Peanut Disease Control Field Trials, 2008: Standard Fungicide Trials

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Peanut Disease Control Field Trials, 2008 Standard Fungicide Trials

A. K. Hagan, K. L. Bowen, and H. L. Campbell

INTRODUCTION

Fungicides, cultural practices, and resistant cultivars are available for the control of damaging diseases and nematode pests that can limit peanut yield. A management program that incorporates these practices can enhance the control of diseases and nematode pests and can increase crop yield and profit potential.

In order to provide timely information concerning disease management practices, Alabama Agricultural Experiment Station personnel conducted foliar and soil-borne disease as well as nematode control trials at the Wiregrass Research and Extension Center (WREC) in Headland, Alabama, and at the Gulf Coast Research and Extension Center (GCREC) in Fairhope, Alabama. This report summarizes the results of those trials.

During the 2008 production season at the WREC, temperatures were near historical averages (Figure 1) and monthly rainfall totals were at or near normal historical averages throughout the entire growing season (Figure 2). As a result, leaf spot severity was much worse than previously observed in all trials and soil-borne disease incidence was greater than in previous years and adversely affected yield.

At the GCREC, temperatures were at or above historical averages throughout the entire growing season (Figure 1) and rainfall totals were at or near normal throughout the entire growing season (Figure 2). More consistent rainfall throughout the growing season led to higher than normal leaf spot severity and higher rust severity. Stem rot incidence increased above that previously observed and resulted in yield decreases.

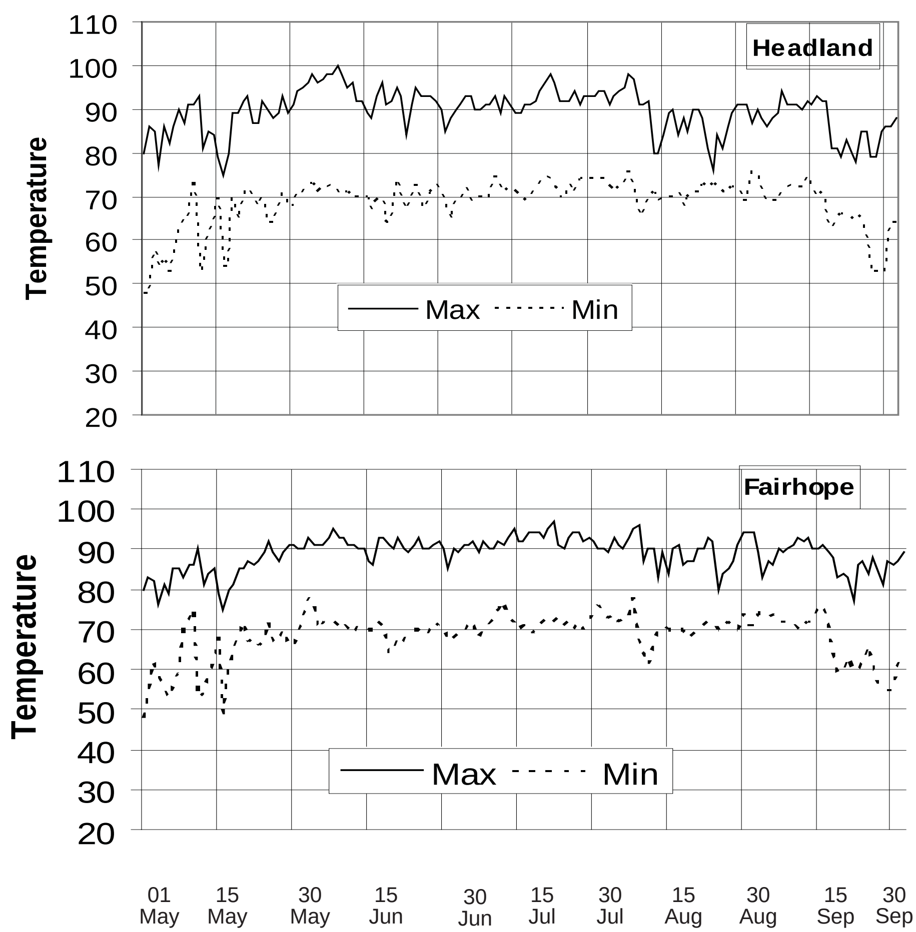
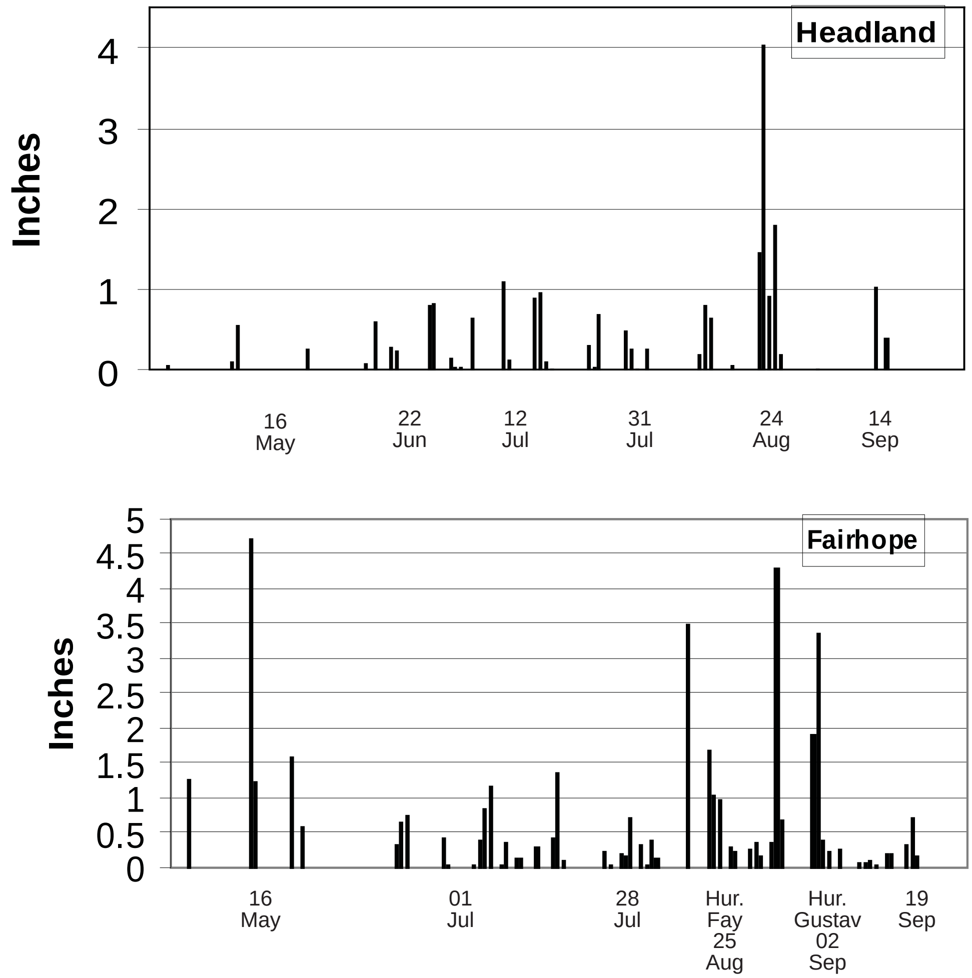


Figure 1. Daily minimum and maximum temperature (^{o}F), May to October 2008.

Figure 2. Daily precipitation (inches), May to October 2008.



RECOMMENDED FUNGICIDE PROGRAMS COMPARED FOR DISEASE CONTROL AND YIELD RESPONSE ON PEANUT, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and L. W. Wells

Objective: To compare recommended fungicide programs on two peanut cultivars for the level of leaf spot and white mold control as well as the yield response.

Methods: On May 22, the peanut cultivars AT3085RO and GA03L were planted at a rate of six seed per foot of row using conventional tillage practices in a Dothan fine sandy loam (organic matter <1 percent) soil at the Wiregrass Research and Extension Center in Headland, Alabama. On May 5, preemergent application of 0.45 ounce per acre of Strongarm + 1 quart per acre of Sonalan was lightly incorporated. Escape weeds were controlled with a broadcast application of 8 fluid ounces per acre of Gramoxone + 8 fluid ounces per acre of Basagran + 1.5 pints per acre of 2,4-DB. The test area received 0.5, 1.0, 1.0, and 0.5 acre inches of water on June 3, July 29, August 8, and October 1, respectively.

A split plot design with peanut cultivar as whole plots and fungicide treatments as sub-plots was used. Whole plots were randomized in four complete blocks. Individual subplots consisted of four 30-foot rows spaced 3 feet apart. Full canopy sprays of each fungicide treatment were made on a standard 14-day calendar schedule on June 27 (1), July 10 (2), July 25 (3), August 7 (4), August 21 (5), September 6 (6), September 18 (7), and September 29 (8) with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons per acre spray volume at 45 psi. A non-ionic surfactant at 1 pint per 100 gallons of spray volume was added to Evito tank mixtures.

Disease Assessment: Early and late leaf spot were rated together on October 10 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves noticed in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. White mold hit counts (one hit equals ≤ 1 foot of consecutive diseased plants per row) were made immediately after digging on October 14. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data in Table 1 were pooled across peanut cultivars.

Weather: Rainfall totals were below the historical average in June and September but were average to well above average for July and August.

Results: Of the two cultivars, AT3085RO had higher leaf spot ratings. Early and late leaf spot were seen on both cultivars. Among all fungicide programs, highest leaf spot ratings were recorded for the Artisan 3.6F program (Table 1). The Abound 2SC program gave less effective leaf spot control than the Provost 433SC and Headline 2.09EC programs. The best leaf spot control was obtained with the Headline 2.09EC program. As a result of low white mold pressure on both cultivars, none of the fungicide programs had any impact on white mold incidence. While the Abound 2SC program had higher yields than the Evito program, yields for the remaining fungicide programs were similar.

On the peanut cultivar AT3085RO, highest leaf spot ratings were recorded for the Artisan 3.6F, Evito, and Bravo Ultrex standard (Table 2). Provost 433SC and Bravo Ultrex/Bravo Ultrex + Moncut 70DF programs controlled early and late leaf spot better than the Artisan 3.6F and the Bravo Ultrex standard. The best leaf spot control was obtained with the Headline 2.09EC program. White mold incidence and yield response were similar for all fungicide programs.

Despite low leaf spot ratings for all fungicide programs on GA03L, some differences in disease control were noted (Table 2). Headline 2.09EC, Bravo Ultrex, and Provost 433SC programs were equally effective in controlling leaf spot diseases. Highest leaf spot ratings were recorded for the Artisan 3.6F and Abound 2SC programs. White mold incidence was low across all fungicide programs. Although leaf spot and white mold pressure was low, significant differences in yield response were noted between fungicide programs. Similarly high yields were obtained with the Headline 2.09EC, Abound 2SC, Bravo Ultrex/Bravo Ultrex + Moncut 70DF, and Bravo Ultrex standard. On GA03L, lowest yields were recorded for the Provost 433SC and Evito programs.

TABLE 1. YIELD RESPONSE AND DISEASE CONTROL WITH RECOMMENDED FUNGICIDE PROGRAMS ON PEANUT

Fungicide regime and rate/A	Application timing	Leaf spot rating[1]	White mold hits/60 ft	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-8	2.7 b	2.5 a	5189 ab
Bravo Ultrex 1.4 lb	1,2,7,8	2.4 c	2.1 a	5205 ab
Provost 433SC 8.0 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7,8	2.5 bc	2.1 a	5189 ab
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	3.3 a	1.8 a	5012 ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.8 b	1.4 a	5225 a
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	1.9 d	1.2 a	5134 ab
Headline 2.09EC 9 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.7 bc	1.1 a	4882 b
Evito 5.7 fl oz + NIS	3,5			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Of the two cultivars, AT3085RO had the highest leaf spot and white mold ratings (Table 3). However, yield for AT3085RO was significantly higher than that of GA03L.

Summary: Despite adequate rainfall and supplemental irrigation, leaf spot and white mold pressure was unusually low in this study. The slightly elevated leaf spot rating for the Artisan 3.6E programs suggests that either the propiconazole component is not as efficacious in controlling leaf spot diseases as the other fungicides or the leaf spot fungi populations have developed tolerance to sterol fungicides. Regardless, Artisan 3.6E should be tank mixed with 0.75 to 1.0 pint per acre of Bravo Weather Stik or another chlorothalonil fungicide to insure effective control of leaf spot diseases. On the leaf spot-susceptible AT3085RO peanut, Evito and Bravo Ultrex proved no more effective than Artisan 3.6E in controlling leaf spot diseases. In contrast, both fungicides gave the same level of leaf spot control as the highly effective Headline 2.09E program on the more leaf spot-resistant GA03L peanut. While white mold ratings were higher on AT3085RO than on GA03L, overall disease pressure was insufficient to have a noticeable impact on peanut yield. Under an intensive fungicide program, AT3085RO has the potential to significantly outyield the more disease-resistant GA03L peanut.

TABLE 2. INFLUENCE OF RECOMMENDED FUNGICIDE PROGRAMS ON LEAF SPOT AND WHITE MOLD CONTROL AS WELL AS YIELD RESPONSE OF TWO PEANUT CULTIVARS

Peanut cultivar Treatment and rate/A	Application timing	Leaf spot rating[1]	White mold hits/60 ft	Yield *lb/A*
AT3085RO				
Bravo Ultrex 1.4 lb	1-8	3.6 ab	4.2 a	5320 a
Bravo Ultrex 1.4 lb	1,2,7,8	2.9 c	2.5 a	5667 a
Provost 433SC 8.0 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7,8	2.9 c	3.3 a	5296 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	4.0 a	2.6 a	5242 a
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	3.2 bc	1.5 a	5389 a
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.1 d	2.0 a	5227 a
Headline 2.09EC 9 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	3.5 abc	1.5 a	5308 a
Evito 5.7 fl oz + NIS	3,5			
GA03L				
Bravo Ultrex 1.4 lb	1-8	1.8 c	0.8 a	5058 a
Bravo Ultrex 1.4 lb	1,2,7,8	1.8 c	1.6 a	4651 bc
Provost 433SC 8.0 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7,8	2.0 bc	0.8 a	5082 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.6 a	1.2 a	4820 ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.4 ab	1.2 a	5029 ab
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	1.7 c	0.3 a	5042 a
Headline 2.09EC 9 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.0 bc	0.7 a	4457 c
Evito 5.7 fl oz + NIS	3,5			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

TABLE 3. YIELD RESPONSE AS WELL AS LEAF SPOT AND WHITE MOLD RATINGS FOR PEANUT CULTIVARS

Peanut line	Leaf spot rating [1]	White mold hits/60 ft	Yield *lb/A*
AT3085RO	3.2 a	2.5 a	5352 a
GA03L	2.0 b	0.9 b	4878 b

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

IMPACT OF FUNGICIDE INPUTS ON THE YIELD AND REACTION OF RUNNER PEANUT CULTIVARS TO DISEASES IN A ONE-YEAR OUT ROTATION WITH COTTON, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and L. W. Wells

Objective: To assess the yield response and reaction of commercial peanut cultivars to leaf spot diseases, white mold, and tomato spotted wilt in a one-year rotation with cotton when maintained under a standard Bravo Ultrex and a high-input fungicide program.

Methods: Commercial runner peanut cultivars were planted on May 28 at a rate of six seed per row foot using conventional tillage practices in a Dothan fine sandy loam (organic matter <1 percent) on a site maintained in a peanut-cotton-peanut rotation at the Wiregrass Research and Extension Center in Headland, Alabama. A center pivot irrigation system delivered 0.5, 1.0, 1.0, and 0.5 acre inches of water on June 3, July 29, August 8, and October 1, respectively. On May 5, Strongarm at 0.45 ounce per acre + Sonalan at 1.0 quart per acre was broadcast and lightly incorporated for preemergent weed control. Escaped weeds were controlled with an postemergent application of Gramoxone at 8 fluid ounces per acre + Basagran at 8 fluid ounces per acre + 2,4 DB at 1.5 pints per acre on June 24.

A split plot design with peanut cultivars as whole plots and fungicide program the sub-plot was used. Whole plots were randomized in four complete blocks. Sub-plots, which consisted of four 30-foot rows spaced 3 feet apart, were randomized within each whole plot. While the standard fungicide program consisted of seven applications of 1.4 pounds per acre of Bravo Ultrex, the high input program included two initial applications of Bravo Ultrex at 1.4 pounds per acre followed by 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.7 pound per acre of Moncut 70DF, 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.7 pounds per acre of Moncut 70DF, and two final applications of 1.4 pounds per acre of Bravo Ultrex. Fungicides were applied on June 27, July 10, July 24, August 7, August 21, September 5, September 18, and September 29 with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons per acre spray volume at 45 psi.

Disease Assessment: Final TSWV hit counts (one hit was defined as ≤ 1 ft of consecutive TSWV-damaged plants per row) were made on October 4. Early and late leaf spot were rated together on October 10 on the mid-season and October 22 on the late maturing peanut cultivars using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold -damaged plants per row) were made immediately after plots were dug on October 14 and October 23 for the mid-season and late-maturing cultivars, respectively. Yields were reported at 7 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$). Since the cultivar x fungicide treatment interactions for TSWV, leaf spot, white mold, and yield were not significant, data for peanut cultivars that are presented in the Table 1 were pooled. Impact of fungicide treatments on disease and yield averaged across peanut cultivars is displayed in Table 2.

Results: Due in part to the May 28 planting date, TSWV severity was lower than had been seen in previous years. Tifguard had significantly fewer TSWV hit counts than any other cultivar except for AT3085RO, GA03L, C-99R, and McCloud (Table 1). Highest TSWV severity was noted on Georgia Green. Disease ratings for the remaining peanut cultivars did not significantly differ from that of AT29-1112. Early and late leaf spot diseases were present. While significant differences in leaf spot severity were noted between peanut cultivars, damage on most was limited to light to moderate leaf spotting with a low level of premature defoliation. The level of leaf spotting and defoliation was higher on AT31-1314 than any other cultivar except for GA02C and AT3085RO. While GA03L suffered the least leaf spotting, similar ratings were recorded for AP-3, AP-4, McCloud, and Tifrunner. While significant differences in white mold hit counts were noted between cultivars, low disease activity minimized the impact of white mold on peanut yield. Overall, there appeared to be little if any relationship between disease severity and peanut yield. The highest yielding cultivar AT31-1314 also had the highest leaf spot rating. Other cultivars that had among the higher pod yields were McCloud, Tifguard, AT27-1516, AT29-1112, and AP-3.

Across all peanut cultivars (Table 2), fungicide program had relatively little impact on disease control or yield. As expected, fungicide program was not expected to have any impact on TSWV severity. However, the leaf spot ratings and white mold hit counts for the standard and high input fungicide programs did not significantly differ. In addition, yield response with the standard and high input fungicide programs was similar. Fungicide program also did not have an impact on peanut grade (data not shown).

Summary: In situations where pressure from leaf spot diseases and white mold is relatively low, costly high input fungicide programs often do little to increase peanut yield or grade over the standard Bravo Ultrex 14-day calendar program. Results showed that peanut cultivars differ considerably to their reaction to TSWV and leaf spot diseases. The cultivars Tifguard and GA03L have much better resistance to TSWV compared with the current industry standard Georgia Green. When the cultivars are planted earlier, the disparity in the reactions of both Georgia Green and GA03L to TSWV with Tifguard would have been much more apparent. As has been noted in 2007 with AT3085RO, elevated leaf spot ratings indicate that AT31-1314, which demonstrated excellent yield potential, may require a more intense fungicide program to avoid the catastrophic leaf spot control failures and subsequent yield losses.

TABLE 1. YIELD AND REACTION OF COMMERCIAL PEANUT CULTIVARS TO TSWV, LEAF SPOT, AND SOIL DISEASES AVERAGED ACROSS FUNGICIDE PROGRAM, WREC

Peanut cultivar	TSWV hits/60 ft [1]	Leaf spot rating [2]	White mold hits/60 ft [1]	Yield *lb/A*
Mid-season Maturity (130 – 145 DAP)				
AP-3	3.1 bcde	2.7 ef	0.6 bc	4973 bcde
AP-4	3.3 bcde	2.9 def	0.6 bc	4842 cde
AT27-1516	3.8 bcd	3.6 bc	1.9 abc	5164 bc
AT31-1314	3.6 bcd	4.5 a	1.3 abc	5802 a
AT29-1112	4.5 b	3.4 cd	1.5 ab	5009 bcd
AT32-78	2.8 bcde	3.4 cd	2.1 a	4799 cde
AT3085RO	2.5 cdef	4.0 ab	1.2 abc	5011 bcd
GA03L	1.8 ef	2.3 f	0.6 bc	4689 de
Georgia Green	6.4 a	2.9 de	1.1 abc	4743 de
McCloud	1.9 def	2.8 def	0.5 bc	5272 b
Tifguard	0.7 f	2.7 ef	0.0 c	5126 bc
Late Maturity (140-165 DAP)				
C-99R	4.1 bc	3.0 cde	1.3 abc	4601 e
GA02C	1.9 def	4.4 a	0.9 abc	4830 cde

[1] TSWV and white mold incidence is expressed as the number of disease hits per 60 feet of row.
[2] Leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

TABLE 2. YIELD AND DISEASE CONTROL WITH THE STANDARD AND HIGH INPUT FUNGICIDE PROGRAM AVERAGED ACROSS PEANUT CULTIVARS

Fungicide program[1]	TSWV hits/60 ft	Leaf spot rating	White mold hits/60 ft	Yield *lb/A*
Standard	3.1 a	3.1 a	1.1 a	4985 a
High Input	3.0 a	3.3 a	0.8 a	4925 a

[1] While the standard fungicide program consisted of eight applications of 1.4 pounds per acre of Bravo Ultrex, the high input program included two initial applications of Bravo Ultrex at 1.4 pounds per acre followed by 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.7 pound per acre of Moncut 70DF, 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.7 pound per acre of Moncut 70DF, and two final applications of 1.4 pounds per acre of Bravo Ultrex. All applications were scheduled at approximately 14-day intervals.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

IMPACT OF PROLINE APPLIED AT-PLANTING ON DISEASE CONTROL AND YIELD OF PEANUT, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and L. W. Wells

Objective: To assess the influence of at-plant applications of Proline fungicide on the occurrence of leaf spot diseases and white mold and on the yield of peanuts.

Methods: On May 22, the peanut cultivars AT3085RO and GA03L were planted at a rate of six seed per foot of row using conventional tillage practices in a Dothan fine sandy loam (organic matter <1 percent) soil at the Wiregrass Research and Extension Center in Headland, Alabama. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was irrigated as needed. A split plot design with peanut cultivars as whole plots and fungicide treatments as sub-plots was used. Whole plots were randomized in four complete blocks. Individual subplots consisted of four 30-foot rows spaced 3 feet apart. Full canopy sprays of each fungicide treatment were made on a standard 14-day calendar schedule on June 27 (1), July 10 (2), July 25 (3), August 7 (4), August 21 (5), September 4 (6), September 18 (7), and September 29 (8) with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons of spray volume per acre at 45 psi.

Disease Assessment: Early and late leaf spot were rated together on October 9 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. White mold and Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive white mold- or CBR-damaged plants per row) were made immediately after plots were dug on October 13. Yields were reported at 7 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$). Data for late leaf spot, white mold, CBR, and yield were pooled across peanut cultivars in Table 1.

Results: Late leaf spot was the dominant leaf spot disease. While both Folicur 3.6F programs gave poorer leaf spot control compared with the Provost 433SC, Abound 2SC, and Bravo Ultrex alone programs, symptoms were limited to light to moderate leaf spotting with a low level of premature defoliation. With Provost 433SC, better leaf spot control was obtained at the 10.7- than the 8-fluid-ounce-per-acre rate. The Proline 480 IF treatment improved leaf spot control with Provost at the 8- but not 10.7-fluid-ounce-per-acre rate. In contrast, addition of the Proline 480 IF treatment to the Abound 2SC program did not enhance leaf spot control. Although stem rot and CBR pressure was low, significant differences in control of both diseases were noted between fungicide programs. With the exception of the Folicur 3.6F program, highest white mold incidence was recorded with Bravo Ultrex alone. Hit counts for CBR were lower for both rates of Provost 433SC compared with Abound 2SC. White mold and CBR hit counts for the programs with and without Proline 480 IF treatment were similar. Yield response with Provost 433SC at 8 fluid ounces per acre and Folicur 3.6F, both without Proline 480 IF, as well as the high rate of Provost 433SC with Proline 480IF was higher compared with the Bravo Ultrex standard. Addition of Proline 480 IF treatment to recommended Provost 433SC, Folicur 3.6F, and Abound 2SC programs did not result in higher yields compared with the same programs without the Proline 480 IF treatment.

Average disease ratings as well as the yield for AT3085RO and GA03L did not significantly differ (Table 2).

Summary: The Proline 480 IF treatment when combined with the four-block spray program with Provost 433SC was designed to control the disease CBR in peanut. In a previous study, the level of CBR control provided by the combination of Proline 480 IF and Provost 433SC was impressive. Results of this study show that in the absence of CBR, the Proline 480 IF treatment, regardless of the in-season fungicide program, did little to enhance the control of early leaf spot or boost peanut yield. Pressure was too low to assess the possible impact of the Proline 480 IF treatment on the control of white mold in peanut. Use of the Proline 480 IF treatment should be restricted to those fields where CBR has previously caused sizable yield losses.

TABLE 1. IMPACT OF AT-PLANT APPLICATIONS OF PROLINE FUNGICIDE ON THE OCCURRENCE OF FOLIAR AND SOIL DISEASES ALONG WITH PEANUT YIELD

Treatment and rate/A	Application timing	Leaf spot rating[1]	White mold[2]	CBR hits/60 ft[2]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-8	2.9 c	1.6 a	0.6 a	4959
Bravo Ultrex 1.4 lb	1,2,7,8	2.7 c	0.5 b	0.2 b	5331
Provost 433SC 8 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	2.1 e	0.5 b	0.0 b	5227
Provost 433SC 10.7 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP[3]	2.3 d	0.5 b	0.4 b	5223
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 8 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.1 e	0.4 b	0.0 b	5471
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 10.7 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	3.8 a	0.9 ab	0.7 ab	5434
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	3.5 b	0.3 b	0.5 ab	5243
Bravo Ultrex 1.4 lb	1,2,7,8				
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.4 d	0.0 b	0.5 ab	5158
Bravo Ultrex 1.4 lb	1,2,4,6,7,8				
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.5 d	0.6 b	1.3 a	5260
Abound 2SC 18.5 fl oz	3,5				

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold and cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] IF AP=In-furrow application of Proline 480 at-planting.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

TABLE 2. AVERAGE DISEASE RATINGS AND YIELD RESPONSE BY PEANUT CULTIVAR

Peanut cultivar	Leaf spot rating[1]	White mold[2]	CBR hits/60 ft[2]	Yield *lb/A*
AT3085RO	2.8 a	0.6 a	0.4 a	5188 a
GA03L	2.6 b	0.6 a	0.5 a	5320 a

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold and cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

TABLE 3. DISEASE RATINGS AND YIELD FOR FUNGICIDE TREATMENTS SEGREGATED BY PEANUT CULTIVAR

Treatment and rate/A	Application timing	Leaf spot rating[1]	White mold[2]	CBR hits/60 ft[2]	Yield *lb/A*
AT3085RO					
Bravo Ultrex 1.4 lb	1-8	3.9 ab	1.8 a	1.0 ab	4733
Bravo Ultrex 1.4 lb	1,2,7,8	2.9	0.2	0.4	5140
Provost 433SC 8 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	2.2	0.2	0.0	5358
Provost 433SC 10.7 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP[3]	2.4	0.4	0.0	4969
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 8 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.1	0.5	0.0	5477
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 10.7 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	4.2	1.0	1.2	5363
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	3.5	0.4	0.6	5401
Bravo Ultrex 1.4 lb	1,2,7,8				
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.3	0.0	0.2	5163
Bravo Ultrex 1.4 lb	1,2,4,6,7,8				
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.5	1.2	0.8	5130
Abound 2SC 18.5 fl oz	3,5				
GA03L					
Bravo Ultrex 1.4 lb	1-8	2.3	1.5	0.3	5146
Bravo Ultrex 1.4 lb	1,2,7,8	2.5	0.8	0.0	5489
Provost 433SC 8 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	2.1	0.7	0.0	5118
Provost 433SC 10.7 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP[3]	2.2	0.5	0.7	5527
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 8 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.1	0.3	0.0	5506
Bravo Ultrex 1.4 lb	1,2,7,8				
Provost 433SC 10.7 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7,8	3.5	0.8	0.3	5493
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	3.5	0.2	0.5	5110
Bravo Ultrex 1.4 lb	1,2,7,8				
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Proline 480 5.7 fl oz	IF AP	2.5	0.0	0.8	5155
Bravo Ultrex 1.4 lb	1,2,4,6,7,8				
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7,8	2.5	0.2	1.7	5368
Abound 2SC 18.5 fl oz	3,5				

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold and cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] IF AP=In-furrow application of Proline 480 at-planting.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

COMPARISON OF DISEASE RISK INDEX FUNGICIDE PROGRAMS FOR PEANUT DISEASE CONTROL IN SOUTHEAST ALABAMA, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and L. W. Wells

Objective: To compare the level of leaf spot, rust, and white mold control as well as yield response of two peanut cultivars to low, medium, and high risk Disease Risk Index fungicide treatment schedules.

Methods: On May 23, the peanut cultivars AT3085RO and GA03L were planted at a rate of six seed per foot of row using conventional tillage practices in a Dothan fine sandy loam (organic matter <1 percent) soil at the Wiregrass Research and Extension Center. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was irrigated as needed.

A split plot design with peanut cultivars as whole plots and fungicide treatments as sub-plots was used. Whole plots were randomized in four complete blocks. Individual subplots consisted of four 30-foot rows spaced 3 feet apart. Full canopy sprays of each fungicide treatment were made on a standard 14-day calendar schedule on July 7 (1), July 10 (1.5), July 21 (2), August 4 (3), August 17 (3.5), August 19 (4), September 4 (5), September 9 (5.5), September 17 (6), September 23 (6.5), and September 29 (7) with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons of spray volume per acre at 45 psi. A total of four, five, and seven fungicide applications were scheduled for the Peanut Disease Risk Index low, medium, and high risk categories.

Disease Assessment: Early and late leaf spot were rated together on October 6 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. White mold hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot-damaged plants per row) were made immediately after plot inversion on October 13. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Since the cultivar x treatment interaction for leaf spot, stem rot, and yield were not significant, data presented in the table were pooled across peanut cultivars.

Weather: Rainfall totals were below the historical average in June and September but ranged from average to well above average for July and August.

Results: Based on Peanut Disease Risk Index guidelines, this study site would be rated as a medium risk for leaf spot and white mold on the cultivar GA03L and a high risk for leaf spot and white mold on the cultivar AT3085RO. While late leaf spot was the dominant leaf spot disease, some early leaf spot was noted, particularly on GA03L. The high risk Bravo Ultrex as well as high risk 12- and 18-fluid-ounce-per-acre Abound 2SC programs gave better leaf spot control than the corresponding medium and low risk programs. In addition, leaf spot control was better with the medium compared with low risk 12- and 18-fluid-ounce-per-acre Abound 2SC and Bravo Ultrex programs. The level of leaf spot control provided by the high risk 12- and 18-fluid-ounce-per-acre Abound 2SC programs was similar. With one exception, the level of white mold control with all risk category programs for both rates of Abound 2SC was similar. White mold counts for all of the Bravo Ultrex programs also did not significantly differ. For Bravo Ultrex alone, a significant decline in yield was noted between the high and two remaining programs. Similar yields were recorded for the low, medium, and high risk programs with the 12-fluid-ounce-per-acre rate of Abound 2SC. When compared with the low risk program, yields were higher for one of the two high risk 18-fluid-ounce Abound 2SC programs. Higher yields were obtained with the high risk 18-fluid-ounce Abound 2SC program than with the12-fluid-ounce Abound 2SC program, while yield response with the high risk Bravo Ultrex program was intermediate.

Of the two cultivars, AT3085RO had higher ratings for leaf spot, rust, and white mold than GA03L (Table 2). Despite the higher leaf spot and white mold ratings, average yield for AT3085RO and GA03L did not significantly differ.

Summary: Low contract prices will continue to pressure producers to trim the cost of growing peanuts. Fungicide inputs, which can total 25 percent of variable peanut production costs, are an obvious target. However, indiscriminate cuts in fungicide inputs, which are often made without regard to the risk of yield-reducing disease outbreaks, can results in sizable losses in pod yield and income. The Disease Risk Index is a tool that allows peanut producers to assess the risk of damaging disease outbreaks and to possibly reduce fungicide inputs without jeopardizing yield potential or farm profitability.

TABLE 1. DISEASE RISK INDEX FUNGICIDE PROGRAMS COMPARED FOR THE CONTROL OF LEAF SPOT AND WHITE MOLD AS WELL AS FOR AVERAGE PEANUT YIELD, WREC

Treatment and rate/A	Application timing[1]	Risk index category	Leaf spot rating[2]	White mold hits/60 row ft[3]	Yield *lb/A*
Bravo Weather Stik 6F 24 fl oz	1,2,3,4,5,6,7	High	4.0 de	2.1 abc	5305 ab
Bravo Weather Stik 6F 16 fl oz	1.5,3,4.5,5.5,7	Med	4.6 bc	2.8 ab	4950 cd
Bravo Weather Stik 6F 24 fl oz	2,3.5,5,6.5	Low	6.2 a	3.1 a	4757 d
Bravo Weather Stik 6F 24 fl oz	1,2,4,6,7	High	3.6 ef	3.0 a	4999 bcd
Abound 2SC 12 fl oz	3,5				
Bravo Weather Stik 24 fl oz	1.5,3,5	Med	5.1 b	0.9 abc	5034 bcd
Abound 2SC 12 fl oz	2,4				
Tilt Bravo SE 36 fl oz	2	Low	6.3 a	1.4 abc	4813 d
Abound 2SC 12 fl oz	3.5,5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Bravo Weather Stik 6F 24 fl oz	1,2,4,6,7	High	3.8 e	0.7 bc	5389 a
Abound 2SC 18 fl oz	3,5				
Tilt Bravo SE 36 fl oz	1,2,4	High	3.3 f	1.9 abc	5007 bcd
Abound 2SC 18 fl oz	3,5				
Bravo Weather Stik 6F 24 fl oz	6,7				
Tilt Bravo SE 36 fl oz	1.5	Med	4.4 cd	1.3 abc	5208 abc
Tilt Bravo SE 24 fl oz	4				
Abound 2SC 18 fl oz	3,5.5				
Bravo Weather Stik 6F 16 fl oz	7				
Tilt Bravo SE 36 fl oz	2	Low	6.0 a	0.4 c	4862 d
Abound 2SC 18 fl oz	3.5,5				
Bravo Weather Stik 6F 24 fl oz	6.5				

[1] Fungicide applications were made on 1 = July 7, 1.5 = July 10, 2 = July 21, 3 = August 4, 3.5 = August 17, 4 = August 19, 5 = September 4, 5.5 = September 9, 6 = September 17, 6.5 = September 23 and 7 = September 29.
[2] Leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system.
[3] White mold incidence is expressed as the total number of white mold hits per 60 feet of row.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

TABLE 2. AVERAGE DISEASE RATINGS AND YIELD RESPONSE BY CULTIVAR

Peanut line	Leaf spot rating[1]	White mold[2]	Yield *lb/A*
AT3085RO	5.7 a	2.5 a	5085 a
GA03L	3.7 b	1.0 b	4976 a

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold incidence is expressed as the number of hits per 60 feet of row.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

PERFORMANCE OF PEANUT DISEASE RISK INDEX FUNGICIDE PROGRAMS COMPARED IN SOUTHWEST ALABAMA, GCREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and M. D. Pegues

Objective: To compare low, medium, and high risk Disease Risk Index fungicide treatment schedules on two peanut cultivars for the level of leaf spot and white mold control as well as the yield response.

Methods: On May 22, the peanut cultivars AT3085RO and GA03L were planted at a rate of six seed per foot of row using conventional tillage practices in a Malbis fine sandy loam (organic matter <1 percent) soil in a field cropped to peanut every third year at the Gulf Coast Research and Extension Center in Fairhope, Alabama. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was not irrigated.

A split plot design with peanut cultivar as whole plots and fungicide programs as sub-plots was used. Whole plots were randomized in four complete blocks. Individual sub-plots consisted of four 30-foot rows spaced 3.2 feet apart. Fungicides were applied on June 26 (1), July 2 (1.5), July 7 (2), July 24 (3), July 29 (3.5), August 6 (4), August 18 (5), August 28 (5.5), September 5 (6), September 18 (6.5), and September 19 (7) with an ATV-mounted boom sprayer with three TX-8 nozzles per row at 10 gallons per acre spray volume at 45 psi.

Disease Assessment: Early and late leaf spot were rated on September 25 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

Rust severity was assessed using the ICRISAT 1-9 rating scale where 1 = no disease and 9 = 80 to 100 percent of leaves withered on September 25. White mold hit counts (1 hits was defined as ≤ 1 ft of consecutive stem rot damaged plants per row) were made immediately after plot inversion on September 30. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$). Data for each peanut cultivar are presented separately.

Results: Based on Peanut Disease Risk Index guidelines, this study site would be rated as a low risk for leaf spot and white mold for the peanut cultivar GA03L and a medium risk for leaf spot and stem rot for the peanut cultivar AT3085RO. Late leaf spot was the dominant leaf spot disease observed. Late leaf spot, rust, and white mold pressure was higher on AT3085RO than on GA03L (Table 1). In addition, higher late leaf spot, rust, and white mold damage reduced the yield of AT3085RO below that recorded for GA03L.

Since the cultivar x treatment interaction for leaf spot, white mold, and yield is significant, data presented in the table were segregated by peanut cultivar. On AT3085R but not GA03L, significant differences in late leaf spot and white mold control were noted between the low, medium, and high risk fungicide programs (Table 2). For AT3085RO, higher leaf spot and rust ratings were recorded for the low risk fungicide compared with the medium and high risk programs, which often gave similar control of both leaf spot and rust diseases. In contrast, the level of late leaf spot and rust control provided by the low, medium, and high risk fungicide programs on GA03L did not greatly differ. While very low white mold pressure on GA03L minimized differences between fungicide programs in the three risk categories, two of the three low risk programs on AT3085RO had higher white mold hit counts compared with similar medium and high risk programs. On AT3085RO, white mold incidence for the medium and high risk Bravo Ultrex programs was similar to the medium and high risk 12.3- and 18.5-fluid-ounce-per-acre Abound 2SC programs. Due to the low late leaf spot, rust, and white mold pressure, yields for the low, medium, and high risk programs on GA03L were similar. In contrast, the high late leaf spot, rust, and stem rot damage recorded for the three low risk programs on AT3085RO was reflected in their significantly lower yields when compared with the medium and high risk programs, which often had similar yields. In addition, application rate for Abound 2SC in the high risk programs did not significantly influence disease control or yield of either peanut cultivar.

Summary: Low contract prices will continue to pressure producers to trim the cost of growing peanuts. Fungicide inputs, which can total 25 percent of variable peanut production costs, are an obvious target. However, indiscriminate cuts in fungicide inputs, which are often made without regard to the risk of yield-reducing disease outbreaks, can results in sizable losses in pod yield and income.

In this study, the performance of Disease Risk Index fungicide programs was compared on the peanut cultivars AT3095RO and GA03L. The peanut cultivars AT3085RO is more susceptible to early and late leaf spot as well as white mold than GA03L. On the more-disease resistant GA03L peanut, the same levels of control of early and late leaf spot, white mold, and rust were obtained with the four-application low risk as was found with the five- and seven-application medium and high risk fungicide programs. In contrast, effective leaf spot, rust, and white mold control on the more disease-susceptible AT3085RO was obtained with the five- and seven-application medium and high risk fungicide programs but not the four-application low risk program. Also lower yields were note between the low and medium risk programs on AT3085RO but not on GA03L.

Overall, the Disease Risk Index is proving to be an effective method of assessing disease risk and adjusting fungicide treatment schedules in response to that risk without jeopardizing peanut yield.

TABLE 1. AVERAGE YIELD AND DISEASE RATINGS FOR THE PEANUT CULTIVARS AT3085RO AND GA03L

Peanut cultivar	Leaf spot rating[1]	Rust [2]	White mold [3]	Yield *lb/A*
AT3085RO	5.2 a	4.8 a	5.5 a	4638 b
GA03L	3.0 b	2.4 b	0.8 b	4839 a

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[3] White mold incidence is expressed as the number of disease hits per 60 feet of row.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

TABLE 2. COMPARISON OF DISEASE RISK INDEX FUNGICIDE PROGRAMS FOR THE CONTROL OF DISEASES AND ON THE YIELD RESPONSE OF TWO PEANUT CULTIVARS

Treatment and rate/A	Application timing[1]	Risk index category	Leaf spot rating[2]	Rust rating[3]	White mold hits/60 row ft[4]	Yield *lb/A*
AT3085RO						
Bravo Weather Stik 1.5 pt	1,2,3,4,5,6,7	High	4.3 c	3.8 d	3.5 d	5586 a
Bravo Weather Stik 1.5 pt	1.5,3,4.5,5.5,7	Med	4.2 c	5.0 bcd	4.6 cd	5386 a
Bravo Weather Stik 1.0 pt	2,3,5.5,6.5	Low	7.8 a	6.8 a	11.8 a	3212 c
Bravo Weather Stik 1.5 pt	1,2,4,6,7	High	5.0 c	4.8 bc	5.0 bcd	5035 a
Abound 2SC 12.3 fl oz	3,5					
Bravo Weather Stik 1.5 pt	1,2,4,6,7	High	4.3 c	3.5 d	3.8 cd	5402 a
Abound 2SC 18.2 fl oz	3,5					
Tilt Bravo SE 24 fl oz	1,2,4	High	4.4 c	4.0 c	3.4 d	5019 a
Abound 2SC 18.2 fl oz	3,5					
Bravo Weather Stik 1.0 pt	6,7					
Tilt Bravo SE 36 fl oz	1.5,4	Med	5.2 c	4.6 bc	4.6 cd	5010 a
Abound 2SC 18.2 fl oz	3,5.5					
Bravo Weather Stik 1.0 pt	7					
Tilt Bravo SE 36 fl oz	2	Low	7.3 ab	6.0 ab	7.3 bc	4083 b
Abound 2SC 18.2 fl oz	3.5,5					
Bravo Weather Stik 1.0 pt	6.5					
Tilt Bravo SE 36 fl oz.	2	Low	6.5 b	5.5 abc	9.0 ab	4244 b
Abound 2SC 12.3 fl oz	3.5,5					
Bravo Weather Stik 1.0 pt	6.5					
Bravo Weather Stik 1.5 pt	1	Med	4.5 c	4.3 c	3.3 d	5001 a
Provost 433 5.7 fl oz	3,5.5					
Abound 2SC 18.2 fl oz	4.5,7					
GA03L						
Bravo Weather Stik 1.5 pt	1,2,3,4,5,6,7	High	2.9 b	2.5 ab	0.5 a	4634 a
Bravo Weather Stik 1.5 pt	1.5,3,4.5,5.5,7	Med	2.5 c	2.0 b	0.3 a	4802 a
Bravo Weather Stik 1.0 pt	2,3,5.5,6.5	Low	3.3 a	2.5 ab	1.3 a	4577 a
Bravo Weather Stik 1.5 pt	1,2,4,6,7	High	2.9 b	2.3 ab	1.0 a	4645 a
Abound 2SC 12.3 fl oz	3,5					
Bravo Weather Stik 1.5 pt	1,2,4,6,7	High	3.0 a	2.8 a	0.5 a	4783 a
Abound 2SC 18.2 fl oz	3,5					
Tilt Bravo SE 24 fl oz	1,2,4	High	3.0 a	2.3 ab	0.3 a	4848 a
Abound 2SC 18.2 fl oz	3,5					
Bravo Weather Stik 1.0 pt	6,7					
Tilt Bravo SE 36 fl oz	1.5,4	Med	3.0 a	2.7 a	1.3 a	4588 a
Abound 2SC 18.2 fl oz	3,5.5					
Bravo Weather Stik 1.0 pt	7					
Tilt Bravo SE 36 fl oz	2	Low	3.0 ab	2.0 b	0.4 a	4617 a
Abound 2SC 18.2 fl oz	3.5,5					
Bravo Weather Stik 1.0 pt	6.5					
Tilt Bravo SE 36 fl oz	2	Low	3.3 a	2.8 a	1.0 a	4508 a
Abound 2SC 12.3 fl oz	3.5,5					
Bravo Weather Stik 1.0 pt	6.5					
Bravo Weather Stik 1.5 pt	1	Med	2.9 b	2.8 a	1.0 a	4462 a
Provost 433 5.7 fl oz	3,5.5					
Abound 2SC 18.2 fl oz	4.5,7					

[1] Fungicide applications were made on 1 = June 26, 1.5 = July 2, 2 = July 7, 3 = July 24, 3.5 = July 29, 4 = August 6, 5 = August 18, 5.5 = August 28, 6 = September 5, 6.5 = September 18, and 7 = September 19.
[2] Late leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system.
[3] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[4] White mold incidence is expressed as the total number of white mold hits per 60 feet of row.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher’s protected least significant difference (LSD) test ($P \leq 0.05$).

EFFECTIVENESS OF RECOMMENDED FUNGICIDE PROGRAMS FOR THE CONTROL OF FOLIAR AND SOIL-BORNE DISEASES AS WELL AS THEIR IMPACT ON YIELD OF TWO PEANUT CULTIVARS, GCREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and M. D. Pegues

Objective: To assess the effectiveness of recommended fungicide program in controlling leaf spot diseases and rust as well as their impact on the yield of the disease-resistant cultivar GA03L and the disease-susceptible peanut cultivar AT3085RO.

Methods: On May 22, the peanut cultivars AT3085RO and GA03L were planted at a rate of six seed per foot of row using conventional tillage in a Malbis fine sandy loam (organic matter <1 percent) soil in a field cropped to peanut every third year. Temik 15G at 6.5 pounds per acre was applied in-furrow for thrips control. An early cracking herbicide application of Gramoxone Inteon at 8 fluid ounces per acre + Storm at 1 pint per acre + Butyrac 175 at 1 pint per acre was made on June 11. Post-emergent weed control was obtained with an application of Cadre at 2 fluid ounces per acre + Strongarm at 0.225 ounce per acre + Induce (NIS). The test area was not irrigated.

A split plot design with cultivars as whole plots and fungicide treatments as sub-plots was used. Whole plots were randomized in four complete blocks. Individual sub-plots consisted of four 30-foot rows spaced 3.2 feet apart. Full canopy sprays of fungicides were made using an ATV-mounted boom sprayer with three TX-8 nozzles per row at 10 gallons of spray volume per acre at 45 psi. Fungicide applications were made on June 26 (1), July 7 (2), July 24 (3), August 6 (4), August 18 (5), September 5 (6), and September 18 (7).

Disease Assessment: Early and late leaf spot were rated together on September 25 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spot and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

Rust severity was assessed on September 25 using the ICRISAT 1 to 9 rating scale where 1 = no disease and 9 = 80 to 100 percent of leaves withered. White mold hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot damaged plants per row) were made immediately after plot inversion on September 30. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Since the cultivar x treatment interactions for leaf spot, stem rot, and yield were not significant, data presented in the table were pooled across peanut cultivars.

Weather: Rainfall totals for May, August, and September were above the 30-year average but totals for June and July were below average.

Results: Despite favorable weather patterns for disease development in August and September, leaf spot, rust, and white mold pressure was relatively low. When data were averaged across peanut cultivar, the Headline 2.09EC program gave better leaf spot control compared with the Artisan 3.6E and Abound 2SC programs (Table 1). Otherwise, leaf spot ratings for the remaining fungicide programs were similar. The Artisan 3.6E program also proved less effective in controlling rust than the Headline 2.09EC and Provost 433SC programs. White mold counts for the Evito program, which were higher compared with Bravo Ultrex + Moncut 70DF, were similar to the remaining fungicide programs. Yields for all fungicide programs were similar.

Of the two cultivars, AT3085RO had higher ratings for leaf spot, rust, and white mold than GA03L (Table 2). Despite lower disease ratings, GA03L yielded significantly less compared with AT3085RO.

On AT3085RO, leaf spot ratings for the Artisan 3.6E and Abound 2SC programs were higher than those reported for the Provost 433 SC program (Table 3). Ratings for the remaining fungicide programs were similar to all of the latter programs. The Provost 433SC and Headline 2.09E programs gave better rust control compared with the Artisan 3.6E program. While the white mold ratings for most of the fungicide programs were similar, control of this disease was better with Bravo Ultrex + Moncut 70DF than with Evito. Yields, which were higher for the Provost 433SC than Bravo Ultrex standard, were similar for remaining fungicide programs.

For GA03L, better leaf spot control was obtained with the Headline 2.09EC than Provost 433SC programs (Table 3). The level of leaf spot control given by the remaining fungicide programs did not differ significantly from that of the above programs. Rust ratings for all fungicide programs on GA03L did not significantly differ. Although white mold pressure was low, incidence of this disease was higher for peanuts treated with Bravo Ultrex than peanuts treated with Provost 433SC, Bravo Ultrex + Moncut 70DF, Artisan 3.6E, and Evito. Yields were similar for all fungicide programs on GA03L.

Summary: While differences in leaf spot, rust, and to a lesser extent white mold control were noted, the fungicide programs gave effective control of the diseases. Leaf spot and rust ratings in particularly were insufficient to appreciably reduce peanut yields, which were very similar for most recommended fungicide programs. While AT3085RO proved most susceptible to leaf spot diseases, rust, and white mold, this cultivar has a significantly higher yield potential than GA03L. Where disease pressure is high, AT3085RO will require an intensive fungicide program to reach its full yield potential.

TABLE 1. DISEASE CONTROL AND YIELDS WITH RECOMMENDED FUNGICIDE PROGRAMS AVERAGED ACROSS TWO PEANUT CULTIVARS

Fungicide regime and rate/A	Application timing[1]	Leaf spot rating[2]	Rust[3]	White mold[4]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	3.1 ab	2.4 ab	2.9 ab	4462 a
Bravo Ultrex 1.4 lb	1,2,7	2.9 b	2.1 c	2.5 ab	4795 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.9 b	2.5 ab	1.3 b	4668 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	3.4 a	2.8 a	2.4 ab	4634 a
Artisan 3.6E 26 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.4 a	2.5 ab	2.5 ab	4720 a
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 b	2.3 b	2.1 ab	4754 a
Headline 2.09EC 9.0 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2	3.1 a	2.6 ab	3.3 a	4462 a
Evito 3.5 fl oz + Induce 10 fl oz (NIS)	3,4,5,6,7				

[1] Fungicide applications were made on 1 = June 26, 2 = July 7, 3 = July 24, 4 = August 6, 5 = August 18, 6 = September 5, and 7 = September 18.
[2] Leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system.
[3] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[4] White mold incidence is expressed as the number of hits per 60 feet of row.
Means in each column that are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

TABLE 2. AVERAGE YIELD RESPONSE AND DISEASE RATINGS FOR THE PEANUT CULTIVARS AT3085RO AND GA03L

Peanut cultivar	Leaf spot rating[1]	Rust [2]	White mold [3]	Yield *lb/A*
AT3095RO	3.6 a	2.9 a	4.0 a	5085 a
GA03L	2.5 b	2.0 b	0.8 b	4200 b

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[3] White mold incidence is expressed as the number of disease hits per 60 feet of row.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

TABLE 3. YIELD AND DISEASE RATINGS FOR RECOMMENDED FUNGICIDE PROGRAMS FOR TWO PEANUT CULTIVARS

Fungicide regime and rate/A	Application timing	Leaf spot rating[1]	Rust[2]	White mold[3]	Yield *lb*/A
AP-3					
Bravo Ultrex 1.4 lb	1-7	3.8 ab	2.8 abc	4.0 ab	4691 b
Bravo Ultrex 1.4 lb	1,2,7	3.0 b	2.3 c	4.5 ab	5506 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	3.3 ab	3.0 abc	2.5 b	5127 ab
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	4.0 a	3.5 a	4.3 ab	4955 ab
Artisan 3.6E 26 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.0 a	3.0 abc	3.5 ab	5265 ab
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.5 ab	2.5 bc	3.3 ab	5093 ab
Headline 2.09EC 9.0 fl oz	3,5				
Bravo Ultrex 1.4 lb	,2	3.8 ab	3.3 ab	6.0 a	4955 ab
Evito 3.5 fl oz + Induce 10 fl oz (NIS)	3,4,5,6,7				
GA03L					
Bravo Ultrex 1.4 lb	1-7	2.5 ab	2.0 a	1.8 a	4232 a
Bravo Ultrex 1.4 lb	1,2,7	2.8 a	2.0 a	0.5 bc	4083 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.5 ab	2.0 a	0.0 c	4210 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.8 a	2.0 a	0.5 bc	4313 a
Artisan 3.6E 26 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 a	2.0 a	1.5 ab	4175 a
Abound 2SC 18.5 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.0 b	2.0 a	1.0 abc	4416 a
Headline 2.09EC 9.0 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2	2.4 ab	2.0 a	0.5 bc	3969 a
Evito 3.5 fl oz + Induce 10 fl oz (NIS)	3,4,5,6,7				

[1] Leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system.
[2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[3] White mold incidence is expressed as the number of hits per 60 feet of row.
Means in each column for each cultivar followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

YIELD RESPONSE AND DISEASE SENSITIVITY OF RUNNER PEANUT CULTIVARS IN CENTRAL ALABAMA, PBU

A. K. Hagan, H. L. Campbell, K. L. Bowen, and S. P. Nightengale

Objective: To assess the yield response and reaction of commercial runner peanut cultivars to early leaf spot, white mold, and tomato spotted wilt.

Methods: The test site was disked with a leveling disk harrow on April 22 and then chiseled on April 25. Runner market-type commercial peanut cultivars were sown on June 2 at a rate of six seed per foot of row in an Independence (Cahaba) loamy fine sand (organic matter <1 percent) at the Plant Breeding Unit in Tallassee, Alabama. Plots were not irrigated. Weed control was obtained with an at-plant application of Pendant at 1.0 quart per acre on June 2 followed by a broadcast application of Dual Magnum II at 1.5 pints per acre on June 4.

Plots, which contained four 30-foot rows spaced 3 feet apart, were arranged in a randomized complete block with six replications. To control leaf spot diseases, full canopy applications of Echo 720 6F at 30 fluid ounces per acre were made on July 2, July 17, July 30, August 14, August 28, September 11, and September 26 with a four-row, tractor-mounted sprayer.

Disease Assessment: Final tomato spotted wilt virus (TSWV) hit counts (one hit was defined as ≤ 1 foot of consecutive TSWV-damaged plants per row) were made on October 16. Early leaf spot was rated on October 16 and November 4 on the mid- and late maturing cultivars, respectively, using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = numerous spotted leaves and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous spotting on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants per row) were made immediately after plot inversion on the mid-maturity cultivars on October 21 and on the late maturing cultivars on November 4. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Results: While minor differences in TSWV incidence were noted between peanut cultivars, overall virus pressure was very low and the counts are not included in the table. Early leaf spot was the dominant leaf spot disease. Noticeable leaf spotting along with moderate defoliation was seen on AT3085RO, Georgia Green, and GA02C. Equally low leaf spot ratings were recorded for Florida 07, GA03L, Tifguard, and York. Highest white mold incidence was reported on AT3085RO. McCloud also suffered considerable white mold damage. Equally low white mold hit counts were recorded for AP-3, C-99R, GA02C, GA03L, Tifguard, and York. Among the mid-maturity peanut cultivars, yields were higher for the cultivars AP-3, Florida 07, GA03L, and Tifguard, which had lower early leaf spot and/or stem rot ratings. Severe frost damage limited the yield of the late maturity cultivars.

YIELD AND DISEASE RATINGS OF SELECTED PEANUT CULTIVARS

Peanut cultivar	Leaf spot rating[1]	White mold hits/60 ft[2]	Yield *lb/A*
Mid-maturity (mature 130-145 DAP)			
AP-3	4.9 c	0.5 c	4685 a
AT3085RO	5.9 a	5.6 a	4153 c
Florida 07	4.8 cd	1.7 bc	4767 a
GA03L	4.2 d	0.5 c	4705 a
Georgia Green	5.8 ab	2.8 bc	4200 bc
McCloud	5.4 b	4.3 ab	4540 ab
Tifguard	4.4 d	0.3 c	4476 abc
Late maturity (mature 140-165 DAP)			
C-99R	4.9 c	1.0 c	3518 d
GA02C	5.5 ab	0.0 c	3446 d
York	4.3 d	0.0 c	4246 bc

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold incidence is expressed as the number of disease hits per 60 feet of row.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Summary: Of the cultivars tested, AT3085RO, Georgia Green, and McCloud had the highest leaf spot and white mold ratings. In contrast, lowest leaf spot and white mold intensity was recorded for Florida 07, GA03L, Tifguard, York, and to a lesser extent AP-3. Generally, those cultivars that had the lowest disease ratings had the highest yields.

EARLY LEAF SPOT AND STEM ROT CONTROL WITH RECOMMENDED FUNGICIDE PROGRAMS IN CENTRAL ALABAMA, PBU

A.K. Hagan, H. L. Campbell, K. L. Bowen, and S. P. Nightengale

Objective: To compare the efficacy of recommended fungicide programs for the control of early leaf spot and white mold as well as the yield response of Georgia Green peanut cultivar.

Methods: Before planting, the test site at the Plant Breeding Unit near Tallassee, Alabama, was chiseled and then smoothed with a leveling disk harrow. On June 2, the runner market-type commercial peanut cultivar Georgia Green was sown at a rate of six seed per foot of row in an Independence (Cahaba) loamy fine sand (organic matter <1 percent). Plots were not irrigated. Weed control was obtained with a pre-plant application of Pendant at 2.0 quarts per acre on May 28 followed by an at-plant broadcast application of Dual Magnum II at 1.5 pints per acre on June 1.

Plots, which consisted of four 30-foot rows spaced 3 feet apart, were arranged in a randomized complete block with four replications. Fungicide treatments were applied on July 2 (1), July 17 (2), July 30 (3), August 14 (4), August 28 (5), September 11 (5), and September 26 (7) with a four-row tractor-mounted sprayer.

Disease Assessment: Early leaf spot was rated on October 16 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few leaf spots in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive diseased plants per row) were made immediately after digging on October 21. Yields were reported at 10 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Results: Early leaf spot was the dominant leaf spot disease. Significant differences in the control of early leaf spot were noted between fungicide programs (see table). Poorest leaf spot control was provided by the Artisan 3.6E program. As indicated by an early leaf spot rating of 3.4, the 10.7-fluid-ounce-per-acre rate of Provost 433SC and the Headline 2.09E programs restricted early leaf spot to the mid-canopy and minimized premature defoliation. In contrast, defoliation levels nearly reached 50 percent level on the Artisan 3.6E-treated peanuts. The 8-fluid-ounce-per-acre rate of Provost 433SC and Abound 2SC programs, which were equally effective in controlling early leaf spot, also gave better control of this disease than the Bravo Ultrex + Folicur 3.6F and standard season-long Bravo Ultrex programs. White mold incidence was significantly higher for the Headline 2.09E program than other fungicide programs, all of which had similar white mold counts. Yield response with the 10.7-fluid-ounce-per-acre rate of Provost 433SC and Abound 2SC programs was significantly higher compared with the other fungicide programs, which had similar yields.

Summary: The best combination of disease control and superior yield response was obtained with the 10.7-fluid-ounce-per-acre Provost 433SC program. While Headline 2.09E also gave better leaf spot control than most fungicide programs, poor white mold activity limited peanut yields. Early leaf spot control with the Artisan 3.6E program, which was unusually poor, may have been due to resistance in the target fungus, *Cercospora arachidicola.* Similar disease ratings for the Bravo Ultrex + Folicur 3.6F and the Bravo Ultrex standard suggest that resistance to the Folicur 3.6F component in the target fungus is present.

DISEASE CONTROL AND YIELD RESPONSE WITH RECOMMENDED FUNGICIDE PROGRAMS ON GEORGIA GREEN PEANUT, PBU

Fungicide and rate/A	Application schedule	Early leaf spot[1]	White mold[2]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	5.0 b	3.5 b	4294 b
Bravo Ultrex 1.4 lb	1,2,7	4.4 c	2.8 b	3868 b
Provost 433SC 8 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	3.4 d	0.8 b	4970 a
Provost 433SC 10.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	6.8 a	1.3 b	4149 b
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.4 c	0.8 b	5081 a
Abound 2SC 18.3 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.4 d	11.8 a	3718 b
Headline 2.09E 9 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2	5.0 b	4.5 b	4130 b
Bravo Ultrex 1.4 lb + Folicur 3.6F 7.2 fl oz	3,4,5,6,7			

[1] Early leaf spot was rated using the Florida 1 to 10 rating scale.
[2] White mold incidence is expressed as the number of disease hits per 60 feet of row.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

REACTION OF COMMERCIAL RUNNER PEANUT LINES TO TOMATO SPOTTED WILT AND EARLY LEAF SPOT IN SOUTHWEST ALABAMA, BARU

A. K. Hagan and J. R. Akridge

Objective: To evaluate the reaction of commercial peanut cultivars to tomato spotted wilt (TSWV) and late leaf spot and the impact of these diseases on peanut yield.

Methods: On May 30, nine commercial runner peanut cultivars were planted at a rate of approximately six seed per foot of row in a field that was cropped to peanut the previous two years using conventional tillage practices in a Benndale sandy loam soil (organic matter <1 percent) at the Brewton Agricultural Research Unit, which is located 45 miles northwest of Pensacola, Florida. Just prior to planting, preemergent weed control was obtained with a tank mixture of 1.8 pints per acre Dual and 1.5 pints per acre Sonalan. A tank mixture of 12 fluid ounces per acre Gramoxone and 1 pint per acre Basagran was applied for postemergent weed control on June 25. Escape weeds were plowed with flat sweeps or pulled by hand. Plots that consisted of four 30-foot rows spaced 3 feet apart were arranged in a randomized complete block with six replications. Full canopy sprays of 2 pints per acre Bravo Weather Stik on July 11, July 24, August 7, and September 11 were followed by an application of a tank mixture of 2 pints per acre Bravo Weather Stik + 4 fluid ounces per acre Tilt on September 26. Fungicides were applied with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons per acre spray volume at 45 psi.

Disease Assessment: Final tomato spotted wilt (TSWV) hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made on September 24. Early leaf spot was rated together on October 15 using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot-damaged plants per row) were made immediately after plot inversion on October 15. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Results: Significant differences in TSWV incidence, leaf spot severity, and yield were observed among the nine peanut cultivars. Highest incidence of TSWV was noted on Tifguard (Table 1). Incidence of TSWV was lower for Florida 07, AT3085RO, and AP-3 than McCloud, GA02C, and York. Early leaf spot was the dominate leaf spot disease. York had a lower leaf spot rating than all other peanut cultivars. Noticeable leaf spotting with moderate to heavy premature defoliation was noted on Georgia Green, GA02C, and AT3085RO. Since white mold pressure was low and negligible differences in disease incidence were seen between peanut cultivars, white mold hit counts are not included in the table. Highest yields were recorded for AP-3. Similar yields were noted for GA03L, Tifguard, Georgia Green, GA02C, McCloud, and AT3085RO.

Summary: Surprisingly, the TSWV rating for Tifguard was considerably higher compared with the majority of peanut cultivars screened. In other trials, Tifguard has been shown to be among the most TSWV-resistant peanut cultivars. Overall, virus ratings were too low to have a detrimental impact on peanut yield. Heavy leaf spotting and premature leaf loss certainly contributed to the lower yields for Georgia Green, GA02C, and AT3085RO.

AVERAGE YIELD AND DISEASE RATINGS OF SELECTED COMMERCIAL PEANUT CULTIVARS

Peanut cultivar	TSWV hits/60 ft[1]	Leaf spot rating[2]	Yield *lb/A*
AP-3	1.0 d	5.5 c	4568 a
GA03L	3.2 cd	4.4 e	3472 cd
Tifguard	7.7 a	5.1 cd	3692 bc
Georgia Green	3.3 bcd	6.6 a	3383 d
GA02C	5.2 bc	6.0 b	3402 d
York	4.8 bc	3.7 f	3800 bc
McCloud	5.7 ab	5.5 c	3538 bcd
AT3085RO	2.0 d	6.3 ab	3454 cd
Florida 07	2.3 d	5.0 d	3931 b

[1] TSWV incidence is expressed as the number of disease hits per 60 feet of row.
[2] Leaf spot was rated using the Florida 1 to 10 rating scale.
Means that are followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

INFLUENCE OF CROPPING SEQUENCE ON DISEASES AND NEMATODES AND ON THE YIELD OF PEANUT, COTTON, AND CORN IN SOUTHWEST ALABAMA, GCREC

A. K. Hagan, H. L. Campbell, K. S. Lawrence, K. L. Bowen, and M. D. Pegues

Objective: (1) To assess the impact of corn cropping frequency on the severity of diseases of peanut as well as on populations of the southern root-knot nematode on corn, cotton, and peanut; and (2) To define the agronomic benefits of corn as a rotation partner with peanut and cotton.

Production Methods: On March 17, 211 pounds per acre of 11-19-19 analysis fertilizer amended with 10 pounds per acre of sulfur and 3 pounds per acre of zinc as well as 2 pints per acre of Prowl herbicide were broadcast and lightly incorporated. The entire study area was ripped and bedded on March 17. Roundup WeatherMax at 22 fluid ounces per acre was broadcast over the areas scheduled to be planted to cotton, peanut, and corn on May 7. The experimental design was a randomized complete block with four replications. Plots for individual rotation sequences consisted of eight rows on 38-inch centers that were 30 feet in length.

Corn: The experimental design for corn was a split plot with crop sequence as the whole plot and a soil insecticide/nematicide treatment as the split plot. Individual four-row subplots received either 6.5 pounds per acre of Counter 15G in-furrow or served as a non-treated control. On March 21, the corn variety Pioneer 31G97 was planted. On April 22, 400 pounds per acre of ammonium sulfate was broadcast. A tank-mixture of Roundup WeatherMax at 22 fluid ounces per acre plus Atrazine at 1 quart per acre was applied to the plots planted to corn. Corn plots were harvested on August 20.

Cotton: The cotton variety DPL 555BR was planted on May 12. Thrips control on cotton was provided by an in-furrow application of 5 pounds per acre of Temik 15G. An application of Roundup Weathermax at 22 fluid ounces per acre on May 30 to cotton was followed by an application of Caparol at 1.5 pints per acre + MSMA at 2 pints per acre + LI700 at 2 quarts per 100 gallons of spray volume applied postdirect on June 27. Escape weeds were pulled by hand. The plant growth regulator Stance at 2 fluid ounces per acre was applied to cotton on June 18, June 20, and July 19. Cotton was prepared for harvest with an application of Diuron at 1ounce per acre + Dropp 50W at 2 ounces per acre + Boll Buster at 1 pint per acre + Crop Oil at 1 quart per 100 gallons of spray volume on September 10 and September 16. Cotton plots were picked on September 24.

Peanut: In 2008, the experimental design for the peanut crop sequences was a split plot with crop sequence as the whole plot and a soil fungicide treatment as the split plot. Individual four-row subplots received either a single broadcast application of 2.9 pounds per acre of Moncut 70DF on July 24 or served as a non-treated control. The peanut cultivar GA03L was planted on May 21 with 6.5 pounds per acre of Temik 15G placed in-furrow for thrips control. Weed control on peanut was obtained with an application of Gramoxone Inteon at 8 fluid ounces per acre + Storm 4L at 1 pint per acre on June 18 followed by an application of Cadre 70DG at 2 ounces per acre + Strongarm 84WDG at 0.225 ounce per acre + Poast at 1.5 pints per acre + a non-ionic surfactant at 2 quarts per 100 gallons of spray volume on June 27. Full canopy sprays of Bravo Weather Stik 6F at 1.5 pints per acre were made for leaf spot and rust control using an ATV-mounted boom sprayer with three TX-8 nozzles per row at 10 gallons per acre spray volume at 45 psi on June 25, July 9, July 24, August 6, August 18, September 5, and September 18. Peanut plots were combined on October 14. Pod yields were reported at 10 percent moisture.

Disease and Nematode Assessment: The occurrence of foliar diseases in corn was visually assessed on June 24 on the ear leaf on a 0 to 10 scale where 0 = no disease, 1 = 1 to 10 percent, 2 = 11 to 20 percent, 3 = 21 to 30 percent, 4 = 31 to 40 percent, etc. of leaf area diseased. In peanuts, tomato spotted wilt (TSWV) hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made on September 21. Early and late leaf spot were rated on September 21 and October 2 using the 1-10 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 leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 =

leaf spots numerous and ≤ 50 percent defoliation, 7 = leaf spots very numerous and ≤ 75 percent defoliation, 8 = numerous leaf spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spots and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Rust severity was assessed on October 2 using the ICRISAT 1 to 9 rating scale where 1 = no disease and 9 = 80 to 100 percent of leaves withered. White mold (WM) hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot damaged plants per row) were made immediately after the plots were dug on October 2. Soil samples for a nematode assay from the corn, peanut, and cotton plots were collected but have not yet been processed.

Results

Corn: Regardless of the crop sequence, minimal foliar disease activity was observed on corn. Symptoms of destructive diseases such as southern rust, northern corn leaf blight, and southern corn leaf blight were not seen; only a low level of common rust was present. Since the soil treatment x crop sequence interaction for corn yield was not significant, corn yield data presented in Table 1 were pooled across crop sequence. Counter 15G insecticide/nematicide failed to increase corn yields above those reported for the non-treated control (Table 1).

Yields were lower for the continuous corn than where corn followed one or two years of peanuts along with two years of cotton but were similar to the cotton-corn-corn and corn-cotton-corn crop sequences (Table 2).

Peanut: While diseases were less prevalent, particularly due to TSWV and white mold, than had been seen in previous years, crop sequence had a significant impact on the disease severity. Incidence of TSWV was similar for all crop sequences (Table 3). Leaf spot severity was significantly higher in the continuous peanuts than where peanut followed one or two years of corn or cotton, which had similar disease ratings. Reductions in leaf spot ratings for peanuts following corn or cotton were similar. White mold incidence was higher on the continuous peanuts than on peanut grown behind one year of cotton or corn but was similar to the counts where peanuts followed two years of corn or cotton. Peanut rust was not observed on peanut in 2008.

For peanut, higher yields were seen where peanut was cropped behind one or two years of corn as well as two years of cotton than for continuous peanuts (Table 3). The peanut-cotton-peanut rotation and continuous peanuts had similar yields.

Low white mold pressure limited the response of peanut to the soil fungicide Moncut 70DF (Table 4). A non-significant soil fungicide x crop sequence interaction for white mold incidence and yield indicates that the rankings for Moncut 70DF and non-treated peanuts were similar for all peanut crop sequences. As a result, white mold ratings and yield presented in Table 3 were pooled across crop sequences. While a significant reduction in white mold incidence was obtained with Moncut 70DF, yield for the Moncut 70DF and the non-treated control did not significantly differ.

Cotton: In contrast to peanut and corn, cotton yields were similar regardless of cropping frequency (Table 5).

Summary: Crop sequence had a significant impact on disease severity in peanut but not in cotton or corn. In peanut, the highest leaf spot and white mold ratings were noted for continuous peanuts. Although low to moderate root knot nematode populations were present in some corn plots in previous years, they apparently had little if any impact on yield as indicated by the failure of Counter 15G insecticide/nematicide to boost corn yields. Over the six-year study period, crop sequence influenced the yield of corn and peanut but not cotton. With corn and peanut, lowest yields were seen where either was maintained in a monoculture.

TABLE 1. AVERAGE YIELD RESPONSE OF CORN ACROSS ALL CROPPING SEQUENCES TO COUNTER 15G INSECTICIDE/NEMATICIDE

Treatment and rate/A	Yield *bu/A*
Counter 15G 6.5 lb	107.6 a
Non-treated control	108.6 a

Means in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (P=0.05).

TABLE 2. IMPACT OF CROP SEQUENCE ON THE YIELD OF CORN AND ROOT KNOT NEMATODE JUVENILE COUNTS

Crop sequence						Root-	Corn
2003	2004	2005	2006	2007	2008	knot [1]	*bu/A*
Corn	Corn	Corn	Corn	Corn	Corn	--	104 d
Corn	Corn	Corn	Peanut	Corn	Corn	--	109 c
Peanut	Corn	Peanut	Corn	Peanut	Corn	--	116 a
Peanut	Peanut	Corn	Peanut	Peanut	Corn	--	111 ab
Cotton	Corn	Cotton	Corn	Cotton	Corn	--	106 bcd
Cotton	Corn	Corn	Cotton	Corn	Corn	--	100 d
Cotton	Corn	Corn	Corn	Cotton	Corn	--	109 bc
Cotton	Cotton	Corn	Cotton	Cotton	Corn	--	111 ab

[1] Number of J2 cotton root knot nematode (*Meloidogyne incognita* race 3) juveniles per 100 cc soil.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

TABLE 3. IMPACT OF CROP ROTATION ON THE LEVEL OF DAMAGE ATTRIBUTED TO DISEASES AND NEMATODES IN PEANUT IN 2008

Crop sequence						Root-		Leaf spot	White	Yield
2003	2004	2005	2006	2007	2008	knot[1]	TSWV[2]	rating[3]	mold[2]	lb/A
Peanut	Peanut	Peanut	Peanut	Peanut	Peanut	--	3.8 a	4.5 a	3.1 a	4238 b
Corn	Peanut	Corn	Peanut	Corn	Peanut	--	3.3 a	3.4 b	1.0 b	4953 a
Corn	Corn	Peanut	Corn	Corn	Peanut	--	3.0 a	3.0 b	1.8 ab	4969 a
Cotton	Peanut	Cotton	Peanut	Cotton	Peanut	--	4.3 a	3.0 b	1.4 b	4311 b
Cotton	Cotton	Peanut	Cotton	Cotton	Peanut	--	2.3 a	2.8 b	1.5 ab	4793 a

[1] Number of J2 root knot nematode juveniles per 100 cc soil sample.
[2] TSWV and white mold incidence is expressed as number of hits per 60 foot of row.
[3] Early and late leaf spot was rated on October 2 using the Florida 1 to 10 scoring system.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

TABLE 4. IMPACT OF MONCUT 70DF ON PEANUT YIELD AND WHITE MOLD INCIDENCE AVERAGED ACROSS ALL PEANUT CROPPING SEQUENCES IN 2008

Treatment and rate/A	White mold[1]	Yield *bu/A*
Moncut 70DF	0.6 b	4659 a
Non-treated control	3.0 a	4652 a

[1] White mold incidence is expressed as number of hits per 60 foot of row.
Means in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (P=0.05).

TABLE 5. IMPACT OF CROPPING SEQUENCE ON COTTON YIELD

Crop sequence						Root-	Cotton[1]
2003	2004	2005	2006	2007	2008	knot	*lbA*
Cotton	Cotton	Cotton	Cotton	Cotton	Cotton	--	2643 a
Peanut	Peanut	Cotton	Peanut	Peanut	Cotton	--	2394 a
Peanut	Cotton	Peanut	Cotton	Peanut	Cotton	--	2439 a
Peanut	Cotton	Cotton	Peanut	Cotton	Cotton	--	2609 a
Cotton	Cotton	Cotton	Peanut	Cotton	Cotton	--	2439 a
Cotton	Cotton	Cotton	Corn	Cotton	Cotton	--	2507 a

[1] Seed cotton yield.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

INFLUENCE OF CROPPING SEQUENCE ON DISEASES AND NEMATODES AND ON THE YIELD OF PEANUT, COTTON, AND CORN IN CENTRAL ALABAMA, PBU

A. K. Hagan, H. L. Campbell, K. L. Bowen, K. S. Lawrence, and S. P. Nightengale

Objective: (1) To assess the impact of corn cropping frequency on the severity of diseases in peanut, as well as on populations of the southern root-knot nematode on corn, cotton, and peanut; and (2) To define the agronomic benefits of corn as a rotation partner with peanut and cotton.

Methods: Prior to 2003, the cropping history of the study site was cotton in 2002, sweet corn in 2001, and either lupine or vetch in 2000. The cotton root-knot nematode (*Meloidogyne incognita* race 3) and the causal fungus of Fusarium wilt of cotton *(Fusarium oxysporum)* as well as the causal fungus of white mold (*Sclerotium rolfsii*) were established before the start of this study.

The study site was disked and chiseled on February 19, 2008. A hose-tow irrigation system was used to apply 0.7, 0.7, 0.6, 0.6, 1.1, and 0.8, acre inches of water on June 2, June 4, June 13, June 18, June 26, and July 8, respectively. Individual plots of corn, cotton, and peanut consisted of eight rows that were 30 feet in length. While the overall experimental design of this study was a randomized complete block with four replications, split plot treatments were added to the corn and peanut plots.

Corn: The experimental design for corn was a split plot with crop sequence as the whole plot and a soil insecticide/nematicide treatment as the split plot. Individual four-row subplots received either 6.5 pounds per acre of Counter 15G in-furrow or served as a non-treated control. A tank mixture of Carmix at 1 pint per acre and Lumax at 1 quart per acre was broadcast over the plots scheduled to be planted to corn and incorporated with a disk harrow on February 5. Plots planted to corn received a broadcast application of 176 pounds per acre of 34-0-0 analysis fertilizer on March 31, were leveled with a field cultivator, and then planted to Pioneer 31G65 corn on 30-inch centers. A layby application of 242 pounds per acre of ammonium nitrate [80 pounds per acre actual N] (34-0-0) was made to corn on May 1. Postemergent weed control was obtained with an application of 22 fluid ounces per acre of Roundup OrignialMax on April 25. Corn was combined on August 18.

Cotton: On May 7, 91 pounds per acre of 33-0-0 analysis fertilizer was broadcast and then incorporated with a leveling disk harrow in the plots planted to DPL 555 cotton on 3-foot centers later that day. Thrips and damping-off control on cotton was provided in-furrow applications of Temik 15G at 6.5 pounds per acre and Terraclor Super X at 8.0 pounds per acre. Broadcast applications of Roundup OriginalMax at 22 fluid ounces per acre were applied to the cotton on May 30, June 23, and July 1. Cotton plots were hand weeded or hoed as needed during the growing season. An application of a tank mixture of Def-6 at 1 quart per acre + Boll'd at 1 quart per acre + Dropp at 4 fluid ounces per acre was applied on September 17 to prepare the cotton for harvest. Cotton was picked on September 25.

Peanut: In 2008, the experimental design for the peanut crop sequences was a split plot with crop sequence as the whole plot and Moncut 70DF soil fungicide treatment as the split plot. Individual four-row subplots received either a single broadcast application of 2.9 pounds per acre Moncut or remained untreated. On May 29, plots were prepared for planting with a leveling disk harrow. On May 30, a preemergent application of Pendant at 1 quart per acre was incorporated with a leveling disk harrow. The peanut cultivar Georgia Green was planted in single rows on 3-foot centers on May 30 with Temik 15G at 6.5 pounds per acre applied in-furrow. Dual at 1.5 pints per acre was broadcast over the peanut plots on June 4. On July 23, Poast at 1.0 quart per acre was broadcast over the peanuts for postemergent grass control. Peanut plots were hand weeded as needed during the growing season. Leaf spot control on peanut was maintained with applications of Echo 720 at 30 fluid ounces per acre on July 2, July 17, July 30, August 14, August 28, September 11, and September 26. As previously noted, an application of Moncut 70DF at 2.9 pounds per acre was made on July 30 to four of eight rows of each peanut plot. Peanuts were inverted on October 17 and picked on October 22.

Disease and Nematode Assessment: The occurrence of foliar diseases in corn was visually assessed on June 24 on the ear leaf on a 0 to 10 scale where 0 = no disease, 1 = 1 to 10 percent, 2 = 11 to 20 percent, 3 = 21 to 30 percent, 4 = 31 to 40 percent, etc. of leaf area diseased. Early leaf spot severity on peanut was rated using the Florida 1 to 10 peanut leaf spot scoring system on October 11 and October 16. White mold hit counts (one hit is defined as ≤ 1 foot of consecutive white mold damaged plants per row) were made on October 17. Incidence of tomato spotted wilt virus (TSWV) in peanut was assessed on August 27 by counting the number of TSWV hits (one hit is defined as ≤ 1 foot of consecutive TSWV-damaged plants per row). Soil samples for a nematode assay, which were taken on August 22, September 19 and October 3 from the corn, peanut, and cotton plots, respectively, were processed using the sugar flotation method.

Results

Corn: Regardless of the crop sequence, no noticeable disease activity was observed on corn. Since the soil treatment x crop sequence interaction for cotton root knot nematode juvenile counts and corn yield was not significant (P=0.05), data for both variables that are presented in Table 1 were pooled across cropping sequences. Counts of cotton root knot nematode juveniles (J2) on corn along with the yield of corn were similar for the Counter 15G insecticide/nematicide-treated corn and the non-treated control (Table 1).

In 2008, crop sequence had a significant influence on cotton root knot juvenile counts and on the yield of corn. Lowest juvenile counts were seen where corn followed one or two years of peanut (Table 1). In contrast, highest juvenile counts were recorded where corn followed one or more years of either cotton or corn. Influence of the previous corn and cotton crop on juvenile counts on corn in 2008 was similar. Corn cropped behind one or two years of peanut yielded higher compared with one or more years of corn or cotton. Equally low yields were seen when corn followed one or more years of corn or cotton as well as when corn was planted continuously for six years.

Peanut: Occurrence of early leaf spot and white mold as well as peanut yield was significantly influenced by crop sequence. In contrast, TSWV hit counts were similar for all peanut crop sequences (Table 3). Early leaf spot ratings were significantly higher for continuous peanuts compared with peanuts behind two years of cotton but not one year of corn or cotton along with two years of corn. Incidence of white mold was significantly higher for the continuous peanuts compared with the other peanut cropping sequences. One or two years of either corn or cotton proved equally effective in helping to suppress white mold on peanut. Yield for the continuous peanuts was significantly below that of peanuts cropped behind one or two years of either cotton or corn. Peanuts following two years of cotton had higher yields compared with peanut following one or two years of corn. Peanut cropped after one year of corn and cotton had similar yields.

When averaged across all cropping sequences, a single application of 2.9 pounds per acre of Moncut 70DF gave approximately 61 percent control of white mold (Table 4). Across all peanut crop sequences, yield gains ranging from 628 to 980 pounds per acre were obtained with the postplant application of Moncut 70DF.

Cotton: Cotton following one or two years of peanut had significantly higher yields compared with cotton cropped behind cotton (Table 5). Yields for cotton following one and two years of peanut were similar. Also, impact of the previous corn and cotton crops on the yield of current year's cotton crop was similar.

Summary: Crop sequence had a significant impact on the yield of cotton and corn as well as diseases and yield of peanut. Yields were higher when corn and cotton followed peanut. With both cotton and corn, yield gains behind one and two years of peanut were similar. As a result, maximum corn and cotton yields can be maintained in a one year out rotation with peanut. When compared with continuous peanuts, a reduction in early leaf spot ratings was seen only with the peanuts cropped behind two years of cotton. One or two years of cotton or corn between peanut crops dramatically reduced the incidence of white mold as well as significantly increased peanut yield. Regardless of the crop sequence, sizable yield gains were obtained with a mid-summer application of the fungicide Moncut 70DF.

TABLE 1. IMPACT OF COUNTER INSECTICIDE/NEMATICIDE TREATMENT ON COTTON ROOT KNOT JUVENILE COUNTS AND CORN YIELD WHEN AVERAGED ACROSS ALL CROPPING SEQUENCES

Treatment and rate/A	Cotton root knot counts[1]	Yield *bu/A*
Counter 15G 6.5 lb	341 a	126 a
Non-treated control	366 a	120 a

[1]Number of J2 cotton root knot nematode *(Meloidogyne incognita* race 3) juveniles per 100 cc soil sample.
Means in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (P=0.05).

TABLE 2. IMPACT OF CROP SEQUENCE ON COTTON ROOT KNOT NEMATODE COUNTS AND ON THE YIELD OF CORN

Crop sequence							
2003	2004	2005	2006	2007	2008	Cotton root-knot counts[1]	Yield *bu/A*
Corn	Corn	Corn	Corn	Corn	Corn	298 bcd	106 e
Corn	Corn	Corn	Peanut	Corn	Corn	330 abc	128 bc
Peanut	Corn	Peanut	Corn	Peanut	Corn	74 d	141 ab
Peanut	Peanut	Corn	Peanut	Peanut	Corn	159 cd	151 a
Cotton	Corn	Cotton	Corn	Cotton	Corn	516 ab	113 de
Cotton	Corn	Corn	Cotton	Corn	Corn	362 abc	121 cd
Cotton	Corn	Corn	Corn	Cotton	Corn	528 ab	109 de
Cotton	Cotton	Corn	Cotton	Cotton	Corn	561 a	113 de

[1] Number of J2 cotton root knot nematode (*Meloidogyne incognita* race 3) juveniles per 100 cc soil.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

TABLE 3. IMPACT OF CROP ROTATION ON THE LEVEL OF DAMAGE ATTRIBUTED TO DISEASES AND NEMATODES IN PEANUT IN 2008

Crop sequence										
2003	2004	2005	2006	2007	2008	Root-knot[1]	TSWV[2]	Leaf spot rating[3]	White mold[2]	Yield *lb/A*
Corn	Peanut	Corn	Peanut	Corn	Peanut	--	5.0 a	5.1 ab	10.5 b	3967 b
Corn	Corn	Peanut	Corn	Corn	Peanut	--	3.3 a	5.0 ab	9.0 b	4118 b
Peanut	Peanut	Peanut	Peanut	Peanut	Peanut	--	3.0 a	5.8 a	22.0 a	2399 c
Cotton	Peanut	Cotton	Peanut	Cotton	Peanut	--	2.0 a	5.5 ab	6.0 b	4967 ab
Cotton	Cotton	Peanut	Cotton	Cotton	Peanut	--	2.5 a	4.6 b	6.0 b	5002 a

[1] Number of J2 root knot nematode juveniles per 100 cc soil sample.
[2] TSWV and white mold incidence is expressed as number of hits per 60 foot of row.
[3] Early and late leaf spot was rated on October 2 using the Florida 1 to 10 scoring system.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

TABLE 4. IMPACT OF MONCUT 70DF ON WHITE MOLD AND PEANUT YIELD RESPONSE

Crop sequence						White mold[1]		Peanut yield[4]		Yield
2003	2004	2005	2006	2007	2008	NT[2]	T[3]	NT	T	*lb/A*
Corn	Peanut	Corn	Peanut	Corn	Peanut	10.5 b	1.8 a	3967 a	4882 a	+978
Corn	Corn	Peanut	Corn	Corn	Peanut	9.0 b	1.8 a	4118 a	4754 a	+636
Peanut	Peanut	Peanut	Peanut	Peanut	Peanut	27.5 a	11.5 a	1909 b	2889 b	+980
Cotton	Peanut	Cotton	Peanut	Cotton	Peanut	6.5 b	5.5 a	4657 a	5277 a	+628
Cotton	Cotton	Peanut	Cotton	Cotton	Peanut	6.0 b	3.0 a	4586 a	5417 a	+868

[1] White mold damage is expressed as number of hits per 60 foot of row.
[2] NT = peanuts not treated with 2.9 pounds per acre of Moncut 70DF.
[3] T = peanuts treated with 2.9 pounds per acre of Moncut 70DF.
[4] Peanut yield is expressed as pounds per acre.
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

TABLE 5. IMPACT OF CROP SEQUENCE ON COTTON YIELD AND COTTON ROOT KNOT NEMATODE COUNTS

Crop sequence						Cotton root-knot counts[1]	Yield
2003	2004	2005	2006	2007	2008		*bu/A*
Cotton	Cotton	Cotton	Cotton	Cotton	Cotton	NA[2]	2375 b
Peanut	Peanut	Cotton	Peanut	Peanut	Cotton	NA	3178 a
Peanut	Cotton	Peanut	Cotton	Peanut	Cotton	NA	3003 a
Peanut	Cotton	Cotton	Peanut	Cotton	Cotton	NA	2376 b
Cotton	Cotton	Cotton	Peanut	Cotton	Cotton	NA	2450 b
Cotton	Cotton	Cotton	Corn	Cotton	Cotton	NA	2185 b

[1] Number of J2 cotton root knot juveniles per 100 cc soil sample.
[2] NA = nematode soil samples not yet processed
Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).

YIELDS AND DISEASE REACTION OF EXPERIMENTAL RUNNER AND VIRGINIA PEANUT LINES, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and B. E. Gamble

Objective: To assess the yields and reaction of experimental runner and Virginia peanut lines to tomato spotted wilt, leaf spot diseases, and white mold.

Methods: On May 8, experimental Virginia and runner type peanut breeding lines as well as several selected commercial runner peanut cultivars were planted at a rate of approximately six seed per foot of row in a field that was cropped to peanut after two years of cotton using conventional tillage practices in a fine Dothan sandy loam (organic matter <1 percent) at the Wiregrass Research and Extension Center in Headland, Alabama. Gypsum at a rate of 600 pounds per treated acre was applied on a 14-inch band over the row middle on June 20. Preemergent weed control was obtained with a broadcast application of 1.0 quart per acre of Sonalan and 0.45 ounce per acre of Strongarm on April 25. Poast Plus at 1.5 pint per acre was applied on July 10 to control escaped grasses. Escape weeds were plowed with flat sweeps or pulled by hand. Temik 15G at 6.5 pounds per acre was placed in-furrow at planting to control thrips. Leaf spot and stem rot control was obtained with applications of a generic chlorothalonil at 1.5 pints per acre on June 9, June 24, July 21, August 18, August 29, and September 13 (maturity group 4) and Abound 2SC at 18.5 fluid ounces per acre on July 8 and August 4. The test area received 1.0, 1.0, 1.0, 1.0, 0.75, and 0.5 acre inches of water via a center pivot on June 3, June 10, July 21, August 4, September 11, and September 30, respectively. Plots that consisted of two 20-foot rows spaced 3 feet apart were arranged in a randomized complete block.

Disease Assessment: Final tomato spotted wilt virus (TSWV) hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made on September 8, September 15, and September 28 for the maturity group 1, 2 and then 3 and 4 lines. Early and late leaf spot were rated together on September 8, September 22, October 1, and October 9 on the maturity group 1, 2, 3, and 4 lines, respectively, using the 1-10 Florida peanut leaf spot scoring system where 1 = no disease, 2 = very few spotted leaves in canopy, 3 = few spotted leaves in lower and upper canopy, 4 = some leaf spotting and ≤ 10 percent defoliation, 5 = leaf spotting noticeable and ≤ 25 percent defoliation, 6 = spotted leaves numerous and ≤ 50 percent defoliation, 7 = spotted leaves very numerous and ≤ 75 percent defoliation, 8 = numerous spots on few remaining leaves and ≤ 90 percent defoliation, 9 = very few remaining leaves covered with leaf spot and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. White mold hit counts (one hit was defined as ≤ 1 ft of consecutive white mold-damaged plants per row) were made immediately after plot inversion on September 15, September 26, October 1, and October 10 on the maturity group 1, 2, 3, and 4 lines, respectively. Yields were reported at 7 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Weather: Rainfall totals were below the historical average in June and September but were average to well above average for July and August.

Results: Incidence of TSWV in the Virginia standard NC-7, Florunner, TxL061821, and TxL061816 were significantly higher compared with the remaining experimental peanut lines and runner commercial standards GA02C, C-99R, and Florida 07. While the fewest TSWV hits were recorded for UF07305, other lines with similar counts were UF07303, GA052524, GA052527, GA052529, N03081T, 31-1314, C724-19-25, and Florida 07. Both early and late leaf spots were noted on the earlier maturing lines, but late leaf spot was the dominant leaf spot disease on the maturity group 3 and 4 peanuts. With the exception of Florida 07, maturity group 1 breeding lines often had lower leaf spot ratings compared with the later maturing peanut lines. The highest leaf spot rating was recorded for GA052527. White mold pressure was relatively low, but significant differences in loci counts between peanut lines were noted. Highest white mold hit counts, which were noted for 31-1314, TxL061816, and NO5008, were significantly above those recorded for the commercial Virginia standard NC-7 and the runner standards GA02C, C-99R, and Florida 07. White mold incidence on many runner and Virginia-type lines was similar to low hit counts found on the commercial standards NC-7, GA02C, C-99R, and Florida 07. Yields of the runner breeding lines N03081T and UF07303 were significantly higher compared with the commercial standards GA02C, C-99R, and Florida 07.

Summary: With two exceptions, the Virginia breeding lines had significantly higher TSWV ratings than the most virus-resistant runner peanut breeding lines and commercial standards GA02C, C99R, and Florida 07. When compared with the above commercial standards, several of the runner breeding lines had similar if not superior resistance to TSWV resistance. Later maturing peanut lines usually had higher leaf spot ratings compared with those lines that matured two to four weeks earlier. Several of the late maturing (group 4) peanut lines such as GA052527 that had high leaf spot ratings may prove too susceptible to leaf spot diseases for general release. While a few breeding lines suffered considerable white mold damage, low ratings for the majority were similar to disease-resistant commercial runner cultivars GA02C, Florida 07, and C-99R. Lowest yields were often recorded for those breeding lines that had the highest TSWV and/or white mold hit counts. When compared with the above

DISEASE RATINGS AND YIELDS FOR THE EXPERIMENTAL RUNNER AND VIRGINIA PEANUT BREEDING LINES, WREC

Peanut cultivar	Market type[1]	Maturity group	TSWV hits/40 ft [2]	Leaf spot rating [3]	White mold hits/40 ft [2]	Yield *lb/A*
NC-7	V	1	27.5 a	2.8 g	2.5 fgh	4247 hi
Florunner	R	2	27.3 a	4.3 bcd	6.3 bcd	3004 k
UF07303	R	3	7.3 fgh	4.3 bcd	3.3 defgh	6498 ab
UF08301	R	2	11.0 def	3.8 def	3.3 defgh	4819 fgh
UF07305	R	2	4.0 h	2.8 g	0.8 h	5636 cde
GA052524	R	4	7.3 fgh	4.8 b	2.3 fgh	5999 bc
GA052527	R	4	7.8 efgh	5.6 a	2.8 efgh	5581 cdef
GA052529	R	4	4.5 gh	4.6 bc	2.5 fgh	5872 bcd
N04072CT	V	2	19.0 b	4.0 cde	4.5 cdefg	3902 ij
N05008	V	2	11.0 def	3.5 ef	9.3 ab	3267 jk
N03081T	V	1	7.5 fgh	2.0 g	0.3 h	6988 a
VT 024051	V	1	18.0 bc	3.5 ef	5.0 cdef	4229 hi
CRSP708	R	3	16.8 bc	3.6 def	6.0 bcde	5182 defg
CRSP911	V	3	14.5 bcd	3.6 def	6.8 bc	4891 efgh
C724-19-25	R	2	5.7 fgh	2.8 g	1.3 gh	4656 ghi
TxL061821	V	1	29.3 a	3.3 fg	6.3 bcd	2922 k
TxL061816	V	1	31.7 a	2.8 g	12.5 a	1915 l
31-1314	R	2	8.3 efgh	4.3 bcd	11.8 a	3385 jk
GA02C	R	3	13.0 cde	4.8 b	1.5 gh	5400 cdefg
C99R	R	3	9.8 defg	3.3 fg	0.5 h	5581 cdef
Florida 07	R	3	7.0 fgh	4.1 bcde	1.8 fgh	5427 cdef

[1] V = Virginia and R = runner-type peanut.
[2] TSWV and white mold severity is expressed as the number of disease loci per 40 feet of row.
[3] Leaf spot was rated using the Florida 1 to 10 leaf spot rating scale.
Means in each column are followed by the same letter are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

DISEASE REACTION AND YIELD RESPONSE OF COMMERCIAL RUNNER PEANUT CULTIVARS IN SOUTHEAST ALABAMA, WREC

A. K. Hagan, H. L. Campbell, K. L. Bowen, and B. E. Gamble

Objective: To compare the yields and reaction of commercial peanut cultivars and advanced breeding lines to tomato spotted wilt, leaf spot diseases, and white mold in a dryland production system.

Methods: On May 8, commercial and advanced peanut lines were planted at a rate of six seed per foot of row in a field that was cropped to peanut after two years of cotton using conventional tillage practices in a fine Dothan sandy loam (organic matter <1 percent). Gypsum at a rate of 600 pounds per treated acre was applied on a 14-inch band over the row middle on June 20. Weed, disease, and insect control were according to Alabama Cooperative Extension System recommendations. The test was irrigated as needed. Plots consisted of two 20-foot rows spaced 3 feet apart arranged in a randomized complete block.

Disease Assessment: TSWV hit counts (one hit was ≤ 1 foot of consecutive TSWV-damaged plants per row) were made on September 8, September 15, and September 28 for the early, mid-season, and late maturing peanut cultivars, respectively. Leaf spot diseases were rated together on September 8, September 15, and September 28 for the early, mid-season, and late maturing, respectively, using the 1-10 Florida peanut leaf spot scoring system. White mold hit counts (one hit was ≤ 1 foot of consecutive diseased plants per row) were made after digging on September 15, September 26, and October 3 for the early, mid-, and late maturing cultivars, respectively. Yields were reported at 7 percent moisture. Significance of treatment effects was tested by analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

Results: While the highest incidence of TSWV was noted in the breeding line AT 3-1114, the current industry standards Georgia Green, McCloud, and AT3085RO also had high TSWV ratings. Disease incidence in nine other cultivars and breeding lines was similar to the low TSWV loci counts found in Tifguard. While a low level of early leaf spot was present on some cultivars, late leaf spot dominated. Highest leaf spot ratings were recorded for AP-3, AT 3-1114, CRSP 895, GA02C, and GPS 1104. Leaf spot ratings for the industry standard Georgia Green were similar to all of the latter peanut lines except for GA02C and AP-3, which suffered heavier damage. Georgia Green and C-99R had the lowest leaf spot ratings. While white mold pressure was relatively low, noticeable disease development was observed on several peanut lines. Hit counts were higher on Florida 07, AT3085RO and C-724-19-25 than on the majority of peanut cultivars and breeding lines, while York, GA06G, and GA02C had the lowest hit counts. Yield for AP-3 and GA05E was higher than those for all cultivars except GA02C, GA06G, C-99R, GA07W, GPS 08-1, C-725-19-25, CRSP 895, and York. Cultivars that had the highest TSWV loci counts—particularly AT 3-1114, AT3085RO, McCloud, and Georgia Green—had among the lowest yields.

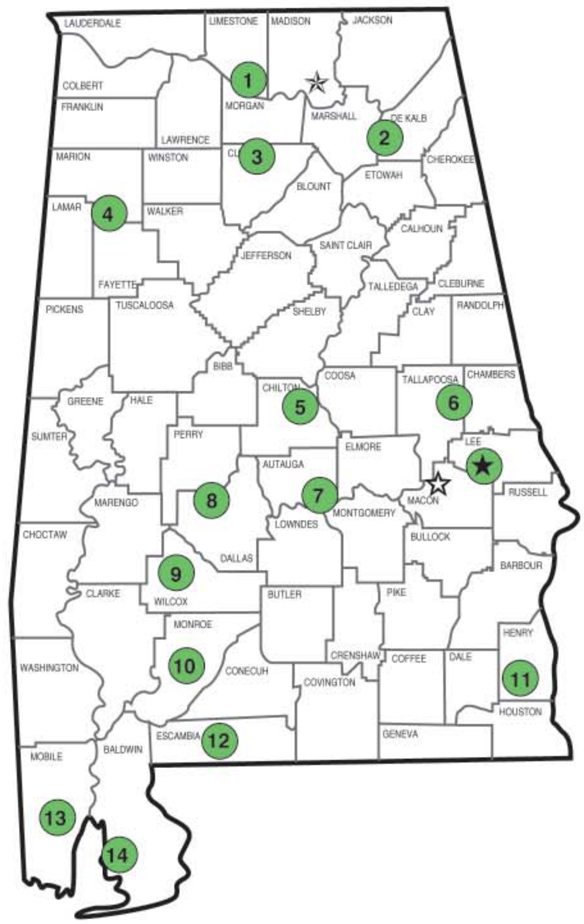
YIELDS AND REACTION OF PEANUT CULTIVARS AND ADVANCED BREEDING LINES TO SEVERAL DISEASES

Peanut cultivar	Maturity	TSWV hits/40 ft[1]	Leaf spot rating[2]	White mold hits/40 ft[1]	Yield *lb/A*
Andru II	Early	9.8 efghi	3.1 efgh	1.8 def	4922 efghij
AP-3	Mid	10.8 efgh	4.6 a	3.3 def	6118 a
AP-4	Mid	11.3 efgh	3.3 defg	1.5 ef	5078 defghi
AT 3-1114	Mid	30.0 af	4.0 abc	3.0 def	4226 j
AT 215	Early	8.5 gh	2.9 fgh	7.5 ab	4653 fghij
AT3085RO	Mid	17.5 bcd	3.5 cdef	6.8 abc	4535 hij
C-724-19-25	Mid	8.0 ghi	2.6 h	2.8 def	5667 abcde
C-99R	Late	12.5 defgh	3.6 cde	3.0 def	5855 abc
CRSP 702	Late	14.5 cdef	3.3 defg	1.5 ef	5273 bcdefghi
CRSP 895	Late	12.3 defgh	4.1 abc	2.8 def	5409 abcdef
EXP 27-1516	Mid	13.5 defg	3.3 defg	7.8 a	4468 ij
Florida 07	Late	10.3 efghi	4.3 ab	2.5 def	5634 abcde
Florida Fancy[3]	Mid	10.0 efghi	3.0 efgh	5.0 abcd	4896 efghij
GA02C	Late	7.8 hi	4.5 a	0.3 f	6094 ab
GA03L	Mid	9.5 efghi	3.0 efgh	2.0 def	5559 abcde
GA05E	Late	11.8 efgh	3.6 cde	3.3 def	6145 a
GA06G	Mid	9.3 fghi	3.0 efgh	0.3 f	5741 abcd
GA07W	Mid	10.3 efghi	2.9 fgh	2.8 def	5885 abc
Georgia Green	Mid	20.7 b	3.8 bcd	3.5 def	4566 hij
Georgia Greener	Mid	11.3 efgh	2.8 gh	4.3 bcde	5335 bcdefg
GPS 08-1	Late	11.0 efgh	2.9 fgh	1.5 ef	5751 abcd
GPS 08-2	Late	15.0 cde	3.0 efgh	3.8 cde	4947 efghij
GPS 1104	Late	11.5 efgh	4.3 ab	1.5 ef	4724 fghij
McCloud	Mid	19.8 bc	3.0 efgh	2.5 def	4612 ghij
Tifguard	Mid	4.8 i	2.9 fgh	3.8 cde	5165 cdefghi
York	Late	9.0 fghi	3.8 bcd	0.3 f	5794 abcd

[1]TSWV and white mold severity is expressed as the number of hits per 40 feet of row.
[2] Leaf spot was rated using the Florida 1 to 10 leaf spot rating scale.
[3] All cultivars were a runner-market type except for Florida Fancy, which was a Virginia-market type.
Means followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test ($P \leq 0.05$).

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.