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**Final Report to the
Southeastern Peanut Research Initiative
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**“Integrated Management of Tomato Spotted Wilt, Fungal Diseases, and Insect
Pests of Peanut”**

Principal Investigators

Albert Culbreath, Dept. Plant Pathology, Univ. of Georgia, P.O. Box 748, Tifton, GA 31793-0748
(spotwilt@tifton.uga.edu).

James R. Weeks, Auburn Univ., Wiregrass Res. and Ext. Center, P.O. Box 217 Headland, AL 36345.
(jweeks@acesag.auburn.edu)

Report Areas:

- A. One field test has been conducted in Tifton in which the cultivars/breeding lines Georgia Green, DP-1, C-11-239, C 34-24, Georgia 01R, Georgia 02C, AP-3, and Carver were combined with twin vs. single row patterns for management of spotted wilt and white mold. All cultivar and row pattern treatments are also subjected to two fungicide treatments. One treatment consisted of a total of 6 applications: Headline, Folicur, Folicur, Folicur, Folicur, Bravo, with initial application at 45 days after planting. The second treatment received 3 sprays: Headline, Folicur, Folicur with initial application at 45 days after planting. All entries responded to increased sprays with lower leaf spot severity. However, there was little difference in yield between the two regimes in most cultivars. It should be pointed out that while leaf spot was severe, there was little white mold or Rhizoctonia. There was no difference between twin rows or single rows for leaf spot severity, but as observed previously, twin row patterns had less tomato spotted wilt.
- B. Two field tests were conducted in Tifton, in which cultivars or breeding lines were combined with tillage treatments for management of spotted wilt and leaf spot. Graduate students Emily Cantonwine and Sara Gremillion headed the efforts in those trials. In one, Georgia Green, C-99R, DP-1, C-11-2-39, C 34-24, C 28-305, Hull were planted in strip-till and conventional till plots, and subjected to 1) no fungicide, 2) Bravo 14-day schedule, 3) Bravo 21-day schedule, or 4) Bravo 28 Day schedule. In the second experiment, Georgia Green, Bolivian cultivar “Bayo Grande”, C-99R, MDR-98, and 4 breeding lines derived from crosses of Bayo Grande and MDR-98 were likewise planted in strip-till vs. conventional tillage, with fungicide treatments of Nontreated, Folicur on a 14-day schedule, and Folicur at 1, 2, or 3 applications total. All plots were evaluated for leaf spot, spotted wilt, and white mold. The emphasis was on maintaining yield and grade while cutting inputs associated with fungal disease control and improving management of tomato spotted wilt in peanut. Results indicate that new cultivars DP-1, and Georgia 01R can be grown with fewer fungicide applications than required for Georgia Green. The breeding lines C 11-2-39 and C 34-24, and several breeding lines developed from the cross of MDR-98 and Bayo Grande also show much promise for suppressing both leaf spot and spotted wilt epidemics. New cultivar AP-3 shows excellent field resistance to TSWV, but appears to be more susceptible to leaf spot than Georgia Green. As in 2002, use of reduced tillage practices suppressed leaf spot and spotted wilt epidemics in most cultivars and breeding lines evaluated, although overall pressure from spotted wilt was much less than in 2002.

- C. Four field tests were conducted in each of Tifton, GA and Marianna, FL in which new peanut cultivars and breeding lines are being screened for resistance to Tomato spotted wilt. There are several new lines that show promise for significant improved field resistance compared to Georgia Green. Of the lines evaluated, F NC94022-1-2-1-1-b3-B from the University of Florida and C-11-2-39 from the USDA-ARS show the highest level of resistance to tomato spotted wilt virus. New cultivars DP-1 and AP-3 continued to show very good levels of resistance to spotted wilt, and each were assigned a risk value of "10", compared to the risk value of 20 and 15 for cultivars Georgia Green and C-99R, respectively.
- D. Three studies at the Wiregrass Research & Extension Center in Headland, AL and one at the Gulf Coast Research & Extension Center in Fairhope, AL were completed during 2003 by Ron Weeks and Research Associate Lee Campbell. Data summary and analyses were completed during the winter months. All work for this project has been completed and this is the final report for work conducted in Alabama.
- E. One study at Headland evaluated 4 peanut cultivars- Georgia Green, Andru II Carver, and ANorden for insect and disease pests. Treatments on each of these cultivars consisted of aldicarb and phorate insecticides applied in-furrow at planting, acephate applied to peanut seed in the hopper, and an untreated control. Evaluations were made for thrips damage, tomato spotted wilt(TSW), and leafspot. Peanut yields and grades were compared. All insecticide treatments on all cultivars provided significantly better control of thrips compared to the untreated peanuts. There were no differences in thrips damage among treatments. TSW was generally reduced in all insecticide treated peanuts for all four cultivars. ANorden and Carver cultivars had lower TSW incidence than the other cultivars. Georgia Green and ANorden had similar levels of leafspot incidence, with Carver somewhat higher and Andru II significantly higher than the other 3 cultivars. Carver had the highest yields of all cultivars across insecticide treatments with Georgia Green and Anorden intermediate and Andru II had significantly lower yields.
- F. Another study at Headland evaluated 4 late-maturity peanut cultivars- C99R, DP-1, Ga 01R and Hull for insect and disease pests. Treatments on each of these cultivars consisted of aldicarb and phorate insecticides applied in-furrow at planting, acephate applied to peanut seed in the hopper, and an untreated control. Evaluations were made for throps damage, tomato spotted wilt (TSW) and leafspot. Peanut yields and grades were also compared. DP-1 and Ga 01R had significantly reduced stands compared to the other cultivars. Some plots were only 35-50 % of the normal 4 plants/ foot stand. Even with poor stands TSW final incidence was not significantly higher in these two cultivars. Thrips damage among insecticide treatments did differ. Damage was significant in all untreated peanuts. In C-99R, Hull, and DP-1 aldicarb treated peanuts had lowest thrips damage. DP-1 and Ga 01R had significantly less leafspot than C-99 R peanuts. Leafhopper visual damage ratings also indicated that Ga 01R had significantly less "hopper burn" than all other cultivars. C-99R and Hull had highest yields which was undoubtedly related to the plant stand. Considering the stand; however, Ga01 R had surprisingly good yields (3500-3800 lbs./Acre) with average stand counts of less than 2 plants/ foot.

- G. A third study at Headland evaluated insect and disease pests of minimum-till peanuts. Wheat , rye, oat winter cover crops and a turned conventional treatment were evaluated. Georgia Green peanuts were planted into the killed cover crops and in the fallow conventional plots. Insects and diseases were monitored during the growing season. In 2003 no differences in foliage feeding insects were detected among the treatments. No significant damage from leafhopper or three-cornered alfalfa hoppers occurred to enable a good comparison. There were differences among treatments for soil insects. There were significantly more wireworms in the rye, wheat and oat minimum-till planted peanuts than the conventionally planted peanuts. There were significantly higher peanut root-knot nematode populations prior to harvest in the rye treatments compared to the wheat, oat or conventionally planted peanuts.
- H. One study conducted in Fairhope evaluated insect and disease pests of 13 cultivars. Nine commercial and 4 experimental lines- Andru II, AP-3, Carver, C-99R, DP-1, GA 02C, Georgia Green, Hull, ANorden, UF 000324, UF 00620, UF 2328, and UF 98324. GA 02C had significantly less TSW than all other peanuts. Carver and UF 00620 had higher late leafspot damage and peanut rust than the other peanuts. Andru II and UF 00620 had significantly lower yields than other peanut lines. Low insect pressure did not allow for any comparisons.