

## S5-9

### EVIDENCE OF UNREDUCED GAMETE PRODUCTION FROM INTERSPECIFIC CROSSES BETWEEN *GOSSYPIUM HIRSUTUM* AND *G. HERBACEUM*

Pannetier C (1,2), Hofs JL (1), Montes E (2), Eber F (3), Coriton O (3), Huteau V(3), Hau B (1), Chevre AM (3)

(1) CIRAD-PERSYST UR 102 34032 Montpellier cedex 5 France

(2) Laboratoire Biologie Cellulaire, INRA 78026 Versailles cedex France

(3) UMR APBV, INRA 35353 Le Rheu cedex France

In order to analyze the gene flow between the allotetraploid cultivated cotton (*Gossypium hirsutum*, AADD,  $2n=52$ ) and the wild diploid (*G. herbaceum*, AA,  $2n=26$ ), the possibility of natural hybridization between these two cotton species has been investigated. In fact, in South Africa and particularly in the KwaZulu Natal Province, where commercialisation of transgenic Bt cotton began in 1998, a wild species (*G. herbaceum*) is neighbouring from the cultivated cotton fields.

From reciprocal crosses performed without emasculation between *G. herbaceum* used as female or male and *G. hirsutum*, 148 and 335 plants respectively, have been analyzed. Neither examination of the morphological characteristics nor the flow cytometry analysis of the 335 plants resulting from the cross *G. hirsutum* x *G. herbaceum*, have shown any to be hybrid plants. For the cross *G. herbaceum* x *G. hirsutum*, three plants have shown a hybrid phenotype. Analysis of DNA content by flow cytometry and morphological traits, have clearly shown that two of them were triploid (AAD). The third one exhibited a value in flow cytometry slightly higher than *G. hirsutum*. In addition some morphological characteristics (plant morphology, presence and size of petal spots, leaf shape...) have led us to conclude that this plant is AAAD and was the result of a fecundation with unreduced gamete AA from the female *G. herbaceum* parent. Fluorescent In Situ Hybridization (FISH), and meiotic behaviour have confirmed this hypothesis. This is, to our knowledge, the first description of the occurrence of a non-reductional meiosis in the species *G. herbaceum*. This plant material could provide a useful tool for the study of the expression of genes duplicated in the A and D cotton genome. The possibility of obtaining an interspecific hybrid between cultivated and diploid wild cotton through fertilization with an unreduced gamete raises the question of its evolution in natural populations.

Key words: gene flow, *G. hirsutum*, *G. herbaceum*, meiosis, unreduced gamete