Recovery and Purification of Spanish High Oleate Peanut ‘AT-9899’.

Z.B. CHEN, Dept. of Crop Sciences, the University of Georgia, Griffin, GA 30223; M.L. WANG, USDA-ARS, Plant Genetic Resources Conservation Unit, Griffin, GA 30223; M.C. LAMB and P.M. DANG, USDA-ARS, National Peanut Research Lab, Dawson, GA 39842; J. BOSTICK, Alabama Crop Improvement Association, Headland, AL 36345; and C.Y. CHEN*, Department of Crop, Soil and Environmental Sciences, Auburn University, 201 Funchess Hall, Auburn, AL 36849.

“AT-9899”, a Spanish market type peanut, was developed in Golden Peanut Company in 2002. It has spreading growth habit and mid maturity. Due to high level of oleate and small seed size, it is grown specifically for confectionery market in the USA and Mexico. However from the time of development and release to 2010, the high oleic trait had diminished, either due to impurity at release or contamination after release to the point that the variety was not meeting industry requirements to be classified as high oleic. In order to recover and purify ‘AT-9899’, 1,600 individual plants were initially selected based on phenotype in field in 2010. After shelling, 600 plants were further evaluated by GC analysis and SNP marker-assisted evaluation. 300 plants were identified as the most similar to original ‘AT-9899’. The 300-plant seeds were planted as breeder seeds for seed increase and 3,200 pounds of the seeds were harvested in 2011. In 2013, about 90 tons of foundation seeds have been successfully achieved. In the meantime, through AFLP profile, potential mixers were identified. The result indicated that marker-assisted selection not only can improve the efficiency of breeding program but also can be used in seed industry for recovery and security of seed purity.