



# Strengthening Agroecological Innovation Systems

Some experiences from innovation processes led by local actors

## Introduction

The collapse of the socialist block in 1989 generated a deficit of energy, supplies and chemicals, and forced significant changes in the ways in which food was produced and distributed in Cuba. Due to these deficits, in the 90's Cuba moved from being the largest consumer of agrochemicals in Latin America to one with vast experience in organic agriculture in the world. In this process of change, state enterprises gradually lost importance in the production and supply of food for local consumption, and low input family farming emerged, supplying now the local markets.

This transition period went hand in hand with a severe economic depression and income of scientists, lecturers, technicians, government employees and the public sector in general were so low that many professionals emigrated to look for better opportunities elsewhere. Behind remained a socialist public sector uncertain how to deal with the emerging non state farming enterprises.

In the 90's, first steps were taken to strengthen family farming. A participatory seeds breeding, multiplication and diffusion project started, a challenge to Cuban scientists, not used to involve farmers in the decision making process and recognizing them as equal partners. This project further evolved to become the Local Agricultural Innovation Programme, Spanish acronym PIAL (*Programa de Innovación Agropecuaria Local*). PIAL is recognized today as one of the leading programmes in Cuba facilitating collective action in support of family farming and reaching over 50,000 small farmers nationwide.

Inspired by initial successes in Cuba, ICRA staff has been using these experiences to support also innovation processes in Mexico and Bolivia. This profile briefly describes three approaches used to facilitate collaboration and coordinated action at local level: (1) Participatory Landrace Breeding, (2) Participatory Seed Diffusion and (3) Facilitation of collective action of multi-actor groups.

## Description of the Agroecology system

### (1) Participatory Landrace Breeding

In Cuba, in our experiences of working on-farm, with farmers and breeding landraces we learnt four important lessons:

1. Wide phenotypic variability of useful traits existed among landraces grown under low-input conditions. Then there are options to breed new varieties by selection.
2. Farmers are able to improve complex characters, i.e. yield under low-input conditions. It was statically proven how farmers through direct selection can genetically advance to yield and its components.
3. Farmers have the capacity to choose varieties that are locally adapted. They understood better than professional plant breeders which types of varieties are needed for local conditions.
4. In order to stimulate seed diversity and farmers participation. It was more efficient to diffuse participatory landrace breeding approach (learning process) rather than the best variety in a specific zone (technology per se).



In Mexico, farmers, NGOs representatives and plant breeders promoted:

- Community organised seed collection to make their own seed bank linked to a landrace breeding program;
- Farmers sown collected materials, every cob or head was considered as a family and separately sown;
- Farmers choose and mix the best families and make “improved gene pools” (Figure 1);
- Farmers multiply seed for self-consumption, barter and/or sale.



Figure 1. Female farmers from Chiapas, Mexico choosing the best cobs to make a community gene pool. (Photo H. Ríos)

In the period 2004-2006 farmers from over 95 rural communities started breeding landraces in Chiapas, Mexico.

## (2) Participatory Seed Diffusion (PSD)



Figure 2. Farmers choosing cowpea varieties in diversity seed fairs in the Northeast “Las Caobas” village, Holguin Province, Cuba. (Photo: H. Rios)

In 2000, under the umbrella of the Ministry of Higher Education of Cuba, a multidisciplinary team was formed, integrated by representatives of the National Institute of Agricultural Research, the Agrarian University of Havana and the Centre for Psychological and Sociological Research. This team started organizing seed diversity fairs in different districts (La Palma, San Antonio de Los Baños and Batabanó) in the Western Region of Cuba, where dozens of small farmers chose plant varieties (Figure 3) and took small samples of seeds back home to test them. Subsequently farmers started experimenting themselves and distributing validated new seeds, forming a network, giving birth to a Participatory Seed

Diffusion (PSD) process. Actually, the diversity of seeds released to farmers came from research organization seed banks, but also from other informal sources and gave PSD the opportunity to breed new varieties through a collaborative effort between farmers and scientists.

Over the coming years the multi-disciplinary research team engaged with district representatives of local NGOs like ANAP (*National Association of Small Farmers*) and ACTAF (*Association of Agricultural and Forestry Technicians*) and with local district government staff and gradually managed to have them embrace PSD, and participating in the organization of new events (fairs), and eventually becoming an integral part of the process promoting PSD. The role of the team changed from one in charge to one transferring ownership of the process to farmers and “champions” in the local public organizations. They were strongly motivated to assume this role, as it increased their social recognition as a stakeholder whose voice counted; but also the opportunity to international exposure and other experiences elsewhere encouraged them to assume leadership. Reflecting on this process, one may say that the team brokered the emergence of PSD in Cuba.

Culinary criteria of the varieties were extremely important in keeping more diversity on-farm. Women organized cooking tests as an important criteria for varietal selection (Figure 4). Mostly male farmers



voted for varieties with high yield and associated characteristics. Female participants voted for varieties related to culinary properties. In the cooking tests, men noted that more than 80% of the varieties tested were of good cooking quality, whereas women were more rigorous.

### (3) Facilitation of collective action of multi-actor groups

This is an approach involving the facilitation of collective processes that enables stakeholders to seize opportunities, build trust and take joint action. ICRA has developed such an approach that leads multi-actor groups through progressive phases of joint action.



Figure 3. Sweet potatoes culinary test organized by women of Jesus Menéndez District, La Tunas Province, Cuba (Photo H. Rios)

An ICRA “interactive learning cycle” (Reflection, Training, Planning and Action) engages all relevant actors, i.e., those actors and stakeholders that really face a common innovation challenge and stand out to profit from joint learning and action. Actors reflect on the challenges they face, learn how to deal with them, plan how to apply the lessons learnt and then apply them in their own working environment.

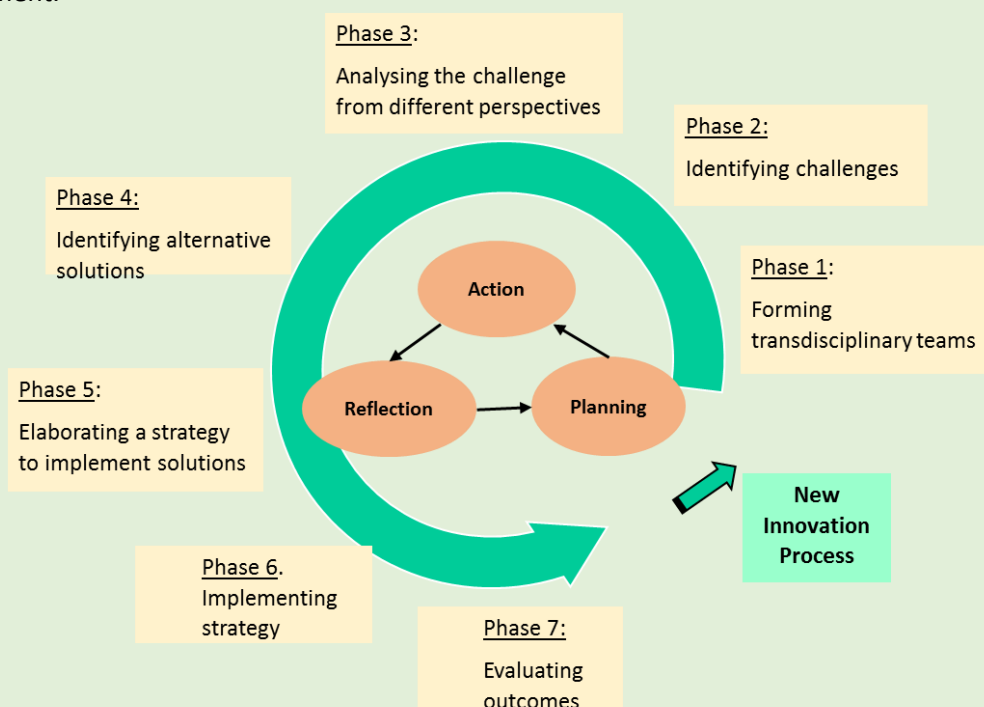


Figure 4. Interactive learning applied by Innovation brokers in Cuba and Bolivia.

However, for an action learning cycle to be successful, it requires someone to bring all actors together and keep them geared in the jointly agreed direction. Then it is important to train identified “champions”, who excelled in the implementation of a new idea, on-the-job as innovation brokers or facilitators.

Since 2012, we conducted several learning cycles in Cuba in partnership with the Local Agricultural Innovation Programme (in Spanish PIAL) and in Bolivia in partnership with the National Innovation



Systems Network for Agriculture and Forestry (in Spanish SNIAF). In each cycle a two-track interactive and experiential learning approach is applied, where the identified “champions” from different organizations at district and provincial level (university lecturers, researchers, technicians and even farmers) were trained on-the-job as innovation facilitators/brokers. They actually facilitated a learning cycle with a group of actors and stakeholders coming together to address a specific challenge (see Figure 5).

## Outcomes of the practices

Under low inputs conditions, farmers were able to improve crop yields.

Access to agrobiodiversity, experimentation and seed multiplication by farmers, choosing among hundred different types of seeds according to their own criteria, has made plant breeding processes more participatory and demand driven.

Forming brokers who themselves formed learning groups (two-track approach) was a successful process in generating innovations for the local agroecological systems. Many local “champions” became catalysers of innovations, who learnt to link different public stakeholders and farmers in a joint collective effort to introduce changes at local level.

Important was the bottom-up approach starting at local (district) level and gradually extending the learning groups to include other actors at provincial and even national level. At the beginning few organisations and individuals believed in the capacity of small farmers becoming the owners of the solutions. But gradually, small farmers, jointly with scientists, NGOs and public organizations have been embracing participatory methods and thus contributing to changes in the hierarchical institutional landscape in Cuba, Chiapas and Bolivia.

One major success factor was the fact that the learning groups focused on real challenges farmers were facing and that the facilitators got the groups into action, collectively sourcing for solutions. This action learning helped to achieve a common understanding among a group of people as diverse as local government, other public organisations and emerging agrobiodiversity business minded farmers.

Facilitating collective action and engaging actors in interactive learning cycles proved to be a successful approach to organise a critical mass of farmers and other actors to promote seed diversity, agroecological practices and farmer participation in Cuba, Mexico and Bolivia.

## Message from farmer to farmers

*“Antes no éramos nadie; ahora, después de trabajar de igual a igual con los científicos somos más respetados y reconocidos por mucha gente. Ya las instituciones cuentan con nosotros para transformar la realidad rural”*

("Before we were nobody; now, after working as equals with scientists we are more respected and recognized by many people. And institutions now count on us to transform the rural reality ")

— Agustín Pimentel, Farmer in La Palma District, Cuba