

**FAO International Technical Conference
on Plant Genetic Resources**

**REPORT OF THE SUB-REGIONAL
PREPARATORY MEETING FOR
CENTRAL AMERICA, MEXICO
AND THE CARIBBEAN**

**San Jose, Costa Rica
21-24 August 1995**



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1 RAPPORTEUR'S REPORT

Introduction

1. The Sub-regional Meeting on Plant Genetic Resources for Mexico, Central America and the Caribbean was held in San Jose, Costa Rica, from August 21-24, 1995.

2. Speakers during the opening ceremony were Charles R. Bowers, Deputy Director General of IICA (welcoming address); Dr. Lawrence Wilson, FAO Sub-regional Representative for the Caribbean; and Mr. Oscar Campos, Deputy Minister of Agriculture of the Republic of Costa Rica.

3. Mr. Oscar Campos, Deputy Minister of Agriculture of Costa Rica, inaugurated the meeting, welcoming the participants on behalf of the Government and people of Costa Rica, and indicating that the countries of Central America and the Caribbean have much in common in terms of the genetic resources of cultivated plants. Except for the few that have hydrocarbon and mineral resources, most of the countries depend on their crops for food and as a source of foreign exchange, from exports.”

4. He stated that “Given this dependency on plant genetic resources for both subsistence and development, it should be clear to our governments that their rational use, diversification and preservation are essential in making agriculture sustainable. These resources are essential, and all others complementary. After all, it has been said many times that ‘the seed comes first’.”

5. He also referred to the urgent need for legislation relevant to these resources. Regarding the region’s wealth of plant genetic resources, he pointed out that for many centuries farmers have worked to preserve these resources, which has led to a large number of domesticated species -corn, beans, Cucurbita, cotton, cacao and many others.

6. He offered interesting ideas on the actions to be executed by the countries of the region in connection with the preservation and sustainable use of plant genetic resources.

Election of the Chairman and Vice Chairmen

7. Mr. Oscar Campos (Costa Rica) was elected to serve as chairman. Dr. Leopoldo Alvarado (Honduras) and Dr. Renford Baker (Jamaica) were elected to serve as vice chairmen. Ms. Soledad Diaz and Dr. Adolfo Rodriguez Nodals, (Cuba) were elected to serve as rapporteurs.



Discussion and approval of the Agenda

8. The agenda was presented by the Chairman and approved, as amended, to allow the sub-regional summaries to be presented first, followed by the country reports. The participants also agreed that the country reports should be presented during the plenary session.

Introduction and background

9. Mr. Esquinas Alcazar (Secretary of the FAO Intergovernmental Commission on Plant Genetic Resources) and Mr. Souza de Silva (Senior Officer of the project Preparation of the Fourth International Technical Conference on Plant Genetic Resources) described the specific characteristics of plant genetic resources for agriculture and food. They pointed out that, due to the globalization of agriculture, and the great interdependence of the countries in terms of the plant genetic resources they use, there must be international cooperation and negotiation on this matter.

10. They recalled the recommendation issued in Agenda 21, of the UNCED, also put forth in Resolution 3 issued by the Diplomatic Conference for the Adoption of the text of the Convention on Biodiversity, to strengthen the Global System for the Conservation and Sustainable Utilization of Plant Genetic Resources. They also pointed out that a periodic publication on the state of plant genetic resources in the world, and a global plan of action, are two essential elements of this system, and that a first version of both documents was being developed during the preparatory process for the Fourth International Technical Conference on Plant Genetic Resources.

11. They indicated that this preparatory process is participatory and is being directed by the countries. Lastly, they described the objectives and the structure of the two documents mentioned, as they had been approved by the countries during the Sixth Meeting of the FAO intergovernmental Commission on Plant Genetic Resources, held in June. They stressed the importance of the meeting for the countries of the region, since it would give them the opportunity to contribute recommendations and proposals to the Global Plan of Action.

Presentation of Institutional Reports

12. The Latin American Economic System (SELA), the Inter-American Institute for Cooperation on Agriculture (IICA), the Centre for Tropical Agriculture, Research and Education (CATIE), the Caribbean Agricultural Research and Devel-



opment Institute (CARDI) and the FAO Regional Office presented reports on the activities they carry out in the region in the field of plant genetic resources. These reports were distributed as inputs for discussion. (Annexes 1 & 2).

Presentation of Draft Subregional Summary Reports

13. Dr. Armando Okado, of the IPGRI Regional Office for the Americas, presented the draft sub-regional summaries, prepared on the basis of the national reports.

14. Both reports were well received by the participants, who felt that they included the most important elements of the national reports and provided an accurate description of the current situation. Both documents were distributed to the participants, to be used as reference for discussion.

Presentation of National Reports

15. During the plenary session of the meeting, the representatives of the participating countries presented their respective national reports, highlighting their strengths and needs and putting forward proposals for the Global Plan of Action.

16. It was clear that many countries have similar needs, and that the region's greatest strength is its wealth of plant genetic resources.

Subregional Working Groups

17. The representatives of the participating countries were divided into two groups to discuss needs, opportunities, limitations, and weaknesses their countries have in common, and to draft proposals and identify priorities for responding to the needs and weaknesses, increasing cooperation between countries and institutions, and contributing to the execution of efforts in this area. Group 1 was made up of the countries of the Caribbean and Group 2 was made up of Mexico and the countries of Central America.



GROUP 1 THE CARIBBEAN

18. This group identified the criteria for selecting crops, stressing their economic importance, potential for diversification and level of environmental acceptability.

19. They also established priorities for the principal activities to be carried out in working with plant genetic resources for the most important crops.

20. They pointed out that while there are collections of plant germplasm for several crops in the Caribbean (for example, banana, roots and tubers, mango, pulses, spices and forage crops) there are no, or underdeveloped, collections for others (ornamentals, minor roots and tubers, medicinal plants, water flora, exotic fruits, amaranths, among others).

21. An analysis of the state of plant genetic resources in the Caribbean revealed the need to implement specific programs.

22. The group noted that these programs should take into consideration regional crops of economic importance for which collections of germplasm exist; regional crops of potential economic importance; cooperation among institutions that have experience with the respective crops: and that they should do more in the areas of information, documentation and early warning systems for plant genetic resources of regional importance.

23. A detailed description of the programs and projects proposed is included in the Report of the Caribbean Group, and constitutes a basic document of this meeting. (Part 2.1)

24. The participants welcomed the proposal of the Dominican Republic to organize a workshop before the end of the year to exchange experiences and reach an agreement among Cuba, Haiti and the Dominican Republic on actions related to plant genetic resources in the sub-region.



GROUP 2 MEXICO AND CENTRAL AMERICA

25. This group identified priorities by area of activity and reviewed the status of plant genetic resources in this important area, a center of origin of numerous cultivated plant species that are, or could be, of great economic importance.

26. The group recommended activities that would contribute to the sustainable development of plant genetic resources, taking into consideration similar wild crops and plants; surveying and collection of plant genetic resources; characterization and evaluation; *ex situ* and *in situ* conservation; training; genetic breeding; legal bases; seed multiplication and production; biotechnology; institutional capacity building; information, documentation and early warning systems; regulation, planning and definition of policies; and sub-regional cooperation and articulation.

27. The participants indicated that although collections containing a broad sampling of genetic diversity exist in the sub-region, they do not coincide with the geographic distribution of plant genetic resources.

28. Similarly, they stressed the importance of characterizing the climate, soil and vegetation in the sub-region, using geographic information systems to develop *in situ* conservation work in protected areas.

29. The participants underscored the importance of formalizing the establishment of REMERFI, and of establishing interinstitutional mechanisms for coordination and integration by country, such as national committees, technical committees, etc.

30. The group noted the importance of developing training activities and, in this sense, indicated the need to identify and analyze the supply of and need for training nationally and regionally.

31. As concerns sub-regional cooperation and articulation, the group felt it was necessary to take into consideration all actions and institutions in the sub-region that are involved in the conservation and sustainable use of plant genetic resources; for example: CATIE, IICA, REMERFI, FHIA, etc.

32. The group stressed the need to set priorities not only for crops of major economic importance, but also for those that have economic potential and are threatened by genetic erosion.

33. The recommendations and proposals produced by this group are detailed in the corresponding report, Part 2.2, which constitutes a basic document for planning future work on plant genetic resources in the region.



34. The rapporteur feels that, as a result of the intense work of both groups and the detailed assessment made of the status of plant genetic resources in the sub-region, the two reports complement each other in many aspects. They also provide much valuable analytical information that can be used in identifying specific actions that will lead to the sustainable development of plant genetic resources in the sub-region and will make it possible to go to the regional conference with positions that are well founded and based on consensus.

35. The conservation and use of plant genetic resources should be seen as two aspects of the same issue, and national plant genetic resource systems should include important components on breeding, seed production and biotechnology.

36. Within this context, the Caribbean and Mexico/Central America groups made a comprehensive assessment of plant genetic resource activities in the sub-region that will contribute to long-term food security in the region. What is needed now are concrete efforts to implement the corresponding recommendations.



GENERAL CONCLUSIONS AND RECOMMENDATIONS OF THE MEETING

General Conclusions

1. Plant genetic resources constitute the foundation of agriculture, and all countries should improve their capacity to conserve and utilize them in a sustainable way.
2. The success of the Global Plan of Action for Plant Genetic Resources depends fundamentally on the level of commitment of the countries themselves.
3. The existing great agro-biodiversity in both sub-regions requires support for plant genetic resources related activities associated with both (i) major crops economically relevant in the present and (ii) minor crops potentially important in the near future, specially those which have been neglected over time and may be endangered by genetic erosion and other adverse factors.
4. The globalization of agriculture and the interdependence of all countries and regions on matters regarding plant genetic resources requires the improvement of existing and, when necessary, the establishment of new cooperation and negotiation mechanisms for access and exchange of plant genetic resources, at the global, regional, sub-regional and national levels.
5. Countries need a national policy framework for plant genetic resources which should be supported by legal and institutional mechanisms as well as by financial arrangements in order to improve their performance regarding the conservation and sustainable utilization of plant genetic resources; as they have to relate with other countries and with sub-regional, regional and international organizations for this matter.
6. A national system for plant genetic resources is imperative for countries willing to (i) articulate all activities on plant genetic resources being carried out by their various organizations and in different sectors; (ii) increase the contribution of plant genetic resources to the development and competitiveness of their agricultural sector; and (iii) improve their national capacity to benefit from the existing sub-regional, regional and international funding and cooperation mechanisms.
7. Most of the countries in both sub-regions do not have sufficient human resources well trained in the related areas of plant genetic resources.



8. Countries need to improve their technical-scientific capacity in order to be less dependent on matters regarding the conservation and sustainable utilization of plant genetic resources. New biotechnologies, traditional crop improvement technologies and farmers technologies should be at the centre of any effort to increase such capacity.

9. Countries need to improve their capacity for analysing and negotiating matters regarding access and exchange of plant genetic resources, information and technology.

10. The effective management of plant genetic resources is of fundamental importance for the conservation and sustainable utilization of plant genetic resources.

11. In the two sub-regions, the implementation of the Global Plan of Action will need new and additional funds from countries as well as from sub-regional, regional and international funding and cooperation organizations.

12. There is a need for regional mechanisms to (i) articulate regional and sub-regional initiatives and (ii) promote exchange of plant genetic resources, information and technology between countries, sub-regions and regions regarding plant genetic resources.

13. Countries from both sub-regions should also adopt a horizontal-cooperation approach to guide their inter-countries initiatives for (i) exchange of plant genetic materials information and technology, as well as for (ii) training of professionals in related areas for the conservation and sustainable utilization of plant genetic resources.

14. The outcome of the negotiations taking place in the process of the revision of the International Undertaking on Plant Genetic Resources (Resolution C7/93), which include (i) regulations of access to plant genetic resources for food and agriculture and (ii) the realization of Farmers' Rights, are of fundamental importance for the conservation and sustainable utilization of plant genetic resources for food and agriculture, which are goals to be achieved through the Global Plan of Action.

15. There is a need for an information system for plant genetic resources which should serve both sub-regions; and such a system should be articulated with the FAO World Information and Early Warning System for Plant Genetic Resources.

General Recommendations

16. Governments and organizations should translate their political will to support plant genetic resources activities into concrete policy, legal, operational and financial actions, mechanisms and arrangements.



17. National, sub-regional and regional systems with their agreements, mechanisms and instruments for the conservation and utilization of plant genetic resources should be strengthened, or developed as appropriate, following a conceptual and operational framework matching, as far as possible, the FAO Global System for the Conservation and Utilization of Plant Genetic Resources for Food and Agriculture. The components of such national, sub-regional and regional systems should be articulated, as far as possible, with the correspondent components of the Global System.

18. National, sub-regional and regional initiatives to be defined in the Global Plan of Action for Plant Genetic Resources should promote a balance between (i) *in situ* and *ex situ* conservation activities; (ii) conservation and utilization activities; and (iii) investments in plant genetic resources and in biotechnology.

19. Countries and sub-regional, regional and international organizations should review their criteria for the allocation of financial resources for plant genetic resources in order to harmonize their budget priorities for this area with the priorities established in the Global Plan of Action for Plant Genetic Resources. By the same token, existing regional, sub-regional, and national programs regarding plant genetic resources should also be reviewed and re-directed in order to support the new national, sub-regional and regional initiatives which will be defined in the Global Plan of Action.

20. National, sub-regional, regional and international initiatives to be defined in the Global Plan of Action for Plant Genetic Resources should include a strong training and education component for both sub-regions, including both the technical-scientific and the management dimensions of plant genetic resources conservation and utilization activities.

21. All countries from Latin America and the Caribbean should take advantage of the regional meeting to be held in Colombia early in 1996 in order to design the political strategy which will guide their participation in the Leipzig Conference on 17-23 June 1996. Both sub-regions should create inter-country technical groups to provide inputs to countries' participation in the Colombia regional meeting.

22. The FAO Regional Office for Latin America and the Caribbean and IICA should cooperate to develop the regional components of the FAO Global System for the Conservation and Utilization of Plant Genetic Resources. This should be done in close cooperation with other regional and sub-regional organizations, such as SELA, CARDI and CATIE as well as international agricultural research centres active in the region, specially IPGRI. This effort should articulate regional and sub-regional initiatives as well as to promote exchange between countries and regions.



23. An information system for plant genetic resources is extremely important for both sub-regions and should be articulated with the FAO World Information and Early Warning System for Plant Genetic Resources. The Caribbean information system for plant genetic resources, CSEGRIN, already in place, is a suitable option for the whole region and may be extended to attend all interested countries.
24. A public awareness campaign should be carried out at all levels in both sub-regions; and countries should be actively involved using their experiences and facilities. FAO and IICA should cooperate with these national initiatives as well as international agricultural research centres active in the region, specially IPGRI.
25. Existing regional and sub-regional mechanisms for cooperation regarding plant genetic resources, specially the plant genetic resources programs and networks, should be strengthened.
26. Relevant regional and sub-regional organizations from Latin America and the Caribbean should be invited by FAO to participate as observers in the meetings of the intergovernmental Commission on Plant Genetic Resources (CPGR).



RECOMMENDATIONS AND PROPOSALS OF THE CARIBBEAN SUBREGION

I. The Caribbean states recognized the existence of a high degree of plant biodiversity in the sub-region. This diversity of plant genetic material exists in crops which are used for food beverages, magazines as well as in forest ecosystems.

It is considered urgent to conserve these PGRs for present and future use, as well as efforts must be made to protect them from erosion and loss.

The Caribbean states recommend that FAO develops programs supporting the effort of the Caribbean states which would enable existing national and regional institutions to collect, identify, characterize and document the PGRs available in the member states.

II. As a consequence of increasing population growth, tourism and recreational use of land and water resources, PGRs in the sub-region are being eroded or under the threat of loss. An understanding of the dynamics of these fragile ecosystems in which the PGRs are being eroded and threatened is required in order to reverse this negative trend.

The Caribbean sub-region recommends that a program be provided which would enable and assist them to conserve, characterize and document PGRs present in these areas. Such programs should also assist the member states in executing a pilot project in the reestablishing PGRs in such areas.

III. The Caribbean states have in the past collected and maintained in *ex situ* gene banks and *in situ* ecosystems plant genetic materials of economically important crops. The systems and technology used in maintaining PGRs are in need of modernization. The sub-region also recognizes that the man power needed to operate and manage PGRs must be properly trained and increased.

The Caribbean sub-region recommends that FAO develops appropriate programs that would assist their respective member states in improving and modernizing the technology available, increase the number of trained professionals and provide better management to PGRs. Institutions like IPGRI and CATIE and other regional institutions could greatly assist in this area.

IV. The Caribbean states consist of more than 25 island states having a land area of 234,108 km² and a population of almost 32 million inhabitants. These islands with limited land mass and renewal water resources also have insignificant mineral resources. As a consequence, PGRs utilization requires the necessary preservation if the inhabitants are to maintain an acceptable level of nutrition, health and well-being.



The Caribbean leaders have recognized that in the environment of the world's new economic order there is an uncompromising approach to market led development, private capital and private capital support systems.

The sub-region member states, in considering these conditions, recommend that FAO seeks funding for programs that would assist Caribbean member states in overcoming the obstacles which would restrict the identification, promotion and development of new alternative, cost competitive ways of using available PGRs.

V. The Caribbean states, in spite of their limited natural resources, must nevertheless be in a position to produce food, clothing and shelter from their PGRs at competitive costs in comparison with those of larger, more developed countries rich in natural resources. This effort requires the preservation and utilization of existing PGRs, as well as the introduction of new varieties through modern plant breeding and advance genetic engineering.

The states recommend that FAO gives support to national and regional programs which would enhance the capability of their respective states to maximize the benefit of existing PGRs and new varieties.

VI. The Caribbean states commend the effort and support given to some states in the area of seed processing and storage. Nevertheless, the states recognize that there will be a continued reliance on seed import for certain crops.

Unfortunately, there is a significant number of cases of poor germination, disease introduction and other problems related to imported seed which have caused not only crops failure but also foreign exchange losses.

It is, therefore, recommended that FAO continues to support and encourage all member states to develop national seed programs including certification and standards for seed exchange regulations. Member states are recommended as a matter of urgency to adopt seed quality standards already available for the region.

VII. The Caribbean states recognize that there are some under utilized vegetable species which can contribute to the improvement of the diet, nutrition and health of Caribbean people. These under utilized species have not received the attention they deserve in the past.

It is therefore recommended that FAO assists in developing a program that would address PGR activities related to this group of crops.

VIII. The sub-region is aware of the importance of information on plant genetic resources for crop improvement and for providing data to be used in an early warning system in order to prevent PGRs from being lost or seriously eroded. The



states of the sub-region recognize the contribution made by the FAO project for the development of the Caribbean Seed and Germplasm Resources Information Network (CSEGRIN).

It is recommended that this system be expanded to include more crops species in the database and that Central American countries should actively participate in this information system.

XI. The sub-region recognizes the need for all member states to make explicit statements with respect to their policy on PGRs. Implicit in such policy statements would be the national view of the world's PGRs. In support of the statements there is a need for gaining public support to facilitate successful implementation of the policy.

It is recommended that FAO provides support and assistance to national efforts in gaining public awareness of the need for action in respect of PGR conservation, evaluation and utilization. Such support should include the preparation of modern legislation which could be used in member states to implement their policies.

Germplasm collection availability and economic importance per crop for the Caribbean countries

Crops	Antigua	Bahamas	Barbados	Cuba	Dominica	Dominican Rep.	Grenada	Haiti	Jamaica	St. Kitts & Nevis	St. Lucia	St. Vincent	Trinidad & Tobago	Total	Collection	Econ. Import
Amaranthus & other Veg.	+	+	+	-	+	+	+	+	+	+	+	+	+	12	-	-
Aquatic flora	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Avocado	+	-	+	+	+	+	+	+	+	-	+	-	+	10	+	-
Banana	+	+	+	+	+	+	+	+	+	+	+	+	+	13	+	+
Citrus	-	-	-	+	+	+	+	+	+	-	+	-	+	8	+	+
Cocoa	-	-	-	+	+	+	-	+	+	-	+	-	+	7	+	+
Coconut	+	+	-	+	+	+	+	+	+	-	+	-	+	10	+	+
Coffee	-	-	-	+	+	+	-	+	+	-	-	-	+	6	+	+
Condiments	+	+	+	+	+	+	+	+	+	+	+	+	+	13	+	-
Cucurbita	+	+	-	+	-	+	-	+	+	-	+	-	+	8	-	-
Exotic Fruits	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Forest Ecosystems	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Forages	+	-	+	+	+	+	+	+	+	+	+	+	+	12	+	-
Food Legumes	+	+	+	+	+	+	+	+	+	+	+	+	+	13	+	-
Maize	+	-	-	+	-	+	+	+	+	-	-	-	+	7	-	-
Mango	+	+	+	+	+	+	+	+	+	+	+	+	+	13	+	+
Medicinal Plants	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Major Root Crops	+	+	+	+	+	+	+	+	+	+	+	+	+	13	+	+
Minor Root Crops	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Ornamentals	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-
Papaya	+	+	+	+	-	+	-	+	+	+	+	+	+	11	-	+
Pineapple	+	+	-	+	+	+	-	+	+	+	+	+	+	11	-	+
Rice	-	-	-	+	-	+	-	+	+	-	-	-	-	4	+	+
Sugarcane	-	-	+	+	-	+	+	+	+	+	-	-	+	8	+	+
Underutilized Crops	+	+	+	+	+	+	+	+	+	+	+	+	+	13	-	-

+ Present; - Absent



Relative importance of activities to economical crops of the Caribbean

Activities	Banana	Citrus	Cocoa	Coconut	Coffee	Mango	Root Crops	Papaya	Pineapple	Rice	Sugarcane	Total Score
1. Survey & Germplasm Collection	0	1	2	1	2	3	5	2	5	1	0	22
2. Strengthen Infrastructure for Crop Improvement	4	5	2	4	5	3	4	5	4	3	3	42
3. Training	5	4	2	3	4	3	3	5	3	4	2	38
4. Documentation & Characterization	2	4	2	2	2	5	4	2	4	2	1	30
5. Evaluation	2	4	2	4	4	5	4	4	4	5	4	42
6. Product Development	4	2	4	5	5	4	5	2	3	5	5	44
7. Multiplication & Distribution	4	5	3	4	4	3	4	4	2	5	4	42
8. Marketing	5	4	4	4	5	5	5	3	2	5	5	47
Total Score	26	29	21	27	31	31	34	27	27	30	24	

Ranking scale: 0 (least important) - 5 (most important)

Relative importance of activities to potentially economic crops of the Caribbean

Activities	Amarant & ot.Veg	Avo cad o	Condi ments	Cucur bits	Aquatic Flora	Exotic Fruits	Forest Ecosystems	Forages	Maize	Medicinal Plants	Minor Root Crops	Orname ntals	Und . Ut. Ind . Crops	Food Legumes	Total Score
1. Survey & Germplasm Collection	5	3	5	5	5	5	5	5	4	5	5	5	5	5	67
2. Strengthen Infrastructure for Crop Improvement	4	2	4	4	4	4	5	4	5	5	4	5	4	4	58
3. Training	3	3	4	3	4	4	5	3	4	5	3	5	4	3	53
4. Documentation & Characterization	5	4	4	5	5	5	5	4	3	5	4	5	5	5	64
5. Evaluation	5	3	4	4	4	5	5	5	4	5	5	5	4	4	62
6. Product Delv.	5	2	3	5	5	5	5	3	3	5	5	1	5	5	57
7. Multiplication & Distribution	3	2	3	3	4	3	5	3	4	5	4	2	4	4	49
8. Marketing	4	4	4	5	4	4	4	2	3	5	3	5	5	4	56
Total Score	34	23	31	34	35	35	39	29	30	40	33	33	36	35	

Ranking scale: 0 (least important) - 5 (most important)



PRESENTATION OF THE CARIBBEAN WORK GROUP PROPOSALS TO THE PGR WORKSHOP (24 AUGUST 1995)

CROP SELECTION

Three criteria were used as the basis of crop selection across the Caribbean. These were:

1. the economic importance of the crop to the various territories,
2. the potential of the crop for diversification,
3. that the crop be environmentally friendly.

Components of economic importance were as follows:

1. good IRR (Internal Rate of Return),
2. the capacity to generate employment,
3. marketability of the crop or products,
4. competitiveness of the crop or products, and
5. the potential to occupy niche markets.

List of Activities used to Evaluate the Selected Crops

1. survey and germplasm collection,
2. strengthen infrastructure for crop improvement,
3. training requirements,
4. documentation and characterization,
5. evaluation,
6. product development,
7. multiplication and distribution of planting material,
8. marketing research and intelligence.



List of crops grouped according to combined score over activities

Crop	Score
Medicinal plants	40
Forest Ecosystems	39
Underutilised industrial crops	36
Exotic fruits, Aquatic plants, food legumes	35
Root crops, cucurbits	34
Ornamentals, <i>Amaranthus</i> and other vegetables, major root crops	33
Mango, coffee and condiments	31
Rice and maize	30
Citrus and forages	29
Pineapple, coconut and papaya	27
Banana	26
Sugarcane and avocado	24
Cocoa	20

List of regional crops having existing germplasm collections

Banana	Food legumes	Condiments
Forages	Root crops	Mango

List of regional crops lacking germplasm collections

Ornamentals	<i>Amaranthus</i> & other vegetables	Aquatic flora
Exotic fruits	Forest ecosystems	Medicinal plants
Minor roots & tubers	Under utilized industrial plants	

List of regional crops of economic importance with germplasm collection

Banana	Mango	Root crops
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List of national crops of economic importance with germplasm collection

Citrus	Coconut	Cocoa
Coffee	Pineapple	Rice
Sugarcane		

There is one national crop, papaya, which lacks germplasm collection.



Outline of programmes and project proposals

Programme I - Regional Crops of Economic Importance with Germplasm Collections.

Project I - Infrastructure strengthening (resource enhancement) and product development of the banana industry and related musa sp.

Objectives: To improve resource capability, diversify the industry and increase the efficiency of planting material multiplication and distribution.

Collaborating institutions: MoAs, FAO, CESDA, CRDA, INIVIT, INIFAT, WINBAN, JAMBAN, CMPGR, IPGRI, CARDI, IICA

Estimated cost: US \$ 1,060,000

Project II - Root crops development in the Caribbean.

Objectives: To survey, collect, characterize and document, evaluate, develop products and carry out research and marketing.

Collaborating institutions: MoAs, FAO, CESDA, CRDA, INIFAT, CMPGR, IPGRI, UWI, CARDI, IICA, INRA

Estimated cost: US \$ 5,000,000

Project III - Mango improvement and development in the Caribbean.

Objectives: To characterize and document, evaluate, develop products and carry out research and marketing.

Collaborating institutions: MoAs, FAO, CESDA, CRDA, ENF, CMPGR, IPGRI, CARDI, IICA, CARIFRUIT, INRA.

Estimated cost: US \$ 2,000,000

Programme II - Regional Crops of Potential Economic Importance.

Project IV - Surveying, collecting, characterizing and evaluating crops of potential economic importance in the Caribbean.



Objectives: To collect, make inventories and evaluate the germplasm for production.

Collaborating institutions: MoAs, FAO, CESDA, CRDA, INIFAT, CMPGR, IPGRI, CARDI, IICA, INRA, CIAT, CARIRI, ORSTOM.

Estimated cost: US \$ 10,000,000

Information, documentation and early warning system for plant genetic resources with regional importance

Considering the importance of the information on PGR, the Caribbean states propose that the Caribbean Seed & Germplasm Resources Information Network (CSEGRIN) be expanded to include all other countries of the sub-region. Data for additional crops should be made available within the database.

Policy Recommendations

Given the general absence of specific policies on PGR management it is proposed that:

1. Governments of the Caribbean should be advised to develop clear policies on PGR management.
2. In so doing, they should establish national level vehicles or mechanisms for implementation of such policies.
3. Following the enunciation of such policies, FAO should assist in preparing model legislation to facilitate the implementation of national policies and the harmonization of regional policies.

The broad areas of focus are as follows:

1. Conservation of PGR with appropriate legislation.
2. Awareness of the importance of PGR management to sustainable development.
3. Common areas of cooperation and collaboration at the regional level. This should include placing PGR management on the regional agenda (Association of Caribbean States - ACS).
4. Institutions which would be responsible for PGR management.



5. Mechanisms for funding.
6. Areas of technical assistance support.
7. Linkages with the Global System.
 - a. Governmental level.
 - b. Caribbean Committee on Management of Plant Genetic Resources (CMPGR).



RECOMMENDATIONS AND PROPOSALS FROM THE CENTRAL AMERICA AND MEXICO SUB-REGION WORK GROUP

Area of activity 1: Priorization of crops and related wild plants

Background

Over the past 12 years, the sub-region has focused its efforts on identifying species and carrying out activities related to plant genetic resources. As a result, a list of priority species (cultivated plants) has been drawn up. Although the list includes only cultivated species, there are plans to prepare a similar list for forestry species.

The criteria for selecting these species also included the conservation of the genetic pool of wild relatives. This will make it possible to add to the list species that, given their importance or because they are in danger of extinction, should be taken into account. This list should be reviewed and analyzed every two years.

Recommendations

1. Plant genetic resource programs must constantly update their inventories of plant genetic resources in the country.
2. This information is to be processed and prioritized by REMERFI, for dissemination throughout the sub-region.

Area of activity 2: Survey and collection of Plant Genetic Resources

Background

Although collections containing a broad sampling of genetic diversity exist in the sub-region, they do not coincide with the geographic distribution of plant genetic resources.

Activities

1. Conduct phyto-geographic studies of species identified as priorities.
2. Verify whether genetic pools are representative, based on the different species that exist in *ex situ* collections.



3. Strengthen sub-regional capabilities, providing the training and equipment needed to use the information contained in geographic information systems (GIS).
4. Based on the above, organize programs to collect priority species.
5. Prepare guidelines for gathering biophysical and ethno-botanical information.

Recommendations

1. Coordinate and complement efforts among national institutions, in order to guarantee the survey and collection of priority plant genetic resources.
2. Identify, through REMERFI, phyto-geographic areas of common interest for joint missions among countries.

Area of activity 3: Characterization and evaluation

Background

A substantial amount of the germplasm conserved in banks has not been characterized or evaluated, due to a lack of economic resources and because of technical limitations (in some cases, the corresponding botanical descriptors do not exist). As a result, little is known about the diversity that exists in the banks or the extent to which such banks duplicate one another. Moreover, the use of molecular techniques to characterize the germplasm is limited, which, in turn, leads to the limited use of the materials conserved in the banks.

Activities

1. Review and update the list of existing botanical descriptors, and prepare those missing.
2. Characterize and evaluate existing collections, using molecular methods.
3. Conduct morphological and agronomic characterization and evaluation activities in the field.
4. Identify sub-regional capabilities for carrying out the aforementioned activities.



Recommendations

1. Designate institutions in the sub-region and charge them with characterizing and evaluating plant genetic resources.
2. Disseminate, through REMERFI, the information generated in the characterization and evaluation activities.

Area of activity 4: *Ex situ* conservation

Background

Although there are several international centers and national institutions that carry out important activities related to the conservation of genetic diversity, they do not cover all species.

The countries have shown interest in conserving the species that are of strategic importance to them.

Ex situ conservation can take place in three different ways: seed banks, *ex situ* conservation in the field; and *in vitro* conservation and cryo-preservation.

In general terms, the infrastructure for conserving germplasm has deteriorated. There is no system for documentation or systematic actions related to germplasm.

There is a general need for training since not enough is known about the species, and the management techniques used throughout the *ex situ* conservation process.

Activities

1. Strengthen existing capabilities.
2. Establish a horizontal information network.
3. Establish systematized programs to regenerate the germplasm in *ex situ* collections.
4. Standardize protocols for the *in vitro* conservation of species of strategic importance.
5. Develop protocols for *in vitro* conservation of species considered to be of strategic importance.
6. Support research to develop cryo-preservation technologies.



Area of activity 5: *In situ* conservation

Background

In the sub-region, *in situ* conservation efforts have focused on timber and non-timber forestry species. In many protected areas, there are no clearly defined objectives concerning the protection of ecosystems, agricultural systems, wild relatives of crops, or threatened forestry species. Major efforts have been made to prepare inventories of the flora of the sub-region; recently, much work has been done in certain protected areas, in preparing inventories of flora and conducting ethnobotanical studies of crops and related wild species.

In situ conservation can take place in two different ways: a) protected areas, and b) *in situ* areas, working with the farmer.

Activities

In protected areas:

1. Characterize climate, soil and vegetation in the sub-region, using geographic information systems. Scale of work 1: 250,000
2. Select and design *in situ* conservation areas of strategic interest to the sub-region and to individual countries.

With the participation of the farmers:

1. Review available information on *in situ* conservation and make it available to them.
2. Define the hierarchy for work: crop-population-community.
3. Establish the size of the populations.
4. Quantify the influence, using monitoring methods.
5. Implement systems to measure the impact of the introduction of plant species.

Recommendation

Review and evaluate available infrastructure, with a view to establishing area for *in situ* conservation.



Area of activity 6: Genetic breeding

Background

One prerequisite for any breeding method (traditional or biotechnological) is the existence of plant variability, for both native and exotic plants.

Suitable conditions exist in the sub-region for plant breeding, beginning with traditional techniques, incorporating biotechnological techniques, and going back to the plant breeder.

Given demands for food and changes in the economic policies of the sub-region, there is a need for a sufficient number of properly trained professionals in the field of plant breeding to meet current and future needs, who realize the benefits of the rational use of plant genetic resources.

Activities

- Review and update university curricula in the field of plant breeding.
- Develop the capacity to breed native and introduced species.
- Provide on-going education at different levels, in plant genetic resources.
- Prepare an inventory of national capabilities in the sub-region, with a view to developing joint programs.
- Sponsor technical fora for professionals in the field of plant breeding, biotechnology and resource conservation.
- Conduct training courses (intermediate and other levels).
- Hold scientific congresses and field demonstrations.
- Create mechanisms to link plant breeding activities with local production and export production systems.

Recommendation

To develop curricula and suitable economic conditions and provide the logistic support needed to ensure the existence of a sufficient number of qualified plant breeders to meet today's demands, with special training in the breeding of promising native crops.



Area of activity 7: Seed production and distribution

Background

The countries of the sub-region are fully aware of the need for legislation on seed production and distribution. Nevertheless, there is considerable heterogeneity in terms of experiences and the existence of laws on seed management.

Activities

- Encourage the countries to pass appropriate laws, standardized throughout the sub-region, including plant protection, intellectual property rights, etc.
- Create a program to increase awareness, with a view to guaranteeing the production of artisanal and certified seeds.
- Promote the exchange of technical experiences among the countries of the sub-region, in order to improve the production of artisanal and certified seeds.
- Conduct socioeconomic studies in order to ensure that efforts are geared to self-sufficiency in seed production.
- Develop and support the infrastructure needed to maintain self-sufficiency in seed production.

Recommendation

That the countries of the sub-region pass appropriate legislation, given their needs and their capacity for seed production and distribution.

That the countries of the sub-region share experiences related to seed production and distribution, with a view to standardizing procedures.

Improve the artisanal production of seeds, working to ensure the sustainable and rational use of plant genetic resources.

Promote and upgrade national certified and artisanal seed systems and enterprises.



Area of activity 8: Biotechnology

Background

Biotechnological techniques are playing an increasingly important role in the use and conservation of plant genetic resources. Nevertheless, the biotechnology institutions and enterprises of the developed countries do not assign priority to native species of the sub-region that are, or could be, of importance. As a result, the countries of the sub-region must develop their own technical capabilities and infrastructure, in order to take full advantage of biotechnology applicable to these species.

Activities

- Inventory biotechnology capabilities in the sub-region.
- Develop and exchange biotechnology protocols of native species.
- Provide training through formal education and short courses on plant biotechnology
- Hold meetings that promote links between biotechnology and the production sector.

Recommendations

Develop and upgrade national public and private biotechnology institutions that have proven to be effective in managing plant genetic resources, and that are representative of the different ecological zones of the sub-region.

Create and/or update the inventory of institutions and human resources in the field of biotechnology that exist in the sub-region.

Create awareness among decision makers regarding the need to secure funding for biotechnology activities in each country. Also, create and/or update policies that provide incentives to promote the participation of private enterprise in the ongoing funding of such activities.

Recommend that REDBIO include priority species in its activities (Area of Activity 1), as a means of ensuring their conservation, characterization and rational use.

Incorporate field collections in *in vitro* collections (whenever possible).



Area of activity 9: Strengthening institutional capabilities

Background

Although a large number of institutions work in the conservation and utilization of plant genetic resources, their actions are limited as a result of several factors which make it difficult for them to comply with their mandates. Moreover, national, sub-regional and regional coordination and integration mechanisms must be improved/strengthened.

Activities

1. Identify and analyze institutions involved in the management and conservation of genetic resources, by country. (National and private organizations, NGOs, universities, etc.). Cost US\$60,000.00
2. Prepare a national strategy to strengthen institutions. The strategies should include:
 - human resources (e.g. training),
 - infrastructure and basic equipment,
 - the country must guarantee links with international technical and financial cooperation (bilateral and multilateral),
 - establish electronic links at the national and international levels, at an estimated cost of US\$50,000.00,
 - at the regional level: identify sub-regional institutions, programs and networks (consultancy, at approximately US\$10,000.00).

Subregional recommendations

1. Formalize establishment of REMERFI.
2. Designate and charge institutions with carrying out sub-regional activities.
3. Link REMERFI with other horizontal cooperation mechanisms that exist in the region. A regional mechanism will facilitate this process and its incorporation into global initiatives, e.g., the FAO Global System, that require regional positions (IICA, FAO, SELA, IPGRI).

National recommendations

1. Establish interinstitutional coordination and integration mechanisms on a country-by country basis (create new or strengthen existing mechanisms). Example: national commissions, technical committees.



2. Promote the participation of the country in sub-regional, regional and global horizontal cooperation initiatives.
3. National institutions agree to fulfill the commitments assumed in the Convention on Biodiversity and Agenda 21, among others, to create programs on plant genetic resources or strengthen existing ones. Also, they should include this subject in their national development plans. (Support from IICA).

Area of activity 10: Training for the conservation and sustainable use of Plant Genetic Resources

Background

Although there are some trained personnel, there is still a need to provide training in different aspects of plant genetic resources. Also, there are national and sub-regional institutions in the sub-region that are in a position to provide training in the sub-region and region. These institutions must be identified, designated and upgraded.

Activities

1. Identify and analyze the supply of and need for training nationally and regionally.
2. Designate and give responsibility to training centers (REMERFI)
3. Execute a yearly sub-regional training program that includes the following types of training:

TYPES	SUBJECT
- Apprenticeships	- Geographic information systems
- Visits and exchanges of personnel	- Taxonomy and botany
	- Collection and sampling
- Short courses	- Molecular biology
- In-service training	- Physiology of seeds for conservation
- Post-graduate	- <i>In vitro</i> conservation and cryo-conservation
	- Documentation
	- Management
	- Conservation and utilization (General courses)
	- Safe exchange



Area of activity 11: Information, documentation and early warning system

Background

Given the fact that the sub-region is an important source of plant genetic diversity, it is essential to establish an efficient sub-regional information and documentation system on the existing pool of these resources. Also, it is important to establish early warning mechanisms to provide information on endangered germplasm.

Activities

1. Create an efficient system (computerized, data base, etc.) that provides rapid access to all information related to the plant genetic resources of the sub-region.
2. Establish a computerized network linking the countries and sub-regional institutions, in order to facilitate the exchange of available information and documentation on plant genetic resources.
3. Acquire the technical capability to update and modernize communications systems.
4. Distribute computerized information contained in the data bases in a timely manner.
5. Establish an effective mechanism for updating information.

Recommendations

Link national plant genetic resource institutions through an efficient communications system, in order to facilitate access to information and documentation on plant genetic resources. In addition, establish an early warning system to minimize the risks of loss and the improper use of germplasm.

Information, documentation and early warning system

- It is necessary to standardize a regional system.
- Minimum amount of standardized data to be included should be defined.
- Country-region-world link is essential.
- Process must be updated on an ongoing basis.
- It is necessary to generate a document on the plant genetic resources that exist in the region.
- First approximation 2 years.
- First update 2 years



Area of activity 12: Regulation, planning and definition of policies

Background

In order to ensure that the different plant genetic resource activities carried out in the region are efficient, all the countries must set up plant genetic resource commissions, whose mandate will be to coordinate and provide advisory services at the national level.

Recommendations

- National plant genetic resource commissions must be set up.

Mandate: to coordinate and advise

- The commission must bring together all people involved in PGR.
- It must have a work program with clear goals.
- Based on the legislation of the countries, the commission must act as a consultative body, coordinating institutions and agencies.
- The commission must have its own budget, to fund its coordination functions.
- It must address the priorities and problems of the region.
- The commission must prepare the national PGR plan and establish institutional commitments.
- The national PGR plan must be ready in 12 months.

Area of activity 13: Subregional cooperation and articulation

Recommendations

Take into consideration all sub-regional actions and institutions involved in the conservation and sustainable utilization of plant genetic resources; for example: CATIE, IICA, REMERFI, PRIAG, FHIA, etc.

Provide REMERFI with the legal standing it needs to coordinate and articulate activities related to the conservation and utilization of plant genetic resources.



Inasmuch as the mandate of REMERFI represents the interests of the sub-region, it should be recognized as the sub-regional entity that will coordinate and articulate the conservation and sustainable utilization of plant genetic resources.

REMERFI should be designated as the oversight entity responsible for supervising, monitoring and coordinating institutions and researchers that receive subsidies for activities carried out through the network. It should also support national plant genetic resource programs, in order to ensure that actions carried out on plant genetic resources in the sub-region are documented.

Area of activity 14: Area of international centres

1. There is a need to strengthen international centers that carry out actions related to the management and conservation of PGR.
2. National and sub-regional efforts in the area of PGR have led to the creation of national and sub-regional entities, which contribute to the actions carried out by the international centers.
3. In recognition of these actions, the governments signed the ministerial agreement during the Miami summit, the regional technological integration project (Central America), of which PGR management is an important component.

Therefore, it is recommended that:

- The work of the international centers in the conservation and utilization of PGR be recognized.
- The countries and national entities be involved in future PGR conservation and management activities, as part of the system.

It is hoped that the countries will participate in setting the agenda and priorities, exercising their mandate over the actions of the centers.



CONSOLIDATED LIST OF OTHER RECOMMENDATIONS AND PROPOSALS SUBMITTED DURING THE MEETING

(Recommendations and proposals submitted at the meeting which are relevant for the preparation of the Global Plan of Action, for the parallel negotiated review of the International Undertaking on Phytogenetic Resources and for consolidating and strengthening other components of the Global System).

A. Creation of sub-regional and regional mechanisms for coordination and agreement, which should be articulated with similar mechanisms of the Global System for the Conservation and Use of PGR.

1. Recommendations and proposals:

- a.** To establish national program PGR programs and/or commissions in each country, to coordinate activities at the national level
- b.** To develop strategies for executing, through the regional agreement mechanism, priority actions in the area of phytogenetic resources.
- c.** To establish a sub-regional information network on phytogenetic resources, with international data bases that can be easily accessed electronically.
- d.** To establish an operational phytogenetic resources management network among the countries of the Caribbean, linked to other international and institutional networks and which will allow for access to and the exchange of germplasm.
- e.** To create sub-regional or international action committees that will advise the countries and sub-regions in the design of legal and policy frameworks that will promote activities related to phytogenetic resources.
- f.** To develop a hemisphere-wide institutional mechanism to address strategic aspects of genetic resources.
- g.** To request that the inter-governmental commission on phytogenetic resources invite regional organizations with relevant phytogenetic resources programs to participate in its meetings, with a view to facilitating international coordination in this field.



B. Policies and legislation.

1. Recommendations and proposal:

- a. That the countries formulate policies and establish a legal framework at the national and regional levels, with a view to safeguarding biodiversity in the region and ensuring that the countries of the region reap the benefits of their phytogenetic resources.
- b. To adopt a position on and agree on norms regulating access to genetic resources for agriculture.
- c. To tap existing experience in the countries and in the region in developing and harmonizing legislation aimed at protecting the rights of plant breeders and farmers.
- d. To adopt a position on the obligation to conserve genetic resources and use them in a sustainable manner, which is shared by the countries of origin and beneficiary countries.
- e. To establish the legal bases and procedures for the transfer of technology within the region, and to the region from countries that benefit from its genetic resources.
- f. To define, together with the member countries of CATIE, a clear policy on the exchange of germplasm.
- g. That the FAO Regional Council include as a standing item on the agenda of its bi-annual meetings, to analyze, monitor and reach decisions that will guarantee implementation of agreements reached in this field.
- h. That the process be speeded up to negotiate the review of the International Undertaking in harmony with the Convention on Biodiversity, as approved unanimously by the member countries of FAO in Resolution 7-93.
- i. To create a technical group that will draft regional positions on the rights of farmers and how they will be enforced, guidelines for the just and equitable distribution of benefits derived from the use of phytogenetic resources, and a unique regional system for protecting plant varieties for use as food and in agriculture, calling special attention to the importance of farmers and recognizing their rights.
- j. To establish policy and legal frameworks at the national and regional levels.
- k. To create regional standards for seed quality, seed technology procedures and quality control.
- l. To publish guidelines for the countries on:



- (i) The foundations (philosophical and operational) to establish a PGR Program/System.
- (ii) How to establish and integrate policy, legal and institutional frameworks.

C. Helping existing institutions to upgrade their performance in the area of PGR

1. Recommendations and proposals

- a. To link the international centers, primarily IPGRI, with national phyto-genetic resource programs, with a view to coordinating activities.
- b. To improve interaction between the international centers operating in Latin America (CIAT, CIMMYT, CIP, INIBAP, IPGRI and others outside the region) and CATIE, tapping the comparative advantages of each to strengthen joint actions and upgrade training activities.
- c. To support CATIE in developing protocols for the *in vitro* conservation of germplasm, cleaning and indexing diseases and pests and exchanging germplasm.
- d. To provide CATIE with the support it needs to immediately begin the collection of germplasm from crops in the countries.
- e. To channel international support through national phyto-genetic resource programs.
- f. To link national programs with the sub-regional cooperation network, in order to ensure coordination and avoid duplication of efforts.
- g. To ask the international centers, especially IPGRI, CIMMYT, CIAT and CIP, to take more decisive action in support of technology transfer and training for technical personnel in the area of phyto-genetic resources.
- h. To provide existing sub-regional and regional PGR-related institutions, such as CARDI, UWI, CATIE, with both technical and financial support, to perform various activities at the sub-regional level.
- i. To enhance storage capability (*ex situ*, *in situ* and *in vitro*) for the short, medium and long terms.
- j. To reinforce CATIE's mandate as the regional institution responsible for promoting the conservation and sound use of phyto-genetic resources.
- k. To improve articulation between existing institutions and networks and the Global System, and its components.



D. Training

1. Recommendations and proposals

- a. To conduct sub-regional workshops, addressed to scientists, managers and policy makers, on:
 - (i) The FAO global system, its elements and lines with PGR national/sub-regional initiatives.
 - (ii) The linkages between *in situ* and *ex situ* conservation.
 - (iii) The linkages between conservation and utilization.
 - (iv) Participatory breeding.
 - (v) Legal and policy dimensions.
 - (vi) Other critical PGR-related issues.
- b. To formulate training projects, on the basis of technical, legal and economic needs detected in the region.

E. Dissemination of information

1. Recommendations and proposals

- a. To draw up a sub-regional plan to distribute information on and increase awareness of the preservation of genetic resources, including forest resources.
- b. To launch a public awareness campaign on the socioeconomic importance of PGR among key actors, especially donors and policy makers.
- c. To expand the CSEGRIN phylogenetic resources information network to all of Latin America and the Caribbean, connecting same to international networks in order to facilitate the exchange of information and germplasm with international centers and other germplasm banks worldwide.
- d. To establish an *ad hoc* commission whose mission will be to persuade international organizations, donors and others sources of funding to earmark resources for conservation activities.



F. Funding

1. Recommendations and proposals

- a. To create a fund that will be used to support those countries that are rich in terms of biological diversity to develop the necessary infrastructure and train the human resources needed to conserve and manage plant genetic resources for agriculture and food.
- b. To create a germplasm fund from a percentage of income earned by countries from exports of agricultural products.
- c. The proposals for the creation of a fund would be aimed at implementing the decision reached unanimously by the Commission on Phyto-genetic Resources and the FAO Conference, to create an International Phyto-genetic Resources Fund (Resolution 3/91). This fund would help in enforcing the rights of farmers.

G. Definition of regional strategies for PGR-related activities

1. Recommendations and proposals

- a. To promote the use and conservation of genetic resources, with a view to diversifying agriculture and forestry products, and making same sustainable.
- b. To create a regional center for the conservation and management of phyto-genetic resources. Cuba, which made the proposal, also offers to serve as head quarters.
- c. To organize a regional international program for the conservation and use of phyto-genetic resources.
- d. To conduct sub-regional activities such as:
 - (i) a project on agricultural biotechnology, to create regional expertise.
 - (ii) collection of the PGR of Caribbean staple food crops that are declining or disappearing.
 - (iii) execution of a Caribbean indigenous plant genome project.
- e. To store long-term germplasm collections at international organizations, and working collections at national and regional organizations.
- f. To ensure the linkage between the conservation and use of phyto-genetic resources, and between them and the biotechnologies.



H. Improving PGR-related activities currently under way

1. Recommendations and proposals

- a. To pay urgent attention to endangered Caribbean species and germplasm of interest for agriculture and food.
- b. To pay attention to forest, aquatic, savannah and wild species of interest for agriculture and food.
- c. To enhance the genetic improvement of new varieties and the conservation of local genetic resources and germplasm.
- d. To widen the germplasm bases of key species through well-coordinated and sustained introductions, collection, characterizations, evaluations, conservation and utilization.
- e. To support seed production programs of orphan crops.
- f. To develop seed storage capability and research for minor crops and forest species of the Caribbean.