Peanut Disease Control Field Trials, 2007: Standard Fungicide Trials

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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 2007 production season at the WREC, temperatures were at or above historical averages (Figure 1), and monthly rainfall totals were well below historical averages throughout the entire growing season (Figure 2). As a result, leaf spot severity was much below that generally observed in all trials whereas soil-borne disease incidence was reduced and little impact was observed on yield.

At the GCREC, temperatures were at or above historical averages throughout the entire growing season (Figure 1), and rainfall was at or near normal throughout the entire growing season (Figure 2). More consistent rainfall throughout the growing season led to normal leaf spot severity and higher rust severity. Stem rot incidence was lower than had been previously observed resulting in little impact on yield.

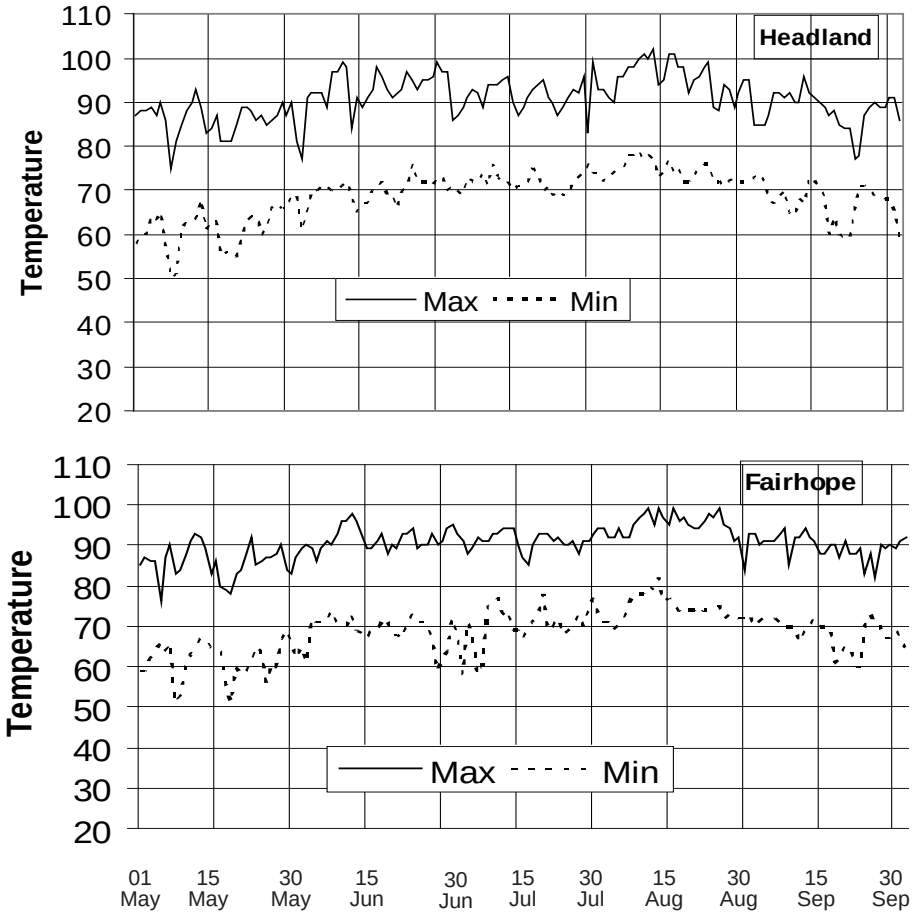

Figure 1. Daily minimum and maximum temperature (°F), May to October 2007.

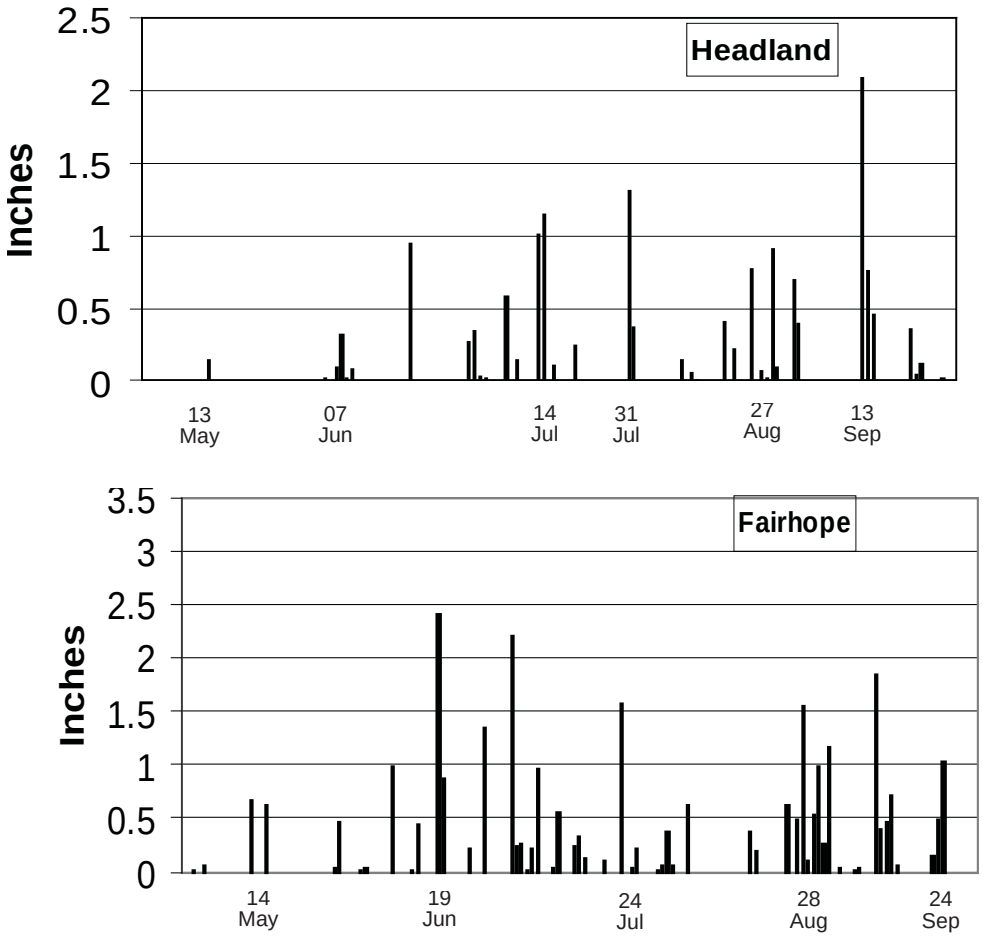

Figure 2. Daily precipitation (inches), May to October 2007.

RECOMMENDED FUNGICIDE PROGRAMS COMPARED FOR CONTROL OF LEAF SPOT AND CYLINDROCLADIUM BLACK ROT (CBR) ON THREE PEANUT CULTIVARS, WREC

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

Objective: To assess the effectiveness of recommended fungicide treatment programs for the control of leaf spot diseases and Cylindrocladium black rot (CBR) on several partially disease-resistant peanut cultivars in an irrigated production system in Southeast Alabama.

Material and Methods: The test site was paratilled on February 27 and turned with a moldboard plow on March 15. On May 18, the peanut cultivars AP-3 (maturity group 4) and GA02C (maturity group 5) were planted at the Wiregrass Research and Extension Center in Headland, Alabama, 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. Weed control was obtained with a preplant application of Sonalan at 1 quart per acre + 0.45 ounce per acre of Strongarm on April 30. Escape weeds were pulled by hand. A center pivot irrigation system was used to apply 1 inch of water on June 7, June 18, June 25, July 5, July 9 , July 23, July 30, August 9, and August 23. 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 2, July 17, August 1, August 15, August 30, September 11, and September 25 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 was added to Folicur 3.6F tank mixtures.

Disease Assessment: Early and late leaf spot (LS) were rated together on October 4 on AP-3 and on October 26 for GA02C 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot and Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot- or CBR-damaged plants per row) were made immediately after plot inversion on October 9 for AP-3 and October 26 for GA02C. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in the table were pooled across peanut cultivars.

Weather: Rainfall totals for May, June, July, and August were below to well below the historical average for this location; afternoon temperatures in July and August were higher than normal.

Results: As a result of hot and dry weather patterns, early and late leaf spot activity was lower than anticipated. Early leaf spot was the primary leaf spot disease observed. Poorest leaf spot control on both peanut cultivars, which was characterized by moderate leaf spotting and a low level of defoliation, was given by the Artisan 3.6E program (Table 1). Abound 2SC, Headline 2.09EC, and Absolute 500F programs, all of which minimized symptoms to light leaf spotting in the lower canopy, controlled leaf spot diseases better than the season-long Bravo Ultrex standard. Stem rot incidence, which was very low, was similar for all fungicide programs. When compared with the Bravo Ultrex standard, a reduction in CBR incidence was obtained only with the Folicur 3.6F program. The CBR hit counts for the remaining fungicide programs were similar. Yield response with the Folicur 3.6F program was also significantly higher than that seen with the Bravo Ultrex standard and Artisan 3.6E programs but similar to that obtained with the remaining fungicide programs. Yields for the remaining fungicide programs were similar to those of the above programs.

Overall, AP-3 suffered less leaf spot damage and had noticeably higher yields compared with GA02C (Table 2). The CBR hit counts for some fungicide programs were higher on AP-3 than on GA02C.

Artisan 3.6E gave less effective control of primarily early leaf spot than all other programs except for Folicur 3.6F (Table 2). While the Abound 2SC program controlled leaf spot diseases better than both the Artisan 3.6E and Folicur 3.6F programs, leaf spot ratings for this and the remaining programs were equally effective against both diseases. Due to low stem rot pressure, none of the fungicide programs tested impacted the incidence of this disease. Significant differences in hit counts for CBR were noted between fungicide programs. The Folicur 3.6F program gave better CBR control than the Bravo Ultrex, Bravo Ultrex + Moncut 70DF, and Artisan 3.6E programs. Disease hit counts for the remaining fungicide programs and those listed above were similar. Yield for the Folicur 3.6F was higher compared with the Artisan 3.6E program. Otherwise, no significant differences in yield between fungicide programs on AP-3 were noted.

TABLE 1. IMPACT OF RECOMMENDED FUNGICIDE PROGRAMS ON THE CONTROL OF LEAF SPOT DISEASES AND CBR AS WELL AS PEANUT YIELD, WREC

Treatment and rate/A	Application timing	Leaf spot rating[1]	CBR hits/60 ft[2]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	3.4 b[3]	5.6 a	4595 b
Bravo Ultrex 1.4 lb	1,2,7	3.3 bc	1.6 b	5064 a
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	2.9 cd	5.3 a	4731 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	3.9 a	4.7 ab	4592 b
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.7 de	4.9 ab	4964 ab
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.6 de	3.8 ab	4855 ab
Headline 2.09EC 9 fl oz	3,5			
Absolute 500F 3.5 fl oz	1,2	2.4 e	5.1 a	4761 ab
Bravo Ultrex 1.4 lb	3,4,5,6,7			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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).

On the later maturing GA02C peanut, the best leaf spot control was obtained with the Headline 2.09E and Absolute 500F programs (Table 2). Both fungicide programs limited leaf spotting to the lower canopy and minimized premature defoliation. In contrast, the Artisan 3.6E and Bravo Ultrex-treated GA02C peanuts suffered from moderate leaf spotting as well as nearly 25 percent premature defoliation. While Folicur 3.6F, Abound 2SC, and Bravo Ultrex + Moncut 70DF programs were more effective against leaf spot than the latter programs, none gave the level of disease control obtained with Headline 2.09E and Absolute 500F programs. The CBR hit counts for the Folicur 3.6F program were lower compared with the Absolute 500F but not the remaining five fungicide programs. When compared with the Absolute 500F program, significant yield gains were posted with the Folicur 3.6F and Bravo Ultrex + Moncut 70DF programs.

Summary: The Artisan 3.6F program consistently gave poorer leaf spot control compared with most other fungicide programs. To avoid leaf spot control failures with this fungicide, particularly during wetter summers, addition of 1.0 pint per acre of a chlorothalonil fungicide to Artisan 3.6E tank mixtures is recommended. Surprisingly, the Folicur 3.6F program proved fairly effective in reducing the incidence of CBR on peanut. This CBR control is reflected in the superior yield response that was often obtained with this fungicide program.

TABLE 2. IMPACT OF RECOMMENDED FUNGICIDE PROGRAMS ON THE CONTROL OF LEAF SPOT AND CBR AS WELL AS YIELD RESPONSE OF TWO PARTIALLY Disease-resistant PEANUT CULTIVARS, WREC

Treatment and rate/A	Application timing	Leaf spot rating[1]	CBR hits/60 ft[2]	Yield *lb/A*
AP-3				
Bravo Ultrex 1.4 lb	1-7	2.0 bc[3]	7.0 a	5046 ab
Bravo Ultrex 1.4 lb	1,2,7	2.4 ab	1.8 b	5506 a
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	1.9 bc	7.3 a	4858 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	3.0 a	7.7 a	4695 b
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	1.5 c	6.3 ab	5409 ab
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	1.9 bc	3.5 ab	5451 ab
Headline 2.09EC 9 fl oz	3,5			
Absolute 500F 3.5 fl oz	1,2	1.9 bc	2.8 ab	5427 a
Bravo Ultrex 1.4 lb	3,4,5,6,7			
GA02C				
Bravo Ultrex 1.4 lb	1-7	4.8 a	4.5 ab	4144 ab
Bravo Ultrex 1.4 lb	1,2,7	4.3 b	1.5 b	4622 a
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	3.9 b	3.3 ab	4604 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	4.9 a	2.5 ab	4489 ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.9 b	3.5 ab	4519 ab
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.3 c	4.0 ab	4259 ab
Headline 2.09EC 9 fl oz	3,5			
Absolute 500F 3.5 fl oz	1,2	3.0 c	7.5 a	4096 b
Bravo Ultrex 1.4 lb	3,4,5,6,7			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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).

IMPACT OF APPLICATION INTERVAL AND CONTROL OF LEAF SPOT DISEASES AND CYLINDROCLADIUM BLACK ROT (CBR) ON PEANUT WITH BRAVO ULTREX AND HEADLINE 2.09E, WREC

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

Objective: To determine the effect of extended application intervals on the effectiveness of Bravo Ultrex and Headline 2.09E for the control of leaf spot diseases and Cylindrocladium black rot on two partially disease-resistant peanut cultivars in an irrigated production system in a field maintained in a peanut – cotton rotation.

Material and Methods: The test site was paratilled on February 27 and turned with a moldboard plow on March 15. On May 18, the peanut cultivars AP-3 (maturity group 4) and GA03L (maturity group 4) were planted at the Wiregrass Research and Extension Center in Headland, Alabama, 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. Weed control was obtained with a preplant application of Sonalan at 1 quart per acre + 0.45 ounce per acre of Strongarm on April 30. Escape weeds were pulled by hand. A center pivot irrigation system was used to apply 1 inch of water on June 7, June 18, June 25, July 5, July 9 , July 23, July 30, August 9, and August 23. 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 at 2-week intervals on June 26, July 10, July 24, August 7, August 21, September 8, and September 21; at 3-week intervals on June 26, July 17, August 7, August 28, and September 21; and at 4-week intervals on June 26, July 24, August 21, and September 21 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: Early and late leaf spot (LS) were rated on July 17, August 1, August 14, August 28, September 13 and September 27 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 11 foot of consecutive stem rot- or CBR-damaged plants per row) were made immediately after plot inversion on October 11. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: Rainfall totals for May, June, July, and August 2007 were below to well below the historical average for this location; afternoon temperatures in July and August were higher than normal. Rainfall totals for September and October were average to above the historical average.

Results: Due to dry and often hot weather patterns throughout much of the summer, overall leaf spot pressure was very low in 2007.

Across both peanut cultivars, application interval had a significant impact on leaf spot control with Bravo Ultrex but not with the Headline 2.09E programs (Table 1). With Bravo Ultrex, leaf spot ratings increased as application intervals were lengthened from 2 to 4 weeks. Even at the highest leaf spot ratings recorded for the 4-week Bravo Ultrex program, only a few, scattered spotted leaves and no premature leaf shed was noted in the peanut canopy. Cylindrocladium black rot (CBR) was the most common soil disease observed. No reduction in CBR hit counts was obtained with any of the fungicide programs. Regardless of application intervals, yield response for all Bravo Ultrex and Headline 2.09E treatments was similar.

On the peanut cultivar AP-3, leaf spot control with Bravo Ultrex but not Headline 2.09E programs declined as application intervals increased from 2- to 3-weeks (Table 2). Leaf spot ratings for the 3- and 4-week Bravo Ul-

TABLE 1. APPLICATION INTERVAL AND CONTROL OF LEAF SPOT DISEASES AND CBR WITH BRAVO ULTREX AND HEADLINE 2.09E AS WELL AS THE EFFECT ON THE AVERAGE YIELD OF TWO PEANUT CULTIVARS

Fungicide regime and rate/A	——Application—— Timing	Interval	Leaf spot rating[1]	CBR hits/60 row ft[2]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	2-week	2.4 c[3]	5.9 a	5245 a
Bravo Ultrex 1.4 lb	1-5	3-week	2.7 ab	4.9 a	4867 a
Bravo Ultrex 1.4 lb	1-4	4-week	2.9 a	7.3 a	4825 a
Bravo Ultrex 1.4 lb	1,2,4,6,7	2-week	2.5 bc	6.4 a	5145 a
Headline 2.09E 9 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,3,5	3-week	2.7 ab	5.9 a	5094 a
Headline 2.09E 9 fl oz	2,4				
Bravo Ultrex 1.4 lb	1,4	4-week	2.7 ab	6.3 a	5182 a
Headline 2.09E 9 fl oz	2,3				

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] Means 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. APPLICATION INTERVAL AND CONTROL OF LEAF SPOT DISEASES AND CBR WITH BRAVO ULTREX AND HEADLINE 2.09E AS WELL AS THE EFFECT ON THE AVERAGE YIELD OF THE PEANUT CULTIVARS AP-3 AND GA03L

Fungicide regime and rate/A	——Application—— Timing	Interval	Leaf spot rating[1]	CBR hits/60 row ft[2]	Yield *lb/A*
AP-3					
Bravo Ultrex 1.4 lb	1-7	2-week	2.3 c3	5.3 ab	5276 a
Bravo Ultrex 1.4 lb	1-5	3-week	2.6 ab	4.3 b	5118 ab
Bravo Ultrex 1.4 lb	1-4	4-week	2.8 a	9.0 a	4761 b
Bravo Ultrex 1.4 lb	1,2,4,6,7	2-week	2.4 bc	7.0 ab	5184 ab
Headline 2.09E 9 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,3,5	3-week	2.5 bc	3.3 b	5306 ab
Headline 2.09E 9 fl oz	2,4				
Bravo Ultrex 1.4 lb	1,4	4-week	2.6 ab	4.8 b	5254 ab
Headline 2.09E 9 fl oz	2,3				
GA03L					
Bravo Ultrex 1.4 lb	1-7	2-week	2.6 a	6.5 a	5221 a
Bravo Ultrex 1.4 lb	1-5	3-week	2.8 a	5.5 a	4616 a
Bravo Ultrex 1.4 lb	1-4	4-week	2.9 a	5.5 a	4888 a
Bravo Ultrex 1.4 lb	1,2,4,6,7	2-week	2.6 a	5.8 a	5106 a
Headline 2.09E 9 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,3,5	3-week	2.9 a	8.5 a	4882 a
Headline 2.09E 9 fl oz	2,4				
Bravo Ultrex 1.4 lb	1,4	4-week	2.8 a	7.8 a	5118 a
Headline 2.09E 9 fl oz	2,3				

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] Means 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).

trex treatments were similar. Despite these differences in leaf spot ratings, overall disease pressure on AP-3, as indicated by disease ratings below 3, was very low. On the Bravo Ultrex-treated AP-3 peanut, incidence of CBR was higher at the 4- than the 3-week application interval. Application interval had no impact on CBR hit counts with the Headline 2.09E treatments. Yields declined as application intervals were extended from 2- to 4-weeks with Bravo Ultrex. In contrast, yields for the 2-, 3-, and 4-week Headline 2.09E treatments on AP-3 were similar.

On GA03L, application interval not only had no impact on the control of leaf spot diseases and CBR but yields for all Bravo Ultrex and Headline 2.09E treatments were similar (Table 2).

Summary: Under dry conditions throughout much of the production season, application interval had relatively little impact on the control of leaf spot diseases on partially disease-resistant peanut cultivars with recommended rates of Bravo Ultrex and Headline 2.09E in an irrigated production system. Overall leaf spot control as well as yield response did not drastically decline when application intervals for both fungicide programs were extended from 2 to 4 weeks. As expected, neither Bravo Ultrex alone or included in a treatment program with Headline 2.09E had a noticeable impact on the incidence of the soil disease Cylindrocladium black rot (CBR) on either peanut cultivar.

CHEMICAL CONTROL OF CYLINDROCLADIUM BLACK ROT (CBR) ON PEANUT, WREC

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

Objective: To evaluate at-plant and postplant applications of recommended and experimental fungicides for the control of Cylindrocladium black rot as well as leaf spot diseases on the partially disease-resistant peanut cultivars AP-3 and GA03L in an irrigated production system.

Materials and Methods: The test site was paratilled on February 27 and turned with a moldboard plow on March 15. On May 18, the peanut cultivars AP-3 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,. The test site has been maintained in a cotton–peanut rotation for more than 10 years and had a history of damaging CBR outbreaks in peanut. Weed control was obtained with a preplant application of Sonalan at 1 quart per acre + 0.45 ounce per acre of Strongarm on April 30. Escape weeds were pulled by hand. A center pivot irrigation system was used to apply 1 inch of water on June 7, June 18, June 25, July 5, July 9 , July 23, July 30, August 9, and August 23. 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 2, July 17, August 1, August 15, August 30, September 11, and September 25 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: Early and late leaf spot (LS) were rated together on September 25 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot and Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot- or CBR-damaged plants per row) were made immediately after plot inversion on October 8. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: While rainfall totals for May, June, July, and August were below to well below the historical average for this location, afternoon temperatures in June, July and August were higher.

Results: Since the cultivar x treatment interaction for leaf spot, stem rot, CBR, and yield were not significant, data presented in the table were pooled across peanut cultivars (Table 1). As a result of the hot and dry weather patterns, early and late leaf spot ratings were lower than anticipated. While the highest leaf spot ratings were recorded for the Folicur 3.6F program, only a moderate level of leaf spotting along with a low level of premature leaf loss, which had little or no impact on yield response, was noted. Among the remaining fungicide treatment regimes, the postplant Proline 480 and Provost 433SC programs gave better leaf spot control than the Abound 2SC program. Addition of the Proline 480 in-furrow at-planting to the Provost 433SC or postplant Proline 480 programs did not enhance leaf spot control. Due to very low stem rot incidence, no differences in the control of this disease was noted between fungicide regimes. The Provost 433SC and postplant Proline 480 programs that included an at-plant application of Proline 480 proved equally effective in controlling CBR. The CBR hit counts of the Provost 433SC (8 fluid ounces) programs with and without Proline 480 applied at-plant were similar. Incidence of CBR was higher on peanut receiving Bravo Ultrex full-season standard than for the Proline 480 and Provost 433SC programs that did not include Proline 480 at-plant treatment. Bravo Ultrex + Moncut 70DF, Abound 2SC, and Folicur 3.6F programs had little impact on CBR incidence. Yield response with the Provost 433SC and Proline 480 programs that included Proline 480 applied in-furrow (IF) were significantly higher than that obtained with the Bravo Ultrex +

TABLE 1. FUNGICIDE PROGRAM IMPACT ON THE CONTROL OF LEAF SPOT DISEASES AND CBR AS WELL AS ON PEANUT YIELD, WREC

Treatment and rate/a	Application timing	Leaf spot rating[1]	CBR hits/60 ft[2]	Yield *lb/a*
Bravo Ultrex 1.4 lb	1-7	2.9 bc[3]	8.8 a	4683 c
Bravo Ultrex 1.4 lb	1,2,7	2.7 c	4.4 bc	5194 ab
Provost 433SC 8 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	2.9 bc	6.5 ab	4952 bc
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Proline 480 5.7 fl oz	IF AP[4]	2.8 cd	1.0 cd	5412 a
Bravo Ultrex 1.4 lb	1,2,7			
Provost 433SC 8 fl oz	3,4,5,6			
Proline 480 5.7 fl oz.	IF AP[4]	2.8 cd	0.6 d	5366 a
Bravo Ultrex 1.4 lb	1,2,7			
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	2.6 d	4.9 b	5091 ab
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.1 b	5.4 b	4867 bc
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,7	3.4 a	5.5 b	5036 abc
Folicur 3.6F 7.2 fl oz	3,4,5,6			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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).
[4] IF AP = In-furrow application of Proline 480 at-planting.

Moncut 70DF, Abound 2SC, and Bravo Ultrex programs but not the Folicur 3.6F program. Despite better CBR control, the addition of Proline 480 in-furrow treatment to the Provost 433SC or Proline 480 programs did not result in a significant increase in yield over those of the same programs without the in-furrow treatment.

While overall leaf spot ratings on AP-3 were low, highest ratings were recorded for the Folicur 3.6F program (Table 2). The Proline 480 program gave better leaf spot control than the Bravo Ultrex standard, Abound 2SC, and Folicur 3.6F programs. The in-furrow Proline 480 application did not enhance the level of leaf spot control obtained with the Provost 433SC and Proline 480 programs. As was noted above, overall stem rot damage levels on AP-3 were very low (data not shown). Significant differences in CBR hit counts were noted between fungicide programs. When compared with the Bravo Ultrex standard as well as the Folicur 3.6F, Abound 2SC, and Bravo Ultrex + Moncut 70DF programs, a significant reduction in CBR incidence was obtained with the Provost 433SC and Proline 480 programs that included the at-plant application of Proline 480. Without the at-plant Proline treatment, CBR hit counts for the Provost 433SC and Proline 480 programs were similar to those for the Folicur 3.6F, Abound 2SC, and Bravo Ultrex + Moncut 70DF programs. Also, effectiveness of the Proline 480 and Provost 433SC programs against CBR was not significantly enhanced by the at-plant application of Proline 480. Yield for the Proline 480 program + Proline 480 applied at-plant was higher compared with the recommended Abound 2SC, Bravo Ultrex + Moncut 70DF, Folicur 3.6F, and standard Bravo Ultrex programs. Despite effective control of CBR, the Provost 433SC program that included Proline 480 at-plant had yields that were similar to the Folicur 3.6F, Abound 2SC, and Bravo Ultrex + Moncut 70DF programs. In addition, the Proline 480 at-plant treatment did not significantly increase yield response of the AP-3 peanut with the postplant Provost 433SC or Proline 480 programs.

Ranking of fungicide programs for the control of leaf spot diseases on GA03L did not greatly differ from the results seen on the AP-3 peanut cultivar. Again, Provost 433SC and Proline 480 alone or in combination with Proline 480 at-plant gave better leaf spot control than with the Folicur 3.6F program (Table 2). Also, the postplant Provost 433SC program was more effective in controlling leaf spot diseases than the recommended Abound 2SC program. As was noted on AP-3, the at-plant Proline 480 application did not enhance leaf spot control on GA03L with either Proline 480 or Provost 433SC. Minimal stem rot damage was seen in all GA03L plots (data not shown). Fungicide program had a significant impact on CBR incidence. Damage was heavier for the Bravo Ultrex-treated GA03L peanuts compared with Proline 480 or Provost 433SC in combination with Proline 480 at-plant, as well as Abound 2SC, and Folicur 3.6F programs. Disease incidence was similar for the Bravo Ultrex standard along with the Proline 480, Provost 433SC, and Bravo Ultrex + Moncut 70DF programs. On GA03L, all Provost 433SC and Proline 480 as well as the Abound 2SC, Folicur 3.6F, and Bravo Ultrex + Moncut 70DF programs had similar CBR hit counts.

While AP-3 had lower leaf spot ratings compared with GA03L, the actual level of disease development on both cultivars was low. In contrast, stem rot and CBR incidence on the two peanut cultivars was similar (Table 3). Overall, yield for AP-3 exceeded that recorded for GA03L. Differences in the leaf spot ratings for the two cultivars

probably were insufficient to be responsible for the differences in yield.

Summary: Overall, the level of leaf spot control provided by the four-block application Provost 433SC and Proline 480 programs was consistently better than that obtained with Folicur 3.6F and to a lesser extent with the Abound 2SC and standard Bravo Ultrex programs. Leaf spot and CBR control with Provost 433SC and Proline 480 was significantly not enhanced with the at-plant Proline 480 application. When compared with Abound 2SC, Folicur 3.6F, Bravo Ultrex standard, and Bravo Ultrex + Moncut 70DF programs, Provost 433SC and Proline 480 when combined with Proline 480 at-plant not only gave superior CBR control on two partially disease-resistant peanut cultivars but also increased pod yields by 300 to 800 pounds per acre. Due to low disease pressure, the possible benefits of the at-plant Proline 480 treatment against stem rot could not be determined. Registration of Proline 480 as an in-furrow, at-plant treatment for the control of CBR in peanut is expected before the 2009 production season.

TABLE 2. IMPACT OF AT-PLANT AND POSTPLANT FUNGICIDE TREATMENTS ON THE CONTROL OF LEAF SPOT DISEASES AND CBR AS WELL AS YIELD RESPONSE OF THE PARTIALLY Disease-resistant PEANUT CULTIVARS AP-3 AND GA03L

Treatment and rate/A	Application timing	Leaf spot rating[1]	CBR hits/60 ft[2]	Yield *lb/A*
AP-3				
Bravo Ultrex 1.4 lb	1-7	2.9 ab[3]	8.3 a	4713 bc
Bravo Ultrex 1.4 lb	1,2,7	2.8 bc	4.0 abc	5155 ab
Provost 433SC 8 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	2.8 bc	8.0 a	4798 bc
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Proline 480 5.7 fl oz	IF AP[4]	2.8 bc	1.0 bc	5130 abc
Bravo Ultrex 1.4 lb	1,2,7			
Provost 433SC 8 fl oz	3,4,5,6			
Proline 480 5.7 fl oz.	IF AP[4]	2.6 bc	0.3 c	5348 a
Bravo Ultrex 1.4 lb	1,2,7			
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	2.4 c	4.8 abc	5149 ab
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.9 ab	7.0 ab	4592 c
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,7	3.3 a	9.0 a	4804 bc
Folicur 3.6F 7.2 fl oz	3,4,5,6			
GA03L				
Bravo Ultrex 1.4 lb	1-7	3.0 bc	9.3 a	4653 c
Bravo Ultrex 1.4 lb	1,2,7	2.8 c	4.8 ab	5233 abc
Provost 433SC 8 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	3.1 abc	5.0 ab	5106 abc
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Proline 480 5.7 fl oz	IF AP[4]	2.9 bc	1.0 b	5693 a
Bravo Ultrex 1.4 lb	1,2,7			
Provost 433SC 8 fl oz	3,4,5,6			
Proline 480 5.7 fl oz.	IF AP[4]	3.0 bc	1.0 b	5385 ab
Bravo Ultrex 1.4 lb	1,2,7			
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	3.0 bc	5.0 ab	5034 bc
Proline 480 5.7 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.3 ab	3.8 b	5143 abc
Abound 2SC 18.5 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,7	3.5 a	2.0 b	5270 ab
Folicur 3.6F 7.2 fl oz	3,4,5,6			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Cylindrocladium black rot (CBR) incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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).
[4] IF AP = In-furrow application of Proline 480 at-planting.

TABLE 3. DISEASE REACTION AND YIELD RESPONSE OF THE PEANUT CULTIVARS AP-3 AND GA03L

Peanut line	Leaf spot rating [1]	Stem rot[2]	CBR rating[2]	Yield *lb/A*
AP-3	2.8 b[3]	0.2 a	5.3 a	5189 a
GA03L	3.1 a	0.3 a	4.0 a	4961 b

[1] LS = Florida 1 to 10 leaf spot rating scale used to rate early and late leaf spot severity.
[2] Stem rot and CBR incident is expressed as the number of disease hits per 60 feet of row.
[3] 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).

BANDED AND BROADCAST APPLICATIONS OF MONCUT 70DF COMPARED FOR STEM ROT CONTROL ON PEANUT, WREC

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

Objective: To determine whether banded applications of selected rates of Moncut 70DF are as effective in controlling stem rot (white mold) as broadcast applications of the same rates of this fungicide on the partially disease-resistant peanut cultivars GA02C and GA03L.

Materials and Methods: On May 18, the peanut cultivars GA03L (maturity group 4) and GA02C (maturity group 5) 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) at the Wiregrass Research and Extension Center. The test site has been maintained in a cotton–peanut rotation for more than 10 years. 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 Moncut 70DF 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. Fungicide applications were made on a 14-day calendar schedule on July 2, July 17, August 1, August 15, August 30, September 11, and September 25 with an ATV-mounted boom sprayer, which was modified to deliver either banded or broadcast applications. The broadcast boom had three TX-8 nozzles per row calibrated to deliver 10 gallons of spray volume per acre, while the banded treatments were applied with a single nozzle centered over the seed furrow in approximately 5 gallons of spray volume per acre.

Disease Assessment: Early and late leaf spot (LS) were rated together on October 6 on GA03L and October 22 on GA02C 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot 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 8 and October 26, respectively on GA03L and GA02C. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: While rainfall totals for May, June, July, and August were below to well below the historical average for this location, afternoon temperatures in June, July and August were higher.

Results: Since treatment ranking with respect to leaf spot ratings, stem rot incidence, and yield were similar for the two peanut cultivars, data presented in Table 1 were pooled.

Moncut 70DF placement and application rate had no impact on the control of leaf spot diseases or stem rot (white mold) on peanut (Table 1). Ratings for both diseases were similar regardless of whether Moncut 70DF was broadcast or banded over the original seed furrow. Bravo Ultrex alone gave the same leaf spot control as all of the Moncut 70DF programs. Due to low stem rot pressure, stem rot hit counts for the peanuts treated with Bravo Ultrex alone were also similar compared with those for all banded and broadcast Moncut 70DF treatments. Yields for all Moncut 70DF treatments and Bravo Ultrex alone were similar. Application rate and placement of Moncut 70DF had not impact on peanut yield response.

On GA03L and GA02C separately, leaf spot rating were similar regardless of fungicide program (Table 2). While stem rot incidence was similar across all treatments on GA03L, differences in stem rot hit counts were noted on GA02C. On the latter peanut cultivar, the broadcast Bravo Ultrex + Moncut 70DF (1.4 pounds) program had lower stem rot hit counts compared with the treatment that included four banded applications of Moncut 70DF (0.7 pound). Otherwise, stem rot ratings on GA02C were similar across fungicide treatments. Finally, fungicide treatment had no impact on the yield of either GA03L or GA02C.

Significant differences in leaf spot incidence and yield were noted between GA03L and GA02C. Due to showers in mid- to late October, leaf spot incidence was higher on GA02C than GA03L (Table 3). When yield response of the two cultivars was compared, GA03L outyielded GA02C by a healthy 1100 pound per acre. Stem rot incidence on the two cultivars was similar.

TABLE 1. IMPACT OF MONCUT 70DF APPLICATION RATE AND PLACEMENT ON THE CONTROL OF STEM ROT AND PEANUT YIELD, WREC

Treatment and rate/A	——Application—— Timing[1]	Placement	Leaf spot rating[2]	Stem rot hits/60 row ft[3]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.0 a[4]	3.0 a	5052 a
Bravo Ultrex 1.4 lb	1,2,4,6,7	Broadcast	2.9 a	1.1 a	5124 a
Bravo Ultrex 1.4 lb + Moncut 70DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb	1,2,7	Broadcast	3.1 a	2.5 a	5179 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb	1,2,4,5,6,7	Broadcast	3.1 a	1.5 a	5327 a
Bravo Ultrex 1.4 lb + Moncut 70DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.9 a	2.1 a	5279 a
Moncut 70DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.9 a	2.4 a	5161 a
Moncut 70DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.2 a	3.8 a	5251 a
Moncut 70DF 1.4 lb	3,4,5,6	Band			

[1] Fungicide applications were scheduled on 1 = July 2, 2 = July 17, 3 = August 1, 4 = August 15, 5 = August 29, 6 = September 12, and 7 = September 27, 2007.
[2] Leaf spot was rated using the Florida 1 to 10 rating scale.
[3] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[4] 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. IMPACT OF MONCUT 70DF APPLICATION RATE AND PLACEMENT ON THE CONTROL OF STEM ROT AND YIELD OF GA03L AND GA02C PEANUT CULTIVARS

Treatment and rate/A	——Application—— Timing	Placement	Leaf spot rating[1]	Stem rot hits/60 row ft[2]	Yield *lb/A*
GA03L					
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.4 a[3]	1.8 a	5796 a
Bravo Ultrex 1.4 lb	1,2,4,6,7	Broadcast	2.1 a	2.0 a	5633 a
Bravo Ultrex 1.4 lb + Moncut 70DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb	1,2,7	Broadcast	2.3 a	2.8 a	5502 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb	1,2,4,5,6,7	Broadcast	2.4 a	2.0 a	5796 a
Bravo Ultrex 1.4 lb + Moncut 70DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.1 a	2.0 a	5929 a
Moncut 70DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.1 a	3.8 a	5699 a
Moncut 70DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	2.4 a	2.3 a	5959 a
Moncut 70DF 1.4 lb	3,4,5,6	Band			
GA02C					
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.6 a	4.3 ab	4308 a
Bravo Ultrex 1.4 lb	1,2,4,6,7	Broadcast	3.8 a	0.0 b	4616 a
Bravo Ultrex 1.4 lb + Moncut 70DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb	1,2,7	Broadcast	4.0 a	2.3 ab	4937 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb	1,2,4,5,6,7	Broadcast	3.8 a	1.0 ab	4858 a
Bravo Ultrex 1.4 lb + Moncut 70DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.8 a	2.3 ab	4628 a
Moncut 70DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.6 a	1.0 ab	4622 a
Moncut 70DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.0 a	5.3 a	4544 a
Moncut 70DF 1.4 lb	3,4,5,6	Band			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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 3. DISEASE RATINGS AND YIELDS FOR EACH CULTIVAR AVERAGED ACROSS FUNGICIDE PROGRAMS

Peanut line	Leaf spot rating[1]	Stem rot hits/ 60 row ft[2]	Yield *lb/A*
GA03L (maturity group 4)	2.3 b[3]	2.4 a	5769 a
GA02C (maturity group 5)	3.8 a	2.4 a	4664 b

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[3] 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).

YIELD RESPONSE OF COMMERCIAL PEANUT CULTIVARS TO NEMATICIDE INPUTS AND THEIR RESPONSE TO THE PEANUT ROOT-KNOT NEMATODE, WREC

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

Objective: To assess (1) the susceptibility of commercial peanut cultivars to the peanut root-knot nematode in an irrigated production system and (2) the impact of Temik 15G application rate on pod yield.

Materials and Methods: On June 3, commercial runner peanut cultivars were planted at a rate of six seed per row foot using conventional tillage practices in a Dothan fine sandy loam (<1 percent organic matter) at the Wiregrass Research and Extension Center in Headland, Alabama. Plots were watered as needed with a center pivot irrigation system. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. A split plot design with peanut cultivars as whole plots and Temik 15G rates as 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. Sub-plot treatments included 6.7 pounds per acre of Temik 15G applied in-furrow over the seed, 13.3 pounds per acre of Temik 15G applied on a narrow band over the open seed furrow, and a non-treated control. Leaf spot and stem rot (white mold) control was obtained with an application of 1.4 pounds per acre of Bravo Ultrex on July 2; Bravo Ultrex at 1.4 pounds per acre + Moncut 70DF at 0.24 pounds per acre on July 17; Abound 2SC at 1.6 pints per acre on August 1; Bravo Ultrex at 1.4 pounds per acre + Moncut 70DF at 0.24 pounds per acre on August 15; Abound 2SC at 1.6 pints per acre on August 29; and Bravo Ultrex at 1.4 pounds per acre on September 12 and September 27.

Disease Assessment: Final TSWV hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made on October 19, and October 30 for the maturity group 4 and 5 peanut cultivars, respectively. Early and late leaf spot (LS) were rated together on October 30 and November 12 on the maturity group 4 and 5 cultivars, respectively, 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot and Cylindrocladium (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive damaged plants per row) were made immediately after plot inversion on October 30 and November 12 on the maturity group 4 and 5 cultivars, respectively. Soil samples for a nematode assay were collected but have not been processed. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in Table 1 were pooled across peanut cultivars, while data shown in Table 2 were segregated by peanut cultivar and Temik 15G treatments. The impact of Temik 15G rate on disease incidence and peanut yield is summarized in Table 3.

Weather: While rainfall totals for May, June, July, and August were below to well below the historical average for this location, afternoon temperatures in June, July and August were higher. The maturity group 5 cultivars suffered some frost damage one or two day prior to being inverted on November 12.

Results: Since the cultivar x treatment interaction for leaf spot, stem rot, CBR, and yield were not significant, data presented were pooled across peanut cultivars (Table 1).

Despite the early June planting date, significant differences in TSWV incidence were noted between peanut cultivars (Table 1). The current industry standard Georgia Green had higher TSWV hit counts than any other cultivar tested. High TSWV incidence was also noted in AT3081R. Cultivars with the lowest TSWV hit counts were AP-3, GA03L, GA02C, and the newly released Tifguard. Low mid-summer rainfall totals greatly limited leaf spot spread, particularly on the maturity group 4 peanut cultivars. Several mid- to late October showers triggered the increase in leaf spot on the maturity group 5 cultivars C-99R, GA02C, and to a lesser extent on Tifguard. Overall

stem rot and CBR incidence was low across all peanut cultivars. Incidence of CBR was higher on AP-3 compared with AT3085RO, GA02C, and McCloud. Due in part to low soil disease pressure, yields for all cultivars tested exceeded 5,000 pounds per acre and yield of Tifguard approached the 6,000 pound per acre mark. Among the maturity group 4 cultivars, AP-3 outyielded GA03L. Otherwise, cultivar yields were similar. Yield for Tifguard exceed that of all cultivars except for C-99R.

TABLE 1. YIELD OF SELECTED PEANUT CULTIVARS AND THEIR RESPONSE TO DISEASES WHEN AVERAGED ACROSS TEMIK15G TREATMENTS, WREC

Peanut line	TSWV hits/ 60 row ft[1]	Leaf spot rating[2]	CBR hits/60 row ft[1]	Yield *lb/A*
Maturity group 4 (matures 130-145 DAP)				
AT3081R	8.4 b[3]	2.1 cde	1.1 ab	5223 cd
AP-3	2.5 d	2.0 def	1.3 a	5512 bc
AT3085RO	6.0 c	1.9 ef	0.3 bc	5385 bcd
GA03L	2.0 d	1.8 f	0.7 abc	5104 d
Georgia Green	11.5 a	2.2 cd	0.5 abc	5118 cd
McCloud	5.6 c	2.3 bc	0.3 bc	5116 cd
Maturity group 5 (matures 140-165 DAP)				
C-99R	5.7 c	3.1 a	0.8 abc	5750 ab
Tifguard	1.1 d	2.5 b	0.6 abc	5941 a
GA02C	3.0 d	3.0 a	0.2 c	5429 bcd

[1] CBR and 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.
[3] 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. IMPACT OF TEMIK 15G APPLICATION RATE ON DISEASE INCIDENCE AND YIELD RESPONSE OF COMMERCIAL PEANUT CULTIVARS

Peanut cultivars	Temik 15G rate lb/A	TSWV hits/60 ft[1]	Leaf spot rating[2]	CBR hits/60 ft[1]	Yield *lb/A*
AT3081R	0	9.5 a[3]	2.0 a	1.3 a	4985 a
	6.7	8.3 a	2.5 a	1.8 a	5215 a
	13.3	7.5 a	2.0 a	0.3 a	5409 a
AP-3	0	2.5 a	2.0 a	0.8 a	5723 a
	6.7	2.3 a	2.0 a	1.5 a	5385 a
	13.3	2.8 a	1.9 a	1.8 a	5427 a
AT3085RO	0	7.0 a	1.9 a	0.5 a	5245 a
	6.7	5.3 a	1.9 a	0.5 a	5554 a
	13.3	5.8 a	2.0 a	0.0 a	5354 a
C-99R	0	7.5 a	3.3 a	1.0 a	5760 a
	6.7	3.8 b	2.9 a	1.3 a	5669 a
	13.3	5.8 ab	3.3 a	0.3 a	5820 a
Tifguard	0	1.5 a	2.4 a	0.3 a	5596 a
	6.7	0.8 a	2.6 a	0.8 a	6068 a
	13.3	1.0 a	2.6 a	0.8 a	6159 a
GA02C	0	3.0 a	2.9 a	0.5 a	5409 a
	6.7	3.3 a	3.0 a	0.0 a	5379 a
	13.3	2.8 a	3.3 a	0.0 a	5500 a
GA03L	0	3.3 a	2.0 a	1.3 a	5294 ab
	6.7	1.5 a	1.8 ab	0.0 a	5396 a
	13.3	1.3 a	1.5 b	1.0 a	4622 b
Georgia Green	0	10.5 a	2.0 a	0.8 a	4858 a
	6.7	14.0 a	2.3 a	0.5 a	5239 a
	13.3	10.0 a	2.4 a	0.3 a	5258 a
McCloud	0	5.0 a	2.3 a	0.3 a	5167 a
	6.7	4.5 a	2.3 a	0.5 a	5118 a
	13.3	6.3 a	2.4 a	0.3 a	5064 a

[1] CBR and 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.
[3] Means for each peanut cultivar 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).

As indicated by non-significant peanut cultivar x treatment interaction, Temik 15G had virtually no influence on disease-related damage or yield response of any of the nine peanut cultivars. On C-99R, TSWV ratings were higher for the non-treated peanuts compared with those receiving 6.7 pounds per acre of Temik 15G (Table 2). Otherwise, TSWV incidence on the remaining eight peanut cultivars was similar for all Temik 15G rates and the non-treated control. On GA03L, less leaf spotting was seen in the plots receiving 13.3 pounds per acre of Temik 15G than non-treated controls. Disease incidence on GA03L at the 6.7 pound per acre rate of Temik 15G was intermediate. Temik 15G application rate did not affect stem rot or CBR incidence. No yield gains were noted on any cultivar with increasing rates of Temik 15G. Yields declined with increasing Temik 15G rates on GA03L.

For the data averaged across peanut cultivars, Temik 15G application rate did not have a significant impact on the incidence of TSWV, leaf spot diseases, CBR, or on pod yield (Table 3).

Summary: As has been seen in previous Alabama trials, Georgia Green is more susceptible to the vi-

rus disease TSWV than many other commercial peanut cultivars. Similarly high TSWV hit counts have also been recorded for AT3081R. While C-99R appears to be moderately susceptible to TSWV, yield response of this peanut cultivar was exceptional. The cultivars AP-3, GA03L, GA02C, and the newly released Tifguard, which are considered partially resistant to TSWV, had low virus hit counts. Tifguard significantly outyielded the other TSWV resistant cultivars. Due to low leaf spot, stem rot, and CBR pressure, no conclusions concerning cultivar reaction to these diseases can be drawn. In the absence of damaging root-knot nematode populations and low virus pressure, an at-plant application of either rate of Temik 15G did not increase peanut yield.

TABLE 3. DISEASE RATINGS AND YIELD RESPONSE TO TEMIK 15G TREATMENTS FOR DATA AVERAGED ACROSS PEANUT CULTIVARS

Temik 15G *lb/A*	TSWV hits/60 ft[1]	Leaf spot rating[2]	CBR hits/60 ft	Yield *lb/A*
0	5.5 a[3]	2.3 a	0.7 a	5348 a
6.7	4.8 a	2.3 a	0.8 a	5447 a
13.3	4.8 a	2.4 a	0.5 a	5401 a

[1] CBR and 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.
[3] Means for each peanut cultivar 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).

FUNGICIDE TREATMENT SCHEDULES BASED ON THE PEANUT DISEASE RISK INDEX COMPARED FOR DISEASE CONTROL AND YIELD RESPONSE OF PEANUT, WREC

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

Objective: To compare the level of disease control and yield response of two partially disease-resistant peanut cultivars to fungicide treatment schedules developed for use with the Peanut Disease Risk Index.

Material and Methods: On May 18, the peanut cultivars AP-3 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. The site selected has been maintained in a peanut-cotton rotation and is classified as a high risk field according to guidelines of the Peanut Disease Risk Index. 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 1 = July 2, 1.5 = July 9, 2 = July 17, 3 = August 1, 3.5 = August 6, 4 = August 13, 4.5 = August 20, 5 = August 30, 5.5 = September 4, 6 = September 11, 6.5 = September 17, and 7 = September 25 with a tractor-mounted boom sprayer with three TX-8 nozzles per row calibrated to deliver 15 gallons per acre of spray volume at 45 psi.

Disease Assessment: Early and late leaf spot (LS) were rated together on September 25 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Soil-borne disease (SD) [Stem rot + Cylindrocladium black rot] hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot- or Cylindrocladium black rot-damaged plants per row) were made immediately after plot inversion on October 8. Yields were reported at 7 percent moisture. Significance of treatment effects were 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, SD, and yield were not significant, data presented in Table 1 were pooled across peanut cultivars.

Weather: While rainfall totals for May, June, July, and August were below to well below the historical average for this location, afternoon temperatures in June, July and August were higher.

Results: Based on the criteria in the Peanut Disease Risk Index, this test site would be rated as a high risk field. As a result of hot and dry weather patterns, leaf spot ratings were lower than anticipated. The high and medium risk Bravo Ultrex programs gave better leaf spot control than the low risk Bravo Ultrex program (Table 1). Similar leaf spot control was obtained with the all risk categories of the Bravo Ultrex/Abound 2SC (18.2 fluid ounces) and Bravo Ultrex/Abound SC (12.3 fluid ounces) programs. Cylindrocladium black rot (CBR) was much more common that stem rot. The low risk Bravo Ultrex treatment had significantly lower SD hit counts than the medium and high risk treatments with the same fungicide. Regardless of risk category, no significant differences in overall SD control were noted between the Bravo Ultrex/Abound 2SC treatment regimes. In addition, yield for all treatment regimes in the low, medium, and high risk categories were similar.

While overall leaf spot pressure was low on AP-3, ratings for the medium risk Tilt Bravo SE/Abound SC (18.2 fluid ounces)/Bravo Ultrex program were higher compared with all other fungicide programs (Table 2). Soil disease (SD) incidence was higher for the high risk Bravo Ultrex compared with the high risk Bravo Ultrex/Abound 2SC (12.3 fluid ounces) and the medium risk Tilt Bravo SE/Abound 2SC (18.2 fluid ounces)/Bravo Ultrex programs. Otherwise, SD incidence ratings of the remaining fungicide programs, regardless of risk category,

were similar. Yields were lower for the medium risk Bravo Ultrex/Provost 433SC/Abound 2SC program compared with the medium risk Bravo Ultrex program. No significant differences in yield response were noted between fungicide programs.

On GA03L, leaf spot ratings were similar for all high, medium, and low risk fungicide programs (Table 2). When compared with the medium risk Bravo Ultrex program, the medium and low risk Tilt Bravo SE/Abound 2SC(18.2 fluid ounces)/Bravo Ultrex programs had lower SD ratings. The low risk Tilt Bravo SE/Abound 2SC (18.2 fluid ounces)/Bravo Ultrex program also had less total SD compared with the high and low risk Bravo Ultrex programs. Yields were similar for all low, medium, and high risk fungicide programs.

While the leaf spot and SD ratings were similar, GA03L yields were significantly different than yields of AP-3 (Table 3).

Summary: Declining profit margins have forced peanut producers to look for ways to trim production costs. Fungicide programs, which may total 25 percent of variable production costs, are an obvious target. However, deleting fungicide inputs without regard to the risk of destructive disease outbreaks often results in yield losses that far exceed any savings. The Peanut Disease Risk Index was designed to help peanut producers assess the likelihood of damaging disease outbreaks based on their current management program as well as determine the benefit of adopting alternative management practices to better control diseases, which then may allow the use of reduced fungicide inputs while maintaining peanut yield.

Despite a rotation pattern that favored leaf spot diseases and stem rot in peanut, dry weather conditions throughout most of production season minimized the development and spread of the above diseases on both peanut cultivars, which also have some resistance to leaf spot and stem rot. Although this was a high risk field according to the Disease Risk Index, the overall level of foliar and soil disease control as well as yield response with the low risk, four-application fungicides programs was comparable to the results obtained with the high risk programs that featured seven fungicide applications. Apparently the dry weather pattern suppressed leaf spot diseases and stem rot sufficiently for the low input fungicide programs to perform as effectively as the much more expensive high input programs.

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

Fungicide regime and rate/A	Application timing[1]	Risk category	Leaf spot rating[2]	Total SD hits/ 60 ft[3]	Yield *lb/A*
Bravo Weather Stik 6F 24 fl oz	1, 2, 3, 4, 5, 6, 7	High	2.7 b[4]	9.5 a	4931 a
Bravo Weather Stik 6F 24 fl oz	1.5, 3, 4.5, 5.5, 7	Med	2.6	8.5 ab	5046 a
Bravo Weather Stik 6F 24 fl oz	2, 3,5, 5, 6.5	Low	3.1 a	4.6 c	5009 a
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	2.6 b	8.9 ab	5203 a
Abound 2SC 12.3 fl oz	3, 5				
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	2.6 b	7.8 abc	5258 a
Abound 2SC 18.2 fl oz	3, 5				
Tilt Bravo SE 36 fl oz	1,2,4	High	2.7 b	6.8 abc	5236 a
Abound 2SC 18.2 fl oz1	3,5				
Bravo Weather Stik 6F 24 fl oz	6,7				
Tilt Bravo SE 36 fl oz	1.5, 4.5	Med	2.7 b	5.8 bc	5145 a
Abound 2SC 18.2 fl oz	3, 5.5				
Bravo Weather Stik 6F 24 fl oz	7				
Tilt Bravo SE 36 fl oz	2	Low	2.8 b	7.0 abc	5094 a
Abound 2SC 18.2 fl oz	3.5, 5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Tilt Bravo SE 36 fl oz	2	Low	2.7 b	7.0 abc	5236 a
Abound 2SC 12.3 fl oz	3.5,5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Bravo Weather Stik 6F 24 fl oz	1.5	Med	2.7 b	7.6 abc	5148 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 = July 2, 1.5 = July 9, 2 = July 16, 3 = July 30, 3.5 = August 6, 4 = August 13, 4.5 = August 20, 5 = August 30, 5.5 = September 4, 6 = September 10, 6.5 = September 17 and 7 = September 25.
[2] Leaf spot severity were rated using the 1 to 10 Florida leaf spot scoring system.
[3] SD incidence = total number of stem rot + Cylindrocladium black rot hits per 60 feet of row.
[4] 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. COMPARISON OF PEANUT DISEASE RISK INDEX FUNGICIDE PROGRAMS FOR THE CONTROL OF DISEASES AND YIELD RESPONSE ON AP-3 AND GA03L PEANUT CULTIVARS

Fungicide regime and rate/A	Application timing	Risk category[1]	Leaf spot rating[2]	SD hits/ 60 ft[3]	Yield *lb*/A
AP-3					
Bravo Weather Stik 6F 24 fl oz	1, 2, 3, 4, 5, 6, 7	High	2.5 a[4]	11.3 a	4689 ab
Bravo Weather Stik 6F 24 fl oz	1.5, 3, 4.5, 5.5, 7	Med	2.4 a	8.5 ab	5173 a
Bravo Weather Stik 6F 24 fl oz	2, 3,5, 5, 6.5	Low	2.4 a	8.0 ab	5137 ab
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	2.5 a	5.8 b	5155 ab
Abound 2SC 12.3 fl oz	3, 5				
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	2.4 a	7.3 ab	5003 ab
Abound 2SC 18.2 fl oz	3, 5				
Tilt Bravo SE 36 fl oz	1,2,4	High	2.6 a	7.3 ab	4888 ab
Abound 2SC 18.2 fl oz1	3,5				
Bravo Weather Stik 6F 24 fl oz	6,7				
Tilt Bravo SE 36 fl oz	1.5, 4.5	Med	3.1 a	4.8 b	4798 ab
Abound 2SC 18.2 fl oz	3, 5.5				
Bravo Weather Stik 6F 24 fl oz	7				
Tilt Bravo SE 36 fl oz	2	Low	2.4 b	8.0 ab	4798 ab
Abound 2SC 18.2 fl oz	3.5, 5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Tilt Bravo SE 36 fl oz	2	Low	2.5 b	9.5 ab	4888 ab
Abound 2SC 12.3 fl oz	3.5,5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Bravo Weather Stik 6F 24 fl oz	1	Med	2.3 b	9.8 ab	4586 b
Provost 433 5.7 fl oz	3.5,5				
Abound 2SC 18.2 fl oz	4.5, 7				
GA03L					
Bravo Weather Stik 6F 24 fl oz	1, 2, 3, 4, 5, 6, 7	High	2.9 a	7.8 ab	5173 a
Bravo Weather Stik 6F 24 fl oz	1.5, 3, 4.5, 5.5, 7	Med	2.8 a	9.3 a	5233 a
Bravo Weather Stik 6F 24 fl oz	2, 3,5, 5, 6.5	Low	2.8 a	7.8 ab	5379 a
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	2.9 a	7.8 ab	5318 a
Abound 2SC 12.3 fl oz	3, 5				
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	High	3.0 a	6.8 abc	5469 a
Abound 2SC 18.2 fl oz	3, 5				
Tilt Bravo SE 36 fl oz	1,2,4	High	2.9 a	6.8 abc	5300 a
Abound 2SC 18.2 fl oz1	3,5				
Bravo Weather Stik 6F 24 fl oz	6,7				
Tilt Bravo SE 36 fl oz	1.5, 4.5	Med	3.0 a	4.5 bc	5221 a
Abound 2SC 18.2 fl oz	3, 5.5				
Bravo Weather Stik 6F 24 fl oz	7				
Tilt Bravo SE 36 fl oz	2	Low	3.0 a	3.5 c	5493 a
Abound 2SC 18.2 fl oz	3.5, 5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Tilt Bravo SE 36 fl oz	2	Low	2.9 a	5.8 abc	5409 a
Abound 2SC 12.3 fl oz	3.5,5				
Bravo Weather Stik 6F 24 fl oz	6.5				
Bravo Weather Stik 6F 24 fl oz	1	Med	2.9 a	7.3 abc	5506 a
Provost 433 5.7 fl oz	3.5,5				
Abound 2SC 18.2 fl oz	4.5, 7				

[1] High, medium (med), and low risk programs consisted of a total of seven, five, and four fungicide applications, respectively, which were scheduled at approximately 14, 21, and 28-day intervals.
[2] Leaf spot severity were rated using the 1 to 10 Florida leaf spot scoring system.
[3] SD incidence = total number of stem rot + Cylindrocladium black rot hits per 60 feet of row.
[4] 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).

TABLE 3. AVERAGE DISEASE RATINGS AND YIELD RESPONSE FOR AP-3 AND GA03L PEANUT CULTIVARS

Peanut line	Leaf spot rating[1]	SD hits/ 60 row ft[2]	Yield *lb/A*
AP-3	2.5 a[3]	8.0 a	4911 b
GA03L	2.9 a	6.7 a	5350 a

[1] Leaf spot severity was rated using the 1 to 10 Florida leaf spot scoring system. [2] SD incidence = total number of stem rot + Cylindrocladium black rot hits per 60 feet of row. [3] 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).

YIELD RESPONSE AND REACTION OF RUNNER PEANUT CULTIVARS TO DISEASES IN A 1-YEAR ROTATION WITH COTTON, WREC

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

Objective: To assess the yield response and reaction of commercial peanut cultivars to leaf spot diseases, stem rot, CBR, and tomato spotted wilt in a 1-year rotation with cotton when maintained under a standard Bravo Ultrex and high-input fungicide program.

Materials and Methods: Commercial runner peanut cultivars were planted on May 18 at a rate of six seed per row foot using conventional tillage practices in a Dothan fine sandy loam (<1 percent organic matter) on a site at the Wiregrass Research and Extension Center in Headland, Alabama, maintained in a peanut-cotton-peanut rotation. Plots were watered as needed with a center pivot irrigation system. Weed control and soil fertility recommendations of the Alabama Cooperative Extension System were followed. 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. Subplots, 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 pound per acre of Moncut 70DF, and a final application of 1.4 pounds per acre of Bravo Ultrex. Fungicides were applied on July 2, July 16, July 30, August 13, August 27, September 10, and September 25 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 foot of consecutive severely TSWV-damaged plants per row) were made on October 8 and October 22 for the maturity group 4 and 5 peanut cultivars, respectively. Early and late leaf spot (LS) were rated together on October 8 and October 22 for the maturity group 4 and 5 cultivars, respectively, 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 ≤

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

Peanut line	TSWV hits/ 60 row ft[1]	Leaf spot rating[2]	Soil disease hits/60 row ft[1]	Yield *lb/A*
Maturity group 4 (matures 130-145 DAP)				
AP-3	1.8 d[3]	1.7 f	4.3 a	5115 a
AT3081R	3.9 bcd	3.0 bc	6.5 a	4749 ab
AT3085RO	3.5 bcd	3.1 b	4.6 a	5206 a
GA03L	3.4 bcd	2.0 ef	3.3 a	5227 a
Georgia Green	11.8 a	2.8 bcd	4.6 a	5079 a
McCloud	4.3 bcd	2.3 def	3.9 a	5124 a
Maturity group 5 (matures 140-165 DAP)				
C-99R	10.9 a	2.7 bcd	4.3 a	4256 bc
GA02C	6.0 b	3.8 a	3.6 a	4153 bc
UF 07	2.0 cd	3.3 ab	6.0 a	4353 bc
York	4.6 bc	2.5 cde	4.8 a	3942 c

[1] TSWV and SD incidence = total number of TSWV or stem rot + Cylindrocladium black rot hits per 60 feet of row.
[2] Leaf spot severity were rated using the 1 to 10 Florida leaf spot scoring system.
[3] 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 RESPONSE AND DISEASE CONTROL WITH A STANDARD AND HIGH INPUT FUNGICIDE PROGRAM AVERAGED ACROSS PEANUT CULTIVARS

Fungicide program[1]	TSWV hits/ 60 row ft	Leaf spot rating	Soil disease hits/60 row ft	Yield *lb/A*
Standard	5.5 a[2]	2.9 a	5.1 a	4605 a
High Input	4.9 a	2.6 b	4.1 a	4835 ac

[1] 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 pound per acre of Moncut 70DF, and a final application of 1.4 pounds per acre of Bravo Ultrex. All applications were scheduled at 14-day intervals.
[2] 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).

10 percent defoliation, 5 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot and Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot- or CBR-damaged plants per row) were made immediately after plot inversion on October 8 for the maturity group 4 and October 26 for the maturity group 5 cultivars. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in Table 1 were pooled across fungicide treatments, while the impact of fungicide treatments on disease and yield averaged across peanut cultivars is displayed in Table 2.

Weather: While rainfall totals for May, June, July, and August were below to well below the historical average for this location, afternoon temperatures in June, July and August were higher.

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

Peanut cultivars/ fungicide program[1]	TSWV hits/60 ft	Leaf spot rating	CBR hits/60 ft	Yield *lb/A*
AP-3				
Standard	1.8 a[2]	2.0 a	3.5 a	5221 a
High Input	1.8 a	1.5 a	5.0 a	5009 a
AT3081R				
Standard	2.5 a	3.6 a	4.0 a	4828 a
High Input	5.3 a	2.4 b	9.0 a	4671 a
AT3085RO				
Standard	4.0 a	3.5 a	7.0 a	5118 a
High Input	3.0 a	2.8 b	2.3 a	5294 a
GA03L				
Standard	3.3 a	1.9 a	4.8 a	5106 a
High Input	3.5 a	2.1 a	1.8 a	5348 a
Georgia Green				
Standard	13.3 a	2.8 a	9.0 a	4658 a
High Input	10.8 a	2.8 a	2.5 a	5500 a
McCloud				
Standard	4.8 a	2.3 a	4.5 a	4979 a
High Input	3.8 a	2.4 a	3.3 a	5270 a
C-99R				
Standard	11.8 a	2.9 a	6.3 a	4398 a
High Input	10.0 a	2.5 a	2.3 a	4114 a
GA02C				
Standard	7.0 a	3.8 a	5.0 a	3866 a
High Input	5.0 a	3.8 a	2.0 a	4441 a
UF 07				
Standard	2.0 a	3.4 a	7.0 a	4175 a
High Input	2.0 a	3.1 a	5.0 a	4532 a
York				
Standard	5.8 a	2.4 a	6.0 a	3702 b
High Input	3.5 a	2.6 a	3.5 a	4181 a

[1] While the standard 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 pound per acre of Moncut 70DF, and a final application of 1.4 pounds per acre of Bravo Ultrex. All applications were scheduled at 14-day intervals.

[2] 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).

Results: Incidence of TSWV in Georgia Green and C-99R was significantly higher than in the remaining eight peanut cultivars (Table 1). Similar TSWV hit counts were noted for AP-3, AT3081R, AT3085RO, GA03L, McCloud, and UF 07. While significant differences in leaf spot ratings were found between peanut cultivars, overall disease pressure, which was reduced by dry summer weather, was not sufficient to noticeably reduce pod yield. While moderate leaf spotting with less than 10 percent premature leaf loss was seen on GA02C, symptoms on most of the remaining cultivars were limited to light leaf spotting in the mid- and sometime only lower leaf canopy. Although Cylindrocladium black rot (CBR) caused more damage than stem rot (white mold), pockets of disease or dying plants were scattered across portions of the four replications rather than uniformly distributed over the test site. As a result, differences in total SD (CBR + stem rot) hit counts between peanut cultivars were not significant. Despite significant differences in TSWV and leaf spot ratings, the yields for all of the maturity group 4 cultivars were similar. In addition, all of the maturity group 4 cultivars except for AT3081R yielded significantly higher than the maturity group 5 cultivars C-99R, GA02C, UF 07, and York, all of which had similar yields.

Across all peanut cultivars (Table 2) or on individual cultivars (Table 3), fungicide program had relatively little impact on disease control or yield response. As expected, TSWV was similar for the standard and high input fungicide programs over all peanut cultivars and on individual cultivars. Overall, a slight but significant improvement in leaf spot control was obtained with high input compared with the Bravo Ultrex standard. Among individual peanut cultivars, leaf spot control was improved with the high input fungicide program on AT3081R and AT3085RO but not on the remaining eight peanut cultivars. When averaged across all peanut

cultivars, SD hit counts and yields for both fungicide programs were similar. The SD ratings for the standard and high input fungicides for each cultivar were also similar. A significant yield increase was obtained with the high input fungicide program only on the cultivar York.

Summary: Georgia Green and C-99R were more susceptible to TSWV than the other cultivars screened. Due to dry summer and wet mid-fall weather patterns, cultivar susceptibility to leaf spot diseases cannot be accurately assessed. While stem rot damaged was very low throughout the planting, localized CBR hot spot' were seen. Unfortunately, these hot spots were not sufficiently uniform for any evaluation of cultivar susceptibility to CBR to be made. Weather patterns may have had more influence on pod yields than diseases. Five of the six mid-season (maturity group 4) cultivars had significantly higher yields than the four late maturing (maturity group 5) cultivars. Lowest yields were reported for York. Fungicide program had virtually no impact on disease incidence or peanut yield. While the standard Bravo Ultrex program targets leaf spot diseases, the high input program is effective in controlling leaf spot diseases and stem rot on peanut. Fungicides in both programs have little if any activity against CBR. Results show that in a relatively low disease setting, expensive high input fungicide programs will do relatively little to enhance peanut yield.

RECOMMENDED FUNGICIDE PROGRAMS COMPARED FOR LATE LEAF SPOT AND RUST CONTROL AS WELL AS YIELD RESPONSE ON PARTIALLY DISEASE-RESISTANT PEANUT CULTIVARS, GCREC

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

Objective: To assess the effectiveness of recommended fungicide treatment programs for the control of leaf spot diseases, peanut rust, and stem rot on several partially disease-resistant peanut cultivars in a dryland production system at the Gulf Coast Research and Extension Center.

Material and Methods: On May 22, the peanut cultivars AP-3 (maturity group 4), GA03L (maturity group 4), and GA02C (maturity group 5) 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. On April 25, 171 pounds per acre of 0-23-23 fertilizer + 10 pounds per acre of sulfur + 0.5 pound per acre of boron along with 2 pints per acre of Prowl herbicide were incorporated with a disk harrow. An early-post broadcast application of the herbicides Gramoxone Inteon at 8 fluid ounces per acre + Storm at 1.0 pint per acre + Butoxone 175 at 1 pint per acre was made on June 6. An additional application of Butoxone 175 at 1.5 pints per acre was made on June 21 to control morning glory. A tank-mixture of Cadre at 2 ounces per acre + Strongarm at 0.225 ounce per acre was made on June 27. 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 were made using an ATV-mounted boom sprayer with 3 TX-8 nozzles per row at 10 gallons per acre spray volume at 45 psi. Fungicide applications were made on 1 = July 2, 2 = July 17, 3 = July 30, 4 = August 14, 5 = August 30, 6 = September 10, and 7 = September 25.

Disease Assessment: Early and late leaf spot (LS) were rated together 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions 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. Leaf spot and rust ratings were taken on for AP-3 and GA03L on September 27 and GA02C on October 9. Stem rot hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot damaged plants per row) were made immediately plot inversion on the two maturity group 4 cultivars on October 4 and on GA02C on October 29. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in the table were pooled across peanut cultivars Table 1 and pooled across fungicide treatments in Table 2.

Weather: Rainfall totals for May and October were below the historical average but were average to above average for June, July, August, and September.

Results: While late leaf spot was more common than early leaf spot, cumulative leaf spot damage was not very high. Leaf spot and rust ratings for the Abound 2SC and Absolute programs were significantly higher compared with most of the other fungicide programs (Table 1). Overall, stem rot pressure was very low and no differences in stem rot hit counts were noted between all fungicide programs. When compared with the Absolute program, yields obtained with the Headline 2.09EC and the Bravo Ultrex + Moncut 70DF programs were significantly higher.

Data for each peanut cultivars presented in Table 2 were averaged across fungicide treatments. Of the three peanut cultivars, AP-3 had significantly lower leaf spot ratings compared with GA02C and GA03L, which had similar ratings for late leaf spot (Table 2). Rust was more severe on GA03L than on the other two cultivars. While overall stem rot pressure was lower, differences in stem rot hit counts were noted between the three cultivars.

Highest hit counts were recorded for AP-3, while GA03L suffered the least stem rot damage. Yields for AP-3, GA03L, and GA02C did not significantly differ.

Treatment rankings for each disease and yield response differed on each peanut cultivar. On AP-3, the level of late leaf spot, which was very low, was similar for all fungicide programs (Table 3). The season-long Bravo Ultrex standard controlled rust better than the Abound 2SC program. For the remaining programs, their effectiveness against rust was similar to the performance of the Bravo Ultrex and Abound 2SC programs. Stem rot incidence and yield response for AP-3 was also similar for all fungicide programs. For GA03L, fungicide program had a significant impact on late leaf spot and stem rot but not on rust (Table 3). While the Headline 2.09E controlled late leaf spot better than the Abound 2SC program, leaf spot ratings for the previously mentioned and other fungicide programs did not statistically differ. Fungicide program had no impact on the severity of rust on the GA03L peanut. Although stem rot pressure was low, stem rot hit counts for the Bravo Ultrex + Moncut 70DF and Artisan 3.6E + Bravo Ultrex programs gave better control of this disease compared with the Bravo Ultrex standard and Provost 433SC programs. Despite differences in late leaf spot and stem rot control, yields for all fungicide programs on GA03L were similar. On the GA02C peanut cultivar, fungicide program had a significant impact on late leaf spot, rust, and stem rot control. Bravo Ultrex + Moncut 70DF and Artisan 3.6E + Bravo Ultrex programs gave better late leaf spot control than the Abound 2SC and Absolute programs on GA02C. When compared with the Bravo Ultrex standard and Headline 2.09E program, Abound 2SC also gave poorer control of late leaf spot. Against rust, the Provost 433SC and Bravo Ultrex + Moncut 70DF programs gave better disease control than the Abound 2SC and Absolute programs. Also, stem rot hit counts were lower for the Bravo Ultrex + Moncut 70DF program compared with the Abound 2SC and Absolute programs. Yields of GA02C were lower for the Absolute than the Bravo Ultrex + Moncut 70DF and Provost 433SC programs.

Summary: While differences in the control of late leaf spot, rust, and stem rot were noted between the seven recommended fungicide programs averaged across peanut cultivars, all proved reasonably effective in controlling LLS and rust diseases and protecting yields. The Bravo Ultrex + Moncut 70DF and Headline 2.09E programs did have a significant yield advantage over the Absolute program. Otherwise, yield response for these and the remaining fungicide programs was similar. On GA03L and GA02C, disease control and yield response with the Abound 2SC program were less than anticipated. All three peanut cultivars differed in the sensitivity to late leaf spot, rust, and stem rot. Lower rust susceptibility of GA02C and AP-3 make them a better choice for growers in Southwest Alabama compared with the more rust susceptible GA03L peanut.

TABLE 1. DISEASE RATINGS AND YIELD RESPONSE TO FUNGICIDE PROGRAMS AVERAGED ACROSS PEANUT CULTIVARS

Treatment and rate/A	Application timing	LLS rating[1]	Rust rating[2]	Stem rot[3]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1-7	2.9 bc[4]	4.1 b	2.4 a	4523 ab
Bravo Ultrex 1.4 lb	1,2,7	2.8 c	4.1 b	2.2 a	4760 ab
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.8 c	4.0 b	1.6 a	4913 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.8 c	4.4 ab	2.4 a	4794 ab
Artisan 3.6E 26 fl oz + Bravo Ultrex 1.0 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.5 a	4.8 a	2.0 a	4714 ab
Abound 2SC 18.3 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 c	4.0 b	2.2 a	4859 a
Headline 2.09EC 9.0 fl oz	3,5				
Absolute 3.5 fl oz	1,2	3.3 ab	4.8 a	2.2 a	4343 b
Bravo Ultrex 1.4 lb	3,4,5,6,7				

[1] Late leaf spot (LLS) was rated using the Florida 1 to 10 rating scale.
[2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[3] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[4] 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: DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut cultivar	LLS rating[1]	Rust rating[2]	Stem rot[3]	Yield *lb/A*
AP-3	2.3 b[4]	3.4 b	2.8 a	4845 a
GA03L	3.3 a	5.7 a	1.4 c	4590 a
GA02C	3.3 a	3.7 b	2.2 b	4657 a

[1] Late leaf spot (LLS) was rated using the Florida 1 to 10 rating scale. [2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale. [3] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.[4] 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 3. YIELD AND DISEASE RATINGS FOR EACH PEANUT CULTIVAR SEGREGATED BY FUNGICIDE PROGRAM

Treatment and rate/A	Application timing	LLS rating[1]	Rust rating[2]	Stem rot[3]	Yield *lb/A*
AP-3					
Bravo Ultrex 1.4 lb	1-7	2.0 a[4]	2.8 b	3.3 a	4473 a
Bravo Ultrex 1.4 lb	1,2,7	2.1 a	3.3 ab	2.5 a	4714 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.1 a	3.5 ab	2.8 a	4932 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.2 a	3.3 ab	4.0 a	5035 a
Artisan 3.6E 26 fl oz + Bravo Ultrex 1.0 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 a	4.3 a	2.3 a	5035 a
Abound 2SC 18.3 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.4 a	3.5 ab	3.0 a	5012 a
Headline 2.09EC 9.0 fl oz	3,5				
Absolute 3.5 fl oz	1,2	2.6 a	4.0 ab	2.3 a	4714 a
Bravo Ultrex 1.4 lb	3,4,5,6,7				
GA03L					
Bravo Ultrex 1.4 lb	1-7	3.5 ab	5.8 a	2.3 a	4496 a
Bravo Ultrex 1.4 lb	1,2,7	3.3 ab	5.5 a	2.3 a	4760 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	3.3 ab	5.5 a	0.5 b	4389 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	3.3 ab	5.8 a	0.5 b	4622 a
Artisan 3.6E 26 fl oz + Bravo Ultrex 1.0 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.6 a	6.0 a	0.8 b	4519 a
Abound 2SC 18.3 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 b	5.7 a	1.5 ab	4932 a
Headline 2.09EC 9.0 fl oz	3,5				
Absolute 3.5 fl oz	1,2	3.5 ab	6.0 a	1.5 ab	4359 a
Bravo Ultrex 1.4 lb	3,4,5,6,7				
GA02C					
Bravo Ultrex 1.4 lb	1-7	3.2 bc	3.8 ab	1.8 bc	4600 ab
Bravo Ultrex 1.4 lb	1,2,7	3.3 abc	3.3 b	1.8 bc	4806 a
Provost 433SC 8 fl oz	3-6				
Bravo Ultrex 1.4 lb	1,2,7	3.0 c	3.0 b	1.5 c	5288 a
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,7	2.8 c	3.7 ab	2.8 ab	4726 ab
Artisan 3.6E 26 fl oz + Bravo Ultrex 1.0 lb	3-6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.0 a	4.3 a	3.0 a	4588 ab
Abound 2SC 18.3 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.1 bc	3.3 b	2.0 abc	4634 ab
Headline 2.09EC 9.0 fl oz	3,5				
Absolute 3.5 fl oz	1,2	3.8 ab	4.3 a	2.8 ab	3957 b
Bravo Ultrex 1.4 lb	3,4,5,6,7				

[1] Late leaf spot (LLS) was rated using the Florida 1 to 10 rating scale.
[2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale.
[3] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[4] 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).

HEADLINE 2.09EC APPLICATION RATE AND INTERVAL AND CONTROL OF LEAF SPOT DISEASES AND RUST, GCREC

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

Objective: To assess the impact of application rate and interval on the control of leaf spot diseases and rust with Headline 2.09EC on several partially disease-resistant peanut cultivars in a dryland production system in southwest Alabama.

Material and Methods: On May 22, the peanut cultivars AP-3 (maturity group 4), GA03L (maturity group 4), and GA02C (maturity group 5) 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 at the Gulf Coast Research and Extension Center in Fairhope, Alabama. On April 25, 171 pounds per acre of 0-23-23 fertilizer + 10 pounds per acre of sulfur + 0.5 pound per acre of boron along with 2 pints per acre of Prowl herbicide were incorporated with a disk harrow. An early-post broadcast application of the herbicides Gramoxone Inteon at 8 fluid ounces per acre + Storm at 1.0 pint per acre + Butoxone 175 at 1 pint per acre was made on June 6. An additional application of Butoxone 175 at 1.5 pints per acre was made on June 21 to control morning glory. A tank-mixture of Cadre at 2 ounces per acre + Strongarm at 0.225 ounce per acre was made on June 27. The test area was not irrigated. 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 sub-plots consisted of four 30-foot rows spaced 3.2 feet apart. Full canopy sprays of were made using an ATV-mounted boom sprayer with 3 TX-8 nozzles per row at 10 gallons per acre spray volume at 45 psi. Fungicide applications were made on 1 = July 2, 2 = July 17, 3 = July 30, 4 = August 14, 5 = August 30, 6 = September 10, and 7 = September 25 for the 2-week calendar schedule; 1 = July 2, 2 = July 27, 3 = August 13, 4 = September 7, and 5 = September 25 for the 3-week calendar schedule; and 1 = July 2, 2 = July 30, 3 = August 30, and 4 = September 25 for the 4-week calendar schedule. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in table for each variable were averaged across peanut cultivar.

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

Results: Late leaf spot was more common than early leaf spot. Application interval had a significant impact on the control of leaf spot diseases and rust with the Bravo Ultrex and both Headline 2.09E programs (Table 1). With the exception of rust control with the Headline 2.09E (9 fluid ounces) program, a significant decline in leaf spot and rust control was seen when application intervals were extended from 2 to 3 weeks. With the Bravo Ultrex and both rates of Headline 2.09E rates, no difference in leaf spot and rust control was seen when application intervals rose from 3 to 4 weeks. Stem rot hit counts were higher for the 3-week Bravo Ultrex and Headline 2.09E (9 fluid ounces) treatments when compared with the corresponding 2-week treatments. However the 2- and 4-week calendar treatments for Bravo Ultrex and both Headline 2.09E programs were similar. Application interval had a significant impact on yield response with the Bravo Ultrex and Headline (15 fluid ounces) programs. With Bravo Ultrex, yield was higher for the 2-week than for the 3-week schedule treatments and intermediate for the 4-week treatment. For the Headline (15 fluid ounces) program, higher yields were recorded for the 2- than for the 4-week schedule treatments and the yield for the 3-week schedule treatment was intermediate between the 2- and 4-week schedules.

Significant differences in the reaction of the three peanut cultivars to late leaf spot, rust, and stem rot were noted (Table 2). Of the three cultivars, GA02C had higher leaf spot ratings, while AP-3 had the lowest. Rust severity was considerably higher on GA03L than GA02C or AP-3. While overall stem rot incidence was low, GA02C had higher stem rot counts than GA03L. Despite significant differences in disease ratings, yields for the three cultivars were similar.

The ranking of fungicide programs for the control of late leaf spot and rust differed between peanut cultivars (Table 3). On AP-3, leaf spot and rust control with Headline 2.09E (15 fluid ounces), but not the lower rate of

Headline 2.09E and Bravo Ultrex, declined when application intervals were extended from 2 to 3 weeks. Application interval had no effect on leaf spot and rust control with both rates of Headline 2.09E and Bravo Ultrex alone on GA03L. In contrast, a significant increase in late leaf spot and rust ratings were seen on GA02C when application intervals for both Headline 2.09E and Bravo Ultrex programs were lengthened from 2 to 3 weeks. Similar leaf spot control was noted with the 3- and 4-week schedules with the above fungicide programs. With few exceptions, application interval with the Headline 2.09E and Bravo Ultrex programs had relatively little impact on the incidence of stem rot.

On AP-3, yield response with both rates of Headline 2.09E declined when application intervals were extended from 3- to 4-week intervals but were similar for the 2- and 3-week calendar schedules (Table 3). Yields were similar with Bravo Ultrex alone across all application intervals on AP-3 and GA03L. When application intervals were lengthened from 2- to 3- and 4-week intervals with the low rate of Headline 2.09E, yields significantly declined. On GA02C, a significant yield decline was seen between the 2- and 3-week intervals with the Bravo Ultrex alone but yields were similar across all application rates with both rates of Headline.

Summary: Extending application intervals beyond the traditional 2-week calendar schedule with Bravo Ultrex alone and programs that included two applications of two rates of Headline 2.09E did not always result in a significant increase in the level of late leaf spot. This pattern of similar late leaf spot control across 2-, 3-, and 4-week treatment schedules was particularly noticeable on the partially leaf spot resistant cultivars AP-3 and GA03L but not the more susceptible cultivar GA02C. Extending application intervals beyond 2 weeks sometimes resulted in a decline in rust control and yield response on AP-3 and GA02C.

Due to the risk of extended periods of rainfall or tropical storms, lengthening application intervals in a calendar schedule can easily result in failures to control late leaf spot and/or peanut rust. Additional work needs to be done to assess whether reducing fungicide application numbers will not result in catastrophic yield losses.

TABLE 1. IMPACT OF APPLICATION RATE AND INTERVAL ON DISEASE CONTROL AND YIELD RESPONSE OF SEVERAL PEANUT CULTIVARS

Treatment and rate/A	Application interval	Leaf spot rating[1]	Rust rating[2]	Stem rot rating[3]	Yield *lb/A*
Bravo Ultrex 1.4 lb	2 wk	3.1 b[4]	4.5 c	2.1 b	4531 ab
Bravo Ultrex 1.4 lb	3 wk	3.8 a	5.3 ab	3.5 a	4037 c
Bravo Ultrex 1.4 lb	4 wk	3.7 a	5.3 ab	2.6 a	4401 abc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2 wk	3.2 b	5.0 b	2.3 b	4446 abc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3 wk	3.6 a	5.6 ab	3.7 a	4097 bc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4 wk	3.8 a	5.8 a	2.7 ab	4209 bc
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	2 wk	3.1 b	4.5 c	2.4 b	4833 a
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	3 wk	3.8 a	5.8 a	2.9 ab	4462 abc
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	4 wk	3.6 a	6.0 a	2.6 a	4196 bc

[1] Leaf spot severity were 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] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[4] Mean separation in each column was according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

TABLE 2. DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut cultivar	LLS rating[1]	Rust rating[2]	Stem rot[3]	Yield *lb/A*
AP-3	3.0 c[4]	4.5 b	2.8 ab	4503 a
GA03L	3.5 b	6.4 a	2.1 b	4293 a
GA02C	4.1 a	4.9 b	3.3 a	4268 a

[1] Late leaf spot (LLS) was rated using the Florida 1 to 10 rating scale. [2] Rust severity was assessed using the ICRISAT 1 to 9 rating scale. [3] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.[4] 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 3. DISEASE RATINGS AND YIELD BY CULTIVAR

Treatment and rate/A	Application interval	Leaf spot rating[1]	Rust rating[2]	Stem rot rating[3]	Yield *lb/A*
AP-3					
Bravo Ultrex 1.4 lb	2 wk	2.8 c[4]	4.0 c	2.3 a	4577 ab
Bravo Ultrex 1.4 lb	3 wk	3.1 bc	4.3 bc	3.3 a	4210 b
Bravo Ultrex 1.4 lb	4 wk	3.0 bc	4.0 c	2.0 a	4726 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2 wk	2.8 c	4.5 abc	2.5 a	4439 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3 wk	2.9 bc	4.5 abc	2.8 a	4462 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4 wk	3.0 bc	4.8 abc	3.3 a	4175 b
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	2 wk	2.8 c	3.8 c	3.8 a	4990 a
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	3 wk	3.6 a	5.8 a	3.0 a	4634 ab
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	4 wk	3.3 ab	5.5 ab	2.3 a	4313 b
GA03L					
Bravo Ultrex 1.4 lb	2 wk	3.5 ab	6.3 a	1.5 ab	4324 ab
Bravo Ultrex 1.4 lb	3 wk	3.4 ab	6.3 a	2.0 ab	4347 ab
Bravo Ultrex 1.4 lb	4 wk	3.4 ab	6.3 a	2.5 ab	4152 b
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2 wk	3.5 ab	6.8 a	2.3 ab	4806 a
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3 wk	3.4 ab	6.5 a	3.3 a	4049 b
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4 wk	3.8 a	6.5 a	1.3 b	4175 b
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	2 wk	3.3 b	6.0 a	1.5 ab	4554 ab
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	3 wk	3.6 ab	6.5 a	2.8 ab	4060 b
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	4 wk	3.4 ab	6.8 a	2.3 ab	4175 b
GA02C					
Bravo Ultrex 1.4 lb	2 wk	3.0 c	3.3 b	2.3 b	4691 a
Bravo Ultrex 1.4 lb	3 wk	4.8 a	5.5 a	5.3 a	3556 b
Bravo Ultrex 1.4 lb	4 wk	4.8 a	5.8 a	3.3 ab	4324 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2 wk	3.3 c	3.8 b	2.3 b	4095 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3 wk	4.5 ab	5.8 a	5.0 a	3728 b
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4 wk	4.8 a	6.0 a	3.5 ab	4278 ab
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	2 wk	3.3 c	3.8 b	2.0 b	4955 a
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	3 wk	4.3 ab	5.0 a	3.0 ab	4691 a
Bravo Ultrex 1.4 lb Headline 2.09E 15 fl oz	4 wk	4.1 b	5.8 a	3.3 ab	4095 ab

[1] Leaf spot severity were 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] Stem rot incidence is expressed as the number of disease hits per 60 feet of row.
[4] Mean separation in each column was according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

COMPARING PEANUT DISEASE RISK PROGRAM FUNGICIDE SCHEDULES IN SOUTHWEST ALABAMA, GCREC

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

Objective: To compare the level of disease control and yield response of a partially disease-resistant peanut cultivar to fungicide treatment schedules developed for the Peanut Disease Risk Index in a dryland production system.

Materials and Methods: On May 18, the peanut cultivar GA03L (maturity group 4) was planted at a rate of six seed per foot of row using conventional tillage at the Gulf Coast Research and Extension Center in Fairhope, Alabama, in a Malbis fine sandy loam (organic matter < 1 percent) soil in a field cropped to peanut every third year. On April 25, 171 pounds per acre of 0-23-23 fertilizer + 10 pounds per acre of sulfur + 0.5 pound per acre of boron along with 2 pints per acre of Prowl herbicide were incorporated with a disk harrow. An early-post broadcast application of the herbicides Gramoxone Inteon at 8 fluid ounces per acre + Storm at 1.0 pint per acre + Butoxone 175 at 1 pint per acre was made on June 6. An additional application of Butoxone 175 at 1.5 pints per acre was made on June 21 to control morning glory. A tank-mixture of Cadre at 2 ounces per acre + Strongarm at 0.225 ounce per acre was made on June 27. The test area was not irrigated. A randomized complete block design with individual plots consisting of four 30-foot rows spaced 3.2 feet apart. Full canopy sprays of fungicides were made using an ATV-mounted boom sprayer with 3 TX-8 nozzles per row at 10 gallons per acre spray volume at 45 psi. Fungicide applications were made on 1 = July 2, 1.5 = July 7, 2 = July 17, 3 = July 30, 3.5 = August 9, 4 = August 14, 4.5 = August 21, 5 = August 30, 5.5 = September 7, 6 = September 10, 6.5 = September 19 and 7 = September 25.

Disease Assessment: Early and late leaf spot (LS) were rated together 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions 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. Final leaf spot and rust ratings were taken on October 4. Stem rot hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot damaged plants per row) were made immediately plot inversion on October 5. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: Rainfall totals for May and Oct were below the 30-year average but were average for June, July, August, and September. Extended periods of above average afternoon temperatures also were noted in June and July.

Results: Late leaf spot was more common than early leaf spot. Relatively few differences in leaf spot control were noted between the low, medium, and high risk fungicide programs (Table 1). The low risk Tilt Bravo SE/Abound 2SC (12.3 fluid ounces)/Bravo Weather Stik program gave poorer leaf spot control than the medium risk Bravo Weather Stik program. The standard high risk Bravo Weather Stik program controlled rust better than seven of the other fungicide programs. With Bravo Weather Stik, rust ratings were lower for the high than for the medium and low risk schedules. Rust severity for the high, medium, and low risk Tilt Bravo SE/Abound 2SC (18.2 fluid ounces)/Bravo Weather Stik treatments as well as the high risk Abound 2SC (12.3 and 18.2 fluid ounces) treatments were similar. Replacement of two applications Bravo Weather Stik in an Abound program (18.2 fluid ounces) with Provost 433 did not enhance rust control. Since overall stem rot incidence was very low, disease ratings, which are not presented in the table, were similar for all fungicide programs. With one exception, yields were similar across all fungicide risk programs. Yield response with the low risk Tilt Bravo/Abound 2SC (12.3 fluid ounces)/Bravo Weather Stik treatment was significantly below that obtained with the high risk Bravo Weather Stik standard.

Summary: Despite three and two fewer fungicide applications, the low and medium Disease Risk programs proved surprisingly effective when compared with the seven application high risk programs in controlling late leaf spot and rust on the GA03L peanut. Only the low risk Tilt Bravo SE/Abound 2SC/Bravo Ultrex program had lower yields compared with the high risk Bravo Ultrex standard. The high level of performance of the low and medium risk programs may be due to in part to relatively dry May weather patterns as well as the use of the partially leaf spot and stem rot resistant peanut cultivar GA03L. The Peanut Disease Risk Index is a work in progress. Additional field trials will be conducted in 2008 to further assess the effectiveness of fungicide programs designed to work in concert with the Peanut Disease Risk Index in southwest Alabama.

TABLE 1. COMPARISON OF PEANUT DISEASE RISK FUNGICIDE PROGRAMS FOR THE CONTROL OF FOLIAR DISEASES AND YIELD RESPONSE OF THE GA03L PEANUT, GCREC

Fungicide	—Application— Timing[1]	Number	Risk index	Leaf spot rating[2]	Rust rating[3]	Yield *lb/A*
Bravo Weather Stik 6F 24 fl oz	1- 7	7	High	2.9 b[4]	4.3 c	5534 a
Bravo Weather Stik 6F 24 fl oz	1.5, 3, 4.5, 5.5, 7	5	Med	2.8 c	5.2 ab	5388 ab
Bravo Weather Stik 6F 24 fl oz	2,3,5,5,6.5	4	Low	3.1 abc	5.5 ab	5235 ab
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	7	High	2.8 c	5.2 ab	5316 ab
Abound 2SC 12.3 fl oz	3, 5					
Bravo Weather Stik 6F 24 fl oz	1, 2, 4, 6, 7	7	High	2.8 c	5.8 a	5235 ab
Abound 2SC 18.2 fl oz	3, 5					
Tilt Bravo SE 36 fl oz	1, 2, 4	7	High	2.9 bc	5.0 bc	5388 ab
Abound 2SC 18.2 fl oz	3, 5					
Bravo Weather Stik 6F 24 fl oz	6, 7					
Tilt Bravo SE 36 fl oz	1.5, 4.5	5	Med	3.0 abc	5.2 ab	5396 ab
Abound 2SC 18.2 fl oz	3,5.5					
Bravo Weather Stik 6F 24 fl oz	7					
Tilt Bravo SE 36 fl oz	2	4	Low	3.3 a	5.7 ab	5146 ab
Abound 2SC 18.2 fl oz	3.5, 5					
Bravo Weather Stik 6F 24 fl oz	6.5					
Tilt Bravo SE 36 fl oz	2	4	Low	3.2 ab	5.7 ab	4985 b
Abound 2SC 12.3 fl oz	3.5, 5					
Bravo Weather Stik 6F 24 fl oz	6.5					
Bravo Weather Stik 6F 24 fl oz	1.5	5	Med	3.0 abc	5.0 bc	5163 ab
Provost 433 5.7 fl oz	3, 5.5					
Abound 2SC 18 fl oz	4.5, 7					

[1] Fungicide applications were scheduled on 1 = July 2, 2 = July 17, 3 = July 30, 4 = August 14, 5 = August 30, 6 = September 10, and 7 = September 25 the high risk programs; on 1.5 = July 9, 3 = July 30, 4 = August 14, 5.5 = September 7, and 7 = September 25 for the medium risk program; and for the low risk programs on 2 = July 17, 3.5 = August 9, 5 = August 30, and 6.5 = September 19.

[2] Leaf spot severity were 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] Means followed by the same letter in each column are not significantly different according to Fisher's protected least significant difference (LSD) test (P=0.05).

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

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

Objective: To evaluate the yield response and reaction of commercial runner peanut cultivars to early leaf spot and stem rot.

Production Methods: Before planting, the test site was chiseled and then smoothed with a leveling disk harrow. On May 29, nine runner market-type commercial peanut cultivars were sown at a rate of six seed per row feet of row in an Independence (Cahaba) loamy fine sand (organic matter <1 percent) at the E.V. Smith Research Center, Plant Breeding Unit, Tallassee, Alabama. Weed control was obtained with an at-plant application of Pendant at 2.4 pints per acre on May 29 followed by a broadcast application of Dual Magnum II at 1.5 pints per acre on June 1. The test area received 0.9, 1.0, 1.0, 0.8, 0.8, and 0.6 acre inches of water on May 27, June 12, August 10, August 24, September 5, and September 28, respectively. 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 5, July 18, August 2, August 22, September 6, September 20, and October 4 with a four-row, tractor-mounted sprayer.

Disease Assessment: Final TSWV hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made immediately before plot inversion on October 19 and November 7 on the group 4 and group 5 cultivars, respectively. Early and late leaf spot (LS) were rated together on October 19 and November 7 on the group 4 and group 5 cultivars, respectively, 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot hit counts (one hit was defined as ≤ 1 foot of consecutive stem rot damaged plants per row) were made immediately after plot inversion on the group 4 cultivars on October 19 and on the group 5 cultivars on November 7. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: While monthly rainfall totals were often below to well below the 30-year average, afternoon temperatures were unusually high throughout much of the summer.

Results: With the exception of McCloud, all cultivars produced a good stand. Due to very low TSWV pressure, no significant differences in cultivar virus ratings were seen. Peanut cultivars did differ significantly in their reaction to leaf spot diseases and stem rot. Early leaf spot was more common than late leaf spot on all cultivars. Lowest leaf spot ratings were recorded for GA03L and McCloud. In contrast, noticeable leaf spotting in the mid- and upper canopy along with some premature leaf loss was seen on AT3081R, AT3085RO, and to a lesser extent on GA02C. Stem rot severity was also higher on AT3081R and AT3085RO than all of the other peanut cultivars except for Carver. Stem rot hit counts were lower for GA03L, GA02C, and C-99R than for the Georgia Green standard. Cultivars that suffered the heaviest stem rot and leaf spot damage had the lowest yields. Highest yields were recorded for AP-3, GA03L, GA02C, C-99R, and Georgia Green.

Summary: So far, TSWV incidence has remained low at this location and had no impact on peanut production. Cultivars that displayed the best stem rot resistance such as AP-3, GA03L, and GA02C also had significantly higher yields than AT3081R, AT3085RO, and Carver. Despite higher stem rot counts, yield for Georgia Green, AP-3, GA03L, and GA02C were similar.

DISEASE RATINGS AND YIELDS FOR COMMERCIAL RUNNER PEANUT CULTIVARS, PBU

Peanut line	Leaf spot rating[1]	Stem rot hits/ 60 row ft[2]	Yield *lb/A*
Maturity group 4 (mature 130-145 DAP)			
AP-3	3.4 c[3]	3.2 bc	4391 a
AT3081R	4.7 a	10.5 a	3231 b
AT3085RO	4.6 a	10.7 a	3317 b
GA03L	2.8 d	0.7 c	4274 a
Carver	3.8 bc	9.7 a	3408 b
Georgia Green	4.0 b	6.2 b	3760 ab
McCloud	2.8 d	--	--
Maturity group 5 (mature 140-165 DAP)			
C-99R	3.8 bc	1.8 c	4021 ab
GA02C	4.3 ab	0.5 c	4454 a

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Stem rot severity is expressed as the number of hits per 60 feet of row.
[3] Mean separation in each column was according to analysis of variance and Fisher's protected least significant difference (LSD) test (*P*=0.05).

FUNGICIDE PROGRAMS COMPARED FOR LEAF SPOT AND STEM ROT CONTROL AS WELL AS YIELD RESPONSE OF GEORGIA GREEN PEANUT, PBU

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

Objective: To compare the efficacy of recommended fungicide programs for the control of early leaf spot and stem rot as well as the yield of the peanut cultivar Georgia Green in central Alabama.

Production Methods: Before planting, the test site was chiseled and then smoothed with a leveling disk harrow. On May 29, the runner-type 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) at the E.V.Smith Research Center, Plant Breeding Unit in Tallassee, Alabama. Weed control was obtained with an at-plant application of Pendant at 2.4 pint per acre on May 29 followed by a broadcast application of Dual Magnum II at 1.5 pint per acre on June 1. The test area received 0.9, 1.0, 1.0, 0.8, 0.8, and 0.6 acre inches of water on May 27, June 12, August 10, August 24, September 5, and September 28, respectively. Plots, which contained four 30-foot rows spaced 3 feet apart, were arranged in a randomized complete block with four replications. Fungicide treatments were applied on 1 = July 4, 2 = July 18, 3 = August 2, 4 = August 22, 5 = September 6, 6 = September 20, and 7 = October 4 with a four-row tractor-mounted sprayer.

Disease Assessment: Early and late leaf spot (LS) were rated together on October 19 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead. Stem rot 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 19. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: While monthly rainfall totals were often below to well below the 30-year average, afternoon temperatures were unusually high throughout much of the summer.

Results: Early leaf spot was the primary leaf spot disease observed. The Headline 2.09E program gave better leaf spot control than any of the remaining fungicide programs. While less effective than Headline 2.09E, the Provost 433SC, Abound 2SC, and Absolute programs proved more effective in controlling early leaf spot compared with the season-long Bravo Ultrex standard, which outperformed the Bravo Ultrex + Moncut 70DF program. Fewest stem rot hit were noted with the Provost 433SC, Bravo Ultrex + Moncut 70DF, and Artisan 3.6E programs. When compared with the season-long Bravo Ultrex standard, no reduction in stem rot incidence was obtained with the Abound 2SC, Headline 2.09E, and Absolute programs. Yields were higher for the Bravo Ultrex + Moncut 70DF, Abound 2SC, and Artisan 3.6E programs when compared with the Bravo Ultrex standard and to a lesser extent the Headline 2.09E program.

Summary: Generally, programs that gave the best control of stem rot also had the highest pod yields. Early leaf spot apparently had limited impact on peanut yield. The best combination of disease control and yield response was obtained with the Bravo Ultrex + Moncut 70DF and Abound 2SC programs.

FUNGICIDE PROGRAMS COMPARED FOR DISEASE CONTROL AND YIELD RESPONSE

Fungicide regime and rate/A	Application timing	Leaf spot rating[1]	Stem rot hits/60 row ft[2]	Yield *lb/A*
Bravo Ultrex 1.4 lb	1 - 7	3.9 b[3]	6.0 a	4670 b
Bravo Ultrex 1.4 lb	1,2,7	3.3 c	1.3 b	5193 ab
Provost 433SC 8 fl oz	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	4.5 a	1.0 b	5374 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	4.1 ab	1.0 b	5318 ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 c	3.3 ab	5492 a
Abound 2SC 18.3 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.1 d	6.5 a	4732 b
Headline 2.09E 9 fl oz	3,5			
Absolute 3.5 fl oz	1,2	2.9 c	5.8 a	4928 ab
Bravo Ultrex 1.4 lb	3,4,5,6,7			

[1] Leaf spot was rated using the Florida 1 to 10 rating scale.
[2] Stem rot severity is expressed as the number of disease hits per 60 feet of row.
[3] Mean separation in each column was according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

TSWV REACTION AND YIELD RESPONSE OF COMMERCIAL RUNNER PEANUT CULTIVARS IN A DRYLAND PRODUCTION SETTING, WREC

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

Objective: To assess the reaction of commercial runner peanut cultivars to tomato spotted wilt virus, leaf spot, and soil-borne diseases as well as their yield response in a dryland production system.

Materials and Methods: On May 8, commercial and experimental peanut lines were planted at a rate of approximately six seed per foot of row in a field that was cropped to peanut after 1 year of cotton and then 1 year of corn 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 July 9. On April 25, Sonalan at 1.0 quart per acre + Strongarm at 0.45 ounce per acre was applied for preplant weed control. Escaped weeds were killed with an application of Basagran at 1.0 quart per acre + Windcheck at 0.25 percent v/v on July 24 or were pulled by hand. Disease control was maintained with an applications of Equus 720 6F at 1.5 pints per acre on June 14, Bravo Weather Stik at 1.5 pints per acre on July 2, Abound 2SC at 18.3 fluid ounces per acre + Solubor at 0.5 pound per acre on July 11, Chloronil 720 at 1.5 pints per acre + Solubor at 1.0 pound per acre on July 27, Abound 2SC at 18.3 fluid ounces per acre + Solubor at 0.5 pound per acre on August 15, and Chloronil 720 at 1.5 pints per acre on August 30 and September 11. Temik 15G at 6.5 pounds per acre was applied in-furrow for thrips control. In addition, an application of Orthene at 0.5 pound per acre was made on May 30 to control thrips. Comite II at 2.25 pints per acre was applied on September 13 to control spider mites. Plots were not irrigated.

Plots consisted of two 20-foot rows spaced 3 feet apart and were arranged in a randomized complete block. Final TSWV hit counts (one hit was defined as ≤ 1 foot of consecutive severely TSWV-damaged plants per row) were made on September 7, September 26, October 2, and October 11 for the maturity group 3, 4, 4.5, and 5 peanut cultivars, respectively.

Disease Assessment: Early and late leaf spot (LS) were rated together on September 24, September 26, October 2, and October 15 on the maturity group 3, 4, 4.5, and 5 cultivars, respectively, 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 = lesions noticeable and ≤ 25 percent defoliation, 6 = lesions numerous and ≤ 50 percent defoliation, 7 = lesions very numerous and ≤ 75 percent defoliation, 8 = numerous lesions on few remaining leaves and ≤90 percent defoliation, 9 = very few remaining leaves covered with lesions and ≤ 95 percent defoliation, and 10 = plants defoliated or dead.

Stem rot 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 24, October 9, October 15, and October 18 on the maturity group 3,4,4.5, and 5 cultivars, respectively. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

Weather: Rainfall totals for May, June, July, and August were below to well below the historical average for this location but average to above average in September and October. Afternoon temperatures in June and July were often above normal.

Results: Noticeable spider mite damage was seen over a sizable portion of this peanut planting in mid-September. Due to the unusually dry weather conditions as well as 3-year rotation pattern, leaf spot and stem rot damage was minimal throughout this peanut planting. Significant differences in TSWV incidence were seen between peanut cultivars. Incidence of TSWV was higher on Georgia Green compared with 18 of the remaining 23 peanut cultivars. Other commercial peanut cultivars that had TSWV hit count similar to those of Georgia Green were Andru II, AT3081R, McCloud, and surprisingly GA03L. Among the commercial runner peanut cultivars, fewest TSWV hit

were noted in C-99R, GA06G, Florida 07, Georgia Greener, AT3085RO, Tifguard, and York. Overall, yields also tended to be higher for the peanut cultivars that suffered the least TSWV damage. Florida 07 yielded more than all peanut cultivars except for the experimental lines C-724-19-25 and CRSP648, as well as the commercial cultivars AT3085RO, Carver, GA06G, Georgia Greener, McCloud, and Tifguard.

TSWV HIT COUNTS AND YIELD FOR COMMERCIAL AND SELECTED EXPERIMENTAL PEANUT CULTIVARS IN A DRYLAND PRODUCTION SYSTEM, WREC

Peanut cultivar	Maturity group	TSWV hits/40 ft[1]	Yield *lb/A*
Andru II	3	14.0 abc[2]	2677 l
AP-3	4.5	11.1 b-g	3585 f-k
AP-4	4	8.3 c-h	3739 c-i
AT3081R	4	13.0 a-d	3376 h-k
AT3085RO	4	7.3 d-h	4265 a-d
C-724-19-25	4	5.3 gh	4420 ab
C-99R	4.5	5.6 gh	3893 b-h
Carver	4	10.8 b-g	4338 abc
CRSP14	4.5	10.0 c-h	3049 jkl
CRSP648	5	6.8 e-h	4193 a-f
CRSP702	5	11.3 b-g	3449 h-k
CRSP 910	4.5	9.3 c-h	3630 e-k
EXP 27-1516	4	11.8 b-f	3666 d-j
EXP 31-1516	4	18.0 a	3467 g-k
Florida 07	4.5	6.0 fgh	4538 a
Florida Fancy[3]	4	11.3 b-g	3222 i-l
GA02C	4.5	11.3 b-g	3340 h-k
GA03L	4	12.5 a-e	3757 c-i
GA06G	4	4.5 h	4519 a
Georgia Green	4	18.3 a	3149 i-l
Georgia Greener	4	5.8 fgh	4229 a-e
McCloud	4	16.3 ab	4084 a-g
Tifguard (C-724-19-15)	4.5	5.5 gh	3957 a-h
York	4.5	6.8 e-h	3022 kl

[1] TSWV severity is expressed as the number of disease hits per 40 ft of row.
[2] Means in each column that are followed by the same letter are significantly different according to Fisher's protected least significant difference (LSD) test (P=0.05).
[3] All cultivars are a runner-market type except for Florida Fancy, which is a Virginia-market type.

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

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

Objectives: (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; (2) to define the agronomic benefits of corn as a rotation partner with peanut and cotton.

Production Methods: On March 5, 206 pounds per acre of 9-19-19 analysis fertilizer amended with 10 pounds per acre of sulfur, 3 pounds per acre of zinc, and 2 pints per acre of Prowl herbicide were broadcast and lightly incorporated. The entire study area was ripped and bedded on March 6. Roundup Weathermax at 22 fluid ounces per acre was broadcast over the areas to be planted to cotton and peanut as well as the corn plots on April 16 and May 3. 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: On March 20, the corn variety DeKalb DKC 69-72 was planted. On May 8, 382 pounds per acre of a mixture of ammonium sulfate and urea was broadcast. A postdirected application of Roundup Weathermax at 22 fluid ounces per acre plus Atrazine at 2 quarts per acre was made to the plots planted to corn. Corn plots were harvested on September 4.

Cotton: The cotton variety DP555BR and peanut cultivar GA03L were planted on May 10 and May 23, respectively. Thrips control on cotton was provided by an in-furrow application of 6.5 pounds per acre of Temik 15G. An application of Roundup Weathermax at 22 fluid ounces per acre made to cotton on May 29 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 26. Escape weeds were pulled by hand. The plant growth regulator Stance at 2 fluid ounces per acre was applied to cotton alone or tank-mixed with the herbicide Evoke at 0.15 ounces per acre on June 26, July 10, and July 19. Cotton was prepared for harvest with an application of Harvade 5F at 8 fluid ounces per acre + Dropp 50W at 2 ounces per acre + Super Boll at 1 pint per acre + Crop Oil at 1 quart per 100 gallons of spray volume on September 17 and followed by an application of Aim 2EC at 1.5 fluid ounces per acre on September 28. Cotton plots were picked on October 4.

Peanut: The peanut cultivar GA03L was planted on May 10 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 + Butoxone 175 at 1 pint per acre on June 8 followed by an application of Cadre 70DG at 2 ounces per acre + Strongarm 84WDG at 0.225 ounce per acre + LI700 at 2 quarts per 100 gallons of spray volume on June 26. 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 26, July 10, July 25, August 9, August 23, and September 6. Peanut plots were combined October 8.

Disease and Nematode Assessment: Incidence of TSWV was assessed by counting the number of TSWV hits, where one hit is defined as ≤ 1 foot of consecutive TSWV-damaged plants per row, on September 16. Late leaf spot severity was rated using the Florida 1 to 10 peanut leaf spot scoring system on October 3. White mold hit counts, where one hit is defined as ≤ 1 foot of consecutive white mold damaged plants per row, were made on October 3 when the peanuts were inverted. Soil samples for a nematode assay were taken from the corn plots on June 29 and October 10 but only the former samples have been processed. Soil samples for a nematode assay from the peanut and cotton plots were collected on September 26 but have not yet been processed.

Surprisingly, cropping frequency influenced the incidence of the virus disease TSWV in peanut (Table 1). Fewer TSWV hits were found where peanut were cropped behind 1 year of cotton than 1 or more years of peanut. Incidence of this disease was also lower for peanut behind corn compared with cotton-peanut-peanut cropping

sequence. Late leaf spot ratings for the cotton-peanut-peanut cropping sequence were also higher than in peanut behind 1 year of cotton. Cropping frequency did not have a significant impact on the incidence of white mold in peanut. Rust incidence was minimal in all peanut plots.

In contrast to peanut, damaging rotation-related disease outbreaks have not emerged in cotton or corn. Regardless of corn cropping frequency, only trace levels of common corn rust along with southern rust were observed. No increase in foliar or soil-borne diseases has been seen in cotton.

Over the last few years, a noticeable increase in the number of juvenile root-knot nematode larvae had been seen in corn. The identity of this root-knot nematode will be determined in 2008. In 2007, corn cropping frequency had a significant impact on populations of this nematode in the corn root zone. Highest larvae counts were noted in the plots maintained in continuous corn for 5 years while the fewest larvae were recovered on corn planted behind 1 year of peanut (Table 2). Intermediate larvae counts were seen where corn followed 1 year of cotton or corn. Root-knot nematode larvae counts in the peanut and cotton plots will be available at a later date.

Seed cotton yields for DPL 555BR were exceptionally high in 2007 (Table 3). While yields for nearly all cotton rotation sequences were similar, cotton that followed peanut in 2005 and cotton in 2006 yielded significantly less than cotton cropped behind peanut. Cropping frequency is beginning to have an influence on the yield of corn. Yield for corn behind peanut in 2005 and corn in 2006 was lower compared with the same crop following either peanut or cotton in 2006. For the continuous corn rotation, yields were intermediate between those reported for the above cropping patterns. Where peanut were cropped for five consecutive years, pod yields were lower compared with peanut behind 1 year of cotton but not corn. Yield response for peanut following peanut was similar to yields reported for plots in continuous peanut production and peanut behind cotton.

Summary: After 5 years, cropping frequency has had a significant impact on the occurrence of diseases and root-knot nematodes as well as yield of peanut and corn. Increasing root-knot populations may be the cause of decline in yield seen in continuous corn. While a trend towards declining cotton yields with increasing cropping frequency is beginning to emerge, no cause for the yield decline has been found. Higher incidence of TSWV and late leaf spot, which are associated with the more frequent cropping of peanut, may also be responsible for downturn in peanut yield.

TABLE 1. IMPACT OF CROP ROTATION ON THE LEVEL OF DAMAGE ATTRIBUTED TO DISEASES AND NEMATODES OF PEANUT, 2007

——Rotation sequence——					Root	TSWV	LLS	White
2003	2004	2005	2006	2007	knot	rating[1]	rating[2]	mold
Pnut	Pnut	Pnut	Pnut	Pnut	--	9.5 ab[3]	5.4 ab	15.8 a
Pnut	Corn	Pnut	Corn	Pnut	--	6.3 bc	4.4 ab	11.0 a
Pnut	Pnut	Corn	Pnut	Pnut	--	10.0 ab	5.6 a	13.5 a
Pnut	Pnut	Cotton	Pnut	Pnut	--	13.0 a	4.8 ab	16.0 a
Pnut	Cotton	Pnut	Cotton	Pnut	--	4.8 c	4.3 b	7.3 a

[1] TSWV incidence is expressed as number of hits per 60 feet of row.
[2] Late leaf spot (LLS) was rated on September 19 using the Florida 1 to 10 leaf spot scoring system.
[3] Means in each column followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).
-- = information not available.

TABLE 2. IMPACT OF CROP ROTATION ON THE POPULATIONS OF THE SOUTHERN ROOT-KNOT NEMATODE ON CORN, COTTON, AND PEANUT, 2007

Crop sequence					Root-knot larval (J2) counts		
2003	2004	2005	2006	2007	Cotton	Corn	Peanut
Corn	Corn	Corn	Corn	Corn	--	295 a[1]	--
Corn	Peanut	Corn	Peanut	Corn	--	17 b	--
Corn	Corn	Peanut	Corn	Corn	--	78 ab	--
Corn	Corn	Corn	Peanut	Corn	--	25 b	--
Peanut	Peanut	Peanut	Peanut	Peanut	--	--	NA
Peanut	Corn	Peanut	Corn	Peanut	--	--	NA
Peanut	Peanut	Corn	Peanut	Peanut	--	--	NA
Cotton	Cotton	Cotton	Cotton	Cotton	NA	--	--
Peanut	Peanut	Cotton	Peanut	Peanut	--	--	NA
Cotton	Peanut	Cotton	Peanut	Cotton	NA	--	--
Peanut	Cotton	Peanut	Cotton	Peanut	--	--	NA
Peanut	Cotton	Cotton	Peanut	Cotton	NA	--	--
Cotton	Cotton	Peanut	Cotton	Cotton	NA	--	--
Cotton	Cotton	Cotton	Peanut	Cotton	NA	--	--
Cotton	Corn	Cotton	Corn	Cotton	NA	--	--
Cotton	Corn	Corn	Cotton	Corn	NA	172 ab	--
Cotton	Corn	Corn	Corn	Cotton	NA	--	--
Cotton	Cotton	Corn	Cotton	Cotton	NA	--	--
Cotton	Cotton	Cotton	Corn	Cotton	NA	--	--

[1] 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).
-- = information not available.

TABLE 3. IMPACT OF CROPPING SEQUENCE ON THE YIELD OF CORN, COTTON, AND PEANUT

Crop sequence					2007 yields		
2003	2004	2005	2006	2007	Lint cotton *lb/A*	Corn *bu/A*	Peanut *lb/A*
Corn	Corn	Corn	Corn	Corn	--	103.6 ab	--
Corn	Peanut	Corn	Peanut	Corn	--	109.5 ab	--
Corn	Corn	Peanut	Corn	Corn	--	97.3 b	--
Corn	Corn	Corn	Peanut	Corn	--	113.2 a	--
Peanut	Peanut	Peanut	Peanut	Peanut	--	--	3393 b
Peanut	Corn	Peanut	Corn	Peanut	--	--	4405 ab
Peanut	Peanut	Corn	Peanut	Peanut	--	--	3588 ab
Cotton	Cotton	Cotton	Cotton	Cotton	2518 ab[1]	--	--
Peanut	Peanut	Cotton	Peanut	Peanut	--	--	3945 ab
Cotton	Peanut	Cotton	Peanut	Cotton	2542 ab	--	--
Peanut	Cotton	Peanut	Cotton	Peanut	--	--	4704 a
Peanut	Cotton	Cotton	Peanut	Cotton	2841 a	--	--
Cotton	Cotton	Peanut	Cotton	Cotton	2335 b	--	--
Cotton	Cotton	Cotton	Peanut	Cotton	2450 ab	--	--
Cotton	Corn	Cotton	Corn	Cotton	2576 ab	--	--
Cotton	Corn	Corn	Cotton	Corn	--	110.5 a	--
Cotton	Corn	Corn	Corn	Cotton	2622 ab	--	--
Cotton	Cotton	Corn	Cotton	Cotton	2680 ab	--	--
Cotton	Cotton	Cotton	Corn	Cotton	2588 ab	--	--

[1] 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).
-- = information not available.

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

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Objectives: (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; (2) to define the agronomic benefits of corn as a rotation partner with peanut and cotton.

General: 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, 2007. On March 20, 67 pounds per acre of 0-0-60 (murate of potash) fertilizer was broadcast and incorporated with a disk harrow. A second broadcast application of 0-0-60 was made on July 12. A hose-tow irrigation system was used to apply 0.9, 0.7, 1.0, 0.8, 1.0, 0.7, 1.0, and 1.3 acre inches of water on May 10, May 24, June 8, June 21, June 28, July 25, August 18, and August 27, respectively. Individual plots of corn, cotton, and peanut consisted of eight rows that were 30 feet in length. The experimental design was a randomized complete block with four replications.

Corn: Plots being planted to corn received a broadcast application of 176 pounds per acre of 34-0-0 analysis fertilizer on March 20, were leveled with a field cultivator, and then planted to Pioneer 31G66 corn on 30-inch centers. A layby application of 288 pounds per acre of 33-0-0 was made to corn on May 3. An early postapplication of a tank mixture of Dual Magnum II at 12 fluid ounces per acre + Atrazine at 1.75 quarts per acre was broadcast on March 21 to control weeds in corn. Corn plots were combined on August 14.

Cotton: On May 14, 88 pounds per acre of 34-0-0 analysis fertilizer was incorporated with a leveling disk harrow into the plots scheduled to be planted to DPL 555 cotton on 3-foot centers later that day. Thrips and damping-off control on cotton was provided by in-furrow applications of Temik 15G at 6.5 pounds per acre and Terraclor Super X at 8.0 pounds per acre. Preemergent weed control was provided by an application of Pendant at 1 quart per acre. Postemergent weed control was obtained with applications of Roundup at 1 quart per acre on June 12 and July 17. Cotton plots were hand weeded or hoed as needed during the growing season. An application of Finish at 1.5 pints per acre to cotton on September 21 was followed by an application of Def-6 at 1.5 pints per acre plus Ginstar at 8 fluid ounces per acre on September 25. Cotton plots were picked on October 1.

Peanut: On May 14, plots planted to peanut were prepared for planting with a leveling disk harrow. The peanut cultivar Georgia Green was planted in single rows on 3-foot centers on May 15 with Temik 15G at 6.5 pounds per acre applied in-furrow. Weed control was obtained with a preemergent application of Pendant at 1 quart per acre + Dual Magnum II at 1.5 pints per acre on May 16. On 12 July, Poast at 1.0 pint per acre was broadcast over the peanuts for postemergent grass control. Peanut plots were hand weeded or hoed 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 June 25, July 12, July 27, 8 August, 22 August, September 6, and September 21. An application of Moncut 70DF at 2.9 pounds per acre was made on July 12 to four of eight rows of each peanut plot. Peanuts were inverted on October 5 and picked on October 11.

Disease and Nematode Assessment: Early leaf spot severity was rated using the Florida 1 to 10 peanut leaf spot scoring system on September 19. White mold hit counts, where one hit is defined as ≤ 1 foot of consecutive white mold damaged plants per row, were made on October 5. Incidence of tomato spotted wilt virus (TSWV) in peanut was assessed on September 7 by counting the number of TSWV hits where one hit is defined as ≤ 1 foot of consecutive TSWV-damaged plants per row. Soil samples for a nematode assay, which were taken on June 29 and on September 24, were processed using the sugar flotation method.

Results: In 2007, cropping sequence had a significant impact on the leaf spot and white mold severity but not on TSWV in peanut (Table 1). Early leaf spot ratings were lower where peanut but not cotton followed 1 year of corn than 1 or more years of peanut. When compared with peanut cropped behind 1 year of corn, white mold damage was higher for the corn-peanut-peanut rotation sequence.

When averaged across all cropping sequences, a single application of 2.0 pounds per acre of Moncut 70DF gave approximately 76 percent control of white mold (Table 2). Despite 79 percent white mold control with Moncut 70DF, the smallest increase in pod yield (166 pounds per acre) was seen in the plots maintained in continuous peanut production. Otherwise, yield gains with Moncut 70DF for the remaining cropping sequences ranged from 510 to 1,218 pounds per acre.

Cotton root-knot larvae counts were higher in the plots maintained in continuous corn than for the corn-peanut-corn rotation, while the counts for the remaining corn cropping sequences were intermediate (Table 3).

Cropping sequence had a significant impact on the yield of cotton, corn, and peanut (Table 4). Highest cotton yields were noted where this crop followed peanut in 2006 as well as in the cotton-corn-cotton rotation pattern. As the frequency of corn or peanut in rotation with cotton declined, cotton yields fell significantly. Lowest cotton yields were noted for continuous cotton plot or where corn was rotated with cotton once over the 5-year study period. Corn yield was higher by nearly 30 bushels per acre for the corn-peanut-corn and peanut-corn-corn rotations than where corn followed cotton or 4 consecutive years of corn. Peanut cropped behind 1 year of cotton or corn had equally high yields. When compared with the latter cropping patterns, a sizable yield decline was seen where peanut followed either corn or cotton in 2005 and then peanut in 2006. In the plots planted to peanut for five consecutive years, pod yields were similar to the corn-peanut but below those for the cotton–peanut rotation.

Summary: Cropping patterns had a significant impact on population density of cotton root-knot nematode as well as on the yield of corn, cotton, and peanut. While corn is an excellent carryover host for the cotton root-knot nematode, cotton yields were higher when cotton followed corn. Peanut is a better rotation partner with cotton than corn, particularly when damaging populations of the cotton root-knot nematode are present. White mold and leaf spot damage levels trended higher and yields lower with the increasing frequency of peanut production. Effectiveness of Moncut 70DF against white mold was reflected in substantially higher peanut yields for all peanut cropping patterns with the exception of continuous peanut rotation.

TABLE 1. IMPACT OF CROP ROTATION ON THE LEVEL OF DAMAGE ATTRIBUTED TO DISEASES AND NEMATODES OF PEANUT, 2007

————Crop sequence————					Root	TSWV	ELS	White
2003	2004	2005	2006	2007	knot	rating[1]	rating[2]	mold[1]
Pnut	Pnut	Pnut	Pnut	Pnut	NA[3]	3.5 a[4]	5.0 a	16.5 ab
Pnut	Corn	Pnut	Corn	Pnut	NA	3.8 a	4.0 b	11.3 b
Pnut	Pnut	Corn	Pnut	Pnut	NA	3.3 a	4.9 a	24.5 a
Pnut	Pnut	Cotton	Pnut	Pnut	NA	3.0 a	5.0 a	21.5 ab
Pnut	Cotton	Pnut	Cotton	Pnut	NA	4.5 a	4.5 ab	17.8 ab

[1] TSWV and white mold incidence is expressed as number of hits per 60 feet of row.
[2] Early leaf spot (ELS) was rated on September 19 using the Florida 1 to 10 scoring system.
[3] NA = nematode soil samples have not been processed.
[4] Means in each column 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 MONCUT 70DF ON WHITE MOLD AND PEANUT YIELD RESPONSE

————Crop sequence————					–White mold[1]–		—Yield lb/A—		Yield gain
2003	2004	2005	2006	2007	NT	FT	NT[2]	FT[3]	lb/A
Pnut	Pnut	Pnut	Pnut	Pnut	16.5 ab[4]	3.5 a	3416 bc	3582 b	166
Pnut	Corn	Pnut	Corn	Pnut	11.3 b	7.5 a	4197 ab	5415 a	1218
Pnut	Pnut	Corn	Pnut	Pnut	24.5 a	5.5 a	3085 c	4018 b	933
Pnut	Pnut	Cttn	Pnut	Pnut	21.5 ab	2.8 a	3005 c	3515 b	510
Pnut	Cttn	Pnut	Cttn	Pnut	17.8 ab	2.8 a	4543 a	5503 a	960

[1] White mold damage is expressed as number of hits per 60 feet of row.
[2] NT = peanuts not treated with 2.9 pounds per acre of Moncut 70DF.
[3] FT = peanuts treated with 2.9 pounds per acre of Moncut 70DF.
[4] Means in each column 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 POPULATIONS OF THE COTTON ROOT-KNOT NEMATODE ON CORN, COTTON, AND PEANUT IN 2007

Crop sequence					Root-knot larval (J2) counts		
2003	2004	2005	2006	2007	Cotton	Corn	Peanut
Corn	Corn	Corn	Corn	Corn	--	313 a[1]	--
Corn	Peanut	Corn	Peanut	Corn	--	108 b	--
Corn	Corn	Peanut	Corn	Corn	--	210 ab	--
Corn	Corn	Corn	Peanut	Corn	--	155 ab	--
Peanut	Peanut	Peanut	Peanut	Peanut	--	--	NA[2]
Peanut	Corn	Peanut	Corn	Peanut	--	--	NA
Peanut	Peanut	Corn	Peanut	Peanut	--	--	NA
Cotton	Cotton	Cotton	Cotton	Cotton	NA	--	--
Peanut	Peanut	Cotton	Peanut	Peanut	--	--	NA
Cotton	Peanut	Cotton	Peanut	Cotton	NA	--	--
Peanut	Cotton	Peanut	Cotton	Peanut	--	--	
Peanut	Cotton	Cotton	Peanut	Cotton	NA	--	--
Cotton	Cotton	Peanut	Cotton	Cotton	NA	--	--
Cotton	Cotton	Cotton	Peanut	Cotton	NA	--	--
Cotton	Corn	Cotton	Corn	Cotton	NA	--	--
Cotton	Corn	Corn	Cotton	Corn	NA	291 ab	--
Cotton	Corn	Corn	Corn	Cotton	NA	--	--
Cotton	Cotton	Corn	Cotton	Cotton	NA	--	--
Cotton	Cotton	Cotton	Corn	Cotton	NA	--	--

[1] Means in each column followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).
[2] NA = nematode soil samples have not been processed.

TABLE 4. IMPACT OF CROPPING SEQUENCE ON THE YIELD OF CORN, COTTON, AND PEANUT

Crop sequence					2007 yields		
					Lint cotton	Corn	Peanut
2003	2004	2005	2006	2007	*lb/A*[1]	*bu/A*	*lb/A*
Corn	Corn	Corn	Corn	Corn	--	106.8 c[2]	--
Corn	Peanut	Corn	Peanut	Corn	--	137.3 ab	--
Corn	Corn	Peanut	Corn	Corn	--	142 a	--
Corn	Corn	Corn	Peanut	Corn	--	115.7 bc	--
Peanut	Peanut	Peanut	Peanut	Peanut	--	--	3416 bc
Peanut	Corn	Peanut	Corn	Peanut	--	--	4197 ab
Peanut	Peanut	Corn	Peanut	Peanut	--	--	3085 c
Cotton	Cotton	Cotton	Cotton	Cotton	726 f	--	--
Peanut	Peanut	Cotton	Peanut	Peanut	--	--	3005 c
Cotton	Peanut	Cotton	Peanut	Cotton	1821 a	--	--
Peanut	Cotton	Peanut	Cotton	Peanut	--	--	4543 a
Peanut	Cotton	Cotton	Peanut	Cotton	1767 ab	--	--
Cotton	Cotton	Peanut	Cotton	Cotton	1204 bcdef	--	--
Cotton	Cotton	Cotton	Peanut	Cotton	1628 abc	--	--
Cotton	Corn	Cotton	Corn	Cotton	1470 abcd	--	--
Cotton	Corn	Corn	Cotton	Corn	--	108.1 c	--
Cotton	Corn	Corn	Corn	Cotton	1283 bcde	--	--
Cotton	Cotton	Corn	Cotton	Cotton	823 ef	--	--
Cotton	Cotton	Cotton	Corn	Cotton	1004 def	--	--

[1] Seed cotton yield of DPL 555.
[2] Means in each column followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (*P*=0.05).
-- = information not available.

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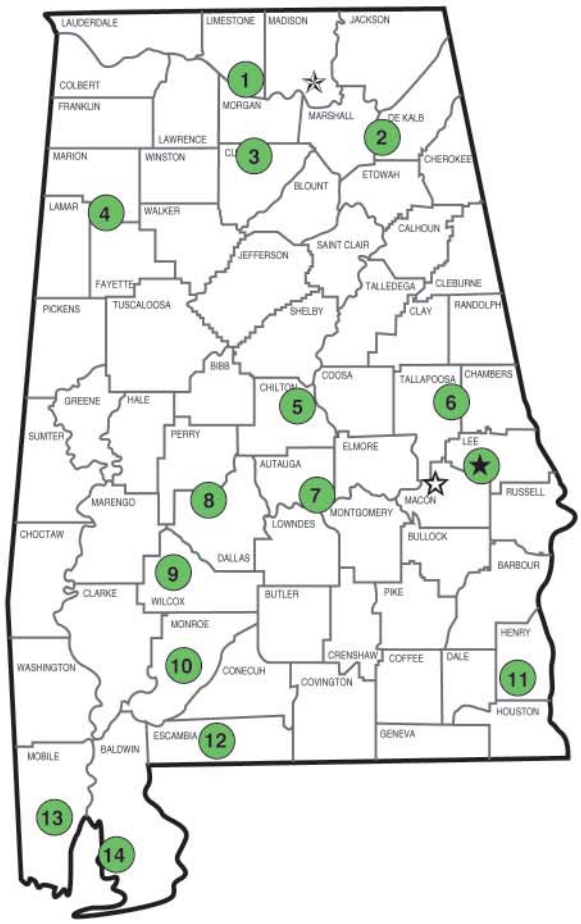

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