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2011

NCARS/NACCESS CODE **NC-27**
ON CAMPUS RESEARCH
REPORT PERIOD **1/1/2011 - 10/31/2011**
 INTERIM ANNUAL / FINAL

**PROGRESS REPORT
TO
NC Peanut Growers Association**

TITLE: Marker Assisted Selection for Sclerotinia Blight Resistance in Virginia-type Peanuts
LEADER(S): H.T. Stalker, S.M Milla-Lewis, T.G. Isleib
DEPARTMENT(S): Crop Science

REPORT:

In the summer of 2005, crosses were made between Sclerotinia resistant line N96074L (a sister line of germplasm release N96076L that actually has a slightly better Sclerotinia reaction) with the widely grown Virginia-type cultivar Perry. Perry is somewhat tolerant to the fungus, but the sources of resistance are different in both parents. Resistance in N96074L is most likely derived from the diploid wild species *A. cardenasii*. We are evaluating 110 recombinant inbred lines in replicated field plots for Sclerotinia blight resistance and attempting to link SSR markers with resistance genes.

The 110 lines were tested in a field at the Upper Coastal Plain Experiment Station during the summer, 2011 in a replicated experiment. Ratings were taken in August and September. Very few plants had diseases during the August rating and the data was discarded. In September, the entries ranged from no plants with Sclerotinia (6 lines) to 2 lines with more than 80% incidence. Data was compared to ratings taken in 2009, but the high and low entries did not line up very well, so there is a question as to which test is most accurate. A greenhouse study is being planted in December, 2011 which should indicate the most resistant and most susceptible genotypes. More than 300 simple sequence repeat (SSR) primer pairs were obtained to conduct molecular analyses to determine whether the markers can be associated with Sclerotinia resistance. The DNA has been collected and is ready for analyses, but until the greenhouse experiment is completed, we are unsure of which genotypes to evaluate. This part of the experiment will be completed in the spring, 2012 (additional funds are not being requested to complete the project).

During 2011, a second set of hybrids were produced using genotypes with high levels of resistance with ones that are extremely susceptible. These crosses should better identify major genes conferring Sclerotinia resistance. In addition, two Sclerotinia resistance lines were obtained from the Oklahoma breeding program (Spanish varieties) which will add another source of unique genes conferring resistance. F1 plants will be grown next year and second generation progenies screened with SSR markers to better evaluate Sclerotinia resistance.

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ON CAMPUS RESEARCH
REPORT PERIOD: 1/1/2011 - 12/31/2011

**PROGRESS REPORT
TO
NORTH CAROLINA PEANUT GROWERS ASSOCIATION**

TITLE: Marker Assisted Selection for Sclerotinia Blight Resistance in Virginia-type Peanuts
LEADER(S): H.T. Stalker, S. Milla-Lewis, T.G. Isleib
DEPARTMENT(S): Crop Science

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IMPACT STATEMENT

Transferring a gene conferring high levels of resistance for Sclerotinia into peanut will potentially have a large impact on the peanut industry. Cultivars with moderate levels of resistance are currently available, but higher levels of resistance are needed to avoid yield losses. Associating molecular markers with genes for Sclerotinia resistance will lead to more productive cultivars with higher levels of resistance and allow pyramiding of multiple resistances.