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558  
2008

**Project Description:**

Development of Peanut Cultivars with Improved Water Use Efficiency and Resistance to the Peanut Root-knot Nematode and TSWV

C. C. Holbrook et al.

**Project Fiscal Year:**

2008

**Executive Summary:**

Previous progress from this project has resulted in the development of peanut genotypes with relatively high yield and relatively low aflatoxin contamination when grown under drought and heat stress conditions. Continued breeding efforts are needed to improve the yield and grade to develop drought tolerant peanut cultivars. During this year we continued these breeding efforts and conducted numerous field tests containing breeding lines that we are evaluating to assess their tolerance to drought, yield, and grade. These lines were planted in replicated studies in our field at the Gibbs Farm that has ten rain out shelters, and in our field at the Bowen Farm that has three rain out shelters. The shelters were then used to impose heat and drought stress for the 40 days immediately prior to harvest. Plots were visually rated for drought stress, and the yield and aflatoxin contamination was measured. Breeding lines that have relatively high yield and relatively low aflatoxin were identified.

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Final Report 2008 (Quarter ending Dec. 31, 2008)

*Summary*

**Development of Peanut Cultivars with Improved Water Use Efficiency and Combining High Oleic into Peanut Genotypes with Resistance to Peanut Root-knot Nematodes and TSWV**

C. C. Holbrook et al.

**PROGRESS REPORT:**

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Our research group has developed Tifguard, a high yielding cultivar with resistance to the peanut root-knot nematode and TSWV. We have also developed molecular markers for nematode resistance, and for both alleles that confer high oleic fatty acid. During the past year we initiated an accelerated backcross breeding program using marker assisted selection to develop High Oleic Tifguard. We hybridized Tifguard with two high oleic cultivars, Georgia 02C and Florida 07. We used molecular markers to test and select the appropriate plant to use these as parents to develop the first generation of backcross seed.