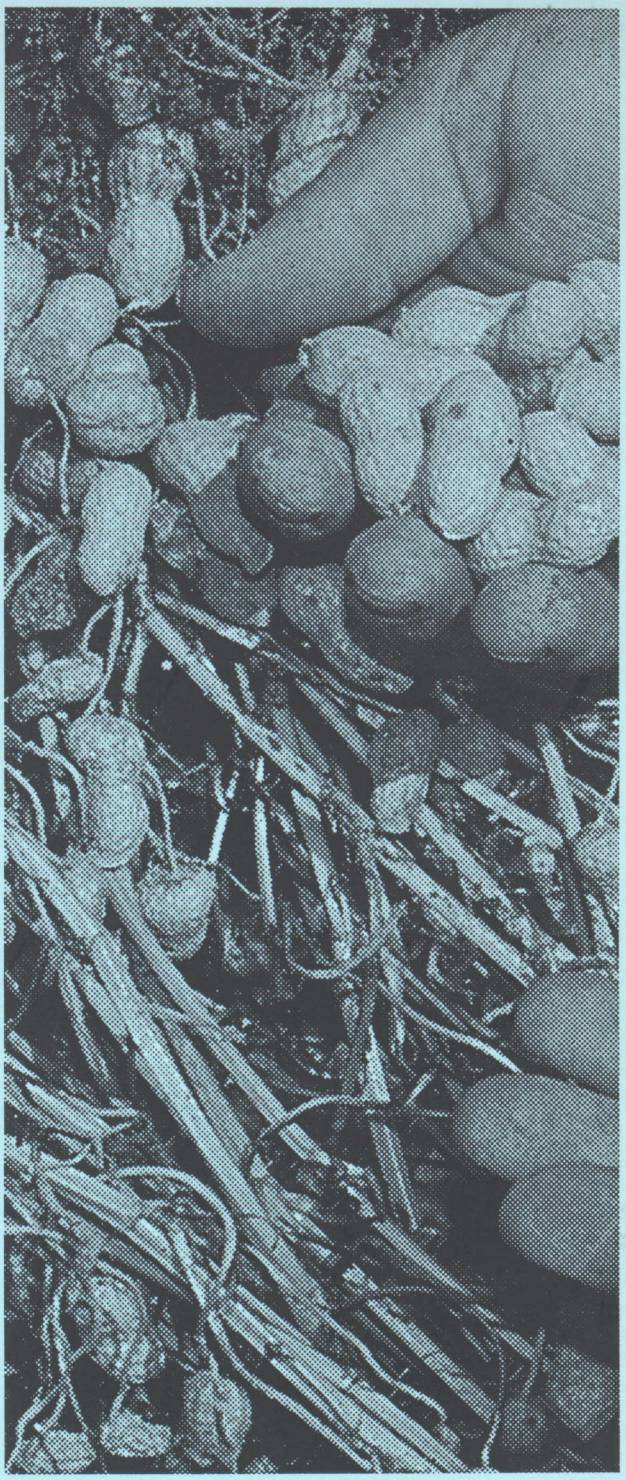
# PEANUT DISEASE CONTROL FIELD TRIALS, 1999



Entomology and Plant Pathology Departmental Series No. 1
March 2000
Alabama Agricultural Experiment Station
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Auburn University
Auburn, Alabama

**This report is the result of a joint effort among the following:**
**Alabama Agricultural Experiment Station**
**Alabama Cooperative Extension System**
**Alabama A&M University**
**Auburn University**

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# Acknowledgments

The following agencies provided financial support for the 1999 peanut disease research program:

BASF Corporation, Research Triangle Park, NC
Gowan Corporation, Yuma, AZ
Griffin Corporation, Valdosta, GA
Novartis Crop Protection, Greensboro, NC
Sipcam Agro USA, Roswell, GA
Zeneca Inc., Wilmington, DE
Wilbur-Ellis, Kansas City, KS

Appreciation is also expressed to Mien-Huei Tzeng, Applied Statistics Consulting Lab, Discrete and Statistical Sciences, for the computation, summarization, and analysis of the data in this report.

# Peanut Disease Control Field Trials, 1999

**A. K. Hagan, K. L. Bowen, H. L. Campbell, and M. E. Rivas-Davila[1]**

## INTRODUCTION

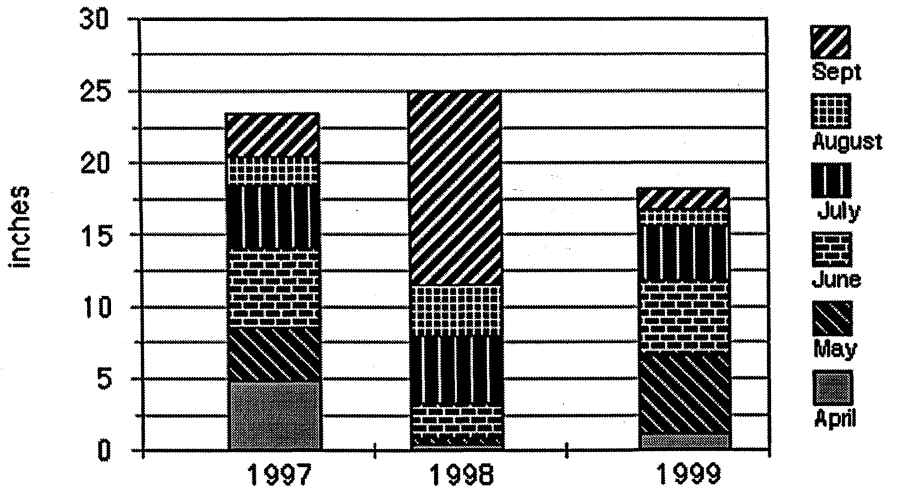
The variety of fungicides available for disease control on peanuts makes it difficult for growers to select the most efficient treatment to use. In order to provide information on the effectiveness of various fungicides, disease trials were conducted by Alabama Agricultural Experiment Station personnel in 1999 on peanut in Alabama. This report summarizes the results of these trials.

The disease trials were located at the Wiregrass Research and Extension Center, Headland, Alabama, and the Gulf Coast Research and Extension Center, Fairhope, Alabama. These trials evaluated the efficacy of current and new fungicides for controlling foliar and soil-borne diseases of peanut and their effect on crop production in Alabama.

## GROWING CONDITIONS

Weather data from the growing season indicated that rainfall was near seasonal normals during the early part of the growing season (May and June) but was below normal during the latter part of the summer (July, August, and September) (Figure 1) and temperatures were near normal during the same time.

Figure 1.Total and monthly rainfall amounts (inches).




[1]*Hagan and Bowen are Professors and Campbell and Rivas-Davila are Research Associates in the Auburn University Department of Entomology and Plant Pathology.*

The lower levels of rainfall during July, August, and September affected disease levels, which were slightly below that usually seen in the area where test plots were located. Root knot nematode contributed to some of the problems observed but were not a major factor in test plots. The biggest problem occurred from southern stem rot caused by *Sclerotium rolfsii*. For leaf spot diseases, dry, hot weather was responsible for lack of damage caused by both early and late leaf spot. Tomato spotted wilt damage was negligible and was rarely observed. *Rhizoctonia solani* stem rot was also not a problem in test plots.

Even though plots received irrigation, the lack of rainfall in July and August contributed to the yield totals in some plots being slightly below normal levels. For more detailed information on the weather in 1999 at the two trial locations, refer to Figures 2 and 3.

Figure 2. Daily precipitation (inches), April to October 1999.

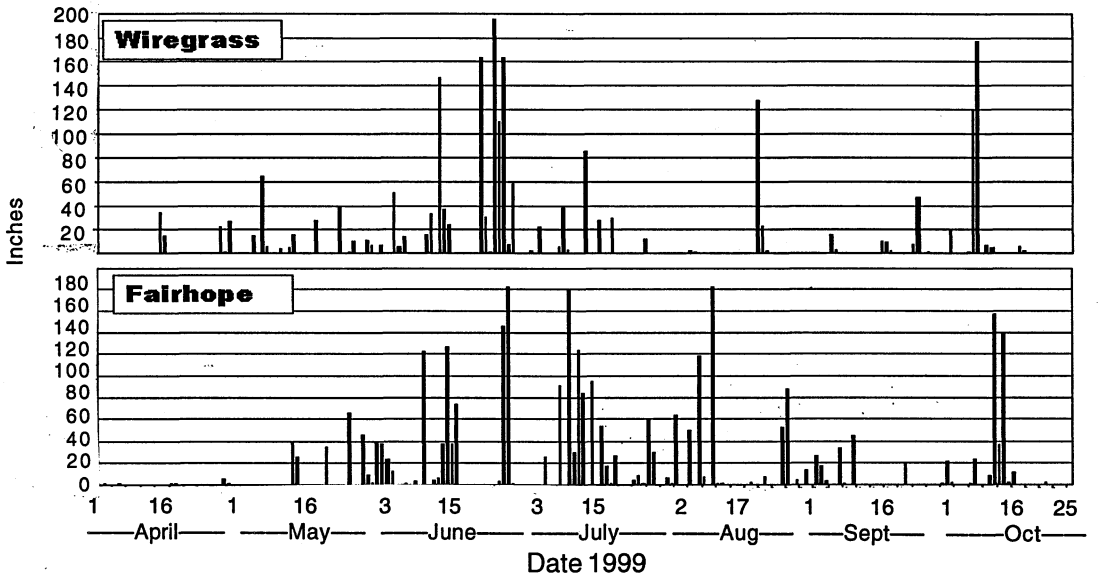
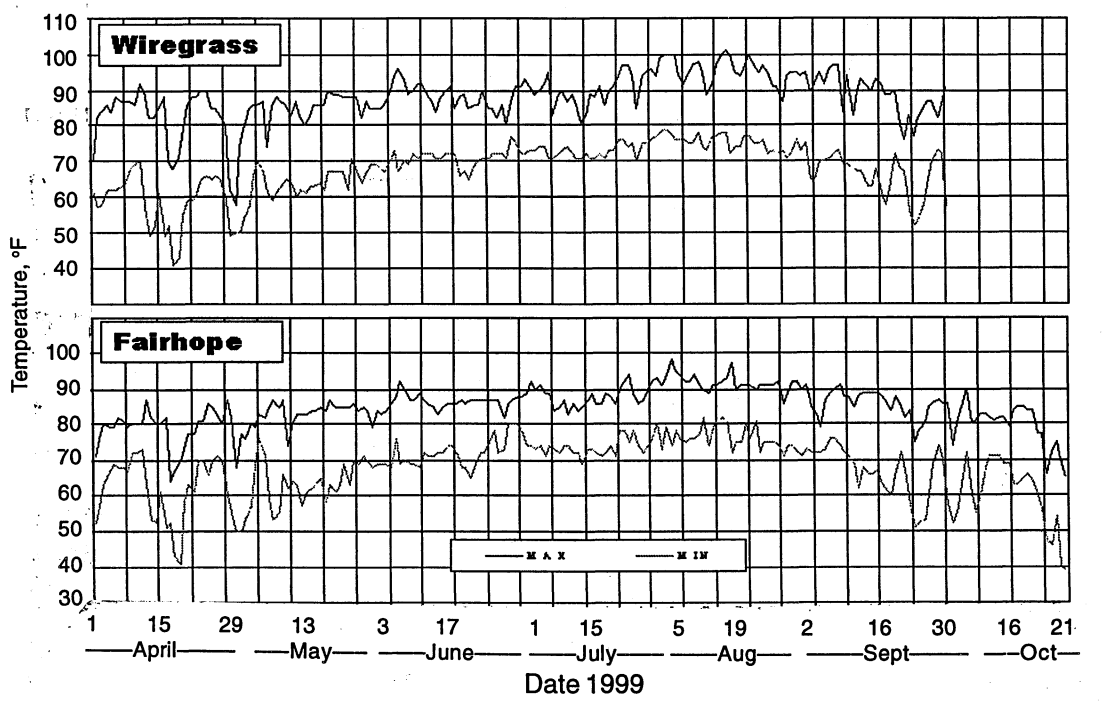



Figure 3. Daily minimum and maximum temperature (°F), April; to October 1999.



## STATISTICAL ANALYSIS

Data presented in this report were statistically analyzed using the Statistical Analysis System (SAS Institute Inc., Cary, N.C.). Data were subjected to ANOVA appropriate for the experimental design used and means were separated using the least significant difference test and Duncan's Multiple Test. All statistical tests were performed at the 5% level of significance.

**NOTE:** The information presented in this report is neither an endorsement nor recommendation of the commercial products used in these trials. Consent of the authors must be obtained to reprint or reproduce any of the summaries.

# Comparison of Abound 2SC, Folicur 3.6F, and Bravo Ultrex for Peanut Disease Control

**Objective:** To measure the efficacy of Abound 2SC, Folicur 3.6F, and Bravo Ultrex for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

**Planting:**

**Date:** May 18, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was four 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five seeds per foot of row.
**Crop History:** Continuous peanut.

**Cultural Practices:**

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Insecticides:** Temik 15G 6.5 pounds per acre at planting.
**Fungicides:** See table.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied:** July 3, August 8, August 21, and September 1. Central pivot system.

**Application of Treatments:** Full canopy sprays were applied to all four rows of each plot at a calibrated rate of 15 gallons per acre using a four-row, tractor-mounted boom sprayer with TX8 nozzles. Sprays were made at two-week intervals on June 14, June 29, July 12, July 26, August 10, August 23, and September 7.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 23 using the Florida leaf spot scoring system. Counts of southern stem rot loci were made on September 23 and September 29 after plot inversion (one locus was defined as $\leq$ 1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 28 and harvested on October 8 at 9% moisture.

**Summary:** Monthly rainfall during the growing season was at or below historical levels. Temperature was near normal for the entire growing season.

Bravo Ultrex, applied season-long, was as effective as combinations of Bravo Ultrex and Abound 2SC in controlling early and late leaf spot, but was not effective against southern stem rot. The only exception to this occurred when the rate of Bravo Ultrex and Abound 2SC was decreased 50% below label rates (0.68 pounds per acre and 0.77 pint per acre, respectively). In both cases, leaf spot and southern stem rot increased dramatically compared to the season-long Bravo Ultrex program. No significant differences in yield were observed in four-block sprays of Bravo Ultrex and Abound 2SC. At-plant treatments of Abound 2SC did not improve leaf spot or southern stem rot control, nor did they boost peanut yield.

**EFFECT OF ABOUND, FOLICUR, AND BRAVO ULTREX ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment | Rate per Acre | Spray Timing[1] | Leaf Spot Ratings[2] 119 DAP[4] | 129 DAP | White Mold Ratings[3] 129 DAP | 135 DAP | Pod Yield lb/ac |
|---|---|---|---|---|---|---|---|
| Bravo Ultrex | 1.4 lb | 1-7 | 4.5 B[5] | 3.3 BC | 9.5 A | 15.0 B | 3474 A-C |
| Abound<br>Bravo Ultrex<br>Abound | 0.38 pt/1000 ft<br>1.4 lb<br>1.15 pt | In-furrow<br>1,2,4,6,7<br>3,5 | 3.8 B-D | 3.3 BC | 7.3 A | 10.8 C-E | 3630 AB |
| Abound<br>Bravo Ultrex | 0.58 pt/1000 ft<br>1.4 lb | In-furrow<br>1-7 | 3.5 B-D | 3.5 B | 8.5 A | 15.5 B | 3277 BC |
| Abound<br>Bravo Ultrex<br>Abound | 0.77 pt/1000 ft<br>1.4 lb<br>1.15 pt | In-furrow<br>1,2,4,6,7<br>3,5 | 3.8 B-D | 3.0 C | 7.3 A | 10.5 DE | 3817 A |
| Bravo Ultrex<br>Abound | 1.4 lb<br>1.15 pt | 1,2,4,6,7<br>3,5 | 3.3 CD | 3.0 C | 7.5 A | 12.3 B-E | 3910 A |
| Bravo Ultrex<br>Abound | 1.4 lb<br>1.15 pt | 1,2,4,6<br>3,5,7 | 3.3 CD | 3.0 C | 7.3 A | 9.0 E | 3910 A |
| Bravo Ultrex<br>Abound<br>Bravo Ultrex + Fluazinam | 1.4 lb<br>0.77 pt<br>1.4 lb + 0 .71 pt | 1,2,7<br>3,5<br>4,6 | 4.3 BC | 3.0 C | 7.3 A | 13.3 B-D | 3682 AB |
| Bravo Ultrex<br>Abound<br>Folicur | 1.4 lb<br>0.77 pt<br>0.45 pt | 1,2,7<br>3,5<br>4,6 | 3.0 D | 3.0 C | 8.5 A | 13.0 B-E | 3723 AB |
| Bravo Ultrex<br>Folicur | 1.4 lb<br>0.45 pt | 1,2,3<br>4,5,6,7 | 3.5 B-D | 3.0 C | 10.0 A | 13.3 B-D | 3412 A-C |
| Bravo Ultrex<br>Abound + Bravo Ultrex<br>Abound | 1.4 lb<br>0.77 pt + 1.4 lb<br>0.77 pt | 1,2,6,7<br>3,4<br>5 | 4.3 BC | 3.3 BC | 10.8 A | 14.8 BC | 3910 A |
| Bravo Ultrex<br>Abound + Bravo Ultrex | 1.4 lb<br>0.77 pt + 0.68 lb | 1,2,7<br>3,4,5,6 | 8.8 A | 8.3 A | 9.5 A | 21.8 A | 2945C |
| LSD (0.05) | | | 1.2 | 0.5 | 5.2 | 4.2 | 565 |

[1] Spray timing was as follows: 1 = June 14, 2 = June 29, 3 = July 12, 4 = July 26, 5 = August 10, 6 = August 23, 7 = September 7.

[2] Early and late leaf spot was assessed on September 13 and 23, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).

[3] Southern stem rot or white mold assessed on September 23 and 29 (inversion), respectively, as the number of consecutive symptoms of the disease loci per total ft row (one locus = $\leq$ 1 foot of consecutive stem rot-damaged plants in a row).

[4] DAP = days after planting.

[5] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Comparison of Moncut 50W Alone and in Tank Mixes for Peanut Disease Control

**Objective:** To evaluate the efficacy of Moncut 50W applied alone and in tank mixes for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

## Planting:

**Date:** May 12, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was six 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five seeds per foot of row.
**Crop History:** Continuous peanut.

## Cultural Practices:

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** See table.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied:** July 29, August 6, August 16, and August 22. Central pivot system.

**Application of Treatments:** Full canopy sprays were applied to all six rows of each plot at a calibrated rate of 15 galllons per acre using a six-row, tractor-mounted boom sprayer with TX8 nozzles. Sprays were made at two-week intervals on June 17, July 2, July 16, July 28, August 12, August 25, and September 10.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 20 using the Florida scoring system. Counts of southern stem rot loci were made on September 20 and September 28 immediately after plot inversion (one locus was defined as $\leq$ 1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 20 and September 28 and harvested on September 23 and October 1, respectively. Yields were reported at 9% moisture.

**Summary:** All of the treatment regimens that included Moncut 50W (at the different rates) showed improvement over the Bravo Ultrex alone for the control of southern stem rot. This level of southern stem rot control provided by Moncut was similar to that obtained with Folicur and Abound programs. No significant differences were seen in the yields between Moncut 50W, Abound 2SC, and Folicur 3.6F treatments, but all three yielded significantly higher than the yield of Bravo Ultrex alone.

**EFFECT OF MONCUT 50W APPLIED ALONE AND IN TANK MIXES ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment | Rate per Acre | Spray Timing[1] | Leaf Spot —Ratings[2]— | | White Mold —Ratings[3]— | | Pod Yield —lb/ac— | |
|---|---|---|---|---|---|---|---|---|
| | | | 124 DAP[4] | 131 DAP | 131 DAP | 139 DAP | 1st dig[5] | 2nd dig[6] |
| Bravo Ultrex | 1.4 lb | 1-7 | 4.6 BC[7] | 4.2 D | 13.2 A | 17.4 A | 3949 B | 3161 B |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>2.0 lb + 1.4 lb | 1,2,4,6,7<br>3,5 | 5.8 AB | 5.8 A-C | 3.8 D | 8.6 B | 4505 A | 4207 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>1.5 lb + 1.4 lb | 1,2,4,6,7<br>3,5 | 4.8 BC | 5.2 CD | 4.8 D | 10.0 B | 4638 A | 4066 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4<br>1.0 lb + 1.4 lb | 1,2,4,6,7<br>3,5 | 6.0 AB | 5.4 B-D | 5.2 D | 8.8 B | 4738 A | 4406 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>1.0 lb + 1.4 lb | 1,2,7<br>3,4,5,6 | 6.4 A | 6.0 A-C | 5.6 D | 8.4 B | 4638 A | 4339 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>1.0 lb + 1.4 lb<br>0.45 pt | 1,2,7<br>3,5<br>4,6 | 6.4 A | 6.8 A | 5.8 D | 8.4 B | 4646 A | 4456 A |
| Bravo Ultrex<br>Abound 2SC<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>1.6 pt<br>1.0 lb + 1.4 lb | 1,2,4,6,7<br>3<br>5 | 4.8 BC | 4.2 D | 6.4 CD | 10.2 B | 4572 A | 4373 A |
| Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>0.45 pt | 1,2,7<br>3,4,5,6 | 6.0 AB | 6.0 A-C | 9.8 B | 11.4 B | 4472 A | 4207 A |
| Bravo Ultrex<br>Abound 2SC | 1.4 lb<br>1.5 pt | 1,2,4,6,7<br>3,5 | 4.2 C | 5.2 CD | 8.8 BC | 10.2 B | 4787 A | 4049 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>2.0 lb + 1.4 lb | 1,2,4,5,6,7<br>3 | 4.8 BC | 4.8 CD | 6.4 CD | 7.2 B | 4812 A | 4240 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>0.75 lb + 1.4 lb | 1,2,7<br>3,4,5,6 | 6.4 A | 6.6 AB | 5.8 D | 10.4 B | 4497 A | 4323 A |
| LSD (0.05) | | | 1.6 | 1.2 | 2.7 | 4.5 | 456 | 484 |

[1] Spray timing was as follows: 1 = June 17, 2 = July 2, 3 = July 16, 4 = July 28, 5 = August 12, 6 = August 25, 7 = September 10.
[2] Early and late leaf spot assessed on September 13 and 20, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).
[3] Southern stem rot or white mold assessed on September 20 and 28, respectively, as the number of consecutive symptoms of the disease loci per total ft row (one locus = $\leq$ 1 foot of consecutive stem rot-damaged plants in a row).
[4] DAP = days after planting.
[5] First digging September 20, harvested September 23.
[6] Second digging September 28, harvested October 1.
[7] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Comparison of Echo 720, Echo 75 WDG, and Eminent 125SL with Standard Fungicide Treatments for Peanut Disease Control

**Objective:** To evaluate the efficacy of Echo 720, Echo 75WDG, and Eminent 125SL compared with standard fungicides for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

## Planting:

**Date:** May 18, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was four 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five seeds per ft of row.
**Crop History:** Continuous peanut

## Cultural Practices:

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** See table.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied:** July 31, August 8, August 21, and September 1. Central pivot system.

**Application of Treatments:** Full canopy sprays were applied to all four rows of each plot at a calibrated rate of 15 galllons per acre using a four-row, tractor-mounted boom sprayer with TX8 nozzles. Applications were made at two week intervals on June 18, July 2, July 16, July 30, August 12, August 26, and September 10.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 23 using the Florida scoring system. Counts of southern stem rot loci were made on September 23 and September 29 immediately after plot inversion (one locus was defined as ≤1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 28 and harvested on October 1. Yields were reported at 9% moisture.

**Summary:** The Echo 720, Echo 75 WDG, and Eminent 125 SL treatments provided levels of control of early and late leaf spot consistent with the full season Bravo Ultrex program. None of the treatments containing Echo 720, Echo 75WDG, or Eminent 125 SL gave significantly better control of southern stem rot than the full season Bravo Ultrex application. Echo and Eminent programs did not significantly impact yields when compared to the Bravo Ultrex standard.

**EFFECT OF ECHO 720, ECHO 75 WDG, EMINENT 125SL, AND STANDARD FUNGICIDE TREATMENTS ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment | Rate perAcre | Spray Timing[1] | Leaf Spot Ratings[2] 119 DAP[4] | 129 DAP | White Mold Ratings[3] 129 DAP | 135 DAP | Yield lb/ac |
|---|---|---|---|---|---|---|---|
| Bravo Ultrex | 1.4 lb | 1-7 | 4.3 A [5] | 3.5 A | 15.3 AB | 22.5 BC | 2593 BC |
| Echo 720<br>Eminent 125 SL | 1.5 pt<br>26.0 fl oz | 1,6,7<br>2,3,4,5 | 4.0 A | 3.0 A | 19.0 A | 24.8 AB | 2313 C |
| Echo 75 WDG<br>Eminent 125 SL | 1.5 lb<br>26.0 fl oz | 1,6,7<br>2,3,4,5 | 3.3 A | 3.5 A | 14.3 AB | 23.3 BC | 2852 BC |
| Echo 720<br>Echo 720 + Eminent 125 SL | 1.0 pt<br>1.0 pt + 13 fl oz | 1,6,7<br>2,3,4,5 | 3.0 A | 3.5 A | 11.0 B | 18.3 CD | 2769 BC |
| Terraclor 15G<br>Bravo Ultrex | 10 lb<br>1.4 lb | In furrow<br>1-7 | 4.3 A | 3.5 A | 17.8 A | 29.8 A | 2365 C |
| Terraclor 4F<br>Bravo Ultrex | 3 pt<br>1.4 lb | In furrow<br>1-7 | 3.0 A | 3.8 A | 14.0 AB | 22.5 BC | 3184 AB |
| Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>0.45 pt | 1,2,7<br>3,4,5,6 | 3.3 A | 3.5 A | 10.8 B | 16.5 DE | 3080 B |
| Bravo Ultrex<br>Abound 2SC | 1.4 lb<br>1.6 pt | 1,3,5,6,7<br>2,4 | 3.5 A | 3.0 A | 10.3 B | 12.0 E | 3682 A |
| LSD (0.05) | | | 1.3 | 1.1 | 6.2 | 5.5 | 601 |

[1] Spray timing was as follows: 1 = June 18, 2 = July 2, 3 = July 16, 4 = July 30, 5 = August 12, 6 = August 26, 7 = September 10.

[2] Early and late leaf spot assessed on September 13 and 23, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).

[3] Southern stem rot or white mold assessed on September 23 and 29 (plot inversion), respectively, as the number of consecutive symptoms of the disease loci per total ft row (one locus = $\leq$1 foot of consecutive stem rot-damaged plants in a row).

[4] DAP=days after planting.

[5] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Comparison of BAS 500F with Standard Fungicide Treatments, Applied at Various Spray Intervals, for Peanut Disease Control

**Objective:** To evaluate the efficacy of BAS 500F compared with standard fungicides at various spray intervals for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

**Planting:**

**Date:** May 18, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was six 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Crop History:** Continuous peanut.

**Cultural Practices:**

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** See table.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied**: July 31, August 8, August 21, and September 1.

**Application of Treatments:** Full canopy sprays were applied to all six rows of each plot at a calibrated rate of 15 gallons per acre using a six-row, tractor-mounted boom sprayer with TX8 nozzles. Spray schedule intervals were as follows:

14 days: June 14, June 29, July 12, July 27, August 10, August 23, and September 7.
21 days: June 14, July 2, July 27, August 16, and September 7.
28 days: June 14, July 12, August 10, and September 7.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 23 using the Florida scoring system. Counts of southern stem rot loci were made on September 23 and 29 (inversion) (one locus was defined as ≤1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 28 and October 8 and harvested on October 7 and October 15, respectively. Yields were reported at 9% moisture.

**Summary:** When applied at two-and three-week intervals, both rates of BAS 500F proved as effective as Folicur 3.6F in controlling the combination of early and late leaf spot on Georgia Green peanut (see table). These same BAS 500F treatments, when applied every two weeks, gave better leaf spot control than did the season-long Bravo Ultrex program. Monthly applications of the high rates of BAS 500F controlled early and late leaf spot better than Folicur 3.6F or Abound 2SC applied on the same schedule.

As compared to the season-long Bravo Ultrex standard, all BAS 500F, Folicur 3.6F, and Abound 2SC programs significantly reduced the severity of southern stem rot (Table 4). When applied on the same schedule, BAS 500F gave the same level of southern stem rot control as Folicur 3.6F and Abound 2SC. No differences in the level of disease control were noted between the two rates of BAS 500F when applied on a two- or three-week schedule.

Despite equal to superior disease control, yield response to BAS 500F, particularly for the two- and three-week spray schedules, was often significantly less than that obtained with the recommended Folicur 3.6F program

(Table 4). When applied monthly, yield in the BAS 500F plots was significantly higher than that recorded with Folicur 3.6F and equal to that maintained in the Abound 2SC-treated plots.

Overall, the efficacy of BAS 500F against soil-borne and foliar diseases of peanut was excellent. The levels of leaf spot and stem rot control were similar and sometimes superior to those obtained with current industry standards such as Folicur 3.6F and Abound 2SC. Failure of BAS 500F to boost peanut yield is puzzling. Given the level of disease control provided by both rates of this fungicide, yield gains should have been equivalent, particularly at the two- and three-week intervals, to those obtained with Folicur 3.6F program.

**EFFECT OF BAS 500F AND STANDARD FUNGICIDE TREATMENTS, APPLIED AT VARIOUS SPRAY INTERVALS, ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per acre | Spray Timing[1] | Spray Intervals | Leaf Spot ——Ratings[2]—— 119 DAP[4] | 129 DAP | White Mold ——Ratings[3]—— 129 DAP | 135 DAP[5] | Pod Yield ——lb/ac—— 1st dig[5] | 2nd dig[6] |
|---|---|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb | 1-7 | 14 | 5.5 B[7] | 5.0 BC | 10.5 A | 21.8 A | 3257 E | 3070 C |
| Bravo Ultrex 1.4 lb<br>BAS 500F 0.15 lb ai | 1,6,7<br>2,3,4,5 | 14 | 3.3 EF | 3.0 DE | 10.8 A | 16.5 B | 3485 DE | 3350 C |
| Bravo Ultrex 1.4 lb<br>BAS 500F 0.25 lb ai | 1,6,7<br>2,3,4,5 | 14 | 2.8 F | 2.8 E | 8.8 AB | 12.0 B-D | 3640 C-E | 3568 BC |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 0.45 pt | 1,2,7<br>3,4,5,6 | 14 | 3.5 EF | 4.0 C-E | 6.3 B-D | 11.3 CD | 4595 A | 4387 A |
| Bravo Ultrex 1.4 lb<br>BAS 500F 0.15 lb ai | 1<br>2-5 | 21 | 3.8 D-F | 4.0 C-E | 8.0 A-C | 15.8 BC | 3806 C-E | 3122 C |
| Bravo Ultrex 1.4 lb<br>BAS 500F 0.25 lb ai | 1<br>2-5 | 21 | 5.0 BC | 4.5 CD | 8.5 AB | 14.3 BC | 4034 A-D | 3557 BC |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 0.45 pt | 1<br>2-5 | 21 | 4.3 C-E | 4.5 CD | 5.0 CD | 8.8 D | 4418 AB | 4045 AB |
| Bravo Ultrex 1.4 lb<br>BAS 500F 0.25 pt | 1<br>2-4 | 28 | 4.8 B-D | 3.8 C-E | 6.3 B-D | 14.5 BC | 3910 B-D | 3972 AB |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 0.45 pt | 1<br>2-4 | 28 | 7.3 A | 6.3 AB | 8.3 A-C | 15.8 BC | 4211 A-C | 3205 C |
| Bravo Ultrex 1.4 lb<br>Abound SC 1.6 pt | 1<br>2-4 | 28 | 7.3 A | 7.3 A | 4.3 D | 10.8 CD | 4589 A | 4076 AB |
| LSD (0.05) | | | 1.2 | 1.6 | 3.4 | 5.0 | 610 | 579 |

[1] Spray intervals and timing were as follows: 14 days: 1=June 14, 2=June 29, 3=July 12, 4=July 27, 5=August 10, 6=August 23, 7= September 7; 21 days: 1=June 14, 2=July 2, 3=July 27, 4=August 16, 5=September 7; 28 days: 1=June 14, 2=July 12, 3=August 10, 4=September 7. [2] Early and late leaf spot assessed on September 13 and September 23, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead). [3] Southern stem rot or white mold assessed on September 23 and September 29 (plot inversion) as the number of consecutive symptoms of the disease loci per total ft row (one locus = 1 foot of consecutive stem rot-damaged plants in a row). [4] DAP = Days after planting. [5] First digging September 28, harvested October 7, 1999. [6] Second digging October 8, harvested October 15, 1999. [7] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P=0.05).

# Comparison of Recommended Fungicide Spray Programs for Disease Control on Georgia Green

**Objective:** To evaluate the efficacy of recommended spray programs for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

**Planting:**

**Date:** May 18, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was six 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five seeds per foot of row.
**Crop History:** Continuous peanut.

**Cultural Practices:**

**Herbicides**: Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** See table.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied:** July 31, August 8, August 21, and September 1. Central pivot system.

**Application of Treatments:** Full canopy sprays were applied to all six rows of each plot at a calibrated rate of 15 gallons per acre using a six-row, tractor-mounted boom sprayer with TX8 nozzles. Sprays were made every two weeks: June 18, July 2, July 16, July 30, August 13, August 26, and September 10.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 23 using the Florida scoring system. Counts of southern stem rot loci were made on September 23 and September 28 immediately after plot inversion (one locus was defined as ≤1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 28 and October 8 and harvested on October 7 and October 15, respectively. Yields were reported at 9% moisture.

**Summary:** All the fungicide programs gave similar levels of leaf spot control. The best control of southern stem rot was noted in plots sprayed with Stratego/Tilt + Moncut/Tilt + Bravo/Tilt. Reductions in southern stem rot damage were also obtained with those programs that included Folicur, Abound, Moncut, or Tilt + Moncut. Due to lower than normal rainfall late in the growing season, Rhizoctonia limb rot levels were insignificant. When compared with Bravo 720 alone, significant yield gains were noted with only the Stratego/Tilt + Moncut program. Differences in yield between the programs which included Folicur, Abound, Moncut, or Tilt + Moncut were not significant.

**EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment | Rate per acre | Spray Timing [1] | Leaf Spot ——Ratings[2]—— 119 DAP[3] | 129 DAP | White Mold ——Ratings[3]—— 129 DAP | 135 DAP[4] | Pod Yield ——lb/ac—— 1st dig[4] | 2nd dig[5] |
|---|---|---|---|---|---|---|---|---|
| Bravo 720 | 1.5 pt | 1-7 | 5.8 A [6] | 3.5 A | 11.0 A | 22.0 A | 3381 BC | 3319 CD |
| Bravo 720<br>Folicur 3.6 F | 1.5 pt<br>7.2 fl oz | 1,2,7<br>3,4,5,6 | 4.3 A-C | 3.5 A | 6.3 BC | 16.0 CD | 3910 AB | 3734 A-C |
| Bravo 720<br>Folicur 3.6F | 1.5 pt<br>7.2 fl oz | 1,5,6,7<br>2,3,4 | 3.8 C | 3.5 A | 7.3 A-C | 19.3 A-C | 3568 A-C | 3360 B-D |
| Bravo 720<br>Abound 2.08 SC | 1.5 pt<br>18.4 fl oz | 1,3,5,6,7<br>2,4 | 4.0 BC | 3.8 A | 7.0 A-C | 12.5 DE | 3755 AB | 3848 A |
| Bravo 720<br>Bravo 720 + Moncut | 1.5 pt<br>1.5 pt + 1.2 lb | 1,2,4,6,7<br>3,5 | 4.3 A-C | 3.8 A | 5.0 C | 14.0 DE | 3713 A-C | 4024 A |
| Tilt/Bravo<br>Tilt/Moncut | label | 1,2,4,6,7<br>3,5 | 4.0 BC | 4.0 A | 8.5 A-C | 16.5 B-D | 3910 AB | 3796 AB |
| Stratego<br>Tilt/Moncut | label | 1,2,4,6,7<br>3,5 | 5.0 A-C | 4.0 A | 6.8 A-C | 15.3 CD | 4003 A | 4097 A |
| K-Tionic + Bravo 720 | 20 oz + 1.5 pt | 1-7 | 5.5 AB | 4.0 A | 9.8 AB | 21.5 A | 3423 BC | 3174 D |
| Bravo 720<br>K-Tionic + Biozyme<br>+ Bravo 720 | 1.5 pt<br>20 oz + 8 oz<br>+ 1.5 pt | 1,3,5,7<br>2,4,6 | 5.3 AB | 3.8 A | 7.5 A-C | 22.3 A | 3174 C | 3288 CD |
| Bravo 720<br>Biozyme + Bravo 720 | 1.5 pt<br>8 oz + 1.5 pt | 1,3,5,7<br>2,4,6 | 5.3 A-C | 3.8 A | 9.8 AB | 20.8 AB | 3381 BC | 3267 D |
| Stratego<br>Montero<br>[Flutolanil + Tilt]<br>Tilt + Bravo Ultrex<br>Bravo Ultrex | 7 fl oz<br>1.2 lb + 4 fl oz<br><br>2 fl oz + 1 lb<br>1.4 lb | 1,5,7<br>2,4<br><br>3<br>7 | 4.3 A-C | 3.0 A | 6.3 BC | 9.8 E | 3609 A-C | 3869 A |
| LSD (0.05) | | | 1.6 | 1.2 | 4.4 | 4.6 | 551 | 452 |

[1] Spray timing was as follows: 1 = June 18, 2 = July 2, 3 = July 16, 4 = July 30, 5 = August 13, 6 = August 26, 7 = September 10.

[2] Early and late leaf spot asssessed on September 13 and September 23, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation , 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).

[3] Southern stem rot or white mold was assessed on September 23 and October 29, respectively, as the number of disease loci per 70 ft row (one locus = 1 foot of consecutive stem rot-damaged plants in a row).

[4] First digging September 28, harvested October 7.

[5] Second digging October 8, harvested October 15.

[6] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Comparison of Several Experimental Fungicides for Peanut Disease Control

**Objective:** To evaluate the efficacy of several experimental fungicides for the control of early and late leaf spot and soil-borne diseases of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

**Planting:**

**Date:** May 12, 1999
**Experimental Design:** Randomized complete blocks with four replications.
Plot size was six 35-foot (10.7 m) rows spaced 3 feet (0.9 m) apart.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five seeds per foot of row.
**Crop History:** Continuous peanut.

**Cultural Practices:**

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** See table.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied:** July 29, August 6, August 16, and August 22. Central pivot system.

**Application of Treatments:** Full canopy sprays were applied to all six rows of each plot at a calibrated rate of 15 gallons per acre using a six-row, tractor-mounted boom sprayer with TX8 nozzles. Sprays were made at two week intervals on June 22, July 8, July 20, August 3, August 18, August 31, and September 15.

**Disease Assessment:** Early and late leaf spot were visually rated on September 13 and September 20 using the Florida scoring system. Counts of southern stem rot loci were made on September 20 and September 28 immediately after plot inversion (one locus was defined as ≤1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on September 20 and September 28, and harvested on September 23 and October 1, respectively. Yields were reported at 9% moisture.

**Summary:** When compared with the full-season Bravo 720 program, all remaining treatment regimes were equally or less effective in controlling early and late leaf spot. Control of southern stem rot was consistently better in the plots treated with Folicur 3.6F and Abound 2SC than in those treated with the season-long Bravo 720 program. A significant reduction in southern stem rot levels, compared with those obtained with the full-season Bravo 720 program, was also noted in the plots treated season-long with ManKocide DF + GX 620 tank mix. Only the Bravo/Folicur, Kocide + Bravo/Folicur, and GSX 611/Folicur programs significantly improved yields above those obtained with Bravo 720 alone.

**EFFECT OF EXPERIMENTAL FUNGICIDES ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment | Rate per acre | Spray Timing [1] | Leaf Spot —Ratings[2]— 119 DAP[4] | 129 DAP | White Mold —Ratings[3]— 129 DAP | 135 DAP | Pod Yield —lb/ac— 1st dig[5] | 2nd dig[6] |
|---|---|---|---|---|---|---|---|---|
| Bravo 720 | 1.5 pt | 1-7 | 3.5 D [7] | 4.8 C | 11.5 A | 18.8 A | 4149 BC | 3454 C |
| Mankocide<br>Folicur 3.6F | 3 lb<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 5.3 BC | 6.5 A-C | 4.3 BC | 7.3 DE | 4667 AB | 4429 AB |
| Mankocide + GX 620<br>Folicur 3.6F | 3 lb + 2 oz<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 5.0 B-D | 6.3 A-C | 6.3 BC | 10.8 B-D | 4574 AB | 4055 A-C |
| Mankocide + GX 620<br>Folicur 3.6F | 2 lb + 2 oz<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 6.5 AB | 6.3 A-C | 5.3 BC | 8.3 C-E | 4377 A-C | 4366 AB |
| Mankocide + GX 620<br>Abound 2SC | 3 lb + 2 oz<br>18.3 fl oz | 1,2,3,5,7<br>4,6 | 6.5 AB | 7.0 AB | 8.0 AB | 10.8 B-D | 4366 A-C | 4086 A-C |
| Mankocide + GX 620 | 2 lb + 2 oz | 1-7 | 7.8 A | 7.8 A | 3.0 C | 11.8 BC | 4159 BC | 4014 A-C |
| Bravo 720<br>Folicur 3.6F | 1.5 pts<br>7.5 oz | 1,2,6,7<br>3,4,5 | 4.5 CD | 5.5 BC | 3.5 BC | 9.5 B-E | 4771 A | 4356 AB |
| Kocide 4.5 LF + Bravo 720<br>Folicur 3.6F | 1 pt + 1 pt<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 4.5 CD | 5.8 BC | 6.0 BC | 5.8 E | 4864 A | 4553 A |
| GSX 611<br>Folicur 3.6F | 1.5 pt<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 4.8 CD | 6.3 A-C | 5.0 BC | 8.0 C-E | 4781 A | 4429 AB |
| GSX 611<br>Folicur 3.6F | 1.5 pt<br>7.5 fl oz | 1,2,6,7<br>3,4,5 | 4.8 CD | 6.0 A-C | 5.8 BC | 8.0 C-E | 4688 AB | 4439 AB |
| Kocide 4.5 LF + Bravo 720<br>Abound 2SC | 1 pt + 1 pt<br>18. 3 fl oz | 1,2,3,5,7<br>4,6 | 8.0 A | 7.8 A | 7.8 AB | 13.5 B | 3941 C | 3869 BC |
| LSD (0.05) | | | 1.7 | 1.8 | 4.6 | 4.2 | 582 | 650 |

[1] Spray timing was as follows: 1=June 22, 2=July 8, 3=July 20, 4=August 3, 5=August 18, 6=August 31, 7=September 15.
[2] Early and late leaf spot assessed on September 13 and September 20, respectively, based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).
[3] Southern stem rot or white mold assessed on September 20 and September 28, respectively, as the number of disease loci per 70 ft row (one locus = 1 foot of consecutive stem rot-damaged plants in a row).
[4] DAP=days after planting.
[5] First digging September 20, harvested September 23.
[6] Second digging September 28, harvested October 1.
[7] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Comparison of Selected Seed Treatments for Peanut Disease Control

**Objective:** To measure the effectiveness of hopper-box treatments for controlling seedling diseases of peanut.

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%)
**Cultivar:** Georgia Green

**Planting:**

**Date:** May 25 1999
**Experimental Design:** Randomized complete blocks with six replications.
Plot size was two 25-foot (7.6 m) rows spaced 3 feet (0.9) apart.
**Crop History:** Continuous peanut and/or cotton.
**Land Preparation:** Moldboard plow and disk.

**Cultural Practices:**

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre (April 9).
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint + Basagran 1 pint per acre (June 2).
**Fungicides:** Bravo Ultrex was applied to all rows of each plot during the entire season.
**Insecticides:** Temik 15G 5 pounds per acre at planting.
**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.
**Irrigation Applied**: None.

**Application of Treatments:** Hopper box: Seed were pre-treated with treatments from cooperator.

**Disease Assessment:** Early and late leaf spot were visually rated on October 5 using the Florida scoring system. Counts of southern stem rot loci were made on October 7 immediately after plot inversion (one locus was defined as ≤1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Plants were dug on October 7 and harvested on October 15. Yields were reported at 9% moisture.

**Summary:** Seasonal rainfall totals were well below seasonal norms from mid-August throughout much of October. In August and September, temperatures were generally above historical averages. As a result, the overall yields in this unirrigated trial were well below expectations. The unusually severe leaf spot pressure also contributed to the poor yields.

**Test 1:** Among the seed dressings tested, peanut seed treated with Vitavax PC had the highest levels of emergence and seedling vigor (Table 1). The poorest seedling emergence and the widest gaps between seedlings were noted for the untreated peanut seed. Generally, seedling emergence levels and skip index for the remaining seed dressings were intermediate between those recorded for Vitavax PC and untreated peanut seed. Peanut seedling vigor was significantly lower for the untreated seed and for WE-120C-treated seed than for all the remaining seed dressings. The vigor of seed treated with Allegiance + Vitavax PC was similar to that recorded for Vitavax PC alone.

Despite a lack of late season rains, early and late leaf spot pressure was exceptionally high. None of the seed dressings appeared to have any influence on leaf spot diseases of peanut (Table 1). By harvest, deleting the first application of Bravo 720 had no impact on leaf spot control either. Stem rot damage was lower for the untreated seed than for all of the seed dressings tested (Table 1). Yields were significantly higher in plots where treated seed was planted than in the untreated controls. Although yield gains obtained with the seed dressings generally were similar, the Vitavax PC-treated peanuts yielded significantly better than those seed treated with WE-120C.

Despite the poor growing conditions, the value of seed dressings was clearly demonstrated. Several seed dressings boosted pod yields nearly 1000 pounds per acre over those recorded for untreated peanut seed. Overall, Vitavax PC when applied at 2 to 4 ounces per 100 pounds of seed alone or combined with another product, performed well.

**Test 2:** Seeding emergence rating, skip index, and seeding vigor for the Vitavax PC-treated seed were significantly higher than those of the other seed dressings and of the untreated seed (Table 2). Levels of seedling emergence and skip indices, which were recorded with the remaining fungicide seed dressings, were also superior to those noted for the untreated seed. Among all treatments the untreated seed had the lowest vigor rating.

As previously indicated, the exceptionally high level of leaf spotting and premature defoliation was fairly uniform across the entire trial. Although significant differences in early and late leaf spot were noted among treatments, the actual impact of those differences on peanut yield probably were minimal (Table 2). White mold hit counts were significantly lower for the untreated than for the treated seed (Table 2). Plots sown with seed treated with WE-120C + WE-147 had significantly lower hit counts than for seed treated with various combinations of WE-120C, WE-143, WE-144, WE-146, WE-147, and NFC/CFC. Yield for the untreated seed was significantly below those for the yields of the seed dressings (Table 2). Similar yield response was noted with all the WE and NCF/CFC-treated seed. Yield of the Vitavax PC-treated seed was similar to those of two of the four WE and NCF/CFC seed dressings screened.

Despite the severe late-season drought, all the seed dressings substantially improved seedling emergence and vigor, reduced the skip index, and boosted the yield of peanut as compared with untreated seed. The bacterial seed dressings generally proved as effective as the Vitavax PC standard in increasing stand vigor and pod yields.

**TABLE 1. EFFECT OF SELECTED SEED TREATMENTS ON SEEDLING EMERGENCE, SKIP, AND VIGOR AND ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999 (TEST 1)**

| Treatment | Rate per 100 lb Seed | Spray Timing [1] | —Emergence— Early[2] | Late[3] | ——Skip—— Early[2] | Late[3] | ——Vigor—— Early[2] | Late[3] | Leaf Spot[4] | White Mold[5] | Yield[6] lb/ac |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bravo 720 6F | 1.5 pt/A | 1-7 | 7.2 E[7] | 6.7 D | 39.7 A | 40.0 A | 2.1 C | 1.9 D | 7.5 A | 3.7 C | 716 C |
| Vitavax PC<br>Bravo 720 6F | 4 oz.<br>1.5 pt/A | hopper box<br>2-7 | 54.7 A | 61.5 A | 4.5 E | 5.7 D | 4.2 A | 4.3 A | 7.3 A | 10.7 A | 1791 A |
| Maxim + Apron XL<br>Bravo 720 6F | 0.08 + .32 oz<br>1.5 pt/A | hopper box<br>2-7 | 45.7 B | 46.3 B | 9.7 D | 7.0 D | 3.7 AB | 3.9 AB | 7.5 A | 8.8 AB | 1370 AB |
| Thiram 42S +<br>RTU PCNB +<br>Vitavax 30C<br>Bravo 720 6F | 3 oz +<br>3 oz +<br>3 oz<br>1.5 pt | hopper box<br><br><br>2-7 | 46.2 B | 46.7 B | 7.0 DE | 8.0 D | 3.9 A | 4.1 AB | 7.5 A | 10.0 AB | 1520 AB |
| Allegiance + Vitavax PC<br>Bravo 720 6F | 0.75 + 2<br>1.5 pt/A | hopper box<br>2-7 | 44.7 B | 44.2 B | 9.0 D | 9.0 CD | 3.8 A | 4.1 AB | 7.7 A | 8.0 AB | 1510 AB |
| WE-120C<br>Bravo 720 6F | 0.24 oz<br>1.5 pt/A | hopper box<br>2-7 | 25.8 D | 25.0 C | 27.7 B | 24.7 B | 2.6 C | 2.9 C | 7.7 A | 7.5 B | 1249 B |
| WE-120C + NFC/CFC<br>Bravo 720 6F | 0.24 + 0.4 oz<br>1.5 pt/A | hopper box<br>2-7 | 36.8 C | 40.3 B | 14.7 C | 12.3 C | 3.3 B | 3.8 B | 7.5 A | 8.7 AB | 1481 AB |
| LSD (0.05) | | | 6.2 | 14.4 | 4.4 | 4.3 | 0.6 | 0.4 | 0.6 | 2.8 | 437 |

[1] Spray timing was as follows: 1=June 18, 2=July 2, 3=July 16, 4=July 30, 5=August 13, 6=August 26, 7=September 10. [2] Early seedling emergence (counts per 25 ft row), vigor (1=lowest vigor; 5=highest vigor), and skip index (0=<1.0 ft gap between seedlings in a ft row; 12= 6.5 ft gap between seedlings in a ft row) were assessed at 14 DAP (June 11). [3] Late seedling emergence, vigor, and skip index were assessed at 28 DAP (June 25). [4] Early and late leaf spot assessed on October 5 based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead). [5] Southern stem rot or white mold was assessed as the number of consecutive symptoms of disease loci per total ft row (one locus =1 foot of consecutive stem rot-damaged plants in a row). [6] Plants were dug on October 7 and harvested on October 15. [7] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

**TABLE 2. EFFECT OF SELECTED SEED TREATMENTS ON SEEDLING EMERGENCE, SKIP, AND VIGOR AND ON LEAF SPOT AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999 (TEST 2)**

| Treatment | Rate per 100 lb Seed | Spray Timing[1] | —Emergence— Early[2] | Late[3] | —Skip— Early[2] | Late[3] | —Vigor— Early[2] | Late[3] | Leaf Spot[4] | White Mold[5] | Yield[6] lb/ac |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bravo 720 6F | 1.5 pt/A | 1-7 | 6.5 C[7] | 7.3 C | 33.7 A | 38.3 A | 2.1 C | 2.0 C | 7.8 A | 3.2 C | 532 C |
| Vitavax PC | 4 oz. | hopper box | 36.5 A | 43.7 A | 8.7 C | 9.0 C | 4.2 A | 4.3 A | 7.2 B | 7.3 AB | 1423 A |
| Bravo 720 6F | 1.5 pt/A | 2-7 | | | | | | | | | |
| WE-120C + WE-147 | 0.24 + 2 oz | hopper box | 29.7 B | 27.3 B | 17.3 B | 20.3 B | 3.5 B | 3.7 B | 7.5 AB | 5.7 B | 1200 AB |
| Bravo 720 6F | 1.5 pt/A | 2-7 | | | | | | | | | |
| WE-120C + WE-147 + NFC/CFC | 0.24 + 2 + 0.4 oz | hopper box hopper box | 31.0 B | 32.0 B | 17.7 B | 19.0 B | 3.5 B | 3.7 B | 7.7 AB | 8.3 A | 1065 B |
| Bravo 720 6F | 1.5 pt/A | 2-7 | | | | | | | | | |
| WE-146 + WE-144 + WE-120C + WE-147 + NFC/CFC | 0.04 + 0.04 + 0.24 + 2 + 0.4 oz | hopper box | 30.5 B | 32.0 B | 15.0 B | 17.7 B | 3.8 AB | 3.8 AB | 7.2 B | 7.8 A | 1249 AB |
| Bravo 720 6F | 1.5 pt/A | 2-7 | | | | | | | | | |
| WE-143 + WE-144 + WE-120C + WE-147 + NFC/CFC | 0.04 + 0.04 + 0.24 + 2 + 0.4 oz | hopper box | 29.0 B | 30.7 B | 17.3 B | 21.3 B | 3.3 B | 3.5 B | 7.3 AB | 8.3 A | 1142 B |
| Bravo 720 6F | 1.5 pt/A | 2-7 | | | | | | | | | |
| LSD (0.05) | | | 4.9 | 6.9 | 6.0 | 5.4 | 0.4 | 0.5 | 0.6 | 2.1 | 236 |

[1] Spray timing was as follows: 1=June 18, 2=July 2, 3=July 16, 4=July 30, 5=August 13, 6=August 26, 7=September 10. [2] Early seedling emergence (counts per 25 ft row), vigor (1=lowest vigor; 5=highest vigor), and skip index (0=<1.0 ft gap between seedlings in a ft row; 12= 6.5 ft gap between seedlings in a ft row) were assessed at 14 DAP (June 11). [3] Late seedling emergence, vigor, and skip index were assessed at 28 DAP (June 25). [4] Early and late leaf spot assessed on October 5 based on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead). [5] Southern stem rot or white mold was assessed as the number of consecutive symptoms of disease loci per total ft row (one locus =1 foot of consecutive stem rot-damaged plants in a row). [6] Plants were dug on October 7 and harvested on October 15. [7] Mean separation within columns was according to Fisher's protected least significant difference (LSD) test (P = 0.05).

# Impact of Placement and Spray Interval of Abound 2SC, Folicur 3.6F, and Bravo Ultrex on Peanut Disease Control and Yield

**Objective:** To assess the efficacy of banded applications of Folicur 3.6F and Abound 2SC applied over several treatment intervals for the control of foliar and soilborne diseases of peanut and to compare their effectiveness with standard broadcast applications of the same fungicides on a disease-resistant cultivar of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM <1%).
**Cultivar:** FL MDR 98

**Planting:**

**Date:** May 7, 1999

**Experimental Design:** Randomized complete block consisting of four replications with fungicide treatments as whole plots and application timing as subplots. Individual subplots consisted of four 30-foot (9.1 m) rows on 3-foot (0.9 m) centers.

**Note:** Trial was located in an area with history of white mold.

**Cultural Practices:**

**Herbicides**: Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre.
Post-emergence: Starfire 11 ounces + 2,4DB 1 pint + Basagran 1 pint per acre.

**Insecticides:** Temik 15 G 6.5 pounds per acre at planting.

**Fungicides:** See tables 1, 2, and 3.

**Nematicides**: None.

**Irrigation Applied:** None.

**Application of Treatments:** Fungicides were applied either as broadcast or banded treatments. Broadcast sprays were applied with a four-row, tractor-mounted sprayer with TX-18 nozzles on 18-inch centers at a spray volume of 12 gallons per acre. Using a twin roller pump and the above sprayer, Folicur 3.6F and Abound 2SC were banded over the row center while Bravo Ultrex was simultaneously applied directly over the middle between each row.

**Disease Assessment:** Leaf spot was rated on September 28 with Florida 1 to 10 leaf spot scoring system, and Southern stem rot was rated on October 15.

**Harvest:** Plants were dug on October 15 and picked October 18 at 9.2 % moisture.

**Summary:** Rainfall totals were considerably below historical records for May, August, and September. As a result, drought conditions, particularly in late summer and early fall, greatly reduced disease pressure and pod yields.

Across all fungicide treatment regimes, leaf spot ratings recorded for the 14- and 21-day spray intervals were lower than those noted for the 28-day interval (Table 1). With 14- and 21-day spray intervals, leaf spot ratings for the broadcast and banded programs of Folicur 3.6F and Abound 2SC were similar. On a 28-day schedule, Folicur 3.6F gave better leaf spot control when applied as a broadcast than as a banded treatment. When disease ratings were averaged across all spray intervals, the Bravo Ultrex/Folicur 3.6F program provided the best leaf spot control. However, overall leaf spot pressure and disease ratings with all spray intervals and for all fungicide programs were low, and differences generally were minor.

Drought conditions greatly reduced southern stem rot (white mold) damage levels in the plot area compared to levels seen on previous peanut crops. Overall, spray interval had no impact on the control of southern stem rot (Table 2). The numbers of stem rot loci recorded across all fungicide programs for the 14-, 21-, and 28-day spray

schedules were similar. When averaged across spray intervals, stem rot levels for the banded and broadcast treatments, as well as the Bravo Ultrex standard, also were similar. For the individual fungicide programs, stem rot damage levels did not significantly differ.

Overall, spray interval had no impact on pod yields (Table 3). Across all fungicide treatments, the yields of peanuts sprayed every 14- to 28-days were similar. When pod yields were averaged across spray intervals, fungicide placement had no influence on peanut yield either. Yields recorded for the banded and broadcast programs of Folicur 3.6F and Abound 2SC were statistically similar. When applied on a 14-, 21-, or 28-day schedule, no differences in yield were noted between the broadcast and banded treatments of either fungicide. Yield response obtained for the 14-day spray schedules with Bravo Ultrex applied season-long was significantly lower than that noted for all of the Folicur 3.6F and Abound 2SC programs. When averaged across all application intervals, yields in the Bravo Ultrex-treated plots were similar to those obtained with Folicur 3.6F and Abound 2SC.

**TABLE 1. EFFECT OF FUNGICIDE PLACEMENT AND SPRAY INTERVALS ON LEAF SPOT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Placement | Spray Interval 14 Days | 21 Days | 28 Days | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2<br>3-6 | Broadcast<br>Broadcast | 2.0 A[3] | 2.0 A | 2.5 B | **2.2 B[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 2.2 A | 2.5 A | 3.7 A | **2.8 AB** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6<br>3,5 | Broadcast<br>Broadcast | 2.0 A | 2.5 A | 3.0 AB | **2.5 AB** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 2.2 A | 2.5 A | 3.0 AB | **2.6 AB** |
| Bravo Ultrex 1.4 lb | 1-6 | Broadcast | 2.5 A | 2.5 A | 4.0 A | **3.0 A** |
| **Mean** | | | **2.2 B[4]** | **2.4 B** | **3.2 A** | |

[1] Early leaf spot was rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation , 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).

[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 30 , 6=September 13.

[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).

[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF FUNGICIDE PLACEMENT AND APPLICATION TIMING ON SOUTHERN STEM ROT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Placement | Spray Interval 14 Days | 21 Days | 28 Days | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2<br>3-6 | Broadcast<br>Broadcast | 4.0 A[3] | 3.0 A | 3.7 A | **3.6 A[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 4.2 A | 3.5 A | 5.0 A | **4.2 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6<br>3,5 | Broadcast<br>Broadcast | 4.7 A | 6.5 A | 5.2 A | **5.5 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 4.2 A | 4.2 A | 6.5 A | **5.0 A** |
| Bravo Ultrex 1.4 lb | 1-6 | Broadcast | 7.7 A | 6.0 A | 4.0 A | **5.9 A** |
| **Mean** | | | **5.0 A[4]** | **4.6 A** | **4.9 A** | |

[1] Southern stem rot counts were expressed as the number of disease loci per 70 ft of row.
[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 30 , 6=September 13.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 3. EFFECT OF FUNGICIDE PLACEMENT AND APPLICATION TIMING ON POD YIELD[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Placement | Spray Interval 14 Days | 21 Days | 28 Days | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2<br>3-6 | Broadcast<br>Broadcast | 2541 A[3] | 2408 A | 2287 A | **2412 A[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 2456 A | 2420 A | 2493 A | **2456 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6<br>3,5 | Broadcast<br>Broadcast | 2456 A | 2432 A | 2166 A | **2351 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 2420 A | 2444 A | 2360 A | **2408 A** |
| Bravo Ultrex 1.4 lb | 1-6 | Broadcast | 2166B | 2251 A | 2299 A | **2239 A** |
| **Mean** | | | **2408 A[4]** | **2391 A** | **2321 A** | |

[1] Yield was measured as pounds per acre.
[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 30 , 6=September 13.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Comparison of Recommended Fungicide Spray Programs for Disease Control on ViruGard, Southern Runner, Georgia Green, and FL MDR 98 (Wiregrass Research and Extension Center)

**Objective:** To compare recommended fungicide spray programs against leaf spot diseases, peanut rust, white mold, and limb rot on selected cultivars of peanut.

Target organisms include early leaf spot, *Cercospora arachidicola,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM<1%)
**Cultivar:** ViruGard, Southern Runner, Georgia Green, FL MDR 98

## Planting:

**Date:** May 18, 1999

**Experimental Design:** A split plot design with cultivars as whole plots and treatments as subplots was used. Whole plots were randomized within four complete blocks. Individual subplots, which consisted of four 30-foot (9.1 m) rows, spaced 3 feet (0.9 m) apart, were randomized within each whole plot.

**Land Preparation:** Moldboard plow and disk.

**Seeding Rate:** Five to six seeds per foot of row.

**Crop History:** Continuous peanuts.

## Cultural Practices:

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre.
Post-emergence: Starfire 11 ounces + 2,4DB 1 pint + Basagran 1 pint per acre.

**Fungicides:** See tables 1, 2, and 3.

**Nematicides:** Recommendations of the Alabama Cooperative Extension System were followed.

**Irrigation Applied:** None.

**Application of Treatments:** Treatments were broadcast as a full canopy sprays using a four-row, tractor-mounted boom sprayer with TX-8 nozzles on 18-inch centers at spray volume of 12 gallons per acre (112 l/ha). Sprays were made on June 18, July 6, July 19, August 2, August 16, August 30, and September 13.

**Disease Assessment:** The Florida 1 to 10 leaf spot scoring system was used to assess the severity of early and late leaf spot. Leaf spot severity was assessed on September 15 on ViruGuard and Georgia Green and on September 29 on Southern Runner and FL MDR 98. Counts of southern stem loci were recorded immediately after digging on September 19 on ViruGard, September 28 on Georgia Green, and October 15 on the remaining two cultivars (one locus was defined as $\leq$ 1 foot of consecutive stem rot damage plants in a row) .

**Harvest:** Plants were dug on September 19 (ViruGard), on September 28 (Georgia Green), and on October 15 for the remaining two cultivars. ViruGard was harvested on September 24, Georgia Green on October 8, and the remaining two cultivars on October 18. Yields were reported at approximately 7% moisture.

**Summary:** Rainfall totals for May, August, and September were well below historical levels. In August and September, temperatures were at or above seasonal norms. All cultivars suffered from considerable drought-related stress, which reduced disease pressure and pod yields well below expected levels.

Early leaf spot was the only leaf spot disease observed. Across all fungicide treatments, leaf spot ratings for ViruGard, Southern Runner, Georgia Green, and FL MDR 98, which ranged from 1.5 to 2.0, were low and did not differ significantly (Table 1). When averaged across cultivars, Bravo Ultrex, applied season-long alone or in combination with Moncut 50W, gave better control of early leaf spot than the Bravo Ultrex/Folicur 3.6F program. Ratings for the Abound

2SC-treated plots were intermediate between those of Bravo Ultrex and Folicur 3.6F. No significant differences in leaf spot control were noted among any fungicide treatment programs on any of the four peanut cultivars.

Overall, the fewest southern stem rot hits were found in Southern Runner, while the highest numbers were noted in FL MDR 98 (Table 2). Stem rot damage levels in ViruGard and Georgia Green were intermediate between levels in Southern Runner and in FL MDR 98. Across the peanut cultivars, the fewest stem rot hits were noted in the plots treated all season with Bravo Ultrex alone. Hit counts in the Abound 2C-treated plots were higher than those treated season-long with Bravo UItrex alone. On Georgia Green and ViruGard, stem rot levels recorded for each fungicide program were similar. Among the recommended fungicide regimes, significant differences in the numbers of stem rot hits were noted on Southern Runner and FL MDR 98.

Despite unfavorable weather conditions, significant differences in yield were noted between fungicide treatment regimes (Table 3). Across peanut cultivars, the highest yields were obtained with the Bravo/Folicur 3.6F treatment regime. When compared with Bravo Ultrex alone, significant yield gains were also seen in the Bravo Ultrex/Abound 2SC-treated plots but not in those plots receiving Bravo Ultrex/Moncut. On individual peanut cultivars, some differences in yield response to fungicide treatments were seen. On Georgia Green, plots receiving Bravo Ultrex alone yielded less than those treated with Folicur 3.6F, Moncut 50W, or Abound 2SC. On the remaining three cultivars, the best yield gains were obtained with the Bravo Ultrex/Folicur program. The performance of Bravo Ultrex/Moncut program did not significantly differ from that of Bravo Ultrex alone.

**Table 1. Effect of Recommended Fungicide Spray Programs on Leaf Spot[1], Wiregrass Research and Extension Center, Headland, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar | | | | |
|---|---|---|---|---|---|---|
| | | ViruGard | Southern Runner | Georgia Green | FL MDR 98 | **Mean** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 2.2 A[3] | 2.5 A | 1.7 A | 2.5 A | **2.2 A[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 1.7 A | 1.7 A | 1.5 A | 1.7 A | **1.7 C** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 2.0 A | 2.5 A | 2.0 A | 2.2 A | **2.2 AB** |
| Bravo Ultrex 1.4 lb | 1-7 | 1.3 A | 1.7 A | 1.7 A | **2.2 A** | 1.8 BC |
| **Mean** | | **1.9 A[4]** | **2.1 A** | **1.7 A** | **2.2 A** | |

[1] Leaf spot was rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10= plant dead).

[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 16, 6=August 30, 7=September 13.

[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).

[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON SOUTHERN STEM ROT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar: ViruGard | Southern Runner | Georgia Green | FL MDR 98 | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 5.5 A[3] | 3.0 AB | 4.0 A | 2.5 B | **3.7 AB[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 4.5 A | 4.5 A | 2.7 A | 7.0 AB | **4.7 AB** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 4.2 A | 2.5 AB | 5.5 A | 8.0 A | **5.1 A** |
| Bravo Ultrex 1.4 lb | 1-7 | 2.7 A | 1.5 B | 4.2 A | 2.7 B | **2.8 B** |
| **Mean** | | **4.2 AB[4]** | **2.9 B** | **4.1 AB** | **5.1 A** | |

[1] Southern stem rot counts were expressed as the number of disease loci per 70 ft of row.
[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 16, 6=August 30, 7=September 13.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 3. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON YIELD[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar: ViruGard | Southern Runner | Georgia Green | FL MDR 98 | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 3031 A[3] | 3243 A | 3176 A | 3164 A | **3154 A[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 2239 B | 2275 C | 2692 A | 2057 C | **2316 C** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 2680 AB | 2759 B | 2868 A | 2644 B | **2738 B** |
| Bravo Ultrex 1.4 lb | 1-7 | 2190 B | 2299 C | 2154 B | 2426 BC | **2267 C** |
| **Mean** | | **2535 A[4]** | **2644 A** | **2723 A** | **2573 A** | |

[1] Yield was measured in pound per acre.
[2] Spray timing was as follows: 1=June 18, 2=July 6, 3=July 19, 4=August 2, 5=August 16, 6=August 30, 7=September 13.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Impact of Application Rate and Number of Sprays on Peanut Disease Control and Yield

**Objective:** To determine whether peanut cultivars with partial resistance to southern stem rot require the same fungicide inputs as southern stem rot-susceptible cultivars to obtain optimum yield response.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* andsouthern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM<1%)
**Cultivars:** Florunner, Southern Runner, Georgia Green, FL MDR 98

## Planting:

**Date:** May 18, 1999

**Experimental Design**: Randomized complete block consisting of four replications with four cultivars as whole plots and three soil fungicide treatments as subplots. Individual fungicide sub-plots, within each cultivar, consisted of six 30-foot (9.1 m) rows on 3-foot (0.9 m) centers.

**Land Preparation:** Moldboard plow and disk.

**Seeding Rate:** Five to six seeds per ft of row.

**Crop History:** Peanut-cotton-peanut rotation.

## Cultural Practices:

**Herbicides:** Pre-plant: Sonalan 1 quart + Dual 1.5 pints per acre.
Post-emergence: Starfire 11 ounces + 2,4 DB 1 pint per acre + Basagran 1 pint per acre.

**Insecticides**: See nematicides.

**Fungicides:** See tables 1, 2, and 3.

**Nematicides:** Temik 15 G 13 pounds per acre banded at planting.

**Irrigation applied**: Approximately 1 inch on July 31, August 8, August 21, and September 1.

**Disease Assessment:** September 29 and October 15.

**Harvest:** Georgia Green and Florunner were dug on September 28 and picked on October 7, while Southern Runner and FL MDR 98 were dug on October15 and harvested on October18. All weights were adjusted to 7% moisture.

**Summary:** Seasonal rainfall totals in May, August, and September fell well below historical averages. During extended periods of dry weather, temperatures generally were at or above seasonal norms. Although the test was irrigated, the plants were under heat stress, particularly in September.

Overall, leaf spot pressure was rated as moderate, while southern stem rot damage was quite noticeable. At the digging, significant peanut root-knot damage, which was characterized by stunting of the vines, poor pod set, and serious pod rot, was noted in portions of the test area. Differentiating between the symptoms of southern stem rot and root-knot nematode was difficult.

Generally, the severity of leaf spot diseases and southern stem rot was lower for the peanuts receiving two to four applications of Folicur 3.6F than for those treated with Bravo Ultrex alone (Tables 1 and 2). Application number and rate had no impact on the level of leaf spot control obtained with Folicur 3.6F. Leaf spot ratings in the Folicur 3.6F-treated plots, which ranged from 2.7 to 3.2, were considerably below the 4.3 recorded for the control. All Folicur 3.6F treatments reduced stem rot severity approximately 30% below those levels obtained with the season-long Bravo Ultrex program. No significant differences in leaf spot severity ratings were seen among the four peanut cultivars tested (Table 1). However, stem rot severity was higher on Florunner than on the remaining three peanut selections (Table 2). Fewer stem rot loci were found in FL MDR 98 than were seen in the Southern Runner and Georgia Green peanut.

Due in part to heavy nematode pressure, yields were lower than anticipated for irrigated peanuts. Across all four cultivars, application number and rate of Folicur 3.6F had no significant impact on peanut yield (Table 3). Yield was significantly higher in the plots that received three applications of Folicur 3.6F than in plots treated with the season-long Bravo Ultrex program. For the remaining Folicur 3.6F programs, yield was similar to that obtained with Bravo Ultrex alone. Among the four cultivars, the FL MDR 98 peanut had the highest yields (Table 3). Yield of this cultivar was significantly above yields of Florunner and Southern Runner but not Georgia Green.

Results agreed with those of previous Alabama studies that application number and rate have limited influence on southern stem rot control with Folicur 3.6F on irrigated peanuts. Here, similar levels of southern stem rot control and yield response were obtained with two, three, and four applications of Folicur 3.6F. Four applications of half the labeled rate of Folicur 3.6F also proved as effective against leaf spot diseases and southern stem rot as did the full label rate of the same fungicide. Also, no significant differences in yield response were seen between these two Folicur 3.6F treatments.

**TABLE 1. EFFECT OF APPLICATION RATE AND NUMBER OF FOLICUR 3.6F SPRAYS ON LEAF SPOT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Number of Sprays | Peanut Cultivar: Florunner | Southern Runner | Georgia Green | FL MDR 98 | Mean |
|---|---|---|---|---|---|---|
| Folicur 3.6F 7.2 fl oz | 4 | 2.5 C[2] | 2.7 B | 2.7 B | 2.7 B | **2.7 B[2]** |
| Folicur 3.6F 7.2 fl oz | 3 | 3.2 BC | 3.0 AB | 3.0 B | 3.7 AB | **3.2 B** |
| Folicur 3.6F 7.2 fl oz | 2 | 3.5 B | 2.2 B | 3.5 AB | 3.2 AB | **3.1 B** |
| Folicur 3.6F 3.6 fl oz | 4 | 3.2 BC | 2.5 B | 3.0 B | 2.7 B | **2.9 B** |
| Bravo Ultrex 1.4 lb | 7 | 4.5 A | 4.0 A | 4.5 A | 4.2 A | **4.3 A** |
| **Mean** | | **3.4 A[3]** | **2.9 A** | **3.3 A** | **3.3 A** | |

[1] Leaf spot was rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).

[2] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).

[3] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF APPLICATION RATE AND NUMBER OF FOLICUR 3.6F SPRAYS ON SOUTHERN STEM ROT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Number of Sprays | Peanut Cultivar | | | | |
|---|---|---|---|---|---|---|
| | | Florunner | Southern Runner | Georgia Green | FL MDR 98 | **Mean** |
| Folicur 3.6F 7.2 fl oz | 4 | 17.0 B[2] | 15.0 AB | 18.0 B | 9.7 A | **14.9 B[2]** |
| Folicur 3.6F 7.2 fl oz | 3 | 21.2 AB | 14.0 AB | 12.5 B | 5.0 A | **13.2 B** |
| Folicur 3.6F 7.2 fl oz | 2 | 26.7 A | 12.7 B | 15.0 B | 6.0 A | **15.1 B** |
| Folicur 3.6F 3.6 fl oz | 4 | 18.2 B | 15.0 AB | 12.5 B | 8.7 A | **13.6 B** |
| Bravo Ultrex 1.4 lb | 7 | 27.7 A | 20.5 A | 25.5 A | 8.0 A | **20.4 A** |
| **Mean** | | **22.2 A[3]** | **15.4 B** | **16.7 B** | **7.5 C** | |

[1] Southern stem rot counts were expressed as the number of disease loci per 60 ft of row.
[2] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[3] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 3. EFFECT OF APPLICATION RATE AND NUMBER OF FOLICUR 3.6F SPRAYS ON YIELD[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Number of Sprays | Peanut Cultivar | | | | |
|---|---|---|---|---|---|---|
| | | Florunner | Southern Runner | Georgia Green | FL MDR 98 | **Mean** |
| Folicur 3.6F 7.2 fl oz | 4 | 2650 A[2] | 2850 AB | 2704 AB | 3001 A | **2801 AB[2]** |
| Folicur 3.6F 7.2 fl oz | 3 | 2456 A | 2553 BC | 3370 A | 3261 A | **2910 A** |
| Folicur 3.6F 7.2 fl oz | 2 | 2178 A | 3031 A | 2813 AB | 3364 A | **2847 AB** |
| Folicur 3.6F 3.6 fl oz | 4 | 2408 A | 2553 BC | 3043 AB | 2910 A | **2729 AB** |
| Bravo Ultrex 1.4 lb | 7 | 2154 A | 2166 C | 2444 B | 2958 A | **2431 B** |
| **Mean** | | **2369 C[3]** | **2631 BC** | **2875 AB** | **3099 A** | |

[1] Yield was measured as pounds per acre.
[2] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[3] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Comparison of Recommended Fungicide Spray Programs for Disease Control on ViruGard, Southern Runner, Georgia Green, and FL MDR 98 (Gulf Coast Research and Extension Center)

**Objective:** To compare the effectiveness of recommended fungicide spray programs against leaf spot diseases, peanut rust, white mold, and limb rot on three selected disease resistant cultivars of peanut.

Target organisms include Early leaf spot, *Cercospora arachidicola,* Late leaf spot, *Cercosporidium personatum,* Peanut rust, *Puccinia arachidis*, Southern stem rot, *Sclerotium rolfsii,* and Limb rot, *Rhizoctonia solani.*

**Location:** Gulf Coast Research and Extension Center, Fairhope, AL
**Soil Type:** Malbis fine sandy loan
**Cultivars:** ViruGuard, Southern Runner, Georgia Green, FL MDR 98

**Planting:**

**Date:** May 19, 1999

**Experimental Design:** Randomized complete block consisting of four replications with cultivars as whole (main) plots and fungicide spray programs as subplots. Individual subplots consisted of four 30-foot (9.1 m) rows spaced 3 feet (0.9 m) apart.

**Land Preparation:** Moldboard plow and disk.

**Seeding Rate:** Five to six seeds per foot of row.

**Crop History:** No prior history of peanut production.

**Cultural Practices:**

**Herbicides:**

**Fungicides:** See tables 1, 2, and 3.

**Nematicides:** None.

**Irrigation applied:** None.

**Application of Treatments:** Sprays were made at two-week intervals.

**Disease Assessment:** Leaf spot was rated on September 23 on ViruGard and Georgia Green and October 2 on FL MDR 98 and Southern Runner. Southern stem rot and limb rot were rated on October 2 on ViruGard and Georgia Green and October 22 on FL MDR 98 and Southern Runner.

**Harvest:** Yield was recorded on October 6 (early cultivars) and October 25 (late cultivars) at 10% moisture.

**Summary:** In 1999, rainfall patterns throughout much of the growing season at the Gulf Coast Research and Extension Center were not a factor limiting peanut yield or disease development.

Late leaf spot was responsible for the noticeable spotting of the foliage and premature leaf shed. Early leaf spot and peanut rust were also noted, but neither disease caused appreciable damage. The leaf spot ratings, however, reflected damage attributed to all three diseases. Across all peanut cultivars, the Bravo Utrex/Abound 2SC and Bravo Ultrex programs gave the best foliar disease control (Table 1). Although the Bravo Ultrex/Folicur 3.6F program and the Bravo Ultrex/Montero program were significantly less effective in controlling leaf spot diseases than the above programs, damage was limited to moderate spotting of the foliage and modest leaf shed.

Averaged across all fungicide treatments, leaf spot levels were significantly higher on ViruGard than on FL MDR 98, Georgia Green, and Southern Runner (Table 1). In particular, severe premature defoliation was noted on ViruGard peanuts treated in mid-season with either Folicur 3.6F or Montero. On the three leaf spot-tolerant cultivars, the Bravo Ultrex/Abound 2SC program limited leaf spotting to the mid and lower canopy.

Over all peanut cultivars, southern stem rot damage levels were significantly higher with the Bravo Utrex program than with the programs that included Folicur 3.6F, Abound 2SC, Moncut 50W, and Montero (Table 2). When compared to Bravo Ultrex alone, the above treatment regimes reduced the number of disease loci by 50 to 70%. Averaged across four cultivars, Folicur 3.6F, Abound 2SC, Moncut 50W, and Montero gave similar control of southern stem rot. On all cultivars except Southern Runner, the above programs proved equally effective in controlling this disease. On Southern Runner, only the Bravo Ultrex/Folicur 3.6F program significantly reduced damage when compared with Bravo Utrex alone.

Among the cultivars tested, the fewest stem rot loci were noted on FL MDR 98 (Table 2). Southern stem rot damage was significantly higher on Georgia Green and Southern Runner than on FL MDR 98. Stem rot levels on ViruGard were intermediate between FL MDR 98 and the former two cultivars.

As was the case with southern stem rot, the Bravo Ultrex program was significantly less effective against limb rot across all cultivars than the remaining treatment regimes (Table 3). Overall, Folicur 3.6F, Moncut 50W, Abound 2SC, and Montero programs gave similar levels of limb rot control. When averaged across all fungicide treatment regimes, ViruGard, FL MDR 98, and Georgia Green suffered less limb rot damage than did Southern Runner (Table 3). Fewest limb rot loci were noted on ViruGard. On FL MDR 98 and Georgia Green, no differences in limb rot damage were noted across the five fungicide treatment regimes.

When averaged over all four cultivars, plots treated with Folicur 3.6F, Moncut 50W, Abound 2SC, or Montero yielded significantly higher than those treated season-long with Bravo Ultrex (Table 4). Of these four fungicides, Abound 2SC, followed by Folicur 3.6F and Moncut 50W gave the best yield gains. Yields for the Montero-treated peanuts were significantly below yields for those treated with Abound 2SC, but not for the Folicur 3.6F or Moncut 50W. With the exception of the Bravo Ultrex/Moncut 50W program, the Abound 2SC program boosted pod yields of ViruGard higher than all other fungicide regimes. On the remaining three cultivars, the yield response obtained with BravoUltrex/Abound 2SC did not differ from that obtained with Folicur 3.6F, Moncut 50W, or Montero programs. Of the four peanut cultivars, FL MDR 98 and Georgia Green yielded significantly better across all fungicide treatment regimes than did ViruGard and Southern Runner (Table 4).

**TABLE 1. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON LEAF SPOT[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar | | | | |
|---|---|---|---|---|---|---|
| | | Virugard | FL MDR 98 | Georgia Green | Southern Runner | **Mean** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 5.7 A[3] | 4.2 A | 4.0 AB | 4.7 A | **4.7 A[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 4.2 B | 3.7 AB | 3.7 AB | 4.2 A | **4.0 B** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 3.5 B | 3.0 B | 2.5 C | 2.7 B | **2.9 C** |
| Bravo Ultrex 1.4 lb | 1-7 | 3.7 B | 2.7 B | 3.0 BC | 4.0 AB | **3.4 C** |
| Bravo Ultrex 1.4 lb<br>Montero [Flutolanol] 1.2 lb +<br>[Propiconozole] 4 oz | 1,3,5,6,7<br>2,4 | 5.7 A | 4.5 A | 4.2 A | 4.0 AB | **4.6 A** |
| **Mean** | | **4.6 A[4]** | **3.6 B** | **3.5 B** | **3.9 B** | |

[1] Leaf spot was rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation , 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10= plant dead. [2] Spray timing was as follows: 1=June 23, 2=July 7, 3=July 21, 4=August 4, 5=August 18, 6=September 1, 7=September 15. [3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05). [4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON SOUTHERN STEM ROT[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar: Virugard | FL MDR 98 | Georgia Green | Southern Runner | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 4.5 B[3] | 2.5 B | 4.2 B | 5.2 B | **4.1 B[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 5.0 B | 3.7 B | 8.0 B | 8.2 AB | **6.2 B** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 4.2 B | 3.5 B | 8.0 B | 8.0 AB | **5.9 B** |
| Bravo Ultrex 1.4 lb | 1-7 | 12.5 A | 9.5 A | 15.7 A | 13.0 A | **12.7 A** |
| Bravo Ultrex 1.4 lb<br>Montero [Flutolanol] 1.2 lb +<br>[Propiconozole] 4 oz | 1,3,5,6,7<br>2,4 | 6.0 B | 4.2 B | 7.5 B | 8.0 AB | **6.4 B** |
| **Mean** | | **6.4 AB[4]** | **4.7 B** | **8.7 A** | **8.5 A** | |

[1] Southern stem rot counts were expressed as the number of disease loci per 70 ft of row.
[2] Spray timing was as follows: 1=June 23, 2=July 7, 3=July 21, 4=August 4, 5=August 18, 6=September 1, 7=September 15.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 3. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON LIMB ROT[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar: Virugard | FL MDR 98 | Georgia Green | Southern Runner | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 3.0 AB[3] | 4.0 A | 3.5 A | 5.3 C | **3.9 B[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 4.0 AB | 3.7 A | 5.7 A | 7.5 BC | **5.2 B** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 1.0 B | 5.0 A | 4.7 A | 6.7 BC | **4.4 B** |
| Bravo Ultrex 1.4 lb | 1-7 | 5.0 A | 6.7 A | 7.0 A | 11.2 A | **7.5 A** |
| Bravo Ultrex 1.4 lb<br>Montero [Flutolanol] 1.2 lb +<br>[Propiconozole] 4 oz | 1,3,5,6,7<br>2,4 | 2.7 AB | 3.7 A | 7.0 A | 8.2 B | **5.4 B** |
| **Mean** | | **3.1 C[4]** | **4.6 BC** | **5.6 B** | **7.9 A** | |

[1] Limb rot counts were expressed as the number of disease loci.
[2] Spray timing was as follows: 1=June 23, 2=July 7, 3=July 21, 4=August 4, 5=August 18, 6=September 1, 7=September 15.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 4. EFFECT OF RECOMMENDED FUNGICIDE SPRAY PROGRAMS ON YIELD[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Peanut Cultivar | | | | |
|---|---|---|---|---|---|---|
| | | Virugard | FL MDR 98 | Georgia Green | Southern Runner | Mean |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | 4101 B[3] | 4906 A | 5110 A | 4330 A | **4612 AB[3]** |
| Bravo Ultrex 1.4 lb<br>Moncut 50W 2.0 lb | 1-7<br>3 | 4356 AB | 4651 AB | 4903 A | 4316 A | **4557 AB** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 18 fl oz | 1,2,4,6,7<br>3,5 | 4594 A | 5055 A | 4818 A | 4654 A | **4780 A** |
| Bravo Ultrex 1.4 lb | 1-7 | 4216 B | 4293 B | 3958 B | 3622 B | **4022 C** |
| Bravo Ultrex 1.4 lb<br>Montero [Flutolanol] 1.2 lb +<br>[Propiconozole] 4 oz | 1,3,5,6,7<br>2,4 | 4161 B | 4852 A | 4602 AB | 4267 A | **4471 B** |
| **Mean** | | **4286 B[4]** | **4751 A** | **4678 A** | **4238 B** | |

[1] Yield was measured as pounds per acre.
[2] Spray timing was as follows: 1=June 23, 2=July 7, 3=July 21, 4=August 4, 5=August 18, 6=September 1, 7=September 15.
[3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Impact of Placement of Abound 2SC, Folicur 3.6F, and Bravo Ultrex on Peanut Disease Control and Yield

**Objective:** To assess the efficacy of banded applications of Folicur 3.6F and Abound 2SC for the control of foliar and soil-borne diseases of peanut and to compare their effectiveness with standard broadcast applications of the same fungicides.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* and southern stem rot, *Sclerotium rolfsii.*

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan sandy loam (OM>1%)
**Cultivars:** Southern Runner, FL MDR 98, Georgia Green

**Planting:**

**Date:** May 18, 1999

**Experimental Design:** A split plot design with cultivars as the whole plots and treatments as subplots was used. Whole plots were randomized within four complete blocks. Subplots, which consisted of four 30-foot (9.1 m) rows spaced 3 feet (0.9 m) apart, were also randomized in each whole plot.

**Land Preparation:** Moldboard plow and disk.

**Seeding Rate:** Five to six seeds per foot of row.

**Crop History:** Peanut-cotton-peanut rotation.

**Cultural Practices:**

**Herbicides:**

**Fungicide:** See tables 1, 2, and 3.

**Nematicides:** 20 pounds per acre Temik.

**Irrigation Applied:** July 31, August 8, August 21, and September 1. Central pivot irrigation system.

**Application of Treatments:** Treatments were broadcast as a full canopy sprays using a four-row, tractor-mounted boom sprayer with TX-8 nozzles on 18-inch centers at a spray volume of 12 gallons per acre (122 l/ha). A twin roller pump and the above sprayer were used to band Folicur 3.6F or Abound 2SC over the row center, while Bravo Ultrex was simultaneously applied directly over the middle between each row. Sprays were applied on June 18, July 6, July 19, August 2, August 16, August 30, and September 13.

**Disease Assessment:** The Florida scoring system was used to assess the severity of early and late leaf spot. Leaf spot severity was assessed on September 15 on Georgia Green and on September 29 on Southern Runner and FL MDR 98. Counts of southern stem loci were recorded after digging on September 29 on Georgia Green and on October 15 on the remaining two cultivars (one locus was defined as $\leq$ 1 foot of consecutive stem rot damaged plants in a row).

**Harvest:** Georgia Green was dug on September 28 and harvested on October 7. Southern Runner and FL MDR 98 were dug on October 15 and harvested on October 18. Yields were reported at approximately 7% moisture.

**Summary:** Early leaf spot was the most common foliar disease. On the worst treatments, damage was limited to moderate spotting on the leaves along with light defoliation in the lower canopy. The relatively hot, dry weather pattern in August and September was largely responsible for the modest leaf spot damage levels, even on irrigated plots.

When averaged across peanut cultivars, the programs which included broadcast applications of Folicur 3.6F or Abound 2SC gave significantly better leaf spot control than did Bravo Ultrex alone (Table 1). Banded treatments of Folicur 3.6F and Abound 2SC were less effective in controlling leaf spot than were broadcast applications of the same fungicides. The level of leaf spot control seen with banded applications of Folicur 3.6F or Abound 2SC was

similar to that given by Bravo Ultrex alone. Among the three peanut cultivars tested, significant differences in the control of early leaf spot were noted only on Georgia Green. All fungicide treatment regimes, except for the banded Abound 2SC program, provided better early leaf spot control than did Bravo Ultrex alone.

Overall, the Folicur 3.6F broadcast program gave the best control of southern stem rot (Table 2). Southern stem rot damage in plots where either Folicur 3.6F or Abound 2 SC was applied on a band was just as high as in those plots treated season-long with the Bravo Ultrex standard. In addition, the Abound broadcast program proved no more effective against southern stem rot than did the three former treatment regimes. On Southern Runner, no differences in stem rot severity were noted among the banded or broadcast programs. For Georgia Green, the Folicur 3.6F broadcast program proved to be the most effective in controlling southern stem rot. Surprisingly, broadcast treatments of Abound 2SC had the highest stem rot damage ratings on FL MDR 98.

In the Folicur 3.6F-treated plots, yield response to the broadcast treatments across all three peanut cultivars was significantly better than the response to the banded program (Table 3). Similar yields were obtained with the Abound 2SC broadcast and banded programs. No differences in pod yields were noted between any of the Folicur 3.6F or Abound 2SC treatments and the standard Bravo Ultrex program. On Georgia Green and Southern Runner, the banded treatment of Folicur 3.6F yielded significantly lower than the broadcast program of the same fungicide. For Abound 2SC, no differences in yields were seen between the banded and broadcast programs on any of the cultivars tested.

When the leaf spot ratings were averaged across all fungicide treatments, Southern Runner suffered from less spotting of the leaves than did FL MDR 98 (Table 1). Early leaf spot ratings for Georgia Green were similar to those of both of the above peanut cultivars. Georgia Green had significantly higher levels of southern stem rot damage than Southern Runner or FL MDR 98 (Table 2). On the latter two peanuts, no differences in the level of stem rot damage were seen. Despite significantly more stem rot damage, the yield of Georgia Green was similar to that recorded for Southern Runner and FL MDR 98 (Table 3).

Results of this study indicate that banding Folicur 3.6F or Abound 2SC may not be a viable alternative to broadcast programs employing these same fungicides. Although the level of disease control provided by the banded applications of either of these fungicides was similar to that offered by the broadcast treatments, yield response, particularly with Folicur 3.6F, was inferior.

**TABLE 1. EFFECT OF FUNGICIDE PLACEMENT ON LEAF SPOT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | SprayTiming[2] | Placement | Peanut Cultivar: Georgia Green | Peanut Cultivar: FL MDR 98 | Peanut Cultivar: Southern Runner | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | Broadcast<br>Broadcast | 2.5 D[3] | 3.5 A | 3.2 A | **3.1 C[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,7<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 4.0 BC | 3.7 A | 3.5 A | **3.7 AB** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6,7<br>3,5 | Broadcast<br>Broadcast | 3.2 CD | 3.7 A | 3.2 A | **3.4 BC** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6,7<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 4.5 AB | 4.2 A | 4.2 A | **4.3 A** |
| Bravo Ultrex 1.4 lb | 1-7 | Broadcast | 5.0 A | 4.7 A | 3.2 A | **4.3 A** |
| **Mean** | | | **3.8 AB[4]** | **4.0 A** | **3.5 B** | |

[1] Early leaf spot was rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead). [2] Spray timing was as follows: 1 = June 18, 2 = July 6, 3 = July 19, 4 = August 2, 5 = August 16, 6=August 30, 7= September 13. [3]Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05). [4]Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF FUNGICIDE PLACEMENT ON SOUTHERN STEM ROT[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Placement | Peanut Cultivar: Georgia Green | FL MDR 98 | Southern Runner | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | Broadcast<br>Broadcast | 7.7 B [3] | 2.0 B | 4.5 A | **4.7 B[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,7<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 13.5 A | 7.7 AB | 9.0 A | **10.1 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6,7<br>3,5 | Broadcast<br>Broadcast | 10.7 AB | 10.7 A | 9.7 A | **10.4 A** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6,7<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 15.5 A | 5.2 AB | 9.7 A | **10.2 A** |
| Bravo Ultrex 1.4 lb | 1-7 | Broadcast | 16.2 A | 3.5 B | 7.2 A | **9.0 A** |
| **Mean** | | | **12.7 A [4]** | **5.6 B** | **8.0 B** | |

[1] Southern stem rot counts were expressed as the number of disease loci per 60 ft of row. [2] Spray timing was as follows: 1 = June 18, 2 = July 6, 3 = July 19, 4 = August 2, 5 = August 16, 6=August 30, 7= September 13. [3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05). [4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 3. EFFECT OF FUNGICIDE PLACEMENT ON YIELD[1], WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Treatment and Rate per Acre | Spray Timing[2] | Placement | Peanut Cultivar: Georgia Green | FL MDR 98 | Southern Runner | Mean |
|---|---|---|---|---|---|---|
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz | 1,2,7<br>3-6 | Broadcast<br>Broadcast | 4084 A [3] | 4066 A | 3890 A | **4013 A[3]** |
| Bravo Ultrex 1.4 lb<br>Folicur 3.6F 7.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,7<br>3-6<br>3-6 | Broadcast<br>Band<br>Band | 3430 B | 3424 AB | 3461 B | **3438 B** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz | 1,2,4,6,7<br>3,5 | Broadcast<br>Broadcast | 3999 A | 2606 B | 3606 AB | **3476 B** |
| Bravo Ultrex 1.4 lb<br>Abound 2SC 19.2 fl oz<br>Bravo Ultrex 1.4 lb | 1,2,4,6,7<br>3,5<br>3,5 | Broadcast<br>Band<br>Band | 3763 AB | 3666 AB | 3424 B | **3618 AB** |
| Bravo Ultrex 1.4 lb | 1-7 | Broadcast | 3346 B | 3775 AB | 3588 AB | **3570 AB** |
| **Mean** | | | **3724 A [4]** | **3555 A** | **3594 A** | |

[1] Yield was measured in pounds per acre. [2] Spray timing was as follows: 1 = June 18, 2 = July 6, 3 = July 19, 4 = August 2, 5 = August 16, 6=August 30, 7= September 13. [3] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05). [4] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Impact of Application Rate and Timing of Moncut 50W on Peanut Disease Control

**Objective:** To determine the optimum rate and application timing for Moncut 50W for the control of Rhizoctonia limb rot and other soilborne diseases of peanut.

Target organisms include late leaf spot, *Cercosporidium personatum,* and limb rot, *Rhizoctonia solani.*

**Location:** Gulf Coast Research and Extension Center, Fairhope, AL
**Soil Type:** Malbis fine sandy loam
**Cultivar:** FL MDR 98

**Planting:**

**Date:** May 20, 1999
**Experimental Design:** Randomized complete block with six replications. Plot size was four 30-foot (9.1 m) rows spaced on 3 foot (0.9 m) centers.
**Land Preparation:** Moldboard plow and disk.
**Seeding Rate:** Five to six seeds per foot of row.
**Crop History:** No prior peanut production on test site.

**Cultural Practices:**

**Herbicides**: Pre-planting: Dual + Prowl. Post-emergence: 2,4 DB + Classic.
**Fungicides**: See table.
**Nematicides:** None.
**Irrigation Applied**: None.

**Application of Treatments:** Sprays were made at two-week intervals.

**Disease Assessment:** Late leaf spot was assessed on October 2, and limb rot was rated on October 22.

**Harvest:** Harvest was completed on October 25. Yield was recorded at 10% moisture.

**Summary:** Temperatures and rainfall patterns were generally favorable at the Gulf Coast Research and Extension Center for the production of peanut. The absence of peanut in the cropping history of this site accounts for the absence of southern stem rot and for the generally low pressure from other diseases as well.

Late leaf spot was the predominate foliar disease observed. Surprisingly, the highest leaf spot ratings were recorded for the Folicur 3.6F-treated peanuts (see table). Bravo Ultrex alone or when tank-mixed with Moncut 50W proved as effective in controlling late leaf spot as the Abound 2SC program. Two and three applications of Moncut 50W at 2.0 and 1.0 pounds per acre, along with Bravo Ultrex, significantly reduced limb rot damage levels below those obtained with Bravo Ultrex alone. Although overall limb rot severity was low, Folicur 3.6F and Abound 2SC failed to limit damage when compared with Bravo Ultrex alone. Despite some differences in late leaf spot and limb rot levels, yields of all the fungicide treatment programs were similar.

**EFFECT OF MONCUT/BRAVO ULTREX PROGRAMS ON LEAF SPOT AND LIMB ROT, GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment | Rate per Acre | Spray Timing[1] | Late Leaf Spot [2] Rating | Limb Rot [3] | Yield (lb/ac) |
|---|---|---|---|---|---|
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>2.0 + 1.4 lb | 1-7<br>3,5 | 3.0 BC [4] | 1.8 B | 4910 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>1.5 + 1.4 lb | 1-7<br>3,5 | 2.7 BC | 2.8 AB | 4927 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>1.0 + 1.4 lb | 1 to 7<br>3, 4, 5 | 2.5 C | 2.0 B | 4855 A |
| Bravo Ultrex<br>Moncut 50W + Bravo Ultrex | 1.4 lb<br>0.5 + 1.4 lb | 1 to 7<br>3,4,5,6 | 3.0 BC | 3.2 AB | 4782 A |
| Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>0.45 pt | 1,2,7<br>3,4,5,6 | 4.5 A | 3.3 AB | 5004 A |
| Bravo Ultrex<br>Abound 2SC | 1.4 lb<br>1.6 pt | 1,2,4,6,7<br>3,5 | 2.7 BC | 2.8 AB | 5378 A |
| Bravo Ultrex<br>Abound 2SC | 1.4 lb<br>1.2 pt | 1,2,4,6,7<br>3,5 | 3.5 B | 4.0 AB | 4807 A |
| Bravo Ultrex | 1.4 lb | 1 To 7 | 2.5 C | 5.7 A | 4788 A |

[1] Spray timing was as follows: 1=June 23, 2=July 6, 3=July 21, 4=August 4, 5=August 17, 6=September 1, 7=September 15.
[2] Late leaf spot rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plant dead).
[3] Limb rot rated as number of hits per 60 ft of row.
[4] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).

# Impact of Various Spray Application Intervals on Peanut Disease Control and Yield

**Objective:** To determine whether extending the interval between fungicide applications from 14 to 21 or 28 days has a significant impact on the control of foliar and soil-borne diseases on the disease-resistant cultivar FL MDR 98; and assess the efficacy of several reduced cost fungicides for the control of foliar diseases of peanut.

Target organisms include late leaf spot, *Cercosporidium personatum,* and peanut rust, *Puccinia arachidis.*

**Location:** Gulf Coast Research and Extension Center, Fairhope, AL
**Soil Type:** Malbis fine sandy loam
**Cultivar:** FL MDR 98

**Planting:**

**Date:** May 20, 1999

**Experimental Design:** Randomized complete block of six replications with fungicide treatments as whole plots and application timing as subplots. Individual sub-plots consisted of four 20-foot (6.1 m) rows on 38-inch (0.95 m) centers.

**Land Preparation:** Moldboard plow and disk.

**Seeding Rate:** Five to six seeds per foot of row.

**Crop History:** No prior history of peanut production.

**Cultural Practices:**

**Herbicides:** Pre-planting: Prowl 1 quart + Dual 1.5 pints per acre.
Early post: 2,4-DB 1 quart per acre. Late post: Classic 0.5 ounces per acre.

**Insecticides:** None.

**Fungicides:** See tables 1, and 2.

**Nematicides:** None.

**Irrigation Applied:** None.

**Application of Treatments:** Sprays schedule intervals as follows:

14-day intervals: June 23, July 7, July 21, August 4, August 18, September 1, and September 15.

21-day intervals: June 23, July 14, August 4, August 21, and September 15.

28-day intervals: June 23, July 21, August 18, and September 15.

**Disease Assessment:** Leaf spot disease was assessed on October 2.

**Harvest:** Plots were dug on October 1 and harvested on October 6. Yield was recorded at 10% moisture.

**Summary:** Temperatures and rainfall patterns were generally favorable at the Gulf Coast Research and Extension Center for the production of peanuts. With no prior history of peanut production in the plot area, southern stem rot caused little if any damage. A noticeable yellowing of the foliage may have indicated that nodulation of the root system by *Rhizobium* nitrogen-fixing bacteria may not have been sufficient for optimum crop health and may also have had an adverse impact on pod yield.

Late leaf spot was the most common foliar disease present within the test area. Peanut rust was also observed in some plots. The disease ratings taken on October 2 are a composite of the damage attributed to both late leaf spot and peanut rust. Unfortunately, disease ratings were recorded the day after the plots had been dug. Portions of the windrow had to be turned over to take disease ratings. As a result, the ratings collected may not accurately represent the level of leaf spotting and premature leaf shed.

Leaf spot ratings in all plots, which were relatively high, indicated that up to 50% of the leaves had been shed prematurely due to both diseases and that many of the remaining leaves were damaged (Table 1). When averaged

across treatment intervals, the two Kocide 4.5F/Folicur programs were less effective in controlling the combination of late leaf spot and peanut rust than was Bravo Ultrex alone. Ratings for the remaining fungicide treatment regimes were intermediate between the latter three programs.

The composite leaf spot ratings for application interval show that late leaf spot intensified as the interval between fungicide application increased from 14 to 28 days (Table 1). However, no differences in disease control were noted between fungicide treatments applied at 14-, 21-, or 28-day intervals.

When averaged across application intervals, the Bravo Ultrex/Folicur-treated peanuts yielded higher than those sprayed season-long with 1.0 pint per acre rate of Kocide 4.5F (Table 2). Otherwise, average yields for application interval for the Kocide and Kocide/Folicur programs were similar to those above treatments. Surprisingly, mean yields averaged across fungicide treatments were similar for all three application intervals. For some fungicide programs, yield declined as application interval increased, while yields were higher at the 28-day spray schedule than at the 14-day schedule.

Overall, the impact of application interval on the control of late leaf spot and peanut rust varied considerably by fungicide program. As expected, the level of late leaf spot and peanut rust control declined as the interval between sprays lengthened from 14 to 28 days. Yield response to a specific program such as Bravo Ultrex/Folicur often appeared to be directly related to disease ratings, but in others, that was not the case. Presently, growers in the Baldwin and Mobile County areas are strongly advised to continue a 14-day spray schedule on their peanuts to insure that leaf spot diseases and peanut rust do not reduce pod yields. Yield gains obtained with the two Kocide/Folicur 3.6F programs were statistically similar to those obtained with the recommended Bravo Ultrex/ Folicur 3.6F regime.

**TABLE 1. EFFECT OF APPLICATION INTERVALS ON THE CONTROL OF LATE LEAF SPOT[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| | | Spray Interval | | | |
|---|---|---|---|---|---|
| Treatment | Rate per Acre | 14 Days [2] | 21 Days [3] | 28 Days [4] | Mean |
| Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>0.45 pt | 5.25 A [5] | 6.2 A | 6.25 A | **5.9 AB[5]** |
| Kocide 4.5 LF<br>Folicur 3.6F | 1.0 pt<br>0.45 pt | 6.0 A | 6.5 A | 6.25 A | **6.2 A** |
| Bravo Ultrex | 1.4 lb | 4.5 A | 5.0 A | 6.25 A | **5.2 B** |
| Kocide 4.5 LF | 1.0 pt | 6.25 A | 6.2 A | 5.75 A | **6.1 AB** |
| Kocide 4.5 LF | 2.0 pt | 5.0 A | 5.7 A | 6.5 A | **5.7 AB** |
| Kocide 4.5 LF<br>Folicur 3.6F | 2.0 pt<br>0.45 pt | 6.0 A | 6.5 A | 6.5 A | **6.3 A** |
| **Mean** | | **5.5 B [6]** | **6.0 AB** | **6.2 A** | |

[1] Late leaf spot rated on the Florida leaf spot scoring system (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with very heavy defoliation, 9 = very few remaining leaves covered with lesions, 10= plant dead).

[2] 14-day intervals: June 23, July 7, July 21, August 4, August 18, September 1, and September 15.

[3] 21-day intervals: June 23, July 14, August 4, August 21, and September 15.

[4] 28-day intervals: June 23, July 21, August 18, and September 15.

[5] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).

[6] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

**TABLE 2. EFFECT OF APPLICATION INTERVAL ON PEANUT YIELD[1], GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

| Treatment | Rate per Acre | Spray Interval | | | Mean |
|---|---|---|---|---|---|
| | | 14 Days [2] | 21 Days [3] | 28 Days [4] | |
| Bravo Ultrex<br>Folicur 3.6F | 1.4 lb<br>0.45 pt | 4121 A [5] | 3916 A | 3529 A | **3831 A[5]** |
| Kocide 4.5 LF<br>Folicur 3.6F | 1.0 pt<br>0.45 pt | 3976 AB | 3336 A | 3319 A | **3564 AB** |
| Bravo Ultrex | 1.4 lb | 3757 AB | 3959 A | 3590 A | **3769 AB** |
| Kocide 4.5 LF | 1.0 pt | 3417 AB | 3147 A | 3280 A | **3281 B** |
| Kocide 4.5 LF | 2.0 pt | 3353 B | 3379 A | 3534 A | **3422 AB** |
| Kocide 4.5 LF<br>Folicur 3.6F | 2.0 pt<br>0.45 pt | 3555 AB | 3787 A | 3727 A | **3690 AB** |
| **Mean** | | **3678 A [6]** | **3587 A** | **3504 A** | |

[1] Yield was measured in pounds per acre.
[2] 14-day intervals: June 23, July 7, July 21, August 4, August 18, September 1, and September 15.
[3] 21-day intervals: June 23, July 14, August 4, August 21, and September 15.
[4] 28-day intervals: June 23, July 21, August 18, and September 15.
[5] Mean separation within columns was according to Duncan's Multiple Range Test (P=0.05).
[6] Mean separation within rows was according to Duncan's Multiple Range Test (P=0.05).

# Reaction of Commercial Peanut Cultivars to Common Peanut Diseases

**Objective:** To assess the sensitivity of commercial peanut lines to TSWV, leaf spot diseases, and southern stem rot.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* southern stem rot, *Sclerotium rolfsii,* and TSWV, tomato spotted wilt virus.

**Location:** Wiregrass Research and Extension Center, Headland, AL

**Soil Type:** Dothan fine sandy loam (OM<1%)

**Cultivars:** Andru 93, COAN, CP-99R, AgriTech 1-1, AgriTech VC2, AgriTech 201, Flavor Runner 458, Flavor Runner 596, Florunner, Georgia Bold, Georgia Green, GK-7, GK-7 H.O, Gregory, NC 7, NC 12 C, NC VII, Southern Runner , SunOleic 97R, Tamrun 98, VA 93B, VA 98R, VA-C 92R, ViruGard

**Planting:**

**Date:** May 5, 1999

**Experimental Design:** Randomized complete block design with four replications. Plots consisted of two 20-foot (6.2 m) rows spaced 3 feet (0.9m) apart.

**Tillage:** Conventional moldboard plow followed by a disk.

**Seeding Rate:** Five to six seeds per foot of row.

**Crop History:** Peanut-cotton-peanut rotation.

**Cultural Practices:**

**Herbicides:** Recommendations of the Alabama Cooperative Extension System were followed.

**Insecticides:**

**Fungicides:** Bravo Ultrex at 1.37pounds per acre (1.6 kg/ha) on June 7, June 21, and September 13. Folicur3.6F at 7.2 fluid ounces (0.53 l/ha) on July 6, July 19, August 2, and August 16.

**Nematicides:**

**Irrigation Applied:** May 22, July 23, August 2. August 12, August 21, and September 10.

**Application of Treatments:** Fungicide sprays were applied at a rate of 15 gallons per acre (140 l/ha) spray volume per acre with a tractor-mounted boom spray with three TX 8 hollow cone nozzles per row.

**Disease Assessment:** TSWV severity was assessed by determining the number of disease loci (1 locus was defined as < 1 foot of consecutive symptomatic plants per row) on September 3 (early maturing [E]), September 8 (intermediate [M]), and September 14 (late maturing [L]). Leaf spot was rated on the same days as TSWV using the Florida leaf spot scoring system. Counts of southern stem rot loci (1 locus was defined as ≤ 1 ft [30] cm) of consecutive noticeably symptomatic plant[s] per row) were made on September 3 (E), September 14 (M), and September 21 (L).

**Harvest:** Plants were dug on September 3 (E), September 14 (M), and September 29 (L) and were harvested on September 8 (E), September 17 (M), and October 1 (L). Yields were reported at 7% moisture.

**Summary:** Among peanut cultivars tested, significant differences in TSWV severity, leaf spot diseases, southern stem rot, and pod yields were recorded. The highest TSWV levels were seen in Tamrun 98 and SunOleic 97R. Severe TSWV damage was also noted on AgriTech 1-1, GK 7 H.O., NC 12C, Flavor Runner 596, and Andru 93. Georgia Green, ViruGard, and Gregory had the least TSWV damage.

Despite an intensive leaf spot control program, considerable development of early and particularly late leaf spot occurred. The heaviest leaf spotting and disease-related leaf shed were seen on Gregory, VA 93B, NC 12C, SunOleic 97R, and COAN. Light spotting of the foliage with the least defoliation was noted on AgriTech 1-1,

Florida CP-99R, VA 98R, and Georgia Green. Moderate leaf spot development, as indicated by disease ratings between 4.2 and 4.9, was found on eight additional peanut cultivars.

Southern stem rot damage was higher on NC VII and AgriTech 201 than on ViruGard, VA 98R, VA93B, SunOleic 97R, NC 7, NC 12C, Georgia Green, Florunner, AgriTech VC2, and Andru 93. The highest yielding peanut cultivars, such as Florida CP-99R, Georgia Green, Gregory, VA-C 92R, and ViruGard, demonstrated resistance to two and, in some cases, all three diseases. With the exception of COAN, nearly all of the cultivars with the lowest pod yields, such as Tamrun 98 and Flavor Runner 458, had high levels of TSWV.

**Reaction of Commercial Peanut Cultivars to TSWV, Leaf Spot, and Southern Stem Rot, Wiregrass Research and Extension Center, Headland, AL, 1999**

| Cultivar (Maturity [1]) | TSWV Rating[2] | Leaf Spot Rating [3] | Stem Rot Rating[4] | Yield (lb/A) |
|---|---|---|---|---|
| Andru 93 (E) | 50.5 B-D [5] | 5.7 A-D | 5.0 D | 4253 B-G |
| COAN (M) | 35.0 D-G | 6.0 A-C | 14.3 B-D | 2780 I |
| Florida CP-99R (L) | 23.0 F-H | 3.5 IJ | 12.5 B-D | 5161 A |
| AgriTech 1-1 (E) | 54.3 BC | 3.2 J | 14.3 B-D | 4361 B-F |
| AgriTech VC2 (E) | 34.3 D-G | 4.0 G-J | 4.3 D | 4886 AB |
| AgriTech 201 (M) | 23.8 E-H | 5.0 C-G | 24.3 AB | 4047 D-G |
| Flavor Runner 458 (M) | 48.0 B-D | 5.7 A-D | 16.3 B-D | 3291 HI |
| Flavor Runner 596 (M) | 55.0 BC | 5.2 B-F | 18.0 A-D | 3678 F-H |
| Florunner (M) | 50.0 B-D | 4.5 E-I | 9.3 CD | 3678 F-H |
| Georgia Bold (M) | 50.5 B-D | 4.7 D-H | 12.5 B-D | 3924 E-H |
| Georgia Green (M) | 11.8 H | 3.7 H-J | 8.8 CD | 4909 AB |
| GK-7 (M) | 25.0 E-H | 4.7 D-H | 17.5 B-D | 3924 E-H |
| GK-7 H.O. (M) | 55.0 BC | 5.0 C-G | 19.3 A-C | 4399 B-E |
| Gregory (M) | 18.0 GH | 6.5 A | 15.5 B-D | 4698 A-D |
| NC 7 (E) | 42.5 B-E | 5.5 A-E | 8.8 CD | 4434 B-E |
| NC 12C (M) | 54.2 BC | 6.2 AB | 10.0 CD | 3660 GH |
| NC VII (M) | 37.5 C-F | 4.5 E-I | 30.5 A | 4082 C-G |
| Southern Runner (L) | 32.5 D-G | 4.2 F-J | 11.8 B-D | 4140 C-G |
| SunOleic 97R (M) | 57.5 AB | 6.0 A-C | 8.0 CD | 4065 C-G |
| Tamrun 98 (M) | 73.0 A | 4.2 F-J | 16.8 B-D | 2912 I |
| VA 93B (E) | 36.3 C-G | 6.2 AB | 7.5 CD | 4217 B-G |
| VA 98R (E) | 35.0 D-G | 3.2 J | 8.8 CD | 4325 B-G |
| VA-C 92R (M) | 26.8 E-H | 5.0 C-G | 18.0 A-D | 4769 A-C |
| ViruGard (E) | 13.0 H | 4.2 F-J | 4.3 D | 4687 A-D |

[1] Peanut maturity group: E = early maturing, M = intermediate, and L = late maturing cultivar.

[2] Numbers of TSWV loci per 100 ft of row.

[3] The combination of early and late leaf spot was rated on a 1 to 10 scale (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with heavy defoliation, 9 = very few remaining leaves covered with lesions, and 10 = plants dead).

[4] Numbers of southern stem rot loci per 100 ft of row.

[5] Mean separation was according to Duncan's Multiple Range Test (P=0.05).

# Reaction of Selected Experimental Peanut Lines to Common Peanut Diseases

**Objective:** To determine the response of experimental peanuts lines to common diseases in Alabama.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum*, southern stem rot, *Sclerotium rolfsii,* and TSWV, tomato spotted wilt virus.

**Location:** Wiregrass Research and Extension Center, Headland, AL

**Soil Type:** Dothan fine sandy loam (OM ≤1%)

**Cultivars:** Florunner, GA 942001, GA 942007, GA 942009, GA 942010, N93 112C, NC 7, OK-B26, Tamrun 98, TP 262-3-5, TP 264-6-4, TX 969342, UF 97102, UF 97318, UF 97610, VT 940419P.

**Planting:**

**Date:** May 5, 1999

**Experimental Design:** Randomized complete blocks with four replications. Plots consisted of two 20-foot (6.2 m) rows spaced 3 feet (0.9 m) apart.

**Tillage:** Conventional with moldboard plow followed by a disk.

**Seeding Rate:** Six seeds per foot of row.

**Crop History:** Peanut-cotton-peanut rotation.

**Cultural Practices:**

**Herbicides**: PPI Sonalan 1 quart per acre + Pursuit 70DG 1.44 ounces per acre and disked, followed by field cultivation; Select 8 ounces per acre + non-ionic surfactant 0.5% v/v; hand weeded.

**Insecticides:** Temik 15G 6.7 pounds per acre in furrow at planting; Karate 7 2 ounces per acre for leafhop pers.

**Fungicides:** Bravo Ultrex at 1.37 pounds per acre (1.6 kg/ha) on June 7, June 21, August 2, August 30, and September 13. Folicur 3.6F at 7.2 ounces per acre (0.53 l/ha) on July 6, July 19, August 2, and August 16.

**Nematicides**: None.

**Irrigation Applied**: May 22, July 23, August 2, August 12, August 21, and September 10.

**Application of Treatments:** Sprays were applied on June 7, June 21, July 6, July 19, August 2, August 16, August 30, and September 13.

**Disease Assessment:** TSWV severity was assessed on September 3 (early maturing [E]), September 8 (mid-season [M]), and September 14 (late maturing [L]) by determining the number of disease loci (one locus was defined as < 1 ft [30 cm] of consecutive symptomatic plant[s] per row). Leaf spot was rated using the using the Florida leaf spot scoring system on September 3 (E), September 8 (M), and September 14 (L). Counts of southern stem rot loci were taken on the day of digging for each maturity group (one locus was defined as ≤ 1 ft of consecutive symptomatic plants per row).

**Harvest:** Plants were dug on September 3 (E), September 14 (M), and September 29 (L) and were harvested September 8 (E), September 17 (M), and October 1 (L), respectively. Yields were reported at 7% moisture.

**Summary:** Significant differences in the severity of TSWV, leaf spot diseases, and southern stem rot as well as in pod yields were noted among the experimental lines and commercial standards screened (Florunner, NC 7, Tamrun 96). As noted in previous years, highest TSWV levels were recorded on virus-susceptible standards (Tamrun 96, Florunner, and NC 7). TSWV severity on the experimental lines GA 942001, N93 112C, and TX 969342 was similar to that noted on the previously mentioned commercial standards. The lowest levels of this disease were recorded in the experimental runner peanut lines UF 97318, UF 97102, and GA 942007.

The fungicide program, which included four consecutive applications of Folicur 3.6F, typically has given good to excellent control of both early and late leaf spot on commercial standards such as Florunner, NC 7, and

Tamrun 96. The predominate leaf spot disease was late leaf spot. Among the experimental lines screened, the highest leaf spot levels were found on Virginia lines OK-B26 and N93 112C. The runner type peanuts GA 942001 and UF 97318 demonstrated good leaf spot resistance. The leaf spot ratings of the remaining experimental lines were similar to those of the commercial standards.

Overall, southern stem rot severity ratings of the majority of the experimental lines and commercial standards were similar. However, stem rot damage was lower for UF 97102 than for UF 97318.

Generally, the yields of the experimental Virginia peanut lines were similar to those of the commercial standard NC 7. Florunner yielded significantly lower than the experimental runner lines GA 942007, GA 942009, GA 942010, UF 97102, UF 97318, and UF 97610.

**Reaction of Selected Experimental Peanut Lines to TSWV, Leaf Spot, and Southern Stem Rot, Wiregrass Research and Extension Center, Headland, AL, 1999**

| Cultivar (Maturity [1]) | Cultivar Type[2] | TSWV Rating[3] | Leaf Spot Rating [4] | Stem Rot Rating[5] | Yield (lb/A) |
|---|---|---|---|---|---|
| Florunner (M) | R | 53.8 AB[6] | 4.5 B-D | 9.3 AB | 3642 E-G |
| GA 942001 (E) | R | 48.0 BC | 2.7 EF | 10.0 AB | 3925 C-E |
| GA 942007 (M) | V | 17.5 F-H | 3.7 C-E | 5.5 AB | 5121 A |
| GA 942009 (M) | R | 31.3 D-F | 4.0 C-E | 13.0 AB | 4821 AB |
| GA 942010 (M) | R | 35.5 C-E | 4.5 B-D | 11.8 AB | 4751 A-C |
| N93 112C (E | V | 59.3 AB | 5.5 AB | 10.5 AB | 4364 A-E |
| NC 7 (E) | V | 46.8 BC | 4.2 CD | 5.5 AB | 4225 B-E |
| OK-B26 (E) | V | 23.0 D-H | 6.0 A | 12.5 AB | 4526 A-D |
| Tamrun 98 (M) | R | 68.0 A | 3.2 D-F | 13.8 AB | 3097 FG |
| TP 262-3-5 (M) | R | 28.8 D-G | 4.7 BC | 9.8 AB | 2974 G |
| TP 296-4-4 (M) | R | 21.8 E-H | 3.7 C-E | 13.3 AB | 3836 D-F |
| TX 969342 (M) | R | 50.5 BC | 4.5 B-D | 6.3 AB | 3942 C-E |
| UF 97102 (M) | R | 15.0 GH | 4.0 C-E | 3.8 B | 5033 AB |
| UF 97318 (L) | R | 9.3 H | 2.2 F | 16.3 A | 5000 AB |
| UF 97610 (E) | R | 38.0 CD | 3.5 C-E | 6.3 AB | 4879 AB |
| VT 940419P (E) | V | 35.0 C-E | 3.5 C-E | 10.5 AB | 4296 A-E |

[1] Peanut maturity group: E = early maturing, M = intermediate, and L = late maturing cultivar.
[2] Cultivar type: V = Virginia, R = Runner peanut cultivar.
[3] Numbers of TSWV loci per 100 ft of row.
[4] The combination of early and late leaf spot was rated on a 1 to 10 scale (1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plants dead).
[5] Numbers of southern stem rot loci per 100 ft of row.
[6] Mean separation was according to Duncan's Multiple Range Test (P=0.05).

# Reaction of Valencia Peanut Cultivars to Common Peanut Diseases

**Objective:** To evaluate the adaptation and virus resistance of Valencia-type peanuts in Alabama.

Target organisms include early leaf spot, *Cercospora arachidicola,* late leaf spot, *Cercosporidium personatum,* southern stem rot, *Sclerotium rolfsii,* and TSWV, tomato spotted wilt virus.

**Location:** Wiregrass Research and Extension Center, Headland, AL
**Soil Type:** Dothan fine sandy loam (OM ≤ 1)
**Cultivars:** GA 952506, GA 952512, GA 952514, Georgia Red

## Planting:

**Date:** May 4, 1999

**Experimental Design:** Randomized complete block with four replications. Plots consisted of two 20-foot (6.2) rows spaced 3 feet (0.9 m) apart.

**Tillage:** Conventional with moldboard plow followed by a disk.

**Seeding Rate:** Six seeds per foot of row.

**Crop History:** Peanut-cotton-peanut rotation.

## Cultural Practices:

**Herbicides**: PPI Sonalan 1 quart per acre + Pursuit 70DG 1.44 ounces per acre and disked, followed by field cultivation; Select 8 ounces per acre + non-ionic surfactant 0.5% v/v; hand weeded.

**Insecticides:** Temik 15G 6.7 pounds per acre in furrow at planting; Karate 7 2 ounces per acre for leafhoppers.

**Fungicides:** Bravo Ultrex at 1.37 pounds per acre (1.6 kg/ha) on June 7, June 21, August 2, August 30, and September 13. Folicur 3.6F at 7.2 ounces per acre (0.53 l/ha) on July 6, July 19, August 2, and August 16.

**Nematicides**: None.

**Irrigation Applied**: May 22, July 23, August 2, August 12, August 21, and September 10.

**Disease Assessment:** Leaf spot and virus ratings were taken on September 1, and southern stem rot ratings were taken on September 3 and September 4.

**Harvest:** Plants were dug on September 3 and harvested on September 8.

**Summary:** Relatively hot, dry weather patterns in August were largely responsible for the modest leaf spot and southern stem rot damage levels.

Significant differences in the severity of TSWV were noted among the four lines of Valencia peanuts (see table). Highest virus levels were seen in Georgia Red, while GA 952514 suffered the least damage. Virus levels in the remaining two experimental Valencia lines were intermediate between the above peanut selections. Leaf spot severity was higher in the three experimental lines as compared with the Georgia Red standard. In all four Valencia peanut lines, southern stem rot damage was very low. The highest yielding Valencia peanut, GA 952514, also suffered the least TSWV damage. The two remaining experimental lines also yielded significantly higher than Georgia Red.

**REACTION OF VALENCIA PEANUT CULTIVARS TOTSWV, LEAF SPOT, AND SOUTHERN STEM ROT, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999**

| Cultivar | TSWV Rating[1] | Leaf Spot Rating[2] | Stem Rot Rating[3] | Yield (lb/ac) |
|---|---|---|---|---|
| GA 952506 | 11.5 C[4] | 5.0 A | 1.2 A | 2803 B |
| GA 952512 | 15.2 B | 5.5 A | 2.5 A | 2828 B |
| GA 952514 | 7.5 D | 5.0 A | 3.0 A | 3215 A |
| Georgia Red | 22.7 A | 4.2 B | 1.2 A | 2519 C |

[1] Numbers of TSWV loci per 40 ft of row.

[2] The combination of early and late leaf spot was rated on a 1 to 10 scale.(1 = no disease, 2 = very few lesions in lower canopy, 3 = few lesions in lower and upper canopy, 4 = some lesions with slight defoliation, 5 = lesions noticeable in upper canopy with some defoliation, 6 = lesions numerous with significant defoliation, 7 = lesions numerous with heavy defoliation, 8 = very numerous lesions on few remaining leaves with heavy defoliation, 9 = very few remaining leaves covered with lesions, 10 = plants dead).

[3] Numbers of southern stem rot loci per 100 ft of row.

[4] Means separation within columns was according to Duncan's Multiple Range Test (P=0.05).

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References are to page numbers

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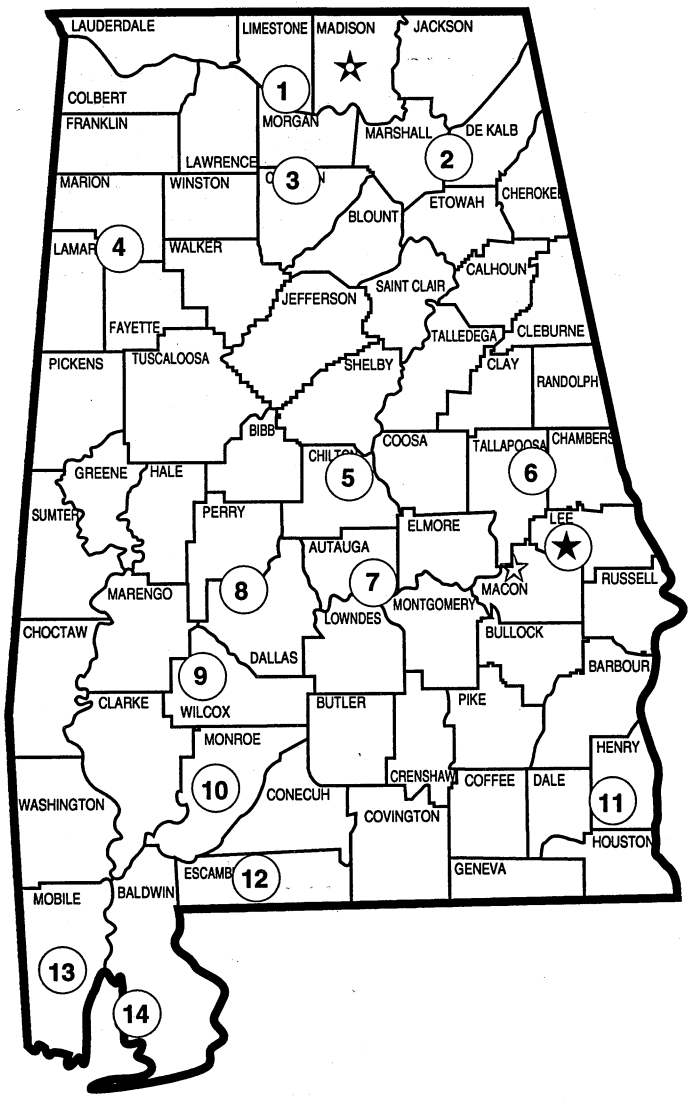


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1. Tennessee Valley Research and Extension Center, Belle Mina.
2. Sand Mountain Research and Extension Center, Crossville.
3. North Alabama Horticulture Station, Cullman.
4. Upper Coastal Plain Research Station, Winfield.
5. Chilton Area Horticulture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