

Identification and characterization of molecular marker(s) associated with resistance to TSWV and white mold in peanuts

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In peanut production areas in the southeastern U.S., tomato spotted wilt virus disease (TSWV) and white mold have become more prevalent and more severe. TSWV has become a major disease to peanut producers in this area and control methods are limited. White mold is a common and often destructive disease of in Georgia peanut fields. Chemical control adds considerably to the cost of production. Fungicides are already the single biggest cost to most peanut growers. Our strategy is to identify resistance genes and molecular markers associated with disease resistance and develop resistant peanut cultivars by using marker-assistant breeding and selection. A cultivar having disease resistance and high yield would present tremendous advantages for Georgia peanut growers to remain competitive.

Progress has been made:

- 1) 540 SSR markers have been developed for peanut with polymorphisms among the tested diverse tetraploid peanut accessions, including Tifrunner, GT-C20, SunOleic 97R and NC94022.
- 2) Two mapping populations have been developed from Tifrunner x GT-C20 and SunOleic 97R x NC94022 with 200 F₂s and 400 F₂s, respectively. Tifrunner is resistant to TSWV and leaf spots. GT-C20 is a Spanish type peanut and has been identified with reduced aflatoxin contamination. NC94022 (botanical variety *hirsuta*) has been identified with higher resistance to TSWV by Culbreath et al. (2005).
- 3) We have sequenced over 45,000 peanut ESTs, and identified several peanut EST clones with similarities to tomato TSWV resistance genes.
- 4) We also have identified two resistance genes from our peanut EST sequence project against White Mold (*Sclerotium rolfsii*).
- 5) Cloning and characterization of these potential genes against TSWV and white mold are under way. We also will map these genes using these two F₂/F₃ mapping populations.