



APPLIED RESEARCH ON FIELD CROP DISEASE CONTROL 2013

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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 (LD₅₀), (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 July, August, September and October was 0.87, 2.55, 2.03, 3.00 and 2.11 in. below normal, respectively; rainfall in June was 2.94 in. above normal. Rainfall during the period totaled 20.04 in., which was 7.62 in. below normal. Average minimum air temperatures were 3°F above normal in October, 1°F above normal in July, normal ($\pm 1^\circ\text{F}$) in May, June and July, 2°F below normal in August and 5°F below normal in September. Average maximum air temperatures were 2 °F above normal in June, July and October, and normal ($\pm 1^\circ\text{F}$) in May, August and September, according to records from NOAA station #44-4044-01 at the Tidewater AREC in Suffolk. Normal represented the mean for the past 80 years of records.

During the planting period, daily soil temperatures at the 4-in. depth averaged $>60^\circ\text{F}$ from 16 thru 18 Apr and 3 thru 9 May. Thereafter, soil temperatures averaged between 64°F and 75°F in the period from 10 through 31 May, and reached 80°F on 25 June. These conditions were favorable conditions for rapid emergence and good seedling vigor. Seasonal accumulations of peanut heat units (DD_{56}) and cotton degree days (DD_{60}) in 2013 were near or above the 19-yr average except for August and September (Table 1). Peanut harvest was completed in October while cotton and soybean harvest were mostly complete in early December. The first killing frost in southeastern Virginia was on 26 October when temperatures dropped to 27.5°F .

Peanut was harvested on 16,000 acres in 2013 and yields averaged 3700 lb/A, 500 lb/A below the record yield of 4200 lb/A in 2012 (Table 2). The loss estimate to peanut diseases equals 2,398 tons of peanuts or \$1.2 million in farm income based a total production of 29,600 tons and a value of \$520/ton (Table 3). *Cylindrocladium* black rot and southern stem rot contributed to 3.0% yield loss in 2013. Leaf spot diseases were first observed in August, and severe outbreaks of late leaf spot occurred in September and October. Tomato spotted wilt virus (TSWV) was present but incidence was relatively low. Northern root-knot, stubby root and sting nematodes caused damage to roots and pods in fields having moderate to high populations of these pests.

Cotton was harvested on 77,000 acres and yields in Virginia averaged 972 lb/A, or 146 lb below the record high for cotton, in 2012 (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 2013 (Table 4). Common foliar diseases were caused by fungi that included species of *Stemphyllium*, *Alternaria*, *Colletotrichum*, *Cercospora*, and *Phomopsis*. *Corynespora* target spot was detected in the lower canopy of cotton in early August but, in contrast to 2012, did not result in significant defoliation or yield loss. Yield losses caused by nematodes totaled 3.0% of yield potential with southern root-knot nematode accounting for the greatest loss. The estimated loss to all diseases totaled 4.2% of yield potential. This estimate indicated that growers in Virginia lost 3.15 million pounds of lint or \$2.39 million to diseases in 2013.

Soybean yields averaged 40 bu/A in 2013 on 590,000 acres (Table 2). Yield loss to diseases in 2013 was estimated to be 8.45%. This estimate indicates growers in Virginia lost 1.99 million bushels or \$24.9 million to diseases in 2013. Soybean cyst and southern root-knot

nematodes accounted for the greatest losses of yield (Table 5). Frogeye leaf spot and *Cercospora* blight were the most prevalent foliar diseases and caused yield losses where outbreaks occurred during seed development and up to full pod (R6). Brown stem rot incidence was higher than in previous years and accounted for 0.5% yield loss. In 2013, soybean rust (SBR) was first detected on 5 September in sentinel plots at the Tidewater AREC. By the end of September, low levels of SBR were confirmed in eight counties of Virginia (Suffolk, Chesapeake, Virginia Beach, Isle of Wight, Sussex, Hanover, Prince George, and Brunswick). Disease incidence in these counties was low and no significant yield loss occurred.

Corn yields averaged 150 bu/A in 2013 on 355,000 acres (Table 2). Seedling disease caused minimal losses of stand. 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 2013.

Wheat yields averaged 62 bu/A on 75,000 acres (Table 2). *Septoria* leaf blotch was the most common disease of wheat in southeastern Virginia. Stripe rust was minimal in 2013. Occurrence of scab on heads was low in the Tidewater Area, but scab was widespread and severe overall in Virginia and contributed to loss of grain yield and quality.

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 eight chapters from this book have been submitted to the American Phytopathological Society for publication in *Plant Disease Management Reports* in 2014. Reprints of these publications are available upon request.

Table 1. Comparison of rainfall, peanut heat units (DD₅₆) and cotton degree-days (DD₆₀) in 2013 to an average of historical records at the Tidewater AREC.

Month	Rainfall (in.)								
	2006	2007	2008	2009	2010	2011	2012	2013	Normal ¹
May	2.86	2.16	3.43	4.60	6.77	2.23	5.74	2.96	3.83
Jun	10.08	3.00	1.56	3.40	0.83	4.28	4.80	7.11	4.17
Jul	3.66	1.71	5.58	4.86	1.01	7.96	2.67	3.18	5.73
Aug	2.50	5.00	2.18	3.38	2.04	14.21	10.43	3.72	5.75
Sep	9.16	0.43	6.01	7.69	8.75	8.96	4.14	1.64	4.64
Oct	8.14	5.26	0.87	1.72	8.24	3.34	7.11	1.43	3.54
Total	36.40	17.56	19.63	25.65	27.64	40.98	34.89	20.04	27.66

¹Normal is mean of previous 80 yrs (1933-2013).

Month	Peanut Heat Units (DD ₅₆)								
	2006	2007	2008	2009	2010	2011	2012	2013	Avg. ²
May	307	319	321	424	457	433	429	355	373
Jun	504	547	695	580	738	645	512	580	588
Jul	665	629	663	635	783	776	774	707	699
Aug	664	664	610	685	703	675	643	589	650
Sep	363	455	482	402	539	503	420	390	452
Oct	171	368	186	204	232	195	213	255	222
Total	2674	2982	2957	2930	3453	3227	2990	2876	2984

²Avg. is mean of previous 19 yrs (1995-2013).

Month	Cotton Degree Days (DD ₆₀)								
	2006	2007	2008	2009	2010	2011	2012	2013	Avg. ²
May	221	230	229	318	346	332	318	260	275
Jun	386	431	585	460	624	529	403	463	473
Jul	541	508	540	513	676	665	652	583	579
Aug	542	541	488	561	580	551	519	469	528
Sep	259	351	367	292	430	385	319	295	343
Oct	104	273	126	136	160	131	145	169	148
Total	2053	2334	2335	2280	2816	2593	2357	2239	2347

²Avg. is mean of previous 19 yrs (1995-2013).

Table 2. Crop production statistics in year of record yield compared to 2013.

Crop	Statistics of record year for yield*			2013 projection ¹	
	Year	Acreage	Yield/A	Acreage	Yield/A
Peanut	2012	20,000	4,200 lb	16,000	3,700 lb
Soybean.....	2012	580,000	42 bu	590,000	40 bu
Corn.....	2000	330,000	146 bu	355,000	150 bu
Cotton (lint)	2012	85,000	1,118 lb	78,000	972 lb
Wheat	2008	280,000	71 bu	275,000	62 bu

¹ Crop production estimates issued in January 2014 by the National Agricultural Statistics Service at <http://www.nass.usda.gov/va>.

Table 3. Estimated loss in yield to peanut diseases in 2013.

Disease	Causal organism	Percent loss
Early leaf spot.....	<i>Cercospora arachidicola</i>	0.5
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>	0.0
Botrytis blight.....	<i>Botrytis</i> sp.	0.0
Peanut rust.....	<i>Puccinia arachidis</i>	0.0
Sclerotinia blight.....	<i>Sclerotinia minor</i>	1.0
Southern stem rot.....	<i>Sclerotium rolfsii</i>	1.0
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>	1.0
Nematode damage	Northern Root Knot, Sting, Lesion, etc.	2.0
Total loss (%).....		8.1¹

¹ The loss estimate equals 2,398 tons of peanuts or \$1.2 million in farm income based on an estimated total production of 29,600 tons and an estimated value of \$520/ton.

Table 4. Estimated loss of yield to cotton diseases in 2013.

Disease	Causal agent(s)	Percent loss
Seedling disease.....	<i>Rhizoctonia solani</i> , <i>Pythium</i> spp.....	1.0
Fusarium wilt.....	<i>Fusarium oxysporum</i> f. sp. <i>vasinfectum</i>	0.0
Verticillium wilt.....	<i>Verticillium dahlia</i>	0.0
Texas root rot.....	<i>Phymatotrichum omnivorum</i>	0.0
Ascochyta blight.....	<i>Ascochyta gossypii</i>	0.0
Bacterial blight.....	<i>Xanthomonas</i> spp.	0.0
Boll rots	<i>Diplodia</i> , <i>Fusarium</i> , <i>Xanthomonas</i>	0.1
Leaf spots	<i>Corynespora</i> , <i>Alternaria</i> , <i>Cercospora</i> , etc...	0.1
Southern root-knot nematode	<i>Meloidogyne incognita</i>	2.0
Reniform nematode.....	<i>Rotylenchulus reniformis</i>	0.0
Other nematodes	<i>Trichodorus</i> spp., <i>Belonolaimus</i> spp., etc..	1.0
Total loss (%).....		4.2¹

¹ The loss estimate equals 3.15 million pounds in Virginia based on production of 75 million pounds of lint in 2013. At a value of \$0.76 per pound, the loss in revenues at the farm gate would total \$2.39 million.

Table 5. Estimated loss of yield to soybean diseases in 2013.

Disease	Causal agent(s)	Percent loss
Seedling diseases	<i>Rhizoctonia</i> spp., <i>Pythium</i> spp., etc.	0.1
Seed rot	<i>Diaporthe/Phomopsis</i> complex	0.1
Cercospora blight	<i>Cercospora kikuchii</i>	1.0
Purple seed stain	<i>Cercospora kikuchii</i>	0.1
Downy mildew	<i>Peronospora manshurica</i>	0.01
Target spot.....	<i>Corynespora cassicola</i>	0.1
Anthraxnose.....	<i>Colletotrichum truncatum</i>	0.2
Brown spot.....	<i>Septoria glycines</i>	0.1
Pod & stem blight.....	<i>Diaporthe phaseolorum</i> var. <i>sojae</i>	0.2
Soybean rust.....	<i>Phakopsora pachyrhizi</i>	0.0
Frogeye leaf spot	<i>Cercospora sojina</i>	2.0
Southern blight.....	<i>Sclerotium rolfsii</i>	0.0
Brown stem rot.....	<i>Phialophora gregata</i>	0.5
Charcoal rot.....	<i>Macrophomina phaseolina</i>	0.01
Stem canker.....	<i>Diaporthe phaseolorum</i> var. <i>caulivora</i>	0.1
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.	0.0
Bacterial diseases	<i>Pseudomonas syringae</i> , <i>P. syringae</i> pv. <i>tabaci</i> , <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>	1.0
Total loss (%).....		8.45¹

¹ The loss estimate equals 1.99 million bushels based on production of 23.6 million bushels in 2013. At a value of \$12.50/bu, the loss would be \$24.9 million in farm revenue.

I. WHEAT SEED TREATMENT FUNGICIDE TEST (WHEATSEED113, Tidewater AREC, 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, 15-ft long with 7-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 CTS 60 ml
3. Dividend Extreme 130 ml + Cruiser 5FS 53 ml
4. Rancona Crest WR 325 ml
5. Rancona CTS 60 ml + Attendant 480FS 104 ml
6. Foothold 325 ml + Attendant 480FS 104 ml
7. Rancona CTS 60 ml + Attendant 480FS 104 + Consensus 35 ml
8. Foothold 325 ml

E. ADDITIONAL INFORMATION:

1. Location: Tidewater AREC, Rt. 58, Suffolk
2. Crop history: corn 2012, wheat/soybean 2011, corn 2010
3. Planting date and variety: 24 Oct 2012, VA08MAS-369
4. Soil fertility report (17 Jan):

pH.....	6.49	K	141 ppm
Ca.....	486 ppm	Zn.....	0.6 ppm
Mg	109 ppm	Mn.....	2.7 ppm
P.....	68 ppm	Soil type	Rains fine sandy loam

5. Fertilizer: 6-16-36 300 lb/A (17 Oct 2012)
Liquid nitrogen (24%) 60 lb/A+ 1.5 pt/A Manganese (21 Feb)
6. Herbicide: Osprey 4.75 fl oz/A (4 Dec 2012)
Harmony Extra 0.6 fl oz (21 Feb)
7. Insecticide: Baythroid XL 2 fl oz/A (4 May)
8. Harvest date: 17 Jun 2013

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

Treatment and rate/100 kg seed ¹	Plants/ft (26 Nov) ²	% Plant stand (26 Apr) ³
Untreated seed.....	12.8	68.8 c
Rancona CTS 60 ml.....	15.0	85.0 ab
Dividend Extreme 130 ml + Cruiser 5FS 53 ml.....	15.3	91.3 a
Rancona Crest WR 325 ml.....	15.9	78.8 bc
Rancona CTS 60 ml + Attendant 480FS 104 ml.....	15.7	85.0 ab
Foothold 325 ml + Attendant 480FS 104 ml.....	16.7	86.3 ab
Rancona CTS 60 ml + Attendant 480FS 104 ml + Consensus 35ml.....	13.7	77.5 bc
Foothold 325 ml.....	16.5	85.0 ab
<i>P</i> (F).....	.38	.01

¹ Seed treatment applied by personnel with Chemtura Corporation.

² Counts of two, 3-ft samples per plot.

³ Visual rating of percent of seedling emergence.

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

Table 7. Effect of seed treatment fungicides on yield and test weight in wheat.

Treatment and rate /100 kg seed ¹	Yield ² (bu/A)	Orthogonal contrast ³ <i>P</i> (F)	Test weight (lb/bu)
Untreated seed.....	83.9	--	58.3
Rancona CTS 60 ml.....	91.8	.2564	58.2
Dividend Extreme 130 ml + Cruiser 5FS 53 ml.....	101.9*	.0147	58.3
Rancona Crest WR 325 ml.....	97.1	.0654	58.1
Rancona CTS 60 ml + Attendant 480FS 104 ml.....	96.6	.0741	58.2
Foothold 325 ml + Attendant 480FS 104 ml...	96.8	.0711	58.2
Rancona CTS 60 ml + Attendant 480FS 104 ml + Consensus 35ml.....	96.3	.0805	58.3
Foothold 325 ml.....	92.8	.2017	57.9
<i>P</i> (F).....	.33	--	.93

¹ Seed treatment applied by personnel with Chemtura Corporation.

² Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013.

³ Means followed by an asterisk are significantly different ($P=0.05$) from the untreated check according to orthogonal contrast.

II. WHEAT VARIETY/FUNGICIDE TEST (WHEATVARFUN113, TAREC, Field 61B)

- A. **PURPOSE:** To compare varieties and fungicide treatment for foliar disease control and impact on yield
- B. **EXPERIMENTAL DESIGN:**
1. Four, randomized complete blocks with 15-ft alleys between blocks
 2. Plots 8-ft wide and 30-ft long with 7.5-in. row spacing
 3. Data collected from the center, seven rows in each plot
- C. **APPLICATION OF TREATMENTS:** Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.8 gal/A. Sprays were applied at GS 39 on 24 Apr.
- D. **VARIETY (MAIN PLOTS):**
1. DynaGro 9042
 2. DynaGro 9171
 3. DynaGro 9922
 4. Shirley
 5. Jamestown
 6. USG 3555
 7. USG 3120
 8. USG 3251
 9. Merl
 10. FS 815
 11. FS 801
- E. **TREATMENT (SUB-PLOTS):**
1. Untreated
 2. Prosaro 421SC 6.5 fl oz + Induce 3.2 fl oz/A GS 39)
- F. **ADDITIONAL INFORMATION:**
1. Location: Tidewater AREC, Rt. 58, Suffolk
 2. Crop history: corn 2012, wheat/soybean 2011, corn 2010
 3. Planting date: 24 Oct 2012
 4. Soil fertility report (17 Jan):
- | | | | |
|----------|---------|-----------------|-----------------------|
| pH..... | 6.49 | K | 141 ppm |
| Ca..... | 486 ppm | Zn..... | 0.6 ppm |
| Mg | 109 ppm | Mn..... | 2.7 ppm |
| P | 68 ppm | Soil type | Rains fine sandy loam |
5. Fertilizer: 6-16-36 300 lb/A (17 Oct 2012)
Liquid nitrogen (24%) 60 lb/A+ 1.5 pt/A Manganese (21 Feb)
 6. Herbicide: Osprey 4.75 fl oz/A (4 Dec 2012)
Harmony Extra 0.6 fl oz (21 Feb)
 7. Insecticide: Baythroid XL 2 fl oz/A (4 May)
 8. Harvest date: 17 Jun 2013

Table 8. Effect of variety selection and fungicide treatment on foliar disease in wheat.

Variety, treatment and rate/A ¹	% leaf area of lower leaves with septoria ² (8 May)	% leaf area with septoria ² (30 May)		% leaf area with rust ² (30 May)	
		lower leaves	upper leaves	lower leaves	upper leaves
DynaGro 9042					
Untreated.....	3.0 a	47.5 a	13.8 a	1.8	1.8
Prosaro 421SC 6.5 fl oz	1.0 b	17.5 b	5.5 b	0.6	0.6
<i>P(F)</i>.....	.01	.005	.04	.08	.14
DynaGro 9171					
Untreated.....	2.3	57.5	11.3	1.8	2.3
Prosaro 421SC 6.5 fl oz	1.3	42.5	20.0	2.3	2.5
<i>P(F)</i>.....	.25	.36	.34	.39	.68
DynaGro 9922					
Untreated.....	2.5 a	41.3 a	12.5	1.8	2.5
Prosaro 421SC 6.5 fl oz	1.5 b	21.3 b	8.8	1.5	2.0
<i>P(F)</i>.....	.0001	.02	.058	.39	.18
Shirley					
Untreated.....	3.5 a	25.0	6.3	1.5	1.5
Prosaro 421SC 6.5 fl oz	1.8 b	8.8	2.5	1.0	0.8
<i>P(F)</i>.....	.006	.06	.051	.18	.34
Jamestown					
Untreated.....	10.0 a	71.3 a	48.8 a	1.0	2.8
Prosaro 421SC 6.5 fl oz	3.8 b	42.5 b	26.3 b	1.3	1.8
<i>P(F)</i>.....	.001	.03	.006	.39	.09
USG 3555					
Untreated.....	2.5	60.0 a	22.5	2.5	1.8
Prosaro 421SC 6.5 fl oz	2.5	27.5 b	8.8	1.3	1.3
<i>P(F)</i>	1.0	.02	.09	.14	.50
USG 3120					
Untreated.....	9.0	63.8 a	30.0 a	1.5	3.5
Prosaro 421SC 6.5 fl oz	5.8	38.8 b	15.0 b	1.8	2.3
<i>P(F)</i>.....	.18	.02	.04	.72	.08
USG 3251					
Untreated.....	2.5 a	40.0	11.3	2.3	2.5
Prosaro 421SC 6.5 fl oz	1.5 b	33.8	6.8	1.5	2.0
<i>P(F)</i>.....	.0001	.60	.36	.21	.76
Merl					
Untreated.....	4.8	57.5 a	18.8	2.0 a	2.8
Prosaro 421SC 6.5 fl oz	2.8	28.8 b	12.5	0.8 b	1.5
<i>P(F)</i>.....	.07	.003	.14	.02	.14
FS 815					
Untreated.....	4.5 a	32.5 a	7.5	2.5	2.8 a
Prosaro 421SC 6.5 fl oz	2.5 b	13.8 b	5.8	2.0	1.1 b
<i>P(F)</i>.....	.0001	.009	.24	.18	.03
FS 801					
Untreated.....	1.8	60.0 a	32.5 a	3.0	3.5
Prosaro 421SC 6.5 fl oz	1.3	32.5 b	15.0 b	2.0	2.3
<i>P(F)</i>.....	.39	.04	.04	.18	.19
Split-plot analysis					
Variety.....	.0001	.0001	.0001	.20	.13
Treatment .....	.0001	.0001	.0001	.0005	.0003
Variety x treatment.....	.0005	.18	.0002	.053	.79

¹ Sprays were applied at GS 39 on 24 Apr with Induce 0.125% (v/v).

² Data represent percent of leaf area with symptoms and signs of disease.

Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 9. Effect of variety selection and fungicide treatment on yield and test weight in wheat.

Treatment, rate/A and application timing ¹	Yield ² (bu/A)	Test weight (lb/bu)
DynaGro 9042		
Untreated.....	77.3	55.9
Prosaro 421SC 6.5 fl oz	76.7	56.1
DynaGro 9171		
Untreated.....	88.0	55.6
Prosaro 421SC 6.5 fl oz	87.3	55.5
DynaGro 9922		
Untreated.....	83.9	57.9
Prosaro 421SC 6.5 fl oz	84.1	57.8
Shirley		
Untreated.....	84.1	56.9
Prosaro 421SC 6.5 fl oz	84.2	57.2
Jamestown		
Untreated.....	81.7	56.8
Prosaro 421SC 6.5 fl oz	82.5	57.7
USG 3555		
Untreated.....	80.4	56.8
Prosaro 421SC 6.5 fl oz	76.4	57.1
USG 3120		
Untreated.....	82.2	56.3
Prosaro 421SC 6.5 fl oz	79.4	56.7
USG 3251		
Untreated.....	87.6	58.2
Prosaro 421SC 6.5 fl oz	86.3	58.4
Merl		
Untreated.....	91.2	58.4
Prosaro 421SC 6.5 fl oz	80.5	58.3
FS 815		
Untreated.....	91.9	57.1
Prosaro 421SC 6.5 fl oz	89.2	56.8
FS 801		
Untreated.....	84.4	57.8
Prosaro 421SC 6.5 fl oz	87.5	58.1
Variety mean		
DynaGro 9042	77.0 e	56.0 e
DynaGro 9171	87.6 ab	55.6 f
DynaGro 9922	84.0 b-d	57.8 b
Shirley.....	84.1 b-d	57.0 c
Jamestown.....	82.1 b-e	57.3 c
USG 3555.....	78.4 de	56.9 c
USG 3250.....	80.8 c-e	56.5 d
USG 3251	86.9 a-c	58.3 a
Merl.....	85.9 a-c	58.3 a
FS 815	90.5 a	56.9 c
FS 801	85.9 a-c	57.9 b
Treatment mean		
Untreated.....	84.8	57.0 b
Prosaro 421SC 6.5 fl oz	83.1	57.2 a
Split-plot analysis		
Variety.....	.003	.0001
Treatment .....	.21	.04
Variety x treatment.....	.74	.19

¹Sprays were applied at GS 39 on 24 Apr with Induce 0.125% (v/v). ²Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013. Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$).

III. WHEAT FUNGICIDE TEST (WHEATFUN113, Field 30)

- A. **PURPOSE:** To compare fungicide treatments applied at growth stage 31 for foliar disease control and impact on yield
- B. **EXPERIMENTAL DESIGN:**
1. Four, randomized complete blocks with 8-ft alleys between blocks
 2. Plots 12-ft wide and 30-ft long with 6.67-in. row spacing
 3. Data collected from the center, seven rows in each plot
- C. **APPLICATION OF TREATMENTS:** Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8003VS nozzles spaced 18-in. apart and delivering 25 gal/A. Fungicide sprays were applied at GS 31 with 24% liquid N on 29 Mar. All treatments were applied with Induce 4 fl oz/A (0.125% v/v).
- D. **TREATMENT, RATE/A AND APPLICATION TIMING:**
1. Untreated
 2. Headline 4.2SC 3 fl oz (GS 31)
 3. Priaxor 4.17SC 2 fl oz (GS 31)
 4. Tilt 3.6EC 2 fl oz (GS 31)
 5. Quilt Xcel 2.2SC 7 fl oz (GS 31)
 6. Evito 4SC 2 fl oz (GS 31)
 7. Twinline 1.75EC 6 fl oz (GS 31)
 8. Priaxor 4.17SC 3 fl oz (GS 31)
 9. Stratego YLD 2 fl oz (GS 31)
 10. Aproach 2.0SC 3.4 fl oz (GS 31)
- E. **ADDITIONAL INFORMATION:**
1. Location: Tidewater Research Farm, Hare Rd., Suffolk
 2. Crop history: peanut, 2012; wheat/soybean, 2011; peanut, 2010
 3. Planting date and variety: 10 Nov 2012, USG 3665
 4. Soil fertility report (17 Jan 2012):

pH.....	6.46	K	76 ppm
Ca.....	372 ppm	Zn.....	0.8 ppm
Mg	44 ppm	Mn.....	3.5 ppm
P	37 ppm	Soil type	Kenansville loamy fine sand
 5. Fertilizer: 5-13-30 355 lb/A (10 Nov, 2012)
Liquid nitrogen (24%) 60 lb/A + Manganese 1.5 pt/A (21 Feb)
Liquid nitrogen (24%) 60 lb/A (29 Mar)
 6. Herbicide: Harmony Extra 0.6 fl oz/A (21 Feb)
Roundup WeatherMax 22 fl oz/A + Interro 2.0 qt/A (20 Jun)
 7. Insecticide: Baythoid 2EC 2 fl oz/A (4 May)
 8. Harvest date: 17 Jun 2013

Table 10. Effect of fungicide treatments on disease incidence in wheat.

Treatment, rate/A ¹	% septoria ² (3 May)		% septoria ² (29 May)		% rust ² (29 May)	
	lower leaves	upper leaves	lower leaves	upper leaves	lower leaves	upper leaves
Untreated	7.8 a	0.6	77.5	67.5	1.0	7.3 a
Headline 4.2SC 3 fl oz.....	4.8 bc	0.3	72.5	63.8	1.0	3.5 b
Priaxor 4.17SC 2 fl oz	3.5 c	0.1	72.5	68.8	1.0	4.5 b
Tilt 3.6EC 2 fl oz.....	4.8 bc	0.1	73.8	57.5	1.0	3.0 b
Quilt Xcel 2.2SC 7 fl oz	4.8 bc	0.1	68.8	55.0	1.5	4.0 b
Evito 4SC 2 fl oz.....	4.3 bc	0.1	73.8	60.0	1.0	4.3 b
Twinline 1.75EC 6 fl oz.....	4.3 bc	0.1	70.0	60.0	1.0	4.0 b
Priaxor 4.17SC 3 fl oz	6.3 ab	0.5	75.0	65.0	1.0	3.0 b
Stratego YLD 2 fl oz	4.8 bc	0.3	70.0	67.5	1.0	3.5 b
Approach 2.0SC 3.4 fl oz	4.8 bc	0.3	70.0	62.5	1.0	4.0 b
<i>P</i> (F) .....	.05	.36	.11	.79	.46	.003

¹ Treatments were applied at GS31 on 29 Mar. All treatments received 24% liquid Nitrogen and Induce 0.125% (v/v). ² Data represent percent of leaf area with symptoms and signs of disease. Rating on 3 May was at flowering (GS55) and 29 May was at early dough (GS83). Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 11. Effect of fungicide treatments on yield and test weight in wheat.

Treatment, rate/A ¹	Yield (bu/A) ²	Orthogonal contrast ³ <i>P</i> (F)	Test weight (lb/bu)
Untreated	78.2	--	55.8
Headline 4.2SC 3 fl oz.....	73.4	.4542	55.6
Priaxor 4.17SC 2 fl oz	76.2	.7512	55.7
Tilt 3.6EC 2 fl oz.....	74.7	.5897	55.2
Quilt Xcel 2.2SC 7 fl oz	76.5	.7961	55.9
Evito 4SC 2 fl oz.....	78.5	.9531	56.0
Twinline 1.75EC 6 fl oz.....	85.0	.2899	56.3
Priaxor 4.17SC 3 fl oz	78.5	.9625	56.2
Stratego YLD 2 fl oz	85.4	.2599	55.8
Approach 2.0SC 3.4 fl oz	84.2	.3451	55.2
<i>P</i> (F) .....	.50	--	.63

¹ Treatments were applied at GS31 on 29 Mar. All treatments received 24% liquid Nitrogen and Induce 0.125% (v/v). ² Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013. ³ Means are not significantly different from the untreated check according to orthogonal contrast.

IV. WHEAT FUNGICIDE TEST (WHEATFUN213, TAREC Research Farm, Field 30)

A. **PURPOSE:** To compare fungicide treatments at growth stage 39 for foliar disease control and impact on yield

B. **EXPERIMENTAL DESIGN:**

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

C. **APPLICATION OF TREATMENTS:** Fungicide treatments were applied with a Lee Spider Sprayer having eight, 8002VS nozzles spaced 18-in. apart and delivering 19.88 gal/A. Treatments were applied at GS 39 on 24 Apr. All treatments were applied with Induce (0.125% v/v).

D. **TREATMENT, RATE/A AND APPLICATION TIMING:**

1. Untreated
2. Stratego YLD 4 fl oz (GS 39)
3. Absolute 500SC 4 fl oz (GS 39)
4. Prosaro 421SC 5 fl oz (GS 39)
5. Prosaro 421SC 6.5 fl oz (GS 39)
6. Twinline 1.75EC 9 fl oz (GS 39)
7. Priaxor 4.17SC 4 fl oz (GS 39)
8. Quilt Xcel 2.2SC 10.5 fl oz (GS 39)
9. Headline 2.09SC 6 fl oz (GS 39)
10. Aproach 2.08EC 6 fl oz (GS 39)

E. **ADDITIONAL INFORMATION:**

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: peanut, 2012; wheat/soybean, 2011; peanut, 2010
3. Planting date and variety: 10 Nov 2012, USG 3665
4. Soil fertility report (17 Jan 2012):

pH.....	6.46	K	76 ppm
Ca.....	372 ppm	Zn.....	0.8 ppm
Mg	44 ppm	Mn.....	3.5 ppm
P	37 ppm	Soil type	Kenansville loamy fine sand

5. Fertilizer: 5-13-30 355 lb/A (10 Nov, 2012)
Liquid nitrogen (24%) 60 lb/A + Manganese 1.5 pt/A (21 Feb)
Liquid nitrogen (24%) 60 lb/A (29 Mar)
6. Herbicide: Harmony Extra 0.6 fl oz/A (21 Feb)
Roundup WeatherMax 22 fl oz/A + Interro 2.0 qt/A (20 Jun)
7. Insecticide: Baythoid 2EC 2 fl oz/A (4 May)
8. Harvest date: 17 Jun 2013

Table 12. Effect of fungicide treatments on disease incidence in wheat.

Treatment, rate/A ¹	% septoria ² (2 May)		% septoria ² (29 May)		% rust ² (29 May)	
	lower leaves	upper leaves	lower leaves	upper leaves	lower leaves	upper leaves
	Untreated.....	7.3	0.8	75.0 a	58.8 a	2.8	5.5
Stratego YLD 4 fl oz	5.3	0.1	55.0 b	28.8 b	2.3	3.3
Absolute 500SC 4 fl oz	6.0	0.3	46.3 bc	25.8 b	2.0	2.8
Prosaro 421SC 5 fl oz	5.5	0.1	51.3 b	25.0 b	2.0	3.3
Prosaro 421SC 6.5 fl oz	5.8	0.1	41.3 cd	22.5 b	2.5	3.3
Twinline 1.75EC 9 fl oz.....	6.0	0.3	32.5 d	12.5 b	1.3	1.8
Priaxor 4.17SC 4 fl oz.....	4.8	0.1	35.0 d	21.3 b	2.8	2.5
Quilt Xcel 2.2SC 10.5 fl oz...	5.0	0.1	37.5 cd	13.8 b	1.5	3.0
Headline 2.09SC 6 fl oz.....	6.0	0.6	38.8 cd	13.8 b	2.3	3.3
Approach 2.08EC 6 fl oz.....	4.5	0.3	35.0 d	15.0 b	2.8	2.8
<i>P</i> (F) .....	.52	.07	.0001	.0002	.055	.08

¹ Treatments were applied at GS39 on 24 Apr. All treatments were applied with Induce 0.125% (v/v).

² Data represent percent of leaf area with symptoms and signs of disease. Rating on 2 May was at flowering (GS55) and 29 May was at early dough (GS83).

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

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

Treatment, rate/A ¹	Yield (bu/A) ²	Orthogonal contrast ³ <i>P</i> (F)	Test weight (lb/bu)
Untreated.....	80.7	--	53.6
Stratego YLD 4 fl oz	84.4	.2942	51.9
Absolute 500SC 4 fl oz.....	76.5	.3987	53.2
Prosaro 421SC 5 fl oz	75.1	.8163	54.9
Prosaro 421SC 6.5 fl oz	80.3	.6848	55.2
Twinline 1.75EC 9 fl oz.....	76.8	.9536	53.2
Priaxor 4.17SC 4 fl oz	77.5	.3582	54.8
Quilt Xcel 2.2SC 10.5 fl oz	77.1	.6429	51.8
Headline 2.09SC 6 fl oz.....	75.5	.6990	55.2
Approach 2.08EC 6 fl oz	78.1	.8616	52.3
<i>P</i> (F) .....	.61	--	.64

¹ Treatments were applied at GS39 on 24 Apr. All treatments were applied with Induce 0.125% (v/v).

² Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013.

V. WHEAT FUNGICIDE TEST (WHEATFUN313, TAREC, Field 29)

- A. **PURPOSE:** To compare various timings of fungicide treatments for foliar disease control and impact on yield
- B. **EXPERIMENTAL DESIGN:**
1. Four, randomized complete blocks with 8-ft alleys between blocks
 2. Plots 12-ft wide and 30-ft long with 6.67-in. row spacing
 3. Data collected from the center, seven rows in each plot
- C. **APPLICATION OF TREATMENTS:** Fungicide treatments were applied with a Lee Spider Sprayer with nozzles spaced 18-in. apart. Sprays were applied at GS 31 using eight, 8003VS nozzles in a volume of 25 gal/A with 24% liquid N on 29 Mar. All other plots received 60 units of 24% liquid N on 29 Mar. Fungicide sprays at GS39 were applied using eight, 8002VS nozzles in a volume of 19.88 gal/A on 24 Apr. Sprays at GS 60-61 were applied on 8 May using Twin Jet nozzles at 60° angles forward and backward delivering a total of 19.88 gal/A. All treatments were applied with Induce (0.125% v/v).
- D. **TREATMENT, RATE/A AND APPLICATION TIMING:**
1. Untreated
 2. Caramba 0.75EC 13.5 fl oz (GS 60-61)
 3. Prosaro 3.25SC 6.5 fl oz (GS 60-61)
 4. Headline 2.09SC 3 fl oz (GS 31)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
 5. Priaxor 4.17SC 2 fl oz (GS 31)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
 6. Tilt 3.6EC 2 fl oz (GS 31)
Prosaro 0.75SC 6.5 fl oz (GS 60-61)
 7. Priaxor 4.17SC 2 fl oz (GS 31)
Twinline 1.75EC 9 fl oz (GS 39)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
 8. Aproach 2.08EC 6 fl oz (GS 39)
 9. Aproach 2.08EC 3 fl oz (GS 31)
Aproach Prima 2.34SC 6.8 fl oz (GS 39)
 10. Aproach Prima 2.34SC 3.4 fl oz (GS 39)
 11. Aproach Prima 2.34SC 5 fl oz (GS 39)
 12. Aproach Prima 2.34SC 6.8 fl oz (GS 39)
 13. Quilt Xcel 10.5 fl oz (GS 39)
- E. **ADDITIONAL INFORMATION:**
1. Location: Tidewater Research Farm, Hare Rd., Suffolk
 2. Crop history: peanut, 2012; wheat/soybean, 2011; peanut, 2010
 3. Planting date and variety: 10 Nov 2012, USG 3665

4. Soil fertility report (17 Jan):

pH.....	6.91	K	65 ppm
Ca.....	467 ppm	Zn.....	0.7 ppm
Mg	42 ppm	Mn.....	4.2 ppm
P.....	38 ppm	Soil type	Kenansville loamy fine sand

5. Fertilizer: 5-13-30 355 lb/A (10 Nov, 2012)

Liquid nitrogen (24%) 60 lb/A + Manganese 1.5 pt/A (21 Feb)

6. Herbicide: Harmony Extra 0.6 oz/A (21 Feb)

Roundup WeatherMax 22 fl oz + Interro 2.0 qt/A (20 Jun)

7. Insecticide: Baythroid 2EC 2 fl oz/A (4 May)

8. Harvest date: 17 Jun 2013

Table 14. Effect of fungicide treatments on disease incidence in wheat.

Treatment, rate/A and timing ¹	% septoria ² (3 May)		% septoria ² (28 May)		% rust ² (28 May)	
	lower leaves	upper leaves	lower leaves	upper leaves	lower leaves	upper leaves
Untreated	8.8ab	0.8	37.5a	23.8a	2.8 a	3.0a
Caramba 0.75EC 13.5 fl oz (GS 60-61).....	7.3a-c	0.8	27.5b	8.8 b	2.3 ab	2.3ab
Prosaro 3.25SC 6.5 fl oz (GS 60-61).....	9.3a	0.6	15.5cd	6.5 b-d	2.3 ab	2.3ab
Headline 2.09SC 3 fl oz (GS 31)						
Caramba 0.75EC 13.5 fl oz (GS 60-61).....	3.8f	0.1	6.0ef	2.8 ef	1.3 b-e	1.8bc
Priaxor 4.17SC 2 fl oz (GS 31)						
Caramba 0.75EC 13.5 fl oz (GS 60-61).....	7.5a-c	0.6	9.5ef	5.0 d-f	1.8 a-c	1.5b-d
Tilt 3.6EC 2 fl oz (GS 31)						
Prosaro 0.75SC 6.5 fl oz (GS 60-61).....	6.5b-e	0.6	8.5ef	4.0 d-f	1.0 b-e	1.8bc
Priaxor 4.17SC 2 fl oz (GS 31)						
Twinline 1.75EC 9 fl oz (GS 39)						
Caramba 0.75EC 13.5 fl oz (GS 60-61).....	4.3ef	0.1	4.0f	1.5 f	0.1 e	0.5d
Approach 2.08EC 6 fl oz (GS 39)	8.5ab	1.0	18.8c	7.5 bd	1.0 c-e	1.8bc
Approach 2.08EC 3 fl oz (GS 31)						
Approach Prima 2.34SC 6.8 fl oz (GS 39)...	4.8d-f	0.3	11.3de	5.3 c-e	1.0 b-e	1.0cd
Approach Prima 2.34SC 3.4 fl oz (GS 39)...	6.0c-f	0.3	9.5ef	4.8 c-e	1.8 a-c	2.0a-c
Approach Prima 2.34SC 5 fl oz (GS 39).....	5.5c-f	0.3	6.0ef	3.0 ef	0.8 c-e	1.8bc
Approach Prima 2.34SC 6.8 fl oz (GS 39)...	6.0c-f	0.3	8.8ef	4.0 d-f	1.5 a-d	1.3b-d
Quilt Xcel 10.5 fl oz (GS 39)	7.0a-d	0.6	6.0ef	3.0 ef	0.3 de	1.0cd
<i>P</i> (<i>F</i>) .....	.0002	.08	.0001	.0001	.003	.003

¹ Treatments were applied at GS 31 (29 Mar), GS39 (24 Apr) or GS 60 (8 May). All applications included Induce (0.125% v/v).

² Data represent percent of leaf area with symptoms and signs of disease. Rating on 3 May was at flowering (GS55) and 28 May was at early dough (GS83).

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 15. Effect of fungicide treatments on yield and test weight in wheat.

Treatment, rate/A and application timing ¹	Yield (bu/A) ²	Orthogonal contrast ³ <i>P</i> (F)	Test weight (lb/bu)
Untreated.....	87.9	--	55.7
Caramba 0.75EC 13.5 fl oz (GS 60-61)	97.6	.0623	56.3
Prosaro 3.25SC 6.5 fl oz (GS 60-61).....	90.3	.6308	55.4
Headline 2.09SC 3 fl oz (GS 31)			
Caramba 0.75EC 13.5 fl oz (GS 60-61)	90.7	.5802	55.9
Priaxor 4.17SC 2 fl oz (GS 31)			
Caramba 0.75EC 13.5 fl oz (GS 60-61)	94.0	.2307	56.5
Tilt 3.6EC 2 fl oz (GS 31)			
Prosaro 0.75SC 6.5 fl oz (GS 60-61).....	99.6*	.0270	57.0
Priaxor 4.17SC 2 fl oz (GS 31)			
Twinline 1.75EC 9 fl oz (GS 39)			
Caramba 0.75EC 13.5 fl oz (GS 60-61)	100.5*	.0178	57.3
Approach 2.08EC 6 fl oz (GS 39).....	95.5	.1428	56.8
Approach 2.08EC 3 fl oz (GS 31)			
Approach Prima 2.34SC 6.8 fl oz (GS 39).....	94.9	.1714	56.1
Approach Prima 2.34SC 3.4 fl oz (GS 39).....	95.7	.1317	56.1
Approach Prima 2.34SC 5 fl oz (GS 39).....	97.9*	.0550	56.6
Approach Prima 2.34SC 6.8 fl oz (GS 39).....	92.5	.3685	56.2
Quilt Xcel 10.5 fl oz (GS 39).....	92.7	.3460	56.3
<i>P</i> (F) .....	.40	--	.18

¹ Treatments were applied at GS 31 (29 Mar), GS39 (24 Apr) or GS 60 (8 May). All applications included Induce (0.125% v/v).

² Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013.

³ Means followed by an asterisk are significantly different ($P=0.05$.) from the untreated check according to orthogonal contrast.

VI. WHEAT FUNGICIDE TEST (WHEATFUN413, TAREC, Field 29)

A. PURPOSE: To compare fungicide treatments for control of head scab and foliar diseases

B. EXPERIMENTAL DESIGN:

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

C. APPLICATION OF TREATMENTS: Fungicide treatments were applied with a Lee Spider Sprayer with nozzles spaced 18-in. apart. Sprays were applied at GS 31 using eight, 8003VS nozzles in a volume of 25 gal/A with 24% liquid N on 29 Mar. All other plots received 60 units of 24% liquid N on 29 Mar. Fungicide sprays at GS39 were applied using eight, 8002VS nozzles in a volume of 19.88 gal/A on 24 Apr. Sprays at GS 60-61 were applied on 8 May using Twin Jet nozzles at 60° angles forward and backward delivering a total of 19.88 gal/A. Treatments applied at GS 39 and GS 60-61 were applied with Induce (0.125% v/v).

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated
2. Caramba 0.75EC 13.5 fl oz (GS 60-61)
3. Prosaro 3.25SC 6.5 fl oz (GS 60-61)
4. Headline 2.09SC 3 fl oz (GS 31)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
5. Priaxor 4.17SC 2 fl oz (GS 31)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
6. Tilt 3.6EC 2 fl oz (GS 31)
Prosaro 0.75SC 6.5 fl oz (GS 60-61)
7. Priaxor 4.17SC 2 fl oz (GS 31)
Twinline 1.75EC 9 fl oz (GS 39)
Caramba 0.75EC 13.5 fl oz (GS 60-61)
8. Prosaro 421SC 6.5 fl oz (GS 39)
Prosaro 421SC 6.5 fl oz (GS 61)
9. Stratego YLD 2 fl oz (GS 31)
Prosaro 421SC 6.5 fl oz (GS 61)
10. Quadris Top 8 fl oz (GS 39)
11. Quadris Top 8 fl oz (GS 31)
Quadris Top 8 fl oz (GS61)
12. Quilt Xcel 7 fl oz (GS 31)
Quilt Xcel 10.5 fl oz (GS 39)
13. Quilt Xcel 7 fl oz (GS 31)
A18933A 9 fl oz (GS 61)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Hare Rd., Suffolk
2. Crop history: peanut, 2012; wheat/soybean, 2011; peanut, 2010
3. Planting date and variety: 10 Nov 2012, USG 3665
4. Soil fertility report (17 Jan):

pH.....	6.91	K	65 ppm
Ca.....	467 ppm	Zn.....	0.7 ppm
Mg	42 ppm	Mn.....	4.2 ppm
P	38 ppm	Soil type	Kenansville loamy fine sand

5. Fertilizer: 5-13-30 355 lb/A (10 Nov, 2012)
Liquid nitrogen (24%) 60 lb/A + Manganese 1.5 pt/A (21 Feb)
6. Herbicide: Harmony Extra 0.6 oz/A (21 Feb)
Roundup WeatherMax 22 fl oz + Interro 2.0 qt/A (20 Jun)
7. Insecticide: Baythroid 2EC 2 fl oz/A (4 May)
8. Harvest date: 17 Jun 2013

Table 16. Effect of fungicide treatments on disease incidence in wheat.

Treatment, rate/A and timing ¹	% septoria ² (2 May)		% septoria ² (28 May)		% rust ² (28 May)	
	lower leaves	upper leaves	lower leaves	upper leaves	lower leaves	upper leaves
Untreated	6.0a	1.5	58.8a	38.8 a	3.0 a	4.5a
Caramba 0.75EC 13.5 fl oz (GS 60-61) ..	5.0ab	0.8	20.0b	9.50 b	1.5 bc	1.8b
Prosaro 3.25SC 6.5 fl oz (GS 60-61).....	4.0bc	0.3	15.0bc	6.50 bc	1.0 b-d	1.5bc
Headline 2.09SC 3 fl oz (GS 31)						
Caramba 0.75EC 13.5 fl oz (GS 60-61) ..	3.3b-d	0.3	8.0de	6.0 bc	1.8 b	2.0b
Priaxor 4.17SC 2 fl oz (GS 31)						
Caramba 0.75EC 13.5 fl oz (GS 60-61) ..	2.8cd	0.3	6.3de	3.5 c	1.5 bc	1.3bc
Tilt 3.6EC 2 fl oz (GS 31)						
Prosaro 0.75SC 6.5 fl oz (GS 60-61).....	2.8cd	0.0	10.0cd	5.0 bc	1.8 b	1.8b
Priaxor 4.17SC 2 fl oz (GS 31)						
Twinline 1.75EC 9 fl oz (GS 39)						
Caramba 0.75EC 13.5 fl oz (GS 60-61) ..	3.0cd	1.0	3.5e	1.0 c	0.1 e	0.1d
Prosaro 421SC 6.5 fl oz (GS 39)						
Prosaro 421SC 6.5 fl oz (GS 61).....	4.3a-c	0.5	5.3de	2.0 c	0.1 e	0.8cd
Stratego YLD 2 fl oz (GS 31)						
Prosaro 421SC 6.5 fl oz (GS 61).....	3.0cd	0.1	8.8de	4.0 bc	1.0 b-d	1.5bc
Quadris Top 8 fl oz (GS 39).....	4.5a-c	0.8	8.8de	4.0 bc	0.6 de	0.8cd
Quadris Top 8 fl oz (GS 31)						
Quadris Top 8 fl oz (GS 61).....	3.8b-d	0.1	7.5de	3.8 bc	0.8 c-e	0.8cd
Quilt Xcel 7 fl oz (GS 31)						
Quilt Xcel 10.5 fl oz (GS 39).....	2.0d	0.1	5.0de	3.3 c	0.8 c-e	0.8cd
Quilt Xcel 7 fl oz (GS 31)						
A18933A 9 fl oz (GS 61).....	3.5b-d	0.3	9.0d	3.8 bc	1.0 b-d	0.8cd
<i>P</i> (<i>F</i>).....	.02	.055	.0001	.0001	.0001	.0001

¹ Treatments were applied at GS 31 (29 Mar), GS39 (24 Apr) or GS 60 (8 May). All applications included Induce (0.125% v/v).

² Data represent percent of leaf area with symptoms and signs of disease. Rating on 2 May was at flowering (GS55) and 28 May was at early dough (GS83).

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 17. Effect of fungicide treatments on yield and test weight in wheat.

Treatment, rate/A and application timing ¹	Yield (bu/A) ²	Orthogonal contrast P(F)	Test weight (lb/bu)
Untreated.....	81.1	--	54.8
Caramba 0.75EC 13.5 fl oz (GS 60-61)	88.6	.11	55.3
Prosaro 3.25SC 6.5 fl oz (GS 60-61).....	90.5*	.05	56.2
Headline 2.09SC 3 fl oz (GS 31) Caramba 0.75EC 13.5 fl oz (GS 60-61)	91.7*	.03	56.2
Priaxor 4.17SC 2 fl oz (GS 31) Caramba 0.75EC 13.5 fl oz (GS 60-61)	93.9*	.008	55.9
Tilt 3.6EC 2 fl oz (GS 31) Prosaro 0.75SC 6.5 fl oz (GS 60-61).....	95.7*	.003	56.6
Priaxor 4.17SC 2 fl oz (GS 31) Twinline 1.75EC 9 fl oz (GS 39) Caramba 0.75EC 13.5 fl oz (GS 60-61)	94.7*	.006	55.9
Prosaro 421SC 6.5 fl oz (GS 39) Prosaro 421SC 6.5 fl oz (GS 61).....	91.7*	.03	56.1
Stratego YLD 2 fl oz (GS 31) Prosaro 421SC 6.5 fl oz (GS 61).....	90.7*	.04	56.0
Quadris Top 8 fl oz (GS 39).....	88.7	.10	55.7
Quadris Top 8 fl oz (GS 31) Quadris Top 8 fl oz (GS 61).....	93.2*	.01	56.1
Quilt Xcel 7 fl oz (GS 31) Quilt Xcel 10.5 fl oz (GS 39).....	86.6	.24	55.3
Quilt Xcel 7 fl oz (GS 31) A18933A 9 fl oz (GS 61)	91.3*	.03	55.9
P(F) .....	.21	--	.06

¹ Treatments were applied at GS 31 (29 Mar), GS39 (24 Apr) or GS 60 (8 May). All applications included Induce (0.125% v/v).

² Yields are weight of wheat adjusted to 13.5% moisture. One bushel equals 60 lbs. Wheat was harvested on 17 Jun 2013. Means followed by an asterisk (*) are significantly different from the untreated check at $P=0.05$ according to orthogonal contrast.

VII. EVALUATION OF FUNGICIDES FOR FOLIAR DISEASE CONTROL (CORNFOLFUN113, TAREC Research Farm, Suffolk, Field 9A)

A. PURPOSE: to compare fungicides 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 two, 8002VS nozzles/row delivering 19.88 gal/A at either V4 (four collars, 28 May) or VT (tassel emergence, 26 Jun).

D. TREATMENT, RATE/A AND APPLICATION TIMING:

1. Untreated check
2. Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4)
3. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)
4. Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4)
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)
5. Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V4)
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)
6. Headline 250SC 6 fl oz + Induce 3.2 fl oz (VT)
7. Headline AMP 10 fl oz + Induce 3.2 fl oz (VT)
8. Quilt Xcel 10.5 fl oz + Induce 3.2 fl oz (VT)
9. Aproach 250SC 6 fl oz + Induce 3.2 fl oz (VT)

E. ADDITIONAL INFORMATION:

1. Location: Tidewater Research Farm, Suffolk
2. Crop history: cotton, 2012; peanut, 2011; corn 2010
3. Planting date and variety: 16 Apr, Hubner H4822RC2P
4. Soil fertility report:

pH.....	6.11	K	38 ppm
Ca.....	229 ppm	Zn.....	0.4 ppm
Mg	28 ppm	Mn.....	1.3 ppm
P	32 ppm	Soil type	Kenansville loamy fine sand

5. Fertilization: 8-15-36 300 lb/A (23 Mar)
10-34-0 10 gal/A (16 Apr)
N (24-0-0-3) 60 lb/A (17 Apr, 22 May)
6. Herbicide: 2,4D Amine 1.5 fl oz/A + Roundup WeatherMax 22 fl oz/A (1 Apr)
Atrex 1.0 qt + Interro 2.0 qt/A (18 Apr)
Touchdown 1.0 qt/A (13 May)
7. Harvest date: 4 Sep

Table 18. Effect of treatment on plant health, lodging and disease incidence in corn.

Treatment, rate/A and application timing ¹	% greening ² (26 Jul)	% lodging ³ (26 Jul)	% brown spot ⁴ (26 Jul)	% Northern corn leaf blight ⁵ (26 Jul)	% Southern corn leaf blight ⁵ (26 Jul)
Untreated check	75.8 d	0.3	2.2	3.8 a	1.5
Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4).....	79.2 cd	0.8	1.5	2.8 b	1.2
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT).....	80.0 b-d	0.8	1.2	2.3 b-d	1.4
Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4) Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT).....	82.5 a-c	0.7	1.4	2.3 b-d	1.0
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V4) Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT).....	84.2 a-c	0.3	1.3	1.5 d	1.0
Headline 250SC 6 fl oz + Induce 3.2 fl oz (VT).....	87.5 a	0.7	0.9	2.5 bc	1.2
Headline AMP 10 fl oz + Induce 3.2 fl oz (VT).....	82.5 a-c	1.3	1.4	2.2 b-d	0.6
Quilt Xcel 10.5 fl oz + Induce 3.2 fl oz (VT).....	85.0 ab	0.2	1.3	2.2 b-d	1.3
Approach 250SC 6 fl oz + Induce 3.2 fl oz (VT).....	83.3 a-c	0.3	1.5	1.8 cd	0.9
<i>P</i> (F).....	.01	.19	.13	.0004	.49

¹ V4=four-collar stage (28 May), VT=tasseling (26 Jun).

² Percent of foliage with green tissue at senescence.

³ Percent of plants lodged.

⁴ Percent of lower stalk with symptoms of brown spot.

⁵ Percent leaf area with symptoms on the ear leaf.

Means followed by the letter(s) in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 19. Effect of treatment on yield in corn.

Treatment, rate/A and application timing ¹	Yield ² (bu/A)	Test weight (lb/bu)
Untreated check	152.4	53.2
Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4)	133.4	54.2
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)	149.5	53.0
Stratego YLD 500SC 2 fl oz + Induce 3.2 fl oz (V4) Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)	139.1	54.1
Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (V4) Stratego YLD 500SC 4 fl oz + Induce 3.2 fl oz (VT)	144.1	53.1
Headline 250SC 6 fl oz + Induce 3.2 fl oz (VT)	152.3	54.0
Headline AMP 10 fl oz + Induce 3.2 fl oz (VT)	144.0	53.5
Quilt Xcel 10.5 fl oz + Induce 3.2 fl oz (VT)	147.3	56.5
Approach 250SC 6 fl oz + Induce 3.2 fl oz (VT)	139.9	58.9
<i>P</i> (F).....	.68	.50

¹ V4=four-collar stage (28 May), VT=tasseling (26 Jun).

² Yields are weight of corn adjusted to moisture content of 15.5%. Corn was harvested on 4 Sep. One bushel = 56 lbs of grain.

VIII. NATIONAL COTTONSEED TREATMENT TEST – VIRGINIA LOCATION
(COTSEEDFUN113, TAREC Research Farm, Field 34A)

- 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. Seeding rate of three seed/ft of row
 3. 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/CWT SEED: All seed were treated with Cruiser 9fl oz/cwt
1. Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz
 2. Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz
 3. Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz + Trilex 2000 1.0 fl oz
 4. Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz + Evergol Extend 1.0 fl oz
 5. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Nuflow M 1.75 fl oz
 6. Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Nuflow M 1.75 fl oz + Nusan 30EC 2.0 fl oz
 7. Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed
 8. Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed + A9625C 1.0 g a.i.+ A16148C 2.5 g a.i./100 kg seed
 9. Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed + A9625C 1.0 g a.i.+ A16148C 5.0 g a.i./100 kg seed
 10. Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Metlock 0.36 fl oz + Rizolex 0.3 fl oz
 11. RTU Baytan/Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz
 12. Vitavax-PCNB 6.0 fl oz + Allegiance FL 0.75 fl oz
 13. RTU-PCNB 14.5 fl oz
 14. Allegiance FL 1.5 fl oz
 15. Untreated
 16. Destructive sample check
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: cotton, 2010; corn, 2011; peanut, 2012
 3. Land preparation: rip and strip till into wheat cover crop
 4. Planting date and variety: 18 Apr, DP 1044 B2RF

5. Soil fertility report (17 Jan):

pH.....	6.45	K.....	49 ppm
Ca.....	258 ppm	Zn.....	0.5 ppm
Mg.....	29 ppm	Mn.....	2.3 ppm
P.....	38 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-emergence - Prowl H₂O 1 pt + Cotoran 4L 1 qt/A (18 Apr)

Post-emergence – Roundup WeatherMax 1.0 qt/A (10 May)

Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)

7. Fertilization: ENC 1.0 qt/A (30 May, 21 Jun)

Liquid nitrogen (24%) 24-0-0-3 40 lb/A (10 Jul)

Boron 1.0 qt w/Agrotain 1.5 qt/A (10 Jul)

8. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)

9. Growth regulator: Pentia 8 fl oz/A (5 Jul); 12 fl oz/A (17 Jul)

10. Defoliant/boll opener: Finish 1.0 qt + Folex 10 fl oz + Super Boll 1.0 pt
+ Free Fall 3 fl oz/A (30 Sep)

11. Harvest date: 24 Oct

Table 20. Effect of treatments on emergence and yield in cotton.

Treatment and rate/cwt seed ¹	Plants/ ft ² (20 May)	Yield ³	
		lb/A	bales/A
Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz.....	2.0 ab	3551	3.00
Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz	1.9 ab	3337	2.82
Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz + Trilex 2000 1.0 fl oz	2.2 a	3878	3.27
Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Evergol Prime 0.32 fl oz + Evergol Extend 1.0 fl oz.....	2.2 a	3394	2.86
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Nuflow M 1.75 fl oz	1.9 ab	3412	2.88
Apron XL 0.32 fl oz + Maxim 4FS 0.08 fl oz + Nuflow M 1.75 fl oz + Nusan 30EC 2.0 fl oz	2.0 ab	3542	2.99
Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed	2.2 a	3518	2.97
Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed + A9625C 1.0 g a.i.+ A16148C 2.5 g a.i./100 kg seed.....	1.7 bc	3424	2.89
Apron XL 3LS 7.5 g a.i. + Maxim 4FS 2.5 g a.i. + Systhane 40WP 21.0 g a.i./100 kg seed + Dynasty CST 125FS 0.03 mg a.i./seed + A9625C 1.0 g a.i.+ A16148C 5.0 g a.i./100 kg seed.....	1.8 ab	3406	2.87
Vortex FL 0.08 fl oz + Allegiance FL 0.75 fl oz + Spera 1.8 fl oz + Metlock 0.36 fl oz + Rizolex 0.3 fl oz	1.9 ab	3793	3.20
RTU Baytan/Thiram 3.0 fl oz + Allegiance FL 0.75 fl oz	2.2 a	3376	2.85
Vitavax-PCNB 6.0 fl oz + Allegiance FL 0.75 fl oz.....	1.9 ab	3724	3.14
RTU-PCNB 14.5 fl oz.....	1.1 d	2931	2.47
Allegiance FL 1.5 fl oz.....	2.0 ab	3551	3.00
Untreated.....	1.3 cd	2865	2.42
<i>P</i> (<i>F</i>).....	.0001	.31	.31

¹ Seed treatments were applied by Dr. Craig Rothrock, Coordinator of National Cottonseed Treatment Trials at the University of Arkansas. Seed was planted 18 Apr.

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

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 40.5% of weight and 480 lb/bale. Plots were harvested on 24 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.

IX. COTTON FOUNDATION SEEDLING DISEASE COMMITTEE - COTTON SEED TREATMENT FUNGICIDE TEST (COTSEEDFUN213, TAREC Research Farm, Field 34A)

A. PURPOSE: To evaluate seed treatment fungicides and pre-emergence herbicide in control of pre- and post-emergence damping-off of cotton when pre-emergence herbicides are used

B. EXPERIMENTAL DESIGN:

1. Split-plot design with main plots of eight rows with and without pre-emergence herbicide
2. Subplots of seed treatments in two 30-ft rows per plot
3. Seeding rate of 3.5 seed/ft of row
4. Four replications in randomized complete block design separated by 8-ft alleyways

C. APPLICATION OF TREATMENTS: Seed treatments (S) were applied to “black” seed by personnel with Bayer CropScience.

D. PRE-EMERGENCE HERBICIDE:

1. Untreated
2. Prowl H₂O 1.0 pt + Cotoran 4L 1.0 qt/A

E. SEED TREATMENTS (OZ/CWT):

1. Untreated
2. Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz
3. Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz
4. Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed
5. Untreated destructive sample check

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: cotton 2010, corn 2011, peanut 2012
3. Land preparation: rip and strip till into wheat cover crop
4. Planting date and variety: 18 Apr, FM 1944 GLB2
5. Soil fertility report (17 Jan):

pH.....	6.45	K.....	49 ppm
Ca.....	258 ppm	Zn.....	0.5 ppm
Mg.....	29 ppm	Mn.....	2.3 ppm
P.....	38 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Post-emergence – Roundup WeatherMax 1.0 qt/A (10 May)
Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)

7. Fertilization: ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 40 lb/A (10 Jul)
Boron 1.0 qt w/Agrotain 1.5 qt/A (10 Jul)
8. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
9. Growth regulator: Pentia 8 fl oz/A (5 Jul); 12 fl oz/A (17 Jul)
10. Defoliant/boll opener: Finish 1.0 qt + Folex 10 fl oz + Super Boll 1.0 pt
+ Free Fall 3 fl oz/A (30 Sep)
11. Harvest date: 24 Oct

Table 21. Effect of pre-emergence herbicide on growth of cotton

Herbicide and rate/A	Biomass (g) ¹ (25 Jun)		
	whole plant	tops	roots
No pre-emergence herbicide	37.9 a	33.3 b	4.6
Prowl H ₂ O 1.0 pt + Cotoran 4L 1.0 qt/A	44.5 a	39.8 a	4.8
<i>P</i> (<i>F</i>)	.02	.02	.80

¹ Data are mean of five, randomly selected plants per each destructive sample check plot.

Table 22. Effect of pre-emergence herbicide and seed treatment on emergence, vigor, and growth of cotton.

Herbicide and rate/A, seed treatment and rate/cwt seed ¹	Plants/ft ²		Vigor ³ (10 May)	% Stand (10 May)	Skip index ⁴ (17 May)	Plant height ⁵ (27 Jun)
	3 May	17 May				
No pre-emergence herbicide						
Untreated	0.4	0.7	1.5	11.3	21.5	15.1c
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	0.7	1.1	3.0	32.5	11.3	16.3b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	0.7	1.0	3.0	37.5	13.8	15.7bc
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	0.6	1.1	3.5	41.3	10.5	17.5a
<i>P(F)</i> .....	.39	.61	.74	.62	.11	.0001
Prowl H₂O 1.0 pt + Cotoran 4L 1.0 qt/A						
Untreated	0.5	0.6	1.8	13.8	22.3	14.9b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	0.6	1.0	2.8	27.5	14.3	14.9b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	0.7	1.0	2.5	32.5	15.3	14.6b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	0.7	1.1	3.3	40.0	10.8	18.0a
<i>P(F)</i> .....	.66	.88	.23	.33	.16	.0001
Seed treatment mean						
Untreated	0.4b	0.7b	1.6c	12.5b	21.9a	15.0c
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	0.6a	1.0a	2.9ab	30.0a	12.8b	15.6b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	0.7a	1.0a	2.8b	35.0a	14.5b	15.1bc
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	0.7a	1.1a	3.8a	40.6a	10.6b	17.8a
Split-plot analysis						
Herbicide .....	.68	.15	.44	.67	.33	.006
Seed treatment.....	.006	.001	.0001	.0002	.009	.005
Herbicide x seed treatment .....	.42	.91	.60	.87	.97	.003

¹All seed treated by personnel with Bayer CropScience. ²Determined from counts of two, 30-ft rows per plot. ³Plant vigor rating scale: 1=no vigor, 9=healthy. ⁴Length and number of skips were recorded to calculate a skip index. Skips were counted and reported according to previous methods (Colyer and Vernon, 2005). The skip index was the sum of skips within each of the two, 30-ft rows/plot. Skips were assigned as 0=no skips, 1=skips 12 to 18 in., 2=skips 18-24 in., 3=skips 24-36 in. and 4=skips >36 in. ⁵Determined from measurements of five plants in each plot. 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 23. Effect of pre-emergence herbicide and seed treatment on yield of cotton.

Herbicide and rate/A, seed treatment and rate/cwt seed ¹	Yield ²	
	lb/A	bales/A
No pre-emergence herbicide		
Untreated.....	3482	2.83
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	3860	3.14
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	3700	3.01
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	3993	3.24
<i>P(F)</i> .....	.09	.09
Prowl H₂O 1.0 pt + Cotoran 4L 1.0 qt/A		
Untreated.....	3019 b	2.45 b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	3579 b	2.91 b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	3334 b	2.71 b
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	4795 a	3.90 a
<i>P(F)</i> .....	.0007	.0007
Seed treatment mean		
Untreated.....	3250	2.64
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz	3719	3.02
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz.....	3517	2.86
Spera 1.8 fl oz + Vortex 0.08 fl oz + Allegiance FL 0.75 fl oz + Evergol Extend 1.0 fl oz + Allegiance FL 0.75 fl oz/cwt + Aeris 0.75 mg a.i. seed	4394	3.57
Split-plot analysis		
Herbicide .....	.52	.52
Seed treatment.....	.0001	.0001
Herbicide x seed treatment .....	.004	.004

¹ All seed treated by personnel with Bayer CropScience.

² Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 39.0% of weight and 480 lb/bale. Plots were harvested on 24 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.

X. EVALUATION OF NEMATODE RESISTANCE IN COTTON VARIETIES
(COTVARNEMA113, Morgan Farm)

A. PURPOSE: To evaluate variety resistance to southern root-knot and other nematodes

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 8-ft alleyways
2. Varieties in two, 30-ft rows per plot, 36-in. row spacing and seeding rate of three seed/ft of row

C. VARIETY, COOL GERM (when available), AND SEED TREATMENT:

1. DP 1028 B2RF (76%, Metalaxyl, Pyraclostrobin, Trifloxyystrobin, Chlorpyrifos, Myclobutanil)
2. DP 1137 B2RF (84%, Metalaxyl, Pyraclostrobin, Trifloxyystrobin, Chlorpyrifos, Myclobutanil)
3. DP 1321 B2RF (76%, Metalaxyl, Pyraclostrobin, Trifloxyystrobin, Chlorpyrifos, Myclobutanil, Imidacloprid)
4. ST 5458 B2RF (RK resistance, Gaucho, Vortex, Allegiance, Spera)
5. PHY 339 WRF (Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
6. PHY 367 WRF (RK resistance, 83%, Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
7. PHY 375 WRF (68%, Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
8. PHY 499 WRF (86%, Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
9. NG 1511 B2RF (Fludioxonil, Myclobutanil, Imidacloprid)
10. DG 2285 B2RF (Dynasty CST)
11. PHY 417 WRF (Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
12. PHY 427 WRF (Fludioxonil, Mefemoxam, Myclobutanil, TCMTB, Thiamethoxam)
13. ST 4946 GLB2 (Gaucho, Vortex, Allegiance, Spera)
14. FM1944 GLB2 (Gaucho, Baytan, Vortex, Allegiance)

D. ADDITIONAL INFORMATION:

1. Location: Morgan Farm, Suffolk
2. Crop history: Continuous cotton since 2000
3. Land preparation: disk in early spring followed by rip and strip till rows
4. Planting date: 14 May
5. Soil fertility report (11 Mar):

pH.....	6.47	Mn	2.3 ppm
Ca.....	409 ppm	Cu.....	0.5 ppm
Mg	41 ppm	Fe	14.3 ppm
P	37 ppm	B.....	0.2 ppm
K.....	65 ppm		
Zn	0.8 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (11 Mar):

Nematodes/500 cc soil

Root knot	500
Lesion	40
Spiral	220
Lance.....	20

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 24. Emergence, thrips injury, vigor, growth and flower counts in cotton varieties.

Variety	Plants/ft ¹ (12 Jun)	Thrips Injury ² (20 Jun)	Vigor ³ (20 Jun)	No. missing row ft. ⁴ (20 Jun)	Plant height (in.) ⁵ (16 Jul)	Flowers/ 12 ft ⁴ (22 Jul)
DP 1028 B2RF.....	2.5 a-c	2.8 b	6.0 c	0.8 e	32.9 cd	21.5 b
DP 1137 B2RF.....	2.2 cd	3.0 b	6.8 ab	1.5 de	33.9 bc	21.5 b
DP 1321 B2RF.....	2.2 cd	2.5 b	6.5 bc	1.5 de	32.0 de	33.8 a
ST 5458 B2RF	2.0 de	2.5 b	6.8 ab	3.8 bc	33.1 cd	33.0 a
PHY 339 WRF	2.4 a-c	3.0 b	6.3 bc	1.3 de	34.0 b	35.0 a
PHY 367 WRF	2.4 a-c	2.5 b	6.5 bc	1.5 de	31.6 e	34.5 a
PHY 375 WRF	2.6 a	2.8 b	6.5 bc	1.0 e	35.6 a	35.8 a
PHY 499 WRF	2.6 ab	2.5 b	7.3 a	1.8 c-e	34.8 ab	22.3 b
NG 1511 B2RF	1.8 e	2.5 b	6.5 bc	4.0 b	34.2 b	32.3 a
DG 2285 B2RF	2.6 ab	2.3 b	6.0 c	1.5 de	33.0 cd	32.5 a
PHY 417 WRF	2.3 b-d	4.0 a	6.0 c	1.8 c-e	32.3 de	24.8 b
PHY 427 WRF	2.2 cd	4.5 a	6.0 c	2.8 b-e	32.7 d	23.3 b
ST 4946 GLB2.....	1.8 e	2.8 b	6.5 bc	3.3 b-d	31.6 e	33.5 a
FM1944 GLB2.....	1.2 f	3.0 b	5.3 d	10.0 a	27.0 f	19.8 b
<i>P(F)</i>.....	.0001	.0001	.0001	.0001	.0001	.0001

¹ Determined from counts of two, 30 ft rows per plot.

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

³ Plant vigor rating scale: 1=no vigor, 9=healthy.

⁴ Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot.

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

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 25. Effect of treatments on nematode populations in cotton.

Variety	Nematodes/500 cc soil (23 Aug) ¹				
	Root knot juvenile	Lesion	Stunt	Spiral	Stubby root
DP 1028 B2RF	0	0	20	3400	0
DP 1137 B2RF	40	0	40	3580	20
DP 1321 B2RF	3080	40	0	4720	20
ST 5458 B2RF	60	20	40	2440	40
PHY 339 WRF	580	20	20	7560	20
PHY 367 WRF	0	20	20	5800	120
PHY 375 WRF	2580	20	0	5320	40
PHY 499 WRF	860	0	20	4220	0
NG 1511 B2RF	60	0	40	2500	0
DG 2285 B2RF	640	0	0	6700	0
PHY 417 WRF	40	0	0	4560	0
PHY 427 WRF	0	0	40	4620	100
ST 4946 GLB2	40	20	20	4220	140
FM1944 GLB2	480	0	0	4720	0

¹ Soil was sampled on 23 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 26. Effect of treatments on earliness, root gall and yield of cotton.

Variety	Open bolls ¹ (16 Sep)	Root galling ² (2 Oct)	Yield ³	
			lb/A	bales/A
DP 1028 B2RF	33.8 c-e	1.0 cd	3182	2.8 a-c
DP 1137 B2RF	33.3 c-e	1.6 bc	3158	2.7 b-d
DP 1321 B2RF	41.5 a-e	3.4 a	3261	2.8 bc
ST 5458 B2RF	26.5 de	1.7 bc	3273	2.7 cd
PHY 339 WRF	59.0 a	0.9 cd	3485	3.0 a-c
PHY 367 WRF	55.0 ab	1.1 cd	3485	3.0 a-c
PHY 375 WRF	58.8 a	2.3 b	3642	3.1 a-c
PHY 499 WRF	45.8 a-d	3.6 a	3370	3.0 a-c
NG 1511 B2RF	41.0 a-e	1.6 bc	3648	3.3 a
DG 2285 B2RF	36.8 b-e	1.2 cd	3436	3.0 a-c
PHY 417 WRF	47.8 a-c	0.7 d	3216	2.8 bc
PHY 427 WRF	42.8 a-e	0.8 d	3446	2.9 a-c
ST 4946 GLB2	24.3 e	1.1 cd	3582	3.1 ab
FM1944 GLB2	23.5 e	1.7 bc	2940	2.4 d
<i>P</i> (F) .....	.009	.0001	.19	.03

¹ Determined from counts in a 6-ft section of each row per plot.

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 weight (480 lb bale) was determined by ginning samples of seed cotton from each variety. Plots were harvested on 20 Nov.

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

XI. YIELD AND GROWTH RESPONSE OF COTTON VARIETIES WITH SEED TREATMENT AND FOLIAR NEMATICIDES COMPARED TO TEMIK 15G IN-FURROW (COTVARNEMA213, 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 subplot at 36-in. row spacing and seeding rate of three seed/ft of row
- C. APPLICATION OF TREATMENTS: Temik 15G was applied to the seed furrow (F) at planting (15 May) with a Noble box. BCS-AR685 was mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow (F) at planting. Seed treatments (S) were applied by personnel with Bayer CropScience. Gaucho 600 0.5 mg a.i./seed for thrips control and Vortex 0.08 oz/Allegiance 0.75 oz/Spera 1.7 oz/cwt as a base fungicide treatment was applied to all seed. Vydate L was applied as a foliar spray (FS) with a backpack sprayer having two, 8004VS nozzles/row spaced 18-in. apart and delivering 19.5 gal/A at the two-leaf stage (4 Jun) and pin head square (3 Jul).
- D. VARIETY (Main plots): cool germ data not available
1. ST 4946 GLB2
 2. FM 1944 GLB2 (root-knot nematode susceptible standard)
- E. TREATMENT, RATE AND APPLICATION METHOD (Sub-plots): F=in furrow, S=seed treatment, FS=foliar spray.
1. Untreated
 2. Temik 15G 5 lb/A (F)
 3. BCS-AR685 18 fl oz (F)
+ Poncho/Votivo .424 mg a.i./seed + Aeris 0.75 mg a.i./seed (S)
Vydate L 16 fl oz/A (FS, 2nd leaf, pin head square)
 4. Aeris SAS 0.75 mg a.i./seed (S)
 5. Aeris SAS 0.75 mg a.i. + USF0738 0.175 mg a.i./seed (S)
 6. Temik 15G 5 lb/A (F)
Vydate CL-V 16 fl oz/A (FS, 2nd leaf, pin head square)
- F. ADDITIONAL INFORMATION:
1. Location: Morgan Farm, 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: 15 May

5. Soil fertility report (11 Mar):

pH.....	6.62	Mn	2.3 ppm
Ca.....	327 ppm	Cu.....	0.4 ppm
Mg	351 ppm	Fe	8.5 ppm
P.....	34 ppm	B.....	0.2 ppm
K.....	93 ppm		
Zn	1 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (15 May):

Nematodes/500 cc soil	
Stunt	220
Lesion.....	40
Spiral	300

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 27. Effect of treatments on emergence, thrips injury, vigor, and growth in cotton.

Variety, treatment, rate and application method ¹	Plants/ft ² (12 Jun)	Thrips injury ³ (20 Jun)	Vigor ⁴ (20 Jun)	No. missing row ft ⁵ (20 Jun)	Plant height (in.) ⁶ (16 Jul)	Flowers/ 12 ft ⁷ (22 Jul)
ST 4946 GLB2						
Untreated	1.8	3.0 a	6.8	5.8	31.1 b	26.3
Temik 15G 5 lb/A (F).....	1.8	2.5 ab	7.3	5.5	33.0 a	22.3
BCS-AR685 18 fl oz (F)						
+ Poncho/Votivo .424 mg a.i./seed						
+ Aeris .75 mg a.i./seed (S).....	1.7	2.0 b	7.3	8.0	31.6 b	22.0
Aeris SAS 0.75 mg a.i./seed (S)	1.9	2.5 ab	7.0	5.3	30.8 b	22.5
Aeris SAS 0.75 mg a.i.						
+ USF0738 0.175 mg a.i./seed (S)..	1.8	2.8 a	6.8	6.3	31.7 b	21.8
Temik 15G 5 lb/A (F)						
Vydate CL-V 16 fl oz/A (FS).....	1.8	2.5 ab	7.5	7.0	33.1 a	25.0
P(F) .....	.84	.08	.11	.75	.0001	.61
FM 1944 GLB2						
Untreated	1.6 b	2.8	6.0	7.5b	29.0 b	18.0
Temik 15G 5 lb/A (F).....	1.5 bc	2.8	7.0	8.5b	32.0 a	24.5
BCS-AR685 18 fl oz (F)						
+ Poncho/Votivo .424 mg a.i./seed						
+ Aeris .75 mg a.i./seed (S).....	1.4 bc	2.5	7.0	8.3b	31.2 a	18.8
Aeris SAS 0.75 mg a.i./seed (S)	1.4 c	3.0	6.5	13.5a	29.1 b	18.0
Aeris SAS 0.75 mg a.i.						
+ USF0738 0.175 mg a.i./seed (S)..	2.1 a	3.0	6.3	3.0c	29.4 b	20.0
Temik 15G 5 lb/A (F)						
Vydate CL-V 16 fl oz/A (FS).....	1.5 bc	2.8	7.0	8.8b	31.2 a	18.8
P(F) .....	.0001	.45	.06	.007	.0001	.29
Variety mean						
ST 4946 GLB2	1.8	2.5 b	7.1 a	6.3	31.9	23.3 a
FM 1944 GLB2	1.6	2.8 a	6.6 b	8.3	30.3	19.7 b
Treatment mean						
Untreated	1.7	2.9 a	6.4 c	6.6	30.1	22.1
Temik 15G 5 lb/A (F).....	1.6	2.6 ab	7.1 ab	7.0	32.5	23.4
BCS-AR685 18 fl oz (F)						
+ Poncho/Votivo .424 mg a.i./seed						
+ Aeris .75 mg a.i./seed (S).....	1.6	2.3 b	7.1 ab	8.1	31.4	20.4
Aeris SAS 0.75 mg a.i./seed (S)	1.7	2.8 a	6.8 bc	9.4	30.0	20.3
Aeris SAS 0.75 mg a.i.						
+ USF0738 0.175 mg a.i./seed (S)..	1.9	2.9 a	6.5 c	4.6	30.5	20.9
Temik 15G 5 lb/A (F)						
Vydate CL-V 16 fl oz/A (FS).....	1.6	2.6 ab	7.3 a	7.9	32.2	21.9
Split-plot analysis, P(F)						
Variety .....	.03	.04	.002	.03	.44	.10
Treatment .....	.009	.04	.003	.06	.0001	.68
Variety x treatment .....	.002	.47	.90	.02	.08	.23

¹S=seed treatment; F=in furrow; FS = foliar spray applied at 2nd leaf (4 Jun) and pinhead square (3 Jul).

²Determined from counts of two, 30-ft rows per plot. ³Thrips damage rating scale: 0=no damage, 10=severe damage. ⁴Plant vigor rating scale: 1=no vigor, 9=healthy. ⁵Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot. ⁶Measurements of three, randomly selected plants per row in each plot. ⁷Determined from counts in two, 6-ft. sections of row per plot. Means followed by the same letter(s) in a column or group are not significantly different at $P=0.05$ according to Fisher's Protected LSD.

Table 28. Effect of seed treatments on nematode in cotton.

Variety, treatment, rate and application method ¹	Nematodes/500 cc soil (25 Jun) ²				
	Root knot	Lesion	Stunt	Spiral	Ring
ST 4946 GLB2					
Untreated.....	0	0	80	40	0
Temik 15G 5 lb/A (F).....	0	0	0	60	0
BCS-AR685 18 fl oz (F) + Poncho/Votivo .424 mg a.i./seed + Aeris .75 mg a.i./seed (S)	20	0	20	40	0
Aeris SAS 0.75 mg a.i./seed (S)	0	0	40	60	0
Aeris SAS 0.75 mg a.i. + USF0738 0.175 mg a.i./seed (S)	40	0	80	100	0
Temik 15G 5 lb/A (F)					
Vydate CL-V 16 fl oz/A (FS).....	0	0	0	0	0
FM 1944 GLB2					
Untreated.....	0	0	120	20	0
Temik 15G 5 lb/A (F).....	0	0	60	60	0
BCS-AR685 18 fl oz (F) + Poncho/Votivo .424 mg a.i./seed + Aeris .75 mg a.i./seed (S)	0	40	40	0	0
Aeris SAS 0.75 mg a.i./seed (S)	0	20	60	60	0
Aeris SAS 0.75 mg a.i. + USF0738 0.175 mg a.i./seed (S)	40	0	140	40	20
Temik 15G 5 lb/A (F)					
Vydate CL-V 16 fl oz/A (FS).....	40	0	20	20	0

¹ S=seed treatment, F=in furrow; FS = foliar spray applied at 2nd leaf (4 Jun) and pinhead square (3 Jul).

² Soil was sampled on 25 Jun and was composites of the four reps of each treatment.

Table 29. Effect of treatments on earliness, root gall and yield of cotton.

Variety, treatment, rate and application method ¹	Open Bolls ² (17 Sep)	Root galling ³ (4 Oct)	Yield ⁴	
			lb/A	bales/A
ST 4946 GLB2				
Untreated	38.8	2.2 a	3309	2.8
Temik 15G 5 lb/A (F)	40.3	1.4 b	3957	3.3
BCS-AR685 18 fl oz (F)				
+ Poncho/Votivo .424 mg a.i./seed				
+ Aeris .75 mg a.i./seed (S)	34.3	1.4 b	3536	3.0
Aeris SAS 0.75 mg a.i./seed (S)	37.8	2.3 a	3567	3.0
Aeris SAS 0.75 mg a.i.				
+ USF0738 0.175 mg a.i./seed (S)	43.8	1.4 b	3485	2.9
Temik 15G 5 lb/A (F)				
Vydate CL-V 16 fl oz/A (FS)	37.5	1.4 b	3802	3.2
<i>P</i> (F) .....	.85	.007	.19	.19
FM 1944 GLB2				
Untreated	30.5bc	2.4 ab	3125	2.6
Temik 15G 5 lb/A (F)	41.5a	1.5 c	3682	3.1
BCS-AR685 18 fl oz (F)				
+ Poncho/Votivo .424 mg a.i./seed				
+ Aeris .75 mg a.i./seed (S)	26.5c	2.1 ab	3258	2.7
Aeris SAS 0.75 mg a.i./seed (S)	38.3ab	2.6 a	2946	2.5
Aeris SAS 0.75 mg a.i.				
+ USF0738 0.175 mg a.i./seed (S)	31.5bc	2.3 ab	3273	2.7
Temik 15G 5 lb/A (F)				
Vydate CL-V 16 fl oz/A (FS)	34.3a-c	1.9 bc	3303	2.8
<i>P</i> (F) .....	.03	.003	.13	.13
Variety mean				
ST 4946 GLB2	38.7	1.7	3609	3.1
FM 1944 GLB2	33.8	2.1	3265	2.7
Treatment mean				
Untreated	34.6	2.3 ab	3217 b	2.7b
Temik 15G 5 lb/A (F)	40.9	1.4 d	3819 a	3.2a
BCS-AR685 18 fl oz (F)				
+ Poncho/Votivo .424 mg a.i./seed				
+ Aeris .75 mg a.i./seed (S)	30.4	1.8 cd	3397 b	2.9b
Aeris SAS 0.75 mg a.i./seed (S)	38.0	2.4 a	3256 b	2.7b
Aeris SAS 0.75 mg a.i.				
+ USF0738 0.175 mg a.i./seed (S)	37.6	1.9 bc	3379 b	2.8b
Temik 15G 5 lb/A (F)				
Vydate CL-V 16 fl oz/A (FS)	35.9	1.7 cd	3553 ab	3.0ab
Split-plot analysis, <i>P</i>(F)				
Variety .....	.16	.39	.12	.10
Treatment .....	.22	.0001	.02	.02
Variety x treatment .....	.53	.45	.77	.77

¹ S=seed treatment, F=in furrow; FS = foliar spray applied at 2nd leaf (4 Jun) and pinhead square (3 Jul).

² Determined from counts in a 6-ft section of each row per plot.

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

⁴ 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 20 Nov.

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

XII. BAYER COTTON SEED TREATMENT NEMATICIDE TEST (COTSEEDNEMA213, Morgan Farm, Suffolk)

A. PURPOSE: To compare combinations of Aeris Seed Applied System (SAS), Gaucho and experimental biologicals for control of 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
3. Seeding rate of 3.5 seed/ft of row

C. APPLICATION OF TREATMENTS: All treatments received Baytan 30 10.0 g + Allegiance FL 15.6 g + Vortex FL 2.5 g a.i./100 kg seed as a base seed treatment. All seed treatments were applied by personnel with Bayer CropScience. Temik 15G was applied to the seed furrow with a Noble Box (14 May).

D. TREATMENT AND RATE (a.i./seed, unless otherwise indicated):

1. Gaucho 600FS 0.375 mg
2. Aeris Seed Applied System 0.375 mg
3. Gaucho 600FS 0.375 mg a.i./seed
+ L1946 SC 1 MIU/seed
4. Gaucho 600FS 0.375 mg a.i./seed
+ L1999 SC 1 MIU/seed
5. Gaucho 600FS 0.375 mg a.i./seed
+ L1947 SC 1 MIU/seed
6. Gaucho 600FS 0.375 mg a.i./seed
+ Votivo 240FS 1 MIU/seed
7. Aeris Seed Applied System 0.375 mg
+ L1946 SC 1 MIU/seed
8. Temik 15G 5 lb/A (F)

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: 14 May, FM 1944 GLB2
5. Soil fertility report (11 Mar):

pH.....	6.62	Mn	2.3 ppm
Ca.....	327 ppm	Cu.....	0.4 ppm
Mg	35 ppm	Fe	8.5 ppm
P	64 ppm	B.....	0.2 ppm
K.....	93 ppm		
Zn	1 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (11 Mar):
- | Nematodes/500 cc soil | |
|-----------------------|-----|
| Root knot | 500 |
| Lesion | 40 |
| Spiral | 220 |
| Lance | 20 |
7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 30. Effect of treatments on emergence, vigor, thrips injury, growth and flowers in cotton.

Treatment and rate a.i./seed (unless otherwise indicated) ¹	Plants/ft ²		Vigor ³ (24 Jun)	Thrips injury ⁴ (24 Jun)	No. missing row ft. ⁵ (24 Jun)	Plant height (in.) ⁶ (16 Jul)	Flowers/ 12 ft ⁷ (22 Jul)
	12 Jun	24 Jun					
Gaicho 600FS 0.375 mg.....	1.2	1.2	5.5	3.0 a	10.0	30.7 c	22.3
Aeris Seed Applied System 0.375 mg ..	1.2	1.2	5.5	2.3 bc	11.5	30.1 c	19.0
Gaicho 600FS 0.375 mg + L1946 SC 1 MIU/seed	1.3	1.3	5.8	3.0 a	8.0	31.2 bc	18.8
Gaicho 600FS 0.375 mg + L1999 SC 1 MIU/seed	1.3	1.3	5.5	2.3 bc	8.0	31.1 bc	20.8
Gaicho 600FS 0.375 mg + L1947 SC 1 MIU/seed	1.3	1.4	6.0	2.8 ab	6.8	32.3 b	23.3
Gaicho 600FS 0.375 mg + Votivo 240FS 1 MIU/seed.....	1.2	1.2	5.5	2.8 ab	11.3	31.1 bc	22.3
Aeris Seed Applied System 0.375 mg + L1946 SC 1 MIU/seed	1.3	1.2	5.3	2.8 ab	9.8	30.6 c	22.8
Temik 15G 5 lb/A (F).....	1.4	1.4	6.5	2.0 c	6.5	34.0 a	29.3
<i>P</i> (F) .....	.20	.20	.07	.02	.09	.0001	.13

¹ F=in furrow. All seed treatments received Baytan 30 + Allegiance FL + Vortex FL seed as a base seed treatment; seed treatments were applied by Bayer CropScience.

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

³ Plant vigor rating scale: 1=no vigor, 9=healthy.

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

⁵ Determined from two, 30-ft rows per plot.

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

⁷ Determined from counts in a 6-ft section of each 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 31. Effect of treatments on nematode populations in cotton.

Treatment and rate a.i./seed (unless otherwise indicated) ¹	Nematodes/500 cc soil (22 Aug) ²			
	Root knot juvenile	Lesion	Spiral	Stubby root
Gaicho 600FS 0.375 mg	2180	20	740	40
Aeris Seed Applied System 0.375 mg	6040	0	1420	140
Gaicho 600FS 0.375 mg + L1946 SC 1 MIU/seed	4220	20	120	80
Gaicho 600FS 0.375 mg + L1999 SC 1 MIU/seed	4480	40	1160	100
Gaicho 600FS 0.375 mg + L1947 SC 1 MIU/seed	340	20	1240	0
Gaicho 600FS 0.375 mg + Votivo 240FS 1 MIU/seed	5300	40	1020	120
Aeris Seed Applied System 0.375 mg + L1946 SC 1 MIU/seed	1600	0	1880	0
Temik 15G 5 lb/A (F)	360	40	2040	0

¹ F=in furrow. All seed treatments received Baytan 30 + Allegiance FL + Vortex FL seed as a base seed treatment. All seed treatments were applied by Bayer CropScience.

² Soil was sampled on 22 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 32. Effect of treatments on earliness, root gall and yield of cotton.

Treatment and rate a.i./seed (unless otherwise indicated) ¹	Open bolls ² (16 Sep)	Root galling ³ (19 Sep)	Yield ⁴	
			lb/A	bales/A
GaUCHO 600FS 0.375 mg.....	19.5	2.3 a	2853	2.3
Aeris Seed Applied System 0.375 mg.....	12.5	1.7 a-c	2732	2.2
GaUCHO 600FS 0.375 mg + L1946 SC 1 MIU/seed	25.0	1.0 de	2937	2.4
GaUCHO 600FS 0.375 mg + L1999 SC 1 MIU/seed	18.3	2.1 ab	2980	2.4
GaUCHO 600FS 0.375 mg + L1947 SC 1 MIU/seed	23.3	1.3 c-e	3058	2.5
GaUCHO 600FS 0.375 mg + Votivo 240FS 1 MIU/seed	24.5	1.5 b-d	2783	2.3
Aeris Seed Applied System 0.375 mg + L1946 SC 1 MIU/seed	19.8	2.1 ab	3064	2.5
Temik 15G 5 lb/A (F)	32.0	0.8 e	3470	2.8
<i>P</i> (F) .....	.39	.0001	.07	.07

¹ F=in furrow. All seed treatments received Baytan 30 + Allegiance FL + Vortex FL seed as a base seed treatment; seed treatments were applied by Bayer CropScience.

² Determined from counts in a 6-ft section of each row per plot.

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

⁴ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 39.4% of weight and 480 lb/bale. Plots were harvested on 20 Nov.

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

XIII. BAYER COTTON SEED TREATMENT NEMATICIDE TEST (COTSEEDNEMA313, Morgan Farm, Suffolk)

- A. PURPOSE: To compare combinations of Aeris Seed Applied System (SAS), Gaucho and experimental biological for control of nematodes in cotton varieties.
- B. EXPERIMENTAL DESIGN:
1. Split-plot design with treatments in main plots and varieties in subplots, randomized complete blocks separated by 8-ft alleys
 2. Two, 30-ft rows per subplot with 36-in. row spacing
 3. Seeding rate of 3.5 seed/ft of row
- C. APPLICATION OF TREATMENTS: All treatments received Baytan 30 10.0 g + Allegiance FL 15.6 g + Vortex FL 2.5 g a.i./100 kg seed as a base seed treatment. All seed treatments were applied by personnel with Bayer CropScience.
- D. TREATMENT AND RATE (A.I./seed, unless otherwise indicated):
1. Gaucho 600FS 0.375 mg
 2. Gaucho 600FS 0.375 mg + L1946 SC 1 MIU/seed
 3. Gaucho 600FS 0.375 mg + L1999 SC 1 MIU/seed
 4. Gaucho 600FS 0.375 mg + L1947 SC 1 MIU/seed
 5. Gaucho 600FS 0.375 mg + L2030 1 MIU/seed
 6. Gaucho 600FS 0.375 mg + Votivo 240FS 1 MIU/seed
 7. Aeris Seed Applied System 0.375 mg
- E. VARIETIES:
1. ST 4946 GLB2
 2. FM 1944 GLB2
 3. ST 5458 B2RF
- 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
 4. Planting date: 14 May

5. Soil fertility report (11 Mar):

pH.....	6.62	Mn	2.3 ppm
Ca.....	327 ppm	Cu.....	0.4 ppm
Mg	35 ppm	Fe	8.5 ppm
P.....	64 ppm	B.....	0.2 ppm
K.....	93 ppm		
Zn	1 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (11 Mar):

Nematodes/500 cc soil	
Root knot.....	500
Lesion.....	40
Spiral	220
Lance.....	20

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb + Boron 2.0 qt/A (28 Jun, 10 Jul)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 33. Effect of treatments on emergence, seedling disease, plant vigor and thrips injury in cotton.

Treatment, rate and variety ¹	Plants/ft ²		Vigor ³ (19 Jun)	Thrips injury ⁴ (19 Jun)	No. missing row ft/60 ft ⁵ (19 Jun)	Plant height (in.) ⁶ (18 Jul)	Flowers/ 12 ft ⁷ (23 Jul)
	12 Jun	25 Jun					
Gaucht 600FS 0.375 mg a.i./seed							
ST 4946 GLB2	1.8a	1.8a	5.5	3.0	3.8	33.1 a	26.0
FM 1944 GLB2	1.4b	1.4b	5.0	3.0	8.8	30.8 b	21.8
ST 5458 B2RF	1.8a	1.8a	6.0	2.5	3.5	32.0 ab	28.8
P(F).....	.007	.005	.07	.13	.09	.002	.19
Gaucht 600FS 0.375 mg a.i./seed + L1946 SC 1 MIU/seed							
ST 4946 GLB2	1.8a	1.8a	5.5 a	2.8	5.8 b	33.0 a	21.0
FM 1944 GLB2	1.2b	1.2b	4.5 b	2.5	10.0 a	29.6 b	22.3
ST 5458 B2RF	1.9a	1.8a	5.5 a	2.8	3.5 a	32.0 a	26.5
P(F).....	.01	.01	.04	.42	.001	.0001	.14
Gaucht 600FS 0.375 mg a.i./seed + L1999 SC 1 MIU/seed							
ST 4946 GLB2	1.9a	1.9a	6.0	2.8	3.0 b	33.4 a	28.8
FM 1944 GLB2	1.4b	1.4b	5.0	2.8	7.5 a	31.3 b	19.8
ST 5458 B2RF	1.8a	1.8a	6.0	2.8	4.5 b	32.0 b	26.8
P(F).....	.05	.05	.08	1.0	.05	.003	.12
Gaucht 600FS 0.375 mg a.i./seed + L1947 SC 1 MIU/seed							
ST 4946 GLB2	1.7a	1.8a	6.3	3.0	4.8	33.7 a	22.3
FM 1944 GLB2	1.3b	1.3b	5.0	3.0	6.8	30.9 c	21.3
ST 5458 B2RF	1.8a	1.9a	5.8	2.3	4.5	32.6 b	27.5
P(F).....	.02	.02	.10	.17	.50	.0001	.12
Gaucht 600FS 0.375 mg a.i./seed + L2030 1 MIU/seed							
ST 4946 GLB2	1.8a	1.8a	5.8	2.5	3.5 b	33.1 a	25.5
FM 1944 GLB2	1.3b	1.3b	4.8	2.8	8.0 a	30.9 b	22.0
ST 5458 B2RF	1.9a	2.1a	5.8	2.5	3.3 b	31.3 b	23.0
P(F).....	.003	.002	.08	.77	.03	.0002	.40
Gaucht 600FS 0.375 mg a.i./seed + Votivo 240FS 1 MIU/seed							
ST 4946 GLB2	1.9a	2.0a	6.0 a	2.5	3.0 b	33.0 a	23.8
FM 1944 GLB2	1.5b	1.5b	5.3 b	2.8	7.0 a	29.7 c	22.3
ST 5458 B2RF	2.1a	2.1a	6.3 a	3.0	2.5 b	31.2 b	26.8
P(F).....	.02	.008	.006	.24	.0003	.0001	.08
Aeris Seed Applied System 0.375 mg a.i./seed							
ST 4946 GLB2	1.8a	1.8a	6.0 a	2.0	4.3	31.4 a	25.8
FM 1944 GLB2	1.3b	1.4b	5.0 b	2.5	7.8	29.0 b	20.0
ST 5458 B2RF	1.8a	1.8a	6.0 a	2.0	4.5	32.0 a	22.0
P(F).....	.0001	.0001	.0001	.30	.09	.0001	.16
Treatment mean							
Gaucht 600FS 0.375 mg a.i./seed	1.7	1.7b	5.5 ab	2.8 a	5.3	32.0 ab	25.5
Gaucht 600FS 0.375 mg a.i./seed + L1946 SC 1 MIU/seed	1.6	1.6b	5.2 b	2.7 a	6.4	31.5 bc	23.3
Gaucht 600FS 0.375 mg a.i./seed + L1999 SC 1 MIU/seed	1.7	1.7b	5.7 a	2.8 a	5.0	31.3 bc	24.8
Gaucht 600FS 0.375 mg a.i./seed + L1947 SC 1 MIU/seed	1.6	1.7b	5.7 a	2.8 a	5.3	32.4 a	23.7
Gaucht 600FS 0.375 mg a.i./seed + L2030 1 MIU/seed	1.7	1.7a	5.4 ab	2.6 ab	4.9	31.8 ab	23.5
Gaucht 600FS 0.375 mg a.i./seed + Votivo 240FS 1 MIU/seed	1.8	1.9a	5.8 a	2.8 a	4.2	31.3 bc	24.3
Aeris Seed Applied System 0.375 mg a.i./seed	1.6	1.7b	5.7 a	2.2 b	5.5	30.8 c	22.6
Split-plot analysis							
Treatment.....	.10	.0001	.0002	.05	.34	.0002	.66
Variety.....	.0001	.04	.07	.058	.0001	.005	.02
Treatment by variety.....	.91	.79	.96	.50	.82	.18	.33

¹All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by Bayer CropScience. ²Determined from counts of two, 30-ft rows per plot. ³Plant vigor rating scale: 1=no vigor, 9=healthy. ⁴Thrips injury rating scale: 0=no damage, 10=severe damage. ⁵Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot. ⁶Measurements of three, randomly selected plants per row in each plot. ⁷Determined from counts in a 6-ft section of each row 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).

Table 34. Nematode populations in cotton.

Treatment, rate and variety ¹	Nematodes/500 cc soil (20 Aug) ²					
	Root knot juvenile	Lesion	Stunt	Spiral	Ring	Stubby root
Gaucho 600FS 0.375 mg a.i./seed						
ST 4946 GLB2	280	0	0	140	0	220
FM 1944 GLB2	440	20	40	480	0	200
ST 5458 B2RF	1680	60	180	720	0	100
Gaucho 600FS 0.375 mg a.i./seed + L1946 SC 1 MIU/seed						
ST 4946 GLB2	1300	0	80	440	0	60
FM 1944 GLB2	3060	0	20	580	0	20
ST 5458 B2RF	2020	20	0	540	0	60
Gaucho 600FS 0.375 mg a.i./seed + L1999 SC 1 MIU/seed						
ST 4946 GLB2	1460	0	80	280	60	20
FM 1944 GLB2	2960	0	20	180	0	120
ST 5458 B2RF	1440	0	20	420	0	200
Gaucho 600FS 0.375 mg a.i./seed + L1947 SC 1 MIU/seed						
ST 4946 GLB2	20	0	0	300	180	20
FM 1944 GLB2	3800	0	40	440	0	140
ST 5458 B2RF	280	20	40	580	0	40
Gaucho 600FS 0.375 mg a.i./seed + L2030 1 MIU/seed						
ST 4946 GLB2	3280	0	200	360	0	380
FM 1944 GLB2	2440	0	140	780	0	80
ST 5458 B2RF	2440	0	200	840	0	260
Gaucho 600FS 0.375 mg a.i./seed + Votivo 240FS 1 MIU/seed						
ST 4946 GLB2	300	0	220	600	0	140
FM 1944 GLB2	1120	0	160	200	0	300
ST 5458 B2RF	800	0	280	160	0	280
Aeris Seed Applied System 0.375 mg a.i./seed						
ST 4946 GLB2	1140	40	60	260	0	120
FM 1944 GLB2	1420	20	40	320	0	60
ST 5458 B2RF	1540	0	120	400	0	200

¹ All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment. All seed treatments were applied by personnel with Bayer CropScience.

² Soil was sampled on 20 Aug and was composites of the four reps of each treatment.

Table 35. Effect of treatments on earliness, root gall and yield of cotton.

Treatment, rate and variety ¹	Open bolls ² (17 Sep)	Root galling ³ (10 Oct)	Yield ⁴	
			lb/A	bales/A
Gaucht 600FS 0.375 mg a.i./seed				
ST 4946 GLB2.....	38.3	1.9	3691 a	3.2 a
FM 1944 GLB2.....	24.8	1.9	3004 b	2.5 b
ST 5458 B2RF.....	32.3	1.9	3204 ab	2.8 ab
P(F)	.10	1.0	.04	.02
Gaucht 600FS 0.375 mg a.i./seed + L1946 SC 1 MIU/seed				
ST 4946 GLB2.....	26.3	2.0	3446 a	3.0 a
FM 1944 GLB2.....	28.8	2.6	2704 b	2.2 b
ST 5458 B2RF.....	30.3	2.6	3164 a	2.7 a
P(F)	.09	.16	.004	.001
Gaucht 600FS 0.375 mg a.i./seed + L1999 SC 1 MIU/seed				
ST 4946 GLB2.....	35.3 a	2.4 a	3660 a	3.2 a
FM 1944 GLB2.....	23.3 b	2.7 a	2992 b	2.5 b
ST 5458 B2RF.....	37.5 a	1.7 b	3058 b	2.6 b
P(F)	.05	.001	.01	.006
Gaucht 600FS 0.375 mg a.i./seed + L1947 SC 1 MIU/seed				
ST 4946 GLB2.....	36.5	2.3	3609	3.1
FM 1944 GLB2.....	32.0	2.3	3173	2.6
ST 5458 B2RF.....	32.8	2.2	3197	2.8
P(F)	.66	.95	.26	.14
Gaucht 600FS 0.375 mg a.i./seed + L2030 1 MIU/seed				
ST 4946 GLB2.....	41.5	1.9	3675 a	3.2 a
FM 1944 GLB2.....	33.5	1.8	2949 b	2.4 b
ST 5458 B2RF.....	34.5	2.3	3446 ab	3.0 a
P(F)	.57	.12	.05	.02
Gaucht 600FS 0.375 mg a.i./seed + Votivo 240FS 1 MIU/seed				
ST 4946 GLB2.....	47.0	2.1 a	4114 a	3.5 a
FM 1944 GLB2.....	37.8	2.0 a	3337 b	2.7 b
ST 5458 B2RF.....	45.3	1.4 b	3373 b	2.9 b
P(F)	.22	.01	.05	.03
Aeris Seed Applied System 0.375 mg a.i./seed				
ST 4946 GLB2.....	36.8	2.5	3666 a	3.2 a
FM 1944 GLB2.....	26.0	2.3	2928 b	2.4 b
ST 5458 B2RF.....	31.3	1.9	3300 ab	2.8 a
P(F)	.09	.16	.01	.003
Treatment mean				
Gaucht 600FS 0.375 mg a.i./seed.....	31.8 b	1.9 bc	3299 b	2.8 b
Gaucht 600FS 0.375 mg a.i./seed + L1946 SC 1 MIU/seed.....	28.4 b	2.4 a	3105 b	2.6 b
Gaucht 600FS 0.375 mg a.i./seed + L1999 SC 1 MIU/seed.....	32.0 b	2.3 ab	3237 b	2.8 b
Gaucht 600FS 0.375 mg a.i./seed + L1947 SC 1 MIU/seed.....	33.8 b	2.3 ab	3327 b	2.8 b
Gaucht 600FS 0.375 mg a.i./seed + L2030 1 MIU/seed.....	36.5 ab	2.0 a-c	3357 ab	2.9 ab
Gaucht 600FS 0.375 mg a.i./seed + Votivo 240FS 1 MIU/seed.....	42.7 a	1.8 c	3608 a	3.1 a
Aeris Seed Applied System 0.375 mg a.i./seed.....	31.3 b	2.2 ab	3298 b	2.8 b
Variety mean				
ST 4946 GLB2.....	37.4 a	2.2	3694 a	3.2 a
FM 1944 GLB2.....	29.1 b	2.2	3012 c	2.5 c
ST 5458 B2RF.....	34.8 a	2.0	3249 b	2.8 b
Split-plot analysis				
Treatment.....	.05	.04	.0001	.0001
Variety.....	.03	.46	.03	.03
Treatment by variety.....	.93	.08	.88	.88

¹All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by personnel with Bayer CropScience. ²Determined from counts in a 6-ft section of each row per plot. ³Rating 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. ⁴Weight (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 20 Nov. Means followed by the same letter(s) in a column and group are not significantly different according to Fisher's Protected LSD ($P=0.05$).

XIV. BAYER COTTON SEED TREATMENT NEMATICIDE TEST (COTSEEDNEMA413, Morgan Farm, Suffolk)

- A. PURPOSE: To compare seed treatments for control of 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
 3. Seeding rate of 3.5 seed/ft of row
- C. APPLICATION OF TREATMENTS: Temik 15G was applied to the seed furrow with a Noble Box (14 May). 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 were applied by Bayer CropScience.
- D. TREATMENT AND RATE/CWT SEED:
1. Gaucho 600FS 9.49 oz
 2. Aeris Seed Applied System 18.98 oz
 3. Gaucho 600FS 9.49 oz
+ BCS-AR83685 500SC 10.63 oz
 4. Gaucho 600FS 9.49 oz
+ Poncho/Votivo 600FS 10.73 oz
 5. Gaucho 600FS 9.49 oz
+ BCS-AR83685 500SC 10.63 oz
+ Poncho/Votivo 600FS 10.73 oz
 6. Gaucho 600FS 9.49 oz
+ BCS-AR83685 500SC 5.315 oz
+ Poncho/Votivo 600FS 10.73 oz
 7. Aeris Seed Applied System 18.98 oz
+ BCS-AR83685 500SC 10.63 oz
 8. Avicta 500FS 4.55 oz
+ Cruiser 600FS 9.49 oz
 9. Temik 15G 5 lb/A (F)
- 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: 14 May, ST 4946 GLB2

5. Soil fertility report (11 Mar):

pH.....	6.62	Mn	2.3 ppm
Ca.....	327 ppm	Cu.....	0.4 ppm
Mg	35 ppm	Fe	8.5 ppm
P.....	64 ppm	B.....	0.2 ppm
K.....	93 ppm		
Zn	1 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (11 Mar):

Nematodes/500 cc soil

Root knot	500
Lesion.....	40
Spiral	220
Lance.....	20

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

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

Treatment, rate/cwt seed and application method ¹	Plants/ft ²		Thrips injury ³ (10 Jun)	Vigor ⁴ (10 Jun)	Plant height (in.) ⁵ (16 Jul)	Flowers/ 12 ft ⁶ (22 Jul)
	21 May	6 Jun				
Gaucho 600FS 9.49 oz (S)	2.0	2.0	3.5	6.0 e	33.1 c-e	27.5
Aeris Seed Applied System 18.98 oz (S) ..	2.0	2.0	2.3	7.5 ab	33.6 b-d	28.5
Gaucho 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz (S)	1.8	1.8	2.8	6.8 cd	33.8 bc	26.0
Gaucho 600FS 9.49 oz + Poncho/Votivo 600FS 10.73 oz (S)	1.8	1.8	3.3	6.3 de	32.7 e	26.0
Gaucho 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz + Poncho/Votivo 600FS 10.73 oz (S)	1.8	1.7	3.3	6.5 c-e	32.8 de	25.0
Gaucho 600FS 9.49 oz + BCS-AR83685 500SC 5.315 oz + Poncho/Votivo 600FS 10.73 oz (S)	1.9	1.9	3.5	7.0 bc	34.2 ab	27.3
Aeris Seed Applied System 18.98 oz + BCS-AR83685 500SC 10.63 oz (S)	1.8	1.8	3.0	7.0 bc	33.5 b-e	26.5
Avicta 500FS 4.55 oz + Cruiser 600FS 9.49 oz (S)	2.0	2.0	3.0	6.8 cd	33.5 b-e	26.0
Temik 15G 5 lb/A (F)	1.9	1.8	2.0	7.8 a	35.0 a	29.5
<i>P</i> (F) .....	.26	.14	.67	.0006	.0001	.66

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by Bayer CropScience.

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

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

⁴ Plant vigor rating scale: 1 = no vigor, 9 = healthy.

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

⁶ Determined from counts in a 6-ft section of each 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 37. Effect of treatments on nematode populations in cotton.

Treatment, rate/cwt seed and application method ¹	Nematodes/500 cc soil (22 Aug) ²				
	Root knot juvenile	Cyst juvenile	Stunt	Spiral	Stubby root
Gaicho 600FS 9.49 oz (S)	1160	80	220	600	200
Aeris Seed Applied System 18.98 oz (S) ..	1460	20	120	360	180
Gaicho 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz (S)	940	80	120	440	180
Gaicho 600FS 9.49 oz + Poncho/Votivo 600FS 10.73 oz (S)	1800	20	60	360	80
Gaicho 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz + Poncho/Votivo 600FS 10.73 oz (S)	1300	0	160	740	160
Gaicho 600FS 9.49 oz + BCS-AR83685 500SC 5.315 oz + Poncho/Votivo 600FS 10.73 oz (S)	1040	60	120	180	100
Aeris Seed Applied System 18.98 oz + BCS-AR83685 500SC 10.63 oz (S)	1820	40	220	1100	220
Avicta 500FS 4.55 oz + Cruiser 600FS 9.49 oz (S)	2600	40	120	460	100
Temik 15G 5 lb/A (F)	340	60	40	120	40

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by Bayer CropScience.

² Soil was sampled on 22 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 38. Effect of treatments on earliness, root gall and yield of cotton.

Treatment, rate/cwt seed and application method ¹	Open bolls ² (16 Sep)	Root galling ³ (27 Sep)	Yield ⁴	
			lb/A	bales/A
Gaucht 600FS 9.49 oz (S).....	33.8	1.8 ab	3576	3.0
Aeris Seed Applied System 18.98 oz (S).....	38.3	1.4 bc	3482	3.0
Gaucht 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz (S).....	29.5	0.9 cd	3449	2.9
Gaucht 600FS 9.49 oz + Poncho/Votivo 600FS 10.73 oz (S)	31.5	2.1 a	3225	2.7
Gaucht 600FS 9.49 oz + BCS-AR83685 500SC 10.63 oz + Poncho/Votivo 600FS 10.73 oz (S)	28.8	0.8 d	3164	2.7
Gaucht 600FS 9.49 oz + BCS-AR83685 500SC 5.315 oz + Poncho/Votivo 600FS 10.73 oz (S)	31.3	1.8 ab	3400	2.9
Aeris Seed Applied System 18.98 oz + BCS-AR83685 500SC 10.63 oz (S).....	43.0	1.8 ab	3660	3.1
Avicta 500FS 4.55 oz + Cruiser 600FS 9.49 oz (S).....	36.3	1.9 ab	3312	2.8
Temik 15G 5 lb/A (F)	49.0	1.4 bc	3733	3.2
<i>P</i> (F).....	.07	.0001	.17	.17

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment. All seed treatments were applied by personnel with Bayer CropScience.

² Determined from counts in a 6-ft section of each row per plot.

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

⁴ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 40.9% of weight and 480 lb/bale. Plots were harvested on 20 Nov.

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

XV. BAYER COTTON NEMATOCIDE TEST (COTNEMA113, Morgan Farm, Suffolk)

- A. **PURPOSE:** To compare seed and in-furrow treatments for control of thrips and nematodes in cotton
- B. **EXPERIMENTAL DESIGN:**
- Four, randomized complete blocks separated by 8-ft alleys
 - Two, 30-ft rows per plot with 36-in. row spacing
 - Seeding rate of 3.5 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 were applied by Bayer CropScience. Liquid in-furrow treatments (F) were mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow at planting (15 May).
- D. **TREATMENT AND RATE/CWT SEED:** S=seed treatment, F = in-furrow
- Gaucho 600FS 9.49 fl oz/cwt (S)
 - Temik 15G 5.0 lb/A (F)
 - Gaucho 600FS 9.49 fl oz/cwt (S)
+ BCS-AR83685 500SC 5.315 fl oz (S)
+ Aeris Seed Applied System 18.98 fl oz (S)
 - Gaucho 600FS 9.49 fl oz/cwt (S)
+ BCS-AR83685 500SC 7.99 fl oz (S)
 - Gaucho 600FS 9.49 fl oz/cwt (S)
+ BCS-AR83685 500SC 10.63 fl oz (S)
 - Gaucho 600FS 0.19 mg a.i./seed (S)
+ Velum Total 440SC 10 fl oz/A (F)
 - Gaucho 600FS 0.19 mg a.i./seed (S)
+ Velum Total 440SC 14 fl oz/A (F)
 - Gaucho 600FS 0.19 mg a.i./seed (S)
+ Velum Total 440SC 18 fl oz/A (F)
- E. **ADDITIONAL INFORMATION:**
- Location: Rick Morgan Farm, Deer Forest Rd., Suffolk
 - Crop history: continuous cotton since 2001
 - Land preparation: disk in early spring followed by rip and strip till
 - Planting date and variety: 15 May, FM 1944 GLB2
 - Soil fertility report (11 Mar):
- | | | | |
|----------|---------|----------------|-------------------------|
| pH..... | 6.57 | Mn | 2 ppm |
| Ca..... | 330 ppm | Cu..... | 0.4 ppm |
| Mg | 37 ppm | Fe | 10.5 ppm |
| P | 28 ppm | B..... | 0.1 ppm |
| K..... | 101 ppm | | |
| Zn | 1 ppm | Soil type..... | Rumford loamy fine sand |

6. Nematode assay report (11 Mar):

Nematodes/500 cc soil

Root knot	1300
Stunt	280
Spiral	680
Lance.....	60

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
Baythroid XL 2.6 fl oz/A (30 Jul)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 39. Effect of treatments on thrips injury, plant vigor, emergence, growth and flowers in cotton.

Treatment, rate and application method ¹	Thrips injury ² (10 Jun)	Vigor ³ (10 Jun)	Plants/ft ⁴ (12 Jun)	Plant height (in.) ⁵ (16 Jul)	Flowers/ 12 ft ⁶ (22 Jul)
Gaucho 600FS 9.49 fl oz/cwt (S)	2.8	6.0 c	1.5	29.9 c	18.0
Temik 15G 5.0 lb/A (F)	2.3	6.8 ab	1.5	31.6 a	23.3
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 5.315 fl oz (S) + Aeris Seed Applied System 18.98 fl oz (S) ..	2.3	6.8 ab	1.4	30.5 bc	20.3
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 7.99 fl oz (S)	2.8	6.8 ab	1.5	30.4 bc	22.5
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 10.63 fl oz (S)	2.5	6.3 bc	1.3	29.7 c	15.5
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 10 fl oz/A (F)	2.5	7.0 a	1.5	31.2 ab	22.5
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 14 fl oz/A (F)	2.5	7.0 a	1.4	31.3ab	18.0
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 18 fl oz/A (F)	2.8	6.3 bc	1.4	31.3 ab	20.0
<i>P</i> (F) .....	.71	.01	.60	.002	.22

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by personnel with Bayer CropScience.

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

³ Plant vigor rating scale: 1 = no vigor, 9 = healthy.

⁴ Determined from counts of two, 30-ft rows per plot.

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

⁶ Determined from counts in a 6-ft section of each row per plot.

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

Table 40. Effect of treatments on nematode populations in cotton.

Treatment, rate and application method ¹	Nematodes/500 cc soil (20 Aug) ²				
	Root knot juvenile	Cyst juvenile	Stunt	Spiral	Stubby root
Gaucho 600FS 9.49 fl oz/cwt (S).....	3320	160	300	640	340
Temik 15G 5.0 lb/A (F).....	660	20	40	780	60
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 5.315 fl oz (S) + Aeris Seed Applied System 18.98 fl oz (S)....	2560	20	200	1980	320
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 7.99 fl oz (S).....	1540	0	160	680	220
Gaucho 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 10.63 fl oz (S).....	1980	40	40	1420	180
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 10 fl oz/A (F).....	360	0	60	1340	280
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 14 fl oz/A (F).....	3780	0	0	940	260
Gaucho 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 18 fl oz/A (F).....	1380	0	0	1140	220

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by Bayer CropScience.

² Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 41. Effect of treatments on earliness, root gall and yield of cotton.

Treatment, rate and application method ¹	Open bolls ² (16 Sep)	Root galling ³ (3 Oct)	Yield ⁴	
			lb/A	bales/A
Gaucht 600FS 9.49 fl oz/cwt (S).....	25.5	1.4 bc	3152	2.5
Temik 15G 5.0 lb/A (F).....	27.8	1.1 c	3349	2.7
Gaucht 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 5.315 fl oz (S) + Aeris Seed Applied System 18.98 fl oz (S) ...	22.0	2.5 a	3176	2.6
Gaucht 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 7.99 fl oz (S).....	28.8	1.8 b	3367	2.7
Gaucht 600FS 9.49 fl oz/cwt (S) + BCS-AR83685 500SC 10.63 fl oz (S).....	17.5	2.5 a	3043	2.5
Gaucht 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 10 fl oz/A (F).....	24.8	1.8 b	3282	2.7
Gaucht 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 14 fl oz/A (F).....	21.5	1.9 b	3325	2.7
Gaucht 600FS 0.19 mg a.i./seed (S) + Velum Total 440SC 18 fl oz/A (F).....	17.8	1.4 bc	3246	2.6
<i>P</i> (F).....	.72	.0001	.82	.82

¹ S=seed treatment, F=in furrow. All seed were treated with Baytan + Allegiance FL + Vortex FL as a base seed treatment; seed treatments were applied by personnel with Bayer CropScience.

² Determined from counts in a 6-ft section of each row per plot.

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

⁴ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 38.8% of weight and 480 lb/bale.

Plots were harvested on 20 Nov.

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

XVI. BAYER COTTON NEMATOCIDE TEST (COTNEMA213, Morgan Farm, Suffolk)

- A. **PURPOSE:** To compare seed and in-furrow treatments 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
 3. Seeding rate of 3.5 seed/ft of row
- C. **APPLICATION OF TREATMENTS:** (F) Granular treatments were applied to the seed furrow with a Noble Box, and liquid in-furrow treatments were mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow at planting (15 May). (S) Avicta Duo was applied to seed by Syngenta Crop Protection. Aeris SAS and Poncho/Votivo were applied by Bayer CropScience.
- D. **TREATMENT AND RATE/A:** F = in-furrow, S = seed treatment
1. Untreated
 2. Temik 15G 5.0 lb/A (F)
 3. Velum Total 440SC 10 fl oz (F)
 4. Velum Total 440SC 14 fl oz (F)
 5. Velum Total 440SC 18 fl oz (F)
 6. Avicta Duo (S)
 7. Aeris SAS (S)
 8. Aeris SAS + Poncho/Votivo (S)
 9. Vydate C-LV 1.0 qt (F)
 10. Vydate C-LV 17 fl oz (F)
 11. Counter 20G 6.5 oz (F)
 12. Q8U80 500SC 1.0 qt (F)

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: 15 May, PHY 375 WRF
5. Soil fertility report (11 Mar):

pH.....	6.57	Mn	2 ppm
Ca.....	330 ppm	Cu.....	0.4 ppm
Mg	37 ppm	Fe	10.5 ppm
P.....	28 ppm	B.....	0.1 ppm
K.....	101 ppm		
Zn	1 ppm	Soil type.....	Rumford loamy fine sand

6. Nematode assay report (11 Mar):

Nematodes/500 cc soil

Root knot	1300
Stunt	280
Spiral	680
Lance.....	60

7. Herbicide Pre-emergence – Prowl H₂O 1.0 pt + Cotoran 1.0 qt
+ Gramoxone Inteon 1.0 pt/A (16 May)
Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)
8. Fertilization: 10-27-27 300 lb/A (13 May)
ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 60 lb/A + Boron 2.0 qt/A (28 Jun)
9. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
10. Growth regulator: Pentia 10 fl oz/A (11 Jul, 30 Jul)
11. Defoliant/boll opener: Folex 10 fl oz + Finish 32 fl oz + Fire Fall 3.5 fl oz
+ Super Boll 16 fl oz/A (21 Oct)
12. Harvest date: 20 Nov

Table 42. Effect of treatments on emergence, vigor, thrips injury, growth and flowers in cotton.

Treatment, rate/A and application method ¹	Plants/ft ² (12 Jun)	Vigor ³ (20 Jun)	Thrips injury ⁴ (20 Jun)	No. missing row ft. ⁵ (20 Jun)	Plant height (in.) ⁶ (16 Jul)	Flowers/ 12 ft ⁷ (23 Jul)
Untreated	2.8 a	6.0 d	3.0 a-c	0.8	32.0 de	27.8 a-c
Temik 15G 5.0 lb/A (F)	2.5 a-d	7.5 a	2.0 d	2.0	34.6 a	31.5 a
Velum Total 440SC 10 fl oz (F) ...	2.5 a-d	6.3 c-d	2.3 cd	1.8	33.5 a-c	27.5 a-c
Velum Total 440SC 14 fl oz (F) ...	2.5 a-c	6.8 bc	2.5 b-d	1.0	33.8 ab	27.3 a-c
Velum Total 440SC 18 fl oz (F) ...	2.7 ab	6.8 bc	2.8 a-d	1.0	33.6 a-c	26.8 a-c
Avicta Duo (S)	2.2 de	6.0 d	3.3 ab	3.0	32.0 de	30.5 a
Aeris SAS (S)	2.1 e	6.0 d	2.5 b-d	2.8	32.6 c-e	27.0 a-c
Aeris SAS + Poncho/Votivo (S) ...	2.3 c-e	6.5 cd	3.5 a	1.5	31.6 e	28.5 ab
Vydate C-LV 1.0 qt (F).....	2.4 b-e	7.3 ab	2.5 b-d	2.0	32.8 b-d	22.8 cd
Vydate C-LV 17 fl oz (F)	2.4 b-e	7.3 ab	2.3 cd	2.3	34.0 a	24.0 b-d
Counter 20G 6.5G oz (F).....	2.3 c-e	6.8 cd	2.8 a-d	2.8	34.2 a	27.0 a-c
Q8U80 500SC 1.0 qt (F).....	2.2 de	5.0 e	3.0 a-c	3.3	29.5 f	19.5 d
<i>P</i> (F) .....	.009	.0001	.024	.13	.0001	.007

¹ S=seed treatment, F=in furrow.

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

³ Plant vigor rating scale: 1=no vigor, 9=healthy.

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

⁵ Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot.

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

⁷ Determined from counts in a 6-ft section of each row per plot.

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

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

Treatment, rate/A and application method ¹	Nematodes/500 cc soil (20 Aug) ²				
	Root knot juvenile	Cyst juvenile	Stunt	Spiral	Stubby root
Untreated	1640	0	160	200	160
Temik 15G 5.0 lb (F)	740	140	120	420	200
Velum Total 440SC 10 fl oz (F)	3320	40	160	380	120
Velum Total 440SC 14 fl oz (F)	1200	0	120	380	200
Velum Total 440SC 18 fl oz (F)	1160	0	100	600	320
Avicta Duo (S)	780	0	180	390	180
Aeris SAS (S)	3620	20	60	40	240
Aeris SAS + Poncho/Votivo (S)	2560	0	160	380	280
Vydate C-LV 1.0 qt (F)	1100	20	100	420	180
Vydate C-LV 17 fl oz (F)	700	20	40	340	120
Counter 20G 6.5G oz (F)	1240	20	40	260	40
Q8U80 500SC 1.0 qt (F)	1760	0	160	240	300

¹ S=seed treatment, F=in furrow.

² Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 44. Effect of treatments on earliness, root gall and yield of cotton.

Treatment, rate/A and application method ¹	Open bolls ² (16 Sep)	Root galling ³ (8 Oct)	Yield ⁴	
			lb/A	bales/A
Untreated	76.8 ab	2.1 ef	3191 b-e	2.8 b-e
Temik 15G 5.0 lb (F)	70.8 a-c	1.5 f	3564 a	3.1 a
Velum Total 440SC 10 fl oz (F)	87.5 a	3.1 a-c	3237 a-d	2.8 a-d
Velum Total 440SC 14 fl oz (F)	85.3 a	1.9 ef	3325 a-c	2.9 a-c
Velum Total 440SC 18 fl oz (F)	79.8 ab	2.4 c-e	3373 a-c	2.9 a-c
Avicta Duo (S)	61.3 b-d	2.8 b-d	2910 de	2.5 de
Aeris SAS (S)	63.5 bc	3.0 b-d	3073 c-e	2.7 c-e
Aeris SAS + Poncho/Votivo (S)	67.5 a-c	3.8 a	3204 b-e	2.8 b-e
Vydate C-LV 1.0 qt (F)	40.3 de	2.3 de	3455 ab	3.0 ab
Vydate C-LV 17 fl oz (F)	53.5 cd	2.0 ef	3285 a-c	2.8 a-c
Counter 20G 6.5G oz (F)	71.0 a-c	2.5 b-e	3237 a-d	2.8 a-d
Q8U80 500SC 1.0 qt (F)	31.3 e	3.1 ab	2886 e	2.5 e
<i>P</i> (F) .....	.0001	.0001	.007	.007

¹ S=seed treatment, F=in furrow.

² Determined from counts in a 6-ft section of each row per plot.

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

⁴ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.6% of weight and 480 lb/bale. Plots were harvested on 20 Nov.

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

XVII. COTTON SEED TREATMENT NEMATOCIDE TEST (COTNEMA313, TAREC Research Farm, Suffolk, Field 34A)

- A. PURPOSE: To compare in-furrow treatments 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
 3. Seeding rate of 3.5 seed/ft of row
- C. APPLICATION OF TREATMENTS: (F) Granular treatments were applied to the seed furrow with a Noble Box and liquid in-furrow treatments were mixed in water and applied at a volume of 5 gal/A through a microtube to the seed furrow at planting. (S) Avicta Duo was applied to see by Syngenta Crop Protection; Aeris SAS and Poncho/Votivo were applied by Bayer CropScience.
- D. TREATMENT AND RATE/A: F = in-furrow, S = seed treatment
1. Untreated
 2. Temik 15G 5.0 lb (F)
 3. Velum Total 440SC 10 fl oz (F)
 4. Velum Total 440SC 14 fl oz (F)
 5. Velum Total 440SC 18 fl oz (F)
 6. Avicta Duo (S)
 7. Aeris SAS (S)
 8. Aeris SAS + Poncho/Votivo (S)
 9. Vydate C-LV 32 fl oz (F)
 10. Vydate C-LV 17 fl oz (F)
 11. Counter 20G 6.5 oz (F)
 12. Q8U80 500SC 1.0 qt (F)
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Farm, Suffolk
 2. Crop history: peanut, 2012; corn, 2011; cotton, 2010
 3. Land preparation: strip tillage
 4. Planting date and variety: 9 May, DP 1028 B2RF
 5. Soil fertility report (17 Jan):

pH.....	6.45	K.....	49 ppm
Ca.....	258 ppm	Zn.....	0.5 ppm
Mg.....	29 ppm	Mn.....	2.3 ppm
P.....	38 ppm	Soil type.....	Kenansville loamy fine sand
 6. Herbicide:
 - Pre-emergence – Roundup Weather Max 1.0 qt/A (10 May)
 - Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 21 Jun)

7. Fertilization: ENC 1.0 qt/A (30 May, 21 Jun)
Liquid nitrogen (24%) 24-0-0-3 40 lb/A (10 Jul)
Boron 1.0 qt w/Agrotain 1.5 qt/A (10 Jul)
8. Insecticide: Orthene 97S 8 oz/A (30 May, 21 Jun)
9. Growth regulator: Pentia 8 fl oz/A (5 Jul); 12 fl oz/A (17 Jul)
10. Defoliant/boll opener: Finish 1.0 qt + Folex 10 fl oz + Super Boll 10 fl oz
+ Free Fall 3 oz/A (30 Sep)
11. Harvest date: 24 Oct

Table 45. Effect of treatments on emergence, plant vigor, thrips injury, growth and flowers in cotton.

Treatment, rate and application method ¹	Plants/ft ² (10 Jun)	Vigor ³ (21 Jun)	Thrips injury ⁴ (21 Jun)	No. missing row ft. ⁵ (21 Jun)	Plant height (in.) ⁶ (19 Jul)	Flowers/12 ft. ⁷ (23 Jul)
Untreated	2.4	6.5b	2.0a	3.3b-d	32.0c	24.8ab
Temik 15G 5.0 lb/A (F)	2.3	7.3ab	1.3bc	1.3d	34.0b	24.0a-c
Velum Total 440SC 10 fl oz (F) ...	2.1	7.5a	1.3bc	6.3a-d	35.3a	25.8a
Velum Total 440SC 14 fl oz (F) ...	2.4	7.5a	1.5a-c	2.5cd	34.4ab	22.8a-c
Velum Total 440SC 18 fl oz (F) ...	2.0	7.3ab	1.0c	6.8ab	35.0ab	24.5a-c
Avicta Duo (S)	2.1	6.8ab	1.5a-c	3.5b-d	34.4ab	20.3b-d
Aeris SAS (S)	2.3	7.0ab	1.8ab	1.5d	34.3ab	22.3a-c
Aeris SAS + Poncho/Votivo (S) ...	2.1	6.8ab	1.3bc	4.0a-d	33.0c	20.3b-d
Vydate C-LV 32 fl oz (F)	2.3	5.3c	2.0a	2.5cd	32.0c	12.8f
Vydate C-LV 17 fl oz (F)	2.2	7.0ab	1.8ab	3.8b-d	35.1ab	16.8d-f
Counter 20G 6.5 oz (F)	2.0	7.0ab	1.5a-c	5.8a-c	34.2b	20.0c-e
Q8U80 500SC 1.0 qt (F)	1.8	4.8c	2.0a	7.8a	30.5d	15.5ef
<i>P</i> (F) .....	.12	.0001	.01	.02	.0001	.0001

¹ S=seed treatment, F=in furrow.

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

³ Plant vigor rating scale: 1=no vigor, 9=healthy.

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

⁵ Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot.

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

⁷ Determined from counts in a 6-ft section of each row per plot.

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

Table 46. Effect of treatments on nematode populations in cotton.

Treatment, rate/A and application method ¹	Nematodes/500 cc soil (26 Aug) ²				
	Root knot juvenile	Stunt	Spiral	Ring	Stubby root
Untreated	280	100	20	40	80
Temik 15G 5.0 lb (F)	80	40	20	80	20
Velum Total 440SC 10 fl oz (F)	720	20	0	100	320
Velum Total 440SC 14 fl oz (F)	80	40	0	60	40
Velum Total 440SC 18 fl oz (F)	240	60	0	180	120
Avicta Duo (S)	180	100	0	240	100
Aeris SAS (S)	320	40	0	0	100
Aeris SAS + Poncho/Votivo (S)	40	20	0	140	100
Vydate C-LV 32 fl oz (F)	160	0	0	140	40
Vydate C-LV 17 fl oz (F)	170	0	0	100	40
Counter 20G 6.5 oz (F)	60	0	0	120	0
Q8U80 500SC 1.0 qt (F)	220	0	0	80	80

¹ S=seed treatment, F=in furrow.

² Soil was sampled on 26 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 47. Effect of treatments on earliness and yield of cotton.

Treatment, rate/A and application method ¹	Open bolls ² (16 Sep)	Yield ³	
		lb/A	bales/A
Untreated.....	54.3 cd	3757 bc	3.43 bc
Temik 15G 5.0 lb (F).....	58.3 bc	4362 a	3.98 a
Velum Total 440SC 10 fl oz (F).....	74.8 a	3960 a-c	3.61 a-c
Velum Total 440SC 14 fl oz (F).....	70.3 ab	4126 ab	3.77 ab
Velum Total 440SC 18 fl oz (F).....	49.0 cd	3951 a-c	3.61 a-c
Avicta Duo (S)	48.8 cd	3681 bc	3.36 bc
Aeris SAS (S)	59.8 a-c	4096 ab	3.74 ab
Aeris SAS + Poncho/Votivo (S).....	56.3 bc	3645 bc	3.33 bc
Vydate C-LV 32 fl oz (F)	16.0 f	3131 de	2.86 de
Vydate C-LV 17 fl oz (F)	32.8 e	3597 cd	3.28 cd
Counter 20G 6.5 oz (F).....	39.5 de	3887 a-c	3.55 a-c
Q8U80 500SC 1.0 qt (F).....	29.0 ef	2841 e	2.59 e
<i>P</i> (F) .....	.0001	.0001	.0001

¹ S=seed treatment, F=in furrow.

² Determined from counts in a 6-ft section of each row per plot.

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 43.8% of weight and 480 lb/bale.

Plots 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 ($P=0.05$).

XVIII. RESPONSE OF COTTON TO FUNGICIDES AND TIMINGS FOR CONTROL OF FOLIAR DISEASE, BOLL ROT AND HARDLOCK (COTFOLFUN113, TAREC, Field 46B)

- A. PURPOSE: To evaluate fungicide chemistries for disease control and improvement of yield in cotton
- B. EXPERIMENTAL DESIGN:
1. Five randomized complete blocks separated by 10 ft alleyways
 2. Six, 30-ft rows per plot; data collected from the two, center rows
 3. Seeding rate of 3.5 seed/ft of row
- C. APPLICATION OF TREATMENTS: Initial treatments were applied at 21 days after first bloom on 8 Aug; 12 days after first applications were sprayed on 20 Aug. All treatments were applied with a Lee Spider Sprayer having 8002VS nozzles spaced 18 inches apart and delivering 19.88 gal/A.
- D. TREATMENT AND RATE/A:
1. Untreated check
 2. Headline 2.08SC 6 fl oz (21 days after 1st bloom)
 3. Priaxor SC 4 fl oz (21 days after 1st bloom)
 4. Twinline EC 8.5 fl oz (21 days after 1st bloom)
 5. Headline 2.08SC 6 fl oz (21 days after 1st bloom + 12 days after 1st appl.)
 6. Twinline EC 8.5 fl oz (21 days after 1st bloom + 12 days after 1st appl.)
 7. Priaxor SC 4 fl oz (21 days after 1st bloom)
AMP SC 9 fl oz (12 days after 1st appl.)
 8. Headline 2.08SC 6 fl oz (21 days after 1st bloom)
Priaxor SC 4 fl oz (12 days after 1st appl.)
 9. Headline 2.08SC 6 fl oz (21 days after 1st bloom)
AMP SC 9 fl oz (12 days after 1st appl.)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC, Holland Rd., Suffolk
 2. Crop history: peanut, 2012; corn, 2011; cotton, 2010
 3. Land preparation: rip and strip till
 4. Planting date and cultivar: 10 May, PHY 499 WRF
 5. Soil fertility report (17 Jan) :
- | | | | |
|---------|---------|----------------|---------------------------|
| pH..... | 6.18 | K..... | 91 ppm |
| Ca..... | 530 ppm | Zn..... | 0.5 ppm |
| Mg..... | 46 ppm | Mn..... | 2.5 ppm |
| P..... | 36 ppm | Soil type..... | Nansemond fine sandy loam |

6. Herbicide:
 - Pre-plant – 2,4D Amine 1.5 pt + Roundup WeatherMax 22 fl oz/A (30 Mar)
 - Buccaneer 1.0 qt/A (27 Apr)
 - Pre-emergence – Acumen 1.0 pt + Cotoran 4L 1.0 qt/A (10 May)
 - Post-emergence – Roundup WeatherMax 22 fl oz/A (30 May, 13 Jun)
 - Buccaneer 22 fl oz (6 Jun); 1.0 qt/A (7 Jul)
7. Insecticide: Orthene 97S 8 oz/A (6 Jun)
- Baythroid XL 2 fl oz/A (31 Jul); 3 fl oz/A (8 Aug)
- Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (15 Aug)
8. Fertilization: 6-16-39 330 lb/A (3 Apr)
- Liquid nitrogen (24%) 24-0-0-3 40 lb + Boron 1.0 qt/A (26 Jun, 10 Jul)
9. Growth regulator: Pentia 10 fl oz/A (2 Jul, 31 Jul); 1.0 pt/A (17 Jul); 12 fl oz/A (8 Aug)
10. Defoliant/boll opener: (18 Oct)
11. Harvest date: 13 Nov

Table 48. Effect of treatment on disease incidence in cotton.

Treatment, rate/A and application date ¹	% target spot ²		% defoliation ³	
	9 Sep	12 Oct	9 Sep	12 Oct
Untreated check.....	6.0	9.0	2.4	12.0
Headline 2.08SC 6 fl oz (8/8).....	5.2	8.4	4.0	10.0
Priaxor SC 4 fl oz (8/8).....	4.6	5.6	3.2	8.0
Twinline EC 8.5 fl oz (8/8).....	5.4	6.4	3.8	9.0
Headline 2.08SC 6 fl oz (8/8, 8/20).....	4.8	4.6	3.6	9.0
Twinline EC 8.5 fl oz (8/8, 8/20).....	6.6	7.0	3.0	9.0
Priaxor SC 4 fl oz (8/8) + AMP SC 9 fl oz (8/20).....	6.4	8.0	2.8	9.0
Headline 2.08SC 6 fl oz (8/8) + Priaxor SC 4 fl oz (8/20).....	6.6	9.2	3.2	11.0
Headline 2.08SC 6 fl oz (8/8) + AMP SC 9 fl oz (8/20).....	4.6	6.6	3.6	14.0
<i>P</i> (<i>F</i>).....	.98	.44	.81	.24

¹ Treatments were applied at 21 days after first bloom (8 Aug) and 12 days after first application (20 Aug).

² Percent leaf area with disease.

³ Percent canopy defoliated.

Means in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 49. Effect of treatment on disease incidence in cotton.

Treatment, rate/A and application date ¹	% foliar disease ²				
	9 Sep		12 Oct		
	mid- canopy	upper leaves	lower canopy	mid- canopy	upper leaves
Untreated check	10.0	11.6	13.0	15.0	24.0
Headline 2.08SC 6 fl oz (8/8)	10.0	17.0	12.0	15.0	23.0
Priaxor SC 4 fl oz (8/8)	9.2	16.6	11.0	13.0	24.0
Twinline EC 8.5 fl oz (8/8)	8.4	12.0	12.0	13.0	22.0
Headline 2.08SC 6 fl oz (8/8, 8/20)	6.8	8.8	13.0	12.0	22.0
Twinline EC 8.5 fl oz (8/8, 8/20)	8.0	8.6	10.0	11.0	22.0
Priaxor SC 4 fl oz (8/8) + AMP SC 9 fl oz (8/20)	7.4	9.4	11.0	14.0	24.0
Headline 2.08SC 6 fl oz (8/8) + Priaxor SC 4 fl oz (8/20)	8.4	8.8	11.0	14.0	21.0
Headline 2.08SC 6 fl oz (8/8) + AMP SC 9 fl oz (8/20)	7.2	13.6	11.0	17.0	28.0
<i>P</i> (<i>F</i>) .....	.95	.67	.91	.74	.81

¹ Treatments were applied at 21 days after first bloom (8 Aug) and 12 days after first application (20 Aug).

² Percent leaf area with symptoms of foliar disease (target spot, *Stemphylium*, leaf spot, anthracnose, etc.). Percentage data were arcsine transformed prior to statistical analysis.

Table 50. Effect of treatments on earliness and yield of cotton.

Treatment, rate/A and application date ¹	Open bolls ² (16 Sep)	Yield ³	
		lb/A	bales/A
Untreated check	40.6	5157	4.4
Headline 2.08SC 6 fl oz (8/8)	46.2	5472	4.7
Priaxor SC 4 fl oz (8/8)	42.0	5360	4.6
Twinline EC 8.5 fl oz (8/8)	49.4	5426	4.6
Headline 2.08SC 6 fl oz (8/8, 8/20)	40.4	5598	4.8
Twinline EC 8.5 fl oz (8/8, 8/20)	39.8	5622	4.8
Priaxor SC 4 fl oz (8/8) + AMP SC 9 fl oz (8/20)	44.0	5489	4.7
Headline 2.08SC 6 fl oz (8/8) + Priaxor SC 4 fl oz (8/20)	36.8	5360	4.6
Headline 2.08SC 6 fl oz (8/8) + AMP SC 9 fl oz (8/20)	45.0	5443	4.6
<i>P</i> (<i>F</i>) .....	.95	.53	.53

¹ Treatments were applied at 21 days after first bloom (8 Aug) and 12 days after first application (20 Aug).

² Determined from counts in a 6-ft section of each row per plot.

³ Weight (lb/A) includes lint + seed; bales/A are weight of lint only. Lint was 41.0% of weight and 480 lb/bale. Plots were harvested on 13 Nov.

XIX. EVALUATION OF IN-FURROW, EMERGENCE, AND FOLIAR FUNGICIDE SPRAYS FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (CBRLFSPOT113, TAREC Research Farm, Field 16B)

A. PURPOSE: To compare efficacy of in-furrow emergence, and foliar applications of fungicides for control of leaf spots, southern stem rot and other soilborne diseases

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleys between blocks
2. Seeding rate of ca. 4 seed/ft of row
3. Split-plot design with treatments in six-row, main plots and varieties in two-row, subplots.

C. APPLICATION OF TREATMENTS: In-furrow treatments (F) 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 (4 May). Treatments at 100% emergence (E) were applied on 28 May with two, 8004E nozzles per row at 19.5 gal/A in an 8-in. band over rows. Foliar sprays for leaf spot control were applied with three, D₃23 nozzles/row delivering 14.85 gal/A. The initial application was at beginning pod (R₃, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).

D. TREATMENT AND RATE/A:

1. Untreated
2. Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
3. Proline 480SC 5.7 fl oz (F)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
4. Propulse 400SC 13.69 fl oz (F)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
5. Propulse 400SC 13.69 fl oz (E)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)

E. VARIETY:

1. Bailey
2. Sugg
3. Champs

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
3. Land preparation: rip and strip till
4. Planting date: 4 May

5. Soil fertility report: (17 Jan)

pH.....	6.38	K.....	39 ppm
Ca.....	201 ppm	Zn.....	0.4 ppm
Mg.....	22 ppm	Mn.....	1.2 ppm
P.....	27 ppm	Soil type.....	Kenansville loamy fine sand

6. Herbicide:

Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt (19 Apr)

Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)

Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)

7. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (4 May in-furrow)

Orthene 97S 8 oz/A (30 May, 19 Jun)

Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)

8. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

9. Additional crop management:

a. Liquid boron 1.0 qt/A (19 Apr)

b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)

c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)

d. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)

e. Liquid Mn 2.0 qt/A (16 Jul)

f. Irrigation: ca. 1 in. (14 Aug, 9 Sep)

10. Harvest date: 25 Oct

Table 51. Effect of treatments on emergence and disease incidence in peanut.

Variety, treatment, rate/A and application date ¹	Plants/ft ² (28 May)	% leaf spot ³		% defoliation ⁴	
		29 Aug	8 Oct	29 Aug	8 Oct
Bailey					
Untreated	3.1	31.3a	88.8	1.6	70.0a
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.8	4.0b	82.5	0.1	17.5b
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	3.0	5.5b	71.3	0.1	13.8b
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.9	2.3b	81.3	0.1	16.3b
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	3.0	3.3b	63.8	0.1	18.8b
<i>P</i> (F) .....	.43	.0002	.19	.25	.0004
Sugg					
Untreated	2.9a	43.8a	83.8	3.0	81.3a
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.9a	2.5b	83.8	0.1	26.3b
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.8a	3.0b	82.5	0.1	25.0b
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.6b	2.3b	82.5	0.1	20.0b
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.8a	1.8b	77.5	0.1	26.3b
<i>P</i> (F) .....	.02	.0001	.96	.25	.0002
CHAMPS					
Untreated	3.0	81.3a	71.3	12.5a	92.5a
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	3.2	3.5b	86.3	0.1b	35.0b
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	3.0	4.3b	82.5	0.1b	27.5b
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.9	1.0b	77.5	0.1b	17.5b
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10)	2.9	1.5b	65.0	0.1b	17.5b
<i>P</i> (F) .....	.50	.0001	.43	.0001	.0001
Variety means					
Bailey	2.9	9.3	77.5	0.4	22.3b
Sugg	2.8	10.7	82.0	0.7	33.8ab
CHAMPS	3.0	18.3	76.5	2.6	38.0a
Split-plot analysis					
Variety .....	.07	.003	.09	.02	.02
Treatment .....	.10	.0001	.22	.0001	.0001
Variety x treatment .....	.38	.0001	.58	.0001	.43

¹F=in-furrow (4 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 7/15) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity). ²Determined from counts of two, 35-ft rows per plot. ³Percentage of total leaflets with early or late leaf spot lesions. ⁴Percentage of total canopy defoliated. Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD (*P*=0.05). Percentage data were arcsine transformed prior to statistical analysis.

Table 52. Effect of treatments on soilborne disease incidence in peanut.

Variety, treatment, rate/A and application date ¹	Stem rot ² (30 Aug)	Sclerotinia ²		CBR ²	
		30 Aug	2 Oct	30 Aug	2 Oct
Bailey					
Untreated.....	0.0	0.0	0.0	0.3	2.0
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.8	0.3	4.0
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.0	0.3	2.8
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.3	0.0	0.0	0.5	1.8
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.3	1.0	1.0	2.5
P(F).....	.44	.44	.44	.44	.34
Sugg					
Untreated.....	0.3	0.0	0.0	2.0	2.8
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.8	1.0	3.8
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.8	0.8	3.8
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.3	0.8	4.3
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	0.3	0.0	2.8
P(F).....	.44	.00	.54	.07	.81
CHAMPS					
Untreated.....	1.3	0.3	0.0	10.0 a	14.5
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.0	0.0	2.5	3.0 b	6.0
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.5	0.3	1.0	3.5 b	7.3
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.3	0.0	1.0	3.8 b	9.3
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)					
Bravo 720 1.5 pt (9/10).....	0.3	0.5	3.0	2.8 b	6.0
P(F).....	.20	.44	.36	.02	.06
Variety means					
Bailey.....	0.1 b	0.1	0.3	0.5	2.6
Sugg.....	0.1 b	0.0	0.4	0.9	3.5
CHAMPS.....	0.5 a	0.2	1.5	4.6	8.6
Split-plot analysis					
Variety.....	.04	.42	.16	.04	.02
Treatment.....	.10	.18	.11	.002	.23
Variety x treatment.....	.22	.72	.71	.004	.02

¹ F=in-furrow (4 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 7/15) 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 with symptoms and/or signs of a disease and included 6-in on either side of that point. Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$).

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

Variety, treatment, rate/A and application date ¹	Root disease (16 Oct) ²	Pod rot (16 Oct) ³	Yield (lb/A) ⁴
Bailey			
Untreated.....	1.8	1.8	4319 b
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.3	1.3	5697 ab
Proline 480SC 5.7 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.0	1.0	6411 a
Propulse 400SC 13.69 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.0	1.0	6346 a
Propulse 400SC 13.69 fl oz (E)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.5	1.0	6746 a
P(F).....	.32	.23	.03
Sugg			
Untreated.....	2.5	1.8	3542 c
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.5	1.5	5562 b
Proline 480SC 5.7 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.5	1.3	6511 a
Propulse 400SC 13.69 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.3	1.0	5917 ab
Propulse 400SC 13.69 fl oz (E)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	1.5	1.3	6667 a
P(F).....	.10	.28	.0001
CHAMPS			
Untreated.....	3.8 a	2.5	1025 c
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	2.5 b	2.0	3988 b
Proline 480SC 5.7 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	2.5 b	2.5	4466 ab
Propulse 400SC 13.69 fl oz (F)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	2.5 b	1.8	5390 a
Propulse 400SC 13.69 fl oz (E)			
Provost 433SC 10.7 fl oz (7/15, 8/8, 8/23)			
Bravo 720 1.5 pt (9/10).....	2.5 b	2.5	5519 a
P(F).....	.04	.18	.0001
Variety means			
Bailey.....	1.3 b	1.2 b	5904 a
Sugg.....	1.7 b	1.4 b	5594 a
CHAMPS.....	2.8 a	2.3 a	4078 b
Split-plot analysis			
Variety.....	.0001	.0001	.0002
Treatment.....	.0005	.02	.0001
Variety x treatment.....	.88	.61	.23

¹F=in-furrow (4 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 7/15) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity). ²Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed. ³Pod rot index: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed. ⁴Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug 16 Oct and harvested 25 Oct. Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD (P=0.05).

XX. EVALUATION OF IN-FURROW, EMERGENCE, AND FOLIAR FUNGICIDE SPRAYS FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (CBRLFSPOT213, TAREC, Field 46C)

A. PURPOSE: To compare efficacy of in-furrow and foliar fungicides for control of leaf spots, southern stem rot and other soilborne diseases

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks separated by 10-ft alleys between blocks
2. Six, 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: In-furrow treatments (F) 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 (8 May). Treatments at 100% emergence (E) were applied on 28 May with two, 8004E nozzles per row at 19.5 gal/A in an 8-in. band over rows. Foliar sprays for leaf spot control were applied with three, D₃23 nozzles/row delivering 14.85 gal/A. The initial application was at beginning pod (R₃, 15 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. Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
3. Proline 480SC 5.7 fl oz (F)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
4. Propulse 400SC 13.69 fl oz (F)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)
5. Propulse 400SC 13.69 fl oz (E)
Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd spray)
Bravo 720 1.5 pt (4th spray)

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Suffolk
2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
3. Land preparation: rip and strip till
4. Planting date and cultivar: 8 May, Champs
5. Soil fertility report: (17 Jan)

pH.....	6.46	K.....	103 ppm
Ca.....	453 ppm	Zn.....	1.7 ppm
Mg.....	45 ppm	Mn.....	1.8 ppm
P.....	19 ppm	Soil type.....	Nansemond fine sandy loam

6. Herbicide:
 - Pre-plant – Roundup Weather Max 1.0 qt/A (11 Apr)
 - Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
 - + Prowl 1.0 pt (26 Apr)
 - Pre-emergence – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
 - + Gramoxone Inteon 1.0 pt/A (10 May)
 - Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)
7. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (8 May in furrow)
- Orthene 97S 8 oz/A (30 May, 20 Jun)
- Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (22 Aug)
8. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)
9. Sclerotinia blight control: Omega 1.0 pt/A (30 Aug)
10. Additional crop management:
 - a. Liquid boron 1.0 qt/A (19 Apr)
 - b. ENC 1.0 qt/A (30 May, 20 Jun, 8 Aug)
 - c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)
 - d. Liquid Mn 2.0 qt/A (16 Jul)
 - e. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)
11. Harvest date: 25 Oct

Table 54. Effect of treatments on emergence and disease incidence in peanut.

Treatment, rate/A and application date ¹	Plants/ft ² (29 May)	% leaf spot ³		% defoliation ⁴	
		30 Aug	17 Oct	30 Aug	17 Oct
Untreated check.....	2.5	17.8 a	88.8 a	1.3	45.0 a
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21)					
Bravo 720 1.5 pt (9/10).....	2.6	1.5 b	31.3 b	0.1	5.0 b
Proline 480SC 5.7 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21)					
Bravo 720 1.5 pt (9/10).....	2.8	1.8 b	31.3 b	0.1	5.5 b
Propulse 400SC 13.69 fl oz (F)					
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21)					
Bravo 720 1.5 pt (9/10).....	2.6	2.5 b	13.8 b	0.1	5.0 b
Propulse 400SC 13.69 fl oz (E)					
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21)					
Bravo 720 1.5 pt (9/10).....	2.7	1.8 b	17.5 b	0.1	5.0 b
<i>P</i> (F).....	.55	.03	.03	.44	.0001

¹ F=in-furrow (8 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

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

³ Percentage of total leaflets with early or late leaf spot lesions.

⁴ Percentage of total canopy defoliated.

Means in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 55. Effect of treatments on soilborne disease incidence in peanut.

Treatment, rate/A and application timing ¹	Southern stem rot ²		Sclerotinia ²		CBR ²	
	29 Aug	18 Oct	29 Aug	18 Oct	29 Aug	18 Oct
Untreated check.....	0.8	22.3 a	1.5	7.3	2.0	6.0
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10)	0.3	8.5 b	2.3	13.3	4.0	4.3
Proline 480SC 5.7 fl oz (F) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10)	0.0	3.5 b	2.0	13.8	0.3	4.5
Propulse 400SC 13.69 fl oz (F) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10)	0.3	2.5 b	1.3	17.0	2.5	5.8
Propulse 400SC 13.69 fl oz (E) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10)	0.3	4.3 b	3.8	15.5	2.5	6.5
<i>P</i> (F).....	.58	.008	.77	.52	.20	.95

¹ F=in-furrow (8 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 15 Jul) 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 with symptoms and/or signs of a disease and included 6-in on either side of that point. Means in a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 56. Effect of treatments on root disease, pod rot and yield in peanut.

Treatment, rate/A and application timing ¹	Root disease ² (21 Oct)	Pod rot ³ (21 Oct)	Yield (lb/A) ⁴
Untreated check	3.3	1.3	3010
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10).....	3.0	2.0	4850
Proline 480SC 5.7 fl oz (F) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10).....	2.3	1.5	5615
Propulse 400SC 13.69 fl oz (F) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10).....	3.5	2.0	5353
Propulse 400SC 13.69 fl oz (E) Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21) Bravo 720 1.5 pt (9/10).....	2.8	1.8	4944
<i>P</i> (F) .....	.20	.37	.26

¹ F=in-furrow (8 May), E=100% emergence (28 May). Foliar fungicides were applied at R₃ (beginning pod, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed.

³ Pod rot index: 0 = none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed.

⁴ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug 20 Oct and harvested 25 Oct.

XXI. COMPARISON OF SEED, IN-FURROW AND PEGGING APPLICATIONS OF NEW COMPOUNDS FOR CONTROL OF SOILBORNE DISEASES AND NEMATODES IN PEANUT (PNEMA113, TAREC Research Farm, Field 28)

- A. PURPOSE: To evaluate new chemistries for control of *Cylindrocladium* black rot (CBR), southern stem rot and nematodes in peanut
- B. EXPERIMENTAL DESIGN:
1. Four, randomized complete blocks separated by 10-ft alleyways
 2. Four, 35-ft rows per plot with only two-center rows treated.
 3. Rows spaced 36 in. apart and planted with 4 seed/ft of row
- C. APPLICATION OF TREATMENTS: All seed were treated with Trilex Star 4 oz/cwt. Experimental treatments included S = seed treatment, F = in seed furrow at planting (3 May) either as granules delivered by a Noble Box or liquid mixes in water to make a volume of 5 gal/A applied through microtubes, CB-P = chemigation broadcast (0.5 in., 65 gal/plot) at pegging (10 Jul).
- D. TREATMENT, RATE/A:
1. Admire Pro Systemic 550SC 9 fl oz (F)
 2. Temik 15G 10 lb (F)
 3. BCS-AR83685 500SC 1.994 fl oz/A (S)
Admire Pro Systemic 550SC 9 fl oz (F)
 4. BCS-AR83685 500SC 3.988 fl oz/A (S)
Admire Pro Systemic 550SC 9 fl oz (F)
 5. BCS-AR83685 500SC 1.994 fl oz/A (S)
Admire Pro Systemic 550SC 9 fl oz (F)
SP 25914 400SC 13.69 fl oz/A (C/B-P)
 6. BCS-AR83685 500SC 3.988 fl oz/A (S)
Admire Pro Systemic 550SC 9 fl oz (F)
SP 25914 400SC 13.69 fl oz/A (C/B-P)
 7. Velum Total 440SC 10 fl oz/A (F)
 8. Velum Total 440SC 18 fl oz/A (F)
 9. Velum Total 440SC 10 fl oz/A (F)
SP 25914 400SC 13.69 fl oz/A (C/B-P)
 10. Velum Total 440SC 18 fl oz/A (F)
SP 25914 400SC 13.69 fl oz/A (C/B-P)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: wheat/soybean, 2012; peanut, 2011; wheat/soybean, 2010
 3. Land preparation: strip tillage
 4. Planting date and cultivar: 3 May, CHAMPS

5. Soil fertility report (17 Jan):

pH.....	6.93	K.....	47 ppm
Ca.....	319 ppm	Zn.....	0.3 ppm
Mg.....	40 ppm	Mn.....	2.0 ppm
P.....	19 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report: (11 Mar)

Nematodes/500 cc soil	
Root knot.....	220
Stunt.....	300
Lance.....	80
Ring.....	20
Stubby root.....	80

7. Herbicide:

Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt (19 Apr)

Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)

Post-emergence – Storm 1.5 pt + Basagran 4SC 1.0 pt/A (2 Jul)

8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (3 May, in-furrow)

Orthene 97S 8 oz/A (30 May, 19 Jun)

Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)

9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

10. Leaf spot control: Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)

Bravo Weather Stik 1.5 pt/A (10 Sep)

11. Additional crop management:

a. Liquid boron 1.0 qt/A (19 Apr)

b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)

c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)

d. Liquid Mn 2.0 qt/A (16 Jul)

e. Irrigation: ca. 1 in. (6 Aug)

12. Harvest date: 18 Oct

Table 57. Effect of treatment on emergence and growth in peanut.

Treatment, rate/A and application method ¹	Plants/ft ² (23 May)	Vigor ³ (31 May)	No. missing row ft/70 ft ⁴ (31 May)	Phyto-toxicity ⁵ (31 May)
Admire Pro Systemic 550SC 9 fl oz (F)	2.7 ab	7.0	2.8	1.0
Temik 15G 10 lb (F)	2.7 a	7.0	1.5	1.0
BCS-AR83685 500SC 1.994 fl oz/A (S)				
Admire Pro Systemic 550SC 9 fl oz (F)	2.3 d	7.0	3.8	1.0
BCS-AR83685 500SC 3.988 fl oz/A (S)				
Admire Pro Systemic 550SC 9 fl oz (F)	2.5 b-d	7.0	2.5	1.0
BCS-AR83685 500SC 1.994 fl oz/A (S)				
Admire Pro Systemic 550SC 9 fl oz (F)				
SP 25914 400SC 13.69 fl oz/A (C/B-P)	2.4 cd	7.0	3.0	1.0
BCS-AR83685 500SC 3.988 fl oz/A (S)				
Admire Pro Systemic 550SC 9 fl oz (F)				
SP 25914 400SC 13.69 fl oz/A (C/B-P)	2.7 ab	7.0	2.8	1.0
Velum Total 440SC 10 fl oz/A (F)	2.7 a-c	7.0	2.0	1.0
Velum Total 440SC 18 fl oz/A (F)	2.7 a-c	7.0	2.0	1.0
Velum Total 440SC 10 fl oz/A (F)				
SP 25914 400SC 13.69 fl oz/A (C/B-P)	2.7 a-c	7.0	1.8	1.0
Velum Total 440SC 18 fl oz/A (F)				
SP 25914 400SC 13.69 fl oz/A (C/B-P)	2.7 a-c	7.0	2.3	1.0
<i>P</i> (F) .....	.004	1.00	.31	1.00

¹ F=in-furrow; S=seed treatment; C/B-P=chemigation broadcast at pegging (10 Jul).

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

³ Plant vigor rating scale: 1=no vigor; 9=healthy.

⁴ Determined from counts of missing feet per plot in skips greater than 1 foot in two, 30 ft rows per plot.

⁵ Phytotoxicity rating scale: 0=none; 9=severe leaf burn.

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

Table 58. Effect of treatment on soilborne disease incidence in peanut.

Treatment, rate/A and application method ¹	Southern stem rot ²			CBR ²	
	29 Jul	30 Aug	1 Oct	30 Aug	1 Oct
Admire Pro Systemic 550SC 9 fl oz (F)	0.5	5.3	0.0	0.8	16.0
Temik 15G 10 lb (F).....	1.0	3.3	0.0	1.8	20.5
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F)	0.3	5.5	0.3	0.8	20.3
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F)	0.5	6.5	0.8	0.3	14.8
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	0.5	5.5	0.0	0.0	17.5
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	0.0	4.0	0.0	0.0	15.5
Velum Total 440SC 10 fl oz/A (F)	0.5	3.5	0.0	0.5	17.5
Velum Total 440SC 18 fl oz/A (F)	0.3	3.3	0.0	1.3	18.0
Velum Total 440SC 10 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	0.3	4.5	0.3	0.5	12.5
Velum Total 440SC 18 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	0.8	5.5	0.8	0.8	16.0
<i>P</i> (F) .....	.62	.44	.56	.23	.90

¹ F=in-furrow; S=seed treatment; C/B-P=chemigation broadcast at pegging (10 Jul).

² Count 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 with symptoms and/or signs of a disease and included 6-in on either side of that point.

Table 59. Effect of treatments on nematode populations in peanut.

Treatment, rate/A and application method ¹	Nematodes/500 cc soil (20 Aug) ²				
	Root knot juvenile	Cyst juvenile	Stunt	Ring	Stubby root
Admire Pro Systemic 550SC 9 fl oz (F).....	2500	0	180	80	20
Temik 15G 10 lb (F).....	160	0	160	0	0
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F).....	4180	0	40	540	20
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F).....	9100	0	100	840	0
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	280	0	40	60	0
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	3120	0	40	40	20
Velum Total 440SC 10 fl oz/A (F).....	120	60	0	0	20
Velum Total 440SC 18 fl oz/A (F).....	120	0	40	0	20
Velum Total 440SC 10 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	3740	0	20	140	0
Velum Total 440SC 18 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	80	20	20	40	20

¹ F=in-furrow; S=seed treatment; C/B-P=chemigation broadcast at pegging.

² Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 60. Disease incidence, root gall, pod rot and yield in peanut.

Treatment, rate/A and application method ¹	TSWV ² (29 Jul)	Sclerotinia ³		Root knot gall index ⁴ (3 Oct)	Root disease ⁵ (3 Oct)	Pod rot ⁶ (3 Oct)	Yield (lb/A) ⁷
		30 Aug	1 Oct				
Admire Pro Systemic 550SC 9 fl oz (F).....	3.3bc	0.3	0.3	3.8	1.8	2.0	3420
Temik 15G 10 lb (F).....	2.0c	0.0	1.5	2.3	2.0	2.0	3069
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F).....	3.0bc	0.8	1.5	3.3	2.5	2.5	2979
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F).....	3.8bc	1.5	2.5	3.8	2.3	2.5	2901
BCS-AR83685 500SC 1.994 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	2.3bc	0.5	1.5	2.5	2.0	1.8	3345
BCS-AR83685 500SC 3.988 fl oz/A (S) Admire Pro Systemic 550SC 9 fl oz (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	6.3a	1.8	4.5	3.5	2.8	2.3	3315
Velum Total 440SC 10 fl oz/A (F).....	4.5ab	1.5	2.5	2.5	1.8	2.5	2966
Velum Total 440SC 18 fl oz/A (F).....	4.3a-c	0.3	0.5	3.5	1.3	1.8	3621
Velum Total 440SC 10 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	2.3bc	1.3	5.8	2.5	1.8	2.0	3573
Velum Total 440SC 18 fl oz/A (F) SP 25914 400SC 13.69 fl oz/A (C/B-P).....	3.0bc	1.8	4.0	2.3	1.8	1.5	3465
<i>P</i> (F).....	.04	.32	.10	.74	.30	.50	.32

¹ F=in-furrow; S=seed treatment; C/B-P=chemigation broadcast at pegging.

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

³ Count 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 with symptoms and/or signs of a disease and included 6-in on either side of that point.

⁴ Root knot nematode galling scale: 0=none, 6=100% of roots with galls.

⁵ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0 = none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed.

⁶ Pod rot index: 0 = none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed.

⁷ Yields are weight of peanuts with moisture content adjusted to 7%. Peanuts were dug 3 Oct and harvested 18 Oct. Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$).

XXII. RESPONSE OF PEANUT VARIETIES TO IN-FURROW FUNGICIDE AND SOIL FUMIGATION FOR CONTROL OF NEMATODES AND SOILBORNE DISEASES OF PEANUT (PNEMA213, TAREC Research Farm, Field 28)

A. PURPOSE: To compare susceptibility of peanut varieties to *Cylindrocladium* black rot (CBR) and nematodes

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 and 3 to 4 seed/ft of row
3. Split-plot design with main plots (treatments) of eight rows and subplots (varieties) of two rows spaced 36 in. apart.

C. APPLICATION OF TREATMENTS: F = in seed furrow at planting (3 May) delivered through microtubes with water in a volume of 5 gal/A. C = chisel application at 8- to 10-in. under each row at least 2 wks prior to planting.

D. TREATMENT AND RATE/A:

Virginia types

1. Untreated
2. Propulse 433SC 13.69 fl oz (F)
3. Vapam HL 42% 7.5 gal (C)

Runner types

4. Untreated
5. Propulse 433SC 13.69 fl oz (F)
6. Vapam HL 42% 7.5 gal (C)

E. CULTIVAR:

Virginia types

1. Bailey
2. Sugg
3. Spain
4. CHAMPS

Runner types

1. GA 06G
2. GA09B
3. GA Greener
4. GA 07W

F. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean, 2012; peanut, 2011; wheat/soybean 2010
3. Land preparation: strip tillage
4. Planting date: 3 May
5. Soil fertility report (17 Jan):

pH.....	6.93	K.....	47 ppm
Ca.....	319 ppm	Zn.....	0.3 ppm
Mg.....	40 ppm	Mn.....	2.0 ppm
P.....	19 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report: (11 Mar)

Nematodes/500 cc soil

Root knot	220
Stunt	300
Lance	80
Ring	20
Stubby root	80

7. Herbicide:

Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt (19 Apr)

Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)

Post-emergence – Storm 1.5 pt + Basagran 4SC 1.0 pt/A (2 Jul)

8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (3 May, in-furrow)

Orthene 97S 8 oz/A (30 May, 19 Jun)

Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (Aug 21)

9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

10. Leaf spot control: Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)

Bravo Weather Stik 1.5 pt/A (10 Sep)

11. Additional crop management:

a. Liquid boron 1.0 qt/A (19 Apr)

b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)

c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)

d. Liquid Mn 2.0 qt/A (16 Jul)

e. Irrigation: ca. 1 in. (6 Aug)

12. Harvest date: 18 Oct

Table 61. Plant populations and disease incidence in cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A and application method or cultivar ¹	Plants/ft ² (22 May)	Tomato spotted wilt virus ³ (27 Jul)	Stem rot ⁴		Sclerotinia ⁴ (2 Oct)	CBR ⁴ (2 Oct)
			27 Jul	2 Oct		
VIRGINIA-TYPE						
Treatment mean						
Untreated	2.2	1.9	1.1	2.3	6.7	12.8
Propulse 433SC 13.69 fl oz (F) ...	2.2	2.3	1.8	0.9	9.7	7.8
Vapam HL 42% 7.5 gal/A (C)	2.3	1.9	1.5	1.7	11.6	6.1
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Cultivar mean						
Bailey	2.5ab	1.7	1.2 b	1.1	10.8	2.6 c
Sugg.....	2.5b	1.5	1.3 b	0.6	9.3	2.8 c
Spain.....	1.3c	2.3	1.0 b	2.2	7.7	11.3 b
CHAMPS.....	2.6a	2.7	2.4 a	2.6	9.6	19.0 a
LSD	0.2	n.s.	0.7	n.s.	n.s.	6.8
Split plot analysis						
Treatment.....	.46	.86	.81	.46	.59	.41
Cultivar .....	.0001	.21	.009	.11	.57	.0001
Treatment by cultivar .....	.62	.61	.63	.50	.80	.53
RUNNER-TYPE						
Treatment mean						
Untreated	3.1	1.1	1.1	4.0	6.6	5.1
Propulse 433SC 13.69 fl oz (F) ...	2.8	1.0	1.0	4.7	5.5	2.9
Vapam HL 42% 7.5 gal/A (C)	3.1	1.3	0.9	2.6	9.7	2.3
LSD	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Cultivar mean						
GA-06G	2.7b	0.7	1.0	6.9 a	7.1 b	5.3
GA09B	4.4a	0.5	0.7	3.6 b	4.3 c	3.8
GA Greener.....	2.3c	1.5	1.2	3.7 b	7.2 b	1.8
GA 07W	2.7b	1.8	1.2	0.8 c	10.6 a	2.8
LSD	0.3	0.9	n.s.	2.6	2.5	2.2
Split plot analysis						
Treatment.....	.20	.90	.86	.24	.45	.20
Cultivar .....	.0001	.051	.74	.0007	.0003	.02
Treatment by cultivar .....	.15	.08	.55	.18	.39	.48

¹ F=in furrow (3 May), C =chisel application of soil fumigant two weeks prior to planting (17 Apr).

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

³ Number of plants with symptoms of tomato spotted wilt virus (TSWV).

⁴ Counts of infection centers in the two center rows of each plot or a total of 70 ft row. An infection center was a point with symptoms and signs of a disease and included 6 in. on either side of that point.

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 62. Nematode populations in peanut.

Treatment, rate/A and application method or cultivar ¹	Nematodes/500 cc soil (21 Aug) ²					
	Root knot juvenile	Root knot male	Stunt	Lance	Ring	Stubby root
VIRGINIA-TYPE						
Untreated						
Bailey	180	0	60	60	480	0
Sugg	500	0	140	20	60	20
Spain	1200	0	20	0	80	0
CHAMPS	3580	0	40	40	200	0
Propulse 433SC 13.69 fl oz (F)						
Bailey	20	20	40	0	160	0
Sugg	120	0	20	0	400	0
Spain	220	0	40	0	300	0
CHAMPS	2620	100	40	0	560	0
Vapam HL 42% 7.5 gal/A (C)						
Bailey	140	0	100	20	160	0
Sugg	0	0	60	60	140	0
Spain	360	0	0	0	80	0
CHAMPS	680	0	20	20	520	0
RUNNER TYPES						
Untreated						
GA 06G	1380	40	180	20	1020	20
GA 09B	120	0	140	0	200	80
GA Greener	1040	0	100	40	1470	0
GA 07W	40	0	0	0	220	0
Propulse 433SC 13.69 fl oz (F)						
GA 06G	300	0	0	0	100	0
GA 09B	1700	40	80	40	180	0
GA Greener	2100	20	40	20	240	100
GA 07W	140	0	20	60	60	0
Vapam HL 42% 7.5 gal/A (C)						
GA 06G	0	0	20	120	220	0
GA 09B	2740	0	40	0	60	40
GA Greener	300	0	0	0	100	0
GA 07W	1940	0	20	0	0	0

¹ F=in furrow (3 May), C =chisel application of soil fumigant two weeks prior to planting (17 Apr).

² Soil was sampled on 21 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 63. Maturity of peanut cultivars based on color of pod mesocarp after pod blasting.

Market type and cultivar	Number of pods			% mature ¹		
	Total	White/ yellow	Orange	Brown/ black	Brown/ black	Orange/ brown/ black
Virginia-type						
Bailey	169	51	39	79	47	70
Sugg	153	31	20	102	67	80
Spain.....	227	94	40	93	41	59
CHAMPS	178	61	18	99	56	66
Runner-type						
GA 06G.....	131	37	11	83	63	72
GA-09B.....	112	15	19	78	70	87
GA Greener.....	116	33	11	72	62	72
GA 07W	36	13	8	15	42	64

¹ Pods with brown to black mesocarp tissue were considered mature for harvest on 19 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 64. Disease incidence and yield in cultivars with and without in-furrow fungicide or Vapam.

Treatment, rate/A and application method or cultivar ¹	Root knot gall index ² (3 Oct)	Root disease ³ (3 Oct)	Pod rot ⁴ (3 Oct)	Yield ⁵ (lb/A)
VIRGINIA-TYPE				
Treatment mean				
Untreated.....	3.5	2.2	2.4	2898 b
Propulse 433SC 13.69 fl oz (F).....	2.8	1.8	1.9	3438 a
Vapam HL 42% 7.5 gal/A (C).....	3.0	2.4	2.2	2970 b
LSD	n.s.	n.s.	n.s.	245
Cultivar mean				
Bailey	2.8	1.3 c	1.3 b	3976 a
Sugg.....	3.3	1.4 c	1.4 b	3374 b
Spain	2.7	2.4 b	2.8 a	2837 c
CHAMPS	3.5	3.3 a	3.2 a	2221 d
LSD	0.6	0.6	0.6	283
Split plot analysis				
Treatment.....	.36	.18	.13	.002
Cultivar .....	.052	.0001	.0001	.0001
Treatment by cultivar .....	.45	.23	.14	.03
RUNNER-TYPE				
Treatment mean				
Untreated.....	2.5	2.1 a	2.8	3724
Propulse 433SC 13.69 fl oz (F).....	3.0	1.6 b	2.4	3630
Vapam HL 42% 7.5 gal/A (C).....	2.6	1.6 b	2.5	3921
LSD	n.s.	n.s.	n.s.	n.s.
Cultivar mean				
GA-06G	2.4	1.9 ab	3.0 a	3469 b
GA09B.....	2.8	2.3 a	3.1 a	3550 b
GA Greener	2.7	1.2 c	2.1 b	3967 a
GA 07W	3.0	1.7 b	2.2 b	4046 a
LSD	n.s.	0.5	0.5	307
Split plot analysis				
Treatment.....	.15	.19	.62	.41
Cultivar .....	.40	.0003	.0006	.0008
Treatment by cultivar .....	.30	.26	.42	.054

¹ F=in furrow (3 May), C =chisel application of soil fumigant two weeks prior to planting (17 Apr).

² Root knot nematode galling scale: 0=none, 6=100% of roots with galls.

³ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed.

⁴ Pod rot index: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed.

⁵ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug 3 Oct and harvested 10 Oct. Means in a column or group followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$).

Table 65. Effect of treatment and cultivar on grade characteristics and value.

Treatment, rate/A and application method or cultivar ¹	% ²								Value (¢/lb) ³
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	
VIRGINIA-TYPE									
Treatment mean									
Untreated	0.5	0.3	80.6 b	40.6 b	4.3 a	1.6 b	1.5	62.8	15.7429
Propulse 433SC 13.69 fl oz (F)	0.5	0.0	85.3 a	47.8 a	1.9 b	1.0 b	1.0	65.4	16.7439
Vapam HL 42% 7.5 gal/A (C)	0.8	0.0	84.6 a	40.5 b	4.3 a	3.2 a	1.2	61.8	16.4306
P(F) .....	.67	.42	.05	.009	.02	.007	.66	.14	.26
Cultivar mean									
Bailey	0.0	0.0	81.8 b	48.4 a	5.3 a	2.9 ab	0.2 b	64.8	17.4358
Sugg.....	0.4	0.0	80.8 b	45.8 ab	3.5 ab	1.0 b	1.2 ab	65.9	16.4331
Spain.....	1.0	0.3	89.2 a	41.3 b	2.4 b	1.6 b	2.8 a	60.7	15.2714
CHAMPS.....	0.7	0.0	8.0 b	34.5 c	2.8 b	3.1 a	0.7 b	62.0	16.0828
P(F) .....	.14	.45	.01	.002	.04	.03	.04	.09	.07
RUNNER-TYPE									
Treatment mean									
Untreated	0.8	0.8	--	--	6.1	4.0	3.4	62.1	15.1608
Propulse 433SC 13.69 fl oz (F)	0.8	0.3	--	--	4.1	4.3	3.8	63.1	14.7623
Vapam HL 42% 7.5 gal/A (C)	1.0	0.5	--	--	5.1	3.5	2.9	65.1	15.2673
P(F) .....	.67	.24	--	--	.18	.61	.73	.20	.75
Cultivar mean									
GA-06G.....	1.0	1.0	--	--	3.8	4.1	2.8	64.6 a	14.6441
GA09B.....	0.7	0.7	--	--	6.7	4.3	4.9	59.9 b	14.5758
GA Greener.....	1.0	0.0	--	--	4.3	4.0	3.0	66.0 a	15.7169
GA 07W.....	0.7	0.3	--	--	5.5	3.7	2.9	68.8 ab	15.3171
P(F) .....	.65	0.7	--	--	.12	.83	.41	.05	.48

¹ F=in furrow (3 May), C =chisel application of soil fumigant two weeks prior to planting (17 Apr).

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.

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.

XXIII. COMPARISON OF IN-FURROW APPLICATIONS OF TEMIK 15G AND NEW CHEMISTRIES FOR CONTROL OF NEMATODES AND SOILBORNE DISEASES OF PEANUT (PNEMA313, TAREC Research Farm, Field 28)

A. PURPOSE: To compare new chemistries for improved control of nematodes and diseases in peanut.

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 and 3-4 seed/ft of row

C. APPLICATION OF TREATMENTS: C = chisel application of soil fumigant 8- to 10-in. under rows at least 2 weeks prior to planting (17 Apr); F = in seed furrow at planting either as granules delivered by a Noble Box or liquid mixes in water to make a volume of 5 gal/A applied through microtubes (3 May); P = application of 12-in. band at pegging with one 8004E nozzle positioned over each row (10 Jul)

D. TREATMENT, RATE/A:

1. Untreated
2. Q8U80 SC 1 pt (F)
3. Q8U80 SC 1 qt (F)
4. Vydate C-LV 32 fl oz (F)
5. Vydate C-LV 64 fl oz (F)
6. Vydate C-LV 32 fl oz (F); 17 fl oz (P)
7. Propulse 400SC 13.69 fl oz (F)
8. AgriMek 0.15 EC 24.61 fl oz (F)
9. Larvin 3.2F 15.36 fl oz (F)
10. Counter 20G 6.5 lb (F)
11. Temik 15G 10 lb (F)
12. Vapam HL 42% 7.5 gal (C)

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: wheat/soybean, 2012; peanut, 2011; wheat/soybean, 2010
3. Land preparation: strip tillage
4. Planting date and cultivar: 3 May, Sugg
5. Soil fertility report (17 Jan):

pH.....	6.93	K.....	47 ppm
Ca.....	319 ppm	Zn.....	0.3 ppm
Mg.....	40 ppm	Mn.....	2.0 ppm
P.....	19 ppm	Soil type.....	Kenansville loamy fine sand

6. Nematode assay report: (11 Mar)

Nematodes/500 cc soil	
Root knot	220
Stunt	300
Lance	80
Ring	20
Stubby root	80

7. Herbicide:

Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt (19 Apr)

Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)

Post-emergence – Storm 1.5 pt + Basagran 4SC 1.0 pt/A (2 Jul)

8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (3 May, in-furrow)

Orthene 97S 8 oz/A (30 May, 19 Jun)

Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)

9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

10. Leaf spot control: Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)

Bravo Weather Stik 1.5 pt/A (10 Sep)

11. Additional crop management:

a. Liquid boron 1.0 qt/A (19 Apr)

b. ENC 1.0 qt/A (30 May, 19 Jun)

c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)

d. Liquid Mn 2.0 qt/A (16 Jul)

e. Irrigation: ca. 1 in. (6 Aug)

12. Harvest date: 18 Oct

Table 66. Effect of treatment on plant populations and disease incidence in peanut.

Treatment, rate/A and application method ¹	Plants/ft ² (24 May)	TSWV ³ (29 Jul)	Southern stem rot ⁴		Sclerotinia ⁴ (1 Oct)	CBR ⁴ (1 Oct)
			29 Jul	1 Oct		
Untreated.....	2.9	1.5	0.8	1.3	6.0	5.0
Q8U80 SC 1 pt (F).....	2.8	1.0	0.0	1.0	6.0	2.3
Q8U80 SC 1 qt (F).....	2.6	2.3	0.3	1.8	8.5	2.0
Vydate C-LV 32 fl oz (F)	2.8	1.3	0.5	0.0	8.8	7.5
Vydate C-LV 64 fl oz (F)	2.6	1.5	0.8	1.8	7.5	6.5
Vydate C-LV 32 fl oz (F); Vydate C-LV 17 fl oz (P)	2.6	1.8	0.3	1.0	8.8	2.0
Propulse 400SC 13.69 fl oz (F)....	2.9	1.3	0.3	0.5	8.3	2.3
AgriMek 0.15 EC 24.61 fl oz (F)...	2.9	1.3	0.5	0.5	8.8	4.8
Larvin 3.2F 15.36 fl oz (F).....	2.8	2.0	0.0	1.0	8.5	4.0
Counter 20G 6.5 lb (F).....	2.8	2.3	0.0	0.3	5.8	5.8
Temik 15G 10 lb (F).....	2.8	1.0	0.5	0.8	6.5	4.5
Vapam HL 42% 7.5 gal (C)	2.9	1.5	0.0	1.8	7.8	2.5
<i>P</i> (F) .....	.20	.56	.76	.45	.99	.65

¹ F=in furrow (3 May), C = chisel application of soil fumigant two weeks prior to planting (17 Apr); P=treatment applied at pegging (10 Jul).

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

³ Number of plants with symptoms of tomato spotted wilt virus (TSWV).

⁴ Count 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 with symptoms and signs of a disease and included 6 in. on either side of that point.

Table 67. Effect of treatments on nematode populations in peanut.

Treatment, rate/A and application method ¹	Nematodes/500 cc soil (20 Aug) ²					
	Root knot juvenile	Root knot male	Stunt	Lance	Ring	Stubby root
Untreated.....	60	0	20	0	0	20
Q8U80 SC 1 pt (F).....	0	0	20	0	0	20
Q8U80 SC 1 qt (F).....	420	0	20	0	200	0
Vydate C-LV 32 fl oz (F)	4580	0	0	60	500	0
Vydate C-LV 64 fl oz (F)	220	0	20	0	0	20
Vydate C-LV 32 fl oz (F); Vydate C-LV 17 fl oz (P)	3180	20	120	0	700	0
Propulse 400SC 13.69 fl oz (F).....	1760	0	60	0	260	0
AgriMek 0.15 EC 24.61 fl oz (F).....	820	0	40	0	700	0
Larvin 3.2F 15.36 fl oz (F).....	60	0	0	40	60	0
Counter 20G 6.5 lb (F)	20	0	80	0	0	0
Temik 15G 10 lb (F).....	0	0	20	0	20	0
Vapam HL 42% 7.5 gal (C)	200	20	60	0	160	0

¹ F=in furrow (3 May), C = chisel application of soil fumigant two weeks prior to planting (17 Apr); P=treatment applied at pegging (10 Jul).

² Soil was sampled on 20 Aug. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 68. Root gall, root disease, pod rot and yield in peanut.

Treatment, rate/A and application method ¹	Root knot gall index ² (4 Oct)	Root disease ³ (4 Oct)	Pod rot ⁴ (4 Oct)	Yield (lb/A) ⁵
Untreated	3.5	2.0	2.0	3830
Q8U80 SC 1 pt (F)	2.8	1.3	1.5	3868
Q8U80 SC 1 qt (F)	2.3	1.5	1.5	2949
Vydate C-LV 32 fl oz (F)	2.8	1.8	1.8	3644
Vydate C-LV 64 fl oz (F)	2.3	1.8	1.5	3629
Vydate C-LV 32 fl oz (F); Vydate C-LV 17 fl oz (P)	2.8	1.3	1.5	3790
Propulse 400SC 13.69 fl oz (F)	2.5	1.5	1.5	3838
AgriMek 0.15 EC 24.61 fl oz (F)	2.8	1.5	1.3	3692
Larvin 3.2F 15.36 fl oz (F)	3.3	2.3	2.5	3293
Counter 20G 6.5 lb (F)	3.0	1.3	1.3	4220
Temik 15G 10 lb (F)	3.0	1.3	1.5	3536
Vapam HL 42% 7.5 gal (C)	2.8	1.5	1.3	3906
<i>P</i> (F) .....	.55	.26	.22	.17

¹ F=in furrow (3 May), C = chisel application of soil fumigant two weeks prior to planting (17 Apr); P=treatment applied at pegging (10 Jul).

² Root-knot nematode galling scale: 0=none, 6=100% of roots with galls.

³ Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed.

⁴ Pod rot index: 0= none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed.

⁵ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug 4 Oct and harvested 18 Oct.

XXIV. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SCLEROTINIA BLIGHT OF PEANUT (SCL113, TAREC, Field 16B)

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:** Treatments were applied according to the Virginia Sclerotinia Blight Advisory Program (<http://webipm.ento.vt.edu/cgi-bin/infonet1.cgi>). Treatments were started when the advisory reported a high risk of disease or Sclerotinia blight was first detected in the field (10 Sep). Thereafter, treatments were applied according to the last effective spray date reported in daily advisories. All treatments were applied with three, D₃23 nozzles/row delivering 14.8 gal/A.

D. **TREATMENT AND RATE/A:**

1. Untreated check
2. Propulse 400SC 10 fl oz
3. Propulse 400SC 13.6 fl oz
4. Omega 500SC 1 pt
5. Fontelis 1.67 SC 1.5 pt
6. Priaxor 4.17SC 8 fl oz
7. Serenade Soil 2 qt
8. Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz

E. **ADDITIONAL INFORMATION:**

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
3. Land preparation: rip and strip till
4. Planting date and cultivar: 4 May, Bailey
5. Soil fertility report: (17 Jan)

pH.....	6.38	K.....	39 ppm
Ca.....	201 ppm	Zn.....	0.4 ppm
Mg.....	22 ppm	Mn.....	1.2 ppm
P.....	27 ppm	Soil type.....	Kenansville loamy fine sand

7. *Cylindrocladium* black rot control: Vapam HL 42% 7.5 gal/A (17 Apr)
8. Herbicide:
 - Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt/A (19 Apr)
 - Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)
 - Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)
9. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (4 May in-furrow)
 - Orthene 97S 8 oz/A (30 May, 19 Jun)
 - Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)
10. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)
11. Leaf spot control:
 - Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)
 - Bravo Weather Stik 1.5 pt/A (10 Sep)
12. Additional crop management:
 - a. Liquid boron 1.0 qt/A (19 Apr)
 - b. ENC 1.0 qt/A (30 May)
 - c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)
 - d. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)
 - e. Liquid Mn 2.0 qt/A (16 Jul)
 - f. Irrigation: ca. 1 in. (14 Aug, 9 Sep)
13. Harvest date: 18 Oct

Note: Trial was scouted for disease on 20 Aug but none present. Fungicide treatments were applied on 10 Sep.

Table 69. Effect of treatments on soilborne diseases and yield in peanut.

Treatment, rate/A ¹	CBR ² (1 Oct)	Sclerotinia ² (1 Oct)	Yield (lb/A) ³
Untreated check.....	1.5	0.3	6532
Propulse 400SC 10 fl oz	0.5	0.5	6785
Propulse 400SC 13.6 fl oz	2.0	0.5	6884
Omega 500SC 1 pt	0.8	0.5	6768
Fontelis 1.67 SC 1.5 pt.....	0.8	2.3	6864
Priaxor 4.17SC 8 fl oz	1.5	0.3	6626
Serenade Soil 2 qt.....	1.5	0.8	6785
Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz	1.3	1.5	7069
<i>P</i> (<i>F</i>) .....	.25	.27	.55

¹ Trial was scouted for disease on 20 Aug and none present; fungicide treatments were applied on 10 Sep.

² Counts of infection centers in the two center rows of each plot or a total of 70 ft row. An infection center was a point with symptoms and/or signs of a disease and included 6 in. on either side of that point.

³ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug 3 Oct and harvested 18 Oct.

XXV. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF SCLEROTINIA BLIGHT OF PEANUT (SCL213, TAREC, 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: Treatments were applied according to the Virginia Sclerotinia Blight Advisory Program (<http://webipm.ento.vt.edu/cgi-bin/infonet1.cgi>). Treatments were started when the advisory reported a high risk of disease or Sclerotinia blight was first detected in the field (21 Aug). Thereafter, treatments were applied according to the last effective spray date reported in daily advisories. All treatments were applied with three, D₃23 nozzles/row delivering 14.8 gal/A.

D. TREATMENT AND RATE/A:

1. Untreated check
2. Propulse 400SC 10 fl oz
3. Propulse 400SC 13.6 fl oz
4. Omega 500SC 1 pt
5. Fontelis 1.67 SC 1.5 pt
6. Priaxor 4.17SC 8 fl oz
7. Serenade Soil 2 qt
8. Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Suffolk
2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
3. Land preparation: rip and strip till
4. Planting date and cultivar: 8 May, Bailey
5. Soil fertility report: (17 Jan)

pH.....	6.46	K.....	103 ppm
Ca.....	453 ppm	Zn.....	1.7 ppm
Mg.....	45 ppm	Mn.....	1.8 ppm
P.....	19 ppm	Soil type.....	Nansemond fine sandy loam

6. Cylindrocladium black rot control: Vapam HL 42% 7.5 gal/A (24 Apr)

7. Herbicide:
 - Pre-plant – Roundup Weather Max 1.0 qt/A (11 Apr)
 - Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt/A (26 Apr)
 - Pre-emergence – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Gramoxone Inteon 1.0 pt/A (10 May)
 - Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)
8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (8 May in furrow)
 - Orthene 97S 8 oz/A (30 May, 20 Jun)
 - Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (22 Aug)
9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)
10. Leaf spot control: Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)
Bravo Weather Stik 1.5 pt/A (10 Sep)
11. Additional crop management:
 - a. Liquid boron 1.0 qt/A (19 Apr)
 - b. ENC 1/0 qtA (30 May, 20 Jun, 8 Aug)
 - c. Landplaster: U.S. Gypsum 420 1200 lb/A (25 Jun)
 - d. Liquid Mn 2.0 qt/A (16 Jul)
 - e. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)
12. Harvest date: 25 Oct

Table 70. Effect of treatment on soilborne disease incidence in peanut.

Treatment, rate/A ¹	Southern stem rot ²			Sclerotinia blight ²		
	13 Aug	20 Sep	18 Oct	13 Aug	20 Sep	18 Oct
Untreated check.....	0.3	0.3	1.8	0.0c	1.5	11.5
Propulse 400SC 10 fl oz.....	0.5	0.0	3.5	0.3bc	0.5	6.5
Propulse 400SC 13.6 fl oz.....	0.3	0.0	0.5	0.0c	1.3	4.0
Omega 500SC 1 pt.....	0.0	0.0	0.8	0.0c	0.8	4.5
Fontelis 1.67 SC 1.5 pt.....	0.0	0.0	1.0	0.5ab	2.0	6.3
Priaxor 4.17SC 8 fl oz.....	0.0	0.0	0.8	0.8a	3.3	4.3
Serenade Soil 2 qt.....	0.3	0.3	4.0	0.0c	1.0	8.0
Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz...	0.3	0.0	0.8	0.0c	1.3	6.3
<i>P</i> (<i>F</i>).....	.86	.58	.42	.01	.50	.13

¹ Fungicides were applied on 21 Aug and 18 Sep according to the Sclerotinia blight advisory and scouting for disease.

² Counts of infection centers in the two center rows of each plot or a total of 70 ft row. An infection center was a point with symptoms and signs of a disease and included 6 in. on either side of that point.
Means in a column followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD.

Table 71. Effect of treatment on disease incidence in fungicide-treated peanuts.

Treatment, rate/A ¹	% leaf spot ² (17 Oct)	% defoliation ³ (17 Oct)	CBR ⁴	
			20 Sep	18 Oct
Untreated check	42.5 a	5.0	2.3	1.5
Propulse 400SC 10 fl oz.....	41.3 a	4.0	2.3	2.3
Propulse 400SC 13.6 fl oz.....	8.8 b	1.0	0.8	2.0
Omega 500SC 1 pt.....	31.3 ab	2.0	1.3	0.8
Fontelis 1.67 SC 1.5 pt.....	17.8 b	3.0	0.5	1.5
Priaxor 4.17SC 8 fl oz	8.8 b	3.0	3.3	3.8
Serenade Soil 2 qt.....	50.0 a	4.0	2.0	2.0
Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz.....	8.8 b	1.0	0.8	1.3
<i>P</i> (F) .....	.004	.09	.51	.58

¹ Fungicides were applied on 21 Aug and 18 Sep according to the Sclerotinia blight advisory and scouting for disease.

² Percentage of total leaflets with early or late leaf spot lesions.

³ Percentage of total canopy defoliated.

⁴ Counts of infection centers in the two center rows of each plot or a total of 70 ft row. An infection center was a point with symptoms and signs of a disease and included 6 in. on either side of that point.

Means in a column followed by the same letter(s) are not significantly different at $P=0.05$ according to Fisher's Protected LSD. Percentage data were arcsine transformed prior to statistical analysis.

Table 72. Effect of treatments on root disease, pod rot and yield in peanut.

Treatment, rate/A ¹	Root disease ² (21 Oct)	Pod rot ³ (21 Oct)	Yield (lb/A) ⁴
Untreated check.....	2.5	1.5	6771
Propulse 400SC 10 fl oz	1.8	1.3	7529
Propulse 400SC 13.6 fl oz	1.5	1.3	7654
Omega 500SC 1 pt.....	1.8	1.4	6859
Fontelis 1.67 SC 1.5 pt.....	2.3	2.0	7373
Priaxor 4.17SC 8 fl oz	2.0	1.0	6603
Serenade Soil 2 qt	2.3	1.3	6874
Serenade Soil 1 qt + Propulse 400SC 13.6 fl oz	1.5	1.3	7097
<i>P</i> (F) .....	.52	.07	.33

¹ Fungicides were applied on 21 Aug and 18 Sep according to the Sclerotinia blight advisory and scouting for disease.

² Root disease includes *Cylindrocladium* black rot and Southern stem rot. Rating scale: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of roots decayed.

³ Pod rot index: 0=none, 1=1-10%, 2=11-25%, 3=26-50%, 4=51-75%, 5=76-90%, 6=91-100% of pods decayed.

⁴ Yields are weight of peanuts adjusted to moisture content 7%. Peanuts were dug 20 Oct and harvested 25 Oct.

XXVI. SUCEPTABILITY OF PEANUT VARIETIES TO NEMATODES AND SOILBORNE DISEASES (SCLVAR113, Tidewater Research Farm, Field 16B)

A. PURPOSE: To compare susceptibility of peanut varieties to Sclerotinia blight

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 and 3 to 4 seed/ft of row

C. VARIETIES:

Virginia types

1. Bailey
2. Sugg
3. Spain
4. CHAMPS

Runner types

5. GA 06G
6. GA 09B
7. GA Greener
8. GA 07W

D. ADDITIONAL INFORMATION:

1. Location: TAREC Research Farm, Hare Rd., Suffolk
2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
3. Land preparation: rip and strip till
4. Planting date: 4 May
5. Soil fertility report: (17 Jan)

pH.....	6.38	K.....	39 ppm
Ca.....	201 ppm	Zn.....	0.4 ppm
Mg.....	22 ppm	Mn.....	1.2 ppm
P.....	27 ppm	Soil type.....	Kenansville loamy fine sand

6. Cylindrocladium black rot control: Vapam HL 42% 7.5 gal/A (17 Apr)
7. Herbicide:
 - Pre-plant – Strongarm 84WDG .22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt (19 Apr)
 - Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)
 - Post-emergence – Select 2EC 1.0 pt with Induce 2 oz/A (2 Jul)
8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (4 May in-furrow)
Orthene 97S 8 oz/A (30 May, 19 Jun)
Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)
9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

10. Leaf spot control: Provost 433SC 8 fl oz/A (16 Jul, 8 Aug, 23 Aug)
11. Additional crop management:
 - a. Liquid boron 1.0 qt/A (19 Apr)
 - b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)
 - c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)
 - d. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)
 - e. Liquid Mn 2.0 qt/A (16 Jul)
 - f. Irrigation: ca. 1 in. (14 Aug, 9 Sep)
12. Harvest date: 18 Oct

Table 73. Emergence, soilborne disease incidence and yield in peanut.

Market type and cultivar	Plants/ft ¹ (14 Jun)	Stem rot ² (29 Aug)	CBR ²		Sclerotinia ²		Yield ³ (lb/A)
			29 Aug	1 Oct	29 Aug	1 Oct	
Virginia-type							
Bailey.....	2.8 b	0.0 b	0.0	1.0 b	0.0	0.0	6288
Sugg.....	2.7 bc	0.3 b	1.5	2.5 b	0.0	0.0	5610
Spain.....	1.7 d	0.0 b	0.3	2.0 b	0.0	0.0	6121
CHAMPS.....	2.6 bc	1.8 a	1.5	5.5 a	0.0	0.0	6018
Runner-type							
GA 06G.....	2.8 b	1.5 a	1.5	3.3 ab	0.3	0.5	5952
GA 09B.....	3.7 a	1.5 a	0.0	1.3 b	0.0	0.0	5605
GA Greener.....	2.4 c	0.0 b	1.3	3.0 b	0.3	0.3	5799
GA 07W.....	2.8 b	0.0 b	1.0	1.8 b	0.0	0.0	6292
<i>P</i> (<i>F</i>).....	.0001	.0007	.44	.03	.58	.09	.24

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

² Count 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 with symptoms and/or signs of a disease and included 6-in on either side of that point.

³ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug on 3 Oct and harvested on 18 Oct.

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

XXVII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOT AND SOILBORNE DISEASES OF PEANUT (LFSPOT213, TAREC Research Farm, Field 9B)

- A. PURPOSE: To compare efficacy of biological agent (Serenade Optimum) and foliar fungicides for control of leaf spots, southern stem rot and other soilborne diseases
- B. EXPERIMENTAL DESIGN:
1. Four randomized complete blocks separated by 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, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until beginning maturity (R₇).
- D. TREATMENT, RATE/A AND APPLICATION SEQUENCE:
1. Untreated check
 2. Bravo Weather Stik 720 1.5 pt (R₃, 2nd, 3rd, 4th, 5th spray)
 3. Provost 433SC 10.7 fl oz (R₃, 2nd, 3rd, 4th)
Bravo Weather Stik 720 1.5 pt (5th spray)
 4. Serenade Optimum WP 14 oz (R₃, 2nd, 3rd, 4th, 5th spray)
 5. Serenade Optimum WP 24 oz (R₃, 2nd, 3rd, 4th, 5th spray)
 6. Serenade Optimum WP 24 oz (R₃, 5th spray)
Provost 433SC 10.7 fl oz (2nd, 3rd, 4th spray)
 7. Provost 433SC 10.7 fl oz (R₃, 3rd, 4th spray)
Serenade Optimum WP 24 oz (2nd, 5th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: Corn, 2012; cotton, 2011; peanut, 2010
 3. Land preparation: rip and strip till
 4. Planting date and cultivar: 4 May, Sugg
 5. Soil fertility report: (17 Jan)
- | | | | |
|---------|---------|----------------|-----------------------------|
| pH..... | 6.44 | K..... | 55 ppm |
| Ca..... | 276 ppm | Zn..... | 0.4 ppm |
| Mg..... | 31 ppm | Mn..... | 1.4 ppm |
| P..... | 29 ppm | Soil type..... | Kenansville loamy fine sand |
6. *Cylindrocladium* black rot control: Vapam HL 42% 7.5 gal/A (17 Apr)

7. Herbicide:
 - Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt/A (19 Apr)
 - Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)
 - Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)
8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (4 May in furrow)
Orthene 97S 8 oz/A (30 May, 19 Jun)
Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)
9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)
10. Additional crop management:
 - a. Liquid boron 1.0 qt/A (19 Apr)
 - b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)
 - c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)
 - d. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)
 - e. Liquid Mn 2.0 qt/A (16 Jul)
11. Harvest date: 25 Oct

Table 74. Effect of treatments on disease incidence in peanut.

Treatment, rate/A and application date ¹	% leaf spot ²		% defoliation ³	
	26 Aug	15 Oct	26 Aug	15 Oct
Untreated check.....	28.8 a	82.5 bc	2.8 a	90.0 a
Bravo Weather Stik 1.5 pt (7/15, 8/5, 8/21, 9/6, 10/16)	1.8 b	21.3 d	0.1 b	4.0 d
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21, 9/6) Bravo Weather Stik 1.5 pt (10/16)	1.3 b	75.0 c	0.1 b	18.8 c
Serenade Optimum WP 14 oz (7/15, 8/5, 8/21, 9/6, 10/16)...	21.3 a	93.8 a	2.5 a	92.3 a
Serenade Optimum WP 24 oz (7/15, 8/5, 8/21, 9/6, 10/16)...	26.3 a	91.5 ab	1.8 a	91.3 a
Serenade Optimum WP 24 oz (7/15, 10/16) Provost 433SC 10.7 fl oz (8/5, 8/21, 9/6).....	5.3 b	83.8 bc	0.3 b	22.5 bc
Provost 433SC 10.7 fl oz (7/15, 8/21, 9/6) Serenade Optimum WP 24 oz (8/5, 10/16)	1.8 b	83.8 bc	0.1 b	25.0 b
<i>P</i> (F) .....	.0001	.0001	.0001	.0001

¹ Fungicides were applied at R₃ (beginning pod, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Percentage of total leaflets with early or late spot lesions.

³ Percentage of total canopy defoliated.

Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 75. Effect of treatments on soilborne disease incidence and yield of peanut.

Treatment, rate/A and application date ¹	CBR ² (26 Aug)	Southern stem rot ² (26 Aug)	Yield (lb/A) ³
Untreated check	3.8ab	28.8a	1946 c
Bravo Weather Stik 1.5 pt (7/15, 8/5, 8/21, 9/6, 10/16)	0.0c	9.5d	6240 a
Provost 433SC 10.7 fl oz (7/15, 8/5, 8/21, 9/6)			
Bravo Weather Stik 1.5 pt (10/16)	0.5bc	13.5cd	6271 a
Serenade Optimum WP 14 oz (7/15, 8/5, 8/21, 9/6, 10/16)	3.8ab	25.0ab	2712 b
Serenade Optimum WP 24 oz (7/15, 8/5, 8/21, 9/6, 10/16)	5.0a	22.3a-c	2229 bc
Serenade Optimum WP 24 oz (7/15, 10/16)			
Provost 433SC 10.7 fl oz (8/5, 8/21, 9/6)	0.0c	13.5cd	6014 a
Provost 433SC 10.7 fl oz (7/15, 8/21, 9/6)			
Serenade Optimum WP 24 oz (8/5, 10/16)	0.3bc	17.3b-d	6122 a
<i>P</i> (<i>F</i>) .....	.02	.002	.0001

¹ Fungicides were applied at R₃ (beginning pod, 15 Jul) 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 with symptoms and/or signs of a disease and included 6-in on either side of that point.

³ Yields are weight of peanuts adjusted to moisture content of 7%. Peanuts were dug on 17 Oct and harvested on 25 Oct.

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

XXVIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF LEAF SPOTS AND SOILBORNE DISEASES OF PEANUT (LFSPOT413, TAREC Research Farm, Field 9B)

- 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, beginning pod, 15 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 Weather Stik 1 pt + Folicur 3.6SC 7.2 fl oz (R₃)
Fontelis 1.67SC 1 pt (2nd, 3rd spray)
Bravo Weather Stik 1.5 pt (4th spray)
 3. Headline 2.09SC 9 fl oz (R₃)
Fontelis 1.67SC 1 pt (2nd, 3rd spray)
Bravo Weather Stik 1.5 pt (4th spray)
 4. Abound 2.08SC 12 fl oz (R₃)
Fontelis 1.67SC 1 pt (2nd, 3rd spray)
Bravo Weather Stik 1.5 pt (4th spray)
 5. Abound 2.08SC 12 fl oz + Alto 0.83SL 5.5 fl oz (R₃, 3rd spray)
Tilt/Bravo 4.3SE 1.5 pt (2nd, 4th spray)
 6. Priaxor 8 fl oz (R₃, 2nd, 3rd spray)
Bravo Weather Stik 1.5 pt (4th spray)
 7. Koverall 75DF 2.0 lb + Topguard 14 fl oz (R₃, 2nd, 3rd spray)
Koverall 75DF 2.0 lb + Bravo Weather Stik 1.0 pt (4th spray)
 8. Bravo Weather Stik 1.0 pt + Folicur 3.6F 7.2 fl oz (R₃, 2nd, 3rd spray)
Bravo Weather Stik 1.5 pt (4th spray)
- E. ADDITIONAL INFORMATION:
1. Location: TAREC Research Farm, Hare Rd., Suffolk
 2. Crop history: corn, 2012; cotton, 2011; peanut, 2010
 3. Land preparation: rip and strip till
 4. Planting date and cultivar: 4 May, Sugg

5. Soil fertility report: (17 Jan)

pH.....	6.44	K.....	55 ppm
Ca.....	276 ppm	Zn.....	0.4 ppm
Mg.....	31 ppm	Mn.....	1.4 ppm
P.....	29 ppm	Soil type.....	Kenansville loamy fine sand

6. *Cylindrocladium* black rot control: Vapam HL 42% 7.5 gal/A (17 Apr)

7. Herbicide:

Pre-plant – Strongarm 84WDG 0.22 oz + Dual II Magnum 1.0 pt
+ Prowl 1.0 pt/A (19 Apr)

Pre-emergence – Roundup WeatherMax 1.0 qt + Strongarm 84WDG 0.22 oz
+ Dual II Magnum 1.0 pt/A (5 May)

Post-emergence – Select 2EC 1.0 pt with Induce 2 fl oz/A (2 Jul)

8. Insecticide: Admire Pro Systemic 550SC 9 fl oz/A (4 May, in furrow)

Orthene 97S 8 oz/A (30 May, 19 Jun)

Steward EC 10 fl oz + Baythroid XL 2 fl oz/A (21 Aug)

9. Acaricide: Danitol 2.4EC 6 fl oz/A (16 Jul, 8 Aug)

10. Additional crop management:

a. Liquid boron 1.0 qt/A (19 Apr)

b. ENC 1.0 qt/A (30 May, 19 Jun, 8 Aug)

c. Landplaster: U.S. Gypsum 420 1400 lb/A (25 Jun)

d. Growth regulator: Apogee 7.25 fl oz/A (16 Jul)

e. Liquid Mn 2.0 qt/A (16 Jul)

11. Harvest date: 25 Oct

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

Treatment, rate/A and application date ¹	% leaf spot ²		% defoliation ³	
	28 Aug	15 Oct	28 Aug	15 Oct
Untreated check	65.0 a	73.8 b	6.5 a	90.0 a
Bravo Weather Stik 1 pt + Folicur 3.6SC 7.2 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6).....	3.5 b	88.8 a	0.1 b	61.3 c
Headline 2.09SC 9 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6).....	1.8 b	88.8 a	0.1 b	43.8 d
Abound 2.08SC 12 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6).....	7.0 b	88.8 a	0.1 b	72.5 b
Abound 2.08SC 12 fl oz + Alto 0.83SL 5.5 fl oz (7/15, 8/21) Tilt/Bravo 4.3SE 1.5 pt (8/5, 9/6).....	4.8 b	80.0 ab	0.1 b	32.5 e
Priaxor 8 fl oz (7/15, 8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6).....	2.0 b	30.0 d	0.1 b	3.8 f
Koverall 75DF 2.0 lb + Topguard 14 fl oz (7/15, 8/5, 8/21) Koverall 75DF 2.0 lb + Bravo Weather Stik 1.0 pt (9/6).....	1.8 b	88.8 a	0.1 b	28.8 e
Bravo Weather Stik 1.0 pt + Folicur 3.6F 7.2 fl oz (7/15, 8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6).....	7.0 b	50.0 c	0.3 b	11.3 f
<i>P</i> (<i>F</i>).....	.0001	.0001	.0001	.0001

¹ Fungicides were applied at R₃ (beginning pod, 15 Jul) and thereafter according to the Va. Peanut Leaf Spot Advisory Program until R₇ (beginning maturity).

² Percentage of total leaflets with early or late spot lesions.

³ Percentage of total canopy defoliated.

Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 77. Effect of treatments on disease incidence in peanut.

Treatment, rate/A and application date ¹	CBR ² (2 Oct)	Southern stem rot ² (16 Oct)	Yield (bu/A) ³
Untreated check	2.3	20.0 a	2447 d
Bravo Weather Stik 1 pt + Folicur 3.6SC 7.2 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6)	2.5	6.0 bc	6386 a-c
Headline 2.09SC 9 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6)	3.8	6.0 bc	6304 a-c
Abound 2.08SC 12 fl oz (7/15) Fontelis 1.67SC 1 pt (8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6)	3.3	11.8 b	5978 c
Abound 2.08SC 12 fl oz + Alto 0.83SL 5.5 fl oz (7/15, 8/21) Tilt/Bravo 4.3SE 1.5 pt (8/5, 9/6)	2.0	5.8 bc	6753 a
Priaxor 8 fl oz (7/15, 8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6)	2.0	0.3 c	6733 ab
Koverall 75DF 2.0 lb + Topguard 14 fl oz (7/15, 8/5, 8/21) Koverall 75DF 2.0 lb + Bravo Weather Stik 1.0 pt (9/6)	4.3	5.8 bc	6575 ab
Bravo Weather Stik 1.0 pt + Folicur 3.6F 7.2 fl oz (7/15, 8/5, 8/21) Bravo Weather Stik 1.5 pt (9/6)	3.3	6.3 bc	6258 bc
<i>P(F)</i>.....	.06	.0014	.0001

¹ Fungicides were applied at R₃ (beginning pod, 15 Jul) 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 row. An infection center was a point with symptoms and signs of a disease 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 16 Oct and harvested on 25 Oct.

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

XXIX. SOYBEAN NEMATICIDE TEST (SOYNEMA113, Tidewater Research Center, Field 55)

A. PURPOSE: To evaluate in-furrow 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: F= applied to the seed furrow at planting (4 Jun) as a liquid mixture with water in a volume of 5 gal/A applied through microtubes

D. TREATMENT AND RATE/A:

1. Q8U80 500SC 0.5 pt (F)
2. Q8U80 500SC 1.0 pt (F)
3. Q8U80 500SC 1.0 qt (F)
4. Vydate C-LV 68 fl oz (F)
5. Untreated

E. ADDITIONAL INFORMATION:

1. Location: TAREC, Suffolk
2. Crop history: soybean, 2012; corn 2011; soybean 2010
3. Land preparation: disk and level with board
4. Planting date and variety: 4 Jun, NK556-GS
5. Soil fertility report (17 Jan):

pH.....	6.41	K.....	85 ppm
Ca.....	450 ppm	Zn.....	0.8 ppm
Mg.....	68 ppm	Mn.....	1.8 ppm
P.....	35 ppm	Soil type.....	Nansemond loamy fine sand

6. Nematode assay report (14 Jun):

Nematodes/500 cc soil

Root knot.....	20
Lesion.....	100
Stunt.....	400
Spiral.....	140

7. Herbicide:

Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)

Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)

Roundup Weather Max 22 fl oz + First Rate 0.3 oz/A (8 Jul)

8. Fertilization: 3-9-30 250 lbs/A (4 Apr)
- ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)
- ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)

9. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)

10. Harvest date: 29 Oct

Table 78. Emergence and vigor in soybeans.

Treatment and rate/A ¹	Plants/ft ²	Vigor ³	
	21 Jun	19 Jun	2 Jul
Q8U80 500SC 0.5 pt	6.0	5.5 d	6.5 a
Q8U80 500SC 1.0 pt	5.8	6.0 c	6.5 a
Q8U80 500SC 1.0 qt	5.9	5.0 e	5.5 b
Vydate C-LV 68 fl oz.....	6.1	7.8 a	7.0 a
Untreated.....	6.1	7.0 b	6.8 a
<i>P</i> (<i>F</i>).....	.49	.0001	.009

¹ All treatments applied in-furrow on 4 Jun.

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

³ Plant vigor rating scale: 1=no vigor, 9=healthy.

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

Table 79. Effect of in-furrow treatments on nematode populations in soybeans.

Treatment and rate/A ¹	Nematodes/500 cc soil (17 Jul) ²			
	Cyst juveniles	Cyst females	Stunt	Spiral
Q8U80 500SC 0.5 pt	680	4	80	60
Q8U80 500SC 1.0 pt	380	4	60	60
Q8U80 500SC 1.0 qt	360	2	40	60
Vydate C-LV 68 fl oz.....	440	6	40	0
Untreated.....	900	3	20	60

¹ All treatments applied in-furrow on 4 Jun.

² Soil was sampled on 17 Jul. Data are counts of nematodes in a composite sample from four reps of each treatment.

Table 80. Effect of treatments on yield and grade of soybeans.

Treatment and rate/A ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
Q8U80 500SC 0.5 pt	58.7	0.5	2.3	3.8
Q8U80 500SC 1.0 pt	58.8	0.5	1.8	3.0
Q8U80 500SC 1.0 qt	58.3	0.5	2.8	3.8
Vydate C-LV 68 fl oz.....	66.2	0.5	2.8	3.3
Untreated.....	59.3	0.5	1.5	3.3
<i>P</i> (<i>F</i>).....	.38	.27	.72	.63

¹ All treatments applied in-furrow on 4 Jun.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 29 Oct.

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

XXX. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES AND SOYBEAN RUST (SOYRUST113, Duke Farm, Field 40)

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 OF TREATMENTS: Treatments were applied at R₁ (beginning bloom, 26 Jul), R₃ (beginning pod, 15 Aug), or R₅ (beginning seed, 23 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 (R₁)
3. Topguard 1.04SC 7 fl oz (R₃)
4. Topguard 1.04SC 7 fl oz (R₁, R₃)
5. Domark 1.9ME 5 fl oz (R₃, R₅)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2012; soybean, 2011; corn, 2010
3. Land preparation: disk and level with board
4. Planting date and variety: 5 Jun, NK S56-G6
5. Soil fertility report (11 Jan):

pH.....	6.47	K.....	63 ppm
Ca.....	269 ppm	Zn.....	0.6 ppm
Mg.....	42 ppm	Mn.....	1.9 ppm
P.....	20 ppm	Soil type.....	Nansemond loamy fine sand

6. Herbicide:

Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)

Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)

Roundup Weather Max 22 fl oz + First Rate 0.3 oz/A (8 Jul)

7. Fertilization: 3-9-30 250 lbs/A (4 Apr)

ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)

ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)

8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)

9. Harvest date: 29 Oct

Table 81. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area affected ¹					
	Anthraco-nose	Brown spot	Cercospora blight	Downy mildew	Frogeye leaf spot	Soybean rust
20 Aug.....	- -	1-3	10-8	3-1	- -	- -
19 Sep.....	6-5	- -	42-15	- -	8-1	3-1

¹ A sample of 50 leaflets was collected on 20 Aug and 19 Sep. Leaflets were incubated in a moist chamber to induce sporulation; diseases were identified using a dissecting microscope.

Table 82. Effect of treatments on disease incidence, defoliation and senescence in soybeans.

Treatment, rate/A and application date ¹	%			
	Cercospora blight ² (8 Oct)	% Target spot ² (8 Oct)	% defoliation ³ (8 Oct)	% yellowing ⁴ (8 Oct)
Untreated	7.6	0.2	98.6	46.0
Topguard 1.04SC 7 fl oz (7/26)	8.2	0.2	98.2	38.0
Topguard 1.04SC 7 fl oz (8/15)	6.8	0.2	97.4	40.0
Topguard 1.04SC 7 fl oz (7/26, 8/15).....	9.0	0.0	98.0	28.0
Domark 1.9ME 5 fl oz (8/15, 8/23).....	4.6	0.0	97.4	34.0
<i>P</i> (F).....	.75	.70	.46	.38

¹ Treatments were applied at R₁ (beginning bloom, 26 Jul), R₃ (beginning pod, 15 Aug), or R₅ (beginning seed, 23 Aug).

² Percent leaf area with disease.

³ Percent canopy defoliated.

⁴ Overall yellowing as an indication of senescence.

Percentage data were arcsine transformed prior to statistical analysis.

Table 83. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application timing ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
Untreated	64.7	0.4	0.2	2.0
Topguard 1.04SC 7 fl oz (7/26)	60.5	0.4	0.2	2.0
Topguard 1.04SC 7 fl oz (8/15)	55.1	0.4	0.4	2.2
Topguard 1.04SC 7 fl oz (7/26, 8/15)	55.4	0.4	0.2	2.2
Domark 1.9ME 5 fl oz (8/15, 8/23).....	58.6	0.5	0.8	2.0
<i>P</i> (F).....	.55	.53	.44	.99

¹ Treatments were applied at R₁ (beginning bloom, 26 Jul), R₃ (beginning pod, 15 Aug), or R₅ (beginning seed, 23 Aug).

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 29 Oct.

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

XXXI. SOYBEAN FUNGICIDE TEST (SOYRUST213, Duke Farm, Field 40)

- 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. Four, 30-ft rows per plot
 3. Rows spaced 18 in. apart
- C. APPLICATION OF TREATMENTS: Treatments were applied at R₃ (beginning pod, 7 Aug) and 13 days after R₃ (20 Aug) with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A. All treatments were applied with Induce 6.4 fl oz/A (0.25% v/v).
- D. TREATMENT, RATE/A AND APPLICATION TIMING:
1. Aproach 2.08EC 6 fl oz (R₃)
 2. Aproach Prima 2.34SC 5 fl oz (R₃)
 3. Aproach Prima 2.34SC 6.8 fl oz (R₃)
 4. Aproach Prima 2.34SC 6.8 fl oz (R₃)
Aproach Prima 2.34SC 6.8 fl oz (13 days after 1st application)
 5. Aproach 2.08EC 6 fl oz
+ Asana XL 0.66EC 9.6 fl oz (R₃)
 6. Aproach Prima 2.34SC 6.8 fl oz
+ Asana XL 0.66EC 9.6 fl oz (R₃)
 7. Aproach 2.08EC 6 fl oz
+ Prevathon 50SC 14 fl oz (R₃)
 8. Aproach Prima 2.34SC 6.8 fl oz
+ Prevathon 50SC 14 fl oz (R₃)
 9. Quilt Xcel 2.2SE 14 fl oz (R₃)
 10. Untreated
- E. ADDITIONAL INFORMATION:
1. Location: Duke Farm, Suffolk
 2. Crop history: corn 2012, soybean, 2011; corn, 2010
 3. Land preparation: disk and level with board
 4. Planting date and variety: 5 Jun, AG 5332
 5. Soil fertility report (11 Jan):
- | | | | |
|---------|---------|----------------|---------------------------|
| pH..... | 6.47 | K..... | 63 ppm |
| Ca..... | 269 ppm | Zn..... | 0.6 ppm |
| Mg..... | 42 ppm | Mn..... | 1.9 ppm |
| P..... | 20 ppm | Soil type..... | Nansemond loamy fine sand |

6. Herbicide:
 - Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)
 - Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)
 - Roundup Weather Max 22 fl oz + FirstRate 0.3 oz/A (8 Jul)
7. Fertilization: 3-9-30 250 lbs/A (4 Apr)
 - ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)
 - ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)
8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)
9. Harvest date: 30 Oct

Table 84. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area affected ¹							
	Anthrax-nose	Brown spot	Cercospora blight	Diaporthe	Downey mildew	Frogeye leaf spot	Phyllosticta	Soybean rust
20 Aug	--	8-2	10-3	--	9-2	2-1	--	--
19 Sep	30-20	--	34-20	9-10	--	16-2	5-5	2-1

¹ A sample of 50 leaflets was collected on 20 Aug and 19 Sep. Leaflets were incubated in a moist chamber to induce sporulation; diseases were identified using a dissecting microscope.

Table 85. Effect of treatments on disease incidence, defoliation and senescence in soybeans.

Treatment, rate/A and application date ¹	% Cercospora blight ² (25 Sep)	% Target spot ² (25 Sep)	% defoliation ³ (25 Sep)	% yellowing ⁴ (25 Sep)
Approach 2.08EC 6 fl oz (8/7).....	4.0 b-d	0.4 b	1.0	4.4 b
Approach Prima 2.34SC 5 fl oz (8/7).....	7.0 ab	0.6 b	2.2	6.2 b
Approach Prima 2.34SC 6.8 fl oz (8/7).....	3.4 b-d	0.1 b	0.6	3.8 b
Approach Prima 2.34SC 6.8 fl oz (8/7) Approach Prima 2.34SC 6.8 fl oz (8/20)....	1.4 d	0.0 b	0.8	2.2 b
Approach 2.08EC 6 fl oz + Asana XL 0.66EC 9.6 fl oz (8/7).....	5.0 b-d	0.2 b	1.6	3.6 b
Approach Prima 2.34SC 6.8 fl oz + Asana XL 0.66EC 9.6 fl oz (8/7).....	2.0 cd	0.2 b	1.6	3.8 b
Approach 2.08EC 6 fl oz + Prevathon 50SC 14 fl oz (8/7).....	5.4 bc	0.2 b	1.6	6.4 b
Approach Prima 2.34SC 6.8 fl oz + Prevathon 50SC 14 fl oz (8/7).....	1.8 cd	0.0 b	0.8	3.0 b
Quilt Xcel 2.2SE 14 fl oz (8/7).....	3.8 b-d	0.0 b	1.0	2.8 b
Untreated	10.6 a	1.4 a	7.8	22.6 a
<i>P</i> (<i>F</i>).....	.0004	.003	.27	.009

¹ Treatments were applied at R₃ (beginning pod, 7 Aug) or 10-14 days after R₃ (20 Aug) with Induce 6.4 fl oz/A.

² Percent leaf area with disease.

³ Percent canopy defoliated.

⁴ Percent of total leaves yellowing as an indication of senescence.

Means within a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to analysis.

Table 86. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application date ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
Approach 2.08EC 6 fl oz (8/7).....	74.1	0.5	1.2	1.6
Approach Prima 2.34SC 5 fl oz (8/7)	73.8	0.5	1.8	2.2
Approach Prima 2.34SC 6.8 fl oz (8/7)	75.4	0.5	2.0	2.4
Approach Prima 2.34SC 6.8 fl oz (8/7)				
Approach Prima 2.34SC 6.8 fl oz (8/20)...	75.2	0.5	2.6	3.2
Approach 2.08EC 6 fl oz + Asana XL 0.66EC 9.6 fl oz (8/7)	74.5	0.5	1.6	3.6
Approach Prima 2.34SC 6.8 fl oz + Asana XL 0.66EC 9.6 fl oz (8/7)	74.7	0.6	1.6	2.0
Approach 2.08EC 6 fl oz + Prevathon 50SC 14 fl oz (8/7).....	75.6	0.5	1.4	1.6
Approach Prima 2.34SC 6.8 fl oz + Prevathon 50SC 14 fl oz (8/7).....	76.1	0.6	1.8	2.2
Quilt Xcel 2.2SE 14 fl oz (8/7).....	76.7	0.6	0.8	2.2
Untreated	74.5	0.6	1.6	2.0
<i>P</i> (<i>F</i>).....	.10	.20	.78	.52

¹ Treatments were applied at R₃ (beginning pod, 7 Aug) or 10-14 days after R₃ (20 Aug) with Induce 6.4 fl oz/A.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 30 Oct.

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

XXXII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES AND SOYBEAN RUST (SOYRUST313, Duke Farm, Field 40)

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. Eight, 30-ft rows spaced 18 in. apart per plot
3. Data collected from four center rows of each plot

C. APPLICATION: Treatments were applied at R₃ (beginning pod, 7 Aug) with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A. All treatments were applied with Induce 6.4 fl oz/A (0.25% v/v).

D. TREATMENT AND RATE/A:

1. Untreated
2. Headline 2.09SC 6 fl oz
3. Priaxor 4.17SC 4 fl oz
4. Quilt Xcel 10.5 fl oz
5. Stratego YLD 4.18SC 4 fl oz
6. Acanto SC 6 fl oz
7. Acanto SC 5.6 fl oz
+ Alto SL 5.6 fl oz
8. Priaxor SC 4 oz
+ Fastac EC 3.8 fl oz
9. Quilt Xcel 10.5 fl oz
+ Warrior T 2.56 fl oz
10. Stratego YLD 4.18SC 4 fl oz
+ Baythroid 2.8 fl oz

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2012; soybean, 2011; corn, 2010
3. Land preparation: disk and level with board
4. Planting date and variety: 5 Jun, AG 5332
5. Soil fertility report (17 Jan):

pH.....	6.47	K.....	63 ppm
Ca.....	269 ppm	Zn.....	0.6 ppm
Mg.....	42 ppm	Mn.....	1.9 ppm
P.....	20 ppm	Soil type.....	Nansemond loamy fine sand

6. Herbicide:

Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)

Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)

Roundup Weather Max 22 fl oz + FirstRate 0.3 oz/A (8 Jul)

7. Fertilization: 3-9-30 250 lbs/A (4 Apr)
ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)
ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)
8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)
9. Harvest date: 30 Oct

Table 87. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area affected ¹						
	Anthrax- nose	Cercospora blight	Downy mildew	Frogeye leaf spot	Phyllosticta	Phomopsis	Soybean rust
20 Aug.....	--	18-5	20-3	--	--	2-2	--
19 Sep.....	3-1	46-10	--	12-1	20-5	--	5-1

¹ A sample of 50 leaflets was collected on 20 Aug and 19 Sep. Leaflets were incubated in a moist chamber to induce sporulation; diseases were identified using a dissecting microscope.

Table 88. Effect of treatments on disease incidence, defoliation and senescence in soybeans.

Treatment, rate/A ¹	% Cercospora blight ² (26 Sep)	% Target spot ² (26 Sep)	% defoliation ³ (26 Sep)	% yellowing ⁴ (26 Sep)
Untreated	9.6 a	1.8	6.2 a	15.6 a
Headline 2.09SC 6 fl oz.....	6.2 bc	1.0	3.0 cd	5.4 c
Priaxor 4.17SC 4 fl oz	3.6 cd	0.8	2.4 cd	6.6 bc
Quilt Xcel 10.5 fl oz	5.6 b-d	0.8	3.8 b-d	6.0 bc
Stratego YLD 4.18SC 4 fl oz	3.4 cd	0.4	2.6 cd	4.0 c
Acanto SC 6 fl oz	8.6 ab	1.8	5.4 ab	10.8 ab
Acanto SC 5.6 fl oz + Alto SL 5.6 fl oz.....	2.8 d	0.8	2.0 d	3.8 c
Priaxor SC 4 oz + Fastac EC 3.8 fl oz.....	5.0 cd	0.8	3.2 b-d	5.0 c
Quilt Xcel 10.5 fl oz + Warrior T 2.56 fl oz.....	5.4 b-d	0.8	4.4 a-c	6.4 bc
Stratego YLD 4.18SC 4 fl oz + Baythroid 2.8 fl oz	4.8 cd	0.6	2.6 cd	5.8 bc
<i>P</i> (<i>F</i>).....	.003	.051	.01	.002

¹ All treatments were applied at R₃ (beginning pod, 7 Aug) with Induce 6.4 fl oz/A.

² Percent leaf area with disease.

³ Percent defoliated canopy.

⁴ Percent of total leaves yellowing as an indication of senescence.

Means within a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to analysis.

Table 89. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
Untreated	71.5	0.6	3.6	2.0
Headline 2.09SC 6 fl oz.....	71.6	0.6	2.4	2.8
Priaxor 4.17SC 4 fl oz	70.8	0.6	1.4	2.4
Quilt Xcel 10.5 fl oz	70.0	0.6	3.0	2.2
Stratego YLD 4.18SC 4 fl oz	70.0	0.6	2.4	2.6
Acanto SC 6 fl oz	69.1	0.6	2.4	2.2
Acanto SC 5.6 fl oz + Alto SL 5.6 fl oz.....	73.0	0.6	1.8	1.8
Priaxor SC 4 oz + Fastac EC 3.8 fl oz.....	77.1	0.6	3.0	2.0
Quilt Xcel 10.5 fl oz + Warrior T 2.56 fl oz.....	68.6	0.6	1.8	2.0
Stratego YLD 4.18SC 4 fl oz + Baythroid 2.8 fl oz	73.2	0.6	2.2	2.4
<i>P</i> (<i>F</i>).....	.33	.09	.32	.55

¹ All treatments were applied at R₃ (beginning pod, 7 Aug) with Induce 6.4 fl oz/A.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 30 Oct.

³ Percent of 100 seed with symptoms of disease.

XXXIII. EVALUATION OF FOLIAR FUNGICIDES FOR CONTROL OF COMMON DISEASES AND SOYBEAN RUST (SOYRUST413, Duke Farm, Field 40)

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. Eight, 30-ft rows spaced 18 in. apart per plot
3. Data collected from four center rows of each plot

C. APPLICATION: Treatments were applied at 3 weeks after V_1 (V_1 = trifoliolate on main stem, 11 Jul), R_1 (beginning flower, 26 Jul), R_2 (full flower, 31 Jul), R_3 (beginning pod, 15 Aug) and R_4 (full pod, 20 Aug) with a Lee Spider sprayer having eight, 8002VS nozzles spaced 18 in. apart and delivering a volume of 19.88 gal/A. Treatments 3-10 were applied with Induce 6.4 fl oz/A (0.25% v/v).

D. TREATMENT AND RATE/A:

1. Untreated
2. Priaxor 4.17SC 4 fl oz (3 weeks after V_1)
3. Priaxor 4.17SC 4 fl oz (R_1 -beginning flower)
4. Priaxor 4.17SC 4 fl oz (R_2 -full flower)
5. Priaxor 4.17SC 4 fl oz (R_3 -beginning pod)
6. Priaxor 4.17SC 4 fl oz (R_4 -full pod)
7. Priaxor 4.17SC 4 fl oz (3 weeks after V_1)
Priaxor 4.17SC 4 fl oz (R_3 -beginning pod)
8. Priaxor 4.17SC 4 fl oz (R_2 -full flower)
Priaxor 4.17SC 4 fl oz (R_3 -beginning pod)

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2012; soybean, 2011; corn, 2010
3. Land preparation: disk and level with board
4. Planting date and variety: 5 Jun, S56-G6
5. Soil fertility report (17 Jan):

pH.....	6.47	K.....	63 ppm
Ca.....	269 ppm	Zn.....	0.6 ppm
Mg.....	42 ppm	Mn.....	1.9 ppm
P.....	20 ppm	Soil type.....	Nansemond loamy fine sand

6. Herbicide:

Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)

Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)

Roundup Weather Max 22 fl oz + First Rate 0.3 oz/A (8 Jul)

7. Fertilization: 3-9-30 250 lbs/A (4 Apr)
 ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)
 ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)
8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)
9. Harvest date: 29 Oct

Table 90. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area affected ¹						
	Anthrac-nose	Cercospora blight	Diaporthe	Downey mildew	Frogeye leaf spot	Phyllosticta	Soybean rust
21 Aug.....	1-1	12-3	--	6-1	--	--	--
19 Sep.....	11-2	45-20	20-20	--	1-1	3-2	6-2

¹ A sample of 50 leaflets was collected on 21 Aug and 19 Sep. Leaflets were incubated in a moist chamber to induce sporulation; diseases were identified using a dissecting microscope.

Table 91. Effect of treatments on disease incidence, defoliation and senescence in soybeans.

Treatment, rate/A and application date ¹	% Cercospora blight ² (8 Oct)	% Target spot ² (8 Oct)	% defoliation ³ (8 Oct)	% yellowing ⁴ (8 Oct)
Untreated	6.6	0.0	98.4	42.0
Priaxor 4.17SC 4 fl oz (7/11).....	10.0	0.6	97.8	48.0
Priaxor 4.17SC 4 fl oz (7/26).....	6.0	0.2	93.6	34.0
Priaxor 4.17SC 4 fl oz (7/31).....	5.0	0.0	96.6	52.0
Priaxor 4.17SC 4 fl oz (8/15).....	10.0	0.0	97.2	36.0
Priaxor 4.17SC 4 fl oz (8/20).....	6.6	0.0	95.8	36.0
Priaxor 4.17SC 4 fl oz (7/11) Priaxor 4.17SC 4 fl oz (8/15).....	7.6	0.0	97.8	44.0
Priaxor 4.17SC 4 fl oz (7/31) Priaxor 4.17SC 4 fl oz (8/15).....	5.6	0.0	95.6	50.0
<i>P</i> (<i>F</i>).....	.24	.14	.25	.47

¹ Treatments were applied at 3 weeks after V₁ (V₁ = trifoliolate on main stem, 11 Jul), R₁ (beginning flower, 26 Jul), R₂ (full flower, 31 Jul), R₃ (beginning pod, 15 Aug) and R₄ (full pod, 20 Aug) with Induce 6.4 fl oz/A.

² Percent leaf area with disease.

³ Percent canopy defoliated.

⁴ Percent of total leaves yellowing as an indication of senescence.

Percentage data were arcsine transformed prior to statistical analysis.

Table 92. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application date ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
Untreated	56.4	0.4 c	1.0	3.0 bc
Priaxor 4.17SC 4 fl oz (7/11)	66.1	0.5 ab	0.6	2.4 c
Priaxor 4.17SC 4 fl oz (7/26)	56.9	0.4 bc	1.8	3.8 ab
Priaxor 4.17SC 4 fl oz (7/31)	68.2	0.5 ab	0.8	4.8 a
Priaxor 4.17SC 4 fl oz (8/15)	70.4	0.5 a	1.8	2.6 c
Priaxor 4.17SC 4 fl oz (8/20)	63.0	0.4 a-c	1.2	2.0 c
Priaxor 4.17SC 4 fl oz (7/11) Priaxor 4.17SC 4 fl oz (8/15)	59.8	0.5 a	2.2	2.4 c
Priaxor 4.17SC 4 fl oz (7/31) Priaxor 4.17SC 4 fl oz (8/15)	61.3	0.5 ab	2.2	3.0 bc
<i>P</i> (F) .....	.26	.03	.41	.0002

¹ Treatments were applied at 3 weeks after V₁ (V₁ = trifoliolate on main stem, 11 Jul), R₁ (beginning flower, 26 Jul), R₂ (full flower, 31 Jul), R₃ (beginning pod, 15 Aug) and R₄ (full pod, 20 Aug) with Induce 6.4 fl oz/A.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 29 Oct.

³ 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 ($P=0.05$).

XXXIV. EVALUATION OF WEATHER-BASED ADVISORIES FOR ASSESSING RISK FOR FOLIAR DISEASES OF SOYBEAN (SOYFUNADV113, Duke Farm, Field 40)

- A. PURPOSE: To evaluate weather-based criteria in timing fungicide sprays for increased efficiency and profitability of foliar disease control in soybean
- 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: All fungicides were applied with Induce 6.4 fl oz/A 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 R_3 (15 Aug) and R_6 (9 Sep) for timing of fungicide application. Air temperature criteria included daily averages $\geq 65^\circ\text{F}$ and $\leq 78^\circ\text{F}$, and moisture provided by periods of relative humidity $\geq 95\%$ for ≥ 10 hrs/day. Thresholds for fungicide application were 2 consecutive favorable days during the monitoring period. The protection interval (PI) after each fungicide spray was 14 days before re-starting each model. Advisory models were compared to sprays applied at R_3 and $R_3 + 21$ days.

One spray: at beginning pod (R_3 , 15 Aug)

1. Priaxor 4.17SC 4 fl oz
2. Quilt Xcel 2.2SE 10.5 fl oz
3. Stratego YLD 4.18SC 4 fl oz

Two sprays: 1st spray at beginning pod (R_3 , 8/15) and 21 days later (9/4)

4. Priaxor 4.17SC 4 fl oz
5. Quilt Xcel 2.2SE 10.5 fl oz
6. Stratego YLD 4.18SC 4 fl oz

One spray: (8/20) following 2 consecutive favorable days from R_3 to R_5

7. Priaxor 4.17SC 4 fl oz
8. Quilt Xcel 2.2SE 10.5 fl oz
9. Stratego YLD 4.18SC 4 fl oz

Two sprays: (8/20), same as previous, followed by a 2nd spray after a 2-week protection period expires and another 2 consecutive favorable days occur (9/6)

10. Priaxor 4.17SC 4 fl oz
11. Quilt Xcel 2.2SE 10.5 fl oz
12. Stratego YLD 4.18SC 4 fl oz
13. Untreated check

E. ADDITIONAL INFORMATION:

1. Location: Duke Farm, Suffolk
2. Crop history: corn 2010, corn 2011, soybean 2012
3. Land preparation: disk and level with board
4. Planting date and variety: 5 Jun, NK S56-G6
5. Soil fertility report (17 Jan):

pH.....	6.47	Mn	42 ppm
Ca.....	269 ppm	K.....	63 ppm
Mg	42 ppm	Zn	0.6 ppm
P	20 ppm	Soil type.....	Nansemond loamy fine sand

6. Herbicide:
 - Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)
 - Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)
 - Roundup Weather Max 22 fl oz + First Rate 0.3 oz/A (8 Jul)
7. Fertilization: 3-9-30 250 lbs/A (4 Apr)
 - ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)
 - ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)
8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)
9. Harvest date: 29 Oct

Table 93. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area affected ¹						
	Anthrax- nose	Brown spot	Cercospora blight	Diaporthe	Downey mildew	Frogeye leaf spot	Soybean rust
21 Aug.....	--	8-2	10-3	--	9-2	--	
19 Sep.....	2-2	--	26-25	24-20	--	7-1	6-1

¹ A sample of 100 leaflets was collected on 21 Aug and 50 leaflets on 19 Sep. Leaflets were incubated in a moist chamber to induce sporulation; diseases were identified using a dissecting microscope.

Table 94. Effect of treatments on disease incidence, defoliation and senescence in soybeans.

Treatment, rate/A and application timing/date ¹	% Cercospora blight ² (8 Oct)	% Target spot ² (8 Oct)	% defoliation ³ (8 Oct)	% yellowing ⁴ (8 Oct)
<u>One spray: (R₃, 8/15)</u>				
Priaxor 4.17SC 4 fl oz	15.0 a	0.4	92.8	46.0
Quilt Xcel 2.2SE 10.5 fl oz.....	12.0 a-c	0.6	88.0	44.0
Stratego YLD 4.18SC 4 fl oz	12.0 a-c	0.4	89.6	50.0
<u>Two sprays: (R₃, 8/15) + 21 days (9/4)</u>				
Priaxor 4.17SC 4 fl oz	14.0 ab	0.0	74.6	41.0
Quilt Xcel 2.2SE 10.5 fl oz.....	5.0 d	0.2	83.8	46.0
Stratego YLD 4.18SC 4 fl oz	8.0 cd	0.6	89.6	52.0
<u>One advisory spray: (8/20)</u>				
Priaxor 4.17SC 4 fl oz	10.0 a-d	0.2	91.0	40.0
Quilt Xcel 2.2SE 10.5 fl oz.....	11.0 a-c	0.2	91.6	48.0
Stratego YLD 4.18SC 4 fl oz	12.0 a-c	0.2	96.8	48.0
<u>Two advisory sprays: (8/20, 9/6)</u>				
Priaxor 4.17SC 4 fl oz	11.0 a-c	0.4	91.4	40.0
Quilt Xcel 2.2SE 10.5 fl oz.....	7.0 cd	0.4	93.0	50.0
Stratego YLD 4.18SC 4 fl oz	9.0 b-d	0.0	89.2	48.0
Untreated	12.0 a-c	0.0	97.8	50.0
<i>P</i> (F).....	.05	.50	.12	.97

¹ All fungicides were applied with Induce 6.4 fl oz/A.

² Percent leaf area with disease.

³ Percent canopy defoliated.

⁴ Percent of total leaves yellowing as an indication of senescence.

Means in a column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD ($P=0.05$). Percentage data were arcsine transformed prior to statistical analysis.

Table 95. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application timing/date ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthracnose ³
<u>One spray: (R₃, 8/15)</u>				
Priaxor 4.17SC 4 fl oz.....	73.3	0.5	2.8	6.0
Quilt Xcel 2.2SE 10.5 fl oz.....	75.5	0.5	2.6	6.4
Stratego YLD 4.18SC 4 fl oz.....	76.1	0.5	3.0	6.6
<u>Two sprays: (R₃, 8/15) + 21 days (9/4)</u>				
Priaxor 4.17SC 4 fl oz.....	76.6	0.5	2.0	5.2
Quilt Xcel 2.2SE 10.5 fl oz.....	76.2	0.5	1.0	5.2
Stratego YLD 4.18SC 4 fl oz.....	75.2	0.5	2.4	5.4
<u>One advisory spray: (8/20)</u>				
Priaxor 4.17SC 4 fl oz.....	73.7	0.5	2.0	4.0
Quilt Xcel 2.2SE 10.5 fl oz.....	76.2	0.5	2.0	5.8
Stratego YLD 4.18SC 4 fl oz.....	70.5	0.5	1.4	4.6
<u>Two advisory sprays: (8/20, 9/6)</u>				
Priaxor 4.17SC 4 fl oz.....	71.8	0.5	2.2	4.2
Quilt Xcel 2.2SE 10.5 fl oz.....	72.0	0.5	2.0	6.6
Stratego YLD 4.18SC 4 fl oz.....	73.7	0.5	1.8	6.0
Untreated	68.1	0.5	2.2	5.4
<i>P(F)</i> .....	.53	.43	.89	.20

¹ All fungicides were applied with Induce 6.4 fl oz/A.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested 29 Oct.

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

XXXV. EVALUATION OF WEATHER-BASED ADVISORIES FOR ASSESSING RISK FOR FOLIAR DISEASES OF SOYBEAN (SOYFUNADV213, Tidewater Research Center, Field 55)

- A. PURPOSE: To evaluate weather-based criteria in timing fungicide sprays for increased efficiency and profitability of foliar disease control in soybean
- 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: All fungicides were applied with Induce 6.4 fl oz/A 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 R_3 (15 Aug) and R_6 (9 Sep) for timing of fungicide application. Air temperature criteria included daily averages $\geq 65^\circ\text{F}$ and $\leq 78^\circ\text{F}$, and moisture provided by periods of relative humidity $\geq 95\%$ for ≥ 10 hrs/day. Thresholds for fungicide application were 2 consecutive favorable days during the monitoring period. The protection interval (PI) after each fungicide spray was 14 days before re-starting each model. Advisory models were compared to sprays applied at R_3 and $R_3 + 21$ days.
- One spray: at beginning pod (R_3 , 8/15)
1. Priaxor 4.17SC 4 fl oz
 2. Quilt Xcel 2.2SE 10.5 fl oz
- Two sprays: 1st spray at beginning pod (R_3 , 8/15) and 21 days later (9/4)
3. Priaxor 4.17SC 4 fl oz
 4. Quilt Xcel 2.2SE 10.5 fl oz
- One spray: (8/20) following 2 consecutive favorable days from R_3 to R_5
5. Priaxor 4.17SC 4 fl oz
 6. Quilt Xcel 2.2SE 10.5 fl oz
- Two sprays: (8/20), same as previous, followed by a 2nd spray after a 2-week protection period expires and another 2 consecutive favorable days occur (9/6)
7. Priaxor 4.17SC 4 fl oz
 8. Quilt Xcel 2.2SE 10.5 fl oz
 9. Untreated check
- E. ADDITIONAL INFORMATION:
1. Location: Tidewater Research Center, Suffolk, Virginia
 2. Crop history: soybean 2010, corn 2011, soybean 2012
 3. Land preparation: disk and level with board
 4. Planting date and variety: 4 Jun, NK S56-G6

5. Soil fertility report (17 Jan):

pH.....	6.41	Mn	1.8 ppm
Ca.....	450 ppm	K.....	85 ppm
Mg	68 ppm	Zn	0.8 ppm
P.....	35 ppm	Soil type.....	Nansemond loamy fine sand

6. Herbicide:

Pre-plant: Roundup WeatherMax 22 fl oz/A (4 Apr)

Post-emergence: Roundup WeatherMax 22 fl oz/A (20 Jun)

Roundup Weather Max 22 fl oz + First Rate 0.3 oz/A (8 Jul)

7. Fertilization: 3-9-30 250 lbs/A (4 Apr)

ENC 1.0 qt/A (20 Jun, 31 Jul, 8 Aug, 22 Aug)

ENC 1.0 qt + Manganese 1.0 qt/A (8 Jul)

8. Insecticide: Brigade 2EC 6 fl oz + Belt SC 2 fl oz/A (22 Aug)

9. Harvest date: 29 Oct

Table 96. Disease incidence in untreated plots.

Rating date	# diseased leaflets/50 - % leaf area ¹						
	Anthraco- nose	Brown spot	Cercospora blight	Downy mildew	Frogeye leaf spot	Phyllo- sticta	Soybean rust
20 Aug.....	10-5	2-1	25-30	--	--	5-3	
19 Sep.....	2-5	--	34-10	3-5	1-3	3-5	1-1

¹ A sample of 50 leaflets was collected on 20 Aug and 19 Sep. Leaflets were incubated in a moist chamber; diseases were identified using a dissecting microscope.

Table 97. Effect of treatments on disease incidence and defoliation in soybeans.

Treatment, rate/A and application timing/date ¹	% Cercospora blight ² (23 Sep)	% defoliation ³ (23 Sep)
<u>One spray: (R₃, 8/15)</u>		
Priaxor 4.17SC 4 fl oz.....	5.6	2.4
Quilt Xcel 2.2SE 10.5 fl oz.....	4.4	1.4
<u>Two sprays: (R₃, 8/15) + 21 days later (9/4)</u>		
Priaxor 4.17SC 4 fl oz.....	2.8	1.2
Quilt Xcel 2.2SE 10.5 fl oz.....	2.6	1.2
<u>One advisory spray: (8/20)</u>		
Priaxor 4.17SC 4 fl oz.....	4.6	1.0
Quilt Xcel 2.2SE 10.5 fl oz.....	5.6	2.2
<u>Two advisory sprays: (8/20, 9/6)</u>		
Priaxor 4.17SC 4 fl oz.....	3.6	1.4
Quilt Xcel 2.2SE 10.5 fl oz.....	4.4	1.8
Untreated check	8.0	2.8
<i>P</i> (F).....	.27	.28

¹ All fungicides were applied with Induce 6.4 fl oz/A.

² Percent leaf area with disease.

³ Percent canopy defoliated.

Percentage data were arcsine transformed prior to statistical analysis.

Table 98. Effect of treatments on yield and grade of soybeans.

Treatment, rate/A and application timing/date ¹	Yield (bu/A) ²	Wt./100 seed (oz)	% purple seed stain ³	% anthrac- nose ³
<u>One spray: (R₃, 8/15)</u>				
Priaxor 4.17SC 4 fl oz	55.9	0.5	1.4	2.2 b
Quilt Xcel 2.2SE 10.5 fl oz.....	63.9	0.5	1.6	3.4 a-c
<u>Two sprays: (R₃, 8/15) + 21 days later (9/4)</u>				
Priaxor 4.17SC 4 fl oz	59.7	0.5	1.6	2.2 d
Quilt Xcel 2.2SE 10.5 fl oz.....	54.8	0.5	0.6	2.2 d
<u>One advisory spray: (8/20)</u>				
Priaxor 4.17SC 4 fl oz	55.5	0.5	2.0	2.4 cd
Quilt Xcel 2.2SE 10.5 fl oz.....	53.9	0.5	2.0	2.6 b-d
<u>Two advisory sprays: (8/20, 9/6)</u>				
Priaxor 4.17SC 4 fl oz	54.8	0.5	1.8	1.6 d
Quilt Xcel 2.2SE 10.5 fl oz.....	59.3	0.5	0.8	3.6 ab
Untreated check	51.9	0.5	0.2	3.8 a
P(F).....	.5707	.2231	.2701	.0010

¹ All fungicides were applied with Induce 6.4 fl oz/A.

² Yields are weight of soybeans adjusted to 13.5% moisture. One bushel equals 60 lb. Soybeans were harvested on 26 Oct.

³ 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 ($P=0.05$).

XXXVI. CLIMATOLOGICAL SUMMARY OF THE 2013 GROWING SEASON AT THE TIDEWATER AGRICULTURAL RESEARCH & EXTENSION CENTER, SUFFOLK, VA.

Day of month	NOV		DEC		JAN		FEB		MAR		APR	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	57	35	61	33	46	30	58	24	52	30	65	45
2	59	31	65	28	48	35	40	13	49	34	73	34
3	57	30	67	37	42	31	42	26	42	28	58	30
4	53	32	72	40	42	20	46	21	46	25	58	29
5	50	36	76	52	46	22	49	30	48	21	56	37
6	52	27	62	28	52	32	57	28	53	34	62	32
7	49	37	50	29	50	29	57	28	44	30	56	29
8	48	35	62	43	52	22	52	39	52	31	73	41
9	68	42	65	42	57	31	52	28	51	33	81	56
10	60	46	70	55	70	38	48	18	61	23	87	58
11	72	35	72	50	59	28	55	26	65	31	90	58
12	74	40	56	40	60	43	63	44	72	43	86	64
13	77	45	48	36	60	48	62	42	71	31	85	68
14	51	32	63	23	65	51	59	29	57	27	82	64
15	53	40	57	24	67	40	50	26	51	21	81	68
16	55	38	54	29	48	29	63	34	60	34	70	56
17	55	32	58	46	50	38	44	23	76	38	77	52
18	58	38	64	48	47	29	33	13	47	34	86	57
19	59	47	64	30	44	20	49	28	47	36	82	57
20	55	46	62	28	56	30	59	22	65	30	85	49
21	59	36	63	28	61	25	49	18	56	25	60	39
22	59	35	48	31	60	26	47	29	42	20	59	35
23	60	27	49	20	35	11	46	34	52	21	57	46
24	68	38	56	32	36	18	45	37	57	27	63	38
25	47	17	56	41	32	10	55	27	43	30	78	52
26	50	24	57	39	29	11	45	25	46	25	66	35
27	63	32	60	37	37	14	63	40	50	30	73	38
28	58	28	50	26	41	21	60	32	53	28	73	38
29	50	22	45	30	42	32			55	25	69	52
30	55	23	46	30	46	30			58	28	69	54
31			45	19	65	45			55	32		
Avg.	58	34	59	35	50	29	52	28	54	29	72	47
Normal	63	39	53	31	50	29	51	29	60	37	70	45
Deviation from normal	-5	-5	+6	+4	0	0	+1	-1	-6	-8	+2	+2

Table 100. Daily maximum and minimum temperatures (°F) May 2013 – October 2013.

Day of month	MAY		JUN		JUL		AUG		SEP		OCT	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	70	54	83	67	83	67	85	66	90	69	75	43
2	61	52	85	70	85	70	84	63	93	67	82	50
3	70	44	87	68	87	68	91	67	90	69	85	51
4	68	47	88	68	88	68	91	66	88	67	87	59
5	62	42	91	68	91	68	83	57	85	59	87	56
6	66	51	92	68	92	68	84	61	89	60	91	59
7	74	52	91	67	91	67	78	64	82	50	87	64
8	77	48	92	70	92	70	88	67	81	54	87	56
9	73	51	87	68	87	68	90	71	80	55	76	55
10	81	54	89	70	89	70	94	73	87	61	65	50
11	88	65	91	70	91	70	95	69	91	64	66	55
12	86	60	88	66	88	66	91	68	91	64	68	57
13	75	44	81	66	81	66	93	70	92	66	72	60
14	66	35	89	70	89	70	91	65	85	62	75	59
15	70	51	90	70	90	70	77	53	75	45	72	51
16	88	60	92	76	92	76	79	54	80	55	68	56
17	90	58	95	68	95	68	80	62	84	52	75	55
18	85	57	95	68	95	68	77	67	85	46	79	56
19	78	60	93	74	93	74	83	64	75	46	74	52
20	83	63	95	70	95	70	77	60	78	51	69	47
21	80	63	91	69	91	69	78	62	80	50	66	32
22	83	63	92	70	92	70	89	66	81	60	70	44
23	86	66	92	70	92	70	90	64	77	50	68	50
24	81	63	90	67	90	67	88	59	70	40	62	38
25	72	40	92	66	92	66	83	55	74	43	58	28
26	69	40	81	59	81	59	79	45	77	52	57	24
27	75	42	85	59	85	59	84	56	77	52	63	31
28	80	52	90	70	90	70	90	66	75	50	68	33
29	90	62	88	70	88	70	95	68	74	51	69	43
30	89	68	89	69	89	69	88	67	75	45	73	44
31	91	58	89	60	89	60	90	70			73	50
Avg.	78	54	86	63	90	68	86	63	82	55	73	49
Normal	77	54	84	63	88	67	87	65	82	60	71	46
Deviation from normal	+1	0	+2	0	+2	+1	-1	-2	0	-5	+2	+3

Table 101. Daily precipitation (inches) November 2012– April 2013.						
Day of month	NOV	DEC	JAN	FEB	MAR	APR
1	0.00	0.00	0.00	0.00	0.00	0.36
2	0.00	0.00	0.50	0.00	0.00	0.00
3	0.00	0.00	0.03	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00
5	0.04	0.00	0.00	0.00	0.00	0.86
6	0.00	0.12	0.05	0.00	0.49	0.00
7	0.04	0.00	0.00	0.00	0.40	0.00
8	0.00	0.02	0.00	1.90	0.00	0.00
9	0.00	0.10	0.00	0.03	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.10	0.00	0.00
12	0.00	0.00	0.04	0.03	0.34	0.08
13	0.18	0.00	0.00	0.06	0.06	0.00
14	0.35	0.00	0.03	0.14	0.00	0.00
15	0.00	0.00	0.36	0.00	0.00	0.00
16	0.16	0.45	0.20	0.00	0.00	0.10
17	0.00	0.31	0.60	0.22	0.17	0.00
18	0.00	0.02	0.99	0.00	0.10	0.04
19	0.00	0.00	0.00	0.00	0.08	0.00
20	0.00	0.00	0.00	0.04	0.00	0.84
21	0.00	0.38	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.50	0.02	0.00
24	0.00	0.00	0.00	0.21	0.00	0.00
25	0.00	0.00	0.00	0.00	0.97	0.00
26	0.00	0.14	4.00	0.00	0.05	0.00
27	0.00	1.81	0.00	0.86	0.00	0.00
28	0.06	0.00	0.00	0.00	0.00	0.00
29	0.00	0.32	0.00		0.00	0.63
30	0.00	0.15	0.00		0.00	0.54
31		0.00	0.47		0.00	
Total	0.83	3.82	7.27	4.09	2.68	3.45
Normal	3.20	3.30	4.63	3.41	3.87	3.28
Deviation from normal	-2.37	+0.52	+2.64	+0.68	-1.19	+0.17

Table 102. Daily precipitation (inches) May 2013 – October 2013.

Day of month	MAY	JUN	JUL	AUG	SEP	OCT
1	0.06	0.00	0.00	0.41	0.00	0.00
2	0.11	0.08	0.08	0.39	0.32	0.00
3	0.00	0.46	0.46	0.00	0.00	0.00
4	0.00	0.04	0.04	0.16	0.27	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00
7	0.08	0.00	0.00	0.22	0.00	0.00
8	0.05	0.00	0.00	0.00	0.00	0.45
9	0.20	0.27	0.27	0.00	0.00	0.06
10	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.34	0.00	0.35
12	0.20	1.30	1.30	0.00	0.00	0.08
13	0.00	0.00	0.00	0.00	0.30	0.12
14	0.00	0.40	0.40	0.05	0.00	0.28
15	0.00	0.00	0.00	0.00	0.00	0.03
16	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.02	0.02	0.00	0.00	0.00
18	0.38	0.00	0.00	0.94	0.00	0.00
19	0.30	0.00	0.00	0.03	0.00	0.00
20	0.84	0.00	0.00	0.05	0.00	0.00
21	0.45	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.03	0.75	0.00
23	0.05	0.12	0.12	0.00	0.00	0.00
24	0.05	0.00	0.00	1.10	0.00	0.06
25	0.19	0.45	0.45	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.04	0.04	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00		0.00
Total	2.96	7.11	3.18	3.72	1.64	1.43
Normal	3.83	4.17	5.73	5.75	4.64	3.54
Deviation from normal	-0.87	+2.94	-2.55	-2.03	-3.00	-2.11