

MANAGEMENT

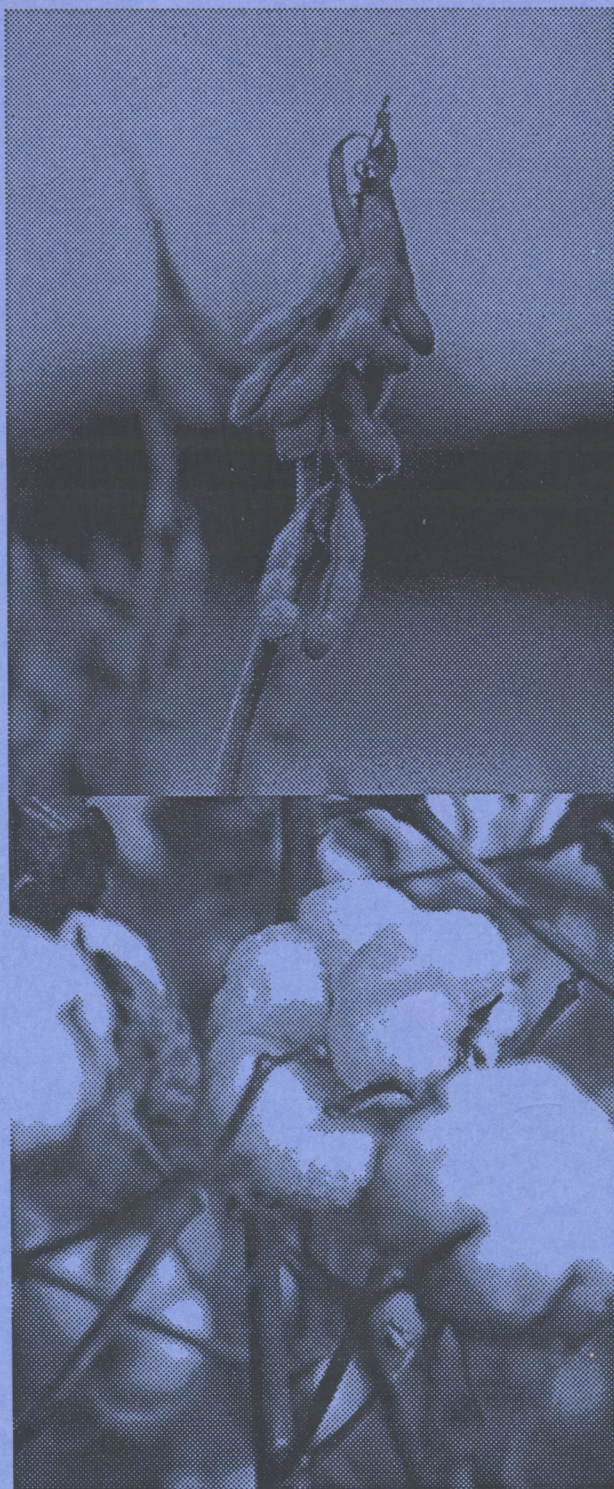
OF DISEASES

ON COTTON

AND

SOYBEAN,

1999



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*The information contained herein is available to all persons regardless of race,
color, sex, or national origin.*

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Management of Diseases on Cotton and Soybean, 1999

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INTRODUCTION

Soybeans and cotton are widely grown in Alabama and producers are constantly battling a variety of diseases. This report summarizes the results of soil-borne and foliar disease trials on soybean and cotton conducted by Alabama Agricultural Experiment Station (AAES) personnel in 1999. It provides management information for producers, industry cooperators, colleagues at universities, and other interested persons.

The soil-borne and foliar disease trials were located at the following AAES stations: Tennessee Valley Research and Extension Center, Belle Mina; Gulf Coast Research and Extension Center, Fairhope; Wiregrass Research and Extension Center, Headland; Monroeville Experiment Field, Monroeville; and Prattville Experiment Field, Prattville.

GROWING CONDITIONS

Test plots at Tennessee Valley Research and Extension Center, Gulf Coast Research and Extension Center, and Wiregrass Research and Extension Center received adequate moisture or were supplemented by standard irrigation practices. The Monroeville and Prattville Experimental Fields do not have irrigation. Prattville received adequate moisture through the growing season; however, Monroeville experienced a drought from July through the end of the season.

APPLICATION METHODS

Granular applications of Terraclor Super X 18.8G, Terraclor Super X G/WGB49, Terraclor 15G, and Ridomil Gold PC 11G were applied in the seed furrow utilizing two row cone planter equipped with granular chemical applicators.

Terraclor 2E, Quadris 2SC, ACT, and Rovral 4F were applied as an in-furrow spray at planting utilizing a flat tip 8002E nozzle directed at an angle across the furrow and calibrated to deliver 20 GPA at 30 PSI.

LS 288 and RTU BaytanThiram + Allegiance were applied to a known amount of seed in a Ziploc bag and shaken until the seeds were completely covered and then allowed to dry. All other seed treatments were applied to the seed by the manufacturer.

Quadris 2SC and Benlate 50 WP were applied as broadcast sprays utilizing a CO₂-charged, backpack system with a two row boom equipped with two flat tip 8001 nozzles per row calibrated to deliver 10GPA at 30 PSI.

Quadris 2SC, Benlate 50 WP, Tilt, Terraclor 4F, and Rovral 4F were applied as foliar sprays using TX-12 cone nozzles mounted on ground slides spraying upward with two nozzles per row calibrated to deliver 26GPA at 75 PSI.

DATA COLLECTION

Plant population densities were determined from 14 to 21 and 28 to 35 days after planting. A skip index rating was determined at 14 to 21 days after planting using the following rating scale: 1 = 1.5 feet of gap between

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plants, 2 = 2.5 feet of gap, 3 = 3.5 feet of gap, and so on. Plant vigor was determined by visual ratings at 28 to 35 days after planting. Vigor was based on observations of seedling health and rated on a 1 to 4 scale with 1 representing the healthiest plants and 4 representing dead plants. Open bolls were counted approximately three weeks before harvest. Percent of open bolls was based on the number of open bolls divided by the total number of bolls on five plants and multiplied by 100 to determine early maturity. Yields were harvested using station equipment and reported as pounds of seed cotton per acre.

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. All statistical tests were performed at the 5% level of significance.

Trade names are used throughout this report for clarity, except where they are unavailable. Appendix A includes a list of all chemicals used in this research and company sources when available. All fungicides are expressed as formulated rate per acre as suggested by the manufacturers.

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.

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.

Evaluation of Selected Experimental Seed Treatments for Control of Seedling Disease of Cotton, Tennessee Valley Research and Extension Center

Objective: To evaluate selected cotton seed treatments for control of *Rhizoctonia solani* and *Pythium* spp. for seedling disease of cotton.

Location: Tennessee Valley Research and Extension Center, Belle Mina, AL

Cultivar: Stoneville 474

Planting:

Date: May 3, 1999

Experimental Design: Randomized complete block with four replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: LS 288 and RTU BaytanThiram + Allegiance were applied to a known amount of seed in a ziploc bag and shaken until completely covered and then allowed to dry. All other fungicides were applied to the seed by the manufacturer. All other seed treatments were applied to the seed by the manufacturer. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 19 and June 2. Open bolls were counted on September 10.

Harvest: Plants were harvested on September 28.

Results: Significant differences in seedling stand were observed at 16 and 30 days after planting. At two and four weeks after planting, Vitavax-PCNB + Allegiance FL, WE -120C + Nu-Flow M + WE-147 + Nu-Grow Film Coat and RTU Baytan Thiram + Allegiance produced significantly greater stands than the untreated control (Tables 1 and 2). Vitavax-PCNB + Allegiance FL and RTU Baytan Thiram + Allegiance also produced a significantly lower skip index indicating a more uniform seedling stand than the untreated control. However, 30 days after planting only Vitavax-PCNB + Allegiance FL produced a significantly lower skip index.

No significant differences were observed in the number of open bolls on five plants per plot (Table 3). Seed cotton yields ranged from 2540 pounds per acre to 1094 pounds per acre for the Vitavax-PCNB + Allegiance FL and the untreated control, respectively. Vitavax-PCNB + Allegiance FL, Maxim + Nu-Flow M + Apron XL, WE -120C + Nu-Flow M + WE-147 + Nu-Grow Film Coat and RTU Baytan Thiram + Allegiance all produced significantly greater yields than the control. Averaging all fungicide treatment yields together produced an increase of 606 pounds of seed cotton per acre greater than the untreated control.

TABLE 1. EFFECT OF SELECTED SEED TREATMENTS ON COTTON STAND, SKIP INDEX, AND PLANT VIGOR 16 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate (fl oz/cwt)	Emergence per 10 ft of row	Plants per ft of row	Skip Index	Vigor Rating
Untreated Control	—	14.25 d	0.57 d	20.0 a	3.0 a
Vitavax-PCNB + Allegiance FL	6.0 + 0.75	46.25 a	1.85 a	10.5 c	3.62 a
TU Baytan-Thiram + Apron FL	3.0 + 0.75	23.75 bcd	0.95 bcd	16.2 abc	3.25 a
U-Flow T + Nu-Flow M + Apron XL	2.25 + 1.25 + 0.32	25.25 bcd	1.01 bcd	15.0 abc	2.88 a
Maxim + Nu-Flow M + Apron XL	0.08 + 1.75 + 0.32	26.0 bcd	1.04 bcd	16.8 ab	3.38 a
WE-120C + Nu-Flow M + WE-147 + Nu-Grow Film Coat	0.24 + 1.25 + 2.0 + 2.0	37.25 ab	1.49 ab	14.3 abc	3.50a
WE-142 + WE-147 + Nu-Grow Film Coat	2.0 + 2.0 + 2.0	17.5 cd	0.70 cd	15.8 abc	3.00a
LS 288	0.5 oz/cwt	24.0 bcd	0.96 bcd	16.0 abc	3.50 a
RTU Baytan Thiram + Allegiance	3.0 + 0.75 oz/cwt	33.0 abc	1.32 abc	13.8 bc	3.38 a
LSD (0.05)		17.30	0.69	5.9	0.96

TABLE 2. EFFECT OF SELECTED SEED TREATMENTS ON COTTON STAND, SKIP INDEX, AND PLANT VIGOR 30 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate (fl oz/cwt)	Emergence per 10 ft of row	Plants per ft of row	Skip Index	Vigor Rating
Untreated Control	—	9.75 c	0.39 c	21.3 a	2.25 b
Vitavax-PCNB + Allegiance FL	6.0 + 0.75	31.00 a	1.24 a	14.8 b	3.75 a
RTU Baytan-Thiram + Apron FL	3.0 + 0.75	18.75 abc	0.75 abc	18.3 ab	2.88 ab
NU-Flow T + Nu-Flow M + Apron XL	2.25 + 1.25 + 0.32	22.25 abc	0.89 abc	18.8 ab	3.38 ab
Maxim + Nu-Flow M + Apron XL	0.08 + 1.75 + 0.32	19.25 abc	0.77 abc	20.0 ab	3.25 ab
WE-120C + Nu-Flow M + WE-147 + Nu-Grow Film Coat	0.24 + 1.25 + 2.0 + 2.0	28.00 ab	1.12 ab	15.2 ab	3.38 ab
WE-142 + WE-147 + Nu-Grow Film Coat	2.0 + 2.0 + 2.0	15.00 bc	0.60 bc	19.0 ab	2.63 ab
LS288	0.5 oz/cwt	20.25 abc	0.81 abc	17.5 ab	3.38 ab
RTU Baytan Thiram + Allegiance	3.0 + 0.75 oz/cwt	25.25 ab	1.01 ab	18.0 ab	2.75 ab
LSD (0.05)		14.34	0.57	6.0	1.14

TABLE 3. EFFECT OF SELECTED SEED TREATMENTS ON COTTON MATURITY AND SEED COTTON YIELD, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate	Open Bolls ¹ %	Seed Cotton Yield lb/ac
Control		45 a	1094 d
Vitavax-PCNB + Allegiance FL	6.0 + 0.75 fl oz/cwt	56 a	2540 a
RTU Baytan-Thiriam + Apron FL	3.0 + 0.75 fl oz/cwt	52 a	1656 bcd
NU-Flow T + Nu-Flow M + Apron XL	2.25 + 1.25 + 0.32 fl oz/cwt	40 a	1721 bcd
Maxim + Nu-Flow M + Apron XL	0.08 + 1.75 + 0.32 fl oz/cwt	48 a	1956 abc
WE-120C + Nu-Flow M + WE-147 + Nu-Grow Film Coat	0.24 + 1.25 + 2.0 + 2.0 fl oz/cwt	55 a	2325 ab
WE1142 + WE-147 + Nu-Grow Film Coat	2.0 + 2.0 + 2.0 fl oz/cwt	42 a	1450 cd
LS 288	0.5 oz/cwt	40 a	1440 cd
RTU Baytan Thiram + Allegiance	3.0 + 0.75 oz/cwt	43 a	1672 abc
LSD (0.05)		19	729

¹ Number of open bolls on five plants divided by the total number of bolls.

Evaluation of Selected Seed Treatments for Control of *Rhizoctonia solani* and *Pythium* spp. on Seedling Disease of Cotton, Tennessee Valley Research and Extension Center

Objective: To evaluate selected cotton seed treatments for control of *Rhizoctonia solani* and *Pythium* spp. for seedling disease of cotton.

Location: Tennessee Valley Research and Extension Center, Belle Mina, AL

Cultivar: Stoneville 474

Planting:

Date: May 3, 1999

Experimental Design: Randomized complete block with four replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All seed treatments were applied by the manufacturer prior to planting. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 19 and June 2. Open bolls were counted on September 10.

Harvest: Plants were harvested on September 28.

Results: Significant differences in seedling stand were observed. At 16 and 30 days after planting, Vitavax-PCNB + Nu-Flow M, Nu-Flow T + Nu-Flow M + Apron XL, Nu-Flow T + Nu-Flow M + WE 147, WE 146 + WE 144 + Nu-Flow T + Nu-Flow M + WE 147 + Nu-Gro Film Coat, and WE 146 + WE 144 + Nu-Gro Film Coat produced significantly greater stands than the untreated control (Table 1). The highest skip index was in the control. Vitavax-PCNB + Nu-Flow M had the lowest skip index, indicating that this treatment produced a more evenly spaced seedling stand than the control.

Three of the fungicide seed treatments produced an increased percentage of open bolls, indicating earlier maturity (Table 2). Seed cotton yields ranged from 2135.5 pounds per acre to 858.8 pounds per acre for the Vitavax-PCNB + Nu-Flow M and the untreated control, respectively. All seed treatments increased the seed cotton yield compared to the control.

TABLE 1. EFFECT OF SELECTED SEED TREATMENTS ON COTTON STAND, SKIP INDEX, AND PLANT VIGOR 16 AND 30 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 16 DAP	Emergence per 25 ft of row 30 DAP	Skip Index 16 DAP	Vigor Rating 30 DAP
Untreated Control	Black seed control	7.3 c	14.0 c	36.3 a	2.3 a
Vitavax-PCNB + Nu-flow M	6.0 + 0.75	28.0 a	42.8 a	20.8 c	1.4 b
RTU Baytan-Thiram + Apron FL	3.0 + 0.75	14.0 bc	23.0bc	29.5 ab	1.8 abc
NU-Flow T + Nu-Flow M + Apron XL	2.25 + 1.25 + 0.32	21.5 ab	35.3 ab	24.8 bc	1.6 bc
Nu-Flow T + Nu-Flow M + WE 147	2.25 + 1.25 + 2.0	26.0 ab	33.8 ab	22.0 bc	1.5 bc
WE-146 + WE-144 + Nu-Flow T + Nu-Flow M + WE-147 + Nu-Grow Film Coat	0.0353 + 0.0353 + 2.25 + 1.25 + 2.0 + 2.0	25.5 ab	37.5 ab	22.3 bc	3.50 a
WE-146 + WE-144 + Nu-Grow Film Coat	0.0353 + 0.0353 + 2.0	29.5 a	40.8 a	23.3 bc	3.00 a
LSD (0.05)		13.2	16.1	7.8	0.96

TABLE 2. EFFECT OF SELECTED SEED TREATMENTS ON COTTON MATURITY AND SEED COTTON YIELD, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate fl oz/cwt	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control	Black seed control	32.2 b	858.8 b
Vitavax-PCNB + Nu-flow M	6.0 + 0.75	46.5 ab	2135.5 a
RTU Baytan-Thiram + Apron FL	3.0 + 0.75	47.9 a	1756.8 a
NU-Flow T + Nu-Flow M + Apron XL	2.25 + 1.25 + 0.32	47.4 ab	1809.1 a
Nu-Flow T + Nu-Flow M + WE 147	2.25 + 1.25 + 2.0	52.7 a	1799.2 a
WE-146 + WE-144 + Nu-Flow T + Nu-Flow M + WE-147 + Nu-Grow Film Coat	0.0353 + 0.0353 + 2.25 + 1.25 + 2.0 + 2.0	54.4 a	2027.8 a
WE-146 + WE-144 + Nu-Grow Film Coat	0.0353 + 0.0353 + 2.0	42.1 ab	2083.3 a
LSD (0.05)		15.3	546.8

Evaluation of In-furrow Fungicide and Fungicide Biological Combinations for Control of *Rhizoctonia solani* and *Pythium* spp. on Seedling Disease of Cotton, Wiregrass Research and Extension Center

Objective: To evaluate selected in-furrow fungicides for control of *Rhizoctonia solani* and *Pythium* spp. seedling disease of cotton.

Location: Wiregrass Research and Extension Center, Headland, AL

Cultivar: NuCotton 35B

Planting:

Date: April 20, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were applied as an in-furrow granular or spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. In-furrow granular fungicides were applied in the seed furrow utilizing a two row cone planter equipped with granular chemical applicators.

Two seed treatments, LS 288 and RTU BaytanThiram + Allegiance were applied to a known amount of seed in a ziploc bag and shaken until completely covered and then allowed to dry before planting. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 5 and May 18. Open bolls were counted on September 16.

Harvest: Plants were harvested on September 29.

Results: Significant differences in seedling stand were observed at 15 and 28 days after planting. In the *R. solani* inoculated rows, Terraclor 2E, Terraclor 15G, Rovral 4F, TSX EC, Ridomil Gold PC 11G, TSX 18,8 (7.0 pounds per acre) and TSX G/WGB49 (5.5 pounds per acre and 7.4 pounds per acre) produced greater stand and lower skip indexes than the control at 15 and 28 days after planting (Tables 1 and 2). In the *Pythium* spp. inoculated rows, Terraclor 15G, Rovral 4F, TSX EC, TSX 18,8 (7.0 pounds per acre) and TSX G/WGB49 (5.5 pounds per acre and 7.4 pounds per acre) produced greater stand and lower skip indexes than the control at 15 days after planting (Table 3). However, by 28 days after planting, only TSX EC and TSX G/WGB (7.4 pounds per acre) produced greater stand and lower skip indexes than the control (Table 4).

The inoculated rows were combined for yields. TSX EC produced a significantly higher percentage of open bolls than the control, indicating earlier maturity (Table 5). Seed cotton yields ranged from 2474 pounds per acre to 1951 pounds per acre for the TSX G/WGB (7.4 pounds per acre) and Terraclor 2EC treatments, respectively (Table 5). The average fungicide yield compared to the control increased the seed cotton 182 pounds per acre.

TABLE 1. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON *R. SOLANI* COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 15 DAYS AFTER PLANTING, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate (formulated product)	Emergence per 25 ft of row	Plants per ft of row	Skip Index	Vigor Rating
Untreated Control	—	22.0 e	0.88 d	30.6 a	2.0 c
Terraclor 2E	48 fl oz	55.8 d	2.23 c	16.6 cd	2.7 ab
Terraclor 15G	5.5 lb	74.4 bcd	2.98 abc	10.2 de	2.8 ab
Rovral 4F	5.2 fl oz	96.2 a	3.71 a	8.6 e	2.9 ab
TSX 18.8G	5.5 lb	28.4 e	1.14 d	29.4 ab	2.0 c
TSX EC	64 oz	93.4 ab	3.74 a	8.6 e	3.0 a
Ridomil Gold PC 11G	7.0 lb	85.6 abc	3.42 ab	10.2 de	2.8 ab
TSX 18.8G	7.0 lb	88.2 abc	3.53 ab	6.6 e	2.9 ab
TSX G/WGB49	7.4 lb	86.2 abc	3.45 ab	11.0 de	2.7 ab
TSX G/WGB49	5.5 lb	71.2 cd	3.85 bc	12.6 de	2.9 ab
RTU Baytan Thiram + Allegiance	3.0+0.75 oz/cwt	26.2 e	1.05 d	31.8 a	2.5 b
LSD (0.05)		20.58	0.82	7.28	0.47

TABLE 2. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON *R. SOLANI* COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND AND SKIP INDEX AT 28 DAYS AFTER PLANTING, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate	Emergence	Plants per ft of row	Skip Index
Untreated Control	—	15.0 d	0.60 d	31.4 a
Terraclor 2E	48 fl oz	39.4 c	1.58 c	16.2 b
Terraclor 15G	5.5 lb	65.4 ab	2.62 ab	8.2 cd
Rovral 4F	5.2 fl oz	84.0 a	3.36 a	9.0 bcd
TSX 18.8G	5.5 lb	15.8 d	0.63 d	30.2 a
TSX EC	64 oz	74.8 ab	2.99 ab	7.8 cd
Ridomil Gold PC 11G	7.0 lb	72.8 ab	2.91 ab	12.2 bcd
TSX 18.8G	7.0 lb	77.4 a	3.09 a	6.6 d
TSX G/WGB49	7.4 lb	77.0 a	3.08 a	7.8 cd
TSX G/WGB49	5.5 lb	58.2 b	2.33 b	14.2 bc
RTU Baytan Thiram + Allegiance	3.0+0.75 oz/cwt	18.8 d	0.75 d	32.2 a
LSD (0.05)		18.75	0.75	7.33

TABLE 3. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON *PYTHIUM* SPP. COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 15 DAYS AFTER PLANTING, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate (formulated product)	Emergence	Plants per ft of row	Skip Index	Vigor Rating
Untreated Control	—	55.4 ef	2.22 ef	11.8 a	2.8 abc
Terraclor 2E	48 fl oz	64.2 def	2.57 def	8.4 abc	3.0 abc
Terraclor 15G	5.5 lb	78.8 a-d	3.15 a-d	5.0 bc	3.1 ab
Rovral 4F	5.2 fl oz	78.4 a-d	3.14 a-d	2.2 c	3.2 a
TSX 18.8G	5.5 lb	54.2 f	2.17 f	12.2 a	2.8 abc
TSX EC	64 oz	87.4 ab	3.50 ab	6.2 abc	2.9 abc
Ridomil Gold PC 11G	7.0 lb	73.2 a-e	2.93 a-e	7.0 abc	2.1 d
TSX 18.8G	7.0 lb	78.2 a-d	3.13 a-d	7.6 abc	2.6 bcd
TSX G/WGB49	7.4 lb	88.8 a	3.55 a	4.6 bc	2.7 abc
TSX G/WGB49	5.5 lb	83.4 abc	3.34 abc	8.2 abc	2.8 abc
RTU Baytan Thiram + Allegiance	3.0 + 0.75 oz/cwt	66.4 c-f	2.66 c-f	6.6 abc	2.8abc
LSD (0.05)		18.22	0.73	6.31	0.50

TABLE 4. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON *PYTHIUM* SPP. COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND AND SKIP INDEX AT 28 DAYS AFTER PLANTING, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate	Emergence	Plants per ft of row	Skip Index
Untreated Control	—	54.0 cd	2.16 cd	11.0 ab
Terraclor 2E	48 fl oz	59.0 bcd	2.36 bcd	10.2 ab
Terraclor 15G	5.5 lb	56.0 cd	2.24 cd	11.4 ab
Rovral 4F	5.2 fl oz	68.8 abc	2.75 abc	5.4 b
TSX 18.8G	5.5 lb	45.4 d	1.82 d	15.4 a
TSX EC	64 oz	76.6 ab	3.06 ab	4.6 b
Ridomil Gold PC 11G	7.0 lb	61.8 bcd	3.47 bcd	8.2 ab
TSX 18.8G	7.0 lb	67.6 abc	2.70 abc	10.6 ab
TSX G/WGB49	7.4 lb	84.2 a	3.37 a	5.4 b
TSX G/WGB49	5.5 lb	71.8 abc	2.87 abc	9.2 ab
RTU Baytan Thiram + Allegiance	3.0 + 0.75 oz/cwt	55.2 cd	2.21 cd	10.6 ab
LSD (0.05)		18.74	0.75	7.69

TABLE 5. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON MATURITY AND SEED COTTON YIELD, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control	—	49.44	2091 ab
Terraclor 2E	48 fl oz	59.82	1951 b
Terraclor 15G	5.5 lb	48.49	2300 ab
Rovral 4F	5.2 fl oz	59.60	2277 ab
TSX 18.8G	5.5 lb	55.41	2056 ab
TSX EC	64 oz	62.66	2114 ab
Ridomil Gold PC 11G	7.0 lb	58.78	2335 ab
TSX 18.8G	7.0 lb	54.08	2323 ab
TSX G/WGB49	7.4 lb	53.61	2474 a
TSX G/WGB49	5.5 lb	56.72	2300 ab
RTU Baytan Thiram +Allegiance	3.0 + 0.75 oz/cwt	55.29	2207 ab
LSD (0.05)		11.15	431.96

Evaluation of In-furrow Fungicide and Fungicide Biological Combinations for Control of *Rhizoctonia solani* and *Pythium* spp. on Seedling Disease of Cotton, Tennessee Valley Research and Extension Center

Objective: To evaluate selected in-furrow fungicides for control of *Rhizoctonia solani* and *Pythium* spp. seedling disease of cotton.

Location: Tennessee Valley Research and Extension Center, Belle Mina, AL

Cultivar: NuCotton 35B

Planting:

Date: April 20, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were applied as an in-furrow granular or spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. In-furrow granular fungicides were applied in the seed furrow utilizing a two row cone planter equipped with granular chemical applicators. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 12 and May 25. Open bolls were counted on September 10.

Harvest: Plants were harvested on September 28.

Results: At 22 and 35 days after planting all fungicide treatments had significantly greater stands than the control (Table 1). At 22 days after planting, Terraclor Super X G/WGB49 at 7.4 pounds per acre produced the greatest stand at 3.6 plant per foot of row and the control produced the lowest with 0.4 plant per foot of row. All fungicides produced lower skip indexes than the control.

No differences in maturity were observed as measured by the percent open bolls (Table 2). Seed cotton yields ranged from 3350.3 pounds per acre to 2122.5 pounds per acre for the Terraclor Super X G/WGB49 at 7.4 pounds per acre and the control treatments, respectively (Table 2). All fungicide treatments produced significantly greater yields than the control.

TABLE 1. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 22 AND 35 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 22 DAP	Emergence per 25 ft of row 35 DAP	Skip Index 22 DAP	Vigor Rating 35 DAP
Untreated Control	—	4.0 d	11.8 d	33.0 a	3.1 a
Terraclor Super X 18.8 G	7.0 lb/ac	28.3 ab	63.3 ab	7.3 c	1.9 b
Terraclor Super X 18.8 G	5.5 lb/ac	27.5 ab	67.5 ab	4.8 c	1.7 b
Terraclor Super X G/ WGB 49	5.5 lb/ac	35.0 ab	66.3 ab	3.5 c	1.6 b
Terraclor Super X G/WGB 49	7.4 lb/ac	36.0 a	75.3 a	2.8 c	1.8 b
Terraclor Super X EC	64 oz/ac	26.3 ab	61.8 b	4.8 c	1.6 b
Ridomil Gold PC 11G	7.0 lb/ac	25.8 b	61.5 b	5.3 c	2.1 b
Rovral	5.3 oz/ac	15.8c	30.8c	19.3 b	2.1 b
LSD (0.05)		9.1	11.8	4.2	0.7

TABLE 2. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON MATURITY AND SEED COTTON YIELD, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control	—	46.9 a	2122.5 b
Terraclor Super X 18.8 G	7.0 lb/ac	51.1 a	3281.7 a
Terraclor Super X 18.8 G	5.5 lb/ac	53.2 a	3089.0 a
Terraclor Super X G/ WGB 49	5.5 lb/ac	57.5 a	3131.5 a
Terraclor Super X G/WGB 49	7.4 lb/ac	53.5 a	3350.3 a
Terraclor Super X EC	64 oz/ac	55.9 a	3193.5 a
Ridomil Gold PC 11G	7.0 lb/ac	56.8 a	3242.5 a
Rovral	5.3 oz/ac	51.8 a	3000.9 a
LSD (0.05)		16.9	395.4

Evaluation of In-furrow Fungicide and Fungicide Biological Combinations for Control of *Rhizoctonia solani* and *Pythium* spp. on Seedling Disease of Cotton, Prattville Experiment Field

Objective: To evaluate selected in-furrow fungicides for control of *Rhizoctonia solani* and *Pythium* spp. seedling disease of cotton.

Location: Prattville Experiment Field, Prattville, AL

Cultivar: DPL 436RR

Planting:

Date: April 14, 1999

Experimental Design: Randomized complete block with five replications.

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were applied as an in-furrow granular or spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. In-furrow granular fungicides were applied utilizing a two row cone planter equipped with granular chemical applicators. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 4 and May 18. Open bolls were counted on September 9.

Harvest: Plants were harvested on September 28.

Results: Significant differences in seedling stand were observed. At 20 days after planting, Terraclor 15G and Rovral 4F had a significantly greater stand than Terraclor 2E (Table 1). However, by 34 days after planting no significant differences in stand were observed among any treatments. Ridomil Gold PC 11G had the most uniform stand with a skip index of 11.5.

No differences in maturity were observed as measured by the percent open bolls (Table 2). Seed cotton yields ranged from 3259.7 pounds per acre to 22214.3 pounds per acre for the Ridomil Gold PC 11 G and Terraclor 2E treatments, respectively (Table 2). There were no significant differences in yields among the treatments including the control.

TABLE 1. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 20 AND 34 DAYS AFTER PLANTING, PRATTVILLE EXPERIMENT FIELD, PRATTVILLE, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 20 DAP	Emergence per 10 ft of row 34 DAP	Skip Index 34 DAP	Vigor Rating 34 DAP
Untreated Control	—	4.8 ab	7.5 a	20.3 c	1.8 b
Terraclor Super X 18.8 G	7.0 lb/ac	7.0 ab	8.0 a	21.5 c	1.9 b
Terraclor Super X 18.8 G	5.5 lb/ac	8.3 ab	9.5 a	20.0 c	1.9 b
Terraclor Super X G/ WGB 49	7.4 lb/ac	5.3 ab	6.3 a	30.0 ab	1.9 b
Terraclor Super X G/WGB 49	5.5 lb/ac	7.0 ab	9.0 a	22.3 bc	2.0 ab
Terraclor Super X EC	64 oz/ac	6.3 ab	8.0 a	17.8 cd	1.8 b
Ridomil Gold PC 11G	7.0 lb/ac	6.0 ab	9.5 a	11.5 d	1.5 b
Rovral 4F	5.3 oz/ac	8.5 a	9.3 a	24.3 abc	1.9 b
Terraclor 2E	48 fl oz/ac	3.0 b	4.0 a	32.0 a	2.5 a
Terraclor 15G	5 lb/ac	10.0 a	9.0 a	22.3 bc	1.7 b
LSD (0.05)		5.4	5.6	8.4	0.5

TABLE 2. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON MATURITY AND SEED COTTON YIELD, PRATTVILLE EXPERIMENT FIELD, PRATTVILLE, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control	—	63.5 a	2954.8 abc
Terraclor Super X 18.8 G	7.0 lb/ac	62.6 a	2860.4 abc
Terraclor Super X 18.8 G	5.5 lb/ac	61.4 a	2889.5 abc
Terraclor Super X G/ WGB 49	7.4 lb/ac	55.2 a	2541.0 cd
Terraclor Super X G/WGB 49	5.5 lb/ac	62.5 a	2679.0 bc
Terraclor Super X EC	64 oz/ac	54.6 a	3012.9 ab
Ridomil Gold PC 11G	7.0 lb/ac	55.0 a	3259.7 a
Rovral 4F	5.3 oz/ac	56.3 a	2962.1 abc
Terraclor 2E	48 fl oz/ac	55.9 a	2214.3 d
Terraclor 15G	5 lb/ac	55.5 a	3071.0 ab
LSD (0.05)		12.2	434.3

Evaluation of Terraclor and Rovral Fungicide Treatments for Control of *Rhizoctonia solani* and *Pythium* spp. on Seedling Disease of Cotton, Tennessee Valley Research and Extension Center

Objective: To evaluate selected in-furrow fungicide sprays for control of *Rhizoctonia solani* and *Pythium* spp. seedling disease of cotton.

Location: Tennessee Valley Research and Extension Center, Belle Mina, AL

Cultivar: DPL 33B

Planting:

Date: April 21, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were applied as an in-furrow spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 12 and May 25. Open bolls were counted on September 10.

Harvest: Plants were harvested on September 28.

Results: At 21 and 34 days after planting, all fungicide treatments produced significantly greater stands than the control (Table 1). Terraclor 15G produced the greatest stand at 2.38 plant per foot of row and the control produced the lowest with 0.25 plant per foot of row at 35 days after planting, respectively. All fungicides produced lower skip indexes than the control.

No differences in maturity were observed as measured by the percent open bolls (Table 2). Seed cotton yields ranged from 3627.9 pounds per acre to 2044.1 pounds per acre for the Terraclor 15G and the control treatments, respectively (Table 2). All fungicide treatments produced significantly greater yields than the control.

TABLE 1. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 21 AND 34 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 21 DAP	Emergence per 10 ft of row 34 DAP	Skip Index 21 DAP	Vigor Rating 34 DAP
Untreated Control	—	3.5 b	6.3 c	37.0 a	3.3 a
Terraclor 2E	48 fl oz/ac	21.5 a	52.3 ab	9.0 bc	1.9 b
Terraclor 15G	5 lb/ac	27.5 a	59.5 a	5.3 c	1.9 b
Rovral 4F	5.2 oz/ac	23.0 a	38.5 b	13.0 b	1.6 b
LSD (0.05)		16.4	17.8	6.9	0.6

TABLE 2. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON MATURITY AND SEED COTTON YIELD, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control	—	47.3 a	2044.1 b
Terraclor 2E	48 fl oz/ac	59.6 a	3425.4 a
Terraclor 15G	5 lb/ac	64.1 a	3627.9 a
Rovral 4F	5.2 lb/ac	58.7 a	3236.0 a
LSD (0.05)		15.4	534.4

Evaluation of Quadris for Control of Seedling Disease of Cotton, Wiregrass Research and Extension Center

Objective: To evaluate Quadris as an in-furrow fungicide spray and seed treatment for control of seedling disease of cotton.

Location: Wiregrass Research and Extension Center, Headland, AL

Cultivar: NuCotton 35B

Planting:

Date: April 23, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were either applied to the seed as a seed treatment before planting or as an in-furrow spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 13 and May 27. Open bolls were counted on September 16.

Harvest: Plants were harvested on September 29.

Results: Significant differences in seedling stand were observed at 20 and 34 days after planting. At 20 days after planting, Quadris, Terraclor, Ridomil + Terraclor and the Protege + Allegiance + Quadris treatments produced significantly greater stands than the black seed control and the Protege + Allegiance + Ascend seed treatment (Table 1). By 34 days after planting, the Quadris in-furrow sprays produced a significantly greater stand than the Protege + Allegiance + Quadris seed treatment (Table 1). The skip index rating at 20 days after planting, found all Quadris, Terraclor, Ridomil + Terraclor, and Protege + Allegiance + Quadris treatments produced significantly more uniform stands than the black seed control and the Protege + Allegiance + Ascend seed treatment (Table 1).

No differences in the percent of open bolls were observed (Table 2). Seed cotton yields ranged from 1858.6 pounds per acre to 1488.3 pounds per acre for the Protege + Allegiance + Ascend and the Protege + Allegiance + Quadris treatments, respectively (Table 2). There were no significant differences in yield among treatments including the control.

TABLE 1. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 20 AND 34 DAYS AFTER PLANTING, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 20 DAP	Emergence per 25 ft of row 34 DAP	Skip Index 20 DAP	Vigor Rating 34 DAP
Untreated Control-black seed	—	11.0 b	23.0 c	24.5 a	2.6 a
Quadris	5.56 fl oz/ac	36.3 a	73.3 a	3.0 b	1.7 b
Quadris	8.35 fl oz/ac	36.0 a	73.5 a	1.8 b	1.7 b
Terraclor	7.4 fl oz/1000 ft	38.8 a	69.0 ab	2.0 b	2.2 ab
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	30.0 a	59.5 b	4.8 b	1.8 ab
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	15.5 b	28.8 c	18.5 a	2.2 a
Protege + Allegiance + Quadris (Seed treatment)	40 ppm + 0.75 fl oz/cwt	33.3 a	56.8 b	5.0 b	1.8 ab
LSD (0.05)		12.6	12.9	9.2	0.8

TABLE 2. EFFECT OF SELECTED IN-FURROW FUNGICIDES ON COTTON MATURITY AND SEED COTTON YIELD, WIREGRASS RESEARCH AND EXTENSION CENTER, HEADLAND, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control-black seed	—	54.3 a	1640.8 a
Quadris	5.56 fl oz/ac	56.8 a	1844.0 a
Quadris	8.35 fl oz/ac	50.5 a	1611.7 a
Terraclor	7.4 fl oz/1000 ft	54.2 a	1786.0 a
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	52.8 a	1539.1 a
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	62.0 a	1858.6 a
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	46.9 a	1488.3 a
LSD (0.05)	18.9	585.3	

Evaluation of Quadris for Control of Seedling Disease of Cotton, Prattville Experiment Field

Objective: To evaluate Quadris as an in-furrow fungicide spray and seed treatment for control of seedling disease of cotton.

Location: Prattville Experiment Field, Prattville, AL

Cultivar: DPL 436 RR

Planting:

Date: April 14, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were either applied to the seed as a seed treatment before planting or as an in-furrow spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 4 and May 18. Open bolls were counted on September 9.

Harvest: Plants were harvested on September 28.

Results: Significant differences in seedling stand were observed at 20 and 34 days after planting. At 20 days after planting, Quadris at 5.56 fluid ounces per acre produced a significantly greater stand than the black seed control and Quadris at 8.35 fluid ounces per acre (Table 1). By 34 days after planting Quadris at 5.56 fluid ounces per acre and Ridomil + Terraclor produced a significantly greater stand than all other treatments (Table 1). The skip index rating at 20 days after planting found Quadris at 5.56 fluid ounces per acre, Terraclor, Ridomil + Terraclor, Protege + Allegiance + Ascend, and Protege + Allegiance + Quadris treatments produced significantly more uniform stands than the black seed control and Quadris at 8.35 fluid ounces per acre (Table 1).

No differences in the percent of open bolls were observed between fungicide treatments and the control (Table 2). Seed cotton yields ranged from 3659.1 pounds per acre to 1248.7 pounds per acre for the Quadris at 5.56 fluid ounces per acre and the untreated black seed control treatments, respectively (Table 2). All fungicide treatments produced significantly greater yields than the black seed control and the Protege + Allegiance + Ascend seed treatment.

TABLE 1. EFFECT OF QUADRIS ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 20 AND 34 DAYS AFTER PLANTING, PRATTVILLE EXPERIMENT FIELD, PRATTVILLE, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 20 DAP	Emergence per 25 ft of row 34 DAP	Skip Index 20 DAP	Vigor Rating 34 DAP
Untreated Control-black seed	—	5.0 b	4.0 c	35.3 a	2.8 a
Quadris	5.56 fl oz/ac	11.5 a	16.0 a	6.5 b	1.6 b
Quadris	8.35 fl oz/ac	6.0 b	4.0 c	28.0 a	2.1 ab
Terraclor 2E	7.4 fl oz/1000 ft	7.3 ab	9.5 b	16.3 b	1.9 b
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	8.3 ab	15.8 a	6.3 b	1.5 b
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	7.0 ab	9.0 bc	12.8 b	1.9 b
Protege + Allegiance + Quadris (Seed treatment)	40 ppm + 0.75 fl oz/cwt	8.0 ab	11.0 ab	10.0 b	1.8 b
LSD (0.05)		4.6	5.5	10.9	0.8

TABLE 2. EFFECT OF QUADRIS ON COTTON MATURITY AND SEED COTTON YIELD, PRATTVILLE EXPERIMENT FIELD, PRATTVILLE, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control-black seed	—	54.1 ab	1248.7 e
Quadris	5.56 fl oz/ac	51.2 b	3659.1 a
Quadris	8.35 fl oz/ac	50.4 b	2780.6 cd
Terraclor	7.4 fl oz/1000 ft	55.2 ab	3121.8 bc
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	58.6 ab	3317.8 ab
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	56.6 ab	2606.4 d
Protege + Allegiance + Quadris (Seed treatment)	40 ppm + 0.75 fl oz/cwt	63.4 a	3230.7 abc
LSD (0.05)		12.8	462.0

Evaluation of Quadris for Control of Seedling Disease of Cotton, Tennessee Valley Research and Extension Center

Objective: To evaluate Quadris as an in-furrow fungicide spray and seed treatment for control of seedling disease of cotton.

Location: Tennessee Valley Research and Extension Center, Belle Mina, AL

Cultivar: DPL 436 RR

Planting:

Date: April 21, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 40 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 125 seed per row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were either applied to the seed as a seed treatment before planting or as an in-furrow spray application at planting. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. Each plot was infested with *Pythium* spp. and *R. solani* by applying inoculated millet seed in the furrow at planting.

Planting Assessment: Stand counts were made on May 12 and May 26. Open bolls were counted on September 10.

Harvest: Plants were harvested on September 28.

Results: Significant differences in seedling stand were observed at 21 and 35 days after planting. At 21 days after planting, all Quadris treatments produced a significantly greater stand than the black seed control and Protege + Allegiance + Ascend seed treatment (Table 1). By 35 days after planting Quadris at 8.35 fluid ounces per acre and Protege + Allegiance + Quadris produced a significantly greater stand than all other treatments (Table 1). All fungicide treatments did produce a significantly greater stand than the control. The skip index rating at 21 days after planting found all fungicide treatments produced significantly more uniform stands than the black seed control and the Protege + Allegiance + Ascend seed treatment (Table 1).

No differences in the percent of open bolls were observed between any treatments (Table 2). Seed cotton yields ranged from 3262.1 pounds per acre to 1459.6 pounds per acre for the Protege + Allegiance + Quadris and the untreated black seed control treatments, respectively (Table 2). All fungicide treatments produced significantly greater yields than the black seed control.

TABLE 1. EFFECT OF QUADRIS ON COTTON SEEDLING DISEASE AS MEASURED BY COTTON STAND, SKIP INDEX, AND PLANT VIGOR AT 21 AND 35 DAYS AFTER PLANTING, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate fl oz/cwt	Emergence per 10 ft of row 21 DAP	Emergence per 25 ft of row 35 DAP	Skip Index 21 DAP	Vigor Rating 34 DAP
Untreated Control-black seed	—	5.3 d	8.5 e	37.3 a	3.1 a
Quadris	5.56 fl oz/ac	20.3 ab	43.8 b	8.5 de	1.8 d
Quadris	8.35 fl oz/ac	27.5 a	53.5 a	8.5 de	1.8 d
Terraclor	7.4 fl oz/1000 ft	13.5 bc	40.8 b	12.5 cde	2.2 bcd
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	18.0 b	39.5 b	11.3 de	2.3 bcd
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	8.5 cd	20.0 d	27.5 b	2.8 ab
Protege + Allegiance + Quadris (Seed treatment)	40 ppm + 0.75 fl oz/cwt	20.8 ab	55.8 a	7.8 e	1.9 cd
Ridomil Gold	0.040 lb ai/ac	14.5 bc	26.5 cd	18.0 c	2.6 abc
Ridomil Gold + Flint	0.40 lb ai/ac + 0.125 lb ai/ac	16.0 bc	29.5 c	14.0 cd	2.3 bcd
LSD (0.05)		7.8	9.3	5.9	0.7

TABLE 2. EFFECT OF QUADRIS ON COTTON MATURITY AND SEED COTTON YIELD, TENNESSEE VALLEY RESEARCH AND EXTENSION CENTER, BELLE MINA, AL, 1999

Treatment	Rate	Open Bolls %	Seed Cotton Yield lb/ac
Untreated Control-black seed	—	50.9 a	1459.6 d
Quadris	5.56 fl oz/ac	58.5 a	3062.9 a
Quadris	8.35 fl oz/ac	56.2 a	3164.1 a
Terraclor	7.4 fl oz/1000 ft	49.1 a	2997.6 ab
Ridomil + Terraclor	0.75 oz/1000 ft + 7.4 fl oz/1000 ft	49.4 a	3040.1 ab
Protege + Allegiance + Ascend (Seed treatment)	40 ppm + 0.75 fl oz/cwt	56.3 a	2566.6 c
Protege + Allegiance + Quadris (Seed treatment)	40 ppm + 0.75 fl oz/cwt	63.8 a	3262.1 a
Ridomil Gold	0.040 lb ai/ac	55.3 a	2703.7 bc
Ridomil Gold + Flint	0.40 lb ai/ac + 0.125 lb ai/ac	53.7 a	2759.2 bc
LSD (0.05)		16.8	382.4

Evaluation of Selected Fungicides for Control of Cotton Boll Rot Disease, Gulf Coast Research and Extension Center

Objective: To determine effects of selected fungicides on cotton boll rot and yield, by conducting a cotton boll rot fungicide test.

Location: Gulf Coast Research and Extension Center, Fairhope, AL

Cultivar: DPL 33B

Planting:

Date: May 19, 1999

Experimental Design: Randomized complete block with five replications.

Plot Design: Two-row plots, rows 40 feet long, 38 inches wide row spacing. Alleys were bush hogged to create a 10 foot alley at defoliation to facilitate harvest.

Seeding Rate: 5 seed per foot of row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System.

Application of Treatments: All fungicides were applied as a foliar spray using TX-12 cone nozzles mounted on ground slides spraying upward with two nozzles per row calibrated to deliver 26 GPA at 75 PSI.

Fungicide Applications: Full bloom applications were made on August 3, and boll cracking applications were made on September 8.

Planting Assessment: Stand counts were made on June 9, 1999

Disease Assessment: Disease ratings were made on October 13, 1999.

Harvest: Plants were harvested on November 3.

Results: Quadris 2SC, Benlate 50 WP, Tilt, Terraclor 4F, and Rovral 4F all significantly reduced the number of rotted cotton bolls as compared to the control (see table). Cotton boll rot was not significantly reduced by two applications (full bloom + boll cracking) of any of the fungicides compared to the full bloom and boll cracking single applications. Seed cotton yields ranged from 2895 pounds per acre to 2111 pounds per acre for the Rovral 4F applied at full bloom and Benlate 50WP applied at boll cracking, respectively. There were no significant differences in yields among treatments; however, full bloom applications increased cotton yield an average of 77 pounds per acre compared to the control.

**EFFECT OF SELECTED FOLIAR FUNGICIDES ON COTTON BOLL ROT AND SEED YIELD,
GULF COAST RESEARCH AND EXTENSION CENTER, FAIRHOPE, AL, 1999**

Treatment	Rate per acre	Spray Schedule	Diseased Bolls number	Seed Cotton Yield lb/ac
Untreated Control			92 a	2531 abc
Quadris 2 SC	0.20 lb	Full bloom	56 bc	2608 abc
Quadris 2 SC	0.20 lb	Full bloom + Boll Cracking	62 bc	2472 abc
Quadris 2 SC	0.20 lb	Boll Cracking	57 bc	2159 bc
Benlate 50WP	0.10lb	Full bloom	49 bc	2667 ab
Benlate 50WP	0.10lb	Full bloom + Boll Cracking	52 bc	2190 bc
Benlate 50WP	0.10lb	Boll Cracking	73 ab	2111 c
Tilt	4oz	Full bloom	72 ab	2618 abc
Tilt	4oz	Full bloom + Boll Cracking	59 bc	2348 bc
Tilt	4oz	Boll Cracking	38 c	2331 bc
Terraclor 4F	16 oz	Full bloom	59 bc	2254 abc
Terraclor 4F	16 oz	Full bloom + Boll Cracking	55 bc	2557 abc
Terraclor 4F	16 oz	Boll Cracking	61 bc	2434 abc
Rovral 4F	4 oz	Full bloom	44 c	2895 a
Rovral 4F	4 oz	Full bloom + Boll Cracking	63 bc	2419 abc
Rovral 4F	4 oz	Boll Cracking	58 bc	2286 bc
LSD (0.05)			26.5	526.5

Evaluation of Selected Fungicides for Control of Cotton Boll Rot Disease, Monroeville Experiment Field

Objective: To determine effects of selected fungicides on cotton boll rot and yield by conducting a cotton boll rot fungicide test.

Location: Monroeville Experiment Field, Monroeville, AL

Cultivar: Paymaster 1220 BR/RR

Planting:

Date: May 5, 1999

Experimental Design: Randomized complete block with five replications.

Plot Design: Two-row plots, rows 40 feet long, 36 inches wide row spacing and 20 foot alleys

Seeding Rate: 5 seed per foot of row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. The field was not irrigated.

Application of Treatments: Fungicides were applied as a broadcast spray utilizing a CO₂-charged, backpack system with a two row boom equipped with flat tip nozzles (8001) calibrated to deliver 10 GPA at 30 PSI.

Fungicide Applications: Full bloom applications were made on August 2, and boll cracking applications were made on September 8.

Disease Assessment: Disease ratings were made on October 13, 1999.

Harvest: Plants were harvested on October 29.

Results: Boll rot was not observed due to the intense drought. Seed cotton yields ranged from 1612 pounds per acre to 1408 pounds per acre for the Quadris 2SC full bloom application and the Rovral 4F full bloom plus boll cracking application, respectively (see table). There were no significant differences in yield among treatments.

**EFFECT OF SELECTED FOLIAR FUNGICIDES ON COTTON BOLL ROT AND SEED YIELD,
MONROEVILLE EXPERIMENT FIELD, MONROEVILLE, AL, 1999**

Treatment	Rate per acre	Spray Schedule	Seed Cotton Yield lb/ac
Untreated Control			1536 ab
Quadris 2 SC	0.20 lb	Full bloom	1612 a
Quadris 2 SC	0.20 lb	Full bloom + boll cracking	1583 ab
Quadris 2 SC	0.20 lb	Boll cracking	1548 ab
Benlate 50WP	0.10 lb	Full bloom	1562 ab
Benlate 50WP	0.10 lb	Full bloom + boll cracking	1606 ab
Benlate 50WP	0.10 lb	Boll cracking	1518 ab
Tilt	4 oz	Full bloom	1562 ab
Tilt	4 oz	Full bloom + boll cracking	1461 ab
Tilt	4 oz	Boll cracking	1583 ab
Terraclor 4F	16 oz	Full bloom	1551 ab
Terraclor 4F	16 oz	Full bloom + boll cracking	1423 ab
Terraclor 4F	16 oz	Boll cracking	1493 ab
Rovral 4F	4 oz	Full bloom	1519 ab
Rovral 4F	4 oz	Full bloom + boll cracking	1408 b
Rovral 4F	4 oz	Boll cracking	1528 ab
LSD (0.05)			200.56

Evaluation of Quadris and Benlate Fungicides for Soybean Foliar Disease Control, Monroeville Experiment Field

Objective: To evaluate Quadris and Benlate fungicides, applied at the R3 and R5 stages of soybean growth, for control of soybean foliar disease.

Location: Monroeville Experiment Field, Monroeville, AL

Cultivar: Carver

Planting:

Date: May 18, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 27 feet long, 36 inches wide, blocks separated by 14-foot alley.

Seeding Rate: 10 seed per foot of row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. The field was not irrigated.

Application of Treatments: Fungicides were applied as a broadcast spray utilizing a CO₂-charged, backpack system with a two row boom equipped with two flat tip nozzles (8001) per row calibrated to deliver 10 GPA at 30 PSI.

Disease Assessment: Foliar disease ratings were made on July 26, August 26, and September 8.

Harvest: Plants were harvested on September 28.

Results: Monroeville suffered a severe drought during the months of July, August, and September of 1999. Foliar diseases were not observed on any date rated. Yields ranged from 17.39 to 21.95 bushels per acre for the Quadris 2SC R5 application and Quadris 2SC R3 application, respectively (see table). The Quadris 2SC 0.15 pounds per acre active ingredient per acre R5 application had a significantly lower yield than all other treatments.

**EFFECT OF QUADRIS 2SC AND BENLATE 50 WP ON SOYBEAN YIELD,
MONROEVILLE EXPERIMENT FIELD, MONROEVILLE, AL, 1999**

Treatment	Rate ai/ac	Timing	Yield lb/ac
Untreated Control		—	20.50 a
Quadris 2SC	0.15 lb	R3	21.95 a
Quadris 2SC + NIS	0.15 lb + 0.25 %	R3	20.16 a
Quadris 2SC	0.20 lb	R3	20.20 a
Quadris 2SC	0.15 lb	R3 + R5	21.38 a
Quadris 2SC	0.15 lb	R5	17.39 b
Quadris 2SC + NIS	0.15 lb + 0.25 %	R5	20.38 a
Quadris 2SC	0.20 lb	R5	20.43 a
Benlate 50WP	0.50 lb	R3	20.97 a
Benlate 50WP	0.50 lb	R3 + R5	20.68 a
LSD (0.05)			2.60

Evaluation of Selected Seed Treatments, In-furrow, and Foliar Sprays for Soybean Stem Canker Control, Monroeville Experiment Field

Objective: To evaluate selected fungicides, applied at planting, for control of soybean foliar disease.

Location: Monroeville Experiment Field, Monroeville, AL

Cultivar: TV5866RR

Planting:

Date: May 17, 1999

Experimental Design: Randomized complete block with five replications

Plot Design: Two-row plots, rows 25 feet long, 36 inches wide, blocks separated by 20-foot alley.

Seeding Rate: 10 seed per foot of row.

Cultural Practices: All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. The field was not irrigated.

Application of Treatments: Fungicides were applied either as a seed treatment, an in-furrow spray or as a foliar broadcast spray. All in-furrow sprays were applied with flat tip nozzles (8002E) calibrated to deliver 20 GPA at 30 PSI. The foliar fungicides were applied at the 2 to 4 trifoliolate stage (V2) as a broadcast spray utilizing a CO₂-charged, backpack system with a two row boom equipped with two flat tip nozzles (8001) per row calibrated to deliver 10 GPA at 30 PSI.

Planting Assessment: Stand counts were made on June 9, 1999.

Disease Assessment: Foliar disease ratings were made on August 2, August 26 and September 8

Harvest: Plants were harvested on September 28.

Results: Seedling stands at 23 days after planting ranged from 114 to 182 plants for the LS 275 and the Rovral 4F treatments, respectively (see table). Emergence was significantly reduced by Quadris applied in-furrow and the seed treatments LS 275 and LS 022 + Allegiance as compared to the control. Plants per foot or row ranged from 4.56 to 7.31 for the LS 275 and Rovral 4F treatments, respectively. The skip index indicated the untreated control, Rovral, and Quadris 2SC (foliar application) produced a significantly more uniform stand than all other treatments. Stem canker was not observed during this trial. Yields ranged from 25.44 to 19.42 bushels per acre for the Quadris 2 SC (foliar application) and ACT, respectively.

**EFFECT OF FUNGICIDES ON SOYBEAN STAND, SKIP INDEX, AND YIELD,
MONROEVILLE EXPERIMENT FIELD, MONROEVILLE, AL, 1999**

Treatment	Rate	Timing	Emergence ¹ 23 DAP	Plants per ft of row 23 DAP	Skip Index ² 23 DAP	Yield bu/ac
Untreated Control		—	171.80 a	6.87 a	2.80 c	20.33 b
Quadris 2SC	0.10 oz ai/1000 rft	in-furrow spray	125.60 bc	5.02 bc	12.20 ab	20.16 b
Quadris 2SC + NIS	0.15 oz ai/1000 rft	in-furrow spray	117.20 c	4.69 c	12.20 ab	20.71 ab
Quadris 2SC	0.10 oz ai 1000 rft + 0.20 lb ai/ac	in-furrow + 2-4 trifoliolate	114.40 c	4.58 c	14.60 a	20.63 ab
Quadris 2 SC	0.20 lb ai/ac	2-4 trifoliolate	157.00 ab	6.28 ab	1.80 c	25.44 a
LS 275	0.2 oz/cwt	seed treatment	114.00 c	4.56 c	11.40 ab	21.21 ab
LS 022 + Allegiance	0.2 oz + 0.1 oz/cwt	seed treatment	129.00 bc	5.16 bc	8.60 abc	21.75 ab
RTU Vitavax Thiram + Allegiance	6.0 oz + 0.375 oz/cwt	seed treatment	150.80 abc	6.03 abc	10.00 ab	23.32 ab
Rovral 4CF	4.0 oz/ac	in-furrow spray	182.80 a	7.31 a	3.00 c	23.45 ab
ACT	6.0 oz/ac	in-furrow spray	146.20 abc	5.85 abc	7.40 bc	19.42 b
LSD (0.05)			38.99	1.56	6.86	4.96

¹Number of live soybean plants per 25 ft of row; all rows received 250 seed.

²Skip index ratings on 25 ft of row. Ratings scale: 1 = 1 ft. gap; 2 = 2 ft. gaps; 3 = 3 ft. gap;25 = 25 ft gap.
Means compared using Fisher's protected least significant difference test.

Chemicals Used in the Soil-borne and Foliar Disease Studies

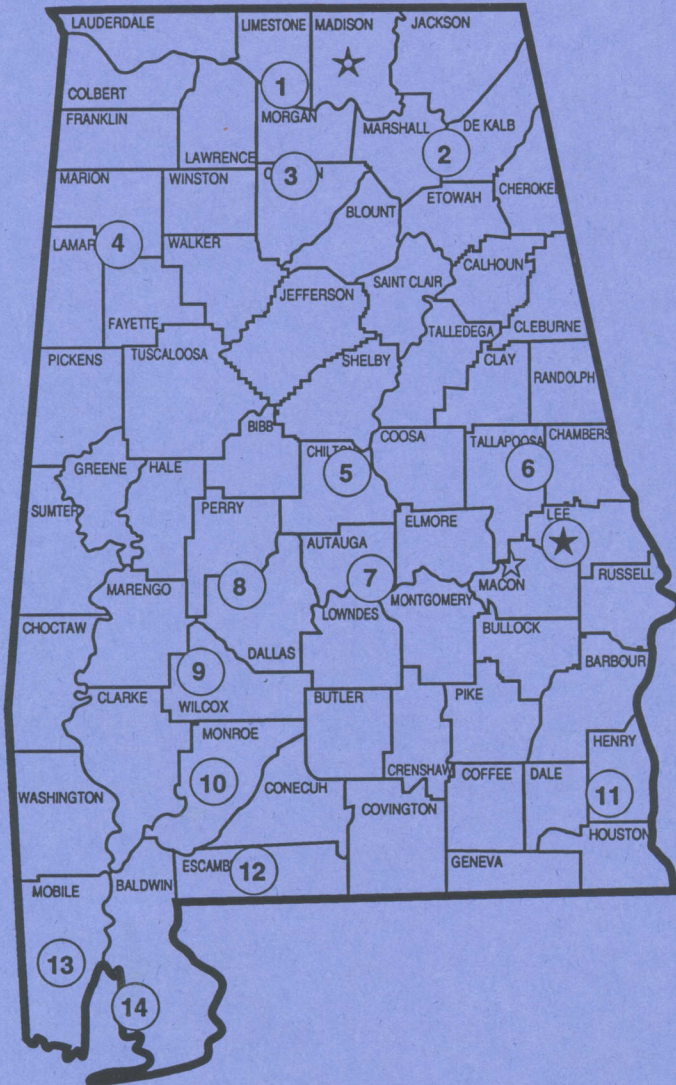
Product	Manufacturer	Composition
ACT	Quick-Gro, Inc. Route 2 Box 75 Lake Providence, LA 71254	unavailable
Allegiance - FL	Gustafson, Inc. 1400 Preston Road, Suite 400 Plano, TX 75093	Metalaxyl- (2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester
Apron FL	Novartis P. O. Box 18300 Greensboro, NC 27419	Metalaxyl -(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester
Apron XL	Novartis P. O. Box 18300 Greensboro, NC 27419	Metalaxyl -(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester
Benlate 50 WP	DU Pont Agricultural Products Walker's Mill, Barley Mill Plaza Wilmington, DE 19898	Benomyl Methyl 1-(butylcarbomonyl)-2-benzimidazolecarbamate
LS 022	Gustafson, Inc. 1400 Preston Road, Suite 400 Plano, TX 75093	unavailable
LS 275	Gustafson, Inc. 1400 Preston Road, Suite 400 Plano, TX 75093	unavailable
LS 288	Gustafson, Inc. 1400 Preston Road, Suite 400 Plano, TX 75093	unavailable
Maxim	Novartis P. O. Box 18300 Greensboro, NC 27419	Fludioxonil (R)-2-(2,6-dimethylphenyl)-metnoxyacetyl-amino)-propionic acid methyl ester
NU-Flow M	WILFARM 6401 North Oak Trafficway Gladstone, MO 64118	unavailable
NU-Flow Film Coat	WILFARM 6401 North Oak Trafficway Gladstone, MO 64118	unavailable
Nu-Flow T	WILFARM 6401 North Oak Trafficway Gladstone, MO 64118	unavailable
Quadris 2SC	Zeneca Ag Products 1800 Concord Pike Post Office Box 15458 Wilmington, DE 19858-5458	Azoxystrobin: methyl (E)-2-{2-[6(2-cyanophenoxy) pyntimifin-4-yloxy]phenyl}-3-methoxyacylate

continued

Chemicals Used in the Soil-borne and Foliar Disease Studies, continued

Product	Manufacturer	Composition
Ridomil Gold PC 11G	Novartis P. O. Box 18300 Greensboro, NC 27419	Pentachloronitrobenzene (R)-2- [[2,6-dimethylphenyl)-methoxacetyamino] -propionic acid methyl ester
Rovral 4CF	Rhone-Poulenc P. O. Box 12014, 2 T. W. Alexander Drive Research Triangle Pk, NC 27709	Iprodione:3-(3,5-dichlorophenyl)-N-(i- methylethyl)-2,4-dioxo-1- imidazolidinecarboxamide
Terraclor 2E	Uniroyal Chemical Inc., Benson Road Middlebury, CT 06749	Etridiazole 5-Ethroxy-3-trichloromethyl-1,2,4- thiadiazole
Terraclor 15G	Uniroyal Chemical Inc., Benson Road Middlebury, CT 06749	Pentachloronitrobenzene
Tilt 2E	Norvartis Post Office Box 18300 Greensboro, NC 27419	Propiconazole:1-[[2-(2,4- dichlorophenyl)-4-propyl-1,3-dioxolan- 2-yl] methyl]-1H-1,2,4-triazole
Terraclor Super X 18.8G	Uniroyal Chemical Inc., Benson Road Middlebury, CT 06749	
Terraclor Super X EC	Uniroyal Chemical Inc., Benson Road Middlebury, CT 06749	Pentachloronitrobenzene 5-Ethoxy-3-(trichloromethyl)-1,2,4- thiadiazole
TSX G/WGB49	Uniroyal Chemical Inc., Benson Road Middlebury, CT 06749	Pentachloronitrobenzene, GB49 - unavailable

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

1. Tennessee Valley Research and Extension Center, Belle Mina.
2. Sand Mountain Research and Extension Center, Crossville.
3. North Alabama Horticulture 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.
13. Ornamental Horticulture Station, Spring Hill.
14. Gulf Coast Research and Extension Center, Fairhope.