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Towards a Regional Hemispheric Conservation Strategy for PGR for Food and Agriculture in the America's

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V FORAGRO

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Canada 

Background

- Plant genetic resources for food and agriculture (PGRFA) are threatened in the Americas and as well as in many other parts of the world.
 - PGRFA national programs in most of the Americas were created, (many under the IICA umbrella) for the conservation and utilization of PGRFA for improved crop varieties and food security.
 - Historically the lack of capacity and coordination weakens efforts towards enhanced food security and sustainable development.

FORAGRO - Panama Declaration 2005

- Extracted from the **Panama Declaration 2005**
 -**Conservation, characterization and use of genetic resources** were recognized
 -The promotion of actions aimed at the consolidation of **strategic initiatives for the region, and at securing funding for them,** in particular with resources from **international cooperation agencies.**
- Where are these international cooperation agencies and how do we gain support for the conservation, characterization and use of GR's?
- Traditional sources – Development Banks, World Bank, CGIAR and various granting and development agencies

Moving Forward – The Global Crop Diversity Trust

- The Global Crop Diversity Trust (GCDDT) was a key driver and supporter in helping to move our initiative to develop a rational PGR strategy for the America's forward
- The GCDDT was established in October 2004 as an independent international organization under international law.
 - The GCDDT mission is to ensure the conservation and availability of crop diversity for food security worldwide through amongst other things the creation of a endowed trust funds for global PGRFA conservation efforts
 - The GCDDT policy framework is provided by the International Treaty on Plant Genetic Resources for Food and Agriculture

Strategies for the GCDT

- The GCDT is supporting the development of PGR conservation strategies that will help guide resource allocationnecessary for efficient and effective conservation;
- There are two complementary and mutually reinforcing approaches to help rationalize conservation efforts. These are:
 - **Regional strategies**
 - Identification of key collections of priority crops on a region-by-region basis and
 - **Crop strategies**
 - Identification globally important collections on a **crop-by-crop** basis

Setting the Stage - Strategic Approaches



Regional Strategies

- The regional conservation strategies aim at identifying key collections of important crops on a region-by-region basis.
 - Identification of regional priorities for upgrading and capacity-building
 - Collective analysis by holders and experts for cost effective conservation and rationalization at a regional level

Crop Strategies

- The crop strategies identify collections, on a crop by crop basis, .. important at a global level.
 - ..largely driven by crop experts and GR specialists....
 - ...identification of any gaps in the regional strategies with regard to important collections of crop diversity.

Road Map for the America's

- All the 6 sub-regional PGR networks in the Americas met between September – December 2004
 - NORGEN, REMERFI, CAPGERNET, TROPIGEN, REDAFIT, REGENSUR
 - Early on we decided to develop a “hemispheric” strategy to take advantage of our diversity and different strengths and well as not restricting our efforts to “Annex one” crops
- A Strategy Advisory Group and Coordinating Group was established and a work-plan agreed
 - Coordinators from the 6 sub-regional networks, (Costa Rica, April 2005).
- Joint regional PGR networks meeting in 22-23 November 2005 in Montevideo to finalize the strategy
 - Information developed and provided national coordinators - crops and collections
 - Dr Campbell Davidson, NORGEN was nominated by the six sub-regional networks as coordinator
- The draft strategy was presented and discussed at the SIRGEALC meeting held in Mexico, November 2007
 - further amendments were incorporated in the following weeks
- The document **“Towards a Regional Hemispheric Conservation Strategy for PGR for Food and Agriculture in the America's”** was subsequently delivered to the GCDT and posted to their website

Initial analysis of the America's PGR capacity

SWOT – Strengths, Weaknesses, Opportunities and Threats

Strengths

- Large number of genebanks
 - with ample diversity of crops and wild relatives in established collections.
- Great range of new genetic materials
 - with many crops and relatives native to the hemisphere.
- IICA
 - an important agricultural cooperation organization in the Americas with a well established backbone through the entire continent.
- Major international agriculture research centers to partner with
 - Bioversity International (based in Colombia), CIP (Peru), CIAT (Colombia) and CIMMYT (Mexico), as well as regional centers – CATIE and CARDI.
- Large well established PGRFA programs in conservation and sustainable utilization in several countries
 - (e.g. USA, Brazil and Canada).

Weaknesses

- Communication difficulties
 - language, infrastructure, documentation systems, geographical access, logistics, etc.
- Vast geographical areas
 - Antarctic to the Arctic – temperate to tropical; low elevation to high elevation.
- Limited public awareness and knowledge regarding PGR
 - genetic diversity of many crops, especially in the tropical areas.
- Differences in policy approaches
- Political stability and related issues
- Parties and non-Parties to the ITPGR
- Limited human resources
- Many under-utilized or neglected crops

Opportunities

- Large number of partnerships possible
 - bilateral and multilateral
- Well established sub-regional networks
 - varying degrees of operational strengths and coordination
- Many potential ‘new’ crops
 - For direct and indirect use in markets, communities, farmers’ groups, etc.
- Creative skills of Members in solving problems.
- Commitment to common goals
 - Particularly as they relate to the goals of the GPA and the Global Crop Diversity Trust

Threats

- Shortage of financial resources – sustainability.
- Range in development of technical expertise
 - variable levels between countries and sub-regions
- Range of infrastructure development
 - many of which require substantial input and/or investment
- Environmental variables
 - e.g. hurricanes, flooding, extreme cold and heat, extreme wet and dry conditions, etc.
- Rapid genetic erosion
 - especially in small island states
- Safe storage of duplicates (back-ups) is not complete

Assessment of important crops

- Given the Americas stretch from the southern tip of Argentina to the northern edge of Canada and Alaska, in combination with altitudinal variations, it is no wonder there is a great diversity of crops
 - The range of edaphic, topographical and climatic conditions is remarkable
 - From snow top mountains to the hot humid rainforests in the tropics
 - Over 85 different crop species were considered
- **Criteria Considered**
 - Food security and nutrition (regional and global levels).
 - Inter-dependence among countries.
 - Income generation (at national and regional levels) for the poor.
 - Economic importance of a crop.
 - Material should represent a wide range of genetic diversity coverage, cultural values, earning potential of the crop, non-monetary and aesthetic values, etc.
 - Higher priority for regional, 'shared' crops (e.g. for the purposes of quarantine, health, distribution, adaptation, enhancement, etc.).

Important Crops in the America's

| Status | Crop - Spanish | Crop - English | Scientific Name |
|------------|-------------------------------|------------------|--------------------------------|
| Annex 1 | Frijoles | Beans | <i>Phaseolus</i> |
| Annex 1 | Maíz | Maize | <i>Zea</i> |
| Annex 1 | Papa, Patata | Potato | <i>Solanum</i> |
| Annex 1 | Trigo | Wheat | <i>Triticum et al.</i> |
| Annex 1 | Yuca, Casava, Mandioca | Cassava | <i>Manihot esculenta only.</i> |
| Annex 1 | Plátano, Llantén | Banana, Plantain | <i>Musa</i> |
| Annex 1 | Cebada | Barley | <i>Hordeum</i> |
| Annex 1 | Camote, Patata Dulce, Batata, | Sweet Potato | <i>Ipomoea</i> |
| Annex 1 | Arroz | Rice | <i>Oryza</i> |
| Annex 1 | Cítricos | Citrus | <i>Citrus</i> |
| Annex 1 | Arveja | Pea | <i>Pisum</i> |
| Article 15 | Ají, Chile | Pepper | <i>Capsicum</i> |
| Article 15 | Tomate | Tomato | <i>Lycopersicon</i> |
| Article 15 | Cacao | Cocoa | <i>Theobroma</i> |
| Article 15 | Pejibaye, chontaduro, pupunha | Peach Palm | <i>Bactris</i> |
| Non Annex | Maní | Peanut | <i>Arachis</i> |

Criteria for assessment of the “Collections”

Equally challenging was the gathering of information on the collections in the hemisphere

- No less than 193 crop specific collections were listed by members.

Criteria considered

- Wild species and relatives and landraces
 - sources of ‘new’ genes - potential use in genetic enhancement
- Collection comes from a center of origin or center(s) of local genetic diversity
 - landraces, uniqueness
- Importance for food and agriculture and relevance for indigenous and local communities
 - Local adaptation to specific agro-ecological growing conditions
- Basic information needs and availability - breeding value.
- Vulnerability of *ex situ* collections, genetic erosion information.
- Collection size, uniqueness (genetic diversity/uniqueness), original varieties, value of material for markets, cultural values, etc.

Regional and international collections held by CARDI, CATIE, CIAT, CIMMYT and CIP, as well as other CG Centers, were considered important, but were not included in the analysis

The Strategy – Outreach

- The Strategy has 4 major objectives and 4 operational elements
 - The overarching goal of the strategy supports a variety of key areas such as the relevant priority activities of FAO's Global Plan of Action (GPA), the International Treaty on PGRFA and is in line with the objectives of the Global Crop Diversity Trust
- Important to recognize that resources are being contributed from multiple sources including
 - National, regional and international governments and organizations such as the GCDT

The Hemispheric Strategy – Our Goal

- The America's Strategy aims to foster the development of cooperation and collaboration amongst all members of the America's, strives for the conservation and sustainable utilization of all crop genetic diversity in the America's and fosters the development of a rational and efficient long-term development plan for conservation and sustainable use of PGRFA.

The 4 major Objectives of the Strategy

- A PGRFA Hemispheric Information System (PGR-HIS) with diversity characterized and rationalized
 - To foster cooperation at the hemispheric level while recognizing sub-regional and national needs, i.e. supporting national collections through an information platform in the context of the hemispheric strategy.
- The safe storage and exchange of germplasm
 - To foster the development of national and regional capacity for safe storage and exchange of germplasm through national, regional and hemispheric efforts and networks.
- Conservation of PGRFA in perpetuity
 - To furnish high priority to the safeguarding of unique and valuable diversity comprised in ex situ collections of PGRFA in the Americas.
- Promoting PGRFA use
 - To foster innovation by promoting the identification of useful materials for direct use, enhancement or plant breeding programs.

The 4 major Operational elements of the Strategy

- **Organizational and Structural**
 - Developing different ways and means to implement effective and efficient conservation programs
 - Design/implement effective cooperation mechanisms
- **Scientific and Technical**
 - Strengthen/Establish research linkages with a variety of stakeholders to streamline operational aspects of genebank management
 - Characterization of critical germplasm
 - Sharing of technical information
- **Resources - Financial and Human**
 - Identification of resource requirements
- **Policy – Legal**
 - Understanding national and regional policy initiatives
 - Sharing information on national laws and obligations

Action items – progress is being made

- Work has begun in the America's building on the strengths of the genebank specialists and with funding from the trust and others
- Database specialists from many regions have been gathered to help develop a new global database system - our first objective
 - GRIN-Global is being developed in partnership between the USDA-ARS and the GCDT and many specialists
- Funding arrangements from the GCDT covering over 150,000 accessions are now or soon will be (under negotiation) in place
 - Objectives 2 and 3 being addressed - Priority collections important for crop and regional networks conserved
 - Regeneration and characterization of important materials
- A recognized important role for improved communications and other key players
 - Hemispheric members felt there was a need to identify emerging or unresolved issues
 - Agreed on the need to meet and discuss critical issues on a regular basis possibly at the SIRGEALC meetings
 - Understanding the significant role that International Centers have
 - CATIE, CARDI, CGIAR (e.g. Bioversity International, CIP, CIAT CIMMYT etc)

Future thinking – issues for future discussions

- Where do we go from here?
 - Implementation of the Strategy
- The following areas have been identified by team members for future meetings
 - Ratification of or accession to the ITPGR
 - Institutional Issues – FAO, GCDT, IICA, CGIAR
 - Exchange of germplasm within the hemisphere - Access and benefit sharing issues
 - Human resources - Expertise and staff training
 - Effective communication
 - Documentation and information sharing
 - Fostering and promoting use of PGRFA from collections
 - Infrastructure issues
 - Regeneration

Thank you to the Regional Hemispheric Conservation Team

CAPGERNet

The Caribbean Plant Genetic Resources Network

Coordinator: Herman Adams; CARDI, Trinidad and Tobago

NORGEN

The Plant Genetic Resources Network for North America

Coordinator: Francisco Ibarra; INIFAP, Mexico

REDARFIT

The Andean Network on Plant Genetic Resources

Coordinator: Llerme Ríos; INIEA, Peru

REGENSUR

PROCISUR's Sub-program for Plant Genetic Resources

Coordinator: Ana Berretta; INIA, Uruguay

REMERFI

The Mesoamerican Network on Plant Genetic Resources

Coordinator: Priscila Alvarado de González; IDIAP, Panama

TROPIGEN

The Amazonian Network on Plant Genetic Resources

Coordinator: Magaly da Silva Wetzel; CENARGEN, Brazil

INSTITUTIONAL PARTNERS

- International Agriculture Research Centres
 - Bioversity International, CIAT, CIMMYT and CIP
- Regional centers
 - CATIE (Costa Rica) and CARDI (Trinidad and Tobago).
- IICA and its PROCIs
- FAO and its Regional offices
- Global Crop Diversity Trust

Thank you – questions?



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