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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT
RESEARCH INITIATIVE
FINAL REPORT FOR WORK
DONE UNDER RESEARCH AGREEMENT

Final Report

August 28, 2008

INSTITUTION: University of Georgia

PROJECT TITLE: New Management Approaches to Control TSWV and the Effect of
Mixed Infections with TSWV and Other Viruses on Yield in Peanut

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GACCP Control NO.: 4-881-653-5

EXPIRATION DATE: December 31, 2007 NPB CONTACT: Emory Murphy
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FINAL REPORT:

The seed from germplasm lines we obtained was contaminated with fungi that resulted in very poor germination despite fungicide applications. This trial will be conducted this year.

During the survey for peanut viruses across South Georgia we collected a total of 1,514 symptomatic peanut samples in 50 counties. Each sample was analyzed using ELISA tests for Tomato spotted wilt virus (TSWV), Potyvirus and Cucumber mosaic virus (CMV). Seventy-five percent of the symptomatic leaves were positive for TSWV, 52% for potyviruses and 1.2% for CMV. Using RT-PCR we identified the following potyviruses: *Peanut mottle virus*, *Peanut stripe virus* and *Zucchini yellow mosaic virus*. TSWV and potyviruses were found in each county surveyed.

Analysis of major and minor soil elements and their ratios to one another were regressed against levels of disease caused by *Tomato spotted wilt virus*. Ranges of the levels (lbs/A) in the soil around the 30 peanut plants for the elements were as follows: Phosphorus [130-494]; Potassium [32-134]; Calcium [310-1332]; Magnesium [46-130]; Sulfur [14-70]; Boron [0.6-1.0]; Copper [2.2-3.6]; Iron [156-382]; Manganese [10-58]; Zinc [6.2-13.4]; and Sodium [22-34]. Regression analysis of these elements and each of their ratios against tomato spotted wilt had absolute r-values ranging from 0.01 to 0.33. Although there were no significant values at the P=0.05 level (standard level of significance), levels of boron and zinc as well as the ratios of calcium with sodium had P values of P=0.1 and the ratio of zinc to sodium had a P value of P=0.07, which is very close to the P=0.05 significance level. What makes these findings extremely interesting is that three of the four elements in these near significant analyses, namely boron, calcium and zinc, were significant at the P=0.05 level or better in a similar study involving tomato spotted wilt and tobacco. These results indicate that the study of the role that elements play in disease expression should be continued.

Peanuts treated with Thimet had fewer symptomatic plants compared to the untreated controls. The effect was very pronounced in susceptible cultivars and less in more resistant

cultivars. A paper has just been published about this study: Response of New Field-Resistant Peanut Cultivars to Twin-Row Pattern or In-Furrow Applications of Phorate for Management of Spotted Wilt. Plant Disease 92:1307-1312