5	2451 d
CHA-026 6F 24 fl oz (7/11, 9/11) Topguard 1.04SC 14 fl oz + CHA-026 16 fl oz (8/1, 8/18).....	1.8	4.8	3641 c
Bravo 720 1.5 pt (7/11, 9/11) Folicur 3.6F 7.2 fl oz + CHA-026 16 fl oz (8/1, 8/18).....	1.8	2.3	4437 a
Fontelis 1.67SC 16 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11)	1.0	3.8	4182 a-c
AMV4550 20WP 17.84 oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	2.0	4.0	3633 c
AMV4550 20WP 24.98 oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	0.5	3.5	4238 a-c
AMV4550 25% EM 13.72 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	2.8	3.0	3735 a-c
AMV4550 25% EM 19.21 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	1.0	2.0	3712 bc
AMV4550 15% EC 22.65 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	1.8	3.3	3725 a-c
AMV4550 15% EC 31.72 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	0.8	4.0	3812 a-c
Provost 433SC 8 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	1.0	2.5	4070 a-c
Folicur 3.6F 7.2 fl oz (7/11, 8/1, 8/18) Bravo 720 1.5 pt (9/11).....	1.5	3.0	4417 ab
<i>P</i> (F)	n.s.	.7358	.0003

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

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

³ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of CBR.

⁴ Yields are weight of peanuts with 7% moisture. Peanuts were dug on 3 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).

XXIX. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (LFSPOT411, TAREC Res. farm, Field 63D)

- A. PURPOSE: To compare efficacy of registered and experimental fungicides for control of leaf spots, southern stem rot and other soilborne diseases.
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks with 10-ft alleys between blocks
 2. Four, 35-ft rows per plot with treatments applied to the two center rows
 3. Seeding rate of ca. 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: Foliar sprays were applied with three, D₃23 nozzles/row delivering 14.85 gal/A. The initial application was at flowering (R₃, 12 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. Bravo 720 1.5 pt (1st, 2nd, 3rd, 4th spray)
 3. Bravo 720 1 pt + T-methyl 10 fl oz (1st, 3rd, spray)
Evito T 11.2 fl oz (2nd, 4th spray)
 4. Evito 480SC 5.7 fl oz/A (1st, 3rd spray)
Bravo 720 1 pt + T-methyl 10 fl oz (2nd, 4th spray)
 5. Bravo 720 1 pt + Convoy 3.8F 1 pt/A (1st, 3rd spray)
Bravo 720 1.5 pt (2nd, 4th spray)
 6. Proline 480SC 5.7 fl oz (1st spray 12 in. band over row)
Provost 433SC 8 fl oz (2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research farm, Hare Rd., Suffolk
 2. Land preparation: strip tillage into wheat cover crop
 3. Crop history: peanut 2008, cotton 2009, 2010
 4. Planting date and cultivar: 7 May, CHAMPS
 5. Soil fertility report: (25 Jan)
- | | | | |
|----------|---------|-----------------|-----------------------------|
| pH | 6.34 | K | 84 ppm |
| Ca | 344 ppm | Zn | 0.4 ppm |
| Mg | 45 ppm | Mn | 2.2 ppm |
| P | 26 ppm | Soil type | Kenansville loamy fine sand |
6. Cylindrocladium black rot control: Metam 42% 7.5 gal/A (15 Apr)
 7. Herbicide:
 - Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Apr)
Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz +
Gramoxone Inteon 1 pt/A (22 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (5 May)
 8. Insecticide: Temik 15G 7 lb/A (7 May); Orthene 97S 8 oz/A (25 May)
Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
 9. Acaricide: Danitol 6 fl oz/A (27 Jun)
 10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)

- c. Liquid Mn 1 qt/A (22 Jun)
d. Irrigation: ca. 1 in. (21 Jun)
11. Harvest date: 14 Oct

Table 99. Effect of treatments on stem rot, leaf spot and defoliation in peanut.

Treatment, rate/A and application timing ¹	Stem rot ² (23 Aug)	% leaf spot ³		% defoliation ⁴ (5 Oct)
		23 Aug	5 Oct	
Untreated check.....	1.3 b	0.1	60.0 a	10.3 a
Bravo 720 1.5 pt (7/12, 8/2, 8/18, 9/13).....	4.0 a	0.1	1.8 b	0.3 b
Bravo 720 1 pt + T-methyl 10 fl oz (7/12, 8/18) Evito T 11.2 fl oz (8/2, 9/13).....	0.3 b	0.1	11.5 b	0.5 b
Evito 480SC 5.7 fl oz/A (7/12, 8/18) Bravo 720 1 pt + T-methyl 10 fl oz (8/2, 9/13)	1.0 b	0.1	3.5 b	0.5 b
Bravo 720 1 pt + Convoy 3.8F 1 pt/A (7/12, 8/18) Bravo 720 1.5 pt (8/2, 9/13)	0.3 b	0.0	22.5 b	0.5 b
Proline 480SC 5.7 fl oz (7/12) Provost 433SC 8 fl oz (8/2, 8/18) Bravo 720 1.5 pt (9/13).....	0.3 b	0.1	17.3 b	0.5 b
<i>P</i> (F)	.0001	.2549	.0028	.0064

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

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

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

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

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

Table 100. Effect of treatments on yield of peanut.

Treatment, rate/A and application timing*	Yield** (lb/A)
Untreated check.....	4036 bc
Bravo 720 1.5 pt (7/12, 8/2, 8/18, 9/13).....	3719 c
Bravo 720 1 pt + T-methyl 10 fl oz (7/12, 8/18) Evito T 11.2 fl oz (8/2, 9/13).....	5069 a
Evito 480SC 5.7 fl oz/A (7/12, 8/18) Bravo 720 1 pt + T-methyl 10 fl oz (8/2, 9/13)	4427 b
Bravo 720 1 pt + Convoy 3.8F 1 pt/A (7/12, 8/18) Bravo 720 1.5 pt (8/2, 9/13)	4026 bc
Proline 480SC 5.7 fl oz (7/12) Provost 433SC 8 fl oz (8/2, 8/18) Bravo 720 1.5 pt (9/13).....	3983 bc
<i>P</i> (F)	.0063

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

** Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 5 Oct and harvested on 14 Oct. Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD (*P*=0.05).

XXX. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SCLEROTINIA BLIGHT OF PEANUT (SCL111, TAREC Res. Ctr., Field 46C)

A. PURPOSE: To evaluate new fungicide chemistry for control of Sclerotinia blight and other soilborne diseases

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Leaf spot diseases were controlled by applications of Bravo 720 1.5 pt/A according to the Virginia Leaf Spot Advisory Program with the 1st spray applied at beginning pod (R₃, 12 Jul). Whenever the Sclerotinia blight advisory (<http://webipm.ento.vt.edu/cgi-bin/infonet1.cgi>) called for a fungicide application, the treatments were applied according to the last effective spray date. All treatments were applied with three, D₃23 nozzles/row delivering 14.8 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated check
2. XP1 LO + Induce 3.2 fl oz
3. XP1 HI + Induce 3.2 fl oz
4. XP2 LO + Induce 3.2 fl oz
5. XP2 MED + Induce 3.2 fl oz
6. XP2 HI + Induce 3.2 fl oz
7. Propulse 400SC 13.69 fl oz
8. Omega 500F 1 pt

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Rt. 58, Suffolk
2. Crop history: corn 2010; cotton 2009; peanut 2008
3. Land preparation: rip and strip till in wheat cover crop
4. Planting date and cultivar: 7 May, CHAMPS
5. Soil fertility report: (25 Jan)

pH.....	6.06	K	81 ppm
Ca	482 ppm	Zn.....	0.5 ppm
Mg	41 ppm	Mn.....	2.4 ppm
P	16 ppm	Soil type	Nansemond fine sandy loam

6. Cylindrocladium black rot control: Metam 42% 7.5 gal/A (21 Apr)

7. Herbicide:

Pre-plant –Roundup Ultra Max 22 fl oz/A (17 Mar, 12 Apr)

Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz (21 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz/A (12 May)

Post-emergence - Select Max 1 pt + Induce 4 fl oz/A (6 Jun, 15 Jun)

8. Insecticide: Temik 15G 7 lb/A (7 May); Orthene 97S 8 oz/A (25 May, 6 Jun)

Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)

9. Acaricide: Danitol 6 fl oz (30 Jun)

10. Leaf spot control: Bravo 720 1.pt/A (12 Jul, 29 Jul, 8 Aug, 14 Sep)

11. Additional crop management:
 - a. Liquid boron 1 qt/A (21 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)
12. Harvest date: 10 Oct

Table 101. Disease incidence in fungicide-treated plots.

Treatment and rate/A ¹	TSWV ² (8 Jul)	Sclerotinia blight ³			
		8 Jul	8 Aug	1 Sep	6 Oct
Untreated check	6.3	0.0	0.0	0.3	1.5 ab
XP1 LO + Induce 3.2 fl oz.....	8.0	0.0	0.3	0.5	1.3 b
XP1 HI + Induce 3.2 fl oz.....	10.3	0.3	0.3	0.3	2.3 ab
XP2 LO + Induce 3.2 fl oz.....	9.3	0.0	0.3	0.8	0.8 b
XP2 MED + Induce 3.2 fl oz	11.0	0.0	0.0	0.0	1.0 b
XP2 HI + Induce 3.2 fl oz.....	6.8	0.0	0.3	0.5	3.0 a
Propulse 400SC 13.69 fl oz	8.0	0.0	0.3	0.3	3.0 a
Omega 500F 1 pt	6.3	0.0	0.3	0.0	0.8 b
<i>P</i> (F)	.2116	.4586	.9504	.3047	.0219

¹ Fungicides were applied on 12 Jul, 8 Aug and 12 Sep according to the Sclerotinia blight advisory and scouting for disease.

² Number of plants per plot with symptoms of tomato spotted wilt virus (TSWV).

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 *Sclerotinia minor* and included 6 in. on either side of that point.

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

Table 102. Disease incidence and yield in fungicide-treated plots.

Treatment and rate/A ¹	Stem rot ²		CBR ²		Yield (lb/A) ³
	8 Aug	1 Sep	1 Sep	6 Oct	
Untreated check	3.5 ab	10.5 a	2.8	12.0 a	2793 bc
XP1 LO + Induce 3.2 fl oz.....	2.5 bc	5.8 bc	2.3	10.5 a	2914 bc
XP1 HI + Induce 3.2 fl oz.....	1.8 bc	5.3 bc	3.0	9.8 ab	2473 c
XP2 LO + Induce 3.2 fl oz.....	1.5 bc	5.3 bc	2.0	9.0 a-c	3349 ab
XP2 MED + Induce 3.2 fl oz	1.0 c	4.5 c	2.8	14.5 a	3216 bc
XP2 HI + Induce 3.2 fl oz.....	1.3 bc	3.3 c	2.3	3.5 c	4090 a
Propulse 400SC 13.69 fl oz	5.5 a	8.0 ab	2.3	4.0 bc	2569 bc
Omega 500F 1 pt	2.8 bc	7.5 b	3.0	10.3 a	2800 bc
<i>P</i> (F)	.0668	.0008	.9921	.0816	.0085

¹ Fungicides were applied on 12 Jul, 8 Aug and 12 Sep according to the Sclerotinia blight advisory and scouting for disease.

² Number of 1-ft sections with disease symptoms in the two center rows of each plot or a total of 70 ft row.

³ Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 7 Oct and harvested on 10 Oct.

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

XXXI. EVALUATION OF SCLEROTINIA RESISTANCE IN TRANSGENIC PEANUTS WITH THE OXALATE OXIDASE GENE (SCLT111, TAREC Res. farm, Field 67)

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

B. EXPERIMENTAL DESIGN:

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

C. FUNGICIDE APPLICATION (Main plots): Omega 500 was applied with three, D₃23 nozzles/row delivering 14.8 gal/A on 12 Sep.

1. Non-treated control
2. Omega 500 1 pt/A applied according to Sclerotinia Blight Advisory Program

D. PARENT CULTIVARS AND TRANSGENIC LINES (Sub-plots): (all seed harvested from SCLTSEED110, except Perry)

1. NC 7 (non-transformed)
2. N70-8-24-4-6-40-10-3-B-B (T₁₀)
3. WILSON (non-transformed)
4. W73-25-17-34-8-2-1-14-17-3-46-B-B (T₁₃)
5. PERRY (non-transformed)
6. P39-7-9-1-40-10-11-30-B-B (T₁₀)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: cotton 2008, peanut 2009, cotton 2010
3. Land preparation: strip tillage
4. Planting date: 19 May
5. Soil fertility report (17 Jan):

pH.....	6.52	K	65 ppm
Ca	376 ppm	Zn.....	0.6 ppm
Mg	38 ppm	Mn.....	4.5 ppm
P	44 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide

Pre-plant – Prowl H₂O 1 pt + Dual II Magnum 1 pt + Strongarm 0.22 oz/A (12 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz/A (24 May)

7. Cylindrocladium black rot control: Vapam 7.5 gal/A (21 Apr)

8. Insecticide: Orthene 97S 8 oz/A (3 Jun)

Steward EC 8 fl oz + Baythroid XL 2 oz/A (12 Aug)

9. Acaricide: Danitol 6 fl oz/A (30 Jun)

10. Leaf spot control: Bravo 720 1.5 pt/A (12 Jul, 29 Jul, 17 Aug, 11 Sep)

11. Additional crop management:

a. Liquid boron 1 qt/A (22 Apr)

b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)

c. Liquid Mn 1 qt/A (22 Jun, 12 Jul)

d. Irrigation: ca. 1 in. (18 Jul)

12. Harvest date: 17 Oct

Table 103. Oxalate oxidase expression in non-transformed cultivars and genetically transformed lines with the barley oxalate oxidase gene.

Cultivar/Lines	Oxalate oxidase expression* (20 Aug)
NC 7 (non-transformed).....	0.044 b
N70-8-24-4-6-40-10-3-B-B	0.259 a
<i>LSD</i>	0.052
Wilson (non-transformed).....	0.039 b
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.132 a
<i>LSD</i>	0.015
Perry (non-transformed).....	0.039 b
P39-7-9-1-40-10-11-30-B-B	0.418 a
<i>LSD</i>	0.074

* Oxalate oxidase expression determined by assay of leaflets from 10 plants/plot in non-treated main plots by a colorimetric detection method that measures hydrogen peroxide released from oxalic acid substrate using a microtiter plate reader at 550 nm (Livingstone et al. 2005, Plant Physiol. 137:1354).

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

Table 104. Stand counts and disease incidence in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Treatment and cultivars/lines	Plants/ft ¹ (10 Jun)	% leaf spot ² (28 Jul)	TSWV ³ (28 Jul)	Stem rot ⁴ (4 Oct)
Non-treated				
NC 7 (non-transformed)	2.39 b	0.8	2.3	0.0
N70-8-24-4-6-40-10-3-B-B	2.84 a	0.6	3.5	0.0
LSD	0.3	n.s.	n.s.	n.s.
Wilson (non-transformed)	2.80	0.1	1.8	0.8
W73-25-17-34-8-2-1-14-17-3-46-B-B...	2.77	0.1	2.5	0.3
LSD	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed)	2.85	0.6	2.0	0.0
P39-7-9-1-40-10-11-30-B-B	2.98	0.6	1.5	0.0
LSD	n.s.	n.s.	n.s.	n.s.
Omega 500 1 pt/A (12 Sep)				
NC 7 (non-transformed)	2.48	0.3	3.5	0.3
N70-8-24-4-6-40-10-3-B-B	2.71	0.3	2.0	0.0
LSD	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed)	2.78	0.8	2.8	0.3
W73-25-17-34-8-2-1-14-17-3-46-B-B...	2.91	0.1	2.3	0.0
LSD	n.s.	0.6	n.s.	n.s.
Perry (non-transformed)	2.91	0.3	2.5	0.0
P39-7-9-1-40-10-11-30-B-B	2.96	0.8	1.8	0.0
LSD	n.s.	n.s.	n.s.	n.s.
Treatment				
Non-treated control	2.77	0.4	2.3	0.2
Omega 500 1 pt/A	2.79	0.4	2.5	0.1
LSD	n.s.	n.s.	n.s.	n.s.
Split-plot analysis, P(F)				
Treatment	.2995	.9779	.3416	.6376
Cultivar	.0001	.1489	.5977	.0652
Treatment x cultivar	.4790	.1182	.4745	.4106

¹ Determined from counts of two, 30-ft rows per plot.² Leaf spot rating scale: 0=none; 100=spots on all leaflets.³ Counts of plants per plot with symptoms of TSWV.⁴ Counts of infection centers in the two center rows of each plot or a total of 60 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ($P=0.05$), n.s. denotes not significant.

Table 105. Incidence of Sclerotinia blight and yield in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Treatment and cultivars/lines	Sclerotinia*		Yield** (lb/A)
	6 Sep	4 Oct	
Non-treated			
NC 7 (non-transformed)	0.3	3.3 a	5417 b
N70-8-24-4-6-40-10-3-B-B	0.0	0.0 b	5842 a
LSD	n.s.	2.6	343
Wilson (non-transformed)	0.3	2.3 a	5966
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.0	0.0 b	5963
LSD	n.s.	2.0	n.s.
Perry (non-transformed)	0.0	3.0 a	5619
P39-7-9-1-40-10-11-30-B-B	0.0	0.0 b	5811
LSD	n.s.	2.5	n.s.
Omega 500 1 pt/A (12 Sep)			
NC 7 (non-transformed)	0.3	0.5	5267
N70-8-24-4-6-40-10-3-B-B	0.3	0.0	5748
LSD	n.s.	n.s.	n.s.
Wilson (non-transformed)	0.5	0.8	5791
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.0	0.5	5969
LSD	n.s.	n.s.	n.s.
Perry (non-transformed)	0.3	1.5 a	5364
P39-7-9-1-40-10-11-30-B-B	0.0	0.5 b	5612
LSD	n.s.	1.0	n.s.
Treatment			
Non-treated control	0.1	1.4	5759
Omega 500 1 pt/A	0.2	0.6	5626
LSD	n.s.	--	22
Split-plot analysis, P(F)			
Treatment	.3910	.0500	.0199
Cultivar	.2702	.0007	.0065
Treatment x cultivar	.9109	.0389	.9802

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

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

Table 106. Grade analysis in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Treatment and cultivars/lines	%*							
	FM	LSK	FAN	ELK	SS	OK	DK	SMK
Non-treated								
NC 7 (non-transformed)	7	0.58	96	51 a	2.1	0.9 b	4	62
N70-8-24-4-6-40-10-3-B-B ...	6	0.20	97	48 b	1.7	1.3 a	4	61
LSD	n.s.	n.s.	n.s.	3	n.s.	0.3	n.s.	n.s.
Wilson (non-transformed)	5	0.28	90	37	1.3	2.4	3	59 b
W73-25-17-34-8-2-1-14-17-3-46-B-B	3	0.28	90	35	1.1	1.9	2	61 a
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	1
Perry (non-transformed)	6	0.40	88	47	1.4	1.5	3	66
P39-7-9-1-40-10-11-30-B-B..	5	0.28	81	39	1.1	1.6	2	67
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Omega 500 1 pt/A (27 Aug)								
NC 7 (non-transformed)	9	0.33	94	48	1.6	1.3	5	60
N70-8-24-4-6-40-10-3-B-B ...	7	0.28	97	52	1.5	1.1	4	63
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed)	6	0.23	89	40	1.1	2.0	3	60
W73-25-17-34-8-2-1-14-17-3-46-B-B	6	0.13	91	33	0.8	1.8	3	60
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed)	8	0.28	89 a	48 a	0.9 b	1.4	3	66
P39-7-9-1-40-10-11-30-B-B..	9	0.28	82 b	39 b	1.5 a	1.3	2	66
LSD	n.s.	n.s.	n.s.	6	0.6	n.s.	n.s.	n.s.
Treatment mean								
Non-treated control	5 b	0.33 a	90	43	1.4	1.6	3	63
Omega 500	8 a	0.25 b	91	43	1.2	1.5	3	63
LSD	1	0.10	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Split-plot analysis, P(F)								
Fungicide	.0130	.0265	.7351	.3617	.1797	.3712	.1872	.9321
Cultivar	.0001	.0818	.0001	.0001	.0460	.0001	.0001	.0001
Fungicide x cultivar	.3598	.4901	.8472	.2302	.9833	.2208	.3803	.2318

* FM=foreign material, LSK=loose shelled kernels, FAN=large whole pods, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Data are from a composite sample of four reps of each cultivar. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ($P=0.05$), n.s. denotes not significant.

XXXII. EFFECT OF MANGANESE ON GENE EXPRESSION AND PLANT HEALTH IN TRANSGENIC PEANUTS WITH THE OXALATE OXIDASE GENE (SCLT211, TAREC Res. farm, Field 34B)

A. PURPOSE: To evaluate the response of parent cultivars and transformed lines with and without applications of manganese

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks with 10-ft alleys between blocks
2. Split-plot design with liquid Mn applied in main plots and cultivar in subplots
3. Two border rows of CHAMPS planted between main plots
4. Two 30-ft rows per subplot with 36 in. row spacing and seed spaced 3 in. apart

C. MANGANESE APPLICATION (Main plots): Nutrisol 8% Manganese (Coastal Agrobusiness, Greenville, N.C.) is derived from manganese sulfate.

1. Non-treated control
2. Nutrisol 8% Manganese 2 qt/A (22 Jun); 1 qt/A (22 Jul)

D. PARENT CULTIVARS AND TRANSGENIC LINES (Sub-plots):

1. NC 7 (non-transformed)
2. N70-8-24-4-6-40-10-3-B-B (T₁₀)
3. WILSON (non-transformed)
4. W73-25-17-34-8-2-1-14-17-3-46-B-B (T₁₃)
5. PERRY (non-transformed)
6. P39-7-9-1-40-10-11-30-B-B (T₁₀)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Hare Rd., Suffolk
2. Crop history: peanut 2008, corn 2009, cotton 2010
3. Land preparation: strip tillage into wheat cover crop
4. Planting date : 19 May
5. Soil fertility report:

pH.....	6.44	K	57 ppm
Ca	243 ppm	Zn.....	0.5 ppm
Mg	35 ppm	Mn.....	2.9 ppm
P	31 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-plant – Prowl H₂O 1 pt + Dual II Magnum 1 pt + Strongarm 0.22 oz/A (12 Apr)
Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz/A (24 May)

7. Insecticide: Temik 15G 7 lb/A in furrow (19 May)

Orthene 97S 8 oz/A (3 Jun)

Steward EC 8 fl oz + Baythroid XL 2 oz/A (12 Aug)

8. Acaricide: Danitol 6 fl oz/A (30 Jun)

9. Leaf spot control: Bravo 720 1.5 pt/A (12 Jul, 29 Jul, 17 Aug, 11 Sep)

10. Additional crop management:

a. Liquid boron 1 qt/A (12 Apr)

b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)

c. Irrigation: ca. 1 in. (18 Jul)

11. Harvest date: 17 Oct

Table 107. Oxalate oxidase expression in non-transformed cultivars and genetically transformed lines with the barley oxalate oxidase gene.

Cultivar/Lines	Oxalate oxidase expression*	
	21 Jun	3 Aug
NC 7 (non-transformed).....	0.055 b	0.063 b
N70-8-24-4-6-40-10-3-B-B	0.288 a	0.726 a
LSD	0.032	0.065
Wilson (non-transformed).....	0.053 b	0.058 b
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.143 a	0.376 a
LSD	0.014	0.059
Perry (non-transformed).....	0.050 b	0.059 b
P39-7-9-1-40-10-11-30-B-B	0.559 a	0.864 a
LSD	0.042	0.044
Treatment mean		
Non-treated control.....	0.198	0.367
Liquid Mn 2 qt/A (6/22); 1 qt/A (7/22)	0.185	0.348
LSD	n.s.	n.s.
Split-plot analysis, P(F)		
Treatment.....	0.2935	0.7192
Cultivar	<.0001	<.0001
Treatment x cultivar.....	0.4109	0.0943

* Oxalate oxidase expression determined by assay of leaflets from 10 plants/plot by a colorimetric detection method that measures hydrogen peroxide released from oxalic acid substrate using a microtiter plate reader at 550 nm (Livingstone et al. 2005, Plant Physiol. 137:1354).

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

Table 108. Stand counts and disease incidence in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Treatment and cultivars/lines	Plants/ft ¹ (8 Jun)	% leaf spot ² (27 Jul)	Stem rot ³	
			6 Sep	3 Oct
Non-treated				
NC 7 (non-transformed)	2.31	1.3	0.5	2.0
N70-8-24-4-6-40-10-3-B-B	2.70	1.5	0.0	1.8
LSD	n.s.	n.s.	n.s.	n.s.
Wilson (non-transformed)	2.56	1.8	0.0	1.5
W73-25-17-34-8-2-1-14-17-3-46-B-B...	2.68	1.5	0.3	2.0
LSD	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed)	2.65	2.0	0.3	2.0
P39-7-9-1-40-10-11-30-B-B.....	2.73	1.5	0.0	2.3
LSD	n.s.	n.s.	n.s.	n.s.
Liquid Mn 2 qt/A (22 Jun); 1 qt/A (22 Jul)				
NC 7 (non-transformed)	2.54 b	1.8	0.0	2.3 a
N70-8-24-4-6-40-10-3-B-B	2.66 a	1.5	0.0	1.3 b
LSD	0.09	n.s.	n.s.	1.0
Wilson (non-transformed)	2.62	2.0	0.5	3.0
W73-25-17-34-8-2-1-14-17-3-46-B-B...	2.81	2.0	0.0	2.0
LSD	n.s.	n.s.	n.s.	n.s.
Perry (non-transformed)	2.61	2.5	0.0	2.0 a
P39-7-9-1-40-10-11-30-B-B.....	2.68	2.0	0.3	1.0 b
LSD	n.s.	n.s.	n.s.	1.0
Treatment mean				
Non-treated control.....	2.61	1.58	0.2	1.9
Liquid Mn 2 qt/A (6/22); 1 qt/A (7/22)	2.65	1.88	0.1	2.0
LSD	n.s.	n.s.	n.s.	n.s.
Split-plot analysis, P(F)				
Treatment.....	.4691	.3794	.6376	.8130
Cultivar	.0017	.5601	.7293	.7975
Treatment x cultivar.....	.2864	.9216	.0874	.4507

¹ Determined from counts of two, 30-ft rows per plot.² Leaf spot rating scale: 0=none, 100=spots on all leaflets.³ Counts of infection centers in the two rows of each plot or a total of 60 ft of row. An infection center was a point of active growth by *Sclerotium rolfsii* and included 6 in. on either side of that point.Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ($P=0.05$), n.s. denotes differences are not significant. Arcsine transformation of percentage data was performed in analysis to determine statistical significance.

Table 109. Incidence of Sclerotinia blight and yield in non-transformed cultivars and transformed lines with the barley oxalate oxidase gene.

Treatment and cultivars/lines	Sclerotinia*		Yield** (lb/A)
	6 Sep	3 Oct	
Non-treated			
NC 7 (non-transformed)	1.3	5.5 a	4208 b
N70-8-24-4-6-40-10-3-B-B	0.0	0.0 b	5419 a
LSD	n.s.	5.2	1143
Wilson (non-transformed)	0.5	4.8 a	4879
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.3	0.0 b	4483
LSD	n.s.	3.8	n.s.
Perry (non-transformed)	0.5	5.3 a	4883
P39-7-9-1-40-10-11-30-B-B	0.0	0.0 b	4912
LSD	n.s.	4.6	n.s.
Liquid Mn 2 qt/A (22 Jun); 1 qt/A (22 Jul)			
NC 7 (non-transformed)	2.5	3.8 a	4366
N70-8-24-4-6-40-10-3-B-B	0.0	0.0 b	4742
LSD	n.s.	3.5	n.s.
Wilson (non-transformed)	1.5	4.8 a	4463
W73-25-17-34-8-2-1-14-17-3-46-B-B	0.0	0.0 b	5327
LSD	n.s.	3.5	n.s.
Perry (non-transformed)	1.0	6.3 a	4883
P39-7-9-1-40-10-11-30-B-B	0.0	0.0 b	4854
LSD	n.s.	4.0	n.s.
Treatment mean			
Non-treated control	0.4	2.6	4797
Liquid Mn 2 qt/A (6/22); 1 qt/A (7/22)	0.8	2.5	4772
LSD	n.s.	n.s.	n.s.
Split-plot analysis, P(F)			
Treatment	.2691	.8958	.8863
Cultivar	.0045	.0001	.0473
Treatment x cultivar	.6145	.8743	.0694

* Counts of infection centers in the two rows of 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.

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

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

XXXIII. COMPARISON OF VIRGINIA- AND RUNNER-TYPE PEANUT CULTIVARS (PVAR111, Field 63D, TAREC Res. farm, Suffolk)

- A. PURPOSE: To compare the profitability of cultivars in strip tillage with and without Vapam for control of *Cylindrocladium* black rot and nematodes
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks separated by 10-ft alleyways
 2. Randomized strips of market-type and either Virginia- or runner-type cultivars
 3. Strip tillage was performed in a field planted to cover crop of wheat
- C. APPLICATION OF TREATMENTS: Vapam 42% was applied 8 in. under each row by a single chisel (C) on 15 Apr.
- D. MARKET TYPE, TREATMENT AND RATE/A:
1. Virginia-type, no soil fumigant
 2. Virginia-type, Vapam 42% 7.5 gal (C)
 3. Runner-type, no soil fumigant
 4. Runner-type, Vapam 42% 7.5 gal (C)

E. VARIETIES:

Virginia types:

1. Bailey
2. Sugg
3. Perry
4. Phillips
5. Florida Fancy
6. CHAMPS

Runner types:

1. AP-4
2. Florida 07-R
3. GA-02C
4. GA 06G
5. GA 09B
6. Tifguard

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, Suffolk
2. Crop History: peanut 2008, cotton 2009, 2010
3. Land preparation: strip tillage into wheat cover crop
4. Planting date: 3 May
5. Soil fertility report: (25 Jan)

pH	6.34	K.....	84 ppm
Ca.....	344 ppm	Zn	0.4 ppm
Mg.....	45 ppm	Mn	2.2 ppm
P	26 ppm	Soil type	Kenansville loamy fine sand

6. Herbicide:

Pre-plant – Roundup Ultra Max 22 fl oz/A (18 Apr)

Dual II Magnum 1 pt + Prowl H₂O 1 pt + Strongarm 0.22 oz +

Gramoxone Inteon 1 pt/A (22 Apr)

Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.22 oz + Gramoxone Inteon 1 pt/A (5 May)

7. Insecticide: Temik 15G 7 lb/A (3 May); Orthene 97S 8 oz/A (25 May)
Steward EC 8 fl oz + Baythroid XL 2 fl oz/A (12 Aug)
8. Acaricide: Danitol 6 fl oz/A (27 Jun, 7 Jul)
9. Leaf spot control: Provost 433SC 8 fl oz/A (7 Jul, 29 Jul, 17 Aug);
Bravo 720 1.5 pt/A (11 Sep)

10. Additional crop management:
 - a. Liquid boron 1 qt/A (22 Apr)
 - b. Landplaster: Peanut Maker 1200 lb/A (14 Jun)
 - c. Liquid Mn 1 qt/A (22 Jun)
 - d. Irrigation: ca. 1 in. (21 Jun)
11. Harvest date: 13 Oct (Virginia-types); 14 Oct (Runner-types)

Table 110. Effect of cultivar selection and treatment on emergence and disease incidence in peanut.

Market type, treatment and cultivar	Plants/ft ¹ (31 May)	% leaf spot ² (14 Jul)	TSWV ³ (14 Jul)	Yellowed/ dead plants ⁴ (9 Sep)
Virginia types				
<i>Treatment mean</i>				
Untreated.....	3.16	0.8	4.3	5.0
Vapam 42% 7.5 gal.....	3.22	0.9	5.5	4.7
LSD.....	n.s.	n.s.	n.s.	--
<i>Cultivar mean</i>				
Bailey.....	3.11 b	0.6 b	2.0 c	0.5
Sugg.....	3.23 b	0.6 b	5.1 ab	4.6
Perry.....	3.25 b	1.6 a	6.4 a	7.5
Phillips.....	3.72 a	0.6 b	6.4 a	7.1
Florida Fancy.....	3.09 b	0.8 b	3.8 bc	4.0
CHAMPS.....	2.73 c	0.9 b	5.9 ab	5.1
LSD.....	0.18	0.7	2.4	--
<i>Split-plot analysis</i>				
Treatment.....	.6478	.8187	.1265	.6327
Cultivar.....	.0001	.0974	.0037	.0001
Treatment by cultivar.....	.6584	.6006	.9170	.0096
Runner-types				
<i>Treatment mean</i>				
Untreated.....	3.33	6.9	2.3	2.8
Vapam 42% 7.5 gal.....	3.43	6.8	2.9	2.1
LSD.....	n.s.	n.s.	n.s.	n.s.
<i>Cultivar mean</i>				
AP-4.....	3.54 b	11.5 a	2.4	2.6 ab
Florida 07-R.....	3.01 c	2.8 bc	3.6	1.1 c
GA-02C.....	3.53 b	11.9 a	2.9	1.8 bc
GA 06G.....	3.38 b	2.3 c	2.5	2.8 ab
GA 09B.....	3.83 a	6.9 b	1.9	2.8 ab
Tifguard.....	2.99 c	5.6 bc	2.5	3.5 a
LSD.....	0.28	4.2	n.s.	1.3
<i>Split-plot analysis</i>				
Treatment.....	.5375	.9568	.5928	.4172
Cultivar.....	.0001	.0001	.3872	.0533
Treatment by cultivar.....	.5745	.7626	.2907	.8538

¹ Determined from counts of two, 35-ft rows per plot. ² Leaf spot rating scale: 0=none; 100=spots on all leaflets. ³ Number of symptomatic plants per plot. ⁴ Yellowed/dead plants are number of 1-ft sections per plot that lacked diagnostic signs, but showed symptoms indicative of CBR. Means followed by the same letter(s) within a group and column are not significantly different ($P=0.05$) according to Fisher's Protected LSD, except if $P \geq 0.05$ and ≤ 0.10 , analysis was based on $P=0.10$. -- indicates LSD not reported due to significant treatment by cultivar interaction.

Table 111. Maturity of peanut cultivars based on color of pod mesocarp after pod blasting.

Market type and cultivar	Number of pods				% mature*	
	Total	White/ yellow	Orange	Brown/ black	damaged	Brown/ black
Virginia-type						
Bailey.....	230	121	11	98	0	42
Sugg.....	182	85	13	84	0	46
Perry.....	212	73	24	115	0	54
Phillips.....	225	72	14	139	0	62
Florida Fancy.....	242	144	37	61	0	25
CHAMPS.....	237	80	28	129	0	54
Runner-type						
AP-4.....	241	92	22	127	0	53
Florida 07-R.....	342	183	31	128	0	37
GA-02C.....	252	125	35	92	0	37
GA 06G.....	212	75	12	125	0	59
GA 09B.....	207	99	15	93	0	45
Tifguard.....	291	179	64	48	0	16

* Pods with brown to black mesocarp tissue were considered mature for harvest on 22 Sep. Orange mesocarp color indicated that kernels were approaching maturity. Yellow to white mesocarp identified immature pods that may be lost during harvest due to light weight after drying in windrows.

Table 112. Effect of cultivar selection and treatment on disease incidence and yield of peanut.

Market type, treatment and cultivar	CBR ¹ (28 Sep)	Stem rot ² (28 Sep)	Sclerotinia ² (28 Sep)	Yield ³ (lb/A)	Value ⁴ (\$/A)	
					100%	commer- cial
Virginia types						
<i>Treatment mean</i>						
Untreated.....	6.6 a	2.1	3.9	4754	826	405
Vapam 42% 7.5 gal.....	3.4 b	1.9	3.4	5001	892	535
LSD	2.5	n.s.	n.s.	n.s.	--	--
<i>Cultivar mean</i>						
Bailey	0.3 c	0.6 c	5.6 a	5856 a	1087	1087
Sugg	2.3 bc	0.4 c	5.5 a	4850 bc	866	303
Perry.....	4.0 bc	1.3 bc	1.6 b	4649 c	810	284
Phillips	9.5 a	3.8 a	3.0 ab	4542 cd	748	262
Florida Fancy	5.6 ab	3.1 a	3.1 ab	5143 b	907	626
CHAMPS	8.5 a	2.9 ab	2.9 ab	4214 d	737	258
LSD	4.3	1.8	2.8	370	--	--
<i>Split-plot analysis</i>						
Treatment	.0477	.7096	.8925	.4018	.2368	.0078
Cultivar	.0007	.0016	.0342	.0001	.0001	.0001
Treatment by cultivar ..	.0788	.8279	.8548	.4747	.0264	.0001
Runner-types						
<i>Treatment mean</i>						
Untreated.....	4.0	2.5	7.1	5428 b	983 b	983 b
Vapam 42% 7.5 gal.....	2.5	2.5	6.5	5913 a	1081 a	1081 a
LSD	n.s.	n.s.	n.s.	278	51	51
<i>Cultivar mean</i>						
AP-4	3.1 ab	3.3 ab	5.0	5427 b	1011 b	1011 b
Florida 07-R.....	1.3 b	0.8 c	9.1	6249 a	1065 ab	1065 ab
GA-02C	1.9 b	1.3 bc	7.1	5370 b	995 b	995 b
GA 06G	4.8 a	3.5 a	4.4	6044 a	1117 a	1117 a
GA 09B	3.4 ab	2.6 a-c	6.3	5503 b	1017 b	1017 b
Tifguard.....	5.1 a	3.8 a	9.0	5430 b	988 b	988 b
LSD	2.4	2.1	n.s.	481	88	88
<i>Split-plot analysis</i>						
Treatment	.1476	.9234	.7832	.0295	.0199	.0199
Cultivar	.0692	.0262	.1633	.0016	.0425	.0425
Treatment by cultivar ..	.7516	.5264	.9363	.2143	.0846	.0846

¹ Number of plants showing symptoms and/or signs of *Cylindrocladium* black rot (CBR).

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

³ Yields are weight of peanuts with moisture content of 7%. Peanuts were dug on 5 Oct; Virginia-type peanuts were harvested on 13 Oct, runner-types were harvested on 14 Oct.

⁴ Composite samples from four replications were graded to determine market value at loan rate and multiplied by yield to estimate value (\$/A). The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels $\geq 2.5\%$; producers receive 35% of value for these peanuts. Means followed by the same letter(s) within a group and column are not significantly different ($P=0.05$) according to Fisher's Protected LSD. -- indicates LSD was not reported due to significant treatment by cultivar interaction.

Table 113. Effect of treatment and cultivar on grade characteristics and value.

Treatment, rate/A application method and cultivar ¹	% ²								Value (¢/lb) ³	
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	100%	commer- cial
VIRGINIA-TYPE										
Treatment mean										
Untreated	3 a	0.75	87.7 a	47	5	2.52b	3.5 a	61	16.5822	7.713
Vapam 42% 7.5 gal .	2 b	0.97	83.5 b	48	4	2.83a	2.4 b	63	17.2447	9.890
P(F).....	.0078	.2904	.0060	.3644	.2436	.0522	.0163	.1745	.1633	.3004
Cultivar mean										
Bailey	2 b	1.10ab	85.9 ab	51 a	3	2.35c	0.8 b	66	17.9701	17.970 a
Sugg.....	3 a	0.60bc	87.9 a	49 ab	5	2.95b	3.4 a	62	17.1402	5.999 b
Perry	3 a	0.90b	82.7 c	44 c	5	2.40bc	3.3 a	61	16.8221	5.888 b
Phillips.....	2 b	0.80b	85.7 a-c	50 a	6	2.00c	4.1 a	60	15.9870	5.595 b
Florida Fancy.....	3 a	1.60a	82.9 bc	46 bc	4	3.05a	3.3 a	62	16.7563	11.475 ab
CHAMPS	3 a	0.15c	88.6 a	47 a-c	5	3.30a	3.0 a	61	16.8050	5.882 b
P(F).....	.0789	.0576	.0573	.0386	.3496	.0107	.0175	.2215	.2919	.0565
RUNNER-TYPE										
Treatment mean										
Untreated	0	1.02			2	2.87	1.1 a	70	17.5798 b	17.5798 b
Vapam 42% 7.5 gal .	0	1.48			2	2.33	0.7 b	71	17.8771 a	17.8771 a
P(F).....	.6109	.0306			.1658	.1092	.0403	.3209	.0460	.0460
Cultivar mean										
AP-4	0	0.75			2	1.85b	0.6 c	72 a	18.1545 a	18.1545 a
Florida 07-R	0	1.25			3	4.20a	0.9 bc	65 b	16.6054 b	16.6054 b
GA-02C	0	1.25			1	1.95b	0.6 c	73 a	17.9714 a	17.9714 a
GA 06G	0	1.65			2	2.50b	1.1 ab	71 a	18.0133 a	18.0133 a
GA 09B	0	1.40			3	2.35b	1.4 a	71 a	17.8874 a	17.8874 a
Tifguard.....	0	1.20			1	2.75b	0.7 bc	71 a	17.7389 a	17.7389 a
P(F).....	.4314	.1824			.2441	.0307	.0710	.0043	.0038	.0038

¹ F=in furrow, C=chisel application.² FM=foreign material, LSK=loose shelled kernels, FAN=large pods, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Data are from a composite sample of four reps of each treatment/cultivar combination.³ Value (¢/lb) represents the market value of peanuts based on the loan rate. The 100% column reports value without any deduction for segregation 2 peanuts. Commercial value includes the deduction for segregation 2 due to damaged kernels ≥ 2.5%; producers receive 35% of value for these peanuts.Means followed by the same letter(s) within a column and group are not significantly different at $P=0.05$ according to Fisher's Protected LSD except if $P \geq 0.05$ and ≤ 0.10 , analysis was based on $P=0.10$.

XXXIV. EVALUATION OF FUNGICIDES ON SOYBEAN SEED FOR SEEDLING DISEASE CONTROL (SOYSEEDFUN111, Duke farm, Suffolk, Field 40)

- A. PURPOSE: to assess the efficacy of experimental seed treatments for control of seedling disease in soybean
- B. EXPERIMENTAL DESIGN:
1. Seed treatments in plots of four, 30-ft rows, spaced 18 in. apart
 2. Four replications in randomized complete block design separated by 8-ft alleyway
- C. TREATMENT AND RATE (ML/100 KG): seed treatments were applied by personnel with Chemtura
1. Untreated check
 2. Rancona 3.8FS 5.6 ml + Belmont 48 ml + Attendant 480 130 ml
 3. Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml
 4. Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml
 5. RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml
 6. Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml
 7. Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml
 8. UBI 9320 300 ml
 9. UBI 9346 300 ml
 10. Rancona Summit 260 ml
 11. Apron Maxx RTA 325 ml
- D. INOCULUM: Inoculum was prepared in the Plant Pathology Lab at the Tidewater AREC using seed of brown top millet moistened with a 2:1 ratio of seed to distilled water and autoclaved twice. The seed was then inoculated with *Rhizoctonia solani* cultures that had been isolated from peanut seed and allowed to incubate at room temperature for 10 days. Subsequently, seed was dried at room temperature for 4 days and then screened to ensure uniform size. Inoculum was banded over rows at planting in front of rolling cultivator at 0.35 ml/ft of row.
1. Non-inoculated
 2. Inoculated (millet seed infested with *Rhizoctonia solani*)
- E. ADDITIONAL INFORMATION:
1. Location: Duke farm, Longstreet Lane, Suffolk
 2. Crop history: corn 2008, soybean 2009, peanut 2010
 3. Planting date and variety: 31 May, TV52R79
 4. Soil fertility report (25 Jan):
- | | | | |
|----------|---------|-----------------|---------------------------|
| pH..... | 6.32 | K..... | 68 ppm |
| Ca | 281 ppm | Zn | 0.6 ppm |
| Mg | 41 ppm | Mn | 1.9 ppm |
| P | 24 ppm | Soil type | Nansemond loamy fine sand |
5. Herbicide:

Post-emergence – Roundup Ultra Max 22 fl oz/A (15 Jun, 15 Jul)
 6. Fertilization: Mandate CDI 1 qt/A (15 Jun, 15 Jul)
Quantum 1 qt/A (21 Jun)
 7. Harvest date: 24 Oct

Table 114. Effect of seed treatments on emergence of soybean.

Treatment and rate (ml/100 kg seed)*	Plants/ft** (8 Jun)		Treatment mean
	non-inoculated	inoculated	
Untreated check	3.44	2.58 c	3.01
Rancona 3.8FS 5.6 ml + Belmont 48 ml+ Attendant 480 130 ml	3.42	3.02 bc	3.22
Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml	3.60	3.88 a	3.74
Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml ...	4.21	3.29 ab	3.75
RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml	3.21	3.27 ab	3.24
Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml	3.40	3.65 ab	3.52
Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml ...	3.23	3.35 ab	3.29
UBI 9320 300 ml	3.33	3.40 ab	3.36
UBI 9346 300 ml	3.48	3.12 bc	3.32
Rancona Summit 260 ml.....	3.31	3.48 ab	3.40
Apron Maxx RTA 325 ml.....	3.65	3.54 ab	3.59
<i>P</i> (F)	.3272	.0406	.1002
Inoculum mean			
Non-inoculated.....			3.48
Inoculated.....			3.33
Split-plot analysis			
Treatment			.1002
Inoculum			.1403
Treatment x inoculum			.1366

* Seed treatments were applied by personnel with Chemtura.

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

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

Table 115. Effect of seed treatments on emergence of soybean.

Treatment and rate (ml/100 kg seed)*	Plants/ft** (15 Jun)		Treatment mean
	non-inoculated	inoculated	
Untreated check	3.52	2.88 d	3.20
Rancona 3.8FS 5.6 ml + Belmont 48 ml+ Attendant 480 130 ml	3.56	3.42 b-d	3.49
Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml	3.83	3.67 a-c	3.75
Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml ..	4.15	3.27 cd	3.71
RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml	3.85	3.23 cd	3.54
Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml	3.65	4.00 a	3.82
Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml ..	3.79	3.75 a-c	3.77
UBI 9320 300 ml	3.56	3.35 cd	3.46
UBI 9346 300 ml	3.96	3.27 cd	3.61
Rancona Summit 260 ml.....	3.63	3.67 a-c	3.65
Apron Maxx RTA 325 ml.....	3.44	3.92 ab	3.68
P(F)	.2043	.0071	--
Inoculum mean			
Non-inoculated.....			3.72
Inoculated.....			3.49
Split-plot analysis			
Treatment			.0925
Inoculum			.0057
Treatment x inoculum			.0101

* Seed treatments were applied by personnel with Chemtura.

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

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05), -- indicates LSD letters were not reported due to a significant treatment by inoculum interaction.

Table 116. Effect of seed treatments on plant vigor in soybean.

Treatment and rate (ml/100 kg seed)*	Vigor** (13 Jun)		Treatment mean
	non-inoculated	inoculated	
Untreated check	5.8 c	4.0 c	4.9
Rancona 3.8FS 5.6 ml + Belmont 48 ml+ Attendant 480 130 ml	6.3 bc	6.3 c	6.3
Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml	7.0 a	6.8 ab	6.9
Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml ..	7.0 a	7.0 a	7.0
RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml	6.5 a	6.0 b	6.3
Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml	7.0 a	6.8 ab	6.9
Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml ..	6.8 a	6.5 ab	6.6
UBI 9320 300 ml	6.5 ab	6.0 b	6.3
UBI 9346 300 ml	7.0 a	6.8 ab	6.9
Rancona Summit 260 ml.....	6.8 ab	6.8 ab	6.8
Apron Maxx RTA 325 ml.....	7.0 a	6.3 ab	6.6
<i>P</i> (F)	.0020	.0001	--
Inoculum mean			
Non-inoculated.....			6.7
Inoculated.....			6.3
Split-plot analysis			
Treatment			.0001
Inoculum			.0001
Treatment x inoculum			.0014

* Seed treatments were applied by personnel with Chemtura.

** Plant vigor rating scale: 0=dead, 10=healthy.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$), -- indicates LSD letters were not reported due to a significant treatment by inoculum interaction.

Table 117. Effect of seed treatments on yield of soybean.

Treatment and rate (ml/100 kg seed)*	Yield** (bu/A)		<i>Treatment mean</i>
	non-inoculated	inoculated	
Untreated check	54.2	47.6 d	50.9
Rancona 3.8FS 5.6 ml + Belmont 48 ml+ Attendant 480 130 ml	59.1	54.5 a-c	56.8
Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml	55.8	57.3 ab	56.5
Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml ..	54.1	55.3 ab	54.7
RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml	53.9	53.3 a-c	53.6
Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml	56.0	58.3 a	57.1
Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml ..	52.9	57.6 ab	55.2
UBI 9320 300 ml	55.1	53.3 a-c	54.2
UBI 9346 300 ml	53.5	52.6 b-d	53.1
Rancona Summit 260 ml.....	56.4	49.3 cd	52.9
Apron Maxx RTA 325 ml.....	56.1	53.0 a-d	54.5
<i>P</i> (F)	.7369	.0094	.1247
<i>Inoculum mean</i>			
Non-inoculated.....			55.2
Inoculated.....			53.8
<i>Split-plot analysis</i>			
Treatment			.1247
Inoculum			.1130
Treatment x inoculum			.0969

* Seed treatments were applied by personnel with Chemtura.

** Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 24 Oct. Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 118. Effect of seed treatments on grade of soybean.

Treatment and rate (ml/100 kg seed)*	Wt./100 seed (oz)			% purple seed stain**		
	non- inoculated	inoculated	<i>Treatment mean</i>	non- inoculated	inoculated	<i>Treatment mean</i>
Untreated check	.5520	.5565	.5542 a-c	3.3	4.0	3.6
Rancona 3.8FS 5.6 ml + Belmont 48 ml + Attendant 480 130 ml	.5529	.5520	.5525 a-d	2.8	3.3	3.0
Rancona XXtra 235 ml + Belmont 35 ml + Nipsit Inside 83 ml.....	.5476	.5450	.5463 cd	4.8	4.3	4.5
Apron Maxx RTA 325 ml + Apron XL LS 10 ml + Cruiser 5FS 83 ml.....	.5476	.5388	.5432 cd	4.3	3.0	3.6
RV100 100 ml + Belmont 48 ml + Attendant 480 130 ml	.5415	.5591	.5503 b-d	5.5	4.3	4.9
Rancona 3.8FS 5.6 ml + UBI 9346 25 ml + Belmont 48 ml + Attendant 480 130 ml	.5688	.5591	.5639 a	5.3	3.0	4.1
Rancona 3.8FS 5.6 ml + UBI 9320 20.8 ml + Belmont 48 ml + Attendant 480 130 ml + UBI 9328 6.5 ml	.5565	.5626	.5595 ab	4.5	4.3	4.4
UBI 9320 300 ml	.5556	.5512	.5534 a-d	4.8	4.5	4.6
UBI 9346 300 ml	.5697	.5538	.5617 ab	6.0	3.0	4.5
Rancona Summit 260 ml.....	.5353	.5459	.5406 d	3.3	4.3	3.8
Apron Maxx RTA 325 ml.....	.5468	.5406	.5437 cd	4.8	3.3	4.0
P(F)	.1273	.4023	.0643	.4710	.8841	.7629
Inoculum mean						
Non-inoculated			.5522			4.5 a
Inoculated			.5513			3.7 b
Split-plot analysis						
Treatment.....			.0643			.7629
Inoculum.....			.7921			.0654
Treatment x inoculum.....			.6354			.4739

* Seed treatments were applied by personnel with Chemtura.

** Data are percent of 100 seed with symptoms of purple seed stain on seed.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$.

XXXV. SYNGENTA SOYBEAN SEED TREATMENT NEMATOCIDE TEST
(SOYSEEDNEMA111, Morgan farm)

A. PURPOSE: To evaluate seed treatment nematicides on soybean

B. EXPERIMENTAL DESIGN:

1. Four, randomized complete blocks with 8-ft alleyways between blocks
2. Four, 30-ft rows/plot
3. Rows spaced 18 in. apart

C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied by personnel with Syngenta Crop Protection. Temik 15G (treatment 7) was applied in-furrow (F) at planting.

D. TREATMENT AND RATE (g a.i./100 kg seed unless otherwise noted):

1. Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S)
2. A14379 FS 56.3 g + A18059 FS 0.99 g (S)
3. Avicta 4.17FS 0.12 mg a.i./seed + A14379 FS 56.3 g + A18059 FS 0.99 g (S)
4. Avicta 4.17FS 0.15 mg a.i./seed + A18212 FS 61.3 g + A18059 FS 0.99 g (S)
5. STP15273 FS 62.5 g + STP15199 FS 5 g + STP20282 FS 78.3 g + A18059 FS 0.99 g (S)
6. STP15142 FS 4 g + STP15142 FL 16.17 g + STP27320 DS 0.156 g + STP17141 FS 5.23 g + A18059 0.99 g (S)
7. Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S)
Temik 15G 3.5 lb/A (F)

E. ADDITIONAL INFORMATION:

1. Location: Rick Morgan farm, Deer Forest Road, Suffolk
2. Crop history: soybean 2009, cotton 2010
3. Land preparation: disk and level with board
4. Planting date and variety: 7 Jun, AG5503
5. Soil fertility report (18 Mar):

pH.....	6.57	Zn.....	1.3 ppm
Ca	594 ppm	Mn.....	2.7 ppm
Mg	55 ppm	Cu.....	0.3 ppm
P	42 ppm	Fe	10.0 ppm
K.....	96 ppm	B.....	0.2 ppm
		Soil type	Rumford loamy fine sand

6. Nematode assay report (9 Mar):

Nematodes/500 cc soil	
Stunt	30
Ring.....	10

7. Herbicide:

Pre-plant - Roundup Ultra Max 22 fl oz/A (25 May)

Post-emergence – Roundup Ultra Max 22 fl oz/A (28 Jun, 15 Jul, 15 Aug)

8. Fertilizer: 11-25-25 300 lb/A (25 Mar)

Mandate CDI 1 qt/A (15 Jul)

9. Insecticide: Baythroid XL 3 fl oz/A (15 Aug)

10. Harvest date: 25 Oct

Table 119. Emergence, vigor and nematode populations in soybeans.

Treatment and rate ¹	Plants/ft ²		Vigor (0-10) ³ (30 Jun)	Nematodes/500cc soil ⁴		
	28 Jun	19 Jul		Stunt	Spiral	Lance
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S)	2.31 a	2.28 a	5.8	80	80	70
A14379 FS 56.3 g + A18059 FS 0.99 g (S)	2.06 a-c	2.00 bc	5.5	40	10	120
Avicta 4.17FS 0.12 mg a.i./seed + A14379 FS 56.3 g + A18059 FS 0.99 g (S)	1.82 c	1.76 c	5.8	190	50	40
Avicta 4.17FS 0.15 mg a.i./seed + A18212 FS 61.3 g + A18059 FS 0.99 g (S)	1.83 c	1.78 c	5.5	0	80	10
STP15273 FS 62.5 g + STP15199 FS 5 g + STP20282 FS 78.3 g + A18059 FS 0.99 g (S)	2.17 ab	2.05 ab	5.3	60	0	10
STP15142 FS 4 g + STP15142 FL 16.17 g + STP27320 DS 0.156 g + STP17141 FS 5.23 g + A18059 0.99 g (S)	1.95 bc	1.86 bc	5.8	20	140	0
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S) Temik 15G 3.5 lb/A (F)	2.05 a	1.88 bc	5.3	30	70	20
<i>P</i> (F)	.0106	.0106	.4990			

¹ Rate is grams a.i./100 kg seed unless otherwise noted. S=seed treatment, F=in furrow.

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

³ Vigor rating scale: 0=dead, 10=healthy.

⁴ Soil was sampled on 26 Jul and was a composite of four reps from each treatment.

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

Table 120. Nematode populations in soybeans.

Treatment and rate*	Nematodes/500cc soil**	
	Stunt	Spiral
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S)	340 ab	1685
A14379 FS 56.3 g + A18059 FS 0.99 g (S)	95 cd	815
Avicta 4.17FS 0.12 mg a.i./seed + A14379 FS 56.3 g + A18059 FS 0.99 g (S)	440 a	1725
Avicta 4.17FS 0.15 mg a.i./seed + A18212 FS 61.3 g + A18059 FS 0.99 g (S)	80 d	975
STP15273 FS 62.5 g + STP15199 FS 5 g + STP20282 FS 78.3 g + A18059 FS 0.99 g (S)	45 d	475
STP15142 FS 4 g + STP15142 FL 16.17 g + STP27320 DS 0.156 g + STP17141 FS 5.23 g + A18059 0.99 g (S)	265 a-c	1293
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S) Temik 15G 3.5 lb/A (F)	115 b-d	1330
<i>P</i> (F)	.0516	.4843

* Rate is grams a.i./100 kg seed unless otherwise noted. S=seed treatment, F=in furrow.

** Soil was sampled on 25 Oct.

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Square root transformation of population data was made in analysis to determine statistical significance. Means in a column with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$.

Table 121. Effect of seed and in-furrow treatments on yield and grade of soybeans.

Treatment and rate ¹	Yield ² (bu/A)	Wt./100 seed (oz)	% purple seed stain ³
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S)	46.5	.5415	0.8
A14379 FS 56.3 g + A18059 FS 0.99 g (S)	41.8	.5468	1.8
Avicta 4.17FS 0.12 mg a.i./seed + A14379 FS 56.3 g + A18059 FS 0.99 g (S)	36.6	.5432	0.5
Avicta 4.17FS 0.15 mg a.i./seed + A18212 FS 61.3 g + A18059 FS 0.99 g (S)	34.7	.5485	0.8
STP15273 FS 62.5 g + STP15199 FS 5 g + STP20282 FS 78.3 g + A18059 FS 0.99 g (S)	43.7	.5626	0.0
STP15142 FS 4 g + STP15142 FL 16.17 g + STP27320 DS 0.156 g + STP17141 FS 5.23 g + A18059 0.99 g (S)	37.2	.5476	0.8
Apron Maxx RFC 6.25 g + A18059 FS 0.99 g (S) Temik 15G 3.5 lb/A (F)	33.1	.5326	0.5
<i>P</i> (F)	.2893	.8784	.1887

¹ Rate is grams a.i./100 kg seed unless otherwise noted. S=seed treatment, F=in furrow.

² Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 25 Oct.

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

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

XXXVI. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES AND SOYBEAN RUST (SOYRUST111, TAREC, Field 56)

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

B. EXPERIMENTAL DESIGN:

1. Five, randomized complete blocks with 8-ft alleys between blocks
2. Four, 30-ft rows per plot
3. Rows spaced 18 in. apart

C. APPLICATION: Treatments were applied at R₂ (full bloom, 22 Jul), 21 days later (11 Aug), 28 days later (17 Aug), R₃ (beginning pod, 11 Aug) or R₅ (beginning seed, 25 Aug) with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated
2. Topguard 1.04SC 7 fl oz (R₂)
3. Topguard 1.04SC 7 fl oz (R₂) ; 7 fl oz (R₂ + 28 days)
4. Domark 1.9ME 5 fl oz (R₂); 4 fl oz (R₂ + 21 days)
5. Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (R₃)
6. Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (R₃, R₅)
7. Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (R₃)
8. Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (R₅)
9. Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (R₃, R₅)
10. Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (R₃)
11. Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (R₃, R₅)
12. Quilt Xcel 2.2SE 14 fl oz + Induce 3.2 fl oz (R₃)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Rt. 58, Suffolk
2. Crop History: cotton 2008, soybean 2009, cotton 2010
3. Planting date and variety: 24 May, RT 5450N
4. Soil fertility report (25 Jan):

pH.....	6.30	K.....	101 ppm
Ca	440 ppm	Zn	0.5 ppm
Mg	40 ppm	Mn	2.0 ppm
P	32 ppm	Soil type	Nansemond loamy fine sand

5. Herbicide:
 - Post-emergence – Roundup Ultra Max 22 fl oz + First Rate 0.3 oz/A (15 Jun)
6. Fertilization: Mandate CDI 1 qt/A (15 Jul)
 - Quantum 1 qt/A (21 Jun)
7. Harvest date: 24 Oct

Table 122. Effect of treatments on disease incidence and defoliation in soybeans.

Treatment, rate/A and application date	% Cercospora blight* (11 Oct)			% defolia- tion** (11 Oct)
	leaf area	pod area	stem area	
Untreated	22.0 a	21.0 a	20.0 a	88.0 a
Topguard 1.04SC 7 fl oz (7/22).....	14.0 b	10.0 bc	12.0 b-d	78.0 a
Topguard 1.04SC 7 fl oz (7/22) ; 7 fl oz (8/17)	13.0 bc	12.0 b	10.0 c-e	75.0 bc
Domark 1.9ME 5 fl oz (7/22); 4 fl oz (8/11).....	10.0 cd	10.0 bc	10.0 c-e	71.0 b-e
Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (8/11).....	9.0 de	7.0 cd	8.0 e	66.0 de
Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (8/11,8/25).	9.0 de	10.0 bc	14.0 b	64.0 e
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/11).....	14.0 b	12.0 b	12.0 b-d	73.0 b-d
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/25).....	6.0 e	8.0 cd	10.0 c-e	64.0 e
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/11,8/25)....	6.0 e	6.0 d	9.0 de	63.0 e
Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (8/11)..	9.0 de	12.0 b	13.0 bc	73.0 b-d
Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (8/11,8/25).....	10.0 cd	9.0 b-d	10.0 c-e	71.0 b-e
Quilt Xcel 2.2SE 14 fl oz + Induce 3.2 fl oz (8/11).....	9.0 de	9.0 b-d	11.0 b-e	67.0 c-e
<i>P</i> (F)	.0001	.0001	.0001	.0001

* Foliar, stem and pod disease rating scale: 0=none; 100=all leaf, pod or stem area with symptoms of Cercospora blight.

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

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

Table 123. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application date	Yield* (bu/A)	Wt./100 seed (oz)	% purple seed stain**	% phomop- sis seed decay**
Untreated	53.4	.6928 b-f	5.4	1.6
Topguard 1.04SC 7 fl oz (7/22).....	54.7	.6878 d-f	5.0	2.2
Topguard 1.04SC 7 fl oz (7/22) ; 7 fl oz (8/17)	56.8	.6900 c-f	3.2	2.2
Domark 1.9ME 5 fl oz (7/22); 4 fl oz (8/11).....	57.3	.6822 ef	3.4	1.4
Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (8/11).....	56.9	.7154 ab	3.4	2.0
Headline 2.09SC 6 fl oz + Induce 6.3 fl oz (8/11,8/25)	52.3	.7090 a-d	3.2	1.6
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/11).....	54.7	.7069 a-e	4.0	1.6
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/25).....	51.6	.7273 a	2.8	1.6
Priaxor 4.17SC 4 fl oz + Induce 6.3 fl oz (8/11,8/25).....	52.9	.7139 a-c	1.8	0.6
Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (8/11)....	48.8	.7062 a-e	4.4	1.4
Quilt Xcel 2.2SE 10.5 fl oz + Induce 3.2 fl oz (8/11,8/25).....	61.1	.6759 f	2.6	1.4
Quilt Xcel 2.2SE 14 fl oz + Induce 3.2 fl oz (8/11).....	56.0	.6801 f	3.4	1.0
<i>P</i> (F)	.7310	.0020	.2368	.5554

* Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 24 Oct.

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

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

Note: yields were variable as a result of lodging caused by high winds from Hurricane Irene on 27 and 28 August.

XXXVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES AND SOYBEAN RUST (SOYRUST211, TAREC, Field 56)

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

B. EXPERIMENTAL DESIGN:

1. Five, randomized complete blocks with 8-ft alleys between blocks
2. Plots 12-ft wide planted to eight, 30-ft rows spaced 18-in. apart
3. Data collected from the four center rows of each plot

C. APPLICATION: Treatments were applied at R₃ (beginning pod, 11 Aug) with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated
2. Priaxor 4.18SC 4 fl oz + Induce 6.3 fl oz (R₃)
3. Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz (R₃)
4. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (R₃)
5. BAS 700 04 2.5SC 2.2 fl oz + Induce 6.3 fl oz (R₃)
6. Tilt 3.6EC 3 fl oz + Induce 3.2 fl oz (R₃)
7. Proline 480SC 1.05 fl oz + Induce 6.3 fl oz (R₃)
8. Headline 2.09SC 5.3 fl oz + Induce 6.3 fl oz (R₃)
9. Quadris 2.08SC 6 fl oz + Induce 3.2 fl oz (R₃)
10. Gem 4.17SC 3.5 fl oz (R₃)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Rt. 58, Suffolk
2. Crop History: cotton 2008, soybean 2009, cotton 2010
3. Planting date and variety: 24 May, RT 5450N
4. Soil fertility report (25 Jan):

pH.....	6.30	K.....	101 ppm
Ca	440 ppm	Zn	0.5 ppm
Mg	40 ppm	Mn	2.0 ppm
P	32 ppm	Soil type	Nansemond loamy fine sand

5. Herbicide:
Post-emergence – Roundup Ultra Max 22 fl oz + First Rate 0.3 oz/A (15 Jun)
6. Fertilization: Mandate CDI 1 qt/A (15 Jul)
Quantum 1 qt/A (21 Jun)
7. Harvest date: 24 Oct

Table 124. Effect of treatments on disease incidence and defoliation in soybeans.

Treatment and rate/A ¹	% Cercospora blight (12 Oct) ²			% defolia- tion ³ (12 Oct)
	leaf area	pod area	stem area	
Untreated	26.0 a	29.0 a	23.0 a	90.0 a
Priaxor 4.18SC 4 fl oz + Induce 6.3 fl oz	8.0 e	12.0 c-e	10.0 c	69.0 f
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz....	10.0 de	13.0 cd	14.0 bc	79.0 c-e
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz ..	9.0 e	7.0 e	10.0 c	76.0 d-f
BAS 700 04 2.5SC 2.2 fl oz + Induce 6.3 fl oz ..	13.0 c-e	16.0 bc	14.0 bc	84.0 a-c
Tilt 3.6EC 3 fl oz + Induce 3.2 fl oz	19.0 b	13.0 cd	22.0 a	85.0 a-c
Proline 480SC 1.05 fl oz + Induce 6.3 fl oz	16.0 bc	19.0 b	20.0 ab	90.0 ab
Headline 2.09SC 5.3 fl oz + Induce 6.3 fl oz	8.0 e	9.0 de	11.0 c	74.0 ef
Quadris 2.08SC 6 fl oz + Induce 3.2 fl oz	15.0 b-d	14.0 b-d	19.0 ab	84.0 b-d
Gem 4.17SC 3.5 fl oz	12.0 c-e	12.0 c-e	15.0 bc	83.0 b-d
<i>P</i> (F)	.0001	.0001	.0002	.0001

¹ Treatments were applied at R₃ (beginning pod, 11 Aug).² Foliar, stem and pod disease rating scale: 0=none; 100=all leaf, pod or stem area with symptoms of Cercospora blight.³ Defoliation rating scale: 0=none, 100=no leaves on plants.Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD (*P*=0.05). Arcsine transformation of percentage data was made in statistical analysis.

Table 125. Effect of treatments on yield and grade of soybeans.

Treatment and rate/A ¹	Yield ² (bu/A)	Wt./100	% purple seed stain ³	% phomopsis seed decay ³
		seed (oz)		
Untreated	47.2	.6787	6.2	1.6
Priaxor 4.18SC 4 fl oz + Induce 6.3 fl oz	49.5	.7048	3.4	1.6
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz....	45.2	.6660	3.2	2.2
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz ..	49.9	.6956	1.8	1.8
BAS 700 04 2.5SC 2.2 fl oz + Induce 6.3 fl oz ..	52.9	.6878	5.4	1.8
Tilt 3.6EC 3 fl oz + Induce 3.2 fl oz	51.4	.6815	5.0	1.0
Proline 480SC 1.05 fl oz + Induce 6.3 fl oz	52.2	.6723	4.0	2.2
Headline 2.09SC 5.3 fl oz + Induce 6.3 fl oz	56.6	.6878	2.4	1.6
Quadris 2.08SC 6 fl oz + Induce 3.2 fl oz	55.6	.6667	3.4	1.0
Gem 4.17SC 3.5 fl oz	52.6	.6787	3.4	1.4
<i>P</i> (F)	.1901	.3686	.5224	.8727

¹ Treatments were applied at R₃ (beginning pod, 11 Aug).² Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 26 Oct.³ Data are percent of 100 seed with symptoms of purple seed stain or phomopsis damage on seed.Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (*P*=0.05).

Note: yields were variable as a result of lodging caused by high winds from Hurricane Irene on 27 and 28 August.

XXXVIII. EVALUATION OF WEATHER-BASED ADVISORIES FOR ASSESSING RISK FOR FOLIAR DISEASES OF SOYBEAN (SOYFUNADV 111, Duke farm, Field 40)

- A. PURPOSE: To evaluate weather-based criteria in timing fungicide sprays for increased efficiency and profitability of foliar disease control
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks with 8-ft alleys between blocks
 2. Plots 12-ft wide planted to eight, 30-ft rows spaced 18-in. apart
 3. Data collected from the four center rows of each plot
- C. APPLICATION: Priaxor 4.18SC 4 fl oz + Induce 6.3 fl oz/A was applied according to advisory spray thresholds with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A.
- D. ADVISORY SPRAY THRESHOLDS: Parameters for favorable conditions for leaf infection and disease were determined between R₃ (8/15) and R₆ (9/17) for timing of fungicide application. Air temperature criteria included daily averages $\geq 60^{\circ}\text{F}$ and $\leq 77^{\circ}\text{F}$, and moisture provided by either accumulations of rainfall ≥ 0.5 in. the previous 5 days or ≥ 1 in. the previous 10 days, or periods of relative humidity $\geq 95\%$ for ≥ 12 hrs/day. Thresholds for fungicide application were 2, 3, 4 or 6 consecutive favorable days or 2, 3, 4, or 6 favorable days in the previous 10 days. The protection interval (PI) after each fungicide spray was 14 days before re-starting each model.
1. 2 consecutive favorable days (8/17)
 2. 3 consecutive favorable days (8/18)
 3. One late spray (9/8) following 16 favorable days in previous 25 days
 4. 1st spray (8/17) + 14-day protection interval and 5 consecutive favorable days; 2nd spray (9/8)
 5. 1st spray (8/17) + 14-day protection interval and 5 consecutive favorable days; 2nd spray (9/8)
 6. One late spray (9/12) following 19 favorable days in previous 28 days
 7. Untreated check
- E. ADDITIONAL INFORMATION:
1. Location: Duke farm, Longstreet Lane, Suffolk
 2. Crop history: corn 2008, soybean 2009, peanut 2010
 3. Planting date and variety: 31 May, RT5450N
 4. Soil fertility report (25 Jan):
- | | | | |
|----------|---------|-----------------|---------------------------|
| pH..... | 6.32 | K..... | 68 ppm |
| Ca | 281 ppm | Zn | 0.6 ppm |
| Mg | 41 ppm | Mn | 1.9 ppm |
| P | 24 ppm | Soil type | Nansemond loamy fine sand |
5. Herbicide:

Post-emergence – Roundup Ultra Max 22 fl oz/A (15 Jun, 15 Jul)
 6. Fertilization: Mandate CDI 1 qt/A (15 Jun, 15 Jul)
Quantum 1 qt/A (21 Jun)
 7. Harvest date: 24 Oct

Table 126. Effect of treatments on disease incidence and defoliation in soybeans.

Advisory spray schedule, and application date ¹	% Cercospora blight (10 Oct) ²	% Cercospora, Anthracnose and Phomopsis (10 Oct) ³		% defolia- tion ⁴
	leaf area	pod area	stem area	(10 Oct)
2 consecutive favorable days; spray (8/17)	11.3 bc	2.8 b	0.8 b	13.8 b
5 consecutive favorable days; spray (8/18)	10.5 bc	1.0 c	0.6 b	7.5 bc
One late spray (9/8).....	11.3 bc	1.0 c	1.0 b	10.3 bc
1 st spray (8/17) + 14-day PI and 7 consecutive favorable days; 2 nd spray (9/8) ..	5.0 d	0.6 c	0.6 b	7.5 bc
1 st spray (8/17) + 14-day PI and 7 consecutive favorable days; 2 nd spray (9/8) ..	8.3 cd	1.0 c	0.8 b	6.3 c
One late spray (9/12)	13.0 b	1.5 c	1.3 b	11.3 bc
Untreated	82.5 a	10.0 a	22.5 a	93.3 a
P(F)	.0001	.0001	.0001	.0001

¹ Treatments were applied with Priaxor 4.19SC 4 fl oz + Induce 6.3 fl oz/A.

² Foliar disease rating scale: 0=none; 100=all leaf area with symptoms of Cercospora blight.

³ Stem and pod disease rating scale: 0=none; 100=all pod or stem area with symptoms of Cercospora blight, Anthracnose or Phomopsis.

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

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

Table 127. Effect of treatments on yield and grade of soybeans.

Advisory spray schedule, and application date ¹	Yield ² (bu/A)	Wt./100 seed (oz)	% purple seed stain ³
2 consecutive favorable days; spray (8/17).....	46.6	.7416 a	3.8 bc
3 consecutive favorable days; spray (8/18).....	47.1	.7478 a	3.8 bc
One late spray (9/8).....	45.5	.7337 ab	3.5 bc
1 st spray (8/17) + 14-day PI and 7 consecutive favorable days (9/8).....	48.1	.7487 a	2.0 c
1 st spray (8/17) + 14-day PI and 7 consecutive favorable days (9/8).....	46.8	.7460 a	3.0 c
One late spray (9/12).....	44.0	.7134 b	6.0 ab
Untreated	43.0	.6729 c	8.0 a
P(F)	.8074	.0001	.0049

¹ Treatments were applied with Priaxor 4.19SC 4 fl oz + Induce 6.3 fl oz/A.

² Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 24 Oct.

³ Data are percent of 100 seed with symptoms of purple seed stain on seed.

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

XXXIX. EVALUATION OF WEATHER-BASED ADVISORIES FOR ASSESSING RISK FOR FOLIAR DISEASES OF SOYBEAN RUST (SOYFUNADV 211, TAREC, Field 56)

B. PURPOSE: To evaluate weather-based criteria in timing fungicide sprays for increased efficiency and profitability of foliar disease control

C. EXPERIMENTAL DESIGN:

1. Five, randomized complete blocks with 8-ft alleys between blocks
2. Plots 12-ft wide planted to eight, 30-ft rows spaced 18-in. apart
3. Data collected from the four center rows of each plot

D. APPLICATION: Treatments were applied with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A.

E. ADVISORY SPRAY THRESHOLDS: Parameters for favorable conditions for leaf infection and disease were determined between R₃ (8/11) and R₆ (9/17). Air temperature criteria included daily averages $\geq 60^{\circ}\text{F}$ and $\leq 77^{\circ}\text{F}$, and moisture provided by either accumulations of rainfall ≥ 0.5 in. the previous 5 days or ≥ 1 in. the previous 10 days, or periods of relative humidity $\geq 95\%$ for ≥ 12 hrs/day. Thresholds for fungicide application were 2, 3, 4 or 6 consecutive favorable days or 2, 3, 4, or 6 favorable days in the previous 10 days. The protection interval (PI) after each fungicide spray was 14 days before re-starting each model.

1. 2 consecutive favorable days; spray (8/17)
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz/A
2. 2 consecutive favorable days; spray (8/17)
Stratego YLD 4.18SC 4 fl oz + Induce 3.2 fl oz/A
3. 3 consecutive favorable days; spray (8/18)
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz/A
4. 3 consecutive favorable days; spray (8/18)
Stratego YLD 4.18SC 4 fl oz + Induce 3.2 fl oz/A
5. 1st spray (8/17) + 14-day PI and 5 consecutive favorable days; 2nd spray (9/12)
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz/A
6. 1st spray (8/17) + 14-day PI and 5 consecutive favorable days; 2nd spray (9/12)
Stratego YLD 4.18SC 4 fl oz + Induce 3.2 fl oz/A
7. 1st spray (8/17) + 14-day PI and 5 consecutive favorable days; 2nd spray (9/12)
Quilt Xcel 2.2SC 10.5 fl oz + Induce 3.2 fl oz/A
8. 1st spray (8/17) + 14-day PI and 5 consecutive favorable days; 2nd spray (9/12)
Stratego YLD 4.18SC 4 fl oz + Induce 3.2 fl oz/A
9. One late spray (9/12); Quilt Xcel 2.2SC 10.5 fl oz
10. One late spray (9/12); Stratego YLD 4.18SC 4 fl oz
11. Untreated check

F. ADDITIONAL INFORMATION:

1. Location: TAREC, Rt. 58, Suffolk
2. Crop History: cotton 2008, soybean 2009, cotton 2010
3. Planting date and variety: 24 May, RT 5450N

4. Soil fertility report (25 Jan):

pH.....	6.30	K.....	101 ppm
Ca	440 ppm	Zn	0.5 ppm
Mg	40 ppm	Mn	2.0 ppm
P	32 ppm	Soil type	Nansemond loamy fine sand

5. Herbicide:

Post-emergence – Roundup Ultra Max 22 fl oz + First Rate 0.3 oz/A (15 Jun)

6. Fertilization: Mandate CDI 1 qt/A (15 Jul)

Quantum 1 qt/A (21 Jun)

7. Harvest date: 26 Oct

Table 128. Effect of treatments on disease incidence and defoliation in soybeans.

Advisory spray schedule, treatment, rate/A and application date ¹	% Cercospora blight (12 Oct) ²			% defolia- tion ³ (12 Oct)
	leaf area	pod area	stem area	
<u>2 consecutive favorable days; spray (8/17)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	11.0 b-d	14.0 bc	15.0 c	86.0 ab
Stratego YLD 4.18SC 4 fl oz.....	12.0 bc	11.0 b-e	13.0 c	86.0 ab
<u>3 consecutive favorable days; spray (8/18)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	12.0 bc	16.0 b	20.0 b	86.0 ab
Stratego YLD 4.18SC 4 fl oz.....	11.0 b-d	11.0 b-e	15.0 c	84.0 bc
<u>1st spray (8/17) + 14-day PI and 4 consecutive favorable days; 2nd spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	10.0 b-e	9.0 c-e	11.0 c	85.0 bc
Stratego YLD 4.18SC 4 fl oz.....	8.0 de	6.0 e	11.0 c	85.0 bc
<u>1st spray (8/17) + 14-day PI and 4 consecutive favorable days; 2nd spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	7.0 e	11.0 b-e	13.0 c	82.0 bc
Stratego YLD 4.18SC 4 fl oz.....	9.0 c-e	8.0 de	11.0 c	79.0 c
<u>One late spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	11.0 b-d	9.0 c-e	12.0 c	83.0 bc
Stratego YLD 4.18SC 4 fl oz.....	13.0 b	12.0 b-d	13.0 c	83.0 bc
Untreated check	26.0 a	28.0 a	25.0 a	91.0 a
P(F)	.0001	.0001	.0001	.0579

¹ Treatments were applied with Induce 3.2 fl oz/A.

² Foliar, stem and pod disease rating scale: 0=none; 100=all leaf, pod or stem area with symptoms of Cercospora blight.

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

Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$. Arcsine transformation of percentage data was made in statistical analysis.

Table 129. Effect of treatments on yield and grade of soybeans.

Advisory spray schedule, treatment, rate/A and application date ¹	Yield ² (bu/A)	Wt./100 seed (oz)	% purple seed stain ³	% phomopsis seed decay ³
<u>2 consecutive favorable days; spray (8/17)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	49.7	.6808 ab	3.2	2.2
Stratego YLD 4.18SC 4 fl oz.....	47.7	.6850 ab	2.2	2.0
<u>3 consecutive favorable days; spray (8/18)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	47.9	.6914 ab	2.8	2.0
Stratego YLD 4.18SC 4 fl oz.....	49.9	.6896 ab	2.0	1.0
<u>1st spray (8/17) + 14-day PI and 4 consecutive favorable days; 2nd spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	48.5	.6780 b	3.0	2.6
Stratego YLD 4.18SC 4 fl oz.....	50.0	.7027 a	1.6	1.8
<u>1st spray (8/17) + 14-day PI and 4 consecutive favorable days; 2nd spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	47.5	.6921 ab	2.0	1.8
Stratego YLD 4.18SC 4 fl oz.....	51.5	.6949 ab	1.6	2.2
<u>One late spray (9/12)</u>				
Quilt Xcel 2.2SC 10.5 fl oz	51.5	.6907 ab	4.4	1.4
Stratego YLD 4.18SC 4 fl oz.....	51.0	.6970 ab	3.4	0.6
Untreated check	47.2	.6533 c	2.2	1.6
<i>P</i> (F)	.9766	.0526	.6864	.3375

¹ Treatments were applied with Induce 3.2 fl oz/A.

² Yields are weight of soybeans with 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 26 Oct.

³ Data are percent of 100 seed with symptoms of purple seed stain or phomopsis damage on seed.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Means with $P \geq 0.05$ and ≤ 0.10 were analyzed at $P=0.10$.

XL. CLIMATOLOGICAL SUMMARY OF THE 2011 GROWING SEASON AT THE
TIDEWATER AGRICULTURAL RESEARCH & EXTENSION CENTER, SUFFOLK, VA.

Table 130. Daily maximum and minimum temperatures (°F) November 2010 - April 2011.												
Day of month	NOV		DEC		JAN		FEB		MAR		APR	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	72	42	70	53	56	20	40	30	79	35	49	40
2	62	32	68	26	46	21	64	33	51	22	51	30
3	56	38	47	32	65	27	72	31	64	30	60	34
4	60	47	46	24	41	19	41	32	46	25	68	43
5	60	44	43	26	49	23	42	35	58	33	86	58
6	60	38	42	17	49	33	52	31	67	42	70	29
7	55	32	40	21	48	24	55	26	65	35	67	46
8	53	27	37	15	42	25	56	34	55	25	79	45
9	63	38	38	14	42	33	52	19	55	29	80	44
10	63	39	40	16	40	18	45	27	59	46	65	46
11	61	33	40	23	37	28	41	11	67	37	75	52
12	62	34	58	27	34	27	45	19	52	26	84	61
13	63	31	53	26	38	20	58	23	67	44	85	47
14	67	29	33	20	43	27	60	23	77	36	68	39
15	69	32	30	13	40	18	71	30	57	34	73	39
16	70	47	35	15	51	28	62	33	58	47	73	52
17	76	52	34	23	50	27	61	20	64	37	72	59
18	61	29	41	20	49	24	72	42	67	42	74	43
19	65	30	41	29	44	33	76	52	83	57	83	52
20	61	32	41	21	48	36	62	33	69	34	87	61
21	69	52	40	24	59	35	57	34	57	42	89	55
22	70	33	45	27	43	19	74	32	77	50	70	37
23	74	47	44	25	30	10	39	26	70	47	61	50
24	77	41	45	26	42	11	52	24	73	50	83	55
25	52	32	39	25	38	25	67	44	60	36	90	63
26	52	32	39	25	52	33	75	26	58	36	89	65
27	66	33	41	22	44	28	58	36	45	33	85	63
28	66	24	38	22	42	22	77	42	40	26	85	69
29	53	23	42	21	51	21			53	23	83	50
30	60	38	47	12	54	28			60	34	71	45
31			45	19	59	30			46	37		
Avg.	63	36	43	23	46	25	58	30	61	36	75	49
Normal	63	39	53	31	50	29	51	29	60	37	70	45
Deviation from normal	0	-3	-10	-8	-4	-4	+7	+1	+1	-1	+5	+4

Table 131. Daily maximum and minimum temperatures (°F) May 2011 – October 2011.

Day of month	MAY		JUN		JUL		AUG		SEP		OCT	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	74	41	97	64	89	59	82	66	83	53	85	50
2	75	48	97	68	90	58	92	66	84	56	66	40
3	83	56	95	61	92	68	93	67	81	58	58	40
4	86	51	83	47	96	67	95	70	86	59	62	41
5	63	39	87	61	98	68	93	69	89	64	70	47
6	70	40	80	62	99	69	89	69	86	67	76	47
7	75	49	89	57	87	65	95	72	92	73	75	39
8	71	48	91	65	92	65	96	70	86	71	74	43
9	77	46	98	69	91	65	95	71	89	67	78	46
10	79	43	100	69	97	63	96	66	88	68	80	58
11	78	44	96	64	92	63	97	67	88	72	79	54
12	79	43	90	63	95	72	89	64	89	61	74	62
13	77	58	91	65	98	73	89	65	88	59	72	64
14	70	58	81	58	89	72	90	63	89	60	81	60
15	90	61	80	58	95	55	87	63	90	62	74	43
16	85	54	81	55	83	56	86	61	90	53	74	40
17	83	61	86	67	85	62	87	59	70	57	76	41
18	79	56	90	65	91	61	89	59	72	63	85	54
19	83	50	95	67	93	64	89	61	69	53	87	61
20	79	53	88	68	97	65	91	66	77	57	78	46
21	82	55	79	60	98	65	88	64	80	64	65	39
22	83	53	82	69	102	74	92	65	83	68	67	42
23	88	68	90	69	103	76	87	58	88	67	67	37
24	92	77	91	67	104	73	86	56	78	64	68	39
25	93	62	90	65	100	72	91	65	79	66	71	44
26	90	68	90	60	96	71	95	66	75	66	69	40
27	93	66	89	67	93	70	88	74	83	66	77	49
28	96	68	92	69	93	69	80	55	85	63	78	42
29	90	64	98	68	100	75	90	66	86	63	52	29
30	97	70	88	65	89	71	85	62	85	58	52	29
31	95	68			95	70	83	55			57	29
Avg.	82	55	89	64	94	67	90	65	84	63	72	46
Normal	77	54	84	63	88	67	87	65	82	60	71	46
Deviation from normal	+5	+1	+5	+1	+6	0	+3	0	+2	+3	+1	0

Table 132. Daily precipitation (inches) November 2010– April 2011.

Day of month	NOV	DEC	JAN	FEB	MAR	APR
1	0	0.04	0	0	0.06	0.21
2	0	0	0	0.14	0	0
3	0	0	0.08	0.05	0	0.06
4	0.05	0	0	0	0	0.45
5	0.37	0.15	0	0	0	0.23
6	0.05	0	0	0.09	0.15	0.07
7	0	0	0	0	0.48	0
8	0	0	0	0.11	0	0
9	0	0	0	0	0	0.45
10	0	0	0	0.01	0.18	0.07
11	0	0	0.09	0	0.38	0
12	0	0.07	0.21	0	0.02	0
13	0.02	0.39	0	0	0	0
14	0	0.1	1.2	0	0	0
15	0	0	0	0	0	0
16	0.02	0	0	0	0.05	0
17	0.18	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0.05	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0.03	0
22	0	0	0	0.03	0.19	0
23	0	0	0	0	0	0.03
24	0.02	0	0	0	0.07	0
25	0	0	0	0.04	0.17	0
26	0.01	0	0.67	0.06	0.02	0
27	0	2	0.36	0	0.27	0.1
28	0	0	0	0.07	0	0.34
29	0	0	0		0	0
30	0	0	0		0.03	0
31		0	0		0.82	
Total	0.72	2.75	2.66	0.60	2.92	2.01
Normal	3.20	3.30	4.64	3.40	3.83	3.30
Deviation from normal	-2.48	-0.55	-1.98	-2.80	-0.91	-1.29

Table 133. Daily precipitation (inches) May 2011 – October 2011.

Day of month	MAY	JUN	JUL	AUG	SEP	OCT
1	0	0	0	0.42	0	0.48
2	0	0	0	0.03	0	0.02
3	0	0	0.13	0	0	0
4	0.12	0	0	0.04	0	0
5	0.15	0.38	0.71	0	0	0.02
6	0	0.04	0	0.03	0.23	0
7	0	0.03	0.3	0	1.08	0
8	0	0	0.96	0	0.85	0.02
9	0	0	1.58	0.06	1.02	0
10	0	0	1.57	0	0	0
11	0.16	0.67	0	0	0	0
12	0	1.67	0	0.1	0	0.02
13	0	0.09	0	0	0	0.03
14	0.14	0	0	0.5	0	0.23
15	0.12	0	0	0.18	0	0
16	0	0	0	0.38	1.85	0
17	0	0.03	0	0	0	0
18	0	0	0	0	0	0
19	0.05	0.03	0	0	0.56	1.58
20	0	0.19	0	0.13	0	0.38
21	0	0	0	0.03	0	0
22	0	0	0	0.12	0.05	0.01
23	0	0.01	0	0	0.05	0.01
24	0.46	0.07	0	0	0	0
25	1.03	0.35	1.76	0	1.87	0
26	0	0	0.4	0.17	0.02	0
27	0	0.07	0	3.5	0	0
28	0	0.06	0	8.15	0.93	0
29	0	0.59	0	0	0.45	0.39
30	0	0	0	0.37	0	0.15
31	0		0.55	0		0
Total	2.23	4.28	7.96	14.21	8.96	3.34
Normal	3.80	4.22	5.79	5.80	4.59	3.48
Deviation from normal	-1.57	+0.06	+2.17	+8.41	+4.37	-0.14