GERMPLASM AND GENETIC STOCKS SESSIONS

Oral Presentations

1. Study of the Determinism of the *glanded-plant and glandless-seed* Trait Introgressed in *G. hirsutum* from *G. sturtianum*.

Guy Mergeai, (mergeai.g@fsagx.ac.be), Unit de Phytotechnie Tropicale et de Horticulture, Gembloux Agricultural University, Gembloux, Belgium
Jean-Marc Lacape, (lacape@cirad.fr), CIRAD, Montpellier, France
Jean-Pierre Baudoin, (baudoin.jp@fsagx.ac.be), Unit de Phytotechnie Tropicale et de Horticulture, Gembloux Agricultural University, Gembloux, Belgium
Jean-Marie Jacquemin, (jacquemin@cra.wallonie.be),
Halima Benbouza, (benbouza.h@fsagx.ac.be), Unit de Phytotechnie Tropicale et de Horticulture, Gembloux Agricultural University, Gembloux, Belgium.

Two hundred and six mapped microsatellites markers evenly distributed on the 26 chromosomes of *Gossypium hirsutum* L. were used to monitor the introgression of DNA fragments coming from the Australian species *G. sturtianum* Willis and the wild American diploid species *G. ramondii* Ulb. in a population of BC_1, BC_2, BC_2S_1, BC_2S_2, BC_2S_3, BC_2S_4, BC_2S_5, BC_2S_2/BC_1, $BC_2S_2/BC_1/S_1$,BC_3, BC_3S_1, BC_3S_2 and BC_3S_3 derivatives obtained from the *G. hirsutum* x *G. raimondii* x *G. sturtianum* (HRS) trispecific hybrid. In the most advanced backcrossed progenies of the HRS hybrid, the only plants that are still showing a drastic inhibition of gossypol synthesis in a part of their seeds and a normal glanding pattern in their other organs contain fragments of *G. sturtianum* DNA related to c02-c1, c03-c17 and c06-c025 linkage groups of *G. hirsutum*. In these plants, all the SSR markers associated to the *G. sturtianum* c06-c025 DNA fragment introgressed in *G. hirsutum* remain heterozygous after numerous generations of selfing. One can thus suppose that this alien chromosomic fragment may also carry a recessive lethal factor, which expresses itself when it becomes homozygous. If this hypothesis proves to be true, it will be necessary to break the linkage that exist between this lethal factor and the gene(s) responsible for the expression of the trait of interest in order to develop stable homozygous cotton lines with very low gossypol content in the seed and high gossypol content in the aerial parts.

2. New Low Gossypol Cotton Germplasm.

Dr. Jodi Scheffler, (jscheffler@msa-stoneville.ars.usda.gov), USDA-ARS, Stoneville MS, USA
Gabriela Romano, (GRomano@msa-stoneville.ars.usda.gov), USDA-ARS, Stoneville MS, USA

Cultivated cotton and its wild relatives typically have glands on both the reproductive and vegetative parts of the plant. These glands contain compounds that are toxic to many pests and help protect the plant from tobacco budworms (TBW), bollworms (BW), plant bugs and possibly some diseases. Unfortunately these same compounds are toxic to humans and non-ruminant animals. Cotton seed would be an even more valuable source of high quality protein if these toxic substances, especially gossypol, could be reduced. The focus of our research is to decrease the levels of gossypol in the seed while maintaining a high enough concentration of toxins in vegetative parts of the plant to offer protection from pests. Work done by us, and others, showed that crosses between cotton varieties with different gland densities and distributions produced a range of types. By selecting within the resulting progeny, we have identified and advanced to the F_7 generation genotypes that have total gossypol amounts less than 0.30% total gossypol in the de-hulled seed, while still possessing glands at