

# **From Traditional Genetics Towards Genomics: A New Approach for an Old Problem**

**M. NOIROT, A. de KOCHKO, T. LEROY, C. CAMPA, P. HAMON, M. DUFOUR,  
S. DUSSERT, J. JOUARN, H. CHRESTIN**

UR 117, UMR 1097 IRD, BP 5045, 34032 Montpellier Cedex 1, France  
CIRAD-CP 1097 IRD, BP 5045, 34032 Montpellier Cedex 1, France

## **SUMMARY**

Since about ten years, advances in genomics increased exponentially, as well as their application in breeding. Now, I would like to present the contribution genomics in the coffee research project of an IRD-CIRAD team. Other talks will be developed today by this team.

Traditionally, coffee breeding, as in other crops, depends on the mode of reproduction. In autogamous crops, as *C. arabica*, we use the genealogic selection. In contrast, in allogamous plants as *C. canephora*, the reciprocal recurrent selection is applied. The second factor acting on breeding way is the range of the intraspecific diversity in regards to the objectives and the access possibilities to the interspecific diversity. In practice, introgression of wild traits was attempted for the two cultivated species. Another breeding way consisted to obtain interspecific F1 hybrids, as in the *Arabusta* program.

The new program, we proposed, is based on genomics and presents three objectives. The first objective is to define new tools for sustainable breeding. This concerns the marker assisted selection strategy and the genetic transformation. The second objective is to improve cup quality with two steps: firstly, to locate and identify genes and, secondly to analyse their regulation of expression. The third objective concerns the cryopreservation of genetic resources.