

## Amazonia biodiversity, a source of fine cocoa flavour niches

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The cocoa market is divided into two categories, "standard" cocoa and "aromatic fine flavour" cocoa, for which the consumer demand is growing despite a rare and low production. Two main old varieties were at the origin of Fine cocoa flavour : "Criollo" from Central America, domesticated for 3800 years by Olmec and Maya people, and "Nacional" from Ecuador present in the pacific coast at least five centuries ago. Both varieties were introduced in their main growing areas from a few genotypes with a narrow and highly homozygous genetic base, before being mixed more recently with newly introduced cocoa genotypes, constituting heterogeneous hybrid populations.

To better understand the *T. cacao* diversity, and the domestication history of these two old varieties, genetic studies were carried out, allowing to recover representatives of the ancestral varieties and to localize their origin in Upper Amazonia despite their current growing area.

In the case of Nacional variety, characterised by floral taste, the Ecuadorian South Amazonia was identified as their domestication area of origin. Collect of genetic resources native to this region were organised to enlarge the genetic base of aromatic cocoa trees suitable for the selection of productive and aromatic new varieties adapted to Amazonia. Agricultural colleges and local indian populations were closely associated to this project, facilitating the recover of native cocoa trees and its further use to produce new aromatic varieties adapted to Amazonia. An integrated genetic and biochemical approach was conducted to characterize this material. It confirmed their large diversity and the richness of volatile compounds they display, offering new opportunities to develop fine flavour cacao niches and potential new incomes for small cocoa farmers of Amazonia.

GWAS (Genome Wide Association Studies), conducted on hybrid Nacional and native cocoa populations were engaged to analyse the genetic and biochemical determinants of the quality traits of Ecuadorian cocoa and identify diagnostic markers or new strategies to facilitate fine flavour cocoa breeding.