

Title of Project: Introgression and utilization of pest and disease resistance genes in wild species for sustainable peanut improvement

Principal Investigator: Scott Jackson –Center for Applied Genetic Technologies (CAGT), UGA

Brief Summary:

Wild peanuts species represent invaluable natural treasure as they have many desirable traits to adapt to climate change including resistance against pests and diseases and tolerance to abiotic stresses. However, it is challenging for breeders to directly utilize the favorable traits in wild peanuts as most wild species are diploid in contrast to tetraploid cultivated peanut, and the hybrids between diploid wilds and cultivated peanut are sterile. **The goals of this project are to 1) create new tetraploid wild peanuts, 2) introduce disease and pest resistance genes from wild species into cultivated peanut and 3) provide new resources for peanut breeders.** This project was initially funded by GPC in 2016, we have developed three new synthetic tetraploid wild peanuts, and made crosses between the synthetic wilds and cultivated peanuts. In 2018, we identified true F1 hybrids with molecular markers and phenotypic traits and conducted backcrosses with TifNV High O/L. We collaborated with a group in Brazil for cytogenetic analysis of the synthetic wilds and the results confirmed tetraploidy of two synthetic wilds. Notably, we generated another synthetic wild peanut which will provide new resistance resource to tomato spotted wilt virus (TSWV).