


The fine cocoa revival in Ecuador



The project to revive production and improve the quality of Nacional cocoa in Ecuador was implemented in connection with European Union programmes to alleviate poverty, in cooperation with Ecuador and France, and with the collaboration of CIRAD and INIAP. It was intended to improve the standard of living of cocoa smallholders by raising the price of traditional Ecuadorian cocoa on the international market. The aims were to help small family farmers to maintain or increase production by renewing or rehabilitating their plantings, and to restore quality by regaining the specific flavour of cocoa from Ecuador, by ensuring good post-harvest processing of their product.

The project was set up in 1995 and ran for five years up to October 2000. It covered the provinces of Guayas, Manabi, Los Rios and El Oro.

Despite difficult environmental conditions (*El Niño*, the economy and social policy in the country), the project conducted its operations in three closely linked programmes: action-research, technology transfer, smallholder organization and associative marketing. Producers, traders and cocoa industrialists actively participated in all phases of the project cycle: diagnosis, programming, operations.

Background of the Ecuadorian cocoa commodity chain

Cocoa cultivation in Ecuador goes back a very long way and underwent its strongest development in the second half of the 19th century, up to World War I. Then, for numerous reasons, the importance of this crop

greatly declined: natural causes such as the occurrence of new diseases (witches' broom, frosty pod rot), but also for socio-economic reasons (sharing out of the large *haciendas*, overcapacity in cocoa processing in the country, reconversion of agro-industry to banana exports, etc.). Since 1980, production has fluctuated around 80,000 t, and Ecuador is the world's eighth largest cocoa producer.

Ecuadorian cocoa has established itself a reputation on the original floral flavour, the *Arriba* flavour, produced by Nacional type cocoa trees. This genetic group falls between the Forasteros and Criollos. However, at the beginning of the 20th century, higher yielding Trinitario type cocoa trees, which were also assumed to be more resistant to new diseases, were introduced into Ecuador from Venezuela. Through a series of natural hybridizations, genetic erosion of Nacional cocoa occurred. Despite this genetic contamination, the *Arriba* flavour of traditional Nacional cocoa batches was maintained, though it decreased in intensity.

At the same time, due to an inappropriate marketing system that did not involve a quality premium, and did not sanction redhibitory defects, most small-scale producers stopped marketing well-prepared cocoa. In 1994, the decline in quality led the ICCO to downgrade Ecuadorian cocoa from 100% to 75% fine or flavour cocoa.

Nacional cocoa, which is considerably hybridized, currently accounts for around 95% of the country's production, but it is gradually being replaced by a clone of Trinitario origin, CCN-51, which is a very high yielder but does not have the *Arriba* taste. Gradual substitution of Nacional cocoa by cocoa from CCN-51 could lead to a loss in the

specificity of Ecuadorian cocoa, and would set the country in direct competition with countries producing bulk cocoa, such as Côte d'Ivoire, with production volumes that are more than ten times larger.

Evaluating and characterizing the *Arriba* flavour

A complete study was launched in 1996 with the assistance of INIAP; it involved the physical, chemical and sensorial characterization of different types of cocoa produced in Ecuador: Nacional, Trinitario, and natural Nacional x Trinitario hybrids. The study revealed the existence of the floral *Arriba* flavour in the beans of pure Nacional and in certain natural hybrids, which were also characterized by their mildness, absence of bitterness and astringency. All these traits seemed to be linked to genetic factors provided by Nacional cocoa; environmental factors promoted the development of these original flavours. A reference *Arriba* liquor was created from cocoa at the collecting centres supported by the project. It was made available to any producers, traders or industrialists who wished to check the organoleptic quality of their product.

Safeguarding the *Arriba* flavour

Two operations were conducted at the same time by the project, one intended to rapidly offer producers Nacional type cocoa seedlings with the *Arriba* flavour to renovate their plantings, and the other, with a more long-term perspective, intended to build up a collection of flavour material for use in cocoa genetic improvement programmes in Ecuador.

INIAP recommended the use of six Nacional type clones from the Pichilingue research station. The project assessed the adaptability of this material to the different agro-ecological conditions in the cocoa growing zone of the coastal plain. The results from 30 plots spread throughout that zone revealed quite high production potential for the material as a whole, apart from clone EET 19 which did not do well; the organoleptic quality of the cocoa was maintained (mildness, absence of bitterness and astringency), and the *Arriba* flavour was only found in clone EET 62.

Action was undertaken to safeguard Nacional material rich in the *Arriba*

flavour. An original pre-breeding method with farmer participation, based on fresh bean tasting, led to the collection of Nacional flavour cultivars from old cocoa plantings (photo 1). The proportion of Nacional cocoa trees with a strong floral flavour was around 1% due to genetic erosion resulting from natural Nacional hybridization with introduced Trinitarios. The project selected 115 cocoa trees and grafted buds onto rootstocks of IMC 6, which is resistant to *Ceratocystis* wilt caused by *Ceratocystis fimbriata*. This material was planted out in two study collections called SNA (*Selección Nacional Aromática*) in which the agronomic characteristics of the material were studied. One collection was at INIAP's Pichilingue station, the other on a smallholding in the Balao region.

Ensuring the quality of post-harvest preparation

The project helped small farmers to organize themselves in smallholder associations, in order to transfer simple post-harvest preparation techniques to them that were adapted to their needs, and make available to them equipment and infrastructures for optimizing preparation (photo 2). More than 25 associations were either restructured or created in the project zone, around twenty of which are operational. The elected representatives were trained and acted as technical managers. Within the associations, the project installed fermentation centres, concreted or mobile tray sun drying areas and warehouses. At the INIAP research station, a modern and didactic post-harvest processing centre was set up for better cocoa preparation, but also for demonstration purposes during technician and farmer training.

Renovating and rehabilitating old plantings

Maintaining or increasing Nacional cocoa production involved increasing plantation productivity, achievable either by renovating the planting material, when the plantation had been excessively weakened, or rehabilitating the planting material, when the trees showed a positive and rapid response to the cultural practices used. In this con-

text, the project set out to validate Nacional type planting material and the cutting back techniques recommended by INIAP.

Despite their susceptibility to diseases, the Nacional type cocoa clones recommended by INIAP showed quite high production potential: around one tonne per hectare, which was around 30% lower than clone CCN 51. A regionalized analysis of the results led to selection of the two or three most appropriate clones for each agroclimatic zone.

On the other hand, the cutting back techniques were difficult to implement and were not cost-effective.

The project therefore set up nurseries of Nacional type cocoa seedlings in the smallholder associations and at the INIAP research station, with an annual production capacity exceeding 280,000 seedlings.

At the same time, the project implemented a technology transfer programme intended for the smallholders grouped in the associations. Through actions such as demonstration plots, "open days", and introductory training courses, it invited farmers to renovate or rehabilitate their plantings.

Guaranteeing a better sale price through direct associative marketing

Another purpose of the smallholder associations was to ensure direct marketing of the cocoa produced by their members, and strengthen the unity of action with respect to the authorities and cocoa buyers in order to ensure that their rights were respected. The project was responsible for training members and their managers in marketing matters.

Among the operations conducted for that purpose, it is worth mentioning:

- restructuring or gaining legal status for more than 25 associations, around twenty of which were operational by the end of the project,
- setting up a body, UNOCACE, covering these organizations and responsible for managing direct exports of quality cocoa, and taking on a representative role in cocoa sector decision-making processes,
- supervisor training in company management, marketing techniques, accountancy, etc. A high-profile information campaign was instigated. For instance, producers and the associations received a quarterly information bulletin from the



Photo 1. Nacional variety cocoa tree.

project concerning the national and international cocoa markets,

- introduction of quality standards applied within the associations for cocoa purchases from members, with price differentials for selling fermented, properly dried cocoa to the association,
- construction of a cocoa packing centre for export batches, for successful associative marketing of quality cocoa,
- granting of small, short-term credit facilities to facilitate the purchase and sale of cocoa produced by members,
- introduction of a specific technical and commercial scheme enabling the collection and direct associative marketing of Nacional cocoa batches,
- marketing of batches of fine and flavour cocoas that are much sought-after by chocolate makers, especially in Europe. For this operation, the project received support from CIRAD, which was involved in developing and marketing batches of cocoa prepared by the project on the international gourmet markets.

These operations resulted in an increase in prices paid to cocoa producers, through:

- premiums received directly at the time of the sale,
- a rebate granted by UNOCACE at the end of the year depending on sales (volumes and export prices),
- competition from independent small-scale buyers, who offer higher prices to producers than the association when



Photo 2. Cocoa collection within a smallholder association.

they have to acquire the volumes essential for their trade.

In addition, the project helped in drawing up a programme intended to improve fine and flavour cocoa marketing, by determining objective differentiation criteria that could be measured between fine cocoas and bulk cocoas. This programme, which was submitted by INIAP to the CFC, via the ICCO, in partnership with Venezuela, Trinidad and Tobago and Papua New Guinea, was approved and was scheduled to be introduced in the first quarter of 2001.

Conclusions and prospects for the sustainability of cocoa project operations in Ecuador

After operating for five years, the project is in a position to propose technological packages which, when applied immediately, can improve the economic situation for smallholders, but can also help in promoting Nacional cocoa from Ecuador.

Several achievements will ensure the sustainability of the project. For instance, INIAP has acquired international recognition and is already involved in numerous international research projects, funded by donors such as the CFC, ACRI, FIRC, and multinationals. These include molecular

characterization of the new Nacional material (CIRAD-BIOTROP), comparative assessment of international clones (CFC-IPGRI), determination of objectively measurable flavour quality parameters (CFC-ICCO), etc.

In addition, the producer associations in UNOCACE have acquired independence and sufficient capital to continue with direct marketing and export of quality cocoa, to the benefit of small-scale producers.

Lastly, several NGOs backing the Ecuadorian Ministry of Agriculture are ready to participate in technology transfer and coordinate technical assistance programmes for associated smallholders.

The cocoa project is a pilot project in which development of the smallholder sector is ensured by direct associative marketing of a specific quality product, backed up by technology transfer and action-research programmes. ■

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