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The International Treaty
ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 13 of the Provisional Agenda

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

THIRD SESSION OF THE GOVERNING BODY

Tunis, Tunisia, 1 – 5 June 2009

COMPILATION OF SUBMISSIONS SENT BY CONTRACTING PARTIES, OTHER GOVERNMENTS, AND RELEVANT INSTITUTIONS AND ORGANIZATIONS ON THE IMPLEMENTATION OF ARTICLE 6

This annex is a compilation of the submissions sent by Contracting Parties, other governments, and relevant institutions concerning the implementation of Article 6 of the International Treaty on Plant Genetic Resources for Food and Agriculture.

All submissions contained in this annex were received by the Secretariat of the Treaty **after 31 August 2008.**

The majority of the submissions have been inserted into this annex in the form and language in which they were received. Minor editorial changes include the full rendering of acronyms and the correction of spelling.

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A. Submissions sent by Contracting Parties

I. AUSTRALIA

Article 6 requires contracting parties to develop and maintain appropriate policy and legal measures that promote the sustainable use of plant genetic resources for food and agriculture. Article 6 suggests using measures such as promoting fair agricultural policies, increasing the diversity of farming systems, strengthening research and plant breeding efforts to enhance biological diversity and develop varieties suitable for marginal areas, and develop policies that ensure adequate seed availability and promote the use of local or locally-adapted crops, varieties and underutilised species.

Australia has very few native plant genetic resources for food and agriculture and Australia's plant-based agriculture relies on plant species that evolved in other continents. However, Australia's agricultural system is one of the world's most efficient; Australia has one of the lowest Producer Support Estimates and least trade distorting policies of OECD member countries. Australia has recognised the importance of sustainable agricultural industries and regions, and has implemented environment protection legislation and programs. The Australian Government provides significant resources for natural resource management in rural regions and indirectly supports the conservation of PGRFA through finding to agricultural research agencies and extension services. These agencies and services use and promote genetic diversity to facilitate high-level productivity and on-going resilience within the agricultural sector. Both public and private breeding enterprises supply varieties that are suitable to the wide range of conditions found in Australia however, the ultimate decision regarding the use of available crop varieties is one for farmers to consider when meeting the requirements of theft markets.

Therefore, in the Australian context, the objectives of Article 6 are being met by virtue of a modern agriculture sector serviced by effective research, development and extension services supported by natural resource management programs and environment protection legislation.

II. CANADA

Canada through various research efforts at the national, provincial, university and private sector levels conduct a broad range of agricultural research relating to sustainability in general and more specifically that regarding PGRFA. Plant breeders continuously look for a diversity of germplasm to broaden the base of the new cultivars, find resistance to pathogens and adaptation to a broad range of environmental conditions.

Our National Genetic Resource program undertakes a broad range of evaluation and characterization trials in a diversity of crops to support the diversity of breeding and research efforts both nationally and internationally. As characterization and evaluation data points are available and verified for accuracy and completeness before they are entered into the Canadian web-based database.

Barley

From 2001-2004 over 1600 barley accessions evaluated for resistance to Fusarium Head Blight disease and other agronomic traits. Several accessions demonstrated very good resistance to the disease and are now being used in barley improvement programs. Staff at PGRC initiated development of greenhouse protocol to screen barley for seedling resistance to net blotch and

spotted blotch diseases. Over 1000 accessions have been evaluated so far. Evaluation data assists plant pathologists and breeders make selections for more detailed evaluations

Canola

New sources of resistance to Sclerotinia stem rot in canola were found in germplasm from Kashmir, China, Australia and Denmark; a molecular linkage map for canola with three quantitative trait loci for Sclerotinia stem rot derived from a Chinese accessions was developed.

Potato

Molecular diversity analysis of potatoes developed in Canada and those of heritage value showed a narrow genetic base and emphasized the need to broaden the base of the gene pool for future potato breeding.

Chickpea

Several molecular linkage maps with QTLs were developed for resistance to ascochyta blight resistance in chickpea.

Oat

Molecular genetic association among 25 oat species revealed considerable variation among species, among ploidy levels and genome levels. The analysis elucidated the evolutionary pathways among the oat species and demonstrated related species for oat improvement.

III. ITALY

The Istituto Agronomico per l'Oltremare (IAO), technical branch of the Italian Ministry of Foreign Affair, has finalised a report focusing on sustainable use of plant genetic resources and on the implementation of farmers' rights in Italy. It aims at analysing a number of case studies, ranging from the institutions to the civil society, within the framework of articles 6 and 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). This report will be fully available in English for the Third Meeting of the Governing Body of the Treaty. Italy ratified the ITPGRFA in 2004 by the national law 101 that devolves power to the Regional Governments for the implementation of the Treaty.

With regard to the implementation of article 6 in Italy, a full range of policies and plans have been set up by various Italian institutional bodies:

a. The Rural development plans (RDP) developed by 19 Regions implemented at least one of the actions envisaged for the conservation of agricultural biodiversity by the measure 214 of the EU Common Agricultural Policy (CAP). 13 Regions included in their RDP specific incentives for the cultivation of local plant genetic resources endangered by genetic erosion.

b. 6 Regions had already established specific rules on agrobiodiversity aiming at preserving it but also promoting its sustainable use. In this latter case the Regions put in place catalogues of local varieties in order to allow the exchange of their seeds among farmers.

c. The national law on conservation varieties issued in 2007, before the European directive on conservation varieties (62/2008/CE), explicitly allows the use, exchange and sell of these varieties by farmers. This law has been conceived as a national harmonization of existing regional laws on promotion and conservation of local varieties and breeds.

d. The National plan on agrobiodiversity was approved in 2008 by the Ministry of Agriculture and all the Italian regions, strengthening the coordination among different

stakeholders, i.e. public bodies, agricultural research centres, farmers' associations, seed savers. A national programme for the implementation of the Plan will be prepared by mid 2009.

e. A national catalogue of local varieties still in use by farmers or conserved by public gene bank was prepared within the Seed interregional programme whose results have been presented last year.

The results of a survey done on the role of civil society points out the unique role that agrobiodiversity has played and still plays in shaping farming systems, agricultural landscape and food habits in Italy. The report so far shows a clear, pronounced correlation between agro-biodiversity and the various forms of direct sale. Public support for direct sale initiatives, whether national or local, can therefore be seen as valid means for contributing towards the sustainable use of agricultural biodiversity and, indirectly, to implementing Article 6 of the Treaty.

B. Submissions sent by other goverments, and relevant instutions and organizations

I. CENTRES OF THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH (CGIAR)

Prepared by System-wide Genetic Resources Programme (SGRP) of the CGIAR for the Third Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture.

I. Introduction

The Second Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty):

> … *requested the Secretary to prepare a comprehensive document at its next session covering the status of the implementation of Article 6, which includes information on policy and legal measures used to achieve the objectives of the Article. It invited submissions from Contracting Parties, other governments, and relevant institutions and organizations, and urged an improved process for information gathering on the sustainable use activities, including means such as surveys, conceptual frameworks, inter-sessional meetings and workshops.*[1]

The aim of this document is to contribute to the comprehensive document prepared by the Secretary, by presenting the activities of the Centres of the Consultative Group on International Agriculture Research (CGIAR Centres) relevant to Article 6 of the Treaty.

II. Update on Article 6 related activities of the CGIAR Centres

At the First Session of the Governing Body, the CGIAR Centres, through the System-wide Genetic Resources Programme (SGRP), submitted a summary of CGIAR Centres' activities

[1] Report of the Second Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, held in Rome, Italy, *29 October - 2 November 2007. Para. 72.* Available at URL: ftp://ftp.fao.org/ag/agp/planttreaty/gb2/gb2repe.pdf (last accessed 11 March 2009)

relevant to Article 6 of the Treaty[2] and provided the URL link to a series of tables, which included the details of those activities for each Centre. In preparation for the Third Session of the Governing Body, the Centres have updated those tables. They are available at URL: http://www.sgrp.cgiar.org/?q=node/537.

In the context of this exercise, some Centres identified policy and law-related issues that impacted either positively or negatively on the activities they were engaged in with national partners.They noted that:

- A lack of communication between governmental departments can impede the implementation of laws and policies that would otherwise support the conservation and sustainable use of genetic diversity.
- Interaction between public administrations at the local and national levels is at times so limited that national policies are developed that are not entirely relevant for local people.
- Sometimes, policy decisions are adopted without enough scientific, technical and economic information, particularly in the areas of market development, intellectual property, seed regulation, biotechnology and biosafety.
- National variety release and seed quality regulations are, at times, structured in ways that prevent the marketing of varieties developed by farmers.
- Quality standards required for the marketing of processed food products are often difficult for small farmers to fulfil, hindering their ability to benefit from small and mid-scale commercialization of processed products.
- Underutilized species and varieties important for food security, particularly in view of the effects of climate change, often receive little or no attention by national research systems.
- Privatization of seed production and commercialization may limit the availability of seeds for small and poor farmers.
- Benefit-sharing mechanisms in research projects involving farmers are often uncertain or non-existent.
- Phyto-sanitary and access regulations may limit the availability of germplasm.
- There is a lack of knowledge and understanding amongst stakeholders of international legislation, in particular the Treaty on Plant Genetic Resources for Food and Agriculture.

Regarding laws and policies that supported their work related to sustainable use, Centres highlighted market instruments that add value to the products of agrobiodiversity, such as geographical indications, organic food and other quality marks.

III. Regarding a conceptual framework for analyzing the sustainable use of PGRFA

As noted above, the Second Session of the Governing Body affirmed that it would be useful to have inter-sessional consideration of conceptual frameworks concerning the sustainable use of plant genetic resources for food and agriculture (PGRFA) according to Article 6 of the Treaty.

In its submission to the Second Session of the Governing Body, the Centres included a note on a conceptual framework for analyzing sustainable use of PGRFA.

[2] Information received from relevant organizations concerning the implementation of Article 6. Contribution from the System-wide Genetic Resources Programme on behalf of the International Agricultural Research Centres of the Consultative Group on International Agriculture Research (CGIAR). Second Session of the Governing Body. IT/GB-2/07/Inf.8. Para. 11 and following. Available at URL: ftp://ftp.fao.org/ag/agp/planttreaty/gb2/gb2i8e.pdf (last accessed 11 March 2009)

Thereafter, on 19-21 November 2007, Bioversity International, supported by SGRP and the Swiss Government, hosted a workshop entitled "Managing CGIAR Centre Plant Breeding Programmes under the International Treaty". Part of this workshop was dedicated to investigating the perspective of Centres' breeders concerning Article 6. The breeder's view is considered particularly relevant given the number of references to plant breeding in the Article. Participants at the workshop included representatives from six CGIAR Centres, the Secretariat of the Governing Body of the Treaty, the Global Crop Diversity Trust and the Global Partnership Initiative for Plant Breeding Capacity Building (GIPB). The report of the workshop is available at URL: http://www.sgrp.cgiar.org/?q=node/538.

The workshop participants made a number of observations with respect to Article 6 of the Treaty. Those observations may be summarized as follows:

The content of the text of Article 6 of the Treaty appears to be as much about using PGRFA to promote sustainable agricultural systems as it is about sustainable use of PGRFA *per se*. It is likely that using PGRFA in the ways identified in Article 6.2 (a)-(g) will contribute both to the conservation of PGRFA and to improved sustainability of the production systems. Thus, there is a sense in which Article 6 provides possible measures for countries to promote a more sustainable agriculture with higher levels of diversity in production systems through the use of PGRFA. This interpretation of Article 6 builds on the concern with sustainability contained in Article 1 of the Treaty: "*The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security*". Thinking about Article 6 in this way may make it easier for contracting parties (and international organizations) to identify a complete and comprehensive range of concrete and practical ways to implement it, i.e., to use PGRFA in ways that support the sustainability of agricultural systems.

A way of looking at sustainable use of PGRFA in breeding programmes is through assessing the genetic variability of materials used in breeding activities. Some methods that increase the genetic variability of materials and broaden their genetic base (for example, crossing adapted with non adapted PGRFA, or improved PGRFA with landraces) are identified in Article 6 as making a positive contribution to sustainable use of PGRFA and are also likely to contribute positively to improving the sustainability of agriculture. Thus multiple sources of disease resistance can reduce the likelihood of epidemics.

Breeding efforts may also be more efficient, and therefore contribute better to the sustainable use of PGRFA, if they are based on a better knowledge of the needs of farmers and consumers. There are different ways to make breeding client-oriented. In the CGIAR, classical breeding programmes have adopted participatory tools to involve farmers, seed merchants, crop processors and consumers in the definition of breeding objectives and targets. Some Centres are exploiting participatory plant breeding (PPB) as one of the participatory tools to enhance farmers' engagement in breeding activities. PPB has the advantage that it targets particular areas and agro-ecological niches and gives farmers the opportunity to express their needs, according to their economic, social and environmental conditions, hence assisting the breeders in finding the most adapted materials. It also gives farmers and breeders the opportunity to use, and add value to, local material and landraces, playing a key role in local agricultural systems.

Access to PGRFA is the first condition for their use. For this reason, the multilateral system of access and benefit-sharing created by the Treaty is an important tool to allow sustainable use.

Together with the material, the exchange of information is vital for breeding programmes to improve sustainable use of PGRFA, as information about characterization and performance of the material contributes to its efficient use.

IV. Follow-up activities

The Centres are dedicated to promoting the sustainable conservation and use of PGRFA towards a sustainable agriculture, as stated in Article 6 of the Treaty. As conservers and users of PGRFA, they will continue sharing their experiences on the implementation of this Article through regular reports to the Governing Body of the Treaty and through their engagement in inter-sessional activities that may take place.

II. SOUTHEAST ASIA REGIONAL INITIATIVES FOR COMMUNITY EMPOWERMENT (SEARICE)

In furtherance of the Governing Body's request for a comprehensive document at its next session covering the status of the implementation of Article 6, the Contracting Parties to the ITPGRFA, other governments, and relevant institutions and organizations have been asked for submissions in this regard. The Governing Body had also urged the implementation of an improved process for information gathering on the sustainable use activities, including means such as surveys, conceptual frameworks, inter-sessional meetings and workshops.

In compliance with this call for contributions, the Southeast Asia Regional Initiatives for Community Empowerment (SEARICE) hereby submits the following documents:

1. SEARICE. 2008. REVISITING THE STREAMS OF PARTICIPATORY PLANT BREEDING: INSIGHTS FROM A MEETING AMONG FRIENDS. Southeast Asia Regional Initiatives for Community Empowerment (SEARICE).

SEARICE organized a meeting among 30 practitioners and advocates of Participatory Plant Breeding (PPB) from different countries in Hanoi, North Vietnam on 25–28 March 2008. The meeting was an attempt to share and consolidate the experiences from different countries in promoting plant breeding efforts with the participation of farmers to strengthen their capacities to develop varieties that are adapted to social, economic and ecological conditions (Article 6.2c).

Experience indicates that there are four major dimensions in strengthening farmers participation in plant breeding through PPB experiences: (1) Technical and Scientific Basis for PPB which covers aspects of genetic base broadening (Article 6.2d); (2) Pedagogy and Learning Process to support wider use of varieties and species on-farm (Article 6.2f); (3) Market and Economic Considerations; and (4) Institutional and Policy Interventions including a re-examination of existing seed laws and regulations as it relates to encouraging farmers' participation (Article 6.2g).

A fuller synopsis is provided as Annex 1.

The full report of the meeting can be downloaded at:
http://www.searice.org.ph/index.php?option=com_content&view=category&layout=blog&id=47&Itemid=66

2. SEARICE. 2007. VALUING PARTICIPATORY PLANT BREEDING: A REVIEW OF TOOLS AND METHODS. Manila, Philippines: Southeast Asia Regional Initiatives for Community Empowerment (SEARICE).

SEARICE organized the International Workshop on Participatory Plant Breeding Valuation in CanTho City, Vietnam on 23–25 February 2007. This workshop looked at different valuation tools to quantify the costs and benefits of PPB, working on the assumption that unless there is concrete proof of the cost efficiency of PPB, advocates would find it difficult to convince national plant breeders and plant breeding institutions of its value as part of a national plant breeding strategy. Among practitioners, there is a need to look into the methods of communicating the results of PPB in order to convince other stakeholders (mostly conventional plant breeders) that PPB works. Most policy makers will examine too the cost efficiency of PPB and its potential contribution to local and national agriculture research and development and the broader, agricultural economy. There is a need to develop a common understanding of the value of PPB and how this value could be expressed in economic or accounting terms (valuation of PPB), as a way of critically reflecting on the use of PPB. Such valuation of PPB is also a potent advocacy tool to promote the wider acceptance of PPB which in turn contributes to the realization of Article 6.2c of the ITPGRFA on promoting plant breeding efforts with participation of farmers in developing countries.

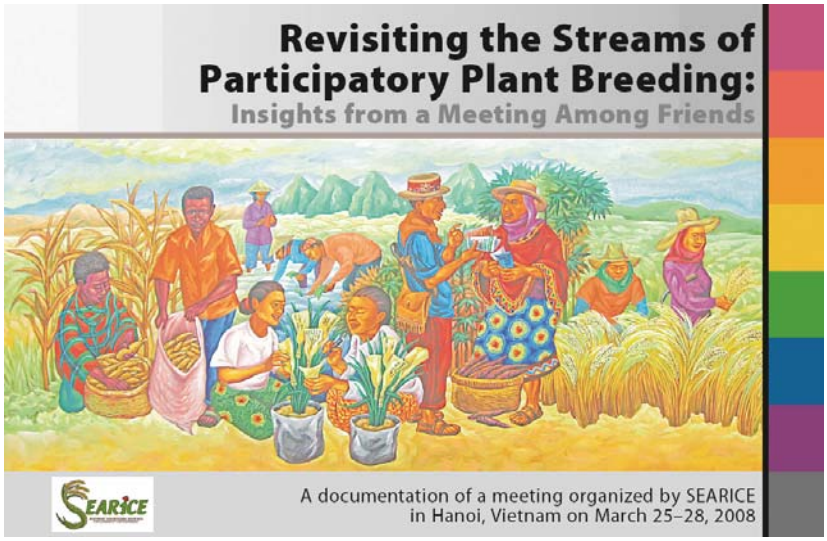
A fuller synopsis is provided as Annex 2.

The full report of the meeting can be downloaded at:
http://www.searice.org.ph/index.php?option=com_content&view=category&layout=blog&id=47&Itemid=66

3. SEARICE is coordinating a regional program on on-farm conservation, crop development and sustainable use of PGRFA in Bhutan, Lao PDR, Vietnam, Thailand and the Philippines. The experiences in implementing the regional program can provide insights to develop strategies, plans and actions towards sustainable use of PGRFA, including experiences in developing and maintaining policy measures that promote the sustainable use of PGRFA. The highlights of accomplishments of this program in 2008 is found in Annex 3.

Annex 1

SYNOPSIS OF "REVISITING THE STREAMS OF PARTICIPATORY PLANT BREEDING"



SEARICE. 2008. REVISITING THE STREAMS OF PARTICIPATORY PLANT BREEDING: INSIGHTS FROM A MEETING AMONG FRIENDS. Southeast Asia Regional Initiatives for Community Empowerment (SEARICE).

THE SOUTHEAST ASIA Regional Initiatives for Community Empowerment (SEARICE) has long been at the forefront of participatory plant breeding (PPB), or farmer-led crop variety selection and development, as a complementary, if not the main strategy of national plant breeding programs. SEARICE's advocacy is backed by more than 15 years of field experiences in implementing PPB at the local, provincial, national and regional levels. This rich community praxis, spread over five countries in Southeast Asia, has enabled SEARICE to contribute in advancing PPB thinking by establishing the scientific and technical basis for PPB; fleshing out its pedagogy and learning processes; exploring the role of the market in advancing PPB; and identifying ways to promote a more favorable policy environment for PPB's broad-scale adoption.

Unfortunately, much of the progress that has been made in pushing the PPB movement forward has gone largely unreported. It remains in the ambit of farming communities and a close-knit group of advocates. In order to identify ways to move PPB forward, SEARICE organized a meeting among 30 practitioners and advocates of PPB in Hanoi, North Vietnam on 25–28 March 2008.

The meeting revolved around four thematic discussion areas, which correspond to four major dimensions of the PPB experience: (1) Technical and Scientific Basis for PPB; (2) Pedagogy and Learning Process; (3) Market and Economic Considerations; and (4) Institutional and Policy Interventions. This fresh take at PPB is a path-breaking development, for which SEARICE shares the credit with the farmers it has worked with, its institutional partners and like-minded groups and individuals.

The different experiences shared at the meeting indicated that scaling up PPB (i.e., horizontally or vertically) generally involves progress in just one of the four dimensions, or in a combination among these. Ideally, however, all four dimensions should move and work as one system in order to scale up PPB. Nevertheless, the experience in the last 20 years has shown that at certain stages in the development/evolution of PPB, one dimension of PPB tends to dominate, and to provide the "push," or "pull" factor. This dominant element partly defines the processes, or how PPB interventions are undertaken on the ground, including what kind of partnerships are forged.

From experiences in the Philippines and in the project areas of the International Center for Agricultural Research in the Dry Areas (ICARDA), such as Syria, Jordan, Eritrea, Egypt, Algeria, Iran, Morocco, Yemen, Mexico and Cuba, the technical aspects of PPB—setting the breeding objectives, pre-breeding, selection of parentals, crossing and selection techniques—proved to be the driving force behind interventions at the community level.

On the other hand, where empowerment processes, such as the Farmers' Field School (FFS) approach, are central to the intervention, as was the case in Indonesia and in the Democratic Republic of Congo, PPB Pedagogy/Learning Processes are the dominant component.

In other cases, such as in Bhutan, Cuba, and Zimbabwe, the PPB interventions were initially driven by technical work and learning processes, and then shifted their emphasis to the development of markets. Elsewhere, policy interventions are a major concern because of the need to sustain PPB efforts and to link these to global efforts and concerns like poverty alleviation, environmental conservation, livelihood development, climate change mitigation, and trade, among others. In Thailand and Vietnam, policy and institutional interventions are being undertaken to complement technical work, which is still the focus of PPB in those countries. PPB practitioners in command- and-control economies, such as Lao PDR and Vietnam, consider it indispensable to do policy work in order to secure the support of their governments for PPB.

Towards the end of the meeting, participants came up with specific recommendations on how to move forward with PPB.

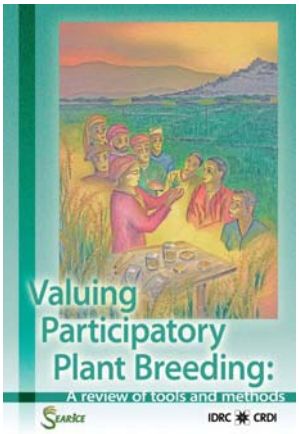
Among these are:

- Securing global recognition for the work of farmer-breeders;
- Documentation of PPB experiences, especially in forms accepted by the formal systems;
- Improving the capacities of plant breeders in PPB;
- Greater engagement of different stakeholder groups in PPB (formal plant breeders, research/academic institutions, extension agents, policy makers, and donor groups), or exploring new ways of working with them;
- Sustained work in different conditions (major-minor crops, main-marginal areas, different political systems, etc);
- Advocacy for farmers' rights, and against Intellectual Property Rights (IPRs) protection/patenting and genetic engineering in crops;
- Elevating PPB onto the global agenda, like climate change; and
- Working for the institutionalization of PPB.

Download the report at:
http://www.searice.org.ph/index.php?option=com_content&view=category&layout=blog&id=47&Itemid=66

Annex 2

SYNOPSIS OF "VALUING PARTICIPATORY PLANT BREEDING: A REVIEW OF TOOLS AND METHODS"



Southeast Asia Regional Initiatives for Community Empowerment. 2007. VALUING PARTICIPATORY PLANT BREEDING: A REVIEW OF TOOLS AND METHODS. Manila, Philippines: SEARICE.

The loss of biodiversity is a concern, given that biodiversity is an important cornerstone of a country's food security. Alongside the loss of plant genetic resources (PGRs) on farmers' fields, is the loss of traditional knowledge associated with the seeds, including the dynamic and evolutionary process of farmers' perpetual selection, evaluation and use of PGRs. This dynamic system is an attribute of a resilient community that can withstand climatic stresses and pest population pressures. Such resilience is needed to ensure a secure food system at the household and national levels.

PPB aims to strengthen this dynamic farmer system of co-evolving and co-adapting PGRs to the changing environment, as a parallel plant breeding strategy and as a conservation approach. At the same time, PPB pushes for the recognition of the role farmers can play in crop improvement as partners of plant breeders/researchers in their work toward national food security.

PPB is now gaining ground in developing countries of the global South. Success stories range from a few community model experiences to PPB becoming part of national plant breeding strategies. The debate on its science, applicability, best approaches and methods, even among practitioners, continues. One of the areas still being contested pertains to the cost-efficiency of PPB. Proponents argue that PPB is cheaper to undertake than conventional plant breeding (CPB) because plant breeders do away with the tedious process of multi-location trials. PPB aims for the release of "unfinished" materials with enough variation from which farmers can select and adapt in their micro-niches and farming practices. PPB critics, on the other hand, argue that this "direct" delivery system is what makes it costly, as most plant breeding institutions are not equipped to handle direct distribution and documentation of results. Unless there is concrete proof of the cost efficiency of PPB, advocates would find it difficult to convince national plant breeders and plant breeding institutions of its value as part of a national plant breeding strategy. PPB therefore remains at the margins of CPB, often dismissed as mere small experiments and pockets of success rather than being taken seriously, as a complementary plant breeding strategy.

Among practitioners, there is a need to look into the methods of communicating the results of PPB in order to convince other stakeholders (mostly conventional plant breeders) that PPB works.

Most policy makers will examine too the cost efficiency of PPB and its potential contribution to local and national agriculture research and development and the broader, agricultural economy. There is a need to develop a common understanding of the value of PPB and how this value could be expressed in economic or accounting terms (valuation of PPB), as a way of critically reflecting on the use of PPB. Such valuation of PPB is also a potent advocacy tool to promote the wider acceptance of PPB.

Recognizing the urgency of this task, the Southeast Asia Regional Initiatives for Community Empowerment (SEARICE), in partnership with the International Development Research Centre (IDRC), organized the *International Workshop on Participatory Plant Breeding Valuation* in CanTho City, Vietnam on 23–25 February 2007. This workshop was participated in by representatives from the academe, research institutions and non-government organizations (NGOs) involved in various forms of support and implementation of participatory plant breeding (PPB) programs in Africa, Latin America and Asia.

Experiences in the use of PPB valuation tools

The Workshop focused on diverse experiences in the use of PPB valuation tools. For instance, a project by the Local Agricultural Research Committee (CIAL) in Honduras totted up the costs of developing local bean varieties through PPB in order to determine the cost-effectiveness of this method. This assessment focused on seven forms of "values" or "capital" that farmers had derived in the process, namely, social/human capital, economic/financial, ecological/natural, and cultural gains, and empowerment, including gender equity.

Another case study looked into the experience of Cuba and Mexico in participatory seed diffusion (PSD). It accounted for the "external costs" of holding diversity fairs featuring maize and bean seeds over a four-year period, and the effect on farmers' participation of an external agency underwriting such costs. The study concluded that access to external support to cover these expenses was regarded by the farmers as an incentive to organize or to participate in seed fairs, and thus is an effective strategy for promoting the conservation/enhancement of genetic diversity. This PSD experience also indicated that PPB, PVS, or PSD would not only reduce government spending on plant breeding research, but also has the potential of boosting local economies, starting with the emergence of a viable and profitable seeds supply industry and related services.

In Syria, the socio-economic impact of conventional—or formal—plant breeding (CPB) versus PPB was compared through such valuation tools as: (1) the Gross Economic Benefit (GEB) model; (2) benefit-cost ratio; and (3) sensitivity analysis based on several years (past and projected) of implementing PPB and CPB programs in Syria. This study provided evidence that no matter how many varieties are released by the formal system, and no matter how much greater their yield gains are than those of local varieties, farmers in marginal environments will not adopt them unless they are developed through a process that involves their participation. Analysis of the farm-level benefits and costs of barley production also showed that farmer participation in the breeding program did not necessarily result in higher production costs. However, it was found that farmers who adopted PPB were likely to incur input costs, but they were also expected to get higher net returns. In addition to the economic benefits, participation also provided other benefits, such as the increase in human and social capital that results from farmers' interaction with breeders, technicians and other farmers.

The evaluation of participatory approaches in bean improvement in Ethiopia consisted of comparisons of diagnostic methods in: (1) identify ing gender-differentiated user preferences; (2) targeting and disseminating more acceptable and productive bean varieties for poor women and men farmers; and (3) comparing and assessing the impacts and costs of participatory and non-participatory breeding approaches in developing client specific germplasm pools. In general, the

evaluation results indicated that the integration of PPB approaches in common bean breeding resulted in increased farmer-held diversity, enhanced farmers' breeding skills, adoption of farmers' selection criteria and preferences, increased positive interactions, and reduced research cost in relation to impacts gained (i.e., more acceptable varieties, fewer research dead-ends, and effectiveness in targeting users' need).

A socio-economic valuation of PPB in Vietnam focused on the benefits and costs to farmers participating in SEARICE's Community Biodiversity Development and Conservation (CBDC) project. The results of this valuation were intended primarily to persuade farmers to adopt PPB (horizontal spread) rather than to gain adherents among policymakers/government decision makers (vertical integration). The challenge was to quantify the benefits of the CBDC project beyond the farmer level, and to find ways to integrate these into the GEB model in order to attract investments in PPB. In general, the valuation showed that farmers' participation in PPB activities directly improved farmers' knowledge and skills, therefore improving farm productivity, the farm economy, local biodiversity and rural society.

Indonesia's experience in "picturing impact," or assessing the status of a project/program using visual tools, such as photographs, proved to be highly qualitative, technology based (i.e., requires a pocket camera and color photo processing usually not available in the village), and moderately time consuming. Some conditions need to be fulfilled for the approach to work. As a PPB valuation tool, Picturing Impact may not be able to give exact measurements of the benefits and costs of adopting PPB. However, because this tool provides images of farmers' communities to policy- and decision-makers, who often do not have the time to visit the communities or to go through long reports, picturing impact could prove to be even more effective in recruiting supporters of PPB.

Lastly, in the Philippines, the cost of PPB was determined by comparing the processes (and activities involved) and the corresponding budget requirements of PPB and CPB. The costing of PPB followed a structured Farmers' Field School (FFS) process, participated in by 15–30 farmers and facilitated by a pool of trainers.

Download the report at:
http://www.searice.org.ph/index.php?option=com_content&view=category&layout=blog&id=47&Itemid=66

Annex 3

HIGHLIGHTS OF ACCOMPLISHMENTS REPORT FOR 2008

CBDC-BUCAP PROGRAM

The Community Biodiversity Development and Conservation and Biodiversity Use and Conservation in Asia Programme (CBDC-BUCAP) aims to strengthen the capacity of farmers to manage their plant genetic resources (PGR) and to secure their local seed systems through conservation, crop improvement and sustainable utilization. The Southeast Asia Regional Initiatives for Community Empowerment (SEARICE) is the regional coordinator of the CBDC-BUCAP program which is being implemented in the five rice-growing countries of Bhutan, Lao PDR, the Philippines, Thailand and Vietnam.

At the end of 2008, the CBDC-BUCAP Program has made a significant contribution to the conservation and development of PGR diversity, particularly in terms of building farmers' capacity to select and develop varieties that meet their needs and preferences. In the Mekong Delta alone, farmers have selected **250** new segregating lines and released new stable lines bringing the number of farmer varieties available in the communities to a total of **103** varieties. In addition, farmer plant breeders in Mekong Delta have made **60** new crosses, resulting in greater diversity of rice varieties available in the region. This translates to more choices for the farmers to consider, which in turn tends to increase the number of varieties being grown in communities at any time. In Bohol province of the Philippines, for instance, farmers are growing **15** to **29** rice varieties per community per season. Fifty percent (50%) of these varieties are farmer-developed. This is a big improvement compared to the 5-9 varieties being grown in the province at the start of the CBDC-BUCAP program, and to the 10-12 varieties found in communities not covered by the program.

Moreover, farmer-developed varieties meet the specific needs of the community since they were bred and selected using farmers' own breeding objectives and selection criteria, and were tested in farmers' own fields. In Vietnam, for instance, there are **4** farmer varieties which adapt very well to acid-sulfate soil; **8** farmer varieties that thrive well in acidic soil; and **7** varieties that do well in saline soils. In other countries, there are farmer varieties that are tolerant to drought and flooded conditions; varieties that are suitable for organic farming systems; and varieties that are resistant to specific pests. This capacity of farmers to develop varieties that are adapted to specific local conditions and micro-niches shows how farmers are adapting to climatic changes and helping their communities develop resiliency.

Livelihood improvement through sustainable use of PGR diversity

The production of good quality seeds and use of better varieties (i.e., the result of farmer breeding and selection) translates to increase in yield. In Eastern Bhutan, farmers have reported a **30%** increase in corn yield due to improvements in seed selection. In the same region, farmers have increased their income by processing corn into *tengma (*corn flakes). Two farmer groups from two communities (Khalling and Dremetse) have been able to save **90,000 (US$2,000)** and **45,000 Ngultrum (US$1,000),** respectively, from the sale of *tengma*.

Likewise, in Laos, farmers have reported a **10-20%** increase in rice yield as a result of using better varieties and good quality seeds. Aside from the use of farmer varieties and good quality

seeds, the increase in yield has been attributed to the reduction in the use of external inputs and to improvements in the farming system. In Vietnam, for instance, **8,000** hectares of riceland are under SRI (system of rice intensification) and the experience of farmers on this system is quite encouraging. SRI has reduced the amount of inputs used: **50-70%** less seeds; **80%** less pesticide; **20-30%** less urea; and **30-50%** less irrigation water. This has resulted in a **10-20%** increase in yield. In the Mekong Delta, farmers have reported a mean net income of **US$645** per hectare resulting from the combined effects of an improved farming system and the use of good quality seeds from their own varieties. This compares favorably with the **US$257** per hectare income from conventional farming system using improved varieties.

Strengthened farmers' management of PGR diversity

The results on the ground clearly show that farmers are quite capable of managing their PGR. The training provided by the program to the farmers has further enhanced their knowledge and skills, which is now recognized not only by their own communities but by other communities and even by the government and the scientific community.

In Laos, initial results reveal that **90-95%** of the seed requirements in the communities where the project is being implemented are supplied by farmers within the community and that most of the seeds are varieties developed through the program. In the Mekong Delta, Seed Clubs have produced and sold more than **83,000** tons of good quality seeds in 2008, satisfying **16%** of the seed requirement in the region. This is a major contribution considering that in the same year, the formal sector produced and distributed only **19,000** tons of seeds, thus meeting only **3.5%** of Mekong Delta's seed requirements.

This capacity of farmers to produce good quality seeds has resulted to better access for all farmers in the community to seeds that are adapted to their local conditions. In Thailand, around **700** farmers in Nan province (and an estimated **1,500** farmers, including those from neighboring provinces) are using farmer-developed varieties. In North and Central Vietnam, more than **82,000** farmers have access to seeds produced by farmer partners. In the Mekong Delta, more than **100,000** hectares are planted with farmer varieties, and around **21%** of the total number of varieties grown in the region (Mekong Delta) are farmer varieties.

The popularity of the farmer varieties can be observed not only among farming communities but also within the government and the scientific community. Currently, there are **16** farmer varieties in North and Central Vietnam and **14** in Mekong Delta that are undergoing national testing for certification. The potential of these varieties has been recognized by government authorities as evidenced by initiatives to test them for wider adaptation. Three out of 14 varieties in Mekong Delta are already registered (i.e. HD1, NV1 and HD4). **HD1** has already received provisional national certification status after passing national tests. HD1 had in fact been shown to be better than formal varieties when it survived the yellow dwarf disease and the brown plant hopper attack in 2008, which almost wiped out all the other rice varieties in Mekong Delta.

Strengthened capacities of local institutions in supporting community management of PGR diversity

As farmers gain confidence in managing their plant genetic resources, extension agents, teachers, plant breeders and researchers who are supporting the work of farmers begin to recognize the

tremendous potential of farmers to manage their own PGR and have started to look more closely at how best to support farmers instead of trying to do the work for them.

In Laos, stronger linkages with local research stations and seed centers have been formed in 2008. This has resulted in greater access to PGR materials and technical assistance for farmer breeding and selection. Farmers are now linked with Pakcheang Rice Seed Station, Pon Ngam Research Station and Thasano Seed Multiplication Center – all located in the provinces. Similarly, in Thailand, partners have expanded their network and strengthened their links with many research and academic institutions for continued support of community-based PGR management. There are now five Research Centers and other national institutions like the National Seed Bank and Agricultural Universities in Thailand that are providing support for the work of farmers.

In Vietnam, there is already an established network of institutions that are linked together and constantly providing support to the Seed Clubs (in Mekong Delta) and BUCAP Clubs (in North and Central Vietnam).

Positive policy changes and actions toward protection of farmers' rights over their PGR

At the policy level, the project has gained recognition and support from local government authorities and even from key institutions at the national level. In Vietnam, the local support for on-farm conservation and development (both technical and financial) has exceeded what the project (CBDC-BUCAP) has managed to provide. In the Mekong Delta alone, local support in 2008 (i.e., for various activities such as farmer field schools, farmers' field days, follow-up training, study tours, seeds, and agricultural equipment) has been valued at more than **US$200,000**.

At the national level, the Ministry of Agriculture and Rural Development (MARD) had issued an order in early 2008 supporting on-farm seed conservation and development (Decision 35/2008/QD-BNN). This important ministry directive is a clear acknowledgment of the work of farmers in PGR management as well as an explicit expression of government support.

In Bhutan, the draft Plant Variety Protection (PVP rules already contain a number of provisions on farmers' rights. This can be credited to the series of discussions with the drafting committee and other key stakeholders. The learning agenda and participatory approaches integrated into the drafting process has resulted in strong support of relevant Departments and Ministry in Bhutan for community based seed management. The need for and importance of on-farm PGR conservation are now clearly outlined in the 2008 Biodiversity Action Plan of Bhutan. Likewise, the PGR conservation, development and use (CDU) activities have been mainstreamed through the national planning workshop of Bhutan's Ministry of Agriculture.

In Laos, research exploring a *sui generis* form of plant variety protection is still on-going. This innovative policy process involving research and policy dialogues with farmers is a first in Laos and probably in the region (Asia).

The work with academic institutions has also advanced in 2008. In Laos, for instance, there is now an on-going process of institutionalizing the integration of PGR management in the curricula of agricultural schools in the country. This will continue in 2009 and by the end of the year, it is expected that all agricultural schools in Laos will be teaching PGR conservation and development using the modules that are currently being developed.