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Final Grant Report
Fund 367353(APPA-RIA03-DISEASE MGT)
July 21, 2009

Title: Integrated Disease Management of Peanut

Project Leader (Alabama):

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Report: Studies were conducted to assess the efficacy of recommended fungicide programs for the control of diseases and their impact on the yield of peanut. Weather patterns in 2008 were conducive to the development of early and late leaf spot in peanut. At the WGREC, highest leaf spot ratings were recorded for the Artisan 3.6F program. While the Abound 2SC program had higher yields than the Evito program, yields for the remaining fungicide programs were similar. While the Headline 2.09EC program gave better leaf spot control compared with the Artisan 3.6E and Abound 2SC programs at GCREC, late leaf spot ratings for the remaining fungicide programs were similar. Also Artisan 3.6E proved less effective, particularly on the peanut cultivar AT3085RO in controlling rust than the Headline 2.09EC and Provost 433SC programs. Despite differences in the control of rust and late leaf spot, yields for all fungicide programs at GCREC were similar. Although Provost 433SC and the Headline 2.09E programs restricted early leaf spot to the mid-canopy and minimized premature defoliation, defoliation levels on the peanut cultivar Georgia Green nearly reached 50% on the Artisan 3.6E-treated peanuts in a study at the PBU in Central Alabama. Stem rot incidence was higher for the Headline 2.09E program than other fungicide programs, all of which had similar damage ratings. Yields for the 10.7 fl oz Provost 433SC and Abound 2SC programs was s higher compared with the other fungicide programs, which had similar yields. Performance of the Peanut Disease Risk Index fungicide programs was evaluated at two sites. At the WGREC, the high risk Bravo Ultrex (7 total applications) as well as high risk 12 fl oz and 18 fl oz Abound 2SC programs gave better leaf spot control than the corresponding medium (5 total applications) and low risk (4 total applications) programs. In addition, leaf spot control was better with the medium compared with low risk 12 and 18 fl oz Abound 2SC programs. With Bravo Ultrex alone, a significant decline in yield was noted between the high risk and remaining medium and low risk schedules. With the 12 fl oz rate of Abound 2SC, similar yields were recorded for the low, medium, and high risk programs. On the disease resistant GA03L cultivar, the same level of control of leaf spot and rust were obtained at the GCREC with the four-application low risk program as was noted with the five- and seven-application, respectively, medium and high risk fungicide programs. In contrast, effective leaf spot, rust, and stem rot control on the more susceptible AT3085RO cultivar was obtained with five- and seven-application medium and high risk fungicide programs but not the four-application low risk program. Also lower yields were note between the low and medium risk programs on AT3085RO but not on GA03L cultivars. Among eight cultivars tested at the WGREC, Tifguard and York had among the lowest ratings for TSWV, leaf spot diseases, and stem rot. The cultivars GA03L and Florida 07 showed partial resistance to TSWV, leaf spot diseases, and stem rot. Generally, peanut cultivars that displayed good disease resistance had the highest yields. However, peanut grade was not associated with reduced disease damage. Georgia Green, which suffered considerable TSWV, leaf spot, and stem rot damage, was the lowest yielding cultivar. Due to low TSWV pressure, the Thimet 20G soil insecticide treatment had little impact on the incidence of this disease and on peanut yield. At GCREC in 2008, the unusually low yield of the cultivar AT3085RO is directly attributed to heavy stem rot damage as well as noticeable leaf spot

and rust damage. Peanut cultivars that had partial resistance to TSWV, leaf spot, rust, and stem rot were GA02C, York, GA03L, and Florida 07. Highest yields were recorded for Florida 07, Georgia Green, GA02C, and McCloud. Despite low TSWV pressure at the GCREC site, a significant yield gain and reduction in TSWV incidence was obtained with Thimet 20G soil insecticide. Of the cultivar tested at the PBU site, the cultivars AT3085RO, Georgia Green, and McCloud had the highest leaf spot and stem rot ratings. In contrast, lowest leaf spot and stem rot intensity was recorded for Florida 07, GA03L, Tifguard, York, and to a lesser extent AP-3. Generally, cultivars that had the lowest disease ratings had the highest yield. In the PBU rotation study, crop sequence had a significant impact on the yield of cotton and corn as well as diseases and yield of peanut. Peanut yields were higher when corn and cotton followed peanut compared with peanut following peanut. With both cotton and corn, yield gains that were obtained after one and two years of peanut were similar. As a result, maximum corn and cotton yields can be maintained in a one year out rotation with peanut. When compared with continuous peanuts, a reduction in early leaf spot ratings was seen only with the peanuts cropped behind two years of cotton. One or two years of cotton or corn between peanut crops dramatically reduced the incidence of stem rot as well as significantly increasing peanut yield. Regardless of the crop sequence, sizable yield gains were obtained with a mid-summer application of the fungicide Moncut 70DF. In the rotation study at the GCREC, peanut cropping frequency significantly influenced the level of late leaf spot but not stem rot or TSWV in peanut. Highest leaf spot levels were noted in the plots maintained in continuous peanut production for six consecutive years. Peanut cropped after one or two years of corn or cotton had similar leaf spot ratings. Yields were lower for the continuous peanut and peanut – cotton rotation sequences. Due to the low stem rot pressure, the application of Moncut 70DF fungicide had no impact on disease control or on peanut yield.

Results of individual fungicide and cultivar screening trials as well as reports summarizing other Plant Pathology related research projects can be viewed at <http://www.ag.auburn.edu/aaes/communications/entplp/entplp12a.pdf> and <http://www.ag.auburn.edu/aaes/communications/entplp/entplp12b.pdf>. In addition, abstracts summarizing research projects supported by this grant have been submitted for the 2009 annual meetings of the American Peanut Research and Education Society and the American Phytopathological Society. Summary reports for many of the projects supported by this grant have been published on-line in Plant Disease Management Reports <http://www.plantmanagementnetwork.org/pub/trial/PDMR/volume3/>.

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NPB Final Report
Fund 367353 (APPA-RIA03-DISEASE MGT)
April 13, 2009

Title: Integrated disease management of Peanut.

Project Leader (Alabama):

Austin Hagan, Department of Entomology and Plant Pathology

Report: Summaries of the peanut field research studies, including those pertaining to fungicide screening, expert system validation, cultivar reaction to diseases, planting date, and management inputs as they relate to disease control in peanut that were conducted at four outlying AAES units have been compiled and submitted to the AAES Publication Unit for final editing and publication on-line as Volume 1 and 2 of the 2008 Peanut Disease Control Field Trials, Entomology and Plant Pathology Series No. 12. In addition, 15 reports summarizing fungicide and cultivar screening trials in peanut were submitted and published in the on-line publication Plant Disease Management Reports in March 2009. Abstracts highlighting the results of field studies supported by this project will be presented at the 2009 American Peanut Research and Education Society and American Phytopathological Society Annual Meetings.

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