Past and present domestication of cocoa in the Upper Amazon region of Ecuador: analysis of ancient DNA in archaeological remains and collection of new genetic resources of native cocoa from the same region

Using a multidisciplinary approach, main objectives are :
to collect new native genetic resources from the south of the Amazon, related to the variety "Nacional" ;
to characterize this plant material morphologically, genetically, biochemically and for sensorial traits ;
to better understand the present and past domestication of cocoa trees in order to better exploit its diversity, trying to find traces of the use of cacao in archaeological remains by the analysis of ancient DNA.

ACTIONS

The main actions carried out can be summarized as follows :
collection of new genetic materials and genetic analyzes ;
analysis of Archaeological DNA Remains (DNA) ;
carbon 14 dating of old DNA samples of cocoa ;
biochemical analyzes of new cocoa trees collected.

RESULTATS

New cacao genetic resources have been collected, propagated by grafting and cuttings, and preserved. The analysis of these cacao trees shows their genetic proximity to the Nacional variety and confirms our hypotheses.Ancient DNA analyzes provide direct access to past domestication by providing information on exploited diversity and heritage history. The analysis of ancient DNA made from ceramic residues found at an archaeological site located in the prospecting area. Results provide the first evidence for the use of T. cacao in the Americas and support the hypothesis that T. cacao was domesticated in South America at least 1,500 years before its transfer to Central America.

PERSPECTIVES

The perspectives are now to continue the collect, preservation and exploitation of the native cocoa trees of the Ecuadorian Amazon with the help of the local populations, and to continue the study of the past domestication of fine cacao varieties using paleogenomics.

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