

15. Cotton genetic resources at CIRAD

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The cotton genetic resources managed by CIRAD is located in Montpellier (South of France) and represents one of the most important collection of seed resources from *Gossypium* species in the world. It includes 3185 accessions representing a large range of diversity. Major part of the 50 species of *Gossypium* genus (all 5 tetraploid and 35 of the 45 diploid species) are present. These accessions originate from 99 different countries, with United States of America, the French West Indies, French-speaking Africa, and Latin America as most frequent origins. *G. hirsutum* L. accounts for 68 % of the collection, and 87 % of the total are tetraploid accessions. The collection comprises both cultivars and primitive accessions. Close to 1700 accessions are cultivars, with a particular emphasis on the varieties that Cirad developed in partnership in different tropical countries. Two millions hectares are cultivated to day with these varieties in West and Central Africa, South America and South East Asia. Numerous primitive landraces as well as early domesticated forms were collected in the eighties under the umbrella of former IBPGR throughout the diversification areas of *G. hirsutum* and *G. barbadense*. Finally a series of interspecific material derived from hexaploid and tetraploid hybrids and developed for possible introgressive breeding (backcrosses to cultivated *G. hirsutum*) are conserved. Seed renewal is undertaken under tropical conditions once every 12 years for cultivars and 15 years for others. The seeds (300 and 100 grams per accession respectively) are stored in a cold room at 5°C and 40% RH. Storage conditions have recently been completed by a parallel storage in an 18 °C freezer. More than 2700 accessions of the collection have been described for morphological and fiber quality traits. The cultivated germplasm is permanently used for seed exchange and several breeding programs had been launched using samples of this germplasm. The primitive pool and the obsolete varieties are freely available. Most recent cultivars, when patented in partnership with Cirad, can be released upon contractual agreement. A database program allows the management of the collection and the printing of catalogs. Recently, a preliminary study of the genetic diversity of a small collection of 56 accessions belonging to the tetraploid pool (landraces and cultivars) has been undertaken using over 200 microsatellites markers. A subset of highly informative markers has been selected and assembled for constituting a genome-wide genotyping kit of chromosome-specific and multiplexable microsatellites. Two or three 3-plex, ie. 6 to 9 microsatellites, per pair of homoeologous chromosomes,

constitute the kit. In the future, the molecular analysis of the diversity of the collection using this kit of microsatellites combined with the botanical, morphological and technological descriptions will permit to structure the variability and to create core collections. This will then facilitate the screening of the collection for traits of economical interest (adaptation to adverse environment, plant mapping, disease and insect resistances). An internet site will also be developed to promote the collection and to give information on the different accessions (description, origin).



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