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GENETIC DIVERSITY AMONG ARBORESCENT *GOSSYPIUM* SPECIES REVEALED BY RAPD AND AFLP

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Abstract

Mexico is one of three centers of diversity of the genus *Gossypium*. *G. aridum*, as currently circumscribed, is widely distributed in arid and semiarid regions of Mexico. Morphological variation has been observed among *G. aridum* plants growing under greenhouse conditions. Nine *G. aridum* accessions from former collection efforts and 24 accessions from a recent collection effort (including 15 putative *G. aridum*, 1 *G. lobatum*, 5 *G. laxum* , 1 *G. schwendimanii* and 2 *G. gossypioides*) were used to evaluate the genetic diversity of "*G. aridum*" and the phylogenic relationships among arborescent *Gossypium* species based on RAPD and AFLP. Twenty-seven random 10-mer primers amplified 210 RAPD bands, and sixteen selective primer combinations generated 766 AFLP bands. Among the 976 bands, 102 were monomorphic, 97 were specific to *Gossypium* Subsection *Selera*, 35 were specific to *Gossypium* Subsection *Erioxylum*, and 33 were specific to recently collected accession US72. Differing numbers of bands specific to other accessions were also observed. The genetic distance between *G. gossypioides* and the species within subsection *Erioxylum* ranged from 0.637-0.841. The genetic distance between two well-established species, *G. lobatum* and *G. schwendimanii,* was 0.323. US72 was not only genetically distant from Subsection *Selera* but was also distant from the four species of Subsection *Erioxylum.* The genetic distances ranged from 0.420 to 0.538, and the dendrogram based on cluster analysis showed that US72 was positioned in the middle of these four recognized species. This suggested an ancestral position but derivation by homoploid hybrid speciation cannot be ruled out. The genetic distances between Oaxaca accessions and accessions from Colima and Jalisco, as well as those between Colima accessions and accessions from other regions, exceeded that between *G. lobatum* and *G. schwendimanii*. The genetic distances among Guerrero accessions were less than 0.323, but these materials were separated into different groups by cluster analysis. In *Gossypium* Subsection *Erioxylum*, *G. schwendimanii* was genetically closer to *G. laxum*, while *G. lobatum* was closer to *G. aridum*. "*G. aridum* " materials were split into several groups, indicating that "*G. aridum,"* probably encompasses taxa that, in fact, may be distinct.