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Title: Continued Development of Integrated Disease Management Systems Incorporating Resistant Peanut Lines, Cultural Practices and Pesticides for Control of Tomato Spotted Wilt, Fungal Diseases, Nematodes, and Insect Pests of Peanut

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Objectives and Description of Project
1) Integrate new peanut cultivars and breeding lines into multiple disease management regimes including combinations of peanut cultivars, tillage system, planting date, row pattern, seeding rates, and chemical inputs for management of tomato spotted wilt, fungal diseases, plant parasitic nematodes, and certain insect pests of peanut.

2) Determine how these interactive factors of new cultivars, cultural practices, etc. should be weighted for the spotted wilt risk assessment index for tomato spotted wilt and fungal disease risk indices for fungal diseases as well as recommendations for other diseases/insects.

3) Determine the response of new TSWV resistant cultivars to imidacloprid (Admire) insecticide for management of spotted wilt and thrips.

Results
Commercial peanut cultivars were screened at the Plant Breeding Unit (PBU) in Tallassee, AL; Sand Mountain Research and Extension Center (SMREC) in Crossville, AL; Wiregrass Research and Extension Center (WGREC) in Headland, AL, and the Gulf Coast Research and Extension Center (GCREC) in Fairhope, AL for their reaction to tomato spotted wilt virus, early and late leaf spot, rust, white mold, and peanut root knot nematode under short and extended rotation regimes. Reports summarizing fungicide program and cultivar disease assessment trials were submitted for publication in the online journal Fungicide and Nematicide Test Results (6) and Biological and Cultural Control of Plant Diseases (4). In Alabama, a complete summary of all peanut disease control field trials will be published in the annual Peanut Disease Research Report in March 2007. Commercial peanut cultivars were screened at the Plant Breeding Unit (PBU) in Tallassee, AL; Sand Mountain Research and Extension Center (SMREC) in Crossville, AL; Wiregrass Research and Extension Center (WGREC) in Headland, AL, and the Gulf Coast Research and Extension Center (GCREC) in Fairhope, AL for their reaction to tomato spotted wilt virus, early and late leaf spot, rust, white mold, and peanut root knot nematode under short and extended rotation regimes. Due to low disease pressure at SMREC, no conclusions concerning the reaction of commercial runner and Virginia-type peanut lines could be drawn. At PBU, overall TSWV pressure was higher in 2006 compared with previous years. Significant difference in cultivar reaction to both TSWV and early leaf spot were seen. Yield for the Virginia peanut lines as well as the mid-season runner peanuts ranged up to 6000 lb/A. Incidence of TSWV reached damaging levels in the cultivar evaluation conducted at the GCREC. Georgia Green suffered far heavier virus damage and more disease-related yield loss than other commercial peanut cultivars. At WGREC, sizable differences in cultivar reaction to TSWV, leaf spot diseases, white mold as well as yield were seen. Cultivars with the best disease resistance and yield package here were AP-3, GA03L, and GA01R. Recommended fungicide programs were evaluated the WGREC and GCREC. At WGREC, Artisan, Folicur, and Absolute fungicides gave good control of CBR, while Moncut fungicide

treatments appeared to increase the severity of this disease, particularly on the peanut cultivar AP-3. In another study, effectiveness of Bravo Ultrex and the low rate of Headline 2.09E for the control of leaf spot and soilborne diseases as well as yield response did not decline when application intervals were extended from 2 to 3 weeks and the total number of fungicide application reduced from 7 to 5. Performance of the above fungicide programs noticeably declined at the monthly treatment intervals. When compared to the recommended 2-week calendar schedule in a second study, the AU-Pnuts advisory treatment cut the number of Bravo Ultrex applications by two. Despite the relatively dry weather pattern for much of the 2006 production season, the elimination of those two Bravo Ultrex applications consistently resulted in a significant increase in the spotting and premature leaf shed due to early and leaf spot diseases. An increase in SD incidence was also seen with the AU-Pnuts advisory treatment for two of the four fungicide programs. That increased disease pressure associated with the advisory program was reflected in lower yields for three of the four fungicide programs. Only the Headline 2.09E program did not follow the trend of lower yield response with the AU-Pnuts advisory treatment. At the GCREC, rust ratings for the Echo 720 as well as both Headline treatments on the peanut cultivar AP-3 were not greatly influenced by application interval (Table 3). For GA02C and Tifrunner, rust control declined when application intervals for Echo 720 and either the low rate or high rate of Headline 2.09E, respectively. Application interval had no impact on the incidence of white mold on AP-3, GA02C, or Tifrunner. Despite significant differences in rust or leaf spot control with one or more fungicide treatments on GA02C and Tifrunner, no significant differences in yield were noted. On AP-3, yields were lower for the 4-week Echo 720 compared with the 2-week treatment. Fungicide program evaluations of susceptible and partially resistant peanut cultivars have been published on-line (http://www.ag.auburn.edu/aaes/communications/bulletins/bull663.pdf) AAES Bulletin 663 and (http://www.ag.auburn.edu/aaes/communications/bulletins/bull665.pdf) AAES Bulletin 665. A summary of 2006 cultivar evaluations have been posted at http://www.aces.edu/timelyinfo/PlantPathology/2007/January/pp620.pdf. Additional reports summarizing 2006 field studies will be published in the coming months.

This report was prepared by Austin Hagan