

Year of CfP: 2008

Project No 0802-010

Project title: Collect of wild cocoa genetic resources related to aromatic chocolate quantities in Ecuadorian Amazonia.

Unit managing the project: AGAP (Genetic improvement and Plant adaptation) (CIRAD, INRA, Montpellier SupAgro)

Project leader: Claire Lanaud (claire.lanaud(a)cirad.fr)

Country involved in the project: Ecuador

Research units from the Foundation's scientific network involved: Qualisud

Sub-thematic axes: IPB-1 (Integrative Plant Biology 1: *Genetics and genomics, plant breeding, ecophysiology*), STDI-2 (Socio-Technical Dynamics of Innovation 2: *Agrifood innovations, food and non-food use of plant crops*)

Objectives:

Food quality improvement, nutritional as organoleptic, is now a strong demand of the society. *Theobroma cacao* is mainly cultivated in West Africa, Latin America and Asia and according to the International Cocoa Organization (ICCO), 14 million farmers are involved on cocoa culture.

Flavor is among the main criterion of quality for chocolate manufacturers. Flavor components depend strongly on conditions of post-harvest processing (environmental effects, storage, fermentation, drying, roasting). However, the genetic origin is also a strong determinant of flavor, independently of the conditions of post-harvest processing. Cocoa could be classified in two main categories : the standard and bulk cocoa representing the main part of the market, and the fine flavor cocoa, used to produce fine flavor chocolate, and produced by 2 main varieties: Criollo and Nacional (from Ecuador). Nacional cocoa has been classified as "fine flavor cocoa" and benefits for this reason of a higher price in the market. However, due to the introgression of foreign varieties, part of Ecuador cocoa was declassified and considered as "bulk cocoa" at lower price.

The objectives of this project are to collect a large and extensive pool of wild *Theobroma cacao* genetic resources, closely related to the aromatic Nacional variety and potentially rich in aromatic cocoa flavors, in 2 regions of Amazonia from Ecuador recently identified by our team as the potential region of origin of the Nacional variety. After morphological characterization of the samples, they will be propagated by bud grafting. Biochemical and molecular analyses will then be performed to study their diversity. This enrichment of genetic resources will facilitate the improvement of new resistant and productive Nacional varieties displaying a strong floral aroma similar to the original Nacional variety.

Total Agropolis Foundation funding: € 45,672 (travel expenses of three French scientists to Ecuador for one month, small equipment, running costs, one month fellowship for a junior scientist from Ecuador)

Funding categorie(s): Agropolis Fondation small grants (support for small exploratory, risky and innovative projects), Agropolis Fondation visiting fellowship

Project duration: 1 January 2009 – 31 December 2011

Keywords: *Theobroma cacao* - cocoa - genetic resources- diversity - aroma