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Development of Peanut Cultivars with Improved Water Use Efficiency & Development of Peanut Cultivars with Resistance to Peanut Root-knot Nematodes and TSWV

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PROGRESS REPORT:

Numerous breeding lines from the peanut breeding programs for the USDA-ARS, the University of Florida, and AgraTech Seed have been tested for resistance to the peanut root-knot nematode and TSWV. These lines have been evaluated in greenhouse trials and in field trials in Georgia and Alabama. Breeding lines with moderated levels of resistance to both pathogens have been identified. These lines have good yield but relatively low grades. Research is ongoing to examine the economic return from growing these lines with reduced nematicide inputs. Research is also ongoing to develop breeding lines with further improvements in resistances, yield, and grade. Progress in these breeding efforts can be accelerated through the use of marker assisted selection. We have developed primers to enable us to conduct marker assisted selection for resistance to nematode.

Breeding lines have also been developed to attempt to improve the drought tolerance of peanut cultivars. These lines have been evaluated for yield and for physiological traits under drought stress conditions. Lines have been identified that have significantly higher yield than standard cultivars when grown under late-season drought-stress conditions. It was hoped that some of the physiological traits could be used to speed breeding progress, however, none of the traits showed a significant correlation with yield.