

33 Honduras

Community seed banks established by local agricultural research committees

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Background

In Honduras, community seed banks are closely related to the local agricultural research committees (Comités de Investigación Agrícola Local or CIALs), which were introduced by the Centro Internacional de Agricultura Tropical (CIAT). A CIAL is a group of men and women who are interested in engaging in collaborative research to improve crop management and productivity and to find solutions to the general challenges surrounding agricultural activities in their communities. The so-called 'young' CIALs are recently established groups of 12- to 20-year-olds who have come together to receive hands-on training to improve their agricultural management skills. In the 1990s, two organizations began working with the CIALs: the Fundación para la Investigación Participativa con Agricultores de Honduras (FIPAH) and the Programa de Reconstrucción Rural (PRR). Currently, 151 CIALs are in operation throughout the country; 117 with the support of FIPAH and PRR.

CIALs were initially conceived as a way for communities to participate in agricultural research and focussed mainly on improving productivity by introducing new management technologies and methods. The work of FIPAH and PRR was kick-started by funding from the International Development Research Centre in Canada, in collaboration with the University of Guelph (Canada) and World Accord (a nongovernmental organization (NGO)), respectively. Since 1998, FIPAH has been receiving support from USC Canada through its Seeds of Survival programme (Chapter 37). By the end of the decade, Norway's Development Fund had begun to provide support (Chapter 35), and the government of Honduras allocated some funding for technology diffusion and crop diversification. Over time, other organizations have become interested in using the CIAL approach. Among them are CARE, through its food security and economic development programme (Promoción de la Seguridad Alimentaria y Desarrollo Económico en las Cuencas) in the Choluteca and Negro river watersheds, and the Escuela Agrícola Panamericana Zamorano (EAP-Zamorano); these two programmes manage a total of 34 CIALs.

Participatory plant breeding

By the end of the 1990s, the CIALs began to get involved in a participatory bean-breeding programme, evaluating improved lines obtained from EAP-Zamorano and CIAT. The objective was not only to improve yields but also to broaden this commodity's genetic base to withstand the environmental disasters that had affected production and conservation of local plant genetic resources (primarily Hurricane Mitch in 1998). In tests, most introduced lines were found to be less adapted and less productive compared with the local varieties they were meant to replace. Therefore, the focus of participatory research turned to locally available landraces; material was recollected from several areas, characterized and introduced into the breeding programme. In this way, the breeding effort gradually evolved into a broader programme that encompassed issues related to conservation and use of agro-biodiversity.

Early on in the process of collecting and characterizing local varieties, the importance of conserving and documenting this material became evident to maintain a broad genetic base for plant breeding. A decision was made to conserve seed at different levels: at the community level in each CIAL or group of CIALs and in regional backup centres managed by FIPAH and PRR experts in collaboration with farmers and volunteers. This gave rise to the seed bank component of the programme.

The first community seed bank was established in 2000 in the CIAL of the Mina Honda community in the department of Yoro, where the community had been concentrating on breeding beans and had released a successful improved variety, Macuzalito, from crosses between the landrace Concha rosada and an improved line supplied by EAP-Zamorano. Based on the interest shown by other CIALs, new banks were established. To date, 11 community seed banks supported by FIPAH (Santa Cruz, La Patastera, La Laguna de los Cárcamos, Cafetales, San José de la Mora, Agua Blanca, Los Linderos, Ojo de Agua, Barrio Nuevo, El Águila and Maye) and two supported by PRR (El Palmichal and Nueva Esperanza) are in operation (Plate 23). Three regional backup seed banks have been established in Yorito (Yoro); San Isidro (Francisco Morazán); and La Buena Fe (Santa Barbara).

Network of seed banks and their operation

The seed banks differ in size and capacity, depending on the size of the CIAL they are associated with, but they tend to have a common minimum infrastructure and equipment. They are operated by the CIAL's management committee and follow the same basic model. Their main role is to maintain seed reserves of the local varieties that have been included in breeding efforts and are frequently planted by farmers in the area. Smaller samples of the original landraces collected in the region are also kept, especially those that are still being used. Other materials are maintained in regional backup banks that fulfill a more conservation-oriented role.

The Santa Cruz CIAL in Yorito has six active members and its seed bank is relatively small; it conserves local bean and maize landraces and is mainly dedicated to reproducing and distributing improved maize varieties – Chileño, Negrito, Capulín, Capulín cycle 2, Guaymas and Santa Cruz – mainly to local farmers.

Although it focusses on maize and beans, the Ojo de Agua CIAL in the municipality of Jesus de Otoro (department of Intibucá) conserves a broader diversity of genetic material, including species such as runner beans (*Phaseolus coccineus*) and lima beans (*Phaseolus lunatus*), several cucurbits (including numerous types of ‘pataste’ [*Sechium edule*]) and a few forage crops. The seed bank also maintains samples of fruit produced by trees introduced and maintained on the back patio of CIAL coordinator Don Claros. His family values conservation of agricultural biodiversity and also uses the seed bank to raise awareness of the importance of diversity in a healthy diet.

In both seed banks, small amounts of seeds of landraces that are less used are stored in glass jars. Large amounts of the landraces that are more actively used by farmers are stored in metal silos or clay containers. Seed is mixed with ashes, chili peppers or garlic to protect it from diseases or with cedar resin to protect it from weevil attack.

Reserves kept in community seed banks are available to both CIAL members and other farmers. Seed is distributed by loan, sale or exchange. Loans are used when requesters are CIAL members or people who are trusted to return seed in good condition, at least from the phytosanitary point of view. In this case, the borrower is required to return one-and-a-half times the amount borrowed. These seed repayments are generally used or sold as grain, as CIAL members prefer to have full control over stock in terms of its genetic integrity and phytosanitary health.

Although regeneration of bean landraces is a task widely shared among CIAL members, reproduction and re-establishment of maize seed is closely linked to maize ‘guardians’ (see Box 33.1). A guardian is someone recognized by the community as a natural conservationist who is given the responsibility of reproducing seed of a specific maize landrace (or improved landrace) year after year, trusting his or her capacity to select the best seeds and enough ears of maize to be representative of the landrace’s genetic diversity. This is particularly important in a crop in which a high proportion is cross-pollinated.

Community seed banks in the CIALs receive support from the regional, backup bank in terms of regeneration of materials, especially those that form the base collections but are not actively in use by farmers and, thus, communities have less incentive and resources to keep reproducing. Regional banks also receive direct requests for seed from farmers and have played an important role in supplying seed in emergency situations, such as after the intense rainfall that caused the loss of over 60ha of maize in La Majada community (Comayagua) a few years ago. The regional banks provide slightly longer-term seed

Box 33.1 Don Santos Herrera and Don Claros Gomez, maize guardians

For several years, Don Santos has been the guardian of the local variety Capulín for the CIAL of Santa Cruz. In 2013, he passed this responsibility over to another guardian, because he had been assigned the task of reproducing the product of the second cycle of a landrace's line that had been improved through mass selection by CIAL members. To avoid contamination with other varieties, his plot – located at the top of a mountain in Santa Cruz county – is isolated from other maize plots. Don Santos visits his plot at least once a day to check on the plants. Under CIAL's guidelines, Don Santos has to select at least 200 ears in each cycle (from a 500–1,000m² plot or a quarter of a manzana, the local unit of land measurement) to preserve the diversity of this landrace and avoid inbreeding.

Don Claros is the coordinator of the Ojo de Agua CIAL in the county of Jesús de Otoro; the CIAL's seed bank is right in front of his house. Don Claros' family's interest in conservation is evident not only in their work with maize (in this case the Matazaneño landrace, whose height has been reduced by a metre over five years of participatory selection), but in the diversity of their orchard and garden. When Don Claros arrived in the region many years ago, farmers were unsure whether they could grow maize or beans with sufficient yields to guarantee their food security or have a surplus to sell. They were dependent on an unreliable potato production and marketing system. Don Claros' determination and the technical support provided by FIPAH through the CIAL enabled the introduction of these crops, thus strengthening food security for the whole community.

conservation under safer and more controlled conditions. The regional bank managed by PRR and the association of CIALs of Lake Yojoa has a seed conditioning system that maintains a constant temperature of close to 18°C and a relative humidity of 12–14 per cent. Under these conditions, regeneration of accessions can be programmed approximately every 2.5 years.

Regional banks have also forged important links with other institutions and regional and international banks. Both PRR and FIPAH are members of the national association for organic agriculture (Asociación Nacional para el Fomento de la Agricultura Ecológica). FIPAH collaborates with the International Maize and Wheat Improvement Centre, EAP-Zamorano and other regional banks, such as that of the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE). FIPAH and CATIE have signed an agreement to repatriate vegetable germplasm from CATIE's germplasm bank and include it in community conservation and breeding programmes.

Documenting collections

Community seed banks in the CIALs maintain a simple documentation system on sheets of paper on which they record the site where each material was collected or obtained, the name of the farmer who contributed the seed, the collection date, the altitude of the site where it was collected and the average reported yields. Also recorded are seed loans and sales and data on the user. Regional banks have more elaborate databases, including, for example, morphological data for accessions that have been characterized. Information on traditional uses of each variety is not recorded as this information is part of the community's oral traditions. Criteria have not been established for managing and distributing information on the collections to third parties, and there is great interest on the part of FIPAH and PRR in correctly managing issues related to access, benefit-sharing and farmers' rights with respect to the community seed banks.

Capacity building and public awareness

Information on community seed bank initiatives is mainly transmitted informally among communities and CIALs, although there have also been efforts to spread the word through radio programmes. Both FIPAH and PRR regularly organize agro-biodiversity fairs where seed bank members present their collections, exchange seeds and offer typical dishes prepared with the conserved materials. Each year, CIAL members involved in seed bank activities receive training focussed on crop diversity conservation and management and crop breeding, and they now have advanced knowledge of the basic concepts of population genetics and selection. Recent training efforts have been devoted to the introduction of a landscape approach to conservation, encouraging farmers to conserve forest patches and the habitats of the wild species from which crop plants have been derived.

Impact, sustainability and future plans

Through the agro-biodiversity programme, FIPAH has promoted conservation of maize and bean landraces in 80 communities. PRR estimates that, since June 2011, it has distributed bean seed to more than 5,000 farmers and maize seed to more than 2,500, both through the central bank and the CIAL-based banks. Women have been important beneficiaries of this effort, as they generally make up 50 per cent of CIAL members. Community seed banks currently operate with support from FIPAH and PRR, who in turn still receive support from USC Canada, the Norwegian Development Fund and World Accord. A seed multiplication and commercialization programme – for traditional and improved landraces – has been envisioned to guarantee sustainability of the agro-biodiversity programme over time. With some initial external support, small seed enterprises could be created, linked to the CIALs,

and quality labels for seed produced by the CIALs could be developed and registered. The plan for the future is to explore maize and bean diversity in new areas of the country and to expand the programme to include other crops and develop specific protocols and approaches. There is also an interest in improving and integrating the banks' documentation systems to develop a national database of maize and bean landraces and locally improved varieties.

Institutions, policies and legislation

Institutional recognition of agro-biodiversity conservation and use initiatives has been slow and is still very limited. Only recently, thanks to FIPAH's advocacy, has there been a change in attitude among decision-makers: FIPAH and PRR are now members of the national seed committee, which enables them to participate in discussions on how to develop systems for registering and commercializing seed of improved landraces through the CIALs. FIPAH and PRR are also members of the recently re-established (2012) national plant genetic resources commission (Comisión Nacional para los Recursos Fitogenéticos) and of national networks on climate change.

In general, it will be important to devise an appropriate legal framework to protect farmers' rights, especially if CIALs begin to register and sell seed from locally improved landraces as an incentive and a mechanism for financing the conservation activities of the local seed banks. To date the main incentive that has kept communities firm in their conservation activities has been their success in stabilizing food production and generating surplus grain for the market. However, younger generations need further incentives if they are to continue being involved in this important activity for the conservation and sustainable use of Honduran agricultural biodiversity.