2012 AU Crops

Cotton Research Report

Research Report No. 42
April 2013
Alabama Agricultural Experiment Station
William Batchelor, Director
Auburn University
Auburn, Alabama

ACKNOWLEDGMENTS

This publication is a joint contribution of Auburn University, the Alabama Agricultural Experiment Station, and the USDA Agricultural Research Service and National Soil Dynamics Laboratory. Research contained in the AU crops research reports was partially funded through the Alabama Cotton Commission, the Alabama Wheat and Feed Grains Producers, the Alabama Soybean Producers, and private industry grants. All funding is appreciated.

Printed in cooperation with the Alabama Cooperative Extension System
(Alabama A&M University and Auburn University)

This report can be found on the Web at
http://aurora.auburn.edu/repo/handle/123456789/44167.

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VARIETY TRIALS

Cherokee County Cotton Variety Trial, 2012

C. H. Burmester, D. Derrick and E. Schavey

Each season a cotton variety trial is conducted in Cherokee County, Alabama, to supplement yield results from the Alabama Cotton Variety Trials. This large, cotton-growing area has unique soil types and farmers often use results of this test to evaluate new cotton varieties for northeast Alabama. In 2012, the trial was conducted on the farm of Randall and Nick McMichen on a Holston fine sandy loam soil. Cotton was planted into a winter cover crop of wheat on May 2. Cotton varieties were planted in a two-replication strip trial to reduce possible soil variability. Twelve rows were harvested from each variety and weighed in a boll buggy for yield determination.

A total of 10 varieties were planted. All varieties were treated with Aeris or Avicta seed treatment and received identical herbicide and insecticide treatments through the season. Varieties were spindle picked on October 25, and a sample from each variety was ginned on a tabletop gin for lint percentage and quality determinations.

A very dry June limited cotton growth and by early July many cotton fields in the area were approaching cut-out. Consistent rainfall began after the first week of July. Cotton shed most small bolls and began growing and fruiting again. This resulted in a much later crop but one that produced record cotton yields in all areas of northern Alabama.

Seed Cotton, Lint yields, and Cotton Quality of 10 Cotton Varieties Tested in Cherokee County, Alabama, 2012

Variety	Seed cotton (lbs/ac)	Lint turnout (%)	Lint yield (lbs/ac)	Mic	Length (in)	Strength (g/tex)	Uniformity (%)
DP 0912 B2RF	3682	0.42	1539	4.7	1.15	28.2	84.0
ST 4288 B2RF	3430	0.40	1369	4.4	1.19	29.9	82.5
PHY 499 WRF	3794	0.43	1620	4.2	1.14	28.2	81.6
DP 1133 B2RF	3952	0.44	1747	4.4	1.18	30.7	83.5
FM 1944 GLB2	3464	0.40	1399	4.5	1.25	32.1	85.9
PHY 367 WRF	3360	0.41	1391	4.7	1.19	30.5	84.6
DP 1137 B2RF	3910	0.44	1728	4.4	1.12	28.2	83.0
FM 1740 B2RF	3484	0.43	1481	4.3	1.15	28.9	81.8
DP1219 B2RF	3120	0.42	1304	3.6	1.21	31.4	82.5
PHY 375 WRF	3992	0.44	1737	4.6	1.16	28.3	82.9

Evaluation of Liberty Herbicide Rates and Application Timings on Cotton Growth and Yields

C. H. Burmester and C. D. Monks

North Alabama Tolerance and Rate/Timings Trials

The effect of Liberty herbicide on growth and yield of Widestrike (PHY 375 WRF) cotton was compared to Liberty Link (FM 4145 LLB2) cotton. This test also compared the yields of both varieties when two applications of higher of Liberty herbicide were applied. The second test compared the effects of two applications of Liberty herbicide on different cotton varieties. Five Widestrike cotton varieties and three Liberty-Link cotton varieties were evaluated. All yields were compared to a non-treated (hand-weeded) check of each variety.

In the rate test, both PHY 375 WRF and FM 4145 LLB2 produced similar cotton yields when Liberty was applied at 1x and 2x rates. When Liberty was applied at 3x and 4x rates, yields of PHY 375 WRF cotton declined but yields of 4145 LLB2 cotton were not affected by rates. Similar results were seen when two applications of these Liberty herbicide rates were applied.

The variety study revealed very little difference in yields when two applications at 29 ounces of Liberty were compared to the check herbicide treatment. In fact, all varieties showed a slight increase in yields with the Liberty herbicide treatment, but differences were not significant. The Phytogen 499 WRF variety produced the highest yields with and without Liberty herbicide in this test.

Central Alabama Cotton Tolerance Evaluations

In central-Alabama on-farm variety trials, Liberty was applied to irrigated and dryland cotton. Varieties were either Phytogen WRF or FiberMax Liberty Link. When cotton was at the 2- to 4-leaf stage, injury to non–Liberty Link varieties was much greater when compared to application to larger cotton. Injury included rapid leaf tissue desiccation and necrosis such that some plants appeared to be near death. Four weeks after application, no injury was apparent and the affected plants were as robust as the untreated. When cotton was larger, injury was not observed and plants were not affected. Liberty Link varieties were not affected by the treatment. There was no clear reason why some locations had damaged cotton and others did not. The conclusion, based on our observations, is that applying Liberty to a non–Liberty Link, 'Widestrike' variety is risky at best when considering crop damage.

Table 1. Cotton Variety Response to Liberty in North Alabama, 2011

Variety	0	29 oz. (2)*	Difference
PHY 367 WRF	1143	1128	-15
PHY 375 WRF	1326	1131	-195
PHY 499 WRF	1379	1284	-105
PHY 565 WRF	1282	1065	-217
PHY 440 W	1361	1096	-265
ST 4145 LLB2	1270	1103	-167
FM 1773 LLB2	1191	1150	-41
FM 1845 LLB2	1308	1175	-133
LSD (0.05) = 137			

*(2) indicates two applications

Table 2. Cotton Variety Response to Liberty in North Alabama, 2012

Variety	0	29 oz. (2)*	Difference
PHY 367 WRF	1437	1585	+148
PHY 375 WRF	1627	1784	+157
PHY 499 WRF	1731	1984	+253
PHY 565 WRF	1470	1488	+18
PHY 440 W	1419	1512	+93
ST 4145 LLB2	1519	1674	+155
FM 5445 LLB2	1377	1531	+154
FM 1944 LLB2	1442	1493	+51
LSD (10) = 103			

*(2) indicates two applications

Table 3. Cotton Variety Response to Liberty Herbicide Rates in North Alabama, 2012

	375 WRF		4145 LLB2	
Rate (oz)	**Once**	**Twice**	**Once**	**Twice**
0	1689	1689	1410	1410
29	1654	1592	1439	1630
58	1490	1687	1306	1506
87	1444	1564	1620	1674
116	1378	1275	1531	1529
LSD (0.10) = 165				

Table 4. Cotton Variety Response to Liberty Herbicide Rates in North Alabama, 2011

	375 WRF		1773 LLB2	
Rate (oz)	**Once**	**Twice**	**Once**	**Twice**
0	1277	1277	1165	1165
29	1275	1309	1145	1231
58	1068	1215	1327	1346
87	913	789	1439	1402
116	738	748	1363	1316
LSD (0.05) =276				

Enhancing Cotton Variety Selection Through On-Farm Evaluations

C. D. Monks

Project Cooperators: C. D. Monks, C. Burmester, D. Derrick, W. Griffith, C. Hicks, W. Griffith, and E. Schavey

Enhancing cotton variety selection in on-farm trials was approved in 2011 for funding during 2012. Cotton varieties were supplied by: Delta and Pine Land, Stoneville, FiberMax, and Phytogen seed companies. The trials were either Roundup Flex or conventional varieties and were initiated during April or May 2012 as follows:

Table 1. Cotton Variety Performance in Northeast Alabama, Cherokee County, 2012*

Producer: McMichen Farms
ACES Cooperators: D. Derrick, C. Burmester, E. Schavey, T. Reed, C. D. Monks, K. Glass, and J. Brasher
Industry Cooperators: Seed Industry Representatives

Variety	Seed cotton (lbs/ac)	Lint turnout (%)	Lint yield (lbs/ac)	Mic	Length (in)	Strength (gr/tex)	Uniformity (%)
DP 0912 B2RF	3682	0.42	1539	4.7	1.15	28.2	84.0
ST 4288 B2RF	3430	0.40	1369	4.4	1.19	29.9	82.5
PHY 499 WRF	3794	0.43	1620	4.2	1.14	28.2	81.6
DP 1133 B2RF	3952	0.44	1747	4.4	1.18	30.7	83.5
FM 1944 GLB2	3464	0.40	1399	4.5	1.25	32.1	85.9
PHY 367 WRF	3360	0.41	1391	4.7	1.19	30.5	84.6
DP 1137 B2RF	3910	0.44	1728	4.4	1.12	28.2	83.0
FM 1740 B2RF	3484	0.43	1481	4.3	1.15	28.9	81.8
DP 1219 B2RF	3120	0.42	1304	3.6	1.21	31.4	82.5
PHY 375 WRF	3992	0.44	1737	4.6	1.16	28.3	82.9

*Plots were planted on May 2 on a Holston fine sandy loam soil in Cherokee County. Plot design was a two-replication strip trial. Two varieties were placed on each side of a 12-row planter. The first replication was planted and then rows counted to plant the second replication. All cotton was no-till into a killed rye cover crop. All seed contained Avicta or Aeris treated seed. Plots were harvested on October 25.

Funding from Cotton Incorporated and the Alabama Cotton Commission was used in conducting this trial. We appreciate the support that Alabama cotton producers provide to our educational programs each year.

Table 2. Cotton Variety Performance in Central Alabama, Dallas County, 2012*

Principle investigators: R. Yates, D. Monks, and J. Brasher
Cooperator: J. Minter, Minter Farms

Variety	Lint turnout (%)	Lint yield (lbs/ac)
PHY 499 WRF (Plot 1)	44.4	1298
PHY 499 WRF (Plot 2)	39.1	1202
DP 1048 B2RF	45.5	1136
DP 1252 B2RF	47.6	1114
DP 1137 B2RF	45.5	1076
DG 2610 B2RF	46.2	1053
FM 1944 GLB2**	41.7	1046
PHY 375 WRF	43.5	1036
PHY 565 WRF	42.3	1002
DP 1050 B2RF	41.7	999
DP 1034 B2RF	43.5	994
ST 5458 B2RF	41.7	962
PHY 367 WRF	42.9	956
DP 0912 B2RF	41.7	931
FM 1740 B2F	42.9	930
DG 2530 B2RF	44.8	920
ST 5288 B2RF	38.1	884
CT 11212	41.7	837
CT 12214	44.0	833
DP 11R159	40.0	832
ST 4288 B2RF	36.0	827
DG 2570 B2RF	39.1	798

*Plot length averaged 2300 ft. x 15 ft. wide. Each variety was planted in two, 4-row plots in a 2-x-1 skip-row pattern. Planting rate was 2.7 seeds/ft., planted on May 7, and harvested on October 31. Cotton was irrigated using a center pivot system.
**"GLB2" designates "glytol, Liberty Link, and BollGard 2"

Partial funding provided by Alabama cotton producers through the Alabama Cotton Commission and Cotton Incorporated.

Table 3. Cotton Fiber Quality from On-Farm Trial in Central Alabama, Dallas County, 2012

Principle investigators: R. Yates, D. Monks, and J. Brasher
Cooperator: J. Minter, Minter Farms

Variety	Mic	Length (in)	Strength (gr/tex)
CT 11212	5.1	36.80	29.8
CT 12214	4.6	37.44	28.8
DG 2530 B2RF	4.9	37.76	31.6
DG 2570 B2RF	4.9	35.20	27.9
DG 2610 B2RF	4.8	39.04	31.2
DP 0912 B2RF	4.2	32.96	28.1
DP 1034 B2RF	4.7	36.80	29.3
DP 1048 B2RF	4.9	37.12	30.7
DP 1050 B2RF	4.8	36.80	28.9
DP 1137 B2RF	5.0	35.84	28.4
DP 11R159	4.9	39.36	30.7
DP 1252 B2RF	5.1	36.80	27.2
FM 1740 B2F	4.7	36.48	31.0
FM 1944 GLB2*	5.1	37.76	30.7
PHY 367 WRF	4.5	35.20	29.5
PHY 375 WRF	4.7	36.80	60.3
PHY 565 WRF	4.8	36.80	30.8
PHY 499 (1st Strip)	4.3	37.44	23.9
PHY 499 WRF (2nd Strip)	4.9	38.72	32.2
ST 4288 B2RF	4.1	36.80	29.5
ST 5288 B2RF	5.1	36.16	28.9
ST 5458 B2RF	5.2	36.80	31.5

*"GLB2" designates "glytol, Liberty Link, and BollGard 2"

Partial funding provided by Alabama cotton producers through the Alabama Cotton Commission and Cotton Incorporated.

Table 4. On-Farm Cotton Variety Evaluations in Alabama, Macon County, 2012*

Cooperator: R. Walters, Walters Farms
Investigators: C. D. Monks, C. Hicks, and J. Brasher
Planted: May 18, 2012; irrigated
Harvested: October 17, 2012

Variety	Lint turnout (%)	Lint yield (lbs/ac)
PHY 375 WRF	40.9	1304
PHY 367 WRF	42.4	1464
PHY 375 WRF	42.7	1416
PHY 565 WRF	45.2	1492
DP 1137 B2RF	47.4	1517
DP 1252 B2RF	42.1	1279
FM 1944 GLB2	41.8	1219
ST 4288 B2RF	43.9	1220
Americot 1511 B2RF	44.4	1306

*Each variety was planted in 8-row strips from 730 to 850 ft. long. Samples were ginned on a small, 10-saw gin; therefore, turnout is high relative to commercial gins that are equipped with multiple cleaning equipment.

On-farm cotton variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Table 5. Cotton Fiber Analysis of On-Farm Trial in Alabama, Macon County, 2012

Cooperator: R. Walters, Walters Farms
Investigators: C. D. Monks, C. Hicks, and J. Brasher
Planted: May 18, 2012; irrigated
Harvested: October 17, 2012

Variety	Mic	Length (32nds inch)	Strength (gr/tex)
PHY 375 WRF	4.0	36.8	31.3
PHY 367 WRF	4.0	36.8	30.8
PHY 375 WRF	4.4	36.2	32.7
PHY 565 WRF	4.8	36.8	29.5
DP 1137 B2RF	4.7	36.5	30.3
DP 1252 B2RF	4.6	35.8	31.1
FM 1944 GLB2	4.0	38.1	31.2
ST 4288 B2RF	4.6	36.8	31.3
Americot 1511 B2RF	NA	NA	NA

On-farm cotton variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Table 6. On-Farm Cotton Variety Evaluations in Alabama, Shelby County, 2012

Cooperator: P. Barber, Barber Farms
Investigators: C. D. Monks, R. Colquitt, E. Schavey, and J. Brasher
Planted: May 19, 2012; non-irrigated
Harvested: November 30, 2012

Variety*	Lint turnout (%)**	Lint yield (lbs/acre)
DP 0912 B2RF	42.5	1365
DP 1048 B2RF	44.2	1174
DP 1034 B2RF	43.1	1277
DP 1137 B2RF	44.5	1319
PHY 367 WRF	39.2	1073
PHY 375 WRF	41.1	1146
PHY 499 WRF	44.6	1275
PHY 565 WRF	40.5	1149
FM 1944 GLB2	40.8	1286
ST 5458 B2RF	41.0	1269

*Each variety was planted in two, 4-row strips from 1060 to 1235 ft. long.
**Samples were ginned on a small, 10-saw gin; therefore, turnout is high relative to commercial gins that are equipped with multiple cleaning equipment.

On-farm cotton variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Table 7. Cotton Fiber Quality Analysis from On-Farm Trial in Alabama, Shelby County, 2012

Cooperator: P. Barber, Barber Farms
Investigators: C. D. Monks, R. Colquitt, E. Schavey, and J. Brasher
Planted: May 19, 2012
Harvested: November 30, 2012

Variety	Mic	Length (32nd inch)	Strength (gr/tex)
DP 0912 B2RF	4.5	36	29.0
DP 1048 B2RF	4.3	39	30.5
DP 1034 B2RF	4.0	39	29.6
DP 1137 B2RF	4.4	38	28.9
PHY 367 WRF	3.8	37	31.7
PHY 375 WRF	3.9	37	28.4
PHY 499 WRF	4.6	38	31.3
PHY 565 WRF	4.0	40	31.3
FM 1944 GLB2	4.3	40	32.1
ST 5458 B2RF	4.3	38	31.8

On-farm cotton variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Table 8. Cotton Fiber Analysis of On-Farm Trial in Alabama, Macon County, 2012

Cooperator: S. Morris, Morris and Sons Farms
Investigators: C. Hicks, R. Yates, C. D. Monks, and J. Brasher
Planted: May 1, 2012; non-irrigated
Harvested: October 10, 2012

Variety	Mic	Length (32nds inch)	Strength (gr/tex)
DPL 491	3.6	35	29.6
ST 4145 LLB2	NA	NA	NA
AU 3202	4.3	38	33.9
LA 17	3.4	37	34.3
ST 5445 LLB2	3.7	38	35.0
LA 35RS	4.1	36	30.9
FM 1845 LLB2	4.3	36	30.0

On-farm variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Table 9. On-Farm Conventional Cotton Variety Evaluations in Alabama, Macon County, 2012

Cooperator: S. Morris, Morris and Sons Farms
Investigators: C. Hicks, R. Yates, C. D. Monks, and J. Brasher
Planted: May 1, 2012; non-irrigated
Harvested: October 10, 2012

Variety*	Lint turnout (%)	Lint yield (lbs/ac)
DPL 491	42.8	1022
ST 4145 LLB2	44.4	1143
AU 3202	42.8	1353
LA 17	41.4	1625
ST 5445 LLB2	45.9	1278
LA 35RS	41.4	1562
FM 1845 LLB2	42.8	1114

*Each variety was planted in 8-row strips from 1250 to 1366 ft. long.

On-farm cotton variety trials are funded in part by Alabama cotton producers through the Alabama Cotton Commission and Cotton Inc.

Breeding Cotton for Yield and Quality in Alabama

D. B. Weaver

In 2012, we evaluated experimental lines for yield and fiber properties at the E.V. Smith Research Center in Tallassee, Alabama, and the Prattville Agricultural Research Unit in Prattville, Alabama. We tested 74 new lines in preliminary tests at Tallassee and 30 lines in advanced tests at Prattville. F2, F3, and F4 generations of various populations were grown at Tallassee, and F4:5 progeny rows were grown, selected and submitted for fiber quality analysis. Crosses were made to create new populations for future work. Most crosses have involved advanced experimental lines from Auburn and other public programs, and newly released sources of resistance to reniform nematode, including BARBREN 713. Complete yield and fiber quality data are now available from the 2011 Regional Breeders Testing Network at 12 yield locations and two disease evaluation locations. Auburn experimental lines ranked second, fifth, eighth, and 10th in the 27-entry test (24 experimental lines plus three checks). Fiber quality of these lines was not up to expectations. None of these lines was continued in the 2012 RBTN test, with all new lines being evaluated in 2012. Complete data on performance of these lines is not yet available, but preliminary data show some of the lines performed well at some locations, particularly in the southeastern U.S.

We have continued to evaluate LONREN-derived experimental lines, with most of the entries being resistant selections from several different populations. Field evaluation of performance was done at Tennessee Valley Research and Extension Center, Belle Mina. Based on the previous two-year study conducted in 2010 and 2011, we have decided to focus future work on BARBREN derived materials and to discontinue developing populations derived from the LONREN resistance source. The only positive trait for the LONREN materials is a reduction in nematode populations and an improvement in fiber strength caused by the single RENlon gene in LONREN. There were no negative effects of the RENlon gene where reniform nematode was not present. We are in the process of studying the nature of the RENlon gene as to how it affects fiber strength. The new BARBREN resistant germplasm has been included in this test and performed very well with regard to nematode resistance, but the agronomics and fiber quality traits of this line are inferior, and it will take more breeding cycles to incorporate this resistance into good, adapted germplasm. We have F2-derived populations that we are currently evaluating for resistance. Additional crosses have been made.

We have continued our evaluation of cotton germplasm and progenies derived from certain accessions identified as heat tolerant using chlorophyll fluorescence as our assay both in the growth chamber and field. Ten elite accessions have been selected from the cotton collection based on evaluation in a growth chamber. A field evaluation using chlorophyll fluorescence was conducted on these 10 elite accessions and four commercial lines in 2011. It was continued in 2012, but there were not enough hot days (> 95 degrees F) to collect meaningful data. Crossing with these lines has been difficult, but we have developed two populations from crosses with two of these accessions. We have continued to verify heat tolerance in these materials in growth chamber studies and are in the process of evaluating F2:3 and F2:4 lines from these populations to determine if heat tolerance is a heritable trait.

We have initiated a project to evaluate cotton genotypes for resistance to Corynespora leaf spot. Our primary objectives are to develop a protocol for evaluation in controlled environments and apply the protocol to various cotton germplasm pools.

WEED MANAGEMENT

Economic Comparison of Liberty-Link, Roundup Ready Flex, and Conventional Systems for Resistant Pigweed Management in Alabama Cotton

M. G. Patterson, W. C. Birdsong, B. A. Dillard, and C. D. Monks

Field trials comparing weed management systems for Monsanto Roundup Ready Flex (DP 1048 B2RF), Fibermax Liberty-Link (FM 1845 LLB2), and Seed Tech Genetics (CT 210) conventional cotton varieties in a glyphosate-resistant Palmer amaranth environment using significant soil-residual herbicide inputs, timely post applications, and having good activating rainfall for all residual herbicides revealed that Palmer could be managed adequately to provide good yields in all three systems. Soil-residual herbicides for all systems included Prowl + Reflex applied at planting. The conventional variety also received Cotoran at planting. Dual Magnum was applied to both Roundup Flex and Liberty-Link varieties in with the respective early posts applications of Roundup or Liberty. Staple was applied to the conventional variety early post. Valor + Diuron + MSMA was applied as a layby to all systems. Escaped Palmer amaranth plants were counted and a value for hand weeding these escaped plants factored in the economic calculations. Although no system controlled 100% of the Palmer amaranth season long, economic analysis of the actual data obtained in 2010 and 2011 revealed that all three systems could be grown for optimum yield and net returns if environmental conditions favor the activation of soil-residual herbicides in a timely manner and residual control is maintained from planting through the layby application. Although the total weed management costs for the Roundup Ready Flex system in this particular trial were more than the Liberty-Link or conventional variety systems, the additional lint produced by the Roundup Ready Flex variety in this particular instance more than compensated for the difference in input costs.

Return on Investment at $0.95 per Pound of Cotton Lint in 2010 and $1.25 per Pound of Cotton Lint, 2011

Parameter	DP 1048 B2RF		FM 1845 LLB2		CT 210	
	2010	2011	2010	2011	2010	2011
Herb $/ac	$53.85	$67.83	$57.75	$74.88	$62.75	$80.97
Hoe $/ac	$23.29	$61.09	$2.69	$5.39	$20.49	$30.99
AMAPA control %	93	93	92	99	88	97
Total weed $/ac	$77.14	$128.92	$60.44	$80.27	$83.28	$111.96
Tech & seed $/ac	$65.00	$65.00	$28.00	$28.00	$6.00	$8.04
Total costs $/ac	$589.00	$643.00	$536.00	$557.00	$536.00	$570.00
Lint lbs/ac	1668	937	1499	607	1331	638
Seed $/ac	$167.00	$170.00	$150.00	$128.00	$133.00	$136.00
Net Return	$1115.00	$604.00	$1032.00	$269.00	$854.00	$298.00

Evaluating 2,4-D and Dicamba Technologies for Palmer Amaranth Control in Current Weed Control Systems

M. G. Patterson and A. Price

A trial was initiated at the Wiregrass Research and Extension Center in Headland, Alabama, in early May 2012 to evaluate the efficacy of 2,4-D (Enlist Cotton from Dow) and dicamba (RR Xtend Cotton from Monsanto) technologies for Palmer amaranth control. No cotton was planted in this trial because there is no cross tolerance between the technologies. Both 2,4-D and dicamba (Clarity) were applied preemergence alone or followed by postemergence applications of glyphosate (Roundup) + Warrant or glufosinate (Liberty) + Dual; or postemergence with Roundup + Warrant or Liberty + Dual. Fomesafen (Reflex) preemergence was also used followed by post applications of some of the above treatments. 2,4-D or Clarity alone applied preemergence provided 77% and 87% control of Palmer amaranth, respectively, by June 1, resulting in 35,000 and 7,000 pigweed plants per acre, respectively, remaining in the plots approximately five weeks after preemergence application. 2,4-D or Clarity preemergence followed by Liberty + Dual Magnum early postemergence in mid-May provided excellent control and no emerged pigweed by June 1. Neither 2,4-D nor Clarity applied with Roundup + Warrant or Liberty + Dual early postemergence provided adequate control of Palmer amaranth. Clarity + Reflex preemergence followed by Liberty + Dual Magnum early postemergence provided good control with approximately 7,000 pigweed plants per acre remaining in the plots five weeks after cotton would have been planted. This data clearly shows that the new genetic technologies, either alone or in combination with existing technology, has limitations for Palmer amaranth control. Dicamba appears to provide slightly more residual control than 2,4-D at the rates used in this trial. Application of either 2,4-D or dicamba preemergence followed by Liberty + Dual provided better control than mixing either product with Liberty + Dual in a postemergence application. Using Clarity pre followed by Roundup + Warrant early postemergence provided relatively good control (92%) even in a resistant Palmer amaranth environment.

Palmer Pigweed Control and No. Plants per Acre

Herbicide/rate	% control, June 1	No. Pigweed/ac, June 8
2,4-D, epcot, 2 pts/ac	77	34,848
Clarity, epot, 1 pt/ac	87	6,970
2,4-D, pre, 2 pts/ac fb, Rdup + Warrant, epot	80	27,878
2,4-D, pre, 2 pts/ac fb, Liberty + Dual, epot	97	0
Clarity, pre, 1 pt/ac fb, Liberty + Dual, epot	95	0
2,4-D + Liberty + Dual, epot	67	20,908
Clarity + Liberty + Dual, epot	62	34,848
Clarity, pre, 1 pt/ac, fb, Rdup + Warrant, epot	92	6,790
Clarity + Reflex, pre fb, Liberty + Dual, epot	95	6,970

IRRIGATION

Variable-Orifice Nozzle Evaluation

J. P. Fulton, A. Sharda, A. Winstead, T. McDonald, and M. Hall

Variable-orifice nozzles are being supplied by a few tip manufacturers today while gaining interests among farmers due to their larger turndown ratios over traditional fixed orifice tips. The premise of these nozzles is to provide a larger flow range over typical sprayer operating pressures and in some cases a 1:1 flow-to-pressure ratio. However, these nozzles incorporate moving parts and springs. Therefore, we are proposing to evaluate the performance of commercially available variable-orifice nozzles. These tests will be conducted over three different flow rates for each nozzle type along with randomly assigning nozzles to two different locations (two separate tests) along the spray boom. For each test, the flow rate from each nozzle will be measured and standard uniformity analyses conducted to report the performance. This experimental design will allow us to understand not only how individual nozzles perform but also nozzle uniformity across the boom.

The following results were determined from this study:

1. Nozzle flow uniformity across the spray boom ranged from 5% to 13%.
2. In several tests, there were individual nozzles which performed well outside an acceptable flow rate of 10%.
3. Lower flow rates tended to generate less uniformity (higher CVs) across the spray boom.
4. As expected and reported by manufacturers of these nozzles, uniformity will be higher compared to fixed orifice tips. However, the advantage afforded is the higher attainable flows over normal operating pressures.
5. The Spot-On calibrator provided a quick and simple means to measure tip flow during calibration.

Evaluating the Potential for Blended Fertilizer Segregation during Application with Spinner Spreaders

J. P. Fulton, C. W. Wood, G. Pate, D. Fasina, T. McDonald, and M. Hall

The use of spinner spreaders is common in Alabama for the application of fertilizers and lime. In terms of fertilizer application, blended fertilizers are popular either to apply P-K or N-P-K blends during the fall or spring for crop production. Most spinner spreader manufacturers today suggest fertilizer application widths between 70 and 90 feet, which may increase the risk of product segregation when applying blended products. Therefore, we propose to conduct experiments to 1) document spread uniformity in terms of single and blended products for setup comparisons and 2) determine the potential for segregation of blended products.

In 2011, we were able to document that fertilizer segregation can occur when applying a blended fertilizer with a spinner spreader. This project noted that P and K tended to separate when applied at a 70-foot swath width. However, we would like to further investigate this issue by including different blended products commonly used in Alabama along with various spreaders. Standard pan testing will be conducted with material caught in each pan weighed to determine distribution pattern uniformity. Collected material in each will also be analyzed for N-P-K through standard nutrient testing. We would like to determine the best management for spinner spreaders to eliminate segregation for Alabama crop production.

The results of this study were:

1. Segregation of nutrients can occur for granulated blended fertilizer when applied using spinner-disc spreaders.
2. Particle size difference between the individual fertilizer constituents was the primary reason for segregation. Therefore, try to blend products with similar particle size.
    a. DAP tends to be applied at the center (ricocheting) and toward the end locations of the pattern.
    b. Potash peaked on either side of the spreader centerline, generating a M-Pattern.
3. As spinner-disc speed increases (especially around 800 rpm), so does the potential of material ricocheting off the discs and vanes and being deposited around the centerline of the spreader. This behavior can cause non-uniform application and potential spatial variability (streaking) in soil fertilizer levels.

DISEASE MANAGEMENT

On-Farm Evaluation of Fungicide, Application Timing, and Variety on Corynespora Leaf Spot in Southwest Alabama Cotton

C. Hicks, C. D. Monks, and A. K. Hagan

Management of Corynespora leaf spot was evaluated using three fungicides applied at two timings at three locations in Alabama. Fungicides were applied with a CO_2 backpack sprayer calibrated to deliver 17 GPA through four 8003VS nozzles on 19-inch spacing. Headline was applied at 12 ounces per acre, Twinline was applied at 8.5 ounces per acre and Quadris was applied at 9 ounces per acre. There were two fungicide programs application timings to determine if the initial spray at first bloom or at full bloom was best to reduce the fungal disease incidence. The early season program was applied at first bloom followed by a second application two weeks later. The later season fungicide program was applied 14 days after first bloom with a second application two weeks later. Plots were four rows by 25 feet long with 36-inch row spacing. Cotton yield was collected by hand from a 10-foot section of the inner two rows. The seed cotton was ginned on a 10-saw gin and sent to the USDA classing office to be classed.

Locations in Grand Bay (Mobile County) and Atmore (Escambia County) were planted with PHY 499 B2F cotton. Corynespora leaf spot (target spot) was first identified July 17 in Atmore and August 26 in Grand Bay. Fungicides were applied in Atmore on July 3, July 17, and August 2. Fungicides were applied in Grand Bay on July 20, August 4, and August 26. In Escambia County, lint yield ranged from 872 to 1202 pounds per acre. The fungicides Twinline, applied with both timing programs, and Headline, applied at 14 days after first bloom and then applied again 14 days later produced yields 324, 167, and 330 pounds per acre higher than the untreated check plot. In Mobile County, cotton lint yields ranged from 798 to 1057 pounds per acre. The fungicides Quadris and Headline, applied at 14 days after 1st bloom and then applied again 14 days later produced yields 158 and 259 pounds per acre higher than the untreated control. Check plots in Mobile and Grand Bay were consistently lower yielding than fungicide-treated plots.

The Summerdale location (Baldwin County) was planted with DP 1050 B2F cotton seed. At this location, Corynespora was diagnosed July 27. Fungicides were applied in Summerdale on July 12, July 27, and August 11. Data were statistically analyzed and means compared using Fisher's protected least significant difference (LSD) test ($P \leq 0.05$). Check plots were not consistently lower yielding than fungicide treated plots. DP1050 B2F in this particular trial does not seem to respond to the fungicides with increased yields as PHY 499 B2F.

PHY 499 B2F Treatment	Lint % turnout		Cotton lint yield/ac	
	Escambia	**Mobile**	**Escambia**	**Mobile**
Check	44.5	40.7	872	798
Twinline first bloom	44.5	40.3	1196	845
Twinline 14 days after first bloom	43.9	39.6	1039	890
Headline first bloom	44.1	40.7	987	945
Headline 14 days after first bloom	44.5	41.1	1202	1057
Quadris first bloom	44.2	40.6	898	801
Quadris 14 days after first bloom	44.9	40.0	1008	956
Sure K (foliar potassium)	NA	41.3	NA	877
LSD (0.10)	***NS***	***NS***	***172***	***106***

PP 1050 B2RF Treatment	Lint % turnout	Cotton lint yield/ac
	Summerdale	**Summerdale**
Check	42.3	1349
Twinline first bloom	43	1295
Twinline 14 days after first bloom	42	1233
Headline first bloom	42.3	1319
Headline 14 days after first bloom	42	1308
Quadris first bloom	42	1211
Quadris 14 days after first bloom	42.3	1303
DP 1050		
LSD (0.05)	***0.017***	***207***

Fungicide Combination Evaluations for Cotton Seedling Disease Management in North Alabama, 2012

K. S. Lawrence, D. W. Schrimsher, and C. Norris

Seed treatment fungicides were evaluated for the management of cotton seedling disease in a naturally infested field on the Tennessee Valley Research and Education Center in Belle Mina, Alabama. The field had a history of cotton seedling disease incidence and was infested by Rhizoctonia solani, Pythium spp., Thielaviopsis basicola, and Fusarium spp. The soil type was a Decatur silt loam (sand 24%, silt 49%, clay 28%). The seed treatments were applied to the seed by Bayer CropScience. Temik 15G (5 pounds per acre) was applied at planting on April 10 in the seed furrow with chemical granular applicators attached to the planter. Plots consisted of two rows, 25 feet long, with 40-inch row spacing, and were arranged in a randomized complete block design with five replications. Blocks were separated by a 20-foot-wide alley. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a sprinkler system as needed. Seedling stand was determined at 20 and 35 days after planting (DAP) on April 30 and May 15. Plots were harvested on October 10. Data were statistically analyzed by ARM 8 and means compared using Fisher's protected least significant difference test ($P < 0.10$). Monthly average maximum temperatures from planting in April through harvest in September were 74.3, 78.8, 91.3, 91.2, 91.6, 80.2, and 73.4 degrees Fahrenheit, with average minimum temperatures of 52.2, 58.0, 68.3, 71.4, 68.1, 58.8, and 46.5 degrees Fahrenheit, respectively. Rainfall accumulation for each month was 10.22, 2.53, 3.11, 4.28, 1.15, 3.15, and 1.47 inches, with a total of 25.91 inches over the entire season.

Seedling disease pressure was high in 2012 due to optimum moisture and cool temperatures. Plant stand was significantly greater in the Apron XL + Maxim 4FS + Systhane 40WP + Dynasty CST seed treatment as compared to the untreated control at 30 DAP. The three and four fungicide combinations (Treatments 1-8, 10, and 13) increase plant stand as compared to 10 of the seed treatment combinations, including the industry standard RTU-PCNB and the untreated control. Plant stands were low with 26% to 13% seedlings surviving, producing 2.6 to 1.3 plants per foot of row. Rhizoctonia solani, Pythium ultimum, and Fusarium spp. were isolated from the diseased seedlings. Seed cotton yields were significantly increased by all fungicides that increased plant stand. Yields varied by 983 pounds per acre at harvest with an average of 174 pounds per acre average increase of seed cotton produced over all the fungicide treatments as compared to the untreated control. The Apron XL + Maxim 4FS + Systhane 40WP + Dynasty CST seed treatment which supported the best stand also produced the highest yield.

Seed treatment and rate (oz/cwt)	Stand/10-ft row[z] 43 DAP	Vigor[y] 43 DAP	Skip index 43 DAP	Seed Cotton (lbs/ac)
Baytan 30 + Allegiance FL + Vortex FL + SP1020 (Emerion)	19.2 ab[x]	3.0	6.6 bc	3581.4
Baytan 30 + Allegiance FL + Vortex FL	15.4 b	2.6	8.0 abc	3134.7
Apron XL + Maxim 4FS + Systhane 40WP	13.8 b	2.4	7.0 bc	3458.9
Apron XL + Maxim 4FS + Systhane 40WP + Dynasty CST	26.0 a	2.8	5.6 bc	3659.6
Apron XL + Maxim 4FS + Systhane 40WP + Dynasty CST + Bion	17.2 ab	2.8	7.4 bc	3366.0
Maxim 4 FS + A16148C + Dynasty 100FS	13.8 b	2.6	8.4 abc	3095.7
Blind Seed Treatment	15.0 b	2.8	7.8 abc	3341.7
Vitavax-PCNB + Allegiance FL	12.2 b	2.2	10.2 ab	2675.9
RTU Baytan Thiram + Allegiance FL	16.4 b	2.8	4.4 c	3432.5
RTU-PCNB	13.2 b	2.6	9.0 abc	3386.6
Allegiance FL	15.0 b	3.0	9.6 ab	2976.3
Baytan 30 + Allegiance FL + Vortex FL (no insecticide)	15.6 b	2.2	8.2 abc	2646.9
Control	16.4 b	2.8	12.2 a	3055.0
LSD (P < 0.10)	***9.04***	***1.02***	***4.71***	***1020.2***

[z]Stand was the number of seedlings in a 10-foot row.
[y]Vigor based on a 1-to-5 scale, with 5 being the best.
[x]Means followed by same letter do not significantly differ according to Fishers LSD test (P < 0.10).

Experimental and Commercial Cotton Varieties Differ in Their Reaction to Target Spot in Southwest Alabama, 2012

A. K. Hagan, K. Glass, M. Pegues, and J. Jones

Target spot (Corynespora leaf spot), which is caused by the fungus *Corynespora cassiicola*, is now distributed statewide on cotton in Alabama. While target spot is found in dryland cotton, heaviest leaf spotting and defoliation is usually observed in irrigated cotton, particularly when strip- or conservation tilled. On May 10, cotton varieties were hill-dropped behind a Kelley Manufacturing Company strip-till unit at a rate of 3 seed per 1.1 row foot in a Malbis fine sandy loam (organic matter < 1%) at the Gulf Coast Research and Extension Center in Fairhope, Alabama. An in-furrow application of Terrachlor 10G at 10 pounds per acre was made to control seed rot and seedling disease. Weed control and fertility were according to recommendations of the Alabama Cooperative Extension System. An application of the plant growth regulator Mepichlor at 6 fluid ounces per acre + Induce at 1 pint per 50 gallons of spray volume on June 18 was followed by three additional applications of 8 fluid ounces per acre Mepichlor + 1 pint per 50 gallons Induce + 4 fluid ounces Bidrin on July 5, July 16, and July 30. Cotton was prepared for harvest with an application of Diuron at 1 ounce per acre + Dropp 50W at 2 ounces per acre + Epthephon at 21 fluid ounces per acre on September 22 and September 27. Plots were not irrigated. Plots consisted of four 30–foot rows spaced 3.2 feet apart arranged in a randomized complete block with four replications. Target spot intensity was visually assessed on September 18 using the 1-to-10 Florida leaf spot rating scale where 1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticed in lower and upper canopy, 4 = some lesions seen and < 10% defoliation, 5 = lesions noticeable and < 25% defoliation, 6 = lesions numerous and < 50% defoliation, 7 = lesions very numerous and < 75% defoliation, 8 = numerous lesions on few remaining leaves and <90% defoliation, 9 = very few remaining leaves covered with lesions and < 95% defoliation, and 10 = plants defoliated. Cotton was mechanically harvested on October 10. Statistical analysis on target spot intensity was done on rank transformations of data, which was then back-transformed for presentation. Means were separated using Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Rainfall totals for May, June, July, and August 2012 exceeded the 30 year average for this study site. Equally high target spot intensity ratings were recorded for the commercial lines Deltapine 1044, Phytogen 499, Phytogen 565, and Phytogen 375 as well as the experimental lines Phytogen PX4339-15, Phytogen PX4339-CB, Phytogen PX 5322-11 and Phytogen PX 5277-02. With disease intensity ratings at or above 7.0, defoliation levels on Deltapine 1044, Phytogen 499, Phytogen 375 were approximately 75%. When compared with All-Tex Nitro 44, which suffered just over 25% defoliation, equally low levels of target spot-associated leaf spotting and premature defoliation were seen on Deltapine 1252, Deltapine 1050, Deltapine MON 11R136, Deltapine MON 11R159, NexGen 0012, and DynaGro DG2610. Seed cotton yield of 12 commercial varieties and experimental lines equaled those of the highest yielding variety Deltapine 1137. Lowest seed cotton yields were recorded for Deltapine MON 11R159, Phytogen PX 5403-05, All-Tex Nitro 44, Deltapine 1044, and Americot 1511.

Seed cotton yield and target spot intensity are not closely linked. Several cotton varieties such as All-Tex Nitro 44 with lower disease ratings also had lower yields when compared with the highest yielding variety Deltapine 1137. In contrast, the experimental line Phytogen PX 4339-15 WRF produced among the highest seed cotton yields despite having among the highest target spot ratings. Particularly for dryland cotton producers, planting a cotton variety with among the lower disease ratings and high yield potential would be the most effective target spot management strategy.

Yields and Reaction of Mid- and Full-season Flex Cotton Varieties and Experimental Lines to Target Spot at the Gulf Coast Research and Extension Center

Cotton Variety	Disease intensity*	Seed cotton (lbs/ac)	Variety	Disease intensity	Seed cotton (lbs/ac)
All-Tex Nitro 44 B2RF	5.2 k**	2759 fg	FiberMax 1944 GLB2	6.5 b-g	3226 a-d
Americot 1511 B2RF	6.4 c-h	2838 d-g	Phytogen 375 WRF	7.0 ab	3011 c-f
Americot NexGen 0012 B2RF	6.0 g-k	3268 abc	Phytogen 499 WRF	7.1 a	3118 b-f
Croplan Genetics 3787 B2RF	6.3 d-h	3268 abc	Phytogen 565 WRF	6.8 a-d	2989 c-f
Deltapine 1044 B2RF	7.2 a	2774 efg	Phytogen PX 4339-15 WRF	7.1 a	3247 abc
Deltapine 1048 B2RF	6.2 f-j	3419 ab	Phytogen PX 4339-6 WRF	6.7 b-f	3204 a-d
Deltapine 1050 B2RF	5.9 h-k	3097 b-f	Phytogen PX 4339-CB WRF	6.8 a-e	3312 abc
Deltapine 1137 B2RF	6.3 e-i	3591 a	Phytogen PX 5277-02 WRF	6.9 abc	3268 abc
Deltapine 1252 B2RF	5.5 jk	3268 abc	Phytogen PX 5322-11 WRF	6.8 a-e	3376 abc
Deltapine MON 11R136 B2RF	5.7 jk	3075 b-f	Phytogen PX 5403-05 WRF	6.4 c-h	2752 fg
Deltapine MON 11R159 B2RF	6.0 i-k	2559 g	Phytogen PX 5409-03 WRF	6.4 c-h	3333 abc
DynaGro DG 2610 B2RF	6.0 g-k	3312 abc			

*Target spot intensity was assessed on September 18 using a 1-to-10 leaf spot scoring system, where 1 = no disease and 10 = completely defoliated plants.
**Means of each variable followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Yields and Reaction of Flex Cotton Varieties to Target Spot in Southwest Alabama, 2012

A. K. Hagan, M. Pegues, and J. Jones

Target spot has emerged as a potential damaging disease of cotton statewide in Alabama. This study was designed to assess the susceptibility of selected commercial flex cotton varieties to target spot in a dryland production system. A cover crop of wheat, which was drilled at a rate of 2.5 bushels of seed per acre on December 14, was killed with 22 fluid ounces per acre of Roundup Weather Max on February 27. Several weeks prior to planting, rows were laid off with a Kelley Manufacturing Co. strip-till unit. On May 9, corn varieties were planted at a rate of 3 seeds per row foot in a Malbis fine sandy loam (organic matter < 1%) at the Gulf Coast Research and Extension Center in Fairhope, Alabama. Thrips and seedling disease control was provided by at-plant, in-furrow applications of 5 pounds per acre Temik 15G and 7 pounds per acre Terraclor 10G, respectively. Fertility and weed control recommendations of the Alabama Cooperative Extension System were followed. An application of regulator Mepichlor at 6 fluid ounces per acre + Induce at 1 pint per 50 gallons spray volume on July 5 was followed by two additional applications of 8 fluid ounces per acre Mepichlor + 1 pint per 50 gallons spray volume Induce + 4 fluid ounces per acre Bidrin + 1 gallon per acre of 5-0-20 liquid fertilizer on July 17 and July 30. Cotton was prepared for harvest with an application of Diuron at 1 ounce per acre + Dropp 50W at 2 ounces per acre + Ethephon at 21 fluid ounces per acre on September 22 and September 27. Plots were not irrigated but rainfall totals for June, July, and August reached and often exceeded the 30-year average for the study site.

Target spot intensity was assessed on July 31, August 13, August 27, September 6, and September 13 using the 1-to-10 Florida peanut leaf spot scoring system, where 1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticed in lower and upper canopy, 4 = some lesions seen and < 10% defoliation, 5 = lesions noticeable and < 25% defoliation, 6 = lesions numerous and < 50% defoliation, 7 = lesions very numerous and < 75% defoliation, 8 = numerous lesions on few remaining leaves and < 90% defoliation, 9 = very few remaining leaves covered with lesions and < 95% defoliation, and 10 = plants defoliated or dead. Plots were picked on October 11. Statistical analyses on disease ratings were done on rank transformations of data. For presentation, data are back-transformed. Means were separated using Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Significant differences in target spot intensity and seed cotton yield were noted between cotton varieties. Similarly, high disease intensity ratings were recorded for Phytogen 499, Phytogen 375, Stoneville 5458, and Fibermax FM 1740. Phytogen 565, DPL 1048, DPL 1050, DPL 1044, DPL 1252, and Fibermax FM 1944 had intensity ratings similar to those recorded for Stoneville 4288, which had the lowest target spot value. Seed cotton yield was equally high for DPL 1252, DPL 1048, DPL 1050, Phytogen 375, DPL 1137, Phytogen 565, and Phytogen 499. Lower yields were reported for DPL 1044 than all other varieties except for Stoneville 4288, Stoneville 5458, and Fibermax FM 1944.

Cotton variety	Target spot intensity[z]	Seed cotton (lbs/ac)[y]
Phytogen 375 WFR	7.0 ab[s]	2959 ab
Phytogen 499 WFR	7.5 a	2849 abcd
Phytogen 565 WFR	6.2 bcd	2904 abc
DPL 1137 B2RF	6.3 bc	2945 abc
DPL 1048 B2RF	6.2 bcd	3028 ab
DPL 1050 B2RF	5.8 cd	3056 ab
DPL 1044 B2RF	6.0 cd	2461 e
DPL 1252 B2RF	6.0 cd	3111 a
Fibermax FM 1740 B2F	6.5 abc	2793 bcd
Fibermax FM 1944 GLB2	6.4 bcd	2641 cde
Stoneville 4288 B2F	5.5 d	2544 de
Stoneville 5458 B2RF	6.6 abc	2544 de

[z]Target spot intensity was assessed on September 18 using 1-to-10 leaf spot scoring system.
[y]Seed cotton yield = total weight of seed + lint.
[s]Means in each column followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Yield and Reaction of Mid- and Full-Season Flex Cotton Varieties in an Irrigated Production System to Target Spot in Southeast Alabama

A. K. Hagan, K. Glass, and L. Wells

Target spot has emerged as a damaging disease of cotton in Alabama. Previous Alabama variety trials suggest that cotton varieties differ in their reaction to target spot. Mid- and full-season cotton varieties and experimental lines were evaluated for their susceptibility to target spot as well as yield in an irrigated study at the Wiregrass Research and Extension Center in Headland, Alabama, on a site cropped the previous two years to corn and peanut. Rows were laid out with a Kelley Manufacturing Co. strip-till rig on May 15, and cotton was sown a rate of 3 seed per 1.1 row feet on May 18 in a Dothan fine loamy sand soil. Fertility and weed control were according to the recommendations of the Alabama Cooperative Extension System. Stink bug control was obtained with a tank mix application of 8 fluid ounces per acre Bidrin + 2 fluid ounces per acre Tracer on July 25 and 6 fluid ounces per acre Bidrin on August 16. The plant growth regulator Pix at 16 fluid ounces per acre was broadcast on August 16. Cotton was prepared for harvest with an application of 6 fluid ounces per acre Dropp + 1 pint per acre Def + 1.5 pint per acre Prep on October 19. Cotton was mechanically harvested on November 15. Plots received 0.4, 0.5, 0.5, 1.0, and 1.0 inch of water on May 31, June 20, June 27, July 9, and July 24, respectively. Plots consisted of four 30-foot rows spaced 3 feet apart arranged in a randomized complete block with four replications. Target spot intensity was assessed on October 9 using a 1-to-10 leaf spot scoring system where 1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticed in lower and upper canopy, 4 = some lesions seen and < 10% defoliation, 5 = lesions noticeable and < 25% defoliation, 6 = lesions numerous and < 50% defoliation, 7 = lesions very numerous and < 75% defoliation, 8 = numerous lesions on few remaining leaves and < 90% defoliation, 9 = very few remaining leaves covered with lesions and < 95% defoliation, and 10 = plants defoliated. Statistical analyses on target spot intensity and turnout were done on rank transformations of data. For presentation, data are back-transformed. Means were separated using Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Significant differences in target spot intensity, % turnout, and seed cotton yield were noted between cotton varieties. Similarly high target intensity ratings were recorded for Phytogen 499, Deltapine 1044, Americot 1511, Phytogen PX 5277-02, Phytogen PX 5322-11, Phytogen PX4339-CB, Phytogen 5403-05, and Deltapine MON 11R136. In contrast, Phytogen 375, Americot NG 0012, Croplan Genetics 3787, Deltapine 1048, Deltapine 1252, DynaGro 2610, Deltapine MON 11R159, and FiberMax 1944 had equally low disease ratings. Turnout ranks were equally high for Americot 1511, Deltapine 1252, and Phytogen 499, while Phytogen PX 5322-11, Phytogen PX 5409-03, Phytogen 375, Fiber Max 1944 had similarly low turnout ratios. Americot 1511, Croplan Genetics 3787, Deltapine 1048, Deltapine 1050, Deltapine 1137, Deltapine 1252, Deltapine MON 11R136, Deltapine MON 11R159, DynaGro 2610, Phytogen PX 5322-11, Phytogen PX 5277-02, Phytogen PX 4339-CB, Phytogen PX 4339-6, Phytogen PX 4339-15, Phytogen 499, and Phytogen PX 5403-05 yields were similarly high as compared with cotton varieties with the lowest yield such as Americot NG 0012, Phytogen 375, Deltapine 1044, All-Tex Nitro 44, and FiberMax 1944.

Yields, % Turnout, and Target Spot Intensity on Mid- and Full-season Flex Commercial Varieties and Experimental Lines of Cotton at the Wiregrass Research Extension Center, 2012

Cotton variety	Target spot intensity[z]	Turnout (%)[y]	Lint yield (lbs/ac)
All-Tex Nitro 44 B2RF	5.8 c-g[xw]	0.42 g	1907 c-f
Americot 1511 B2RF	6.7 abc	0.46 a	2340 a
Americot NG 0012 B2RF	5.1 h	0.44 de	1623 f
Croplan Genetics 3787 B2RF	5.1 h	0.44 d	2001 a-e
Deltapine 1044 B2RF	6.7 ab	0.42 g	1809 def
Deltapine 1048 B2RF	5.4 e-h	0.44 d	2139 a-d
Deltapine 1050 B2RF	6.0 b-f	0.45 bc	2174 abc
Deltapine 1137 B2RF	5.5 d-h	0.44 d	2180 abc
Deltapine 1252 B2RF	5.3 fgh	0.45 ab	2199 abc
Deltapine MON 11R136 B2RF	6.1 a-e	0.42 g	2060 a-d
Deltapine MON 11R159 B2RF	5.7 d-h	0.44 cd	2064 a-d
DynaGro 2610 B2RF	5.5 c-f	0.43 ef	2120 a-d
FiberMax 1944 GLB2	5.5 d-h	0.41 h	1968 b-f
Phytogen 375 WRF	5.1 h	0.41 h	1709 ef
Phytogen 499 WRF	7.4 a	0.45 ab	2093 a-d
Phytogen 565 WRF	5.9 b-f	0.42 g	2157 abc
Phytogen PX 4339-15 WRF	5.9 b-f	0.43 f	2215 abc
Phytogen PX 4339-6 WRF	5.8 c-g	0.42 g	2171 abc
Phytogen PX 4339-CB WRF	6.0 b-f	0.43 f	2296 ab
Phytogen PX 5277-02 WRF	6.2 b-f	0.43 f	2270 ab
Phytogen PX 5322-11 WRF	6.1 a-d	0.40 h	2280 ab
Phytogen PX 5403-05 WRF	6.0 a-d	0.44 d	2037 a-e
Phytogen PX 5409-03 WRF	5.8 c-g	0.40 h	2004 b-e

[z]Target spot intensity was assessed on October 9 using leaf spot scoring system (1 to 10 scale).
[y]Turnout (%) = ratio of lint to total seed cotton yield.
[x]Means in each column followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test ($P < 0.05$).
[w]Disease intensity and turnout data in columns are calculated means, but letters differentiating means were calculated using rank transformations.

On-Demand Fungicide Program Compared for Target Spot on Cotton in Southwest Alabama

A. K. Hagan, M. Pegues, and J. Jones

Recommended and candidate fungicides were compared for the control of target spot as well as impact on seed cotton yield of Phytogen 499 at the Gulf Coast Research and Extension Center in Fairhope, Alabama, in a dryland production system. A cover crop of wheat, which was drilled at a rate of 2.5 bushels of seed per acre on December 14, 2011, was killed with 22 fluid ounces per acre of Roundup Weather Max on February 27, 2012. On May 9, Phytogen 499 cotton variety were hill dropped behind a Kelley Manufacturing Co. strip-till unit at a rate of 3 seed per foot of row in a Malbis fine sandy loam (organic matter < 1%). Seed in the hopper was treated with Prevail seed dressing for seed rot and seedling disease control. Fertility and weed control were according to recommendations of the Alabama Cooperative Extension System. An application of the plant growth regulator mepichlor at 6 fluid ounces per acre + Induce at 1 pint per 50 gallons of spray volume on July 5 was followed by two additional applications of 8 fluid ounces per acre mepichlor + 1 pint Induce per 50 gallons of spray volume + 4 fluid ounces per acre Bidrin + 1 gallon per acre of 5-0-20 liquid fertilizer on July 17 and July 30. Cotton was prepared for harvest with an application of Diuron at 1 ounce per acre + Dropp 50W at 2 ounces per acre + Ethephon at 21 fluid ounces per acre on September 22 and September 27. The study was not irrigated. Plots consisted of four 30-foot rows spaced 3.2 feet apart arranged in a randomized complete block with four replications. Fungicides were applied with a Spider sprayer with 11002 tips mounted on a four row boom in 15 gallons per acre of spray volume at 40 psi on July 26 when symptoms were first noted in the canopy and on August 7. Target spot intensity was visually assessed on August 13, August 27, September 6, and September 13 using the 1-to-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticed in lower and upper canopy, 4 = some lesions seen and < 10% defoliation, 5 = lesions noticeable and < 25% defoliation, 6 = lesions numerous and < 50% defoliation, 7 = lesions very numerous and < 75% defoliation, 8 = numerous lesions on few remaining leaves and < 90% defoliation, 9 = very few remaining leaves covered with lesions and < 95% defoliation, and 10 = plants defoliated. Cotton was mechanically harvested on October 11. Statistical analyses on seed cotton yield were done on rank transformations of data. For presentation, data are back-transformed. Means were separated using Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Monthly rainfall for June, July, and August exceeded the 30-year average for the study site. Significant differences in target spot intensity were noted among the fungicides treatments. While the least leaf spotting and premature defoliation attributed to target spot was noted with the Headline 2.09SC and the 8.5 fluid ounce per acre rate of Twinline, similarly low disease ratings were also recorded with the 7 fluid ounce per acre rate of Twinline along with Headline AMP, and Quilt XCEL. When compared with the non-treated control, target spot intensity was equally high on the Stratego YLD, Bravo WeatherStik and Muscle-treated cotton. Yields for all fungicide treatments and non-treated control did not significantly differ. Higher yields were noted for the Headline AMP- than Startego YLD-treated cotton.

Yield Response and Target Spot Control with On-demand Applications of Registered and Candidate Fungicides on Phytogen 499 Cotton at the Gulf Coast Research and Extension Center

Fungicide and rate/ac	Target spot intensity[z]	Seed cotton yield (lbs/ac)[y]
Twinline 7 fl oz	6.0 de[x]	3383 ab
Twinline 8.5 fl oz	5.9 e	3302 ab
Headline 2.08SC 6 fl oz	5.9 e	3336 ab
Headline AMP 9 fl oz	6.1 de	3428 a
Quadris 2.08F 6 fl oz	6.5 bcd	3279 ab
Quilt EXCL 14 fl oz	6.3 cde	3222 ab
Muscle 3.6F 7.2 fl oz	6.9 abc	3199 ab
Bravo Weather Stik 1.5 pt	7.4 a	3096 ab
Stratego YLD 5 fl oz	7.1 ab	3015 b
Non-treated control	7.3 a	3142 ab

[z]Target spot intensity was assessed on September 18 using the Florida peanut leaf spot scoring system.
[y]Seed cotton yield = total weight of seed + lint.
[x]Means in each column followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test ($P < 0.05$).

Recommended Fungicides Compared for Target Spot Control on Two Cotton Varieties in Southwest Alabama

A. K. Hagan, M. Pegues, and J. Jones

Target spot is widely distributed in cotton across Alabama. Leaf spotting and defoliation attributed to target spot has been most intense in irrigated cotton or fields receiving frequent showers during flowering and boll fill. Recommended fungicides were screened for their activity against target spot on two cotton varieties as well as potential impact on seed cotton yields on the cotton varieties Phytogen 499 (susceptible) and Deltapine 1050 (tolerant) at the Gulf Coast Research and Extension Center in Fairhope, Alabama. On May 9, Phytogen 499 and Deltapine (DPL) 1050 cotton varieties were hill dropped behind a Kelley Manufacturing Co. strip-till unit at a rate of 3 seed per foot of row in a Malbis fine sandy loam (organic matter <1%) on a site cropped to cotton the previous three years. Seed in the hopper were treated with Prevail seed dressing for seed rot and seedling disease control. Fertility and weed control were according to the recommendations of the Alabama Cooperative Extension System. An application of the plant growth regulator Mepichlor at 6 fluid ounces per acre + Induce at 1 pint per 50 gallons of spray volume on June 18 was followed by three additional applications of 8 fluid ounces per acre Mepichlor + 1 pint per 50 gallons Induce + 4 fluid ounces Bidrin on July 5, July 16, and July 30. Cotton was prepared for harvest with an application of Diuron at 1 ounce per acre + Dropp 50W at 2 ounces per acre + Epthephon at 21 fluid ounces per acre on September 22 and September 27. Plots were not irrigated but monthly rainfall totals during the growing season often exceeded the 30-year historical average. Plots consisted of four 30-foot rows spaced 3.2 feet apart arranged in a randomized complete block with four replications. Twinline at 7 and 8.5 fluid ounces per acre; Headline 2.09SC at 6 and 9 fluid ounces per acre; and Quadris 2.08F at 6 and 9 fluid ounces per acre were applied with a Spider sprayer with TX-12 nozzles spaced 19 inches apart mounted on a four-row boom in 15 gallons of spray volume per acre at 40 psi on July 5 (first bloom) and on July 23. Target spot intensity was visually assessed on September 13 using a 1-to-10 leaf spot rating scale where 1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticed in lower and upper canopy, 4 = some lesions seen and < 10% defoliation, 5 = lesions noticeable and < 25% defoliation, 6 = lesions numerous and < 50% defoliation, 7 = lesions very numerous and < 75% defoliation, 8 = numerous lesions on few remaining leaves and < 90% defoliation, 9 = very few remaining leaves covered with lesions and < 95% defoliation, and 10 = plants defoliated. Cotton was mechanically harvested on October 11. Significance of interactions was done using the PROC MIXED procedure in SAS. Statistical analyses on target spot intensity and seed cotton yield were done on rank transformations of data. For presentation, data are back-transformed. Means were separated using Fisher's protected least significant difference (LSD) test ($P < 0.05$). Since the cotton variety *x* fungicide interaction was not significant, data presented for each variable were pooled by variety and fungicide treatment.

While the target spot intensity was higher on Phytogen 499 than Deltapine 1050, seed cotton yield of the two varieties was similar. All fungicide treatments were equally effective in reducing the level of leaf spotting and premature defoliation attributed to target spot when compared to the non-treated control. With the exception of Headline 2.09SC at the 9 fluid ounce per acre rate, yields for the remaining fungicide treatments and the non-treated control did not significantly differ. Yield response with Twinline, Headline 2.09SC, and Quadris was not impacted by application rate.

Split plot analysis (F)	Target spot intensity[z]	Seed cotton yield (lbs/ac)[y]
Cotton variety	300.06***[x]	1.13
Fungicide	8.59***	2.32*
Cotton variety x fungicide	1.20	1.27
Cotton variety means		
Deltapine 1050	5.1 b[wv]	3321 a
Phytogen 499	6.7 a	3238 a
Fungicide means		
Twinline 7.5 fl oz	5.7 b	3256 b
Twinline 9 fl oz	5.7 b	3216 b
Headline 6 fl oz	5.7 b	3400 ab
Headline 9 fl oz	5.7 b	3474 a
Quadris 6 fl oz	5.8 b	3205 b
Quadris 9 fl oz	5.8 b	3377 ab
Non-treated control	6.5 a	3156 b

[z]Target spot intensity was rated using a leaf spot scoring system (scale = 1 to 10) on September 13.
[y]Seed cotton yield = total weight of seed + lint.
[x]Significance of F values at the 0.05, 0.01, and 0.001 levels is indicated by *, **, or ***, respectively.
[w]Means in each column followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test ($P < 0.05$).
[v]Disease intensity data in columns are calculated means, but letters differentiating means were calculated using rank transformations.

INSECT MANAGEMENT

Effectiveness of Different Insecticides in Controlling Spider Mites and Aphids Infesting Cotton

T. Reed and C. Burmester

Studies to evaluate the efficacy of different chemicals in controlling spider mites and aphids were conducted in growers' fields near Belle Mina (Limestone County, Alabama) and Moulton (Lawrence County, Alabama), respectively. Chemical treatments used and rates applied are presented in Tables 1 and 2. There were four replications/treatments with treatments arranged in an RCB design in both tests. Plots were four rows wide and 50 feet long in the spider mite study. Plots were four rows wide and 30 feet long in the aphid study. Spider mite treatments were applied June 27 using a tractor-mounted spray boom equipped with TX 10 conejet nozzles that delivered 15 gallons of spray per acre using 40 psi. Aphid treatments were applied June 30 using a CO2 backpack sprayer equipped with TX 10 conejet nozzles that delivered 16.3 gallons per acre using 38 psi. Spider mite counts were made four and nine days after application (DAA). Aphid counts were made four and seven DAA. Yields were obtained by hand-harvesting 10 row feet per plot in the spider mite test and 5 row feet per plot in the aphid test.

Results are presented in Tables 1 and 2. Number of spider mites and the percentage of leaves with spider mite eggs was significantly greater in the bifenthrin treatment nine DAA in comparison to all the other treatments, including water. Thrips were observed feeding on mite eggs, and bifenthrin may have reduced thrips predation. All treatments significantly reduced aphid numbers in comparison to water both four and seven days after application. There were no statistically significant differences among treatments with respect to yield in either study.

Table 1. Efficacy of Selected Chemicals in Reducing Spider Mites Infesting Cotton, 2012

Chemical treatment	Rate of product applied per acre	No. of mites per 1/4th leaf		% leaves sampled with mite eggs 7/6	Seed cotton yields (lbs/ac)
		7/1	7/6		
Water		8.4 A	2.6 B	35 B	1538
Bifenthrin 4EC	5.7 oz	4.9 AB	6.65 A	75 A	1573
Zeal 72% WSP	1.0 oz	0.6 BC	0.1 C	5 C	1446
Dicofol 4E	36.0 oz	0.3 BC	0 C	0 C	2003
Abamectin 0.15 EC	12.0 oz	0.15 C	0 C	0 C	1690
P>F		0.0276	0.0005	0.0001	0.1616
LSD 0.1		***4.62***	***2.17***	***20%***	

Table 2. Efficacy of Selected Chemicals in Controlling Aphids Infesting Cotton, 2012

Chemical treatment	Rate of product applied per acre	No. of aphids per 1/4th leaf		Seed cotton yields (lbs/ac)
Water		47.4 A	20.5 A	2308
Intruder 70 WP	0.85 oz	4.0 C	3.8 B	2038
Carbine 50 WG	2.70 oz	9.8 BC	2.4 B	1803
Admire Pro 4.4 SC	1.14 oz	15.5 B	4.0 B	2038
Centric 40 WG	2.00 oz	17.1 B	5.7 B	1934
P>F		0.0001	0.0000	0.454
LSD 0.1		***10.38***	***3.77***	

Effect of Foliar Applications of Different Insecticides to Seedling Cotton on Thrips Density, Thrisps Damage to Cotton, and Cotton Yields, 2012

T. Reed and B. Freeman

DPL 0912 seed were planted in 40-inch rows May 8 at the Tennessee Valley Research and Extension Center in Belle Mina, Alabama. Prior to planting, the seed were treated with fungicides, but the only insecticide applied was chlorpyrifos. Foliar insecticde treatments and application rates are presented in Table 1. Rows were 30 feet long with two rows per plot. Treatments were arranged in a RCB design with four reps per treatment. All plots were treated on May 25 (one true leaf), and half the plots were treated again on June 4 (second true leaf). Five plants per plot were collected on May 29 and June 8 and shaken in a jar of alcohol. Thrips were identified and counted later using a binocular scope. Damage ratings were also made on June 8. Plots were harvested at crop maturity.

The numbers of thrips per five plants recovered after insecticide applications are presented in Table 1. There was no significant effect with respect to treatment on the number of immature thrips (IMs) (P>F=0.15) or the number of adults + immatures (ADs + IMs) (P>F=0.17) four days after application (DAA) of the first foliar spray. However, numbers of IMs and of ADs + IMs were numerically lower in the Radiant and Orthene plots than in the pyrethroid treatments and the control. Thrips numbers declined in all plots and on June 8 (four DAA after second application) thrips numbers in control plots were 79% less than they were on May 29. There was a significant effect with respect to insecticide treatment on the number of thrips present four days after half the plots were treated a second time. Numbers of IMs and numbers of ADs + IMs in plots sprayed once were significantly lower in the Radiant treatment than in both the Karate Z and Karate 1 EC treatments. Numbers of IMs and numbers of ADs + IMs in plots sprayed twice were significantly lower in the Radiant and Orthene treatments than in both the Karate Z and Karate 1 EC insecticide treatments. Thrips damage ratings and yields in the different treatments are presented in Table 2. Thrips damage level ratings were significantly lower in plots sprayed once with Radiant and Orthene than in all the other treatments applied once (P>F=0.00). The same was true when treatments were applied twice (P>F=0.00). There was no significant effect with respect to yield among treatments applied once or twice (P>F=0.34). The percentage of each thrips species present in all plots on May 29 and June 8 are presented in Table 3. Tobacco thrips and Eastern flower thrips were the most abundant species present on May 29. By June 8, soybean thrips and Western flower thrips constituted 24% and 12.7%, respectively, of the total thrips population. Tobacco thrips were the most abundant species the second sampling date.

Table 1. Effect of One and Two Applications of Select Insecticides to Seedling Cotton Plants on Thrips Density at Belle Mina, 2012

		Number of thrips per 5 plants					
		5/29 (IX)[1]		6/8 (IX)		6/8 (2X)[2]	
Insecticide	Rate Product per acre	IM[3]	Ad[4] + Im	Im	Ad + Im	Im	Ad + Im
Karate Z	1.28 oz	43.80	48.00	9.00 A	15.80 A	8.50 B	14.00 AB
Karate IEC	2.56 oz	23.80	27.30	8.80 A	11.30 ABC	3.50 BCD	8.00 CDE
Ammo	3.20 oz	23.30	24.50	3.30 BCD	5.30 DEF	3.75 BCD	8.30 CDE
Untreated		17.00	29.80	7.30 AB	9.30 BCD	5.00 ABC	9.00 BCD
Orthene 90	0.30 lbs	15.30	16.30	3.00 BCD	5.80 CDEF	0.00 D	1.00 F
Radiant	1.50 oz	10.00	13.30	0.80 CD	3.30 EF	0.00 D	1.50 F
+ MSO	0.5 % v/v						
P>F		0.15	0.17	0.0065	0.0010	0.0065	0.0010
LSD 0.1	***4.56***	***5.53***	***4.56***	***5.53***			

[1]1X = Plots sprayed once on 5/25, [2]2X = Plots sprayed twice, 5/25 and 6/4, [3]IM = immatures, [4]Ad = adults

Table 2. Effect of One and Two Applications of Select Insecticides to Seedling Cotton Plants on Thrips Damage and Yield at Belle Mina, 2012

		Damage rating[1]		Seed cotton (lbs/ac)	
Insecticide	Rate of product per acre	6/8 (1X)[2]	6/8 (2X)[3]	1X	2X
Untreated	-----	3.5 AB	3.8 A	3502	3454
Ammo	3.20 oz	3.3 ABC	3.5 AB	3419	3243
Karate Z	1.28 oz	3.1 ABC	3.0 BC	3352	3417
Karate IEC	2.56 oz	3.0 BC	2.8 CD	3714	3429
Radiant	1.50 oz	2.3 DE	1.8 E	3590	3405
Orthene 90	0.30 lb	2.0 E	1.8 E	3594	3350
P>F	0.0	0.0	0.34	0.34	
LSD 0.1	***0.69***	***0.69***			

[1]damage rating – 1 = light, 5 = Severe, [2]1X = Plots sprayed once, [3]2X = Plots sprayed twice

Table 3. Percent Species Composition of Thrips Adult Population in Cotton at Belle Mina in 2012 on 2 Sampling Dates

Species	5/29	6/8
Tobacco Thrips	42.0 %	45.0 %
Eastern Flower Thrips	56.5 %	18.3 %
Western Flower Thrips	0.0 %	12.7 %
Soybean Thrips	1.5 %	24.0 %

Efficacy of Two New Insecticides, Belay and Transform, in Controlling Tarnished Plant Bugs Attacking Cotton

T. Reed and R. H. Smith

This study was conducted at the E. V. Smith Research Station near Tallassee, Alabama. Chemical treatments, application rates, and timing of all applications are presented in the table. There were four replications per treatment with treatments arranged in a randomized complete block design. Treatments were applied using a Spider Sprayer equipped with TX-VS4 nozzles that delivered 11.8 gallons per acre at 60 psi. Plants were sampled using a drop cloth. Results are presented in the table. Tarnished plant bug (TCB) numbers were slightly less than one per foot of row when this trial was initiated and remained at a treatable level in the untreated control over the following 21 days. The mean number of TPBs present in the untreated control across all sample dates was five per row foot. All the different treatments provided similar levels of control of tarnished plant bugs, and all provided a significant reduction in the number of tarnished plant bugs in comparison to the control on all sampling dates. There was no significant effect on yield of seed cotton with respect to the different treatments. However, there was a numeric trend toward higher yields in Treatments 2-6.

Efficacy of Select Insecticides for Control of Tarnished Plant Bugs in Cotton in Central Alabama, 2012

No.	Treatment	Rate (oz/ac)	Timing	# Tarnished bug plants per 6 row feet		
				7/10	7/17	7/27
1.	Transform 50WDG 1939	0.75 oz	1st bloom (7/6)	0.25B	0.50BC	0.50B
2.	Transform 50WDG 2043	1.50 oz	1st bloom (7/6)	1.25B	0.25BC	1.00B
3.	Diamond 0.83 EC 2034 + Bidrin 8 EC	6.00 oz 6.00 oz	3rd week square (6/29)	0.25B	0.25BC	1.25B
4.	Diamond 0.83 EC + Bidrin 8EC	6.00 oz 6.00 oz	1st bloom (7/6) 1st bloom (7/6)	0.50B	0.00C	1.25B
5.	Diamond 0.83 EC 2121 fb Diamond 0.83 EC	6.00 oz 6.00 oz	1st bloom (7/6) 2 weeks later (7/23)	1.00B	0.00C	0.50B
6.	Bidrin 8EC 2013	4.00 oz	1st bloom (7/6)	1.25B	0.00C	0.50B
7.	Belay 2.13 SC 1899	3.00 oz	1st bloom (7/6)	1.00B	1.00B	1.00B
8.	Belay 2.13 SC 1899	4.00 oz	1st bloom (7/6)	0.50B	0.50BC	1.25B
9.	Untreated 1864	--------		3.25A	2.00A	9.75A
P > F =	0.007	0.012	0.000	0.156		
LSD 0.1	***1.19***	***0.87***	***1.41***			

Demonstration and Validation of a More Rapid Survey Method for Monitoring Stink Bug Damage to Cotton

R. H. Smith

A stink bug trial was conducted at the Wiregrass Research and Extension Center (WREC) in Headland, Alabama, to evaluate several different survey techniques. Cotton was planted on May 21 with a full season variety (DP1050B2RF) in alternating strips (eight rows wide) with peanuts (eight rows wide). This planting pattern was used to insure the maximum level of stink bug migration from peanuts into cotton season long. Plots were eight 60-foot rows with four replicates. Surveys were made every 14 days beginning the fourth week of bloom. A total of three surveys were made (fourth, sixth, and eighth week of bloom). Ten bolls, one-quarter inch in diameter, were selected at random from each plot and transported to the lab for observation for both external and internal stink bug injury. Bolls were selected from rows one or two (adjacent to peanuts). The time required for each survey method was recorded. All treatments were made on the same schedule to eliminate varying infestation levels as a variable. All plots, except the untreated control, were sprayed with Bidrin at 5 ounces active ingredient per acre during the third, fifth, and seventh week of bloom. Post treatment counts were made seven days later.

Stink bug pressure at the WREC, as well as statewide, was below treatment levels for the second consecutive season. The level of stink bug damage is a factor in the time required to conduct certain survey methods. A higher level of damage would have added time to some of the methods used in this trial. Conclusions from this trial are as follows: The “dynamic threshold” survey method, as recommended by all southeastern states, based on multiyear, multistate research data sponsored by Cotton Incorporated, is the best compromise between: the time required to survey; threshold usage; and the minimization of stink bug injury.

No.	Treatment survey description	Mean of three survey dates		
		Total minutes required	External % boll damage	Internal % boll damage
1.	Observe for external damage only.	3.5	24	?
2.	Crush all bolls and examine for internal damage.	14.3	20	3
3.	Observe for external damage and crush only those with external damage for internal damage (dynamic threshold). Only crush bolls with external injury until a threshold is reached.	4.3	15	6
4.	Conduct no surveys. Make automatic applications on weeks 3, 5, and 7 of bloom.	0.0	17	3
5.	Untreated season long to document level of stink bug pressure encountered. Utilized survey method number 3.	4.0	24	8

Timing of New Insecticide Chemistry for Caterpillar Control in Cotton Varieties with No Insect Traits

R. H. Smith

The objective of this study was to evaluate the timing of new caterpillar chemistry on non-Bt cotton as to their effectiveness in reducing caterpillar damage. Previous research has documented that the newer chemistry gives better suppression when applied prior to, at the egg stage, or shortly thereafter. This small plot replicated timing study was conducted at the Prattville Agricultural Research Unit in Prattville, Alabama, utilizing a cotton variety with no insect traits, DP174RF. Three application timings were made between mid-July and early August (July 16, July 25, and August 7) comparing the control of the newer chemistry, Prevathon and Belt, versus a standard pyrethroid. Extremely light caterpillar pressure occurred in the trial area during the historical peak bollworm period of July 18-25. A moderate level of pressure was encountered between early and mid-August and likely was a combination of bollworms and tobacco budworms. An end-of-season damaged-boll survey was taken on October 4 to measure the number of worm-damaged bolls from one 60-foot row of each plot. Yields were also taken.

This trial was targeted towards the historical flight of bollworms, coming from corn to cotton, about July 20 in central Alabama. However, in 2012, the caterpillar pressure occurred early to mid-August and was primarily the tobacco budworm species. As a result, our timing of applications was much too early to meet the objectives of this trial. The residual period of worm suppression expected from the rates of Prevathon and Belt used in this study would be from seven to 12 days. Therefore, the residual received from both July application dates would have diminished prior to the August period when budworms occurred.

When focusing on only the August 7 treatments, some expected results occurred. Both Prevathon and Belt performed similarly in reducing bollworm-damaged bolls, 8.0 and 7.8 per 60 row feet, respectively. These numbers represent more than a 50% reduction from the untreated. The pyrethroid application actually had more damaged bolls than the untreated. This could likely be explained by the fact that budworms are resistant to pyrethroids, and the August 7 pyrethroid application decimated the beneficial complex prior to the budworm egg lay.

A second trial site was conducted at the Gulf Coast Research Center in Fairhope, Alabama. A similar timing regime was implemented on July 5, July 9, and July 16 to coincide with the historically earlier-occurring bollworm peak at that location. Again, bollworm numbers were almost undetectable during the July period. A heavy tobacco budworm flight did occur in early August, but the cotton in this trial was too mature to receive measurable levels of damage. Yields were collected, but no caterpillar damage counts were taken.

Impact and Management of Fire Ants in the Alabama Cotton Production System, 2012

R. H. Smith, T. Reed, and D. Moore

This study was conducted in 2012 to determine the impact of the red imported fire ant, *Solenopsis invicta* Buren, on tobacco budworm/bollworm populations infesting cotton. The primary objective of this effort was to quantify the actual value of red imported fire ants (RIFAs) to producers of Bt and non-Bt cotton varieties. The study was conducted in central Alabama at the Prattville Agricultural Research Unit. The study utilized a split-plot design. The main plot variables were a normal RIFA population and an insecticide-reduced RIFA population. The fire ant population was reduced by applying an insecticide to the soil after planting. Amdro fire ant bait was also applied to the reduced RIFA population plots on May 31 and July 12. The study examined the effect of these two population levels on the yields of three cotton varieties (subplots); DPL 1050 B2RF (Bollgard II), PHY 499 WRF (Widestrike), and DP 174 RF (non-Bt). Individual varietal plots were eight rows wide and 60 feet long. There were eight replications of each variety planted in both normal and reduced RIFA population areas. RIFA population levels were determined in each plot by counting RIFAs on three small sections of frankfurters on July 12 and August 6. RIFA density indexes were measured using a scale of 0 to 4, with 0 = no RIFAs present, 1 = 1 to 5 RIFAs present, 2 = 6 to 10 RIFAs present, 3 = 11 to 20 RIFAs present, and 4 = more than 20 RIFAs present.

RIFA index values showed that, over two sampling dates, there were an average of 3.8 times more RIFAs in the untreated vs. insecticide-treated plots. Mean RIFA population index values onJuly 12 were 0.49 in the insecticide-treated plots and 3.06 in the untreated plots. Mean RIFA population index values were 1.17 in the insecticide-treated plots on August 6 and 3.22 in the untreated plots. This indicated that the second application of Amdro applied on July 12 failed to suppress the RIFA numbers. Extremely low worm populations (primarily tobacco budworm) and more fire ants in the insecticide-treated plots relative to untreated plots in 2012 in comparison to 2011 resulted in no significant difference in the number of worm-damaged bolls (WBDs) in the DP 174 RF plots with a reduced RIFA density (5.25 WBDs per 60 feet) vs. the normal RIFA population (3.75 WBDs per 60 feet). Only one WBD was found in the Bt variety plots. PHY 499 WRF had a significantly higher (P>F=0.000) seed cotton yield (3414 pounds per acre) than DP 1050 B2RF (2959 pounds per acre), and DP 174 RF had a significantly lower yield (2386 pounds per acre)than DP 1050 B2RF (LSD 0.1 = 125 pounds per acre). The study indicated that when worm numbers are low, fire ants may not provide a reduction in the number of worm-damaged bolls.

NEMATODE MANAGEMENT

Evaluation of Poncho Votivo, Aeris, and Temik on Cotton for Reniform Nematode Management in North Alabama, 2012

D. W. Schrimsher, K. S. Lawrence, and C. Norris

Poncho Votivo, Aeris, and Temik 15G were evaluated for the management of the reniform nematode on cotton in an infested field near Belle Mina, Alabama. The soil was a Decatur silt loam (sand 23%, silt 49%, clay 28%). All seed treatments were applied to the seed by the Bayer CropScience. Temik 15G (840 grams active ingredient per hectare) was applied in furrow at planting on May 1 with granular applicators attached to the planter. Plots consisted of two rows, 7.62 meters long with 1.02-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by 6.1-meter-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Nematode population densities were recorded 34 DAP to evaluate treatment effects on vermiform populations. Plots were harvested on October 10. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure, and means compared using Fisher's protected least significant difference (LSD) test. Temperatures were normal, with monthly average maximum temperatures at planting in May through harvest in October were 29.7, 32.3, 34.7, 31.6, 28.9, and 22.3 degrees C, with average minimum temperatures of 17.1, 18.7, 22.5, 20.1, 16.1, and 9.9 degrees C, respectively. Rainfall was normal and accumulations for each month were 7.2, 3.1, 12.2, 8.3, 11.1, and 8.6 centimeters, with a total of 55.8 centimeters over the entire season.

Reniform nematode disease pressure was high in 2012 due to the mild winter and timely rainfall in May, July, and August. Increases in plant stands at 29 DAP occurred in Temik 15G (Treatment 6) and Gaucho 600 FS + Poncho Votivo + USF 0738 (Treatment 8) over the control (Treatment 1). Nematode population densities at 34 DAP were extremely high across all treatments, with a range from a low of 6182.2 to a high of 14059.5 per 150 cubic centimeter with no statistically significant differences among treatments. Seed cotton yields were significantly increased by all treatments over the control. The Temik 15G (Treatment 6), Gaucho 600 FS + Poncho Votivo + USF 0738 (Treatment 8), and Aeris + USF 0738 (Treatment 9) had a 49.6%, 51.3%, and 56.2 %, increase in seed cotton yield, respectively, over the control.

No.	Seed treatment and rate[z] (mg ai/seed)	Stand[y] 3 m row		Reniform nematodes per 150 cm^3 soil		Seed cotton lbs/ac	
		31 DAP		34 DAP			
1.	Control	24.4	c[x]	7137.9	a	1397.2	c
2.	Gaucho 600 FS (0.375)	27.0	bc	7230.6	a	2193.1	b
3.	Gaucho 600 FS (0.375) + Poncho Votivo (0.425)	31.8	abc	11124.0	a	2165.6	b
4.	Aeris (0.75) + Poncho Votivo (0.425)	30.4	abc	6674.4	a	2360.6	ab
5.	Avicta (0.15) + Cruiser (0.375)	31.2	abc	14059.5	a	2122.8	b
6.	Temik 15G (5.0 lb/A)	36.8	a	6182.2	a	2719.5	ab
7.	Aeris (0.75)	32.2	abc	10876.8	a	2337.1	ab
8.	Gaucho 600 FS (0.375) + Poncho Votivo (0.425) + USF0738 (0.2)	34.2	ab	7369.7	a	2867.7	a
9.	Aeris (0.75) + USF0738 (0.2)	29.8	abc	10320.60	a	2845.4	a
	LSD (P < 0.10)	***5.09***		***10204.80***		***358.01***	

[z]Vortex FL, Baytan 30, and Allegiance FL were applied to all treatments at a rate of 2.5, 10, and 15.6 g ai/ 100kg seed, respectively.
[y]Means followed by same letter do not significantly differ according to Fishers least significant difference (LSD) test (P < 0.10).
[x]Stand was the number of seedlings in a 3-m of row.

Evaluation of Aeris, Temik, and Two Experimental Compounds for Management of Reniform Nematodes on Cotton in North Alabama, 2012

D. W. Schrimsher, K. S. Lawrence, and C. Norris

Aeris, Temik 15G, and two different experimental compounds were evaluated for the management of the reniform nematode on cotton in a naturally infested field near Belle Mina, Alabama. The soil was a Decatur silt loam (sand 23%, silt 49%, clay 28%). All seed treatments were applied to the seed by the manufacturer. Temik 15G (840 grams active ingredient per hectare), SP 26966 (418 grams active ingredient per hectare) and SP 26966 (611 grams active ingredient per hectare) were all applied in furrow at planting on May 1 with chemical applicators attached to the planter. Plots consisted of two rows, 7.62 meters long with 1.02-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by 6.1-meter-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Nematode numbers were recorded 34 DAP to evaluate treatment effects on vermiform populations. Plots were harvested on October 10. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure, and means compared using Fisher's protected least significant difference (LSD) test. Monthly average maximum temperatures from planting in May through harvest in October were 29.7, 32.3, 34.7, 31.6, 28.9, and 22.3 degrees C, with average minimum temperatures of 17.1, 18.7, 22.5, 20.1, 16.1, and 9.9 degrees C, respectively. Rainfall accumulation for each month was 7.2, 3.1, 12.2, 8.3, 11.1, and 8.6 centimeters with a total of 55.8 centimeters over the entire season.

Reniform nematode disease pressure was high in 2012 due to the mild winter and timely rainfall in May, July and August. Plant stands at 31 DAP were similar across all treatments. Vigor ratings recorded at 31 DAP ranged from a low of 2.5 for Temik 15G (Treatment 2) to a high of 4.5 for Gaucho 600 FS + USF 738 + SP 26966 (Treatment 8). Vigor ratings recorded at 43 DAP were similar in comparison, with the exception of Temik 15G (Treatment 2), which had a significantly lower vigor rating than all other treatments. Nematode populations recorded at 34 DAP were extremely high across all treatments with a range from a low of 3322.0 for Gaucho 600 FS + SP 26966 (Treatment 6) to a high of 7833.4 for Temik 15G (Treatment 2), which was significantly higher than all other treatments. Seed cotton yields for Gaucho 600 FS + SP 26966 418 grams active ingredient per hectare (Treatment 6), Gaucho 600 FS + SP 26966 611 grams active ingredient per hectare (Treatment 7), and Gaucho 600 FS + USF 738 + SP 26966 418 grams active ingredient per hectare (Treatment 8) were all significantly higher than Gaucho 600 FS (Treatment 1) and Temik 15G (Treatment 2). These experimental compounds evaluated in this trial show the ability to decrease reniform populations and increase yields over the standard controls.

No.	Seed treatment and rate[z] (mg ai/seed)	Stand[y] 10 ft row		Plant Vigor[x]				Reniform per 150 cm^3		Seed cotton lbs/ac	
		31 DAP		31 DAP		43 DAP		34 DAP			
1.	Gaucho 600 FS (0.375)	33.4	a[w]	2.6	e	2.9	ab	5577.6	a	1535.0	c
2.	Temik 15G (840 g /ha)	33.4	a	2.5	e	2.3	b	7833.4	b	1541.4	c
3.	Aeris (0.75) +	31.2	a	3.3	d	3.78	a	6365.6	a	2255.0	bc
4.	Gaucho 600 FS (0.375) + USFS0 738 (0.35)	35.6	a	3.9	c	3.35	a	4295.2	a	2735.3	abc
5.	Gaucho 600 FS (0.375) + USFS0 738 (0.35) + Votivo 240FS (0.071)	33.0	a	4.1	abc	3.75	a	5994.8	a	2713.2	abc
6.	Gaucho 600 FS (0.375) + SP 26966 (418 g ai/ha)	35.8	a	4.0	bc	3.3	a	3322.0	a	3007.0	ab
7.	Gaucho 600 FS (0.375) + SP 26966 (611 g ai/ha)	32.6	a	4.4	ab	3.45	a	4551.8	a	3870.4	a
8.	Gaucho 600 FS (0.375) + USFS0 738 (0.35) + SP 26966 (418 g ai/ha)	32.4	a	4.5	a	3.6	a	4851.6	a	3225.6	ab
	LSD ($P < 0.10$)	6.15		.348		.727		4415.27		866.84	

[z]Vortex FL, Baytan 30, and Allegiance FL were applied to all treatments at a rate of 2.5, 10, and 15.6 g ai/ 100kg seed, respectively.
[y]Stand was the number of seedlings in 3.05 meters of row.
[x]Plant Vigor Rating Scale 1-5, with 1 being the lowest rating and 5 being the highest.
[w]Means followed by same letter do not significantly differ according to Fishers least signficant difference LSD test ($P < 0.10$).

Evaluation of USF 0738 on Soybeans for Reniform Nematode Efficacy in North Alabama, 2012

D. L. Bailey, K. S. Lawrence, and D. W. Schrimsher

Poncho 600, Poncho Votivo, USF0738, Gaucho 600 FS, and BCS-AR836 were evaluated for control of the reniform nematode on soybeans in a naturally infested field near Belle Mina, Alabama. Pentri and Allegiance FL were applied to all treatments, Pentri was applied at a rate of 0.015 mg ai/seed, and Allegiance FL was applied at a rate of 15.6 g ai/100 kg. The soil was a Decatur silt loam (sand, silt, clay of 23-49-28). All nematicides, fungicide, and insecticide seed treatments were applied to the seed by the manufacturer. USF0738 was applied as a foliar spray at the six- to eight-leaf stage using a CO^2-charged backpack sprayer. Plots consisted of two rows, 25 feet long, with 40-inch row spacing and arranged in a randomized complete block design with five replications. Blocks were separated by 20-foot-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Nematode numbers were recorded 34 DAP to evaluate treatment effects on vermiform populations. Plots were harvested on September 26. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure, and means compared using Fisher's protected least significant difference (LSD) test. Monthly average maximum temperatures from planting in May through harvest in September were 85.4, 90.1, 94.4, 88.9, and 84 degrees F, with average minimum temperatures of 62.9, 65.7, 72.5, 68.3, and 61.1 degrees F, respectively. Rainfall accumulation for each month was 2.85, 1.21, 4.80, 3.26, and 4.97 inches, with a total of 17.09 inches over the entire season.

No.	Treatment name[x]	Rate		Stand 5 ft row[z]		Nematode count		Yield Bu/a	
1.	PONCHO 600	0.11	mg ai/seed	35.2	a[y]	2054.85	a	75.4	a
2.	PONCHO 600	0.13	mg ai/seed	29.6	a	1297.80	a	76.0	a
3.	PONCHO 600 + USF0738	0.11 0.15	mg ai/seed mg ai/seed	27.8	a	1112.40	a	75.2	a
4.	PONCHO 600 + USF0738	0.11 0.20	mg ai/seed mg ai/seed	31.4	a	1714.95	a	74.3	a
5.	PONCHO 600 + USF0738	0.11 0.25	mg ai/seed mg ai/seed	32.0	a	1143.30	a	76.8	a
6.	PONCHO VOTIVO + USF0738	0.13 0.15	mg ai/seed mg ai/seed	26.8	a	1529.55	a	77.1	a
7.	PONCHO VITIVO + USF0738	0.13 0.2	mg ai/seed mg ai/seed	29.6	a	1869.45	a	73.4	a
8.	PONCHO VITIVO + USF0738	0.13 0.25	mg ai/seed mg ai/seed	32.4	a	1050.60	a	72.3	a
9.	PONCHO 600 + BCS-AR836	0.11 250	mg ai/seed g ai/ha	29.0	a	1236.00	a	74.4	a
10.	GAUCHO 6 + USF0738 + PONCHO VITIVO	0.11 0.15 0.13	mg ai/seed mg ai/seed mg ai/seed	33.4	a	1143.30	a	78.0	wa
11.	PONCHO 600 + BCS-AR836 + USF0738	0.11 250 0.15	mg ai/seed g ai/ha mg ai/seed	28.0	a	1081.50	a	71.7	a
	LSD (P ≤ 0.10)			***7.03***		***1464.95***		***5.62***	

[z]Stand was the number of seedlings in 5 ft. of row.
[y]Means followed by same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.05$)
[x]Pentri was applied to all the treatments with a rate of 0.015 mg ai/seed, as well as Allegianc FL at a rate of 15.6 g ai /100kg

Valent Soybean Seed Treatment Evaluation for Reniform Nematode Management in North Alabama, 2012

D. L. Bailey, K. S. Lawrence, D. W. Schrimsher, and C. Norris

Experimental nematicide seed treatments were evaluated for control of the reniform nematode on soybeans in a naturally infested field near Belle Mina, Alabama. The soil was a Decatur silt loam (sand 23%, silt 49%, clay 28%). All seed treatments were applied by Valent Bioscience Corporation. Plots consisted of two rows, 7.35 meters long with 0.9-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by 6-meter-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Soil samples for nematode analysis were collected at 34 DAP, and the number of nematodes per 150 cubic centimeter of soil were recorded. Plots were harvested on September 26. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure, and means compared using Fisher's protected least significant difference (LSD > 0.10) test. Monthly average maximum temperatures from planting in May through harvest in September were 29.6, 32.2, 34.6, 31.6, and 28.8 degrees C, with average minimum temperatures of 17.1, 18.7, 22.5, 20.1, and 16.1 degrees C, respectively. Rainfall accumulation for each month was 7.23, 3.07, 12.19, 8.28, and 12.62 centimeters with a total of 43.39 centimeters over the entire season.

Plant stands were not different among treatments ranging from 27.2 to 32.6 plants per 1.5-meter row. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees, thus this season was more normal for heat units but dry. Reniform nematode population densities were moderate and ranged from 448 to 2070 nematodes per 150 cubic centimeters soil with significant differences between the control (Treatment 1) and the treatment with the experimental compound V-10321 + Nipsit inside insecticide A (Treatment 4). The control treatment had significantly less reniform nematodes per 150 cubic centimeters soil (463.5) than the experimental treatment combination V-10321 + Experimental A (1066). And both of these treatments (Treatments 1 and 4) supported significantly less nematodes per 150 cubic centimeter soil than the treatment with Trilex + Allegiance-FL +Poncho 600 + Votivo (Treatment 7), which was supporting 2070.3 nematodes per 150 cubic centimeters soil. There was a significant increase in soybean yield in the V-10321 + Experimental C (Treatment 6) treatment over all other treatment yields. Soybeans yields varied by 556.1 kilograms per hectare (8.3 bushels per acre) over all the treatments. The control produced the lowest yield of 426.9 kilograms per hectare (6.33 bushels per acre). The Experimental C compound combined with V-10321 + Nipsit inside insecticide produced a superior yield compared to all the remaining treatments.

No.	Treatment name	Stand 1.5 m row[z]		Nematode population density[x]		Yield lbs/ac	
1.	Control	32.6	a[y]	463.5	c	4267.9	a
2.	V-10321 + Nipsit inside insect	32.0	a	618.0	bc	4482.3	a
3.	V-10321 + Nipsit inside insect + V-10355	27.2	a	679.8	bc	4616.3	a
4.	V-10321 + Nipsit inside insect + Experimental A	31.8	a	1066.0	b	4549.3	a
5.	V-10321 + Nipsit inside insect + Experimental B	28.8	a	834.3	bc	4549.3	a
6.	V-10321 + Nipsit inside insect + Experimental C	29.6	a	448.0	c	4824.0	b
7.	Trilex + Allegiance – FL + Poncho 600 + Votivo	30.8	a	2070.3	a	4669.9	a
	LSD (P = 0.05)	***9.77***		***376.67***		***522.6***	

[z]Stand was the number of seedlings in 1.5 meter of row.
[y]Means followed by same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.05$).
[x]Nematodes per 150 cm^3.

Evaluation of Seed Treatment Nematicides on Soybeans for Reniform Nematode Management in North Alabama, 2012

D. L. Bailey, K. S. Lawrence, D. W. Schrimsher, and C. Norris

Poncho 600, Poncho Votivo, Gaucho 600 FS, and two experimental treatments were evaluated for control of the reniform nematode on soybeans in a naturally infested field near Belle Mina, Alabama. The soil was a Decatur silt loam (sand 23%, silt 49%, clay 28%). All nematicide, fungicide, and insecticide seed treatments were applied to the seed by Bayer CropScience. The experimental treatment, BCS-AR836, was applied as a foliar spray at the six- to eight-leaf stage using a CO^2-charged backpack sprayer. Plots consisted of two rows, 7.35 meters long with 1.06-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by 6.09-meter-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Soil samples for nematode analysis were collected at 34 DAP and recorded as nematodes per 150 cubic centimeters soil. Plots were harvested on September 26. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure, and means compared using Fisher's protected least significant difference (LSD > 0.10) test. Monthly average maximum temperatures from planting in May through harvest in September were 29.6, 32.2, 34.6, 31.6, and 28.8 degrees C, with average minimum temperatures of 17.1, 18.7, 22.5, 20.1, and 16.1 degrees C, respectively. Rainfall accumulation for each month was 7.23, 3.07, 12.19, 8.28, and 12.62 centimeters, with a total of 43.39 centimeters over the entire season. This temperature is dryer than normal for this time of year with moderate temperatures.

Nematode population densities at planting were moderate while growing conditions were dry in May, August, and September. Plant stands were similar between all the treatments with 26.8 to 33.4 plants per 3-meter row except in the insecticide control (1) that showed a significantly higher number (35.2) of plants per 3-meter row. Nematode population densities ranged from 2054.9 per 150 cubic centimeters soil in the Poncho 600 control (Treatment 1) to 1050.6 per 150 cubic centimeters soil in the Poncho Votivo + USF0738 0.25 mg ai/seed (Treatment 8), with no significant difference between any of the treatments, probably due to the high variability in the nematode population densities. The soybean yields varied by 423 kilograms per hectare between all treatments. The top-yielding treatments, USF0738 at 0.15 mg ai/seed + Poncho Votivo 0.13mg ai/seed with or without Gaucho (Treatments 6 and 10), respectively, yielded an average of 5195.8 kilograms per hectare, which was significantly higher than the rest of the treatments.

No.	Treatment	Stand rate	3 m row[z]	*Rotylenchulus reniformis* nematodes/ 150 cm^3 of soil	Soybean seed lbs/ac
1.	Poncho 600	0.11 mg ai/seed	35.2 b[y]	2054.80 a	5051.8 a
2.	Poncho 600	0.13 mg ai/seed	29.6 a	1297.80 a	5092.1 a
3.	Poncho 600 + USF0738	0.11 mg ai/seed 0.15 mg ai/seed	27.8 a	1112.40 a	5038.4 a
4.	Poncho 600 + USF0738	0.11 mg ai/seed 0.20 mg ai/seed	31.4 a	1714.90 a	4978.1 a
5.	Poncho 600 + USF0738	0.11 mg ai/seed 0.25 mg ai/seed	32.0 a	1143.30 a	5145.6 a
6.	Poncho Votivo + USF0738	0.13 mg ai/seed 0.15 mg ai/seed	26.8 a	1529.50 a	5165.7 b
7.	Poncho Votivo + USF0738	0.13 mg ai/seed 0.20 mg ai/seed	29.6 a	1869.40 a	4917.8 a
8.	Poncho Votivo + USF0738	0.13 mg ai/seed 0.25 mg ai/seed	32.4 a	1050.60 a	4844.1 a
9.	Poncho 600 + BCS-AR836	0.11 mg ai/seed 250 g ai/ha	29.0 a	1236.00 a	4984.8 a
10.	Gaucho 600 + USF0738 + Poncho Votivo	0.11 mg ai/seed 0.15 mg ai/seed 0.13 mg ai/seed	33.4 a	1143.30 a	5226.0 b
11.	Poncho 600 + BCS-AR836 + USF0738	0.11 mg ai/seed 250 g ai/ha 0.15 mg ai/seed	28.0 a	1081.50 a	4803.0 a
	LSD (P ≤ 0.10)		***7.03***	***1464.95***	***72.62***

[z]Stand was the number of seedlings in 3-meter row.
[y]Means followed by the same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.05$).

Evaluation of Seed Treatment Nematicides on Soybeans for Root-Knot Management in Central Alabama, 2012

D. L. Bailey, K. S. Lawrence, D. W. Schrimsher, and S. Nightengale

Poncho 600, Poncho Votivo, Gaucho 600 FS, and two experimental treatments were evaluated for control of the root knot nematode on soybeans in a naturally infested field on the Plant Breeding Unit of the E.V. Smith research Center near Tallassee, Alabama. The soil is Kalmia loamy sand (80% sand, 10% silt, 10% clay). Plots consisted of two rows, 7.6 meters long, with 1-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 3-meter alley. The experimental BCS-AR836 was applied as a foliar spray at the six- to eight-leaf stage using a CO^2-charged backpack sprayer. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Stand counts were recorded 29 days after planting (DAP) to determine plant density and seedling loss. Soil samples for nematode analysis were collected at 34 DAP, and numbers were recorded as eggs per gram of root. Plots were harvested on September 26. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure and means compared using Fisher's protected least significant difference (LSD v> 0.10) test. Monthly average maximum temperatures from planting in May through harvest in September were 28.8, 30.3, 33.6, 31.1, and 29.6 degrees C, with average minimum temperatures of 16.2, 18.0, 21.2, 20.1, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 17.63, 7.67, 8.38, 13.54, and 4.78 centimeters, with a total of 52 centimeters over the entire season. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus, thus this season was more normal for heat units but dry.

Nematode population densities at planting were moderate while conditions for this disease were ideal. Plant stands were similar between all the treatments with 60.6 to 69.0 plants per 3-meter row. Plants showed no sign of phytotoxicity in any treatment combinations. Root knot nematode population densities were lower in Pentri + Allegiance FL + USF0738 + Poncho Votivo (Treatment 8), Pentri + Allegiance FL + Gaucho 600 FS + USF0738 + Poncho Votivo (Treatment 10), and Pentri + Alligiance FL + Poncho 600 + USF0738 (Treatment 3), as compared to the fungicide control. Soybean yields significantly increased with the use of Pentri + Allegiance FL + Poncho Votivo + USF0738 (Treatment 9) and Pentri + Allegiance FL+Poncho Votivo + USF0738 (Treatment 7), compared to the other treatments. The yield ranged from a high of 4881.9 kilograms per hectare in the treatment combination Pentri + Allegiance FL + Poncho Votivo + USF0738 (Treatment 7) and a low of 4420.8.0 kilograms per hectare in the treatment combination Pentri + Allegiance FL + Poncho 600 + USF0738 (Treatment 4). Pentri + Allegiance FL + USF0738 + Poncho Votivo (Treatment 8), which supported the fewest root knot nematodes, also produced a lesser yield.

No.	Treatment name	Rate		Stand 3 m row[z]		Nematode population density		Yield lbs/ac	
1.	Pentri + Allegiance FL + Poncho 600	0.015 15.600 0.110	mg ai/seed g ai/100 kg mg ai/seed	64.2	a[y]	5392.0	a	4719.2	ab
2.	Pentri + Allegiance FL + Poncho 600	0.015 15.600 0.130	mg ai/seed g ai/100 kg mg ai/seed	63.2	a	7585.9	a	4568.5	ab
3.	Pentri + Allegiance FL+ Poncho 600 + USF0738	0.015 15.600 0.110 0.150	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	64.8	a	2564.7	b	4596.2	ab
4.	Pentri + Allegiance FL + Poncho 600 + USF0738	0.015 15.600 0.110 0.200	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	61.8	a	6612.6	a	4420.8	a
5.	Pentri + Allegiance FL + Poncho 600 + USF0738	0.015 15.600 0.110 0.250	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	68.4	a	3275.4	a	4666.2	ab
6.	Pentri + Allegiance FL + USF0738 + Poncho Votivo	0.015 15.600 0.150 0.130	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	60.6	a	6705.3	a	4583.7	ab
7.	Pentri + Allegiance FL + Poncho Votivo + USF0738	0.015 15.600 0.130 0.200	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	66.6	a	8034.0	a	4881.9	b
8	Pentri + Allegiance FL + USF0738 + Poncho Votivo	0.015 15.600 0.250 0.130	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed	69.0	a	1946.7	b	4474.7	a
9.	Pentri + Allegiance FL + Poncho 600 + BCS-AR83685	0.015 15.600 0.110 250	mg ai/seed g ai/100 kg mg ai/seed g ai/ha	63.0	a	3043.6	a	4851.2	b
10.	Pentri + Allegiance FL + GAUCHO 600 FS + USF0738 + Poncho Votivo	0.015 15.600 0.118 0.150 0.130	mg ai/seed g ai/100 kg mg ai/seed mg ai/seed mg ai/seed	62.4	a	2379.3	b	4601.0	ab
11.	Pentri + Allegiance FL + Poncho 600 + BCS-AR83685 + USF0738	0.015 15.600 0.110 250 0.150	mg ai/seed g ai/100 kg mg ai/seed g ai/ha mg ai/seed	62.4	a	4604.1	a	4509.0	ab
	LSD (P=.10)			***9.31***		***5262.330***		***406.75***	

[z]Stand was the number of seedlings in 3-meter row.
[y]Means followed by the same letter do not significantly differ according to Fisher's LSD test (P ≤ 0.05).

Soybean Variety Response to Reniform Nematodes in North Alabama, 2012

D. L. Bailey, K. S. Lawrence, D. W. Schrimsher, and C. Norris

Twenty-eight different commercial soybean varieties were evaluated for their performance in a reniform infested field near Belle Mina, Alabama. The soil was a Decatur silt loam (23% sand, 49% silt, 28% clay). Plots consisted of one row, 25 feet long with 40-inch row spacing, and were arranged in a randomized complete block design with four replications. Blocks were separated by 20-foot-wide alleys. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a linear sprinkler system as needed. Soil samples for nematode analysis were collected after harvest on November 16, and densities were recorded as nematodes per 150 cubic centimeters soil. Plots were harvested on November 1. Data were statistically analyzed by analysis of variance using the generalized linear models (GLM) procedure and means compared using Fisher's protected least significant difference (LSD ≥ 0.05) test. Monthly average maximum temperatures from planting in June through harvest in November were 90.1, 94.4, 88.9, 84, 72.2, and 63.2 degrees F with average minimum temperatures of 65.7, 72.5, 68.3, 61.1, 49.8, and 35.5 degrees F, respectively. Rainfall accumulation for each month was 1.21, 4.80, 3.26, 4.97, 3.37, and 1.29 inches, with a total of 18.9 inches over the entire season. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry.

Nematode densities were statistically similar across all soybean varieties grown. Reniform population densities ranged from a low of 521nematodes per 150 cubic centimeters soil to a high of 2781 for NK 495 and HBK 4924, respectively. Soybean variety trial yields ranged from 41.1 to 66.6 bushels per acre. The varieties that yielded over 60 bushels per acre were Terral 5663, HBK 4721, and Cropland 25081. These three top-yielding varieties also supported lower numbers of nematodes with 657, 966, and 830 reniforms per 150 cubic centimeters of soil, respectively. Fourteen varieties produced yield between 50 and 60 bushels per acre, with reniform population densities ranging from 521 to 2781 and averaging 1353 per 150 cubic centimeters of soil. The lowest-yielding soybean varieties—Terral 5721, HBK 5525, Progeny 4710, and Asgrow 4633—supported a higher reniform population, with an average of 1748 reniform per 150 cubic centimeters of soil.

Treatment	Nematodes per 150 cm^3		Yield bu/a	
Terral 5663	656.6	a[z]	66.6	a
Croplan 25081	830.4	a	61.7	ab
HBK 4721	965.6	a	61.6	ab
Croplan 4801	907.7	a	59.5	ab
Asgrow 5633	965.6	a	59.1	ab
Asgrow 4632	1641.6	a	59.0	ab
NK 495	521.4	a	58.6	ab
Terral 4833	1351.9	a	58.1	ab
Croplan 25371	1332.6	a	57.9	ab
Asgrow 5732	714.6	a	54.7	ab
Asgrow 4832	1931.3	a	54.4	ab
Croplan 25820	2472.0	a	53.8	ab
Progeny 5711	791.8	a	53.1	ab
HBK 4924	2781.0	b	52.1	ab
Asgrow 4933	946.3	a	52.0	ab
Asgrow 5532	695.3	a	51.1	ab
Progeny 5412	1062.2	a	51.0	ab
HBK 5221	965.6	a	48.9	ab
Progeny 5811	656.6	a	48.8	ab
Progeny 5655	1216.7	a	48.8	ab
Terral 5153	927.0	a	48.8	ab
Asgrow 6132	946.3	a	47.8	ab
Terral 4922	1873.3	a	46.3	ab
Terral 4753	927.0	a	46.0	ab
Terral 5721	1178.1	a	45.8	b
HBK 5525	2278.9	a	45.8	b
Progeny 4710	1448.4	a	45.2	b
Asgrow 4633	2085.8	a	41.1	b
LSD ($P \leq 0.05$)	***1968.33***		***11.27***	

[z]Means followed by same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.05$).

Cotton Variety and Nematicide Combinations for Reniform Management in North Alabama, 2012

K. S. Lawrence, D. W. Schrimsher, C. H. Burmester, and C. Norris

Five nematicide combinations were evaluated for reniform nematode management on three cotton varieties. The field site is located on the Tennessee Valley Research Center near Belle Mina, Alabama. This field has been cultivated in cotton for more than 12 years and was infested with the reniform nematode field in 1997. The soil is a Decatur silt loam (24% sand, 49% silt, 28% clay). The cotton varieties were treated with nematicide seed treatments by Bayer CropScience. Temik 15G was applied at planting with granular hoppers attached to the planter. Vydate CLV was applied as a foliar spray at the six- to eight-leaf stage using a CO^2 charged backpack sprayer. Plots were planted on May 1 with a soil temperature of 22.7 degrees C at a 10-centimeter depth and adequate soil moisture. Plots consisted of two rows, 7.6 meters long with 1.0-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 6.1-meter-wide alley. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a sprinkler system as needed. Seedling stand was determined at 30 days after planting (DAP) on May 31. Soil samples were collected for nematode analysis by taking 10 soil cores 2.5 centimeters by 15 centimeters deep from the two rows in a zigzag pattern on June 5 and again on July 5. Nematodes were extracted by gravity screening and sucrose centrifugation. Plots were harvested on October 11. Data were statistically analyzed using SAS and means compared using Fisher's protected least significant difference test ($P < 0.10$). No interactions were observed between variety and nematicides, although all data are presented for multiple comparisons. Monthly average maximum temperatures from planting in April through harvest in October were 24.8, 29.7, 32.3, 34.7, 31.6, and 28.9 degrees C, with average minimum temperatures of 11.6, 17.2, 18.7, 22.5, 20.2, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 3.78, 7.24, 3.07, 12.19, 8.2, 8.0, and 12.6 centimeters, with a total of 55.1 centimters over the entire season. The rainfall was adequate in May, but conditions became very dry in June. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry.

Reniform nematode disease pressure was high for irrigated cotton in 2012. Statistically, no interactions occurred between the cotton varieties and nematicides; however, all the data are presented for comparisons. Plant stand at 30 DAP was similar for all varieties and nematicides with an average of 12 plants per meter of row. FM 1740 B2F supported the greatest stand compared to the Stoneville varieties, and the Temik 15G treatments had the greatest number of seedlings compared to Aeris and the Poncho/Votivo Aeris seed treatment combinations. All stands were within the optimal rage of four to 12 plants per meter of row. Reniform population densities were very high at 35 DAP. No variety response or nematicide effect was observed at either nematode sampling time. Nematodes recovered at 65 DAP were lower in the Vydate CLV foliar nematicide treatment over all three varieties. Seed cotton yield was significantly greater in the Stoneville varieties compared to the FM1740B2F. Yields were also greater in the Vydate CLV foliar nematicide spray compared to the Gaucho seed treatment. This yield increase was equal to 319 kilograms per hectare of lint cotton. Interestingly, ST4282B2F and FM1740B2F both responded to the nematicides, with an average increase of 702 and 559 kilograms per hectare, respectively, in seed cotton over all four nematicide treatments compared to the Gaucho control. Ranking the nematicides indicated that Vydate CLV produced the greatest increased seed cotton in two of the three varieties, followed by Temik 15G. In 2012, the nematicides increased the cotton yields on two of the three varieties and did produce enough additional lint yields to pay for the additional nematicide investment.

Cotton variety	Seed treatment and rate	Stand (plants/ 3 m row*) 30 DAP	Rotylenchulus reniformis/ 150 cm^3 soil 35 DAP	Rotylenchulus reniformis/ 150 cm^3 soil 65 DAP	Seed cotton (lbs/ac)
ST 5488 B2F	1. Gaucho 600 (0.5 mg ai/seed)	36**	11881	8343	3582.1
ST 5488 B2F	2. Aeris (0.75 mg ai/seed)	32	6644	10475	3745.5
ST 5488 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	34	16470	10352	3481.4
ST 5488 B2F	4. Temik 15G 0.9 kg/ha	39	12097	6338	3397.1
ST 5488 B2F	5. Vydate 0.2 l/ha	29	8510	4329	3648.9
ST 4282 B2F	1. Gaucho 600 (0.5 mg ai/seed)	34	20023	14152	3145.9
ST 4282 B2F	2. Aeris (0.75 mg ai/seed)	34	14987	12901	3482
ST 4282 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	29	10043	12159	3866.7
ST 4282 B2F	4. Temik 15G 0.9 kg/ha	39	11649	9996	3956.9
ST 4282 B2F	5. Vydate 0.2 l/ha	36	9517	5037	4085.2
FM 1740 B2F	1. Gaucho 600 (0.5 mg ai/seed)	39	14121	7756	2499.4
FM 1740 B2F	2. Aeris (0.75 mg ai/seed)	39	10970	12329	2716.0
FM 1740 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	37	10506	14245	2704.9
FM 1740 B2F	4. Temik 15G 0.9 kg/ha	43	7292	11139	3143.5
FM 1740 B2F	5. Vydate 0.2 l/ha	44	15110	8903	3668.2
LSD (P < 0.10)		***8.18***	***12126.9***	***9403.9***	***1547.4***
	1. Gaucho 600 (0.5 mg ai/seed)	36.5 ab	15342	10084 ab	2744.1 b
	2. Aeris (0.75 mg ai/seed)	35.2 b	10867	11902 a	2957.1 ab
	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	33.2 b	12339	12252 a	2989.7 ab
	4. Temik 15G 0.9 kg/ha	40.0 a	10274	8823 ab	3067.0 ab
	5. Vydate 0.2 l/ha	36.6 ab	11118	6424 b	3445.8 a
LSD (P < 0.10)		**4.33**	**5909.1**	**5075.4**	**644.28**
ST 5488 B2F		34.2 b	11120	7967	3186.0 a
ST 4282 B2F		34.4 b	13244	10849	3307.6 a
FM 1740 B2F		40.3 a	11600	10874	2628.7 b
LSD (P < 0.10)		***3.35***	***4577.2***	***3931.4***	***499.06***

*Stand was the number of seedlings in 3 meters of row.
**Means followed by same letter do not significantly differ according to Fisher's LSD test (P < 0.10).

Cotton Variety and Nematicide Combinations for Root-Knot Management in South Alabama, 2012

K. S. Lawrence, D. W. Schrimsher, and S. Nightengale

Five nematicide combinations were evaluated for root-knot nematode management on three cotton varieties. The field site is located on the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. This field has a history of cotton cultivation and root-knot nematode infestation. The soil is a Kalmia loamy sand (80% sand, 10% silt, 10% clay). The cotton varieties were treated with nematicide seed treatments by Bayer Crop Science. Temik 15G was applied at planting with granular hoppers attached to the planter. Vydate CLV was applied as a foliar spray at the six- to eight-leaf stage using a CO^{2-}charged backpack sprayer. Plots were planted on May 2 with a soil temperature of 25.5 degrees C at a 10-centimter depth and adequate soil moisture. Plots consisted of two rows, 7.6 meters long with a 1-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 3-meter-wide alley. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a sprinkler system as needed. Seedling stand was determined at 22 days after planting (DAP) on May 25. Nematodes were collected from three root systems per plot on June 13 and again on July 26. Plots were harvested on September 25. Data were statistically analyzed using SAS and means compared using Fisher's protected least significant difference test ($P<0.10$). No interactions were observed in between variety and nematicides, although all data are presented for multiple comparisons. Monthly average maximum temperatures from planting in April through harvest in October were 25.1, 28.8, 30.3, 33.6, 31.1, and 29.6 degrees C, with average minimum temperatures of 11.3, 16.2, 18.0, 21.2, 20.1, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 2.41, 17.63, 7.67, 8.38, 13.54, and 4.78 centimeters, with a total of 54.41 centimeters over the entire season. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry.

Root-knot nematode disease pressure was high for irrigated cotton in 2012. Statistically, no interactions occurred between the cotton varieties and nematicides; however, all the data are presented for complete comparisons. Plant stand at 22 DAP ranged from 9.6 to 15 plants per meter of row. FM 1740 B2F supported a greater stand compared to ST 4288B2F and the seed treatment nematicides, and Temik 15G had the greatest number of seedlings compared to Gaucho and Vydate treatments. Root-knot nematode population densities were very high at 42 DAP. The FM 1740 B2F variety supported more root-knot nematode eggs per gram of root than either of the Stoneville varieties. Temik 15G supported the fewest root-knot compared to all other chemical treatments. Nematode eggs per gram of root were lower at 85 DAP, probably due to the increased root mass. Temik 15G reduced root-knot nematode eggs per gram of root compared to the Gaucho seed treatment. Seed cotton yield was significantly greater in the ST 4288 B2F variety compared to the FM1740B2F variety. Yields were also greater in the Temik 15G granular nematicide treatment compared to the seed treatment and foliar spray nematicides. Interestingly, ST-4282B2F and FM1740B2F both responded to Temik 15G and the Vydate CLV nematicides with an average increase of 504 and 389 kilograms per hectare in seed cotton over the nematicide treatments compared to the Gaucho control. Ranking the nematicides indicated that Temik 15G produced the greatest increased seed cotton in two of the three varieties, followed by Vydate CLV. In 2012, the nematicides increased the cotton yields on two of the three varieties and did produce enough additional lint yields to pay for the additional nematicide investment.

Cotton variety	Seed treatment and rate	Stand/ 3 m row*	*Meloidogyne incognita*/ gm root		Seed cotton lbs/ac
		22 DAP	42 DAP	85 DAP	
ST 5488 B2F	1. Gaucho 600 (0.5 mg ai/seed)	39 ab**	2262 a	527 ab	3554.4 a
ST 5488 B2F	2. Aeris (0.75 mg ai/seed)	41 ab	6799 b	221 a	3712.0 a
ST 5488 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	39 ab	1722 a	376 a	3452.9 a
ST 5488 B2F	4. Temik 15G 0.9 kg/ha	37 ab	576 a	51 a	4575.2 b
ST 5488 B2F	5. Vydate 0.2 l/ha	37 ab	3695 ab	200 a	3543.4 a
ST 4282 B2F	1. Gaucho 600 (0.5 mg ai/seed)	29 b	3207 ab	72 a	3795.3 a
ST 4282 B2F	2. Aeris (0.75 mg ai/seed)	35 ab	851 a	36 a	4054.4 b
ST 4282 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	43 a	1282 a	54 a	3980.2 ab
ST 4282 B2F	4. Temik 15G 0.9 kg/ha	37 ab	1123 a	57 a	4205.4 b
ST 4282 B2F	5. Vydate 0.2 l/ha	39 ab	1125 a	41 a	4270.5 b
FM 1740 B2F	1. Gaucho 600 (0.5 mg ai/seed)	37 ab	7426 b	849 b	3443.8 a
FM 1740 B2F	2. Aeris (0.75 mg ai/seed)	45 a	6173 b	455 ab	3438.6 a
FM 1740 B2F	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	40 ab	9023 b	535 ab	3517.3 a
FM 1740 B2F	4. Temik 15G 0.9 kg/ha	40 ab	1988 a	162 a	4113.0 b
FM 1740 B2F	5. Vydate 0.2 l/ha	41 ab	7608 b	738 b	3745.8 a
LSD (P < 0.10)		***6.7***	***5618.8***	***524.2***	***665.25***
	1. Gaucho 600 (0.5 mg ai/seed	34.6 b	4298	482.6 a	3597.8 b
	2. Aeris (0.75 mg ai/seed)	40.1 a	4608	237.7 ab	3735.0 b
	3. Poncho (0.424 mg ai/seed)/Votivo + Aeris (0.75 mg ai/seed)	40.7 a	4009	321.4 ab	3650.1 b
	4. Temik 15G 0.9 kg/ha	39.3 a	1286	84.7 b	4488.4 a
	5. Vydate 0.2 l/ha	38.0 ab	4085	311.7 ab	3597.8 b
LSD (P < 0.10)		***4.33***	***4104.6***	***302.65***	***498.08***
ST 5488 B2F		38.5 ab	3011 b	275.1 b	3767.6 ab
ST 4282 B2F		36.5 b	1518 b	52.0 b	4061.2 a
FM 1740 B2F		40.6 a	6443 a	547.7 a	3651.7 b
LSD (P < 0.10)		***3.02***	***3179.4***	***234.43***	***385.81***

*Stand was the number of seedlings in 3 meters of row.
**Means followed by same letter do not significantly differ according to Fisher's LSD test (P < 0.10).

Cotton Seed Treatment Granular and Foliar Nematicide Combinations for Reniform Management in North Alabama, 2012

K. S. Lawrence, D. W. Schrimsher, C. H. Burmester, and C. Norris

Seed treatment nematicides were evaluated in combination with Temik 15G and Vydate CLV for the management of the reniform nematode in an infested cotton field on the Tennessee Valley Research and Education Center in Belle Mina, Alabama. The field was infested with the reniform nematode in 2007, and population densities have increased each year. The soil type was a Decatur silt loam (24% sand, 49% silt, 28% clay). Plots consisted of two rows, 7.6 meters long, with 1-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 7-meter alley. The seed treatments were applied to the seed by Syngenta. Temik 15G (5 pounds per acre) was applied at planting on May 1 in the seed furrow with chemical granular applicators attached to the planter. Vydate CLV was applied as a foliar spray at the six- to eight-leaf stage using a CO^2 charged backpack sprayer. All plots were irrigated and maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a sprinkler system as needed. Seedling stand and vigor were determined at 30 days after planting (DAP) on May 31. Nematode samples were collected including 10 soil cores in a zigzag pattern across the plot, and 150 cubic centimters of soil was extracted by gravity sieving and sucrose centrifugation. Plots were harvested on October 10. Data were statistically analyzed by GLM and means compared using Fisher's protected least significant difference test ($P < 0.10$). Monthly average maximum temperatures from planting in April through harvest in October were 24.8, 29.7, 32.3, 34.7, 31.6, and 28.9 degrees C, with average minimum temperatures of 11.6, 17.2, 18.7, 22.5, 20.2, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 3.78, 7.24, 3.07, 12.19, 8.2, 8.0, and 12.6 centimeteres, with a total of 55.1 centimeters over the entire season. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry.

Reniform nematode disease pressure was intense in 2012. Plant stand was similar between all nematicide treatments, with nine to 12 plants per meter of row at 30 DAP. Seedling vigor was also similar between all nematicide treatments, with no phytotoxicity observed. Reniform nematode population densities were very high at 35 DAP, increasing from the average of 1500 per 150 cubic centimeters of soil at planting. The Avicta Duo seed treatment (Treatment 2) reduced reniform numbers compared to the standard fungicide insecticide seed treatment control (Treatment 1). All other nematicides treatments supported similar nematode numbers. A second sampling at 65 DAP found reniform nematode population densities were reduced in the Vydate CLV (Treatment 5), Temik 15G (Treatment 6) and Avicta Duo seed treatment (Treatment 3). Seed cotton yields were significantly increased by Vydate CLV (Treatment 5) and Temik 15G (Treatment 6) compared to the standard fungicide insecticide seed treatment control (Treatment 1). Yields varied by 1091 kilograms per hectare at harvest with an average of 705 kilograms per acre average increase of seed cotton produced by the Avicta Duo seed treatment (Treatments 2 and 3) and the seed treatment experimental combinations (Treatment 4). The addition of Vydate CLV or Temik 15G with the Avicta Duo seed treatment increased seed cotton yield by another 257 and 386 kilograms per hectare, respectively. The use of the seed treatment nematicide alone and with the addition of Vydate CLV or Temik 15G economically increased yield in 2012 with enough revenue to cover the cost of the nematicides.

Seed treatment and rate	Stand plants/3 m row[z]	Vigor[y]	*Rotylenchulus reniformis*/ 150 cm^3 soil		Seed Cotton lbs/ac
	30 DAP	30 DAP	35 DAP	65 DAP	
1. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed	35.4	3.0	8250 a[x]	8250 a	1462 b
2. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Avicta Duo 0.49 mgai/seed	30.2	3.4	4511 b	6783 ab	2215 ab
3. STP15142 15 gai/100kgseed STP15199 10 gai/100kgseed STP17141 40 gai/100kgseed A17823 21 gai/100kgseed Avicta Duo 0.49 mgai/seed	30.6	3.7	7200 ab	3816 b	2162 ab
4. STP15142 15 gai/100kgseed A17823 21 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed STP15199 10 gai/100kgseed STP16191 5 gai/100kgseed STP15142 15 gai/100kgseed Cruiser 5 FS 0.375 mgai/see STP20282 78.3 gai/100kgseed	29.4	3.4	6335 ab	7107 a	2126 ab
5. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Avicta Duo 0.49 mgai/seed Cruiser 5 FS 0.375 mgai/seed Vydate L 2 SL 298 gai/ha	29.2	3.3	6674 ab	4403 b	2424 a
6. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Temik 15G 840 gai/ha	32.8	3.4	6783 ab	4048 b	2553 a
LSD < 0.10	***6.11***	***0.74***	***2941.4***	***3322.1***	***964.4***

[z]Stand was the number of seedlings in 3 meters of row.
[y]Vigor is a 5-point scale with 5 being the best and 1 being the worst.
[x]Means followed by same letter do not significantly differ according to Fisher's LSD test (P < 0.10).

Cotton Seed Treatment Granular and Foliar Nematicide Combinations for Root Knot Management in Alabama, 2012

K. S. Lawrence, D. W. Schrimsher, and S. Nightengale

Seed treatment nematicides were evaluated in combination with Temik 15G and Vydate CLV for the management of the root-knot nematode in an infested cotton field on the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. This field has a history of cotton cultivation and root-knot nematode infestation. The soil is a Kalmia loamy sand (80% sand, 10% silt, 10% clay). Plots consisted of two rows, 7.6 meters long, with 1-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 3-meter alley. The seed treatments were applied to the seed by Syngenta. Temik 15G (5 pounds per acre) was applied at planting on 2 May in the seed furrow with chemical granular applicators attached to the planter. Vydate CLV was applied as a foliar spray at the six- to eight-leaf stage using a CO^2-charged backpack sprayer. All plots were irrigated and maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were irrigated with a sprinkler system as needed. Seedling stand and vigor were determined at 22 days after planting (DAP) on May 24. Nematodes were extracted from three root systems from each plot on June 13. Plots were harvested on September 26. Data were statistically analyzed by GLM and means compared using Fisher's protected least significant difference test ($P < 0.10$). Monthly average maximum temperatures from planting in April through harvest in October were 25.1, 28.8, 30.3, 33.6, 31.1, and 29.6 degrees C, with average minimum temperatures of 11.3, 16.2, 18.0, 21.2, 20.1, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 2.41, 17.63, 7.67, 8.38, 13.54, and 4.78 centimters, with a total of 54.41 centimeters over the entire season.

Root-knot nematode disease pressure was intense in 2012. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry. Plant stand was in the optimal range with 10 to 13 plants per meter of row at 22 DAP. Seedling vigor was also similar between all nematicide treatments; however, thrips damage was observed, with the Temik 15G (Treatment 6) reducing the insect foliar symptoms. Root-knot nematode population densities were very high at 42 DAP. The Avicta Duo seed treatment (Treatment 2) and the seed treatments plus Vydate CLV (Treatment 5), and Temik 15G (Treatment 6) reduced root-knot J2 and eggs compared to the experimental seed treatment combination (Treatment 4). None of the nematicides treatments reduced root-knot numbers compared to the standard insecticide fungicide treatment (Treatment 1).When the root-knot nematodes were evaluated on a per-gram-of-root basis, all nematicide treatments supported fewer root-knot nematodes compared to the experimental seed treatment combination (Treatment 4). None of the nematicide treatments reduced root-knot nematode densities compared to the standard insecticide fungicide treatment (Treatment 1). A second sampling at 65 DAP found root-knot nematode densities were reduced in the Vydate CLV (Treatment 5), Temik 15G (Treatment 6) and the Avicta Duo seed treatment (Treatment 3). Seed cotton yields were similar between all treatments. Yields varied by 436 kilograms per hectare at harvest, with an average of 246 kilograms per hectare average increase of seed cotton produced by the Avicta Duo seed treatment (Treatments 2 and 3). The addition of Vydate CLV or Temik 15G with the Avicta Duo seed treatment increased seed cotton yield by another 202 and 111 kilograms per hectare, respectively. The use of the seed treatment nematicide alone and with the addition of Vydate CLV or Temik 15G economically increased yield in 2012 with enough revenue to cover the cost of the nematicides.

Seed treatment and rate	Stand/ 3 m row[z]	Vigor[y]	*Meloidogyne incognita* J2 and eggs	*Meloidogyne incognita*/ g of root	Seed cotton lbs/ac
	30 DAP	30 DAP	42 DAP	42 DAP	
1. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed	30.2 b[x]	2.7	8791 ab	5314 b	1731.6
2. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Avicta Duo 0.49 mgai/seed	37.4 a	3.0	5238 b	3773 b	1788.9
3. STP15142 15 gai/100kgseed STP15199 10 gai/100kgseed STP17141 40 gai/100kgseed A17823 21 gai/100kgseed Avicta Duo 0.49 mgai/seed	35.6 ab	3.1	8359 ab	4991 b	2167.8
4. STP15142 15 gai/100kgseed A17823 21 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed STP15199 10 gai/100kgseed STP16191 5 gai/100kgseed STP15142 15 gai/100kgseed Cruiser 5 FS 0.375 mgai/seed STP20282 78.3 gai/100kgseed	37.0 a	2.8	13333 a	9945 a	1772.0
5. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Avicta Duo 0.49 mgai/seed Cruiser 5 FS 0.375 mgai/seed Vydate L 2 SL 298 gai/ha	37.4 a	2.9	4712 b	2935 b	1933.5
5. Apron Xl 3 LS 7.5 gai/100kgseed Maxim 4 FS 2.5 gai/100kgseed Systhane 40 WP 21 gai/100kgseed Dynasty CST 125 FS 0.03mgai/seed Temik 15G 840 gai/ha	32.8 ab	3.4	5145 b	4009 b	1842.3
LSD < 0.10	***6.41***	***0.40***	***5945.0***	***4185.7***	***759.81***

[z]Stand was the number of seedlings in 3 meters of row.
[y]Vigor is a 5-point scale with 5 being the best and 1 being the worst.
[x]Means followed by same letter do not significantly differ according to Fisher's LSD test (P < 0.10).

Evaluation of Poncho Votivo, Aeris, Temik, and UFS0 738 on Cotton for Root-Knot Management in Alabama, 2012

N. Xiang, K. S. Lawrence, D. W. Schrimsher, and S. Nightengale

Poncho Votivo, Aeris, Temik, and USF0 738 were evaluated for the management of the root-knot nematode on cotton in a naturally infested field on the Plant Breeding Unit of the E.V. Smith Research Center near Tallassee, Alabama. The soil is Kalmia loamy sand (80% sand, 10% silt, and 10% clay). All seed treatments were applied by Bayer Crop Science. Temik 15G was applied at planting on May 2 in the seed furrow with chemical granular applicators attached to the planter. Plots consisted of two rows, 7 meters long with 0.9-meter spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 6-meter-wide alley. All plots were maintained with standard herbicide, insecticide, and fertility production practices throughout the season as recommended by the Alabama Cooperative Extension System. Seedling stand and vigor were determined at 22 days after planting (DAP) on May 24. Nematode population densities were determined by extracting eggs from three root systems per plot at 42 DAP. Plots were harvested on September 26. Data were statistically analyzed by ARM and means compared using Fisher's protected least significant difference test ($P \leq 0.10$). Monthly average maximum temperatures from planting in April through harvest in October were 25.1, 28.8, 30.3, 33.6, 31.1, and 29.6 degrees C, with average minimum temperatures of 11.3, 16.2, 18.0, 21.2, 20.1, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 2.41, 17.63, 7.67, 8.38, 13.54, and 4.78 centimeters, with a total of 54.41 centimeters over the entire season.

Nematode disease pressure was ideal for early planted cotton in 2012. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry. Plant stand was similar among all the treatments, with 10 to 13 plants per meter of row at 22 DAP. Plant vigor was significantly improved by the nematicide combinations Gaucho 600 FS + Poncho Votivo (Treatment 3), Gaucho 600 FS + Poncho Votivo + USF0 738 (Treatment 8), and Aeris + USF0 738 (Treatment 9) as compared to the control (Treatment 1). Root-knot nematode total eggs and numbers of eggs per gram of root were very high and were similar among all the treatments, although Temik 15G (Treatment 6) supported the fewest. Differences in cotton yield varied by 503 kilograms per hectare, but were not significant among treatments. Ranking the treatments indicated Gaucho 600 FS + Poncho Votivo + USF0 738 (Treatment 8) produced the greatest yield in this test. Although, the Temik 15G treatment supported the fewest root knot eggs, it was ranked seventh among the nine treatments for yield.

No.	Nematicide[z]	22 DAP	22 DAP	*Meloidogyne incognita* (42 DAP)		Seed cotton lbs/ac
		Stand[y]/3 m row	Vigor[w]	Eggs/ 3 root systems	Eggs/g root	
1.	Vortex FL 2.5 g ai/100 kg Baytan 30 10 g ai/100 kg Allegiance FL 15.6 g ai/10 kg	12[z]	2.3 b	31147[x]	17972	2425
2.	Gaucho 600 FS 0.375 mg ai/seed	10	2.4 ab	29942	19042	2112
3.	Gaucho 600 FS 0.375 mg ai/seed Poncho Votivo 0.425 mg ai/seed	12	3.0 a	20116	9950	2433
4.	Aeris 0.75 mg ai/seed Poncho Votivo 0.425 mg ai/seed	12	2.5 ab	35504	19005	2049
5.	Avicta 0.15 mg ai/seed Cruiser 0.375 mg ai/seed	13	2.8 a	46628	22252	2373
6.	Temik 15G 840 g/ ha	11	2.9 a	13194	8440	2222
7.	Aeris 0.75 mg ai/seed	12	2.7 ab	21228	10605	2398
8.	Gaucho 600 FS 0.375 mg ai/seed Poncho Votivo 0.425 mg ai/seed USF0 738 0.2 mg ai/seed	12	2.9 a	35690	16855	2551
9.	Aeris 0.75 mg ai/seed USF0 738 0.2 mg ai/seed	11	2.9 a	42735	23684	2279
	LSD = 0.05	***3***	***0.5***	***34402***	***15557***	***1011***

[z]Nematicide treatments included a base fungicide application of 2.5 g ai/100 kg of Vortex FL, 10 g ai/100 kg of Baytan 30, and 15.6 g ai/100kg.
[y]Stand was the number of seedlings in 3 meters of row.
[x]Means followed by same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.10$).
[w]Vigor ranged from 1 to 5, with 5 being the best and 1 being the worst.

Evaluation of Temik, Aeris, and Two Experimental Compounds on Cotton for Root-Knot Management in Alabama, 2012

N. Xiang, K. S. Lawrence, D. W. Schrimsher, and S. Nightengale

Temik, Aeris, and two experimental compounds were evaluated for the management of the root-knot nematode on cotton in the field at the Plant Breeding Unit of the E.V. Smith Research Center near Tallassee, Alabama. The soil is a Kalmia loamy sand (80% sand, 10% clay, 10% silt). Seed treatments were applied by Bayer Crop Science. Temik 15G was applied on May 2 in the seed furrow with chemical granular applicators attached to the plant. Plots consisted of two rows, 7 meters long with 0.9-meter row spacing and were arranged in a randomized complete block design with five replications. Blocks were separated by a 6-meter-wide alley. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plant stand and vigor were counted and rated at 22 DAP. Nematode numbers were determined by extracting eggs from three roots systems per plot at 42 DAP. Plots were harvested on September 26. Data were statistically analyzed by ARM and means compared using Fisher's protected least significant difference test ($P \leq 0.10$). Monthly average maximum temperatures from planting in April through harvest in October were 25.1, 28.8, 30.3, 33.6, 31.1, and 29.6 degrees C, with average minimum temperatures of 11.3, 16.2, 18.0, 21.2, 20.1, and 16.2 degrees C, respectively. Rainfall accumulation for each month was 2.41, 17.63, 7.67, 8.38, 13.54, and 4.78 centimeters, with a total of 54.41 centimeters over the entire season.

The 2012 season was a good year for root-knot disease pressure. The rainfall was adequate in May but became limited through the remainder of the season. Temperatures did not reach 100-plus degrees F, thus this season was more normal for heat units but dry. Plant stand among all treatments ranged from 12 to 14 plants per meter of row at 22 DAP. The experimental product UFS0 738 increased stand (Treatments 4 and 5) compared to the Gaucho (Treatment 1), Temik 15G (Treatment 2) and Aeris (Treatment 3). Plant vigor was similar among all the treatments. Root-knot nematode total egg numbers were significantly reduced by Gaucho + USF0738 + SP 26966 (Treatment 8) at 42 DAP compared to Gaucho + USF0738 alone (Treatment 4). The number of root-knot eggs per gram of root followed this same trend, but was not significantly different. Seed cotton yields were not different and varied by 589 kilograms per hectare across all treatments. Gaucho + USF0738 + SP 26966 (Treatment 8), which reduced nematode numbers, ranked third following Gaucho 0.375 milligrams active ingredient per seed + SP 26966 611 grams active ingredient per hectare (Treatment 7) and Aeris (Treatment 3) for seed yield.

No.	Treatments and rate[z]	22 DAP	22 DAP	*Meloidogyne incognita* (42 DAP)		Seed cotton lbs/ac
		Stand[y]/3 m row	Vigor[w]	Eggs/3 root systems	Eggs/g root	
1.	Gaucho 0.375 mg ai/seed	12 b[x]	3.0	6180 ab	3442[x]	4136[x]
2.	Temik 15G 840 gai/ha	12 b	3.1	6798 ab	3437	4226
3.	Aeris 0.75 mg ai/seed	12 b	3.3	21815 ab	8940	4367
4.	Gaucho 0.375 mg ai/seed UFS0 738 0.35 mg ai/seed	14 a	3.0	30328 a	10466	4295
5.	Gaucho 0.375 mg ai/seed UFS0 738 0.35 mg ai/seed Votivo 240FS 0.071 mg ai/seed	14 a	3.2	14708 ab	5911	4271
6.	Gaucho 0.375 mg ai/seed SP 26966 418 g ai/ha	13 ab	3.5	8992 ab	4927	3933
7.	Gaucho 0.375 mg ai/seed SP 26966 611 g ai/ha	14 a	3.5	9548 ab	6446	4522
8.	Gaucho 0.375 mg ai/seed UFS0 738 0.35 mg ai/seed SP 26966 418 g ai/ha	13 ab	3.0	4141 b	2793	4317
	LSD (P = 0.05)	***2***	***0.6***	***26008***	***9248***	***720***

[z]Nematicide means each treatment including 2.5 g ai/100 kg of Vortex FL, 10 g ai/100 kg of Baytan 30, and Allegiance FL 15.6 g ai/100kg.
[y]Stand was the number of seedlings in 3 meters of row.
[x]Means followed by same letter do not significantly differ according to Fisher's LSD test ($P \leq 0.10$).
[w]Vigor ratings from 1 to 5, with 5 being the best and 1 the worst.

Maintenance and Expansion of the ACES/Auburn University Website for Alabama Crops, 2012

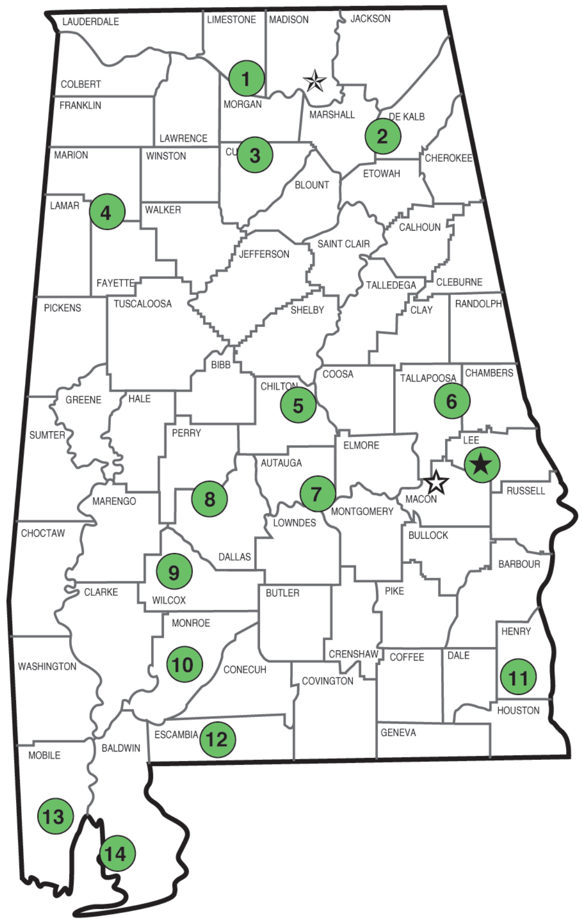
D. Monks, C. Dillard, D. Delaney, C. Burmester, and P. Mask

Research and extension information generated by support from Alabama cotton, soybean, and grain producers has been directed toward specific production problems. In the past, the information was exchanged with producers via word of mouth, production meetings, and printed mailouts. With the critical need for rapid information transfer, the "Alabama Crops Website" was initiated to provide this service to producers and the farming community. The website provides information including, but not limited to: corn, cotton, soybean, forages, small grains, stored grains, hay and pasture weed control, precision ag (linked), soil fertility and soil testing, plant disease diagnostics, enterprise budgets, IPM guides, OVT research information, and on-farm research and development. The "alabamacrops.com" website has served for the past several years as the conduit through which much of the agronomic crop research and field information flows. Recently, Jon Brasher, ACES crops Web coordinator, and John Hartley, ACES webmaster, have been improving this portal to make it ever more user-friendly. The newly designed site is in the process of being launched and will be further developed over the next year. We are appreciative of the support from Alabama cotton producers to help support our efforts that hopefully make their operations more economically and environmentally sustainable. We also encourage you to make comments and provide constructive input to brashjh@auburn.edu so that the site will continue to meet your needs.

Contributors Index

Alabama's Agricultural Experiment Station
AUBURN UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the state has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

★ Main Agricultural Experiment Station, Auburn.
☆ Alabama A&M University.
☆ E. V. Smith Research Center, Shorter.

1. Tennessee Valley Research and Extension Center, Belle Mina.
2. Sand Mountain Research and Extension Center, Crossville.
3. North Alabama Horticulture Research Center, Cullman.
4. Upper Coastal Plain Agricultural Research Center, Winfield.
5. Chilton Research and Extension Center, Clanton.
6. Piedmont Substation, Camp Hill.
7. Prattville Agricultural Research Unit, Prattville.
8. Black Belt Research and Extension Center, Marion Junction.
9. Lower Coastal Plain Substation, Camden.
10. Monroeville Agricultural Research Unit, Monroeville.
11. Wiregrass Research and Extension Center, Headland.
12. Brewton Agricultural Research Unit, Brewton.
13. Ornamental Horticulture Research Center, Spring Hill.
14. Gulf Coast Research and Extension Center, Fairhope.