

Arachis Genus In-Depth Characterization for Conservation and Peanut Breeding

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Peanut belongs to the genus *Arachis*, that contains 83 described species grouped into nine taxonomical sections, according to their morphology, chromosome cytology, geographic distribution and cross-compatibility relationships. During the 50's throughout the late 80's, many trips were made in South America to collect wild *Arachis* species, generating a great body of knowledge and invaluable asset to the research and breeding communities. The main repositories of wild *Arachis* species are at EMBRAPA (Brazil), IBONE (Argentina), ICRISAT (India) and PGRCU (USA) and TAMU. PGRCU holds 65 out of all *Arachis* species. Its primary goal is to preserve this valuable germplasm for all researchers worldwide for use in breeding programs, genomics, or other scientific research. This resource is constantly utilized by the peanut breeders and other researchers worldwide to provide the necessary genetic variability in their respective programs to improve cultivated peanut. Because of the International treaties, there has been a halt in germplasm exchange and therefore, accessions of local seed banks are almost irreplaceable. The goal of this research is to genotype all accessions of *Arachis* species in the USDA-PGRCU genebank, and selected accessions of the TAMU, NCSU, IBONE and EMBRAPA using the 48K Affymetrix chip to create a database that will help understand the structure of the genus and serve as a species 'barcode'. A positive and precise identification of *Arachis* species will help researchers select materials for bridge crosses for introgression programs. It will also help maintain purity of the collections, thus ensuring its high quality as a living legacy for the next generation of researchers, the industry and the consumers.