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

Final Report

June 30, 2006

INSTITUTION: University of Georgia

PROJECT TITLE: Rapid Screening of New Peanut Genotypes

RES. AGR. NO.: 25-21-RF332-428 PROJECT LEADER: Dr. Alex Csinos

GACCP Control NO.: 4-836-653-0

EXPIRATION DATE: June 30, 2006 NPB CONTACT: Dee Houston

NPB Control NO.: 159

FINAL REPORT:

OBJECTIVE

Evaluate new peanut cultivars and breeding lines for resistance to TSWV under controlled conditions by mechanical inoculation of the virus pathogen. Evaluations will include observation of development of local and systemic symptoms and detection of the virus by serological methods (ELISA and/or immunoblotting).

PROJECT SUMMARY

Materials and Methods

We obtained 37 different peanut genotypes for TSWV screening from different researchers throughout the region. Along with the 37 genotypes we selected two additional genotypes (Georgia Green and Sunoleic 97R) for use as controls due to the known nature of Georgia Green being moderately resistant and Sunoleic 97R being very susceptible to TSWV. Twenty seed from each variety were sown into Fafard germination mix for grow-out and placed into a growth chamber with a 16:8 light to dark ratio. The temperature was maintained at 30 degrees Celsius. At approximately 10 days post seeding (about the stage of first leaf opening), the plants were inoculated with TSWV. Two leaflets from each plant were inoculated with TSWV, and the plants were allowed to continue to grow out approximately 14 days. During this time, any TSWV symptom expression was noted. At 14 days post inoculation, tissue from each of the plants was screened for TSWV using Double antibody sandwich-Enzyme linked immunosorbent assay (DAS-ELISA). From each plant, three different tissues were screened; leaf, root, and stem. This entire screening process was repeated a second time for confirmation. The incidence of TSWV infection was analyzed along with the symptomatic expression of TSWV to formulate an index of disease within each variety.

Results

Of the 37 genotypes screened, 6 exhibited a disease index of less than 1 (8 being the highest infection rating and 0 being no infection); F-NC94022-1-2-1-1-b3-B *hypogaea* var. *hirsuta*, C11-2-39, C12-3-114-58, GA 01R, DP-1 and AP-3. By comparison, Georgia Green and Sunoleic 97R had disease indices of 5.9 and 6.2 respectively. Of all of the varieties, AT-201, A-93, and NC-V11 performed the worst in relation to parameters measured.

This project has shown that a wide range of peanut varieties can be screened in a rapid fashion for TSWV resistance. This data can be used as a tool for selection of varieties to be further screened for use in the field.