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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT RESEARCH INITIATIVE		PROGRESS REPORT January 12, 2009	
Quarterly Report (September 1-December 31, 2008)			
Institution: University of Georgia			
Project Title: Understanding Climate and Weather Impacts on the Incidence of TSWV and White Mold in Peanut			
Research Agreement No.: 25-21-RD-315-135		Project Investigators: Joel O. Paz, Gerrit Hoogenboom, Robert C. Kemerait, Tim Brenneman, and Rabiou Olatinwo	

Introduction

Tomato spotted wilt virus (TSWV) and white mold (caused by *Sclerotium rolfsii*) are the two most important plant diseases that affect peanuts in Georgia and the Southeast. In 2005, TSWV reduced Georgia peanut crop value by 7.5%, accounting for roughly \$31.7 million in crop damage. Crop damage due to white mold increased from approximately \$6.9 million in 2002 to \$16.9 million in 2005, the second highest since 1998 when approximately \$30.7 million worth of damage was recorded. Variation in level of damage and disease severity can be partly attributed to changing weather patterns during the growing season, and perhaps due to climate variability from one year to the next. A better understanding of the effects of climate and weather patterns on the incidence and severity of TSWV and white mold in peanuts is important and necessary for developing a comprehensive integrated management strategy.

Objective

The goal of this project is to establish a relationship between the El Niño-Southern Oscillation (ENSO) phase, and the incidence of TSWV and white mold.

Progress

Our activities in this quarter continued on the analysis of white mold field experimental data with more focus on impact of weather parameters using field trials data provided by Dr. Tim Brenneman. Weather data from Georgia Automated Environmental Monitoring Network (AEMN) station in Tifton was used for analysis. The accumulated infection day was calculated and evaluated to optimized weather conditions that favors white mold incidence. The infection day was defined as a day when all three conditions below (items a-c) are met.

- a. Average air temperature is between 25-32 °C,
- b. Average soil temperature at 5 cm is between 27-32 °C and
- c. Average RH >85%

Results indicate a significantly higher infection days during 1998 and 1999 growing seasons, which also correspond with the higher incidence level observed from the field trial during the same years (Figure 1). As mentioned in the previous quarterly report, the accumulated infection days were different during El Niño, Neutral and La Niña years. Additional findings indicate a significant contribution by variation in weather pattern and favorable conditions for the

development of white mold which may explain the differences in during El Niño, Neutral and La Niña years.

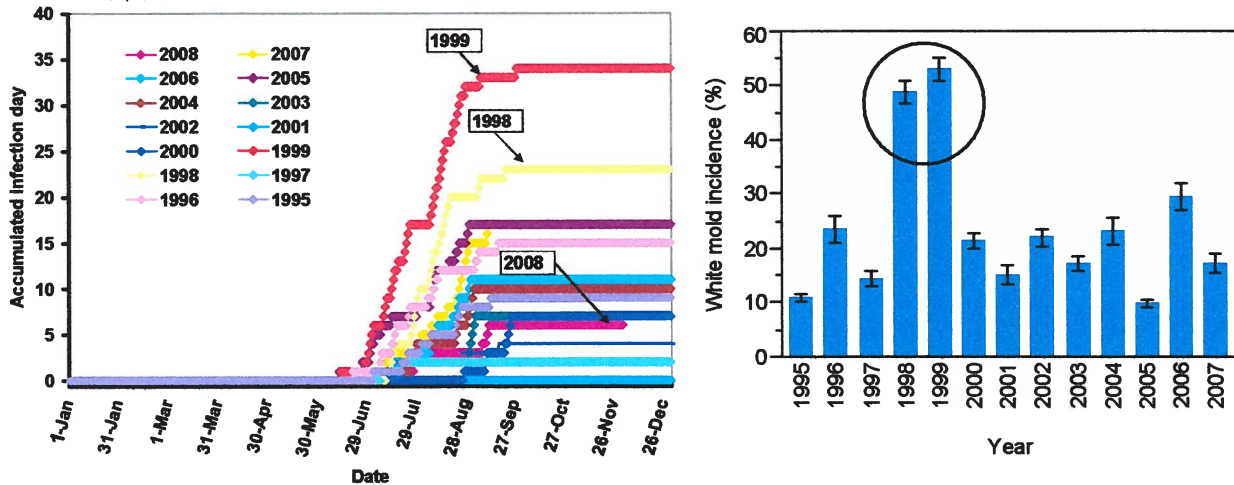


Figure 1. The accumulated infection day and incidence of white mold in peanut at Tifton from 1995 - 2007.

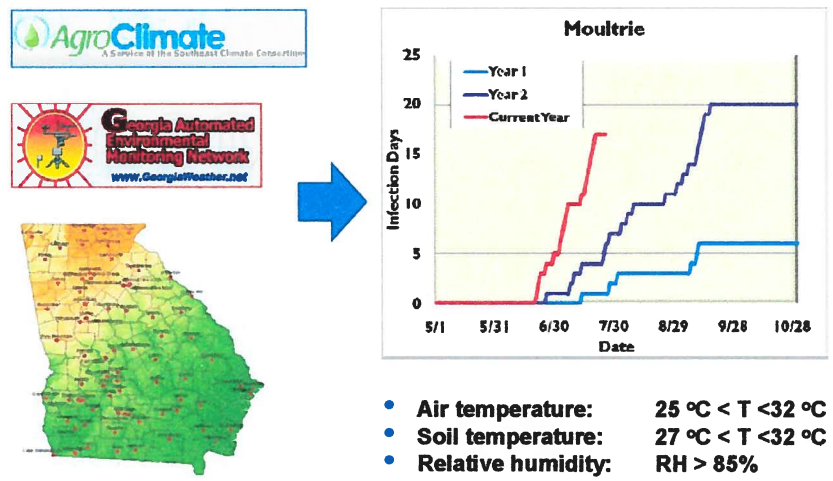


Figure 2. A possible web tool for managing white mold in peanut.

Further analysis will be conducted to determine optimum threshold values of specific weather variables that correlate with white mold in order to develop a user friend online tool (Figure 2) for peanut growers. Progress has also been made toward developing a TWSV risk calculator for managing spotted wilt. Predictions and field survey observations obtained in 2008 will be evaluated for accuracy.

We presented our results to a group of researchers and extension specialists at the Tri-State (AL, GA, FL) TSWV meeting which was held in Fort Gaines, GA on December 15-16, 2008. The workgroup will consider adding a climate/weather component in the next version of the Peanut Disease Risk Index.