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REPORT PERIOD 05/02 - 04/03
_____INTERIM ___X___ FINAL

PROGRESS REPORT
To
NATIONAL PEANUT BOARD

TITLE: DEVELOPMENT OF TOMATO SPOTTED WILT VIRUS GERMPLASM

LEADERS: S. P. Tallury, T. G. Isleib and H. T. Stalker

DEPARTMENT: CROP SCIENCE

Two diploid wild species of peanut, *Arachis diogoi* (accession 10602) and *A. correntina* (accessions 9530 and 19616) were identified as resistant to tomato spotted wilt virus (TSWV) infection in laboratory and greenhouse experiments. The goal of the current proposal is to transfer TSWV resistant genes from these *Arachis* species into cultivated peanut, *A. hypogaea*. Direct hybridization of these *Arachis* species with peanut cultivars (NC-V 11, Gregory, Perry, NC 12C and VA 98R as seed parents) resulted in the establishment of triploid F_1 hybrids in the greenhouse. Conventionally, the triploid F_1 hybrids are sterile and seed fertility can be restored by chromosome doubling to establish hexaploid hybrids. Vegetative cuttings from triploid F_1 hybrids will be treated with colchicine in the summer of 2003 to establish hexaploid hybrids, which will be selfed and backcrossed in the fall/winter of 2003 to obtain progenies for field screening of TSWV resistance in the summer of 2004 and beyond.

During the summer/fall of 2002, we have established diploid F_1 hybrids between *A. diogoi* as the pollen parent and *A. batizocoi*, and *A. ipaensis* as the seed parents. Also, F_1 hybrid plants of *A. correntina* (9530 and 19616) in crosses with *A duranensis* (accession 30067) were established in the greenhouse. Attempts will be made to establish allopolyploids from these hybrids in the summer/fall of 2003. F_1 hybrids will be made using allopolyploids as pollen parents with NC-V 11, Gregory, Perry, VA 98R as seed parents in the spring/summer of 2004. F_1 hybrids and segregating progenies from these crosses will be evaluated in the laboratory tests in 2004 and beyond.

In the summer of 2002, direct crosses were made between *A. hypogaea* (NC-V 11, Gregory, Perry, NC 12C and VA 98R) and four TSWV resistant, improved tetraploid interspecific hybrid derivatives derived from another diploid *Arachis* species, *A. cardenasii*. F_1 hybrids were grown in the winter nursery in Puerto Rico in 2002 and F_2 progeny rows will be planted in field tests at Lewiston in the summer of 2003 for evaluation of TSWV resistance. Single plant selections from these will be advanced to develop families with TSWV resistance in 2004 and beyond.

Summary of Expenditure:

As of April 30, 2003, the expenditure on this project totals to $19,394.08, which is used to pay salary for part-time help, travel and to buy supplies.