

Mobilizing Genetic Diversity for Strengthening Peanut Breeding Program in Africa and the US.

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The aim of breeding is to combine as much as possible desirable alleles for traits of interest in order to produce new varieties that meet the needs of end-users. Thus, genetic diversity is the foundation of any breeding program. Peanut genetic diversity is low and breeding programs have until recently exploited a limited portion of the existing diversity. In an international effort involving several NARS in Africa, UGA, ICRISAT and CIRAD, a two-pronged strategy is being implemented for increasing diversity used by breeders. On one side, synthetic allotetraploids that combines A and B genomes of diverse wild diploid species are developed and used for moving genes from the wild species to the cultivated species. Wild alleles at QTL loci conferring resistance to diseases and other having major effects on yield and seed size have been mapped and are currently being deployed in elite cultivars. On the other side, hundreds of accessions held by NARS breeders and thousands of US germplasms, including African germplasm maintained at USDA, have been assembled and genotyped using the V2 Axiom-Arachis. A core set of lines will be defined from the genotyping work and phenotyped in 8 countries in West and East Africa. These resources will provide comprehensive analysis of the diversity used by breeders, offer opportunity to breeders to accessing wider genetic variation and will offer the opportunity to map genes of interest via association studies.