Peanut Disease Control Field Trials, 2006: Standard Fungicide Trials

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Peanut Disease Control Field Trials, 2006
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 2006 production season at the WREC, temperatures were at or above historical averages (Figure 1), and monthly rainfall totals were below historical averages in May, June, and July and near normal in August, September, and October, resulting in late season increase in disease severity (Figure 2). As a result, increases in leaf spot severity were observed in all trials near the end of the growing season whereas soil-borne disease incidence was reduced and little impact was observed on yield.

At the GCREC, temperatures were near normal throughout the entire growing season and rainfall was below historical averages in May, June, and July and near normal in August, September, and October. More consistent rainfall throughout the growing season led to above normal leaf spot severity and higher incidence of soil-borne diseases. However, little impact was observed on yield.

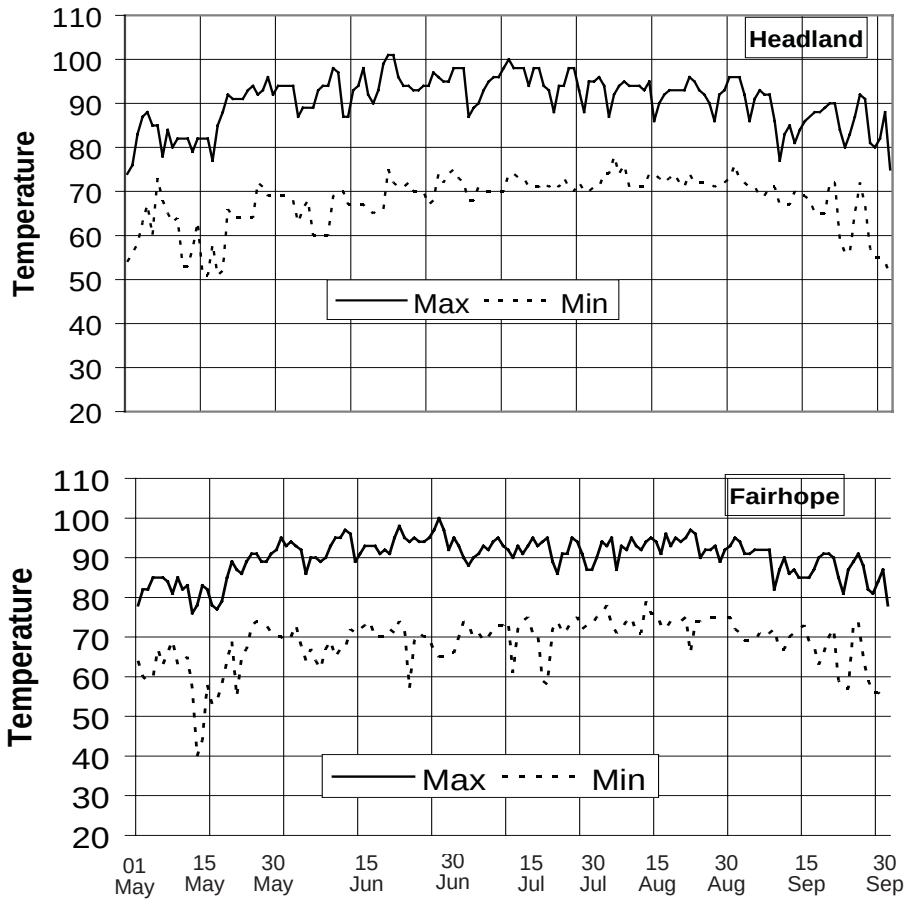

Figure 1. Daily minimum and maximum temperature (°F), May to October 2006.

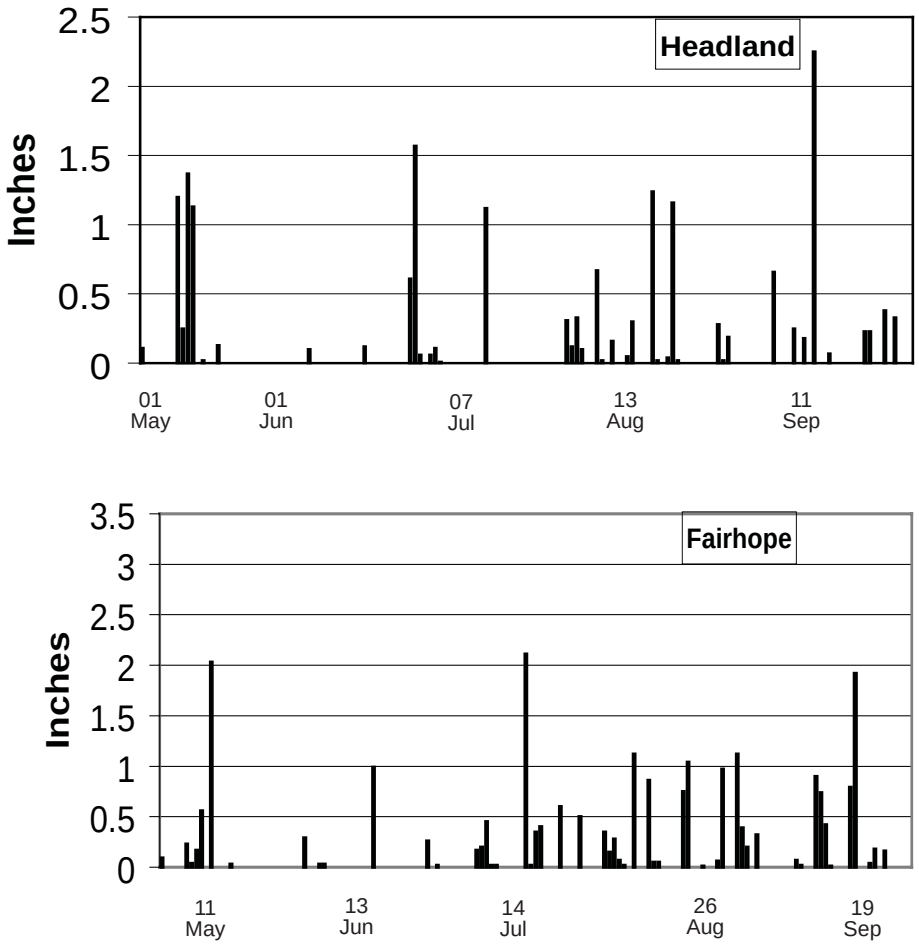

Figure 2. Daily precipitation (inches), May to October 2006.

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

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

Objective: To assess the yield and the reaction of commercial peanut cultivars in a 1-year rotation to leaf spot diseases, white mold, and tomato spotted wilt.

Methods: The test site was paratilled and turned with a moldboard plow on March 6 and then smoothed with a disk harrow. On May 22, 10 commercial runner peanut lines were planted at a rate of approximately six seed per foot of row using conventional tillage practices in a Dothan fine sandy loam (<1 percent OM) in a field maintained in a peanut-cotton-peanut rotation. Sonalan at 1 quart per acre + Strongarm at 0.45 ounce per acre were broadcast for preemergent weed control and incorporated with a disk harrow. On June 21, 1.5 pints per acre of Storm + 1.5 pints per acre of 2,4 DB were applied for postemergent weed control. Escape weeds were pulled by hand or killed by cultivating the row middles with flat sweeps. Temik 15G at 6.7 pounds per acre was applied in-furrow at plant to control thrips. The test was irrigated on June 1, June 21, July 6, July 17, August 22, and September 5. A split plot design with peanut lines as the whole plot and fungicide treatments as subplots was used. Whole plots were randomized in four complete blocks. Subplots were four 30-foot rows spaced 3 feet apart randomized within each whole plot.

Fungicide treatment programs consisted of either seven applications of 1.4 pounds per acre of Bravo Ultrex (standard fungicide program) or two initial applications of 1.4 pounds per acre of Bravo Ultrex followed by 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.8 pounds per acre of Moncut 70DF, 1.6 pints per acre of Abound 2SC, 1.4 pounds per acre of Bravo Ultrex + 0.8 pounds per acre of Moncut 70DF, and finally 1.4 pounds per acre of Bravo Ultrex (high input fungicide program). Full canopy sprays of each fungicide treatment with a tractor-mounted boom sprayer with three TX-8 nozzles per row in 15 gallons of spray volume per acre were made on June 26, July 10, July 25, August 7, August 21, September 7, and September 21. Recommended weed and nematode control practices were followed.

Incidence of TSWV was determined by counting the number of TSWV hits (one hit was defined as ≤ 1 foot of consecutive symptomatic plant(s) per row) for the middle two rows of each plot. TSWV was rated on September 30 for the maturity group 3 cultivar Andru II; on October 13 for the maturity group 4 cultivars AgraTech 3081R, AgraTech 3085, AP-3, Georgia Green, and GA03L; and on October 26 for the maturity group 5 cultivars Florida C-99R, GA01R, GA02C, and Tifrunner,

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Leaf spot ratings were recorded on September 30 for the group 3 cultivars, October 5 for the group 4 cultivars, and October 25 for the group 5 cultivars.

White mold hits (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants per row) for the middle two rows per plot were counted immediately after digging on September 30 for the maturity group 3 cultivar, on October 13 for the maturity group 4 cultivars, and on October 26 for the maturity group 5 cultivars.

Plots were harvested 2 to 3 days after inversion with a field combine and 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). Since the cultivar X fungicide treatment interaction for TSWV, leaf spot, SSR, and yield were not significant, data presented in Table 1 were pooled across fungicide treatments.

Results: Monthly rainfall totals for most of the production season except for September and October were below to well below the historical average for the test site, while afternoon temperatures, particularly in June and July, were above to well above the seasonal average.

Significant differences in leaf spot severity, incidence of TSWV and white mold, and yield were noted among the 10 commercial runner peanut cultivars. Incidence of TSWV was highest on Georgia Green and was equally low on AgraTech 3085A, AP-3, Florida C-99R, GA02C, GA03L, and Tifrunner. Generally, late leaf spot was the more common of the two leaf spot diseases on all cultivars. Due in part to frequent October showers, leaf spot severity was higher on the late-maturing Florida C-99R and GA02C than on the majority of other cultivars. Lowest leaf spot ratings were recorded for GA03L, Georgia Green, and the early maturing Andru II. AgraTech 3085A suffered heavier white mold damage than all of the other cultivars. While white mold hit counts on the remaining peanut cultivars did not greatly differ, disease incidence was lower on GA01R and GA03L than on AgraTech 3081R. Yields for AP-3 and GA01R were higher compared with those recorded for AgraTech 3081R, AgraTech 3085A, Georgia Green, GA02C, and Tifrunner.

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

Peanut line	TSWV hits/ 60 row ft [1]	Leaf spot rating [2]	White mold hits/60 row ft [1]	Yield *lb/ac*
Maturity group 3 (matures 126-140 DAP)				
Andru II	3.9 bc [3]	2.8 de	3.5 bcd	3727 abc
Maturity group 4 (matures 130-145 DAP)				
AgraTech 3081R	4.0 bc	3.8 bc	6.1 b	3412 bcd
AgraTech 3085A	2.4 cd	3.6 c	9.8 a	3261 d
AP-3	1.2 d	3.6 c	3.8 bcd	3914 a
GA03L	1.0 d	2.3 e	1.6 cd	3799 ab
Georgia Green	9.9 a	2.9 d	4.8 bc	3370 bcd
Maturity group 5 (matures 140-165 DAP)				
Florida C-99R	2.3 cd	4.3 ab	4.5 bcd	3648 a-d
GA01R	4.5 b	3.5 c	1.3 d	3934 a
GA02C	1.6 d	4.7 a	3.0 bcd	3491 a-d
Tifrunner	1.3 d	3.8 bc	4.2 bcd	3279 cd

[1] White mold and TSWV incidence is expressed as the number of disease hits per 60 foot of row.
[2] LS = Early and late leaf spot rated using the 1 to 10 Florida leaf spot scoring 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).

The high input (BravoUltrex/Abound/Bravo+Moncut/Bravo Ultrex) fungicide program gave better leaf spot and white mold control than the season long Standard Bravo Ultrex program but had no effect on the incidence of TSWV (Table 2). A significant yield gain of 213 pounds per acre over the standard fungicide program was also obtained with the high input fungicide Ultrex program.

When compared with the standard fungicide program, the high input program significantly reduced leaf spot ratings for Andru II, AgraTech 3081R, AgraTech 3085A, Florida C-99R, and Georgia Green but not the cultivars known to have partial resistance to these diseases (Table 3). Not surprisingly, the addition of the soil fungicides Abound 2SC and Moncut 70DF to a fungicide program greatly reduced the incidence of white mold on the more susceptible cultivars but had less of an impact on the partially resistant AP-3, Florida C-99R, GA01R, GA02C, GA03L, and Tifrunner peanuts. Despite differences in leaf spot and white mold control, yield response to the high input and standard fungicide programs on all cultivars tested did not significantly differ.

Summary: Peanut cultivars differ considerably in susceptibility to TSWV, leaf spot diseases, and white mold. Growing disease-resistant cultivars, particularly those resistant to TSWV, is the most effective method of maximizing yield while keeping production costs in check. Cultivars with the best disease-resistance package were GA01R, GA02C, and GA03L. While the remaining cultivars suffered less TSWV damage than the current industry standard, they proved more susceptible than GA01R, GA02C, and GA03L to either leaf spot diseases or white mold. The superior disease resistance of GA01R, GA02C, and GA03L was also reflected in their high yields.

While the high input fungicide program did significantly increase yield above that recorded for the standard fungicide program, the yield gain of just over 200 pounds per acre probably would not cover the additional cost associated with two applications of Abound 2SC and Moncut 70DF.

TABLE 2. YIELD RESPONSE AND DISEASE CONTROL WITH TWO FUNGICIDE PROGRAMS AVERAGED ACROSS PEANUT CULTIVARS

Fungicide program	TSWV hits/ 60 row ft [1]	Leaf spot rating [2]	White mold hits/60 row ft [1]	Yield *lb/ac*
Bravo Ultrex (standard)	3.1 a [3]	3.9 a	6.1 a	3471 b
BravoUltrex/Abound/Bravo+Moncut/Bravo Ultrex (high input)	3.5 a	3.1 b	2.4 b	3684 a

[1] White mold and TSWV incidence is expressed as the number of disease hits per 60 foot of row.
[2] LS = Early and late leaf spot rated using the 1 to 10 Florida leaf spot scoring 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 3. YIELD AND DISEASE RATINGS FOR EACH PEANUT CULTIVAR BROKEN DOWN BY FUNGICIDE PROGRAM

Peanut Cultivar	Fungicide program	TSWV hits/ 60 row ft	Leaf spot rating	White mold hits/ 60 row ft	Yield lb/ac
Andru II	Standard [1]	3.5 b-f [3]	3.5 b-e	6.3 b-f	3691 ab
	High Input [2]	4.3 bcd	2.1 g	0.8 g	3763 ab
AgraTech 3081R	Standard	3.3 b-f	4.4 ab	8.5 ab	3461 ab
	High Input	4.8 bc	3.3 def	3.8 c-g	3364 ab
AgraTech 3085A	Standard	2.5 b-f	4.3 abc	12.3 a	3086 b
	High Input	2.3 b-f	2.9 efg	7.3 bcd	3436 ab
AP-3	Standard	1.0 f	3.8 b-e	4.3 b-g	3933 a
	High Input	2.0 c-f	3.5 b-e	3.3 d-g	3896 ab
Florida C-99R	Standard	2.5 b-f	4.8 a	6.8 b-e	3352 ab
	High Input	2.0 c-f	3.8 b-e	2.3 efg	3945 a
GA01R	Standard	4.0 b-e	3.6 b-e	1.0 g	3920 a
	High Input	5.0 b	3.4 c-f	1.5 g	3945 a
GA02C	Standard	1.8 cdf	5.1 a	5.3 b-g	3207 ab
	High Input	1.5 ef	4.3 abc	0.8 g	3775 ab
GA03L	Standard	1.3 ef	2.5 fg	2.5 efg	3654 ab
	High Input	0.8 f	2.0 g	0.8 g	3945 a
Georgia Green	Standard	9.8 a	3.4 c-f	8.0 abc	3436 ab
	High Input	10.0 a	2.1 g	1.5 g	3303 ab
Tifrunner	Standard	1.3 ef	3.7 b-e	6.3 b-f	3086 b
	High Input	1.3 ef	3.9 bcd	2.0 fg	3473 ab

[1] Standard fungicide program consisted of seven applications of 1.4 lb/ac of Bravo Ultrex made on a 14-day calendar schedule.
[2] High input fungicide program included two applications of 1.4 lb/ac Bravo Ultrex, then 1.6 pt/A Abound 2SC, 1.4 lb/ac Bravo Ultrex + 0.8 lb/ac Moncut 70DF, 1.6 pt/A Abound 2SC, 1.4 lb/ac Bravo Ultrex + 0.8 lb/ac Moncut 70DF, and finally 1.4 lb/ac Bravo Ultrex.
[3] Means in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test, (P=0.05).

RECOMMENDED 2-WEEK CALENDAR AND AU-PNUTS ADVISORY SCHEDULES WITH RECOMMENDED FUNGICIDES COMPARED FOR THE CONTROL OF LEAF SPOT DISEASES AND SOIL DISEASES ON THREE PEANUT CULTIVARS, WREC

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

Objective: To compare the effectiveness of recommended 2-week calendar and AU-Pnuts advisory schedules with Bravo Ultrex, Folicur 3.6F, Headline 2.09E, and Abound 2SC programs for the control of leaf spot diseases and white mold on partially disease-resistant AP-3, GA02C, and GA01R peanut cultivars.

Methods: The test site was paratilled and turned with a moldboard plow on March 6 and then smoothed with a disk harrow. On May 22, the peanut cultivars AP-3 (maturity group 4), GA02C (maturity group 5), and GA01R (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 (OM<1 percent) soil. Sonalan at 1 quart per acre + Strongarm at 0.45 ounce per acre were broadcast for preemergent weed control and incorporated with a disk harrow. On June 21, 1.5 pints per acre of Storm + 1.5 pints per acre of 2,4 DB were applied for postemergent weed control. Escape weeds were pulled by hand or killed by cultivating the row middles with flat sweeps. Temik 15G at 6.7 pounds per acre was applied in-furrow at plant to control thrips. The test was irrigated on June 1, June 21, July 6, July 17, August 22, and September 5. A split-plot design with peanut cultivars as whole plots and fungicide treatments as subplots was used. Whole plots were randomized in four complete blocks. Subplots consisted of four 30-foot rows spaced 30-feet apart. Full canopy sprays were made on a 2-week calendar schedule or according to the AU-Pnut leaf spot advisory with a tractor-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 15 gallons of spray volume per acre at 45 psi. Calendar applications were made on June 26, July 10, July 25, August 7, August 21, September 8, and September 21, while the applications scheduled according to the AU-Pnuts advisory were made on June 26, July 14, August 7, September 8, and September 26.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead].. Final leaf spot ratings were taken on October 4 for AP-3 and October 11 for GA02C and GA01R.

Soil-borne disease (SD) [white mold/Cylindrocladium black rot (CBR)] hit counts (one hit was defined as ≤ 1 foot of consecutive SD-damaged plants per row) were made on October 12 for AP-3 and October 26 for GA02C and GA01R. Yields were reported at 10 percent moisture. Significance of treatment effects were tested by ANOVA and Fisher's protected least significant difference (LSD) test (P=0.05). Data presented in Table 1 were pooled across peanut cultivars.

Results: Monthly rainfall totals for most of the production season except for September and October were below to well below the historical average for the test site, while afternoon temperatures, particularly in June and July, were above to well above the seasonal average.

Early leaf spot was the more common of the two leaf spot diseases. With all fungicide programs, the 2-week calendar treatment gave better control of leaf spot diseases than the associated AU-Pnuts advisory treatment (Table 1). Among the 2-week calendar and AU-Pnuts treatments, the Folicur 3.6F program gave poorer control of leaf spot diseases compared with the Bravo Ultrex, Abound 2SC, and Headline 2.09E programs, which gave similar leaf spot control. Cylindrocladium black rot (CBR) was much more common than white mold. Soil-borne disease hit counts were higher for the AU-Pnuts advisory than 2-week calendar treatments for the Abound 2SC and Bravo Utrex programs. As was the case with the leaf spot control, the 2-week calendar treatments with Abound 2SC, Bravo Ultrex, and Folicur 3.6F yielded significantly higher compared with the AU-Pnuts advisory treatments for these same fungicides. Yield response with the Headline 2.09E 2-week calendar and AU-Pnuts advisory treatments was similar. Yield response with the 2-week calendar treatments for Bravo Ultrex, Abound 2SC, Folicur 3.6F, and Headline 2.09E did not significantly differ.

TABLE 1. COMPARISON OF 2-WEEK CALENDAR AND AU-PNUTS ADVISORY SCHEDULES WITH RECOMMENDED FUNGICIDES FOR THE CONTROL OF LEAF SPOT DISEASES AND SOIL-BORNE DISEASES ON SELECTED PEANUT CULTIVARS, WREC

Fungicide regime and rate/ac	——Application—— Schedule	Number	Leaf spot rating [1]	Soil-borne disease hits/60 row ft [2]	Yield *lb/ac*
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.3 d [3]	3.2 c	4574 ab
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	AU-Pnuts[4]	5	4.3 b	5.2 ab	4110 cd
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	2-wk	7	3.7 c	3.2 c	4776 a
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	AU-Pnuts	5	4.6 a	4.1 bc	4251 bc
Bravo Ultrex 1.4 lb	2-wk	7	3.3 d	4.1 bc	4493 abc
Bravo Ultrex 1.4 lb	AU-Pnuts	5	4.0 bc	6.0 a	3812 d
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.2 d	3.2 c	4421 abc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	AU-Pnuts	5	4.1 b	4.1 bc	4485 abc

[1] LS = Florida 1 to 10 leaf spot rating scale used to rate early and late leaf spot severity.
[2] Soil-borne disease (SD) incidence is expressed as the number of CBR and white mold hits per 60 foot 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).
[4] AU-Pnut disease advisory rules specify that the first application be made immediately after six or more rain events (≤0.10 inch) and second and subsequent applications immediately after three rain events.

Significant differences in the leaf spot and soil-borne disease ratings as well as yield were seen between peanut cultivars (Table 2). Overall leaf spot ratings were higher for GA02C compared with AP-3 or GA01R. In contrast, AP-3 suffered significantly higher SD damage than GA01R, while SD incidence on GA02C was intermediate between these two cultivars. Highest yields were recorded for GA01R.

On AP-3, the best leaf spot control with all fungicide programs was obtained with the 2-week calendar schedule (Table 3). For the fungicide programs tested, application schedule and number, however, did not have an impact on soil-borne disease incidence on this peanut cultivar. With the exception of Abound 2SC, yield responses with the calendar and advisory treatment schedules for Bravo Ultrex, Folicur 3.6F, and Headline 2.09E were statistically similar.

While the calendar schedule with Bravo Ultrex, Folicur 3.6F, and Headline 2.09E gave better leaf spot control than their comparative AU-Pnuts advisory treatments on the GA01R peanut cultivar, leaf spot ratings for the calendar and advisory treatments with Abound 2SC were not significantly different (Table 3). The decline in leaf spot control with the AU-Pnuts advisory treatment was particularly noticeable for the Folicur 3.6F program. On GA01R, SD control also declined with the Folicur 3.6F AU-Pnuts advisory treatment compared with the calendar schedule treatment for the same fungicide. Similar levels of SD control were obtained with the calendar and advisory treatments for Bravo Ultrex, Abound 2SC, and Headline 2.09E programs. On GA01R, higher leaf spot ratings for AU-Pnuts advisory treatments for the Bravo Ultrex and Folicur 3.6F but not Headline 2.09E programs were reflected in significantly lower yields. Although the leaf spot ratings were similar, yield for the Abound 2SC calendar treatment was higher than the AU-Pnuts advisory treatment.

On GA02C, application schedule had a significant impact on leaf spot control with Bravo Ultrex and Folicur 3.6F but not with Abound 2SC or Headline 2.09E (Table 3). The SD ratings for the 2-week calendar and AU-Pnuts schedule treatments with Bravo Ultrex, Folicur 3.6F, Abound 2SC, and Headline 2.09E were similar. Lower yields for the AU-Pnuts advisory vs. the 2-week calendar treatment were only noted with Bravo Ultrex. Otherwise, yields for the calendar and advisory treatments for Abound 2SC, Folicur 3.6F, and Headline 2.09E on GA02C did not significantly differ.

TABLE 2. DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut line	Leaf spot rating	Soil-borne disease hits/60 row ft	Yield *lb/ac*
AP-3	3.7 b [1]	4.8 a	4376 ab
GA01R	3.6 b	3.4 b	4510 a
GA02C	4.2 a	4.2 ab	4209 b

[1] 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).

Summary: When compared to the recommended 2-week calendar schedule, the AU-Pnuts advisory treatment cut the number of Bravo Ultrex applications by two. Despite the relatively dry weather pattern for much of the 2006 production season, the elimination of two Bravo Ultrex applications consistently resulted in a significant increase in the spotting and premature leaf shed due to early and leaf spot diseases. An increase in SD incidence was also seen with the AU-Pnuts adviso-

ry treatment for two of the four fungicide programs. That increased disease pressure associated with the advisory program was reflected in lower yields for three of the four fungicide programs. Only the Headline 2.09E program did not follow the trend of lower yield response with the AU-Pnuts advisory treatment.

TABLE 3. DISEASE RATINGS AND YIELD SEPARATED BY PEANUT CULTIVAR AND FUNGICIDE TREATMENT, WREC

Fungicide regime and rate/ac	——Application—— Schedule	Number	Leaf spot rating	Soil-borne disease hits/60 row ft	Yield *lb/ac*
		AP-3			
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.3 c [1]	3.5 a	4404 ab
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	AU-Pnuts	5	4.8 a	7.0 a	3812 b
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	2-wk	7	3.1 c	4.0 a	4804 a
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	AU-Pnuts	5	4.3 ab	4.3 a	4538 ab
Bravo Ultrex 1.4 lb	2-wk	7	3.1 c	3.8 a	4623 a
Bravo Ultrex 1.4 lb	AU-Pnuts	5	4.3 ab	6.8 a	4066 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.0 c	3.8 a	4308 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	AU-Pnuts	5	4.0 b	5.5 a	4453 ab
		GA01R			
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.0 c	2.8 cd	4852 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	AU-Pnuts	5	3.5 bc	4.0 abc	4404 bc
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	2-wk	7	3.5 bc	2.3 cd	4973 a
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	AU-Pnuts	5	5.0 a	5.5 a	4054 bc
Bravo Ultrex 1.4 lb	2-wk	7	3.0 c	3.3 bcd	4646 ab
Bravo Ultrex 1.4 lb	AU-Pnuts	5	3.6 b	5.0 ab	3836 c
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.0 c	2.3 cd	4550 abc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	AU-Pnuts	5	3.9 b	2.0 d	4767 ab
		GA02C			
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.8 b	3.3 bc	4465 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	AU-Pnuts	5	4.5 a	4.5 abc	4114 ab
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	2-wk	7	4.5 a	3.3 c	4550 a
Bravo Ultrex 1.4 lb Folicur 3.6F 7.2 fl oz	AU-Pnuts	5	4.5 a	2.5 c	4162 a
Bravo Ultrex 1.4 lb	2-wk	7	3.8 b	5.3 ab	4211 a
Bravo Ultrex 1.4 lb	AU-Pnuts	5	4.1 ab	6.3 a	3533 b
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.6 b	3.5 bc	4404 a
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	AU-Pnuts	5	4.5 a	4.8 abc	4235 a

[1] 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).

APPLICATION INTERVAL AND CONTROL OF DISEASES OF PEANUT WITH RECOMMENDED FUNGICIDES, WREC

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

Objective: To compare application interval on the effectiveness of recommended fungicide programs for the control of leaf spot diseases and Cylindrocladium black rot (CBR) on three peanut cultivars with partial resistance to foliar and soil-borne diseases.

Methods: The test site was paratilled and turned with a moldboard plow on March 6 and then smoothed with a disk harrow. On May 22, the peanut cultivars AP-3 (maturity group 4), GA02C (maturity group 5), and Tifrunner (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 (OM<1 percent) soil. Sonalan at 1 quart per acre + Strongarm at 0.45 ounce per acre were broadcast for preemergent weed control and incorporated with a disk harrow. On June 21, 1.5 pints per acre of Storm + 1.5 pints per acre of 2,4 DB were applied for postemergent weed control. The test area was irrigated June 1, June 21, July 6, July 17, August 22, and September 5. A split plot design with peanut cultivars as whole plots and fungicide treatments as subplots 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 2-week calendar schedule on June 26, July 10, July 24, August 7, August 21, September 8, and September 21; 3-week calendar schedule on June 26, July 17, August 7, August 28, and September 21; and 4-week calendar schedule on June 26, July 24, August 21, and September 21 with a tractor-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 15 gallons of spray volume per acre at 45 psi.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Final leaf spot ratings were taken on October 4 for AP-3, and October 11 for GA02C and Tifrunner.

Soil-borne disease [Cylindrocladium Black Rot (CBR) + white mold] hit counts (one hit was defined as ≤ 1 foot of consecutive CBR + white mold-damaged plants per row) were made on October 12 for AP-3 and October 26 for GA02C and Tifrunner. 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 weere pooled across peanut cultivars.

Results: Rainfall totals for June and July were below the historical average for this location. In contrast, the typically drier months of September and October were much wetter than normal. Temperatures were above average for May, June, and July but seasonal through the remainder of the growing season.

While the leaf spot ratings for the 2- and 3-week Bravo Ultrex and Headline 2.09E treatments were similar, a significant decline in leaf spot control was noted when application intervals for the Abound 2.08SC program were lengthened from 2 to 3 weeks (Table 1). Leaf spot severity increased when the application intervals for the Bravo Ultrex and Headline 2.09E programs were extended from 3 to 4 weeks. Cylindrocladium black rot (CBR) caused much more damage than white mold. Overall soil-borne disease incidence for the Bravo Ultrex and Headline 2.09E programs was significantly higher when treatment intervals went from 2 to 4 weeks and 2 to 3 weeks, respectively. Application interval for the Abound 2.08SC program did not have a significant impact on soil-borne disease incidence. Yield for the 2- and 3-week Bravo Ultrex treatments was significantly higher than the 4-week treatment with this same fungicide. With the Headline 2.09E program, the 3-week treatment yielded higher than the 4-week treatment but was similar in yield to the 2-week Headline 2.09E treatment. The 3-week Abound 2.08SC had lower yields compared with the 2- and 4-week treatments with this same fungicide. Also, yield response with the 2- and 3-week treatments for Bravo Ultrex and Headline 2.09E did not significantly differ.

The peanut cultivars differed significantly in their response to leaf spot and soil-borne diseases (Table 2). Across all fungicide treatments, GA02C suffered more leaf spot damage than AP-3 or Tifrunner. The latter pea-

nut cultivar had the lowest leaf spot rating. Soil-borne disease hit counts (primarily CBR) were higher on GA02C than Tifrunner. Damage levels on AP-3 and GA02C were similar. Yield response was significantly higher for AP-3 compared with GA02C and Tifrunner.

On AP-3, the level of leaf spot control obtained with the 2- and 3-week Bravo Ultrex standard and both Headline programs was similar (Table 3). A decline in disease control was consistently seen when application intervals were extended to 4 weeks. With all fungicide programs, application interval did not have an impact on the incidence of soil-borne diseases but did on yield response with Bravo Ultrex. Yield of AP-3 was higher for the 2- and 3-week than the 4-week Bravo Ultrex treatments. Yield response with the Headline 2.09E (9 and 15 fluid ounces) programs was similar across all application intervals.

TABLE 1. AVERAFE YIELD RESPONSE AND DISEASE CONTROL WITH RECOMMENDED FUNGICIDES AT 2-, 3-, AND 4-WEEK CALENDAR PROGRAMS

Fungicide regime and rate/ac	——Application—— Schedule	Number	Leaf spot rating [1]	Soil-borne disease hits/60 row ft [2]	Yield *lb/ac*
Bravo Ultrex 1.4 lb	2-wk	7	3.3 b[3]	3.3 c	4361 a
Bravo Ultrex 1.4 lb	3-wk	5	3.4 b	6.1 abc	4235 ab
Bravo Ultrex 1.4 lb	4-wk	4	5.7 a	8.1 a	3485 c
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.3 b	5.9 abc	4118 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3-wk	5	3.3 b	3.3 c	4497 a
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4-wk	4	4.7 ab	6.6 ab	3824 bc
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.5 b	4.9 bc	4298 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	3-wk	5	5.0 ab	5.8 abc	3634 c
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	4-wk	4	3.9 ab	7.0 ab	4275 a

[1] LS = Florida 1 to 10 leaf spot rating scale used to rate early and late leaf spot severity.
[2] Soil-borne disease (SD) incidence is expressed as the number of CBR and white mold hits per 60 foot 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).

As was noted on AP-3, better leaf spot control on GA02C was obtained with Bravo Ultrex and the Headline 2.09E (9 fluid ounces) program applied at 2 and 3 weeks rather than at monthly intervals (Table 3). Poorest leaf spot control with the Headline 2.09E (15 fluid ounce) program was seen at the 3-week interval treatment. With Bravo Ultrex but not Headline programs, soil-borne disease hit counts increased as application interval lengthened. Application interval (and number) had a significant impact on the yield response with Bravo Ultrex but not Headline 2.09E. With Bravo Ultrex, yields declined when the interval between applications was extended. In contrast, yield as well as disease ratings were similar across all Headline (9 fluid ounces) treatments.

With Bravo Ultrex and Headline 2.09E (9 fluid ounces) on Tifrunner, a significant increase in leaf spot ratings was noted between the 3- and 4-week treatments (Table 3). Leaf spot ratings for the 3-week Headline 2.09E (15 fluid ounces) treatment were higher compared with those recorded for the 2- and 4-week treatments with this same fungicide. Application interval had a significant effect on soil-borne disease hit counts on the Bravo Ultrex but not the Headline 2.09-treated Tifrunner peanut. Yields for the 2- and 3-week treatments with Bravo Ultrex and Headline 2.09E (9 fluid ounces) programs were higher than those for the 4-week treatments with both fungicides. With the higher rate of Headline 2.09E, the 3-week treatment, which suffered the heaviest leaf spot damage, also had the lowest yield.

Summary: Effectiveness of Bravo Ultrex and the low rate of Headline 2.09E for the control of leaf spot and soil-borne diseases as well as yield response did not decline when application intervals were extended from 2 to 3 weeks and the total number of fungicide application reduced from seven to five. Performance of the above fungicide programs noticeably declined at the monthly treatment intervals. When applied monthly, yields were also sharply lower for Bravo Ultrex and the low rate of Headline 2.09E. Poorest disease control and yield response with the high rate of Headline 2.09E was noted for the 3-week treatment. Overall, AP-3 outyielded GA02C and Tifrunner by 500 pounds per acre.

TABLE 2. DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut line	Leaf spot rating [1]	Soil-borne disease hits/60 row ft [2]	Yield *lb/ac*
AP-3	4.1 b[3]	5.4 ab	4421 a
GA02C	4.4 a	6.8 a	3898 b
Tifrunner	3.5 c	4.8 b	3923 b

[1] LS = Florida 1 to 10 leaf spot rating scale used to rate early and late leaf spot severity.
[2] Soil-borne disease (SD) incidence is expressed as the number of CBR and white mold hits per 60 foot 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 YIELD SEPARATED BY PEANUT CULTIVAR AND FUNGICIDE TREATMENT, WREC

Fungicide regime and rate/ac	——Application—— Schedule	Number	Leaf spot rating	Soil-borne disease hits/60 row ft	Yield *lb/ac*
		AP-3			
Bravo Ultrex 1.4 lb	2-wk	7	3.3 b [1]	3.3 a	4671 ab
Bravo Ultrex 1.4 lb	3-wk	5	3.5 b	6.0 a	4888 a
Bravo Ultrex 1.4 lb	4-wk	4	5.8 a	4.5 a	4017 cd
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.6 b	6.8 a	4417abcd
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3-wk	5	3.5 b	5.3 a	4308 bcd
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4-wk	4	5.3 a	7.5 a	3981 d
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.5 b	4.3 a	4525 abc
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	3-wk	5	3.6 b	4.3 a	4719 ab
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	4-wk	4	5.0 a	7.3 a	4259 bcd
		GA02C			
Bravo Ultrex 1.4 lb	2-wk	7	3.5 c	4.0 bc	4223 a
Bravo Ultrex 1.4 lb	3-wk	5	3.8 c	9.3 ab	3703 abc
Bravo Ultrex 1.4 lb	4-wk	4	6.5 a	11.5 a	3181 bc
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	3.6 c	7.8 abc	3993 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3-wk	5	3.5 c	1.8 c	4586 a
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4-wk	4	4.8 b	5.3 abc	4138 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.9 c	5.5 abc	4066 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	3-wk	5	6.5 a	8.0 abc	2904 c
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	4-wk	4	3.6 c	7.8 abc	4308 a
		Tifrunner			
Bravo Ultrex 1.4 lb	2-wk	7	3.0 c	3.0 b	4187 a
Bravo Ultrex 1.4 lb	3-wk	5	3.0 c	3.0 b	4114 a
Bravo Ultrex 1.4 lb	4-wk	4	4.8 a	8.3 a	3279 b
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	2-wk	7	2.8 c	3.3 b	3945 ab
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	3-wk	5	2.9 c	2.8 b	4598 a
Bravo Ultrex 1.4 lb Headline 2.09E 9 fl oz	4-wk	4	4.0 b	7.0 ab	3352 b
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	2-wk	7	3.1 c	5.0 ab	4296 a
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	3-wk	5	5.0 a	5.0 ab	3279 b
Bravo Ultrex 1.4 lb Abound 2SC 18.3 fl oz	4-wk	4	3.0 c	6.0 ab	4259 a

[1] 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).

FUNGICIDE PROGRAMS COMPARED FOR THE CONTROL OF LEAF SPOT DISEASES AND CYLINDROCLADIUM BLACK ROT ON THREE PARTIALLY DISEASE-RESISTANT PEANUT CULTIVARS, WREC

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

Objective: To evaluate the effectiveness of recommended Bravo Ultrex, Folicur 3.6F, Abound 2SC, Bravo Ultrex + Moncut 70DF, Headline 2.09E, and Absolute programs for controlling leaf spot diseases, white mold, and Cylindrocladium Black Rot (CBR) and to evaluate the impact of controlling these diseases on the yield of the partially disease-resistant AP-3, GA02C, and Tifrunner peanut cultivars in an irrigated production system at the Wiregrass Research and Extension Center.

Methods: The test site was paratilled and turned with a moldboard plow on March 6 and then smoothed with a disk harrow. On May 22, the peanut cultivars AP-3 (maturity group 4), GA02C (maturity group 5), and Tifrunner (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 (OM<1 percent) soil. Sonalan at 1 quart per acre + Strongarm at 0.45 ounce per acre were broadcast for preemergent weed control and incorporated with a disk harrow. On June 21, 1.5 pints per acre of Storm + 1.5 pints per acre of 2,4 DB were applied for postemergent weed control. Escape weeds were pulled by hand or killed by cultivating the row middles with flat sweeps. Temik 15G at 6.7 pounds per acre was applied in-furrow at plant to control thrips. The test was irrigated on June 1, June 21, July 6, July 17, August 22, and September 5. A split plot design with peanut cultivars as whole plots and fungicide treatments as subplots 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 calendar schedule on June 26, July 10, July 24, August 7, August 21, September 8, and September 21 with a tractor-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 15 gallons of spray volume per acre.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Final leaf spot ratings were taken on October 10 for AP-3 and October 25 for GA02C and Tifrunner.

Cylindrocladium black rot (CBR) hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants per row) were made on October 13 and October 26 for GA02C and Tifrunner. 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). Since the cultivar X treatment interaction for leaf spot, white mold, and yield were not significant, data presented in Table 1 were pooled across peanut cultivars.

Results: Rainfall totals for June and July were below the historical average for this location. In contrast, the typically drier months of September and October were much wetter than normal. Temperatures were above average for May, June, and July but seasonal through the remainder of the growing season.

Late leaf spot was the more common of the two leaf spot diseases across all fungicide treatments on AP-3 and Tifrunner. While early leaf spot was the predominate disease on the Bravo Ultrex, Bravo Ultrex + Moncut 70DF, and Abound 2SC-treated GA02C peanuts, the Artisan 3.6E, Folicur 3.6E, Headline 2.09E, and Absolute programs on GA02C suffered more late leaf spot damage. The best control of both leaf spot diseases was given by the Headline 2.09E program. In contrast, the Folicur 3.6F and Artisan 3.6E treatments had significantly higher leaf spot ratings than all of the other fungicide programs except for Bravo Ultrex + Moncut 70DF (Table 1). Cylindrocladium black rot (CBR) was considerably more damaging, particularly on AP-3, than white mold, which appeared to cause minimal damage. Hit counts for CBR were significantly higher for the Bravo Ultrex + Moncut 70DF than for the Folicur 3.6F, Absolute, and Artisan 3.6E programs. Yield response with the Folicur 3.6F program was significantly higher than that obtained with the Headline 2.09E, Bravo Ultrex + Moncut 70DF, and Bravo Ultrex programs.

TABLE 1. YIELD RESPONSE AND DISEASE CONTROL WITH RECOMMENDED FUNGICIDE PROGRAMS AVERAGED ACROSS PEANUT CULTIVARS, WREC

Treatment and rate/ac	Application timing	Leaf spot rating	CBR hits/60 ft	Yield *lb/ac*
Bravo Ultrex 1.4 lb	1 to 7	4.5 bc [1]	7.6 ab	3727 b
Bravo Ultrex 1.4 lb	1,2,7	5.3 a	3.5 b	4263 a
Folicur 3.6F	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	5.0 ab	9.6 a	3703 b
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	5.3 a	3.1 b	3973 ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.4 c	6.3 ab	4033 ab
Abound 2SC 1.6 pt	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.6 d	6.8 ab	3747 b
Headline 2.09EC	3,5			
Absolute 3.5 fl oz	1,2	4.2 c	3.8 b	4017 ab
Bravo Ultrex 1.4 lb	3,4,5,6,7			

[1] 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).

Due to frequent showers in October, leaf spot ratings for the late-maturing cultivars GA02C and Tifrunner were significantly above those recorded for AP-3 (Table 2). When averaged across all fungicide programs, GA02C had the highest leaf spot ratings. In addition, defoliation levels on this cultivar were sufficient to cause sizable yield losses. The CBR hit counts for all three peanut cultivars were similar. Due in part to less leaf spot damage, AP-3 yielded significantly more than GA02C. Yield for Tifrunner was intermediate between AP-3 and GA02C.

On AP-3, the Headline 2.09E program gave better leaf spot control than the other fungicide programs except for the Abound 2SC and Absolute programs, which had similar disease ratings (Table 3). With the exception of the Headline 2.09E program, the heaviest CBR damage was observed on the Bravo Ultrex + Moncut 70DF-treated AP-3 peanuts. The Folicur 3.6F program gave better control of this disease than the Bravo Ultrex + Moncut 70DF and Headline 2.09E programs. Yield response with the Folicur 3.6F and Artisan 3.6F programs was higher compared with the Bravo Ultrex + Moncut 70DF program.

On GA02C, the poorest leaf spot control was obtained with the Folicur 3.6F, Bravo Ultrex + Moncut 70DF, and Artisan 3.6E programs (Table 3). While the season-long Bravo Ultrex and Abound 2SC programs proved more effective against leaf spot diseases than the above treatments, the Headline 2.09E and Absolute programs gave the best leaf spot control. Highest CBR hit counts were recorded for the Bravo Ultrex and Bravo Ultrex + Moncut 70DF programs. Hit counts for the remaining fungicide treatments were similar. Despite poorer leaf spot control, the Folicur 3.6F-treated GA02C peanuts had higher yields compared with those treated season-long with Bravo Ultrex alone. Yields for the remaining fungicide treatments did not differ from those for the Folicur 3.6F and Bravo Ultrex programs.

On Tifrunner, the Artisan 3.6E program gave poorer leaf spot control than the Bravo Ultrex, Abound 2SC, and Headline 2.09E programs (Table 3). Surprisingly, fungicide program did not have a significant impact on the incidence of CBR or the yield of the Tifrunner peanut.

Summary: As has been consistently seen in previous years, a bimonthly calendar fungicide program that includes two applications of Headline 2.09E usually gives the best control of early and late leaf spot diseases on peanut. The recommended Folicur 3.6F and Artisan 3.6F programs were less effective in controlling leaf spot than most of the other fungicide programs. When rotation and/or weather patterns favor damaging leaf spot outbreaks, both of these fungicides as well as the generic tebuconazole fungicides must be tank-mixed with 0.75 to 1 pint per acre of a generic chlorothalonil fungicide, Bravo Ultrex, or Bravo Weather Stik to insure effective leaf spot control. Given the hot and relatively dry summer weather patterns, the prevalence of CBR over white mold was surprising. Previous research has shown that the later peanuts are planted, the lower the level of white mold damage. Apparently, late May-planted peanuts, which set much of their blooms after the hottest part of the summer has passed, are less susceptible to attack by the white mold fungus. In contrast, CBR damage may be enhanced by declining soil temperatures coupled with

TABLE 2. DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut line	Leaf spot rating	CBR hits/60 row ft	Yield *lb/ac*
AP-3	3.9 [1]	6.8 ab	4168 a
GA02C	5.4 a	5.1 a	3699 b
Tifrunner	4.7 c	5.6 b	3903 ab

[1] 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).

heavy late summer or early fall rains. While Moncut 70DF is known to have no activity against CBR, this fungicide treatment appeared to actually increase the level of CBR-damage on AP-3 and GA02C. In contrast, the recommended Folicur 3.6F program proved most effective in suppressing CBR but also in boosting the yield of AP-3 and GA02C. All cultivars, however, proved equally susceptible to CBR. Among the cultivars evaluated, AP-3 would be the best yield potential, as long as it is cropped in fields that do not have a history of CBR.

TABLE 3. DISEASE RATINGS AND YIELD SEPARATED BY PEANUT CULTIVAR AND FUNGICIDE TREATMENT, WREC

Fungicide regime and rate/ac	Application timing	Leaf spot rating	CBR hits/ 60 row ft	Yield *lb/ac*
	AP-3			
Bravo Ultrex 1.4 lb	1 to 7	3.9 a [1]	5.0 bc	4102ab
Bravo Ultrex 1.4 lb	1,2,7	4.6 a	1.8 c	4417 a
Folicur 3.6F	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	4.0 a	15.3 a	3872 b
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.4 a	4.0 bc	4417 a
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb.	1,2,4,6,7	3.6 ab	6.5 bc	4211ab
Abound 2SC 1.6 pt	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 b	10.0 ab	4054ab
Headline 2.09EC	3,5			
Absolute 3.5 fl oz	1,2	3.8 ab	4.8 bc	4102ab
Bravo Ultrex 1.4 lb	3,4,5,6,7			
	GA02C			
Bravo Ultrex 1.4 lb	1 to 7	5.4 b	9.5 a	3194 b
Bravo Ultrex 1.4 lb	1,2,7	6.3 a	1.3 b	4187 a
Folicur 3.6F	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	6.0 a	9.3 a	3412ab
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,4,6,7	6.1 a	3.0 ab	3691ab
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	5.0 b	3.0 ab	3884ab
Abound 2SC 1.6 pt	3,5			
Bravo Ultrex 1.4 lb	1,2,4,6,7	4.4 c	4.3 ab	3654ab
Headline 2.09EC	3,5			
Absolute 3.5 fl oz	1,2	4.2 c	3.3 ab	3872ab
Bravo Ultrex 1.4 lb	3,4,5,6,7			
	Tifrunner			
Bravo Ultrex 1.4 lb	1 to 7	4.5 bc	8.3 a	3884 a
Bravo Ultrex 1.4 lb	1,2,7	5.1 ab	7.5 a	4187 a
Folicur 3.6F	3,4,5,6			
Bravo Ultrex 1.4 lb	1,2,7	5.0 ab	4.3 a	3824 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	5.4 a	2.3 a	3812 a
Artisan 3.6E 26 fl oz	3,5			
Bravo Ultrex 1.4 lb.	1,2,4,6,7	4.5 bc	7.8 a	4005 a
Abound 2SC 1.6 pt	3,5			
Bravo Ultrex 1.4 lb.	1,2,4,6,7	3.8 c	6.3 a	3533 a
Headline 2.09EC	3,5			
Absolute 3.5 fl oz	1,2	4.6 ab	3.3 a	4078 a
Bravo Ultrex 1.4 lb	3,4,5,6,7			

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

IMPACT OF PLACEMENT AND APPLICATION RATE OF MONCUT 70DF FUNGICIDE ON DISEASE CONTROL AND YIELD OF TWO PEANUT CULTIVARS, 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 white mold as broadcast applications of the same rates of this fungicide on the peanut cultivars ANorden and GA02C.

Methods: The test site was paratilled and turned with a moldboard plow on March 6 and then smoothed with a disk harrow. On May 22, the peanut cultivars ANorden (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 (OM<1 percent) soil at the Wiregrass Research and Extension Center. Sonalan at 1 quart per acre + Strongarm at 0.45 ounce per acre were broadcast for preemergent weed control and incorporated with a disk harrow. On June 21, 1.5 pints per acre of Storm + 1.5 pints per acre of 2,4 DB were applied for postemergent weed control. Escape weeds were pulled by hand or killed by cultivating the row middles with flat sweeps. Temik 15G at 6.7 pounds per acre was applied in-furrow at plant to control thrips. The test was irrigated on June 1, June 21, July 6, July 17, August 22, and September 5. A split plot design with peanut cultivars as whole plots and Moncut 70DF treatments as subplots 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 2-week calendar schedule on June 26, July 10, July 24, August 8, August 22, September 8, and September 21 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, which delivered approximately 10 gallons of spray volume per acre. In contrast, banded treatments were applied using a single nozzle centered over the row middle in approximately 5 gallons of spray volume per acre.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Final leaf spot ratings were taken on October 10 for ANorden and October 25 for GA02C.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants per row) were made on October 13 for ANorden 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 Table 1 were pooled across peanut cultivars.

Results: Monthly rainfall totals for most of the production season except for September and October were below to well below the historical average for the test site, while afternoon temperatures, particularly in June and July, were above to well above the seasonal average.

Surprisingly, Moncut 70DF applied as a broadcast or banded treatment reduced the effectiveness of Bravo Ultrex against leaf spot diseases (Table 1). Poorest leaf spot control was seen where Moncut 70DF was applied at 0.7 pound per acre in a four-application block either as a tank-mix partner with Bravo Ultrex or banded separately over the row middle. Due to relatively low white mold pressure, no conclusions concerning the efficacy of broadcast vs. banded applications of Moncut 70DF could be made. Significant yield gains over the season-long Bravo Ultrex standard were obtained with two of the six Moncut 70DF treatments.

Significant differences in leaf spot but not white mold ratings were noted between ANorden and GA02C (Table 2). Due to heavy October rain showers, GA02C did have higher average leaf spot ratings as well as higher yields compared with ANorden. White mold hit counts for the two peanut cultivars were similar.

On ANorden, the Bravo Ultrex standard gave better leaf spot control compared with two of the three Moncut 70DF banded treatments (Table 3). Generally, leaf spot damage levels were not high enough to have an impact on yield. The broadcast and banded Moncut 70DF treatments, which were equally effective, reduced the incidence

of white mold compared with the season-long Bravo Ultrex standard. However, the yield response for the Moncut 70DF-treated ANorden peanuts was similar to that recorded for Bravo Ultrex alone.

Leaf spot incidence was higher for the banded and broadcast four-block application Moncut 70DF treatments than for Bravo Ultrex alone (Table 3). White mold incidence was similar across all treatments. Despite higher leaf spot ratings, the banded four-block application treatment with Moncut 70DF had higher yields than the Bravo Ultrex standard.

Summary: Due to low white mold pressure, no conclusions can be made concerning the performance of banded vs. broadcast applications of Moncut 70DF. Surprisingly, several Moncut 70DF treatments appeared to have a detrimental impact on the effectiveness of Bravo Ultrex for the control of leaf spot diseases.

TABLE 1. PLACEMENT OF MONCUT 70DF AND THE CONTROL OF PEANUT DISEASES

Treatment and rate/ac	Application timing	Placement	Leaf spot rating	White mold hits/60 ft	Yield *lb/ac*
Bravo Ultrex 1.4 lb/ac	1-7	Broadcast	3.6 d [1]	3.6 a	2916 b
Bravo Ultrex 1.4 lb/ac	1,2,4,6,7	Broadcast	3.9 cd	0.6 b	3261 a
Bravo Ultrex 1.4 lb + Moncut DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,7	Broadcast	4.4 ab	1.3 b	3146 ab
Bravo Ultrex 1.4 lb + Moncut DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,4,5,6,7	Broadcast	4.0 c	1.4 b	3152 ab
Bravo Ultrex 1.4 lb + Moncut DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.8 cd	2.5 ab	3261 a
Moncut DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.1 bc	1.5 b	3043 ab
Moncut DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.5 a	2.5 ab	3031 ab
Moncut DF 0.7 lb	3-6	Band			

[1] 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 line	Leaf spot rating	White mold hits/60 row ft	Yield *lb/ac*
ANorden	3.6 b [1]	2.1 a	3008 b
GA02C	4.4 a	1.7 a	3224 a

[1] 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 SEGREGATED BY CULTIVAR FOR EACH FUNGICIDE PROGRAM

Fungicide program and rate/ac	Application timing	Placement	Leaf spot rating	White mold hits/60 ft	Yield *lb/ac*
ANorden					
Bravo Ultrex 1.4 lb/ac	1-7	Broadcast	3.0 c [1]	5.3 a	2965 ab
Bravo Ultrex 1.4 lb/ac	1,2,4.6.7	Broadcast	3.5 bc	0.8 b	3194 a
Bravo Ultrex 1.4 lb + Moncut DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,7	Broadcast	3.6 abc	0.8 b	3025 ab
Bravo Ultrex 1.4 lb + Moncut DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,4,5,6,7	Broadcast	3.6 abc	1.5 b	3194 a
Bravo Ultrex 1.4 lb + Moncut DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.4 bc	2.3 b	3183 a
Moncut DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	3.9 ab	1.8 b	2868 ab
Moncut DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.3 a	2.8 b	2626 b
Moncut DF 0.7 lb	3-6	Band			
GA02C					
Bravo Ultrex 1.4 lb/ac	1-7	Broadcast	4.3 c	2.0 a	2867 b
Bravo Ultrex 1.4 lb/ac	1,2,4,6,7	Broadcast	4.3 c	0.5 a	3327 ab
Bravo Ultrex 1.4 lb + Moncut DF 1.4 lb	3,5	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,7	Broadcast	5.1 a	2.0 a	3267 ab
Bravo Ultrex 1.4 lb + Moncut DF 0.7 lb	3,4,5,6	Broadcast			
Bravo Ultrex 1.4 lb/ac	1,2,4,5,6,7	Broadcast	4.4 bc	1.3 a	3109 ab
Bravo Ultrex 1.4 lb + Moncut DF 2.7 lb	3	Broadcast			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.1 c	2.5 a	3340 ab
Moncut DF 2.7 lb	3	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.3 c	1.3 a	3219 ab
Moncut DF 1.4 lb	3,5	Band			
Bravo Ultrex 1.4 lb	1-7	Broadcast	4.6 b	2.3 a	3436 a
Moncut DF 0.7 lb	3-6	Band			

[1] 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).

DISEASE SUSCEPTIBILITY AND YIELD RESPONSE OF COMMERCIAL AND EXPERIMENTAL PEANUT LINES IN AN IRRIGATED PRODUCTION SYSTEM, WREC

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

Objective: To assess the yield potential and the susceptibility of commercial and experimental runner peanut cultivars to tomato spotted wilt, early leaf spot, late leaf spot, and white mold in a well-rotated, irrigated production system at the Wiregrass Research and Extension Center.

Methods: On May 10, 21 commercial and experimental runner-type peanut lines and three Virginia-type peanut lines were planted at a rate of approximately six seed per foot of row in a field that was cropped to peanut after 2 years of cotton using conventional tillage practices in a Dothan fine sandy loam (OM<1 percent). Prior to planting, 1000 pounds per acre of lime was broadcast and lightly incorporated with a disk harrow. Gypsum at a rate of 600 pounds per treated acre was applied on a 14-inch band over the row middle on July 5. Escape weeds were controlled with flat sweeps or were pulled by hand. A randomized complete block design with four replications per peanut line was used. Plots were two 20-foot rows spaced 3 feet apart. Full canopy sprays of 1.0 pint per acre of Chloronil + 2 fluid ounces per acre of Tilt 3.6F were followed by 1.5 pints per acre of Chloronil, 1.2 pints per acre of Abound 2SC, 1.5 pints per acre of Chloronil, 1.2 pints per acre of Abound 2SC, and applications of 1.5 pints per acre of Chloronil. An application of 1.5 pints per acre of Chloronil was made to the maturity group 5 cultivars. Fungicides were applied with a tractor-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 15 gallons of spray volume per acre.

Incidence of tomato spotted wilt virus (TSWV) was determined on September 14, September 22, October 5, and October 13 for the maturity group 3, 4, 4.5, and 5 peanut lines, respectively, by counting the number of TSWV hits (one hit was defined as ≤ 1 foot of consecutive TSWV-damaged plants per row) in each row.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Early leaf spot ratings were taken on September 22 for the maturity group 3, on September 30 for the maturity group 4, on October 10 for the maturity group 4.5, and on October 25 for the maturity group 5 cultivars.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants per row) in each row were made immediately after plot inversion on September 22 for the maturity group 3, on October 3 for the maturity group 4, on October 13 for the maturity group 4.5, and on October 26 for maturity group 5 cultivars. Plots were harvested with a field combine. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference test (P=0.05).

Results: Monthly rainfall totals for most of the production season except for September and October were below to well below the historical average, while afternoon temperatures, particularly in June and July, were above to well above the seasonal average for Headland, Alabama.

While virus pressure was not as severe as had been seen in the previous 2 years, peanut cultivars differed considerably in their reaction to TSWV. Cultivars with the highest TSWV hit counts were the Virginia type NC-VII and Gregory as well as McCloud, AT3081R, and Georgia Green (Table 1). In contrast, TSWV levels were very low in the cultivars York and Tifrunner along with the experimental lines C 724-19-25 and C 724-19-15. Other cultivars showing some resistance to TSWV included AP-3, EXP3085A, and GA03L. Both early and late leaf spot were observed in this planting. Sizable differences in the reaction of peanut cultivars to these two diseases were seen. The least leaf spotting was noted on the experimental peanut line C 724-19-25 and AP-3. A low level of leaf spotting and premature leaf loss was also recorded on Andru II, ANorden, C 724-19-15, and GA05E. Noticeable leaf spotting and premature leaf loss was seen on ATTA BOY, GA01R, York, EXP3085A, and Georgia Green. With the exception of the Virginia peanut cultivars Gregory and NCVII, southern stem rot incidence was low. The high levels of TSWV and white mold damage on Gregory and NCVII are reflected in their unusually low yields.

Significant differences in yield were also noted between the remaining peanut lines. Florida 07, York, Carver, EXP3085A, EXP 27-1516, GA03L, AP-3, C 724-19-15, and C 12-3-114-58 yielded significantly higher than the current standard Georgia Green.

Summary: Cultivars that had a moderate to high level of resistance to TSWV also were among those with the highest yields. While leaf spot diseases did not have a great impact on yield, those cultivars with some level of resistance to these diseases give peanut producers additional control options as well as margin for error should weather conditions delay a fungicide application.

YIELD AND DISEASE REACTION OF COMMERCIAL AND EXPERIMENTAL RUNNER AND VIRGINIA-TYPE PEANUT CULTIVARS, WREC

Peanut line	TSWV hits/ 60 row ft	Leaf spot rating	White mold hits/60 row ft	Yield *lb/ac*
Maturity group 3 (matures 126-140 DAP)				
Andru II	13.0 c-h [1]	3.3 fgh	0.3 e	5137 c-f
Maturity group 4 (matures 130-145 DAP)				
ANorden	14.0 c-h	3.4 e-h	3.8 b	4810 ef
AT3081R	18.5 abc	4.0 a-f	2.3 b-e	5445 b-e
C 724-19-25	6.5 ij	2.9 h	2.3 b-e	5445 b-e
Carver	14.5 b-g	3.6 c-h	3.3 b-d	6008 ab
EXP 27-1516	16.0 a-f	4.1 a-e	0.8 e	5627 a-d
EXP3085A	9.5 g-i	4.4 abc	2.5 b-e	5808 abc
Georgia Green	18.3 a-d	4.3 a-d	2.0 b-e	4810 ef
GA03L	8.5 h-j	3.8 b-g	1.8 b-e	5735 a-d
Gregory [2]	17.5 a-d	3.9 a-f	14.3 a	2378 g
NC-VII [2]	21.0 a	3.8 b-g	14.3 a	1761 g
McCloud (UF03326)	20.0 ab	3.8 b-g	3.5 bc	4864 ef
Maturity Group 4.5 (mature 140-155 DAP)				
AP-3	8.5 h-j	2.9 h	2.3 b-e	5917 ab
C 724-19-15	4.5 j	3.3 fgh	0.8 e	5962 ab
Florida C-99R	13.9 c-h	3.5 d-h	2.0 b-e	5182 c-f
GA 02C	12.4 d-i	4.3 a-d	2.0 b-e	5100 def
GA05E [2]	12.0 e-i	3.0 gh	0.5 e	5651 a-d
Tifrunner	5.8 j	3.6 c-h	1.3 cde	5146 c-f
Florida-07 (UF04327)	10.3 f-j	4.5 ab	2.3 b-e	6171 a
Maturity group 5 (matures 140-165 DAP)				
ATTA BOY	9.3 g-j	4.6 a	2.0 b-e	5391 b-e
C 12-3-114-58	9.0 g-j	3.8 b-g	1.0 de	5690 a-d
GA01R	15.5 a-f	4.5 ab	1.5 b-e	4665 f
York (UF04321)	5.5 j	4.5 ab	1.3 cde	5917 ab

[1] 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).
[2] Virginia type market peanut.

YIELD AND SENSITIVITY OF PEANUT CULTIVARS TO TOMATO SPOTTED WILT, LEAF SPOT DISEASES, AND WHITE MOLD IN A DRYLAND PRODUCTION SYSTEM, WREC

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Objective: To assess the yield potential and the susceptibility of commercial and experimental runner peanut cultivars to tomato spotted wilt, early leaf spot, late leaf spot, and white mold in a well-rotated, dryland production system at the Wiregrass Research and Extension Center.

Methods: On May 17, commercial and experimental runner peanut lines were planted at a rate of approximately six seed per foot of row in a field that was cropped to peanut after 2 years of cotton using conventional tillage practices in a Dothan fine sandy loam (OM<1 percent). Gypsum and lime at rates of 600 and 1000 pounds per treated acre, respectively, were applied. On April 25, 1.0 quart per acre of Sonalan + 0.45 ounce per acre of Strongarm were broadcast and lightly incorporated with a disk harrow. Select at 8 ounces per acre + 1 quart per acre of crop oil concentrate were broadcast on July 26 for escape grass control. Escape weeds were plowed with flat sweeps or pulled by hand. The plot area was not irrigated. A randomized complete block design with four replications per peanut line was used. Plots were two 20-foot rows spaced 3 feet apart. Full canopy sprays of 1.0 pint per acre of Chloronil + 2 fluid ounces per acre of Tilt 3.6F were followed by 1.5 pints per acre of Chloronil, 1.2 pints per acre of Abound 2SC, 1.5 pints per acre of Chloronil, 1.2 pints per acre of Abound 2SC, and applications of 1.5 pints per acre of Chloronil. An application of 1.5 pints per acre of Chloronil was made to the maturity group 5 cultivars. Fungicides were applied with a tractor-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 15 gallons of spray volume per acre.

Incidence of tomato spotted wilt virus (TSWV) was determined on September 9, October 3, October 10, and October 25 for the maturity group 3, 4, 4.5, and 5 peanut lines, respectively, by counting the number of TSWV hits (one hit was defined as ≤ 1 foot of consecutive symptomatic plants).

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable in upper canopy with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Ratings for leaf spot diseases were taken on October 3 for Andru II and on October 18 for the maturity group 4, 4.5, and 5 peanut lines.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants) were made immediately after plot inversion on October 3 for Andru II, October 10 for the maturity group 4, October 25 for the maturity group 4.5, and November 7 for the maturity group 5 peanut lines. Plots were harvested with a field combine. Yields were reported at 7 percent moisture. Significance of treatment effects were tested by analysis of variance and Fisher's protected least significant difference test (P=0.05).

Results: Rainfall totals for May, June, and early July were below normal but near or above the historical average in August, September, and October. Afternoon temperatures were at or above average in May, June, July, and August.

While TSWV incidence was relatively low, significant differences in virus levels were found between peanut cultivars (Table 1). Virus incidence was higher on Georgia Green than the other peanut cultivars. Other cultivars that suffered significant virus damage included AT 3081R, Carver, Andru II, and McCloud. Although C 724-19-25 and C 724-19-15 had the lowest TSWV loci count, a similar incidence of this disease was seen on an additional 11 peanut cultivars. Due in part to the dry weather patterns in late spring and early summer, leaf spot pressure was very low. However, significant differences in the level of leaf spot disease damage were noted between cultivars. White mold incidence was also very low. Highest white mold hit counts were noted on AP-3. Given the less than optimum rainfall patterns, yields were surprisingly high. The newly released cultivars York and Florida 07 had among the highest yields. Other cultivars that yielded significantly higher than the industry standard Georgia Green were Carver, GA03L, Florida C-99R, C 724-19-15, C 724-19-25, McCloud, EXP 27-1516, and Andru II.

Summary: Damage attributed to TSWV, leaf spot, and white mold on these runner type peanut cultivars was lower in this dryland location compared with a similar nearby irrigated cultivar trial. Despite the relatively low TSWV pressure, higher levels of this disease appeared to be linked with the poor yield response noted for ATTA BOY, Georgia Green, and AT3081R. In contrast, several newly released peanut cultivars such as Florida-07, York, and GA03L had higher yields than the majority of the cultivars evaluated. Other high yielding cultivars were Florida C-99R and Carver.

YIELD AND REACTION OF COMMERCIAL AND EXPERIMENTAL PEANUT LINES TO DISEASES IN A DRYLAND PRODUCTION SETTING, WREC

Peanut line	TSWV hits/ 60 row ft	Leaf spot rating	White mold hits/60 row ft	Yield *lb/ac*
Maturity group 3 (matures 126-140 DAP)				
Andru II	8.0 bc [1]	2.3 a-d	0.3 fg	5009 a-e
Maturity group 4 (matures 130-145 DAP)				
ANorden	5.5 c-f	1.4 de	2.0 b-f	4665 c-f
AT3081R	9.5 b	1.4 de	5.0 a	3394 g
C 724-19-25	2.0 gh	1.8 cde	3.8 ab	5009 a-e
Carver	8.0 bc	1.8 cde	1.8 c-g	5200 abc
EXP 27-1516	3.5 e-h	1.5 cde	2.3 c-e	4949 a-e
EXP3085A	3.8 d-h	1.4 de	3.0 bc	4429 def
Georgia Green	13.8 a	1.6 cde	1.3 c-g	4296 f
GA03L	4.3 d-h	1.5 cde	1.5 c-g	5209 abc
McCloud (UF03326)	7.3 bcd	1.6 cde	2.3 b-e	4982 a-e
Maturity Group 4.5 (mature 140-155 DAP)				
AP-3	3.5 e-h	1.9 b-e	5.5 a	4719 c-f
C 724-19-15	1.3 h	2.3 a-d	0.0 g	5034 a-d
Florida C-99R	5.8 c-f	2.1 a-e	2.5 bcd	5167 abc
GA 02C	4.1 d-h	2.9 a	0.5 efg	4949 a-e
GA05E [2]	2.5 fgh	2.1 a-e	1.8 c-e	4441 def
Tifrunner	3.0 e-h	2.1 a-e	2.0 b-f	4840 b-f
Florida-07 (UF04327)	2.3 fgh	2.8 ab	2.3 b-e	5542 a
Maturity group 5 (matures 140-165 DAP)				
ATTA BOY	6.5 b-e	2.1 a-e	2.0 b-f	4302 f
C-12-3-114-58	3.0 e-h	1.8 cde	1.8 c-g	4737 c-f
GA 01R	4.8 c-h	2.4 abc	2.3 b-e	4411 ef
York (UF04321)	3.8 d-h	2.0 a-e	1.0 d-f	5433 ab

[1] 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).
[2] Virginia market type peanut.

YIELD AND REACTION OF COMMERCIAL PEANUT CULTIVARS TO LEAF SPOT AND SOIL-BORNE DISEASES IN SOUTHWEST ALABAMA, GCREC

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Objective: To assess the susceptibility of commercial runner peanut cultivars to tomato spotted wilt (TSWV), early and late leaf spot, rust, and white mold as well as the possible impact of these diseases on peanut yield.

Methods: On May 11, commercial runner-type peanut cultivars were planted at a rate of six seed per foot of row using conventional tillage in a Malbis fine sandy loam (OM<1 percent) soil in a field cropped to peanut once every 3 years. Weed and insect control as well as soil fertility recommendations of Alabama Cooperative Extension System were followed. The test area was not irrigated. Peanut cultivars were randomized into four complete blocks. Plots were four 30-foot rows spaced 3.2 feet apart. Full canopy fungicide applications were made with a four-row, ATV-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 10 gallons of spray volume per acre. Recommended fungicides were applied on June 27, July 10, July 24, August 8, August 21, September 6, and September 20 to control leaf spot diseases and rust. An eighth fungicide application was made on the late maturing peanut cultivars on September 29.

Incidence of tomato spotted wilt (TSWV) was determined on September 7 by counting the number of TSWV hits (one hit was defined as ≤1 foot of consecutive symptomatic plants) per the middle two rows of each plot.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Leaf spot ratings were taken on September 25 for mid-season (maturity group 4) cultivars and on October 9 for the late maturing (maturity group 5) peanut cultivars.

Rust severity was rated on all peanuts cultivars using the ICRISAT 1 to 9 rating scale where 1 = no disease to 9 = 80 to 100 percent of leaves withered on September 25 and October 9 for the mid- and late maturing cultivars, respectively.

White mold hit counts (one hit was defined as ≤ 1 foot of consecutive white mold-damaged plants) per the middle two rows of each plot were made when the peanuts were inverted on September 26 for the mid-season cultivars and October 10 for the late maturing 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).

Results: Monthly rainfall totals were below the historical average for May, June, and July but were average to above average for August, September, and October. Temperatures were above average for June and July but seasonal for the remainder of the production season.

Incidence of TSWV was considerably higher at this location in 2006 than was observed in previous years. The industry standard Georgia Green had significantly higher TSWV hit counts compared with the other cultivars. Incidence of TSWV was significantly lower on AP-3 than on AT3081R and GA01R. Dry mid-summer weather patterns delayed the onset of late leaf spot and suppressed disease severity. Leaf spot ratings were higher for AT3081R, Florida C-99R, and GA02C compared with the remaining peanut cultivars, which all had similar leaf spot ratings. Florida C-99R and GA02C suffered significantly more rust damage than AP-3, AT3081R, GA01R, and Georgia Green. Highest white mold hit counts were recorded for Tifrunner. Florida C-99R and GA01R had higher white mold hit counts than GA03L, while the counts for the remaining cultivars were intermediate. Highest yields were recorded for AP-3, AT3081R, and GA03L. In contrast, Georgia Green, the cultivar that suffered the heaviest TSWV damage also had the lowest yield.

Summary: Incidence of TSWV has reached the point that selection of a virus-resistant cultivar will be critical for maintaining high yields in southwest Alabama. In particular, Georgia Green is too susceptible to TSWV to be planted before late May on single rows using conventional tillage practices. Low yields for Florida C-99R and GA02C appear to be related to the high late leaf spot and rust damage. The highest yielding cultivars were AP-3 and AT3081R.

YIELD RESPONSE AND SUSCEPTIBILITY OF SELECTED COMMERCIAL RUNNER AND VIRGINIA PEANUT LINES TO DISEASES, PBU

		Disease rating				
Peanut cultivars	Maturity group [1]	TSWV hits/60 ft [2]	Leaf spot rating [3]	Rust rating [4]	White mold hits/60 ft [2]	Yield *lb/ac*
AP-3	M	12.0 [5]	3.3 b	3.8 b	1.9 b	5521 a
AT3081R	M	21.8	3.7 a	3.8 b	2.2 b	5475 a
Florida C-99R	L	19.4	3.7 a	5.0 a	3.8 b	3869 c
GA01R	L	24.2	3.1 b	3.8 b	3.6 b	4366 bc
GA02C	L	20.9	3.9 a	5.0 a	2.1 b	3885 c
GA03L	M	18.3	3.2 b	4.3 ab	1.9 b	4764 ab
Georgia Green	M	57.0	3.0 b	4.0 b	2.6 b	3533 c
Tifrunner	L	14.7	3.2 b	4.2 ab	6.8 a	3785 c

[1] Maturity group: M = mid-maturity and L = late maturity peanut cultivar.
[2] White mold and TSWV incidence is expressed as the number of disease hits per 60 foot of row.
[3] Early and late leaf spot rated using the 1 to 10 Florida leaf spot scoring scale.
[4] Rust rated using the ICRISAT 1 to 9 rust rating scale.
[5] Means in each column followed by the same letter were not significantly different according to ANOVA and Fisher's protected least significant difference (LSD) test (P=0.05).

DISEASE CONTROL WITH RECOMMENDED FUNGICIDES ON PEANUT IN SOUTHWEST ALABAMA, GCREC

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

Objective: To determine the effectiveness of recommended fungicide programs for controlling leaf spot diseases, rust, and white mold as well as their impact on the yield of three partially disease-resistant peanut cultivars.

Methods: On May 18, the peanut cultivars AP-3 (maturity group 4), GA02C (maturity group 5), and Tifrunner (maturity group 5) were planted at a rate of six seed per foot of row using conventional tillage in a Malbis fine sandy loam (OM<1 percent) soil in a field cropped to peanut once every 3 years. Poast at 1.5 pints per acre + crop oil at 1 quart per acre were applied on June 5 for postemergent grass control. On June 16, a tank mixture of Gramoxone at 6 fluid ounces per acre + Storm at 1 pint per acre + Butyrac 175 at 1 pint per acre + Induce surfactant at 2 quarts per 100 gallons of spray volume was broadcast and the plots were cultivated. A tank mixture of Cadre at 2 ounces per acre + 0.225 ounces of Strongarm per acre + 2 quarts of Induce surfactant per 100 gallons of spray volume was broadcast. Soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was not irrigated. Whole plots were randomized into four complete blocks. Fungicide subplots, which consisted of four 30-foot rows spaced 3.2 feet apart, were randomized with each whole plot. Full canopy sprays of each fungicide treatment were made to all plots on June 27, July 10, July 24, August 8, August 22, September 6, and September 20. An additional application of Echo 720 at 1.5 pints per acre was made to the late maturing (maturity group 5) cultivars on September 29. Treatment applications were made using an ATV-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 10 gallons per acre of spray volume at 45 psi.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Leaf spot ratings were taken on AP-3 on September 25 and the remaining cultivars on October 8.

Rust severity was rated using the ICRISAT 1 to 9 rating scale (1 = no disease, to 9 = 80 to 100 percent of leaves withered) on September 26 on AP-3 and the later maturing cultivars on October 9.

White mold hit counts (one hit was ≤ 1 foot of consecutive white mold-damaged plants per row) were made when the peanuts were inverted on September 26 (AP-3) and October 9 (GA02C and Tifrunner). 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).

Results: Rainfall patterns were unusually dry for May, June, and much of July 2006. Average rainfall totals were noted in August, September, and October. In addition, afternoon temperatures were above to well above average for the first half of the growing season.

As a result of the early hot, dry weather, early and late leaf spot pressure was not as high as expected. At the end of the production season, late leaf spot was the more common of the two peanut leaf spot diseases observed. Artisan 3.6E was less effective in controlling leaf spot diseases than the remaining six fungicide programs, which gave a similar level of disease control (Table 1). Rust ratings for Artisan 3.6E were higher than those recorded for the Bravo Ultrex, Moncut 70DF +Bravo Ultrex, and Abound 2SC programs. Incidence of white mold was lower for the Bravo Ultrex, Artisan 3.6E, and Abound 2SC programs compared with the Headline 2.09E program. Yield response was higher for the Bravo Ultrex, Absolute, and Moncut 70DF + Bravo Ultrex programs compared with the Artisan 3.6E program. Yields for the Abound 2SC, Folicur 3.6F, and Headline 2.09E programs were intermediate.

While overall late leaf spot pressure was very low, GA02C had higher ratings for this disease than AP-3 or Tifrunner (Table 2). When averaged across all fungicide treatments, rust ratings for the three cultivars did not sig-

nificantly differ. While Tifrunner suffered the heaviest white mold damage, incidence of this disease on AP-3 and GA02C was similar. Of the three cultivars, AP-3 yielded far more than GA02C or Tifrunner. Lowest yields were reported for Tifrunner.

On AP-3, all fungicide programs were equally effective in controlling late leaf spot (Table 3). Artisan 3.6E was less effective on GA02C and Tifrunner in controlling late leaf spot than most of the other fungicide treatments. While Abound 2SC gave better rust control than Folicur 3.6F on AP-3, the performance of these treatments against this disease on GA02C and Tifrunner was similar. On Tifrunner, Artisan 3.6E was significantly less effective against rust than the other fungicide programs.

Summary: Due to the dry weather patterns throughout much of the summer, damaging late leaf spot and rust outbreaks did not occur. With the exception of Artisan, most of the fungicide programs proved equally effective in controlling late leaf spot and rust. The combination of the lowest disease ratings and best yield response was obtained with Bravo Ultrex and the Bravo Ultrex + Moncut 70DF programs. Yield response with the Absolute program was comparable to that obtained with the former fungicide programs. Surprisingly, AP-3 far outyielded GA02C and Tifrunner.

TABLE 1. COMPARISON OF RECOMMENDED FUNGICIDE PROGRAMS FOR THE CONTROL OF FOLIAR AND SOIL DISEASES OF PEANUT AS WELL AS THEIR IMPACT ON YIELD

Fungicide regime and rate/ac	Application timing	Leaf spot rating [1]	Rust rating [2]	White mold hits/ 60 ft	Yield *lb/ac*
Bravo Ultrex 1.4 lb	1 to 7	2.7 b[3]	3.4 cd	3.3 c	5590 a
Bravo Ultrex 1.4 lb	1,2,7	2.8 b	4.0 ab	4.3 abc	5253 ab
Folicur 3.6F 7.2 fl oz	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7	2.7 b	3.3 d	3.8 bc	5685 a
Moncut 70DF 0.4 lb + Bravo Ultrex 1.4 lb	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.2 a	4.3 a	3.7 bc	5028 b
Artisan 3.6E 26 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 b	3.5 bcd	3.4 c	5429 ab
Abound 2SC 1.15 pt	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.8 b	3.8 abc	5.3 a	5276 ab
Headline 2.09E 9 fl oz	3,5				
Absolute 3.5 fl oz	1,2	2.7 b	3.8 abc	4.8 ab	5544 a
Bravo Ultrex 1.4 lb	3,4,5,6,7				

[1] Leaf spot rating 1 to 10 rating scale used to assess early and late leaf spot severity.
[2] Rust severity was rated using the ICRISAT 1 to 9 rating scale.
[3] Means followed by the same number in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

TABLE 2. DISEASE RATINGS AND YIELDS BY PEANUT CULTIVAR

Peanut cultivar	Leaf spot rating	Rust rating	White mold hits/ 60 ft	Yield *lb/ac*
AP-3	2.7 b[1]	3.9 a	2.9 b	6386 a
GA02C	3.1 a	3.6 a	3.3 b	5189 b
Tifrunner	2.7 b	3.8 a	6.0 a	4627 c

[1] 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 FUNGICIDE PROGRAM AND PEANUT CULTIVAR

Fungicide regime and rate/ac	Application timing	Leaf spot rating	Rust rating	White mold hits/60 row ft	Yield *lb/ac*
AP 3					
Bravo Ultrex 1.4 lb	1 to 7	2.8 a[1]	3.5 ab	2.3 a	6905 a
Bravo Ultrex 1.4 lb	1,2,7	2.9 a	4.5 a	3.3 a	6389 ab
Folicur 3.6F	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7	2.5 a	3.5 ab	2.5 a	6022 b
Bravo Ultrex 1.4 lb + Moncut 70DF 0.4 lb	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.6 a	4.3 ab	3.3 a	6354 ab
Artisan 3.6E 26 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.9 a	3.3 b	2.5 a	6079 b
Abound 2SC 1.6 pt	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.6 a	4.0 ab	3.5 a	6515 ab
Headline 2.09EC	3,5				
Absolute 3.5 fl oz	1,2	2.8 a	4.0 ab	3.0 a	6435 ab
Bravo Ultrex 1.4 lb	3,4,5,6,7				
GA02C					
Bravo Ultrex 1.4 lb	1 to 7	2.9 b	3.3 a	2.8 ab	5299 a
Bravo Ultrex 1.4 lb	1,2,7	3.0 b	3.5 a	3.3 ab	5184 a
Folicur 3.6F	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7	3.1 b	3.3 a	4.3 a	5334 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	3.5 a	3.8 a	2.0 b	4622 a
Artisan 3.6E 26 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.0 b	3.5 a	2.8 ab	5529 a
Abound 2SC 1.6 pt	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.9 b	3.8 a	4.8 a	4852 a
Headline 2.09EC	3,5				
Absolute 3.5 fl oz	1,2	3.0 b	4.0 a	3.3 ab	5506 a
Bravo Ultrex 1.4 lb	3,4,5,6,7				
Tifrunner					
Bravo Ultrex 1.4 lb	1 to 7	2.5 b	3.5 bc	4.8 c	4565 b
Bravo Ultrex 1.4 lb	1,2,7	2.6 b	4.0 b	6.5 abc	4187 b
Folicur 3.6F	3,4,5,6				
Bravo Ultrex 1.4 lb	1,2,7	2.4 b	3.0 c	4.5 c	5701 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	3.4 a	5.0 a	5.8 abc	4106 b
Artisan 3.6E 26 fl oz	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	2.5 b	3.8 bc	5.0 bc	4680 b
Abound 2SC 1.6 pt	3,5				
Bravo Ultrex 1.4 lb	1,2,4,6,7	3.0 ab	3.8 bc	7.8 ab	4462 b
Headline 2.09EC	3,5				
Absolute 3.5 fl oz	1,2	2.4 b	3.5 bc	8.0 a	4691 b
Bravo Ultrex 1.4 lb	3,4,5,6,7				

[1] Means followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

IMPACT OF APPLICATION INTERVAL ON DISEASE CONTROL AND YIELD RESPONSE WITH HEADLINE 2.09E, GCREC

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

Objective: To assess the impact of application interval and rate on the control of leaf spot diseases, rust, and white mold with Headline 2.09E as well as on the yield of three partially disease-resistant peanut cultivars.

Methods: On May 18, the peanut cultivars AP-3 (maturity group 4), GA02C (maturity group 5), and Tifrunner (maturity group 5) were planted at a rate of six seed per foot of row using conventional tillage in a Malbis fine sandy loam (OM<1 percent) soil in a field cropped to peanut once every 3 years. Poast at 1.5 pints per acre + Crop Oil at 1 quart per acre were applied on June 5 for postemergent grass control. On June 16, a tank mixture of Gramoxone at 6 fluid ounces per acre + Storm at 1 pint per acre + Butyrac 175 at 1 pint per acre + Induce surfactant at 2 quarts per 100 gallons of spray volume was broadcast and the plots were cultivated. A tank mixture of Cadre at 2 ounces per acre + 0.225 ounce of Strongarm per acre + 2 quarts of Induce surfactant per 100 gallons of spray volume was broadcast. Soil fertility recommendations of the Alabama Cooperative Extension System were followed. The test area was not irrigated. A split plot design with peanut cultivars as whole plots and fungicide treatments as subplots was used. Whole plots were randomized in four complete blocks. Individual subplots consisted of four 30-foot rows spaced 3.2-feet apart. Full canopy sprays of each fungicide treatment were made on a 14-, 21-, and 28-day calendar schedule using an ATV-mounted boom sprayer with three TX-8 nozzles per row that delivered approximately 10 gallons per acre spray volume at 45 psi. In 2006, applications were made on June 27, July 10, July 24, August 8, August 22, and September 6, and September 20 for the 2-week schedule; June 27, July 18, August 8, August 29, and September 20 for the 3-week schedule; and June 27, July 24, August 22, and September 20 for the 4-week schedule. An additional application of Echo 720 at 1.5 pints per acre was made to the maturity group 5 cultivars on September 29.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Leaf spot ratings were taken on AP-3 on September 26 and the remaining cultivars on October 9.

Rust severity was rated using the ICRISAT 1 to 9 rating scale (1 = no disease, to 9 = 80 to 100 percent of leaves withered) on September 26 on AP-3 and the later maturing cultivars on October 9.

White mold hit counts (one hit was ≤ 1 foot of consecutive white mold-damaged plants per row) were made when the peanuts were dug on September 26 (AP-3) and October 9 (GA02C and Tifrunner). 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).

Results: Rainfall patterns were unusually dry for May, June, and much of July 2006. Average rainfall totals were noted in August, September, and October. In addition, afternoon temperatures were above to well above average for much of the growing season.

As a result of the hot, dry weather throughout the first half of the production season, early and late leaf spot pressure was less than expected. Late leaf spot was the most common of the two peanut leaf spot diseases. Application interval had a significant impact on the control of leaf spot diseases and rust with the low (9 fluid ounces) rate of Headline 2.09E and Echo 720 programs but not the high (15 fluid ounces) rate of Headline 2.09E. With the low rate of Headline 2.09E and the season-long Echo 720 program, the best leaf spot control was obtained at the 2-week treatment interval and poorest was seen with the 4-week treatments. A decline in rust control was seen when application intervals were extended from 2 to 4 weeks with Echo 720 and the 2- to 3-week interval treatments with the low rate of Headline 2.09E. At the high rate of this fungicide, similar leaf spot and rust control was seen at the 2-, 3-, and 4-week treatment intervals. Echo 720 proved as effective as both rates of Headline 2.09E in controlling

leaf spot diseases and rust on peanut. At all rates of Headline 2.09E, application interval did not have a significant impact on white mold control. In addition, white mold hit counts for the Headline 2.09E programs did not differ from those recorded for the season-long Echo 720 program. Application interval did not have a significant impact on the yield response obtained with the low and high rate of Headline 2.09E as well as with Echo 720.

While GA02C had the lowest leaf spot rating, this cultivar suffered the heaviest rust damage (Table 2). Of the three cultivars, Tifurnner had the highest leaf spot and white mold rating. The least rust damage was seen on AP-3. Incidence of white mold on AP-3 and GA02C was similar. Yields for the three peanut cultivars also did not significantly differ.

On AP-3 and GA02C, application interval had surprisingly little effect on the control of leaf spot diseases with both low and high rates of Headline 2.09E (9 and 15 fluid ounces) (Table 3). Leaf spot incidence for the 2-, 3-, and 4-week treatments on both cultivars did not greatly differ. A decline in leaf spot control was seen on Tifrunner when application intervals with both rates of Headline 2.09E were extended from 2 to 4 weeks. With Echo 720, leaf spot control on GA02C and Tifrunner significantly dropped between the 2- and 3-week treatment schedules.

On the earlier maturing AP-3, rust ratings for the Echo 720 as well as both Headline treatments were not greatly influenced by application interval (Table 3). For GA02C and Tifrunner, rust control declined when application intervals for Echo 720 and either the low rate or high rate of Headline 2.09E, respectively. Application interval had no impact on the incidence of white mold on AP-3, GA02C, or Tifrunner. Despite significant differences in rust or leaf spot control with one or more fungicide treatments on GA02C and Tifrunner, no significant differences in yield were noted. On AP-3, yields were lower for the 4-week Echo 720 compared with the 2-week treatment.

Summary: Lengthening application intervals with Echo 720 as well as both rates of Headline 2.09E resulted in an increase in late leaf spot incidence but not white mold. Rust levels were also higher for Echo 720 and the low rate of Headline 2.09E. With the exception of Echo 720 on AP-3, extending application intervals from 2 to 4 weeks did not reduce peanut yield.

TABLE 1. EFFECT OF APPLICATION RATE AND INTERVAL ON THE CONTROL OF LEAF SPOT DISEASES AND RUST AS WELL AS THE YIELD OF SELECTED PEANUT CULTIVARS

Fungicide rate/ac	—Application— Interval	Timing	Leaf spot rating [1]	Rust rating [2]	White mold hits/60 row ft	Yield *lb/ac*
Echo 720 1.5 pt	2 week	1-7	2.9 d [3]	3.7 c	3.8 ab	4932 ab
Echo 720 1.5 pt	3 week	1-5	3.5 ab	4.3 abc	3.5 ab	4760 ab
Echo 720 1.5 pt	4 week	1-4	3.9 a	4.8 a	4.0 ab	4577 ab
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.2 cd	3.9 bc	4.1 ab	4913 ab
Headline 2.09E 9 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.7 a	4.7 a	4.8 a	4504 b
Headline 2.09E 9 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.7 a	4.4 ab	3.7 ab	4569 ab
Headline 2.09E 9 fl oz		2,3				
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.1 cd	3.9 bc	4.3 ab	4980 a
Headline 2.09E 15 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.3 bc	4.3 abc	3.3 b	4645 ab
Headline 2.09E 15 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.5 ab	4.4 abc	4.2 ab	4707 ab
Headline 2.09E 15 fl oz		2,3				

[1] LS = Florida 1 to 10 leaf spot rating scale used to rate early and late leaf spot severity.
[2] Rust severity was rated using the ICRISAT 1 to 9 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. DISEASE RATINGS AND YIELD FOR EACH PEANUT CULTIVAR AVERAGED ACROSS FUNGICIDE TREATMENTS

Peanut cultivar	Leaf spot rating	Rust rating	White mold hits/ 60 ft	Yield *lb/ac*
AP-3	3.3 b [1]	3.6 c	2.9 b	4689 a
GA02C	3.1 c	5.2 a	2.9 b	4765 a
Tifrunner	3.9 a	4.0 b	5.9 a	4701 a

[1] 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 FUNGICIDE PROGRAM AND PEANUT CULTIVAR

Fungicide regime and rate/ac	——Application—— Interval	Timing	Leaf spot rating	Rust rating	White mold hits/60 row ft	Yield *lb/ac*
AP 3						
Echo 720 1.5 pt	2 week	1-7	3.1 bc [1]	3.5 ab	2.3 a	5207 a
Echo 720 1.5 pt	3 week	1-5	3.4 abc	3.5 ab	2.8 a	4611 ab
Echo 720 1.5 pt	4 week	1-4	3.5 ab	3.5 ab	3.0 a	4382 b
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.0 c	3.5 ab	2.5 a	5058 ab
Headline 2.09E 9 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.6 a	4.3 a	4.0 a	4622 ab
Headline 2.09E 9 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.1 bc	3.3 b	2.8 a	4393 b
Headline 2.09E 9 fl oz		2,3				
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.2 abc	3.7 ab	2.7 a	4691 ab
Headline 2.09E 15 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.4 abc	4.0 ab	3.5 a	4634 ab
Headline 2.09E 15 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.3 abc	3.3 b	2.8 a	4600 ab
Headline 2.09E 15 fl oz		2,3				
GA02C						
Echo 720 1.5 pt	2 week	1-7	3.3 d	4.8 bc	3.5 ab	4645 a
Echo 720 1.5 pt	3 week	1-5	4.1 abc	5.0 bc	2.0 ab	4830 a
Echo 720 1.5 pt	4 week	1-4	4.5 a	6.3 a	2.8 ab	4863 a
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.8 bcd	4.3 c	4.8 a	5012 a
Headline 2.09E 9 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	4.0 abc	5.5 ab	3.3 ab	4542 a
Headline 2.09E 9 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	4.3 ab	5.5 ab	3.0 ab	4347 a
Headline 2.09E 9 fl oz		2,3				
Echo 720 1.5 pt	2 week	1,2,4,6,7	3.5 cd	4.8 bc	3.5 ab	4931 a
Headline 2.09E 15 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.6 bcd	5.3 b	1.8 b	4794 a
Headline 2.09E 15 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.8 bcd	5.3 b	2.8 b	4921 a
Headline 2.09E 15 fl oz		2,3				
Tifrunner						
Echo 720 1.5 pt	2 week	1-7	2.4 d	2.8 d	5.5 a	4944 a
Echo 720 1.5 pt	3 week	1-5	3.2 bc	4.3 ab	5.8 a	4840 ab
Echo 720 1.5 pt	4 week	1-4	3.4 ab	4.5 a	6.3 a	4485 ab
Echo 720 1.5 pt	2 week	1,2,4,6,7	2.8 cd	4.0 abc	6.0 a	4668 ab
Headline 2.09E 9 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	3.5 ab	4.3 ab	7.0 a	4347 b
Headline 2.09E 9 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.8 a	4.5 a	5.3 a	4967 a
Headline 2.09E 9 fl oz		2,3				
Echo 720 1.5 pt	2 week	1,2,4,6,7	2.6 d	3.3 cd	6.3 a	4955 a
Headline 2.09E 15 fl oz		3,5				
Echo 720 1.5 pt	3 week	1,3,5	2.8 d	3.5 bcd	4.5 a	4508 ab
Headline 2.09E 15 fl oz		2,4				
Echo 720 1.5 pt	4 week	1,4	3.5 ab	4.8 a	7.0 a	4600 ab
Headline 2.09E 15 fl oz		2,3				

[1] Means followed by the same letter in each column are not significantly different according to analysis of variance and Fisher's protected least significant difference (LSD) test (P=0.05).

YIELD AND REACTION OF RUNNER AND VIRGINIA PEANUT CULTIVARS TO DISEASES IN CENTRAL ALABAMA, PBU

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

Objective: To assess the yield potential and response of commercial Virginia- and runner-type peanut cultivars to diseases in central Alabama.

Methods: Prior to planting, the test site was sub-soiled and smoothed with a leveling disk harrow. On May 23, peanuts were sown at a rate of six seed per foot of row using conventional tillage in an Independence (Cahaba) loamy fine sand (OM<1 percent) soil. A tank-mixture of Pendant at 1 quart per acre + Dual Magnum II at 20 fluid ounces per acre was lightly incorporated on May 22 for preemergent grass and broadleaf control. The test area received 0.7 and 0.5 acre inches of water on July 7 and October 13. The plots, which consisted of four 30-foot rows spaced 3 feet apart, were arranged in a randomized complete block. Full canopy applications of Equus at 1.5 pints per acre were made for the control of early and late leaf spot on June 29, July 28, August 11, August 24, September 7, and September 21 with a four-row tractor-mounted sprayer.

Incidence of spotted wilt (TSWV) was determined by counting the number of TSWV loci (one locus was defined as ≤ 1 foot of consecutive symptomatic plants) per middle two rows of each plot.

Early leaf spot (ELS) was rated using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation (≤10 percent), 5 = lesions noticeable in upper canopy with some defoliation (≤25 percent), 6 = lesions numerous with significant defoliation (≤50 percent), 7 = lesions numerous with heavy defoliation (≤75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation (≤90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation (≤95 percent), and 10 = plants defoliated or dead]. Leaf spot severity was rated on October 6 for the early maturing cultivars and October 18 for the remaining cultivars.

White mold hit counts (one hit was ≤ 1 foot of consecutive white mold-damaged plants per row) were made when the peanuts were inverted on October 6 for the early maturing (maturity group 3) cultivars and on October 18 for the remaining (maturity group 4 and 5) cultivars. Yield was 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).

Results: While rainfall totals for the 2006 growing season were generally adequate for growing peanuts, afternoon temperatures in June, July, and much of August were often above the historical average for the test site.

Significant differences in TSWV ratings were noted between the ten cultivars. Among the Virginia-type cultivars, incidence of this disease was higher on NC12C than Gregory, Wilson, NCVII, and Perry, which all had similar TSWV ratings. Georgia Green suffered from heavier TSWV damage compared with AP-3 and GA03L. While early leaf spot was the most common of the two peanut leaf spots, noticeable late leaf spot development was seen on the Virginia-type cultivars NC12C, Perry, and Gregory. The leaf spot (LS) rating for Gregory was significantly above those reported for all cultivars except for Georgia Green and GA02C. The lowest leaf spot ratings were recorded for AP-3, GA01R, and NCVII. Incidence of white mold was consistently higher for the Virginia than for the runner-type peanut cultivars. Gregory yielded significantly higher than the Virginia-type cultivar NC-12C and the runner-type peanut cultivars AP-3, GA01R, and GA02C. The combination of cool October temperatures coupled with being dug 1 to 2 weeks prior to optimum maturity probably accounts for the poor yields obtained with the latter three runner-type peanut cultivars.

Summary: While ratings for TSWV were higher in 2006 than in the previous 2 years, disease levels have not reached the point that this disease has had an appreciable impact on peanut yield. Should peanut production continue in central Alabama, the incidence of TSWV in peanut will increase possibly to the point that a combination of cultural practices and more disease-resistant cultivars will be needed to maintain crop yield. Although differences in leaf spot ratings were noted between cultivars, overall leaf spot ratings were not sufficient to appreciably reduce peanut yield. Failure to maintain a protective fungicide program may eventually result in sizable yield loss due to

this disease. The Virginia-type peanuts were more susceptible to white mold than the runner-type peanuts. Yield response for the maturity group 3 and 4 cultivars was excellent. Cooler weather patterns in October suppressed the yield of the maturity group 5 peanut cultivars.

YIELD AND RESPONSE OF COMMERCIAL PEANUT CULTIVARS TO DISEASES

		Disease rating			
Peanut cultivars	Maturity group	TSWV hits/60 ft [1]	Leaf spot rating [2]	White mold hits/60 ft [1]	Yield *lb/ac*
Runner Type					
AP-3	4	1.2 [3]	2.7	0.7	4978
GA03L	4	1.8	3.5	2.0	5742
GA01R	5	2.7	2.9	2.5	3482
Georgia Green	4	5.2	4.1	2.3	5942
GA02C	5	3.8	4.2	1.5	4680
Virginia Type					
Wilson	4	4.7	3.7	5.8	6013
Perry	3	5.2	3.3	6.0	5581
NC-12C	3	12.5	3.8	6.0	5270
NCVII	3	3.5	2.8	5.8	6273
Gregory	4	5.5	4.7	7.8	5961
LSD (P=0.05)		**2.0**	**0.7**	**2.7**	**764**

[1] White mold and TSWV incidence is expressed as the number of disease hits per 60 foot of row.
[2] Early and late leaf spot rated using the 1 to 10 Florida leaf spot scoring scale.
[3] Means in each column followed by the same letter were not significantly different according to ANOVA and Fisher's protected least significant difference (LSD) test (P=0.05).

FUNGICIDES COMPARED FOR DISEASE CONTROL ON PEANUT IN CENTRAL ALABAMA, PBU

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

Objective: To compare the level of early leaf spot and white mold control on peanut given by recommended fungicide programs at the Plant Breeding Unit in Tallassee, Alabama.

Methods: Prior to planting, the test site was sub-soiled and smoothed with a leveling disk harrow. On May 23, the peanut cultivar Carver was sown at a rate of six seed per foot of row using conventional tillage in an Independence (Cahaba) loamy fine sand (OM<1 percent) soil. Peanut were first grown on this site in 2005. A herbicides tank-mix of Pendant at 1 quart per acre + Dual Magnum II at 20 fluid ounces per acre was incorporated on May 22. The test area received 0.7 acre inches of irrigation water on July 7. Plots, which consisted of four 30-foot rows spaced 3 feet apart, were arranged in a randomized complete block. Applications of each fungicide treatment were made on June 29, July 14, July 28, August 11, August 24, September 7, and September 21 with a four-row tractor-mounted sprayer.

Early leaf spot (ELS) was rated on October 12 using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few spots on leaves in plant canopy, 3 = some leaf spotting in lower and upper canopy, 4 = some leaf spotting in lower and upper canopy with light defoliation (<10 percent), 5 = leaf spotting noticeable in upper canopy with some defoliation (<25 percent), 6 = leaf spots numerous with noticeable defoliation (<50 percent), 7 = leaf spots numerous with heavy defoliation (<75 percent), 8 = numerous leaf spots on few remaining leaves with severe defoliation (<90 percent), 9 = very few remaining leaves covered with leaf spots and severe defoliation (<95 percent), and 10 = plants defoliated or dead].

White mold hit counts (one hit was $\leq$ 1 foot of consecutive diseased plants per row) were made when the peanuts were dug on October 18. 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).

Results: While rainfall totals for the 2006 growing season were generally adequate for growing peanuts, afternoon temperatures in June, July, and much of August were often above the historical average for the test site.

Early leaf spot was far more common than late leaf spot. Poorest leaf spot control was obtained with the Equus/Moncut + Equus program (Table 1). The Abound 2SC program controlled early leaf spot control better than Equus alone but not the Folicur 3.6F, Absolute, and Artisan 3.6E programs. The Headline 2.09E program gave the best control of early leaf spot. Since white mold pressure was low, disease loci counts for all fungicide treatments did not appreciably differ. Yield response with all fungicide programs was similar.

Summary: While differences in leaf spot control were noted between fungicide programs, leaf spot ratings on the least effective treatment were not sufficient to significantly reduce peanut yield. Poorer leaf spot control was obtained with the Equus/Moncut 70DF + Equus than with the season-long Equus program. A similar decline in leaf spot control with the former fungicide program has been noted in 2006 in trials at other locations. Results suggest that the Moncut 70DF tank-mix partner appears to be interfering with the activity of Equus fungicide against the early leaf spot fungus.

DISEASE CONTROL AND YIELD RESPONSE WITH RECOMMENDED FUNGICIDE PROGRAMS, PBU, 2006

Fungicide regime and rate/ac	Application timing	Early leaf spot rating [1]	White mold hits/60 row ft [2]	Yield *lb/ac*
Equus 1.5 pt	1 to 7	3.6 b [3]	0.5 a	4774 a
Equus 1.5 pt	1,2,7	3.3 bc	1.8 a	5112 a
Folicur 3.6F 7.2 fl oz	3,4,5,6			
Equus 1.5 pt	1,2,7	4.4 a	0.5 a	5154 a
Moncut 70DF 0.4 lb + Equus 1.5 pt	3,4,5,6			
Equus 1.5 pt	1,2,4,6,7	3.1 bc	0.8 a	5216 a
Artisan 3.6E 26 fl oz	3,5			
Equus 1.5 pt	1,2,4,6,7	2.9 c	1.8 a	5236 a
Abound 2SC 1.15 pt	3,5			
Equus 1.5 pt	1,2,4,6,7	2.1 d	0.8 a	5187 a
Headline 2.09E 9 fl oz	3,5			
Absolute 3.5 fl oz	1,2	3.3 bc	1.3 a	5109 a
Equus 1.5 pt	3,4,5,6,7			

[1] Early and late leaf spot rated using the 1 to 10 Florida leaf spot scoring scale.
[2] White mold incidence is expressed as the number of hits per 60 foot 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).

IMPACT OF CROP ROTATION ON THE OCCURRENCE OF DISEASES AND NEMATODES IN CORN, COTTON, AND PEANUT IN SOUTHWEST ALABAMA, GCREC

A. K. Hagan, H. L. Campbell, J. R. Weeks, and M. Pegues

Objective: To evaluate the impact of cropping frequency of corn, cotton, and peanut on the yield of those crops, as well as the occurrence of diseases and root-knot nematode on those crops as influenced by crop rotation at the Gulf Coast Research and Extension Center in Fairhope, Alabama.

Methods: On March 7, 206 pounds per acre of 9-19-19 + 10 pounds per acre of sulfur + 3 pounds per acre of zinc along with Prowl at 2 pints per acre were broadcast and incorporated. On March 15, DKC 69-72 corn was planted with 7 pounds per acre of Counter 15G insecticide placed in-furrow. Roundup Weathermax at 22 fluid ounces per acre was broadcast over the corn on April 12. A post-plant application of ammonium nitrate at 350 pounds per acre was made to the corn on May 12. Fibermax 960 BR cotton and Carver peanuts were planted on May 15 and May 18, respectively. Temik 15G was applied in-furrow to the peanuts at 6.7 pounds per acre. Postemergent weed control in cotton included an application of Roundup Weathermax at 22 fluid ounces on May 31 and Caperol at 1.5 pints per acre + MSMA 6 at 2.5 pints per acre + Include at 1 quart per 100 gallons spray mixture on July 7. Postemergent weed control on peanut was obtained with an application of Gramoxone at 6 fluid ounces per acre + Storm at 1 pint per acre on June 6, which was followed by Cadre DF at 1 ounce per acre + Strongarm at 0.3 ounce per acre + Induce at 1 pint per acre on June 20. Bravo Weather Stik at 1.5 pints per acre was applied with an ATV-mounted sprayer for the control of leaf spot diseases and rust on peanut on June 26, July 10, July 24, August 8, August 21, September 6, and September 21. The experimental design was a randomized compete block with four replications. Individual plots consisted of eight rows on 38-inch centers that were 30 feet in length. Corn, cotton, and peanut were harvested on August 10, September 28, and October 5, respectively. The plots were not irrigated.

Tomato spotted wilt (TSWV) hit counts (one hit was $\leq$ 1 foot of consecutive TSWV-damaged plants per row) were made on September 5.

Early and late leaf spot (LS) were rated together using the Florida peanut leaf spot scoring system [1 = no disease, 2 = very few lesions in canopy, 3 = few lesions noticeable in lower and upper leaf canopy, 4 = some lesions in lower and upper canopy with light defoliation ($\leq$10 percent), 5 = lesions noticeable with some defoliation ($\leq$25 percent), 6 = lesions numerous with significant defoliation ($\leq$50 percent), 7 = lesions numerous with heavy defoliation ($\leq$75 percent), 8 = numerous lesions on few remaining leaves with severe defoliation ($\leq$90 percent), 9 = very few remaining leaves covered with lesions and severe defoliation ($\leq$95 percent), and 10 = plants defoliated or dead] on September 25.

White mold hit counts (one hit was $\leq$ 1 foot of consecutive diseased plants per row) were made immediately after the plots were dug on September 25. Yields were reported at 10 percent moisture. Soil samples for a nematode assay were taken periodically through the growing season from all plots and were processed using the standard nematode flotation method.

Results: In 2006, rainfall totals for April, May, and June were below the historical average for the test location but were average to above average for the remainder of the production season. Temperatures were also above average in May and June.

While TSWV was much more damaging than in past years at this location, no significant differences in the incidence of this disease were noted between peanut rotation sequences (Table 1). In addition, peanut rotation sequence did not have a significant impact on the severity of leaf spot diseases, peanut rust, or white mold. Overall root-knot larval numbers across all peanut rotation sequences were zero (data not shown). Yield response for the peanut-corn-peanut rotation was significantly lower compared with peanuts cropped behind 3 years of corn. Otherwise, yields for the all peanut cropping sequences were statistically similar.

Overall numbers of root-knot larvae have remained relatively low on corn and cotton while none have been found around peanut (Table 2). Among the corn rotations, root-knot larvae counts are higher on the continuous corn compared with the peanut-corn-peanut-corn, corn-cotton-corn, and cotton-corn-corn-corn rotation sequenc-

es. Similar root-knot larval numbers were recorded for the remaining corn rotation sequences. While root-knot nematode larvae were seen in the cotton plots, differences in larval counts between cotton rotation sequences were not significant. So far, no buildup of the root-knot nematode has been seen on peanut.

Yield of cotton and corn was similar across all rotation sequences in 2006.

Summary: For the second consecutive year, weather patterns had a detrimental impact on the yield of corn but not cotton or peanut. Cropping frequency for corn and cotton has had little impact on yield. Yield in plots kept in continuous corn or cotton for 4 years was similar to that of either crop grown after 1 year of peanut. Considerable plot to plot variation in yield obscured any impact that cropping sequence might have had on peanut yield. So far, the expected buildup of leaf spot diseases, white mold, and root-knot nematode where peanut has been cropped for 4 consecutive years has not been seen. Populations of root-knot nematodes, probably a race of the southern root *(Meloidogyne incognita)* nematode, are present on corn and cotton. While corn cropping frequency may have some impact on root-knot populations, larval counts are too low to have a detrimental impact on corn yield. This was the first year that root-knot was noted on cotton. Additional sampling will be required over the next 2 years to determine whether cotton or a weed is the target host of this root-knot nematode.

TABLE 1. IMPACT OF CROPPING SEQUENCE ON THE INCIDENCE OF DISEASES AND YIELD OF PEANUT, 2006

Rotation sequence				TSWV	Leaf spot	White mold	Yield
2003	2004	2005	2006	hits/60 row ft	rating	hits/60 row ft	*lb/ac*
Corn	Pnut	Corn	Pnut	20.5 a[1]	3.4 a	11.5 a	4054 b
Corn	Corn	Corn	Pnut	17.5 a	2.9 a	13.3 a	5203 a
Pnut	Pnut	Pnut	Pnut	21.5 a	3.8 a	12.5 a	4368 ab
Pnut	Pnut	Corn	Pnut	15.0 a	3.1 a	13.5 a	4646 ab
Pnut	Pnut	Cotton	Pnut	21.5 a	2.6 a	13.3 a	4743 ab
Cotton	Pnut	Cotton	Pnut	16.5 a	2.8 a	11.3 a	4743 ab
Pnut	Cotton	Cotton	Pnut	19.0 a	2.9 a	8.3 a	5046 ab
Cotton	Cotton	Cotton	Pnut	20.3 a	3.6 a	11.3 a	4211 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).

TABLE 2. IMPACT OF CROPPING FREQUENCY OF CORN, COTTON, AND PEANUT ON POPULATIONS OF ROOT-KNOT NEMATODES AND CROP YIELD, GCREC

Rotation sequence				–Root-knot nematode counts[1]–			Yield		
							Corn	Lint cotton	Peanut
2003	2004	2005	2006	Cotton	Peanut	*bu/ac*	*lb/ac*	*lb/ac*	
Corn	Corn	Corn	Corn	40 a [2]	--	--	84.9 a	--	--
Corn	Pnut	Corn	Pnut	--	--	0	--	--	4054 b
Corn	Corn	Pnut	Corn	27 ab	--	--	81.4 a	--	--
Corn	Corn	Corn	Pnut	--	--	0	--	--	5203 a
Pnut	Pnut	Pnut	Pnut	--	--	0	--	--	4368 ab
Pnut	Corn	Pnut	Corn	2 b	--	--	85.5 a	--	--
Pnut	Pnut	Corn	Pnut	--	--	0	--	--	4646 ab
Ctn	Ctn	Ctn	Ctn	--	0 a	--	--	1263 a	--
Pnut	Pnut	Ctn	Pnut	--	--	0	--	--	4743 ab
Ctn	Pnut	Ctn	Pnut	--	--	0	--	--	4743 ab
Pnut	Ctn	Pnut	Ctn	--	0 a	--	--	1329 a	--
Pnut	Ctn	Ctn	Pnut	--	--	0	--	--	5046 ab
Ctn	Ctn	Pnut	Ctn	--	61 a	--	--	1114 a	--
Ctn	Ctn	Ctn	Pnut	--	--	0	--	--	4211 ab
Ctn	Corn	Ctn	Corn	4 b	--	--	84.5 a	--	--
Ctn	Corn	Corn	Ctn	--	64 a	--	---	1140 a	--
Ctn	Corn	Corn	Corn	4 b	--	--	75.9 a	--	--
Ctn	Ctn	Corn	Ctn	--	77 a	--	--	1205 a	--
Ctn	Ctn	Ctn	Corn	25 ab	--	--	85.3 a	--	--

[1] Root-knot nematode counts = the number of J2 free living larvae found in the soil.

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

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

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

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.

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

The plot area at the Plant Breeding Unit near Tallassee, Alabama, was disked and chiseled on March 8.

Corn: On March 29, 150 pounds per acre of 5-10-15 analysis fertilizer + 2 percent zinc and 176 pounds per acre of ammonium nitrate (34-0-0) were incorporated with a disk harrow and field cultivators into the plots being planted to Pioneer 31G66 corn on twin rows on 3-foot centers on that same day. A layby application of 294 pounds per acre of ammonium nitrate was made to the corn on April 25. To control weeds in corn, a tank mixture of Dual Magnum II at 1 pint per acre + Atrazine at 1.75 quarts per acre was broadcast on April 1. Corn plots were combined on August 10.

Cotton: The cotton plots were split into four-row sub plots with Stoneville 4892BR planted in a randomly selected subplot and DPL 555 in the other on April 19. The next day, 88 pounds per acre of ammonium nitrate (34-0-0) was broadcast. Thrips and damping-off control on cotton was provided by an at-plant in-furrow application of Temik 15G at 6.5 pounds per acre and Terraclor Super X at 8.0 pounds per acre. Weed control on cotton was provided by a preemergent application of Cotoran at 1.5 quarts per acre followed by applications of Roundup at 1 quart per acre on June 2 and June 29. An application of Dropp 50W at 0.2 pounds per acre + Finish at 1 quart per acre was made on August 28. Cotton plots were picked on September 7.

Peanut: Pendant at 1 quart per acre + Dual Magnum II at 1.8 pints per acre were incorporated with a disk harrow on May 8. The peanut Georgia Green was planted on the same day with Temik 15G at 6.5 pounds per acre applied in-furrow. On June 16, Poast at 1.5 pints per acre was broadcast over the peanuts for postemergent grass control. Leaf spot control on peanut was maintained with applications of Bravo Weather Stik on June 14 and June 29 followed by applications of Equus at 1.5 pints per acre on July 28, August 11, and August 24. The peanuts were inverted on September 28 and picked on October 3. Peanut plots were hand weeded or hoed as needed during the growing season. Approximately 0.9 to 1.0 acre inch of water was applied with a traveling gun irrigation system on May 25, June 1, June 7, June 14, and June 28.

Disease and Nematode Assessment: Early leaf spot severity was rated using the Florida 1 to 10 peanut leaf spot scoring system on September 21. White mold hit counts (one hit was defined as $\leq$ 1 foot of consecutive white mold-damaged plants per row) were made on September 30. Incidence of tomato spotted wilt virus (TSWV) in peanut was assessed on September 1 by counting the number of TSWV hits (one hit was defined as $\leq$ 1 foot of consecutive TSWV-damaged plants per row). Soil samples for a nematode assay were taken shortly after each crop was harvested and were processed using the sugar flotation method.

Results: Peanut cropping frequency did have a significant impact on the incidence of TSWV and white mold but not root-knot nematode counts or the severity of early leaf spot (Table 1). Hit counts for TSWV were lower where peanut followed 3 years of corn compared with 1 year of cotton. Otherwise, the incidence of this disease was similar for the other peanut rotations. White mold hit counts were lower where peanuts were cropped behind three years of cotton or corn compared with 2 years of cotton.

As was seen in 2005, the field corn Pioneer 31G66 is an excellent host for the cotton root-knot nematode. Lowest larval counts were found where corn was cropped behind 1 year of peanut (Table 2). In contrast, peak larval populations were seen where corn was grown after 1 or 3 years of cotton as well as continuous corn. Crop sequence did not have a significant impact on cotton root-knot larval counts on cotton (Table 2).

Cropping sequence had a significant impact on the yield of cotton, corn, and peanut (Table 3). Highest corn yields were seen when peanut but not cotton or corn was grown the previous year. In contrast, lowest yields were typically seen when corn followed this same crop or cotton. Yield of cotton was higher when grown behind 1 year of peanut but not corn. Lowest lint yields were seen in the continuous cotton plots. Highest peanut yields were seen where peanut was cropped behind 1 or 3 years of cotton.

Summary: Cropping patterns had a significant impact on the yield of corn, cotton, and peanut. In addition, corn proved to be an excellent carryover host for the cotton root-knot nematode. In fact, 31G66 corn proved to be nearly as good as host for this nematode as cotton. In addition, the high numbers of nematode larva, seen where corn followed corn or cotton, clearly reduced the yield of this crop. Despite high root-knot larval populations, lint yields were higher where cotton was grown behind corn than cotton. In contrast, nematode populations dropped sufficiently after 1 year of peanut to sharply boost the yield of cotton and corn. Peanut cropping frequency also had a significant impact on the white mold and, surprisingly, TSWV damage levels.

TABLE 1. IMPACT OF CROP ROTATION ON THE LEVEL OF DAMAGE ATTRIBUTED TO DISEASES AND NEMATODES OF PEANUT, 2006

——Rotation sequence——				Root	TSWV	ELS	White mold
2003	2004	2005	2006	knot [1]	hits/60 row ft	rating [2]	hits/60 row ft
Corn	Pnut	Corn	Pnut	5 a[3]	5.8 ab	5.9 a	10.4 ab
Corn	Corn	Corn	Pnut	13 a	4.5 b	4.9 a	6.4 b
Pnut	Pnut	Pnut	Pnut	0 a	5.0 ab	5.9 a	11.5 ab
Pnut	Pnut	Corn	Pnut	1 a	5.5 ab	6.1 a	12.8 ab
Pnut	Pnut	Cotton	Pnut	0 a	8.3 a	6.1 a	12.6 ab
Cotton	Pnut	Cotton	Pnut	16 a	8.5 a	5.5 a	8.0 ab
Pnut	Cotton	Cotton	Pnut	8 a	6.0 ab	5.4 a	14.0 a
Cotton	Cotton	Cotton	Pnut	5 a	7.8 ab	5.4 a	6.1 b

[1] Root-knot larvae (J2) counts per 100 cc soil.
[2] ELS = early leaf spot.
[3] Means that are in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (P=0.05).

TABLE 2. IMPACT OF CROP ROTATION ON THE POPULATIONS OF THE SOUTHERN ROOT-KNOT NEMATODE ON CORN, COTTON, AND PEANUT, 2006

———Rotation sequence———				—Root-knot larval (J2) counts—		
2003	2004	2005	2006	Cotton	Corn	Peanut
Corn	Corn	Corn	Corn	--	645 ab[1]	--
Corn	Peanut	Corn	Peanut	--	--	5 a
Corn	Corn	Peanut	Corn	--	205 bc	--
Corn	Corn	Corn	Peanut	--	--	13 a
Peanut	Peanut	Peanut	Peanut	--	--	0 a
Peanut	Corn	Peanut	Corn	--	106 c	--
Peanut	Peanut	Corn	Peanut	--	--	1 a
Cotton	Cotton	Cotton	Cotton	237 a	--	--
Peanut	Peanut	Cotton	Peanut	--	--	0 a
Cotton	Peanut	Cotton	Peanut	--	--	16 a
Peanut	Cotton	Peanut	Cotton	296 a	--	--
Peanut	Cotton	Cotton	Peanut	--	--	8 a
Cotton	Cotton	Peanut	Cotton	289 a	--	--
Cotton	Cotton	Cotton	Peanut	--	--	5 a
Cotton	Corn	Cotton	Corn	--	838 a	--
Cotton	Corn	Corn	Cotton	235 a	--	--
Cotton	Corn	Corn	Corn	--	449 abc	--
Cotton	Cotton	Corn	Cotton	359 a	--	--
Cotton	Cotton	Cotton	Corn	--	947 a	--

[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).

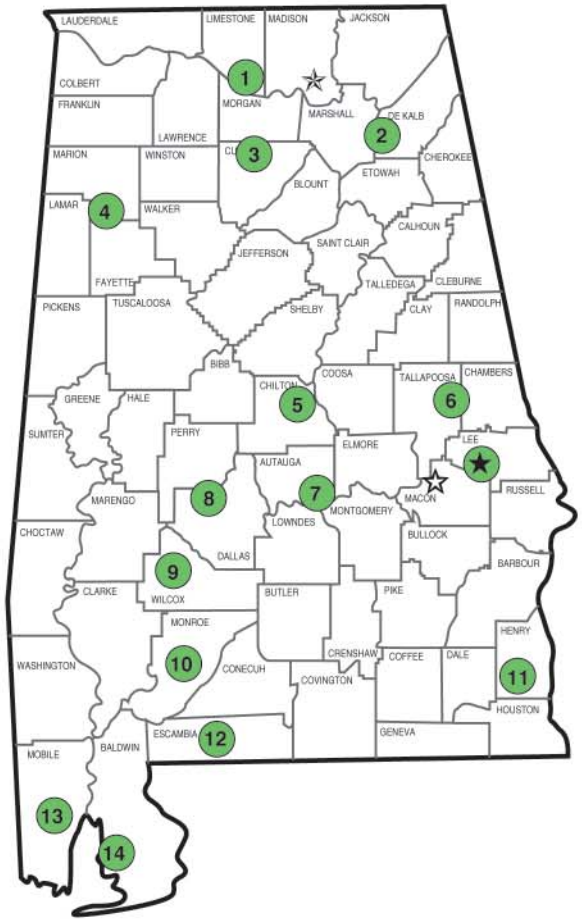
TABLE 3. IMPACT OF CROPPING SEQUENCE ON THE YIELD OF CORN, COTTON, AND PEANUT

Crop sequence				2006 yields		
				Lint cotton	Corn	Peanut
2003	2004	2005	2006	*lb/ac*	*bu/ac*	*lb/ac*
Corn	Corn	Corn	Corn	--	107 bc[1]	--
Corn	Peanut	Corn	Peanut	--	--	4256 ab
Corn	Corn	Peanut	Corn	--	145 a	--
Corn	Corn	Corn	Peanut	--	--	4389 ab
Peanut	Peanut	Peanut	Peanut	--	--	3539 b
Peanut	Corn	Peanut	Corn	--	126 ab	--
Peanut	Peanut	Corn	Peanut	--	--	4326 ab
Cotton	Cotton	Cotton	Cotton	392 c	--	--
Peanut	Peanut	Cotton	Peanut	--	--	3567 b
Cotton	Peanut	Cotton	Peanut	--	--	4519 a
Peanut	Cotton	Peanut	Cotton	697 a	--	--
Peanut	Cotton	Cotton	Peanut	--	--	4135 ab
Cotton	Cotton	Peanut	Cotton	766 a	--	--
Cotton	Cotton	Cotton	Peanut	--	--	4516 a
Cotton	Corn	Cotton	Corn	--	114 bc	--
Cotton	Corn	Corn	Cotton	538 b	--	--
Cotton	Corn	Corn	Corn	--	88 c	--
Cotton	Cotton	Corn	Cotton	466 bc	--	--
Cotton	Cotton	Cotton	Corn	--	100 bc	--

[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).

Alabama's Agricultural Experiment Station
AUBURN UNIVERSITY

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



Research Unit Identification

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

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