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**PROGRESS REPORT TO:
NATIONAL PEANUT BOARD**

TITLE: Marker assisted breeding for tomato spotted wilt virus (TSWV) resistance in Virginia-type peanuts.

INVESTIGATORS: S.R. Milla, senior researcher, T.G. Isleib, professor, and S.P. Tallury, senior researcher.

DEPARTMENT: Crop Science

PROGRESS:

A total of 13, 5, and 4 F₁ seeds derived from the crosses of NC 12C, Gregory, and Florunner by TSWV-resistant line HTS 02-01, respectively were sent to the Puerto Rico Winter Nursery for generation advance. The resulting F₂ populations were harvested in March.

Because of the sensitivity of TSWV to high temperatures, work with artificial inoculations could not be started until the beginning of the fall. From August to September, work was conducted to establish a system for growth and inoculation of *Nicotiana benthamiana*, the species we will be using to host the virus prior to peanut inoculation. *N. benthamiana* is severely susceptible to the virus and is therefore, a good host for increasing the virus load.

During September October, work was also conducted on fine tuning the artificial inoculation technique to be used for peanuts. Because TSWV carries its own enzymes for replication within the host, and because of the waxy nature of the peanut leaf surface, the procedure for artificial inoculations in peanuts is extremely sensitive and all conditions must be in place in order to have successful infection. Test inoculations were conducted utilizing NC 7 and NC 9, cultivars that are susceptible to the virus, and a viral strain collected from symptomatic plants growing at the Peanut Belt Research Station in Lewiston, NC. Infection rates of 90-100% were achieved.

HTS-02-01-derived F₂ populations are currently being grown in the greenhouse in order to (1) obtain leaf samples for DNA extractions for marker analysis, and (2) inoculate them with the virus to obtain disease reaction data.

SUMMARY OF EXPENDITURES: Expenditures to date on this project total \$4,290.69, including \$ 2,381.00 for expendable greenhouse and laboratory supplies necessary to conduct the TSWV artificial inoculations, and \$ 1,909.69 in salary used to support a student worker who was needed to aid with maintenance of plants, and assistance with artificial inoculations.