2.3 Practices that contribute to promoting and appreciating Andean crops and identity in Cotacachi, Ecuador

César Guillermo Tapia Bastidas and Hugo Fabian Carrera Rueda

Ecuador: a diversity of crops and cultures

With its variation in landscapes, crops and human cultures, Ecuador is an important repository of agrobiodiversity. The richness of its biodiversity and its native plant genetic resources (PGR) represent fundamental elements of the Ecuador cultural heritage. Generations of Ecuadorian farmers have contributed to their creation. Unfortunately, however, socio-economic and environmental changes over recent years have caused the erosion of agrobiodiversity, associated knowledge and customs. Nevertheless, indigenous and local farmers still maintain their agrobiodiversity and associated ancestral knowledge concerning the use-values of the varieties, their customs and agricultural management practices, thereby contributing to the conservation strategy of in situ on-farm conservation of these PGR.

Cotacachi agrobiodiversity project

Cotacachi is located 80 km north of Ecuador’s capital Quito, in the great western plains of Hoya del Imbabura (Figure 2.3.1). The altitude varies from 2600 to 3350 m above sea level and the area extends over 1809 km². Cotacachi is recognized as an important site for PGR. This diversity has been shaped by the unique culture and traditions of both indigenous Kichwa people and other ethnic groups living in the area.

In the period 2002–2008, the National Plant Genetic Resources Department of the National Autonomous Institute for Agricultural Research in Ecuador (INIAP-DENAREF) and the Union of Peasant and Indigenous Organizations of Cotacachi (UNORCAC) implemented an agrobiodiversity project in Cotacachi on promoting Andean crops for rural development. Through this project, we aimed to associate strategies for rural development with agrobiodiversity management. INIAP and UNORCAC established partnerships with various national and international institutions, including the Corporation for Export and Investment Promotion and its Sustainable BioTrade Initiative (CORPEI), the Andean Foundation for the Promotion of Sustainable Technologies for Natural Resource Management (FOMRENA), the Union for Economic Cooperation and Development of the People (UCODEP), the United States Department of Agriculture (USDA) and Bioversity International.

The home garden is a critical livelihood component of rural households in Cotacachi. It provides numerous benefits to farming families and acts as a repository of local species diversity that is used for food, medicines, ornaments, fuel and animal feed.
Farmers maintain their cultural customs (ritual ceremonies) and continue to manufacture handicrafts and tools, through their use of diversity from the home garden.

**Practices for recognizing and appreciating the value of diversity**

In the project, we decided to respect the Andean cosmovision and legacy of traditional agricultural systems while promoting PGR conservation and development. As such, we associate our work not only with the physical mountainous environment and its cultural aspects, but also with local customs and beliefs concerning Mother Earth, and the important role they play in the maintenance of people’s farms and well-being. This starting point guided us towards establishing reciprocal social and institutional relationships, which, over the years, led to the development of a series of practices that contributed to community biodiversity management (CBM). These practices include:

- strengthening the two-way relationship between gene banks (*ex situ*) and farmers (*in situ* on-farm) through several interventions;
- creating an agrobiodiversity catalogue;
- organizing seed exchange and food fairs;
- adding value to local species, crops and varieties and developing market chains for these agrobiodiversity products;
- supporting the establishment of organic producers and rural enterprises;
- linking agrobiodiversity and cultural diversity with tourism;
- developing agrobiodiversity courses for formal education;
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Below, we provide further details concerning the development of these practices in the Cotacachi district, and demonstrate how they benefit both individuals and communities beyond conservation.

**Promoting farmers’ access to gene bank accessions and use of local crops and varieties**

The INIAP gene bank holds 480 accessions collected from the Cotacachi district. These include several cereals, root and tuber crops, fruits, vegetables and legumes. As a means to repatriate and promote their reintroduction, we set up a diversity block on communal land in Cotacachi. Shrestha *et al.* (Chapter 2.2) describe modalities of diversity blocks in more detail. We included 155 maize accessions (*Zea mays*), 111 bread wheat accessions (*Triticum aestivum*), 73 pepper accessions (*Capsicum spp.*), 44 ground cherry accessions (*Physalis peruviana*), 42 figleaf gourd accessions (*Cucurbita ficifolia*), 37 tamarillo accessions (*Cyphomandra betacea*) and 18 achocha accessions (*Cyclanthera pedata*). Community members were involved in assessing and characterizing the accessions. They selected the best varieties based on their own criteria, such as high yield, tolerance to pests and diseases, good eating quality, suitability for agrotourism and ornamental values. For those selected accessions, seed was produced on communal land. We were able to reintroduce and restore the cultivation of dozens of traditional crop varieties. The seed produced was further distributed to other farmers interested in diversifying and enriching their production scheme.

**Collaborating with gene banks: community contributions to ex situ conservation**

During the project activities in Cotacachi, INIAP collected samples of the current local varieties and deposited them in the national gene bank. INIAP characterized and evaluated the accessions, which are now being conserved *ex situ* under long-term storage conditions. This collaboration with the INIAP gene bank also contributed to the *in situ* multiplication of gene bank accessions in their original farming system and/or habitat.

**Establishing an agrobiodiversity catalogue**

We developed an agrobiodiversity catalogue of the Andean highlands of Cotacachi. Our main aim was to document and better understand PGR and associated traditional knowledge in order to achieve a more effective way of managing genetic resources, including both *ex situ* and *in situ* strategies. The catalogue was published and has been shared among the farming communities and other stakeholders. It reflects the unique diversity of species, crops and varieties found in Cotacachi. For example, it shares the fact that more than 12 maize landraces and 40 common types of beans are maintained by farmers. The catalogue has also been used to identify...
those species, crops and/or varieties that have a strong association with local livelihoods. Consequently, these PGR have been prioritized for follow-up action in the project. The agrobiodiversity catalogue for Cotacachi could be referred to as a kind of community biodiversity register (CBR), as described by Subedi et al. (Chapter 2.4); however, its structure is closer to that of an institutional rather than community-based register, when compared with the CBR in Nepal.

Exchanging gene bank materials in seed fairs

Over the course of the project, we organized four diversity fairs, a practice that is described in more detail by Shrestha et al. (Chapter 2.2). The fairs assisted us in reintroducing gene bank accessions, and facilitated the monitoring of flows of local crops and varieties. The major reason why farmers participate in the fairs is to exchange seed. We organized the fairs in such a way that farmers’ groups or households could exhibit their traditional food and culinary diversity. UNORCAC now regularly organizes the diversity fairs. It is a practice that reveals the importance of Andean crops and associated food and cultural heritage to all Ecuadorians. It contributes to awareness-raising, conservation, research, education and agro-tourism; moreover, it enhances local farmers’ self-esteem.

Creating artisan food products in support of agrobiodiversity management

The project emphasized the consumption and promotion of local foods, holding workshops to address local nutritional culture, recipe exchange and value addition to local crops through artisanal processing. In training workshops, families from the community, nutritionists and agronomists shared information about the value of local crops, such as their productive, nutritional and culinary properties, and their use in the preparation of artisanal food products for sale. The project supported the establishment of a food-processing plant to produce and package artisanal foods, including: Andean blackberry marmalade (Rubus glaucus), squash seed snacks (Cucurbita ficifolia), spicy pepper pastes and dried ground cherries. These attractive, high-quality food products are marketed to tourists visiting the Cotacachi area, the nearby famous Otavalo market, and the capital city Quito.

Establishing agrobiodiversity-oriented enterprises

In order to emphasize the value of the products, our marketing strategy tells the story of the Andean crops and the indigenous farmers who produce them. A rural micro-enterprise, Sumak Mikuy, pays a premium price for the high-quality produce, and any profits made from the business are reinvested into the community. In follow-up to these commercial activities, a network of certified organic producers was established, to guarantee access to the necessary raw materials. These value chain practices led to the publication of an Agro-culinary Guide to Cotacachi and its Surroundings, and a Cookbook of the Traditional and Intercultural Andean Cuisine of Cotacachi, which further documented and popularized our rich food diversity. The results of the agrobiodiversity project
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in Cotacachi emphasize the importance of integrating value addition activities for generating economic benefits, as shared by various authors in Part IV.

**Promoting agrobiodiversity tourism**

The project has contributed to the development of agrobiodiversity tourism in Cotacachi. Rural lodges have been constructed throughout the Cotacachi region, using traditional local materials. These *albergues* are owned and operated by individual families. Overnight stays at the lodges and daytime tours with native guides are coordinated by a community-based tourism agency, Runa Tupari Native Travel (www.runatupari.com), which is associated with UNORCAC. The agency has developed a number of tourist routes and offers tourists a range of local products. Tourists appreciate Andean gastronomy that uses local crops and varieties cultivated in home gardens. Agrobiodiversity tourism provides an important source of additional income for farming families. The gardens, in turn, diversify the families’ income and diet, and contribute to the revaluation of the role of native crops in Andean agriculture by the tourists, and also by the farming households themselves.

**Integrating an agrobiodiversity course into the formal education system**

In our project, we designed an agrobiodiversity course for the formal education system. We developed a guidebook for rural teachers entitled *Planting Seeds of Reflection and Hope*, which is used in 19 intercultural, bilingual primary schools in the indigenous communities of Cotacachi. Our strategy was to link the course with teacher and student clubs. Through the clubs, we were able to create a base of 60 teachers and 400 students. Their efforts helped us to promote and raise awareness of agrobiodiversity to 1200 students and, consequently, to the rural community. An important UNORCAC partner that became an offspring of the project in this process was the Teachers Environmental Association of Cotacachi. This association facilitates and enhances the contribution and involvement of teachers in socio-environmental education and rural development.

**Raising awareness of agrobiodiversity beyond farming communities**

We used a variety of publications and media for raising public awareness. A cartoon video called *The Most Valuable Treasure in the World* was created with the help of schoolchildren from the Intercultural Bilingual Education Centres of Cotacachi. This cartoon conveys a message to people not directly involved in our project activities, calling for the conservation of Andean crop diversity, and its associated knowledge and values.

**Lessons learned**

Our project provided benefits to more than a thousand families, either directly or indirectly. It demonstrated the value of establishing functional linkages between *ex situ* gene banks and farming communities. In partnership with several stakeholders, we were able to develop a number of mechanisms for benefit-sharing.
Our efforts resulted in an increase in farmers’ access to the germplasm collections of gene banks, enabling farmers to broaden their varietal portfolio. Through our efforts to institutionalize a diversity of CBM practices in the community, we contributed to the empowerment of the rural communities in various ways. We strengthened their ability to manage their agrobiodiversity, establish community institutions, make use of agrobiodiversity and generate benefits from their agrobiodiversity. We can conclude that by the end of the six-year project, in 2008, we had contributed to the enhancement of several assets in the livelihood of the Andean communities in Cotacachi.

The gene bank in turn benefited from the recycling of gene bank accessions in their original ecological and social environment. In addition, they were able to collect new materials, through diversity fairs, monitor genetic erosion and enrich their collections by documenting farmers' knowledge on the accessions. Conservation professionals were able to improve the functioning of their gene banks and to reduce operational costs, as a result of their participation in the agrobiodiversity project in Cotacachi.

The Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture identified a gap in linkages between strategies for in situ and ex situ conservation (FAO, 2010). In this regard, our experiences in Cotacachi can be considered a milestone for filling this gap if other conservation professionals and their institutions follow the same path.

In Cotacachi, we learned that agrobiodiversity conservation can be aligned with the often-considered contrary force of development and community empowerment. We achieve this linkage for example through promoting entrepreneurship in agrotourism and the production and marketing of Andean food products. The collaboration between UNORCAC, INIAP and the private sector can be considered a successful civil–public–private sector partnership.

The diversity of practices introduced by the project increased the self-esteem of the rural communities, motivating them to appreciate and therefore conserve their local agrobiodiversity, culture and traditions, which we collectively refer to as ‘native Ecuadorian agrobiodiversity’. This is crucial for acknowledging Andean identity and lifestyle, and becomes a community asset of critical significance during times of socio-environmental changes.

One very important element for the success of this project was the dialogue between the various types of organizations involved. This created the possibility of generating a ‘new model’ that associates community empowerment with conservation. The project led to a qualitative leap in the development of UNORCAC, an important stakeholder that is now autonomous in the design and implementation of developmental processes. It is no longer an object of research, or the beneficiary of projects run by other stakeholders. This has been a decisive element for allowing the organization to trumpet this cooperative model as an example to other organizations in similar situations in Ecuador and beyond. For further up- and out-scaling this model, combining conservation and development through a local cooperative organization, we aim to analyse UNORCAC’s institutional, technical and political capabilities that have made the project into a success. If UNORCAC can sustain its role following the conclusion of the project, we will have been successful in developing an organization and a potential model for ‘development with identity’.