Nematode Resistance from *Arachis stenosperma* Incorporated into Elite Peanut

C. BALLEN-TABORDA*, Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Athens, GA, USA; Y. CHU, P. OZIAS-AKINS, Department of Horticulture and Institute of Plant Breeding, Genetics and Genomics, University of Georgia, Tifton, GA, USA; P. TIMPER, C.C. HOLBROOK, USDA-ARS, Tifton, GA, USA; S.A. JACKSON, Bayer Crop Science, Saint Louis, MO, USA; D.J. BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Crop and Soil Science, University of Georgia, Athens, GA, USA; S.C.M. LEAL-BERTIOLI, Institute of Plant Breeding, Genetics and Genomics and Department of Plant Pathology, University of Georgia, Athens, GA, USA.

Root-knot nematode (RKN) *Meloidogyne arenaria* is a devastating pathogen for peanut. Strong resistant to RKN is present in the peanut wild relative *Arachis stenosperma*, and the two loci controlling the resistance in chromosomes A02 and A09 have been incorporated into elite breeding lines through marker-assisted backcrossing. The advanced backcross population of 271 BC_3F_1 lines was genome-wide genotyped and introgressions were observed across the genome and not only in the target chromosomes (A02 and A09). We can suggest that the non-target introgressions could be controlling other traits of interest, such as fertility, resistance to leaf spot and growth habit as the population was in greenhouse. With the objective to validate the nematode resistance alleles in Chr A02 and A09, seven BC_3F_1 families harboring different sizes of the introgression of resistance alleles in A02 and five carrying the loci in A09, and that had a high recurrent genome recovery were selected for further testing and selections. From each of the 12 families, 12 BC_3F_2 seeds were planted in the greenhouse and genotyped with 10 KASP markers to confirm the presence of the resistance loci. Right now, 12 BC_3F_2 lines that best represent each family are being phenotyped for nematode resistance. This work will allow us to closely define the smallest introgression in A02 that is required to provide resistance and confirm that A09 is also involved in preventing infection. These genotypes that incorporate strong RKN resistance and the markers linked to this trait represent a valuable tool for introgression of this new and strong nematode and leaf spot resistance into new peanut cultivars and can significantly impact peanut production in RKN-affected areas.