

Abstract

Genetic Material Exchange: Key for the Past, Present and Future of Coffee Cultivar Improvement [†]

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Abstract: It all began with Arabica coffee seeds that crossed the Red Sea from Ethiopia to Yemen. It continued with seeds smuggled out of Yemen in various directions. Gesha, one of the cultivars producing the most expensive coffees in the world, went from Ethiopia to Tanzania, Kenya, Costa Rica and, finally, Panama, where it would become famous. Who would have thought that the main genetic solution to the devastating Coffee Leaf Rust disease would come from an unlikely natural cross between two species—*Coffea canephora* and *Coffea arabica*—introduced from Africa to the little-known Timor island in Southeast Asia? It is these numerous and uncontrolled movements of plant material that have shaped the genetic improvement of the Arabica coffee plant. It is highly likely that the present and future challenges facing the coffee sector will require new exchanges of plant material. We can already see that species that could be of interest in tackling climate change, for instance, *C. racemosa*, *C. stenophylla*, *C. zanguebariae*, are still in their natural African habitat. They will have to be studied and tested in different environments. A new wave of genetic material exchange will be needed from their natural habitat or domestication center to various coffee-producing countries from various *Coffea* species. This will first be so for agronomic research and then for actual production. However, in the 21st century, it is fortunately compulsory to perform this ethically and in compliance with international regulations. The coffee scientific community needs to be prepared and aligned.

Keywords: Nagoya; breeding; genetic resources



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