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# **Conservation & Utilisation of the Plant Genetic Resources of Mexico and Central America**

## **Project Progress Report**

**March 1995**



**WORLD CONSERVATION  
MONITORING CENTRE**



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The mission of the  
World Conservation Monitoring Centre is to provide  
information on the status, security and  
management of the Earth's biological diversity.



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Information included in this report has been gathered as part of a project on the Conservation and Sustainable Utilisation of the Crop Genetic Resources of Central America and Mexico, funded by the Darwin Initiative of the British Government. Workshop costs were met by a grant from the Swedish International Development Authority (SIDA).

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# About WCMC



WORLD CONSERVATION  
MONITORING CENTRE

*The World Conservation Monitoring Centre provides information services on the conservation and sustainable use of species and ecosystems and supports others in the development of their own information systems*

WCMC is internationally recognised as a centre of excellence in the handling and management of information on the conservation of biodiversity. The Centre has more than 12 years' experience in this field, providing advice and information services not only to its three founder organisations, IUCN - The World Conservation Union, the World Wide Fund for Nature (WWF) and the United Nations Environment Programme (UNEP), but also to development aid agencies, UN agencies, international convention secretariats, government and non-governmental organisations, the media, commerce and industry.

WCMC is a non-profit organisation, independent of government funding and public membership. Occupying a new, purpose-built, building in Cambridge, WCMC is a highly professional organisation with full project development and management capabilities. WCMC employs some 60 professional staff, with a wide range of international experience.

## Key skills include:

- development and provision of information services
- information management on:
  - species and habitats of conservation concern
  - protected areas
  - international conservation agreements and programmes
- locating information from other sources worldwide
- systems analysis
- database design and management
- map based Geographical Information Systems (GIS)
- computer communications

Annually WCMC delivers upwards of 30 projects, as well as providing regular information services for a wide range of clients. WCMC's project portfolio of over 100 projects, in execution or development, builds on the Centre's resources and staff experience and is centred upon the main aims of the Centre, which are to provide:

## *Information Services:*

based on programmes of analyses, compilation and assessment

## *Technical Assistance:*

based on experience in information management



WCMC has significant experience in the development of information services required by the users of biodiversity data. For example, WCMC provides information services to:

- the *Convention on International Trade in Endangered Species* Secretariat and several Contracting Parties including the EU
- IUCN and UNESCO on *World Heritage*
- IUCN's expert networks on species and protected areas.
- UNEP and the *Convention on Biological Diversity*

In addition, WCMC has been collaborating with British Petroleum Company plc to develop an advanced map-based information management system - the *Biodiversity Map Library*. This system aims to facilitate access to computer maps and the databases linked to them, providing non-expert users much of the power of a computer GIS, without requiring them to be familiar with GIS software and technology. This database offers an advanced take-off point for further projects in this area.

WCMC has been very active in supporting development of in-country information management, and is the hub of a network of organisations preparing guidelines and materials for capacity building. These activities build on an earlier collaboration between WCMC and UNEP on the development of *Guidelines for Country Studies on Biological Diversity*. They are to provide the support necessary for developing and implementing the national biodiversity strategies and action plans called for by the *Convention on Biological Diversity*. WCMC activity in this area is likely to increase significantly over the next few years.

WCMC works to a three-year programme, reviewed annually by its international management board. The programme identifies the wide range of activities being undertaken by the Centre, most of them in collaboration with a wide range of national and international organizations. The programme also charts the general direction in which the Centre is moving, while providing sufficient flexibility to encompass new services which fall within the Centre's mission. WCMC actively seeks new opportunities.

*The WCMC Board comprises: Chairman - Rudolph Agnew, a prominent British businessman; Anthony Brough, former Assistant Executive Director of UNEP; Sir Martin Holdgate, President of the Zoological Society of London; Dr Claude Martin, the Director of WWF International; Professor Reuben Olemba, UNEP Office of the Environment Programme; Professor Adrian Phillips, Chairman of IUCN Commission on National Parks and Protected Areas; and Dr Robin Pellw, Director of WWF UK. Dr N. Mark Collins, Director of WCMC, acts as Secretary to the Board.*

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*WCMC Conservation Information Service is sponsored by the BT Community Programme*







# Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

## Report of Workshop CATIE, Turrialba, Costa Rica 17-20 October 1994

This report provides a brief summary of the discussions and agreements reached at the Workshop, convened by WCMC and hosted by CATIE, to discuss implementation of the project *Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America*. A copy of the agenda of the meeting forms Annex 1 of the report and the participant list, forms Annex 2. The meeting was sponsored by the UK Government, through the Darwin Initiative, and the Swedish International Development Agency.

### Monday 17 October

#### Morning Session

##### Introductory remarks

The meeting was opened by **Sara Oldfield** (Chair) who welcomed participants to the workshop on behalf of WCMC. She pointed out that WCMC saw the Workshop as a great opportunity to develop a new initiative focusing on *in situ* conservation of wild populations of crop plants, wild relatives and wild resource species of ethnobotanic importance. A major aim of the project should be to link expertise from different sectors and to link information from a wide range of sources to facilitate biodiversity conservation.

**Rafael Ocampo** welcomed participants on behalf of CATIE.

**Oscar Gomez** provided a brief update on the activities of REMERFI.

**Harriet Gillett** gave a presentation on the work of WCMC, with a focus on the work of the Plants Programme.

##### Presentation of background documents

**Sara Oldfield** gave a brief introduction to the project and presented a series of working documents and maps prepared for discussion and review by the Workshop.

##### Working Documents:

- 1 Project Overview, describing aims, objectives and proposed activities.
- 2 Report on the feasibility meeting held at WCMC in March to refine the scope of the project. This meeting agreed a series of recommended outputs for the current Workshop and the following Working Documents present the results of those recommendations.
- 3 Summaries (in English and Spanish) of project activities undertaken, including preliminary ideas for follow-up activities. This document was presented as a key paper for use in setting priorities during the Workshop.

- 4 Contact list of people and institution involved in work related to the project. The list was based on replies to a questionnaire sent out as part of the project.
- 5 Summary of information on REMERFI priority species.
- 6 Brief review of *in situ* conservation focusing mainly on existing documentation for wild resource species and wild relatives.
- 7 Review of database applications and data transfer formats. It includes details of a survey of relevant databases undertaken for the project.
- 8 Maps. A series of maps showing point location for selected species (*Manihot*, *Chrysophyllum*, *Manilkara*, *Solanum*), mapped from herbarium specimens and regional *Floras*, overlaid on habitat information contained within the Biodiversity Map Library at WCMC.

Comments and additional information were invited from participants on Working Documents 3 - 8. Updated versions, incorporating this data will be circulated to participants.

The Chair summarised the objectives of the meeting:

- 1 To discuss information requirements for *in situ* conservation planning.
- 2 To review existing information on plant genetic resources *in situ*.
- 3 To develop a funding proposal for the field implementation phase of the project.

## Discussion

Following the introduction of the project a general discussion was held on information requirements for *in situ* conservation planning.

**Trevor Williams** emphasised the need to establish ground rules by deciding the units for *in situ* conservation, and defining which information needs are a priority.

He suggested four strategic points for discussion:

- 1 The need to decide priorities
- 2 The need for units of conservation, for example, spatial x taxon
- 3 The need for estimates of population management
- 4 The need for conservation to be effective

**Mikkel Grumm** questioned what was meant by *in situ* conservation in the context of this project and whether this would include "on farm" conservation.

**Sara Oldfield** replied that in the preparatory work, WCMC had concentrated on *in situ* conservation of wild species, but there was a need for further discussion on this point.

**Bruce Benz** cited the case of teosinte, which needs human intervention in order to be conserved, and pointed out that this would also be the case with other crop species such as beans, rice, *Capsicum*, *Ipomoea*, and *Arachis*. He suggested that there should not be a distinction between cultivated and spontaneous forms.

**Gerardo Budowski** pointed out that there may be some traditionally cultivated species with high diversity which need conserving and effective management. CGIAR has considered the approach of selecting areas for conservation which have traditional farming techniques. It would not be feasible to conserve all species, but a few could be selected. He also cited the threat posed by new improved species to biodiversity in the wild.

It was agreed that wild plants of cultivated species and wild relatives should be given the highest priority for *in situ* conservation but that the emphasis should not exclusively be on wild material.

It was also agreed that *in situ* conservation should be at the population level. **Trevor Williams** explained that the concept of spatial x taxon as genetic resource management units (GRMU) could be useful.

**Gerardo Budowski** pointed out that the spatial x taxon concept was appropriate for wild units, but for semi-cultivated units, taxon x spatial x human intervention was needed for example for teosinte in Mexico; the potato in Peru; and wild legumes and lentils in Turkey.

**Sara Oldfield** suggested that information was needed to set priorities for *in situ* conservation both in the selection of taxa and geographical areas.

**Daniel Debouck** said that for target taxa there was a need to bring together three different fields of information in order to prepare a planning tool: floristic data; information from *ex situ* germ plasm banks; and information related to habitat conservation, for example, threats and protection status. The aim should be to link these three data sets into computerised systems.

It was agreed that this provided a practical basis for developing appropriate information systems which could cover both wild and cultivated taxa.

It was agreed that there is currently very little overlap between floristic information and data on *ex situ* collections. In general those working in floristic botany are not interested in weedy material.

It was also pointed out that floristic information generally lacks ecological data reflecting ecotypic variation across a floristic area.

**Gerardo Budowski** emphasised the value of data on pollinators and distributors.

**Bruce Benz** suggested that collectors should be encouraged to record certain types of information. All habitats are in a rapid state of change and information on degree of human intervention needs to be recorded, in part, so as to assess which plant material will remain available for further investigation and use.

The value of ethnobotanic information was noted and **Mikkel Grumm** also suggested that it would be valuable to integrate population variability data.

**Cirilio Nelson** pointed out that the information requirements would depend on the definitions of *in situ* and *ex situ* conservation followed.

It was agreed that *in situ* conservation could include a range of techniques to conserve the taxon within its original habitat, including propagation and planting.

Kerry Walter emphasised the considerable overlap in scope between *in situ* and *ex situ* conservation with techniques being selected according to the particular taxon or population. On farm conservation could be integrated into particular conservation strategies.

#### Afternoon session

Sara Oldfield introduced the REMERFI listing of priority taxa, and suggested that it may be necessary to define the information needs for each taxa. She asked if herbarium data can be taken as a useful starting point.

Daniel Debouck replied that it was the best current starting point and that the value of the data would be enhanced by integration with the other data sets discussed in the morning session.

Patricia Davila Aranda described the role of the Herbarium at UNAM in coordinating preparation of Flora Mesoamericana and mentioned the increasing computerisation of herbarium records. She emphasised the need to check the taxonomy of plant specimens when entering geographical coordinates into data bases. UNAM is using BRAHMS with some modifications.

Gerardo Budowski emphasised that in some areas herbaria do not have the capacity to computerise data. There is a need to share geographical data and make this accessible to all users.

Cyrilio Nelson pointed out that in Honduras, information is in the herbarium cabinets and this is ready to enter into databases. The BRAHMS programme will be utilised.

Martin Mitré reported that in Panama integration of data held by the herbaria and by ANCON is now beginning but is an immense task. He stressed the need for regional compatibility between databases.

Bruce Benz asked about the relevance of old data in herbaria.

It was agreed that recollection of herbarium plant material may be necessary within the project and that in modernising herbarium information it would be worthwhile to incorporate genetic information and also ethnobotanic information.

Ismael Ponciano stressed the need to broaden the discussion to take into account social factors. He agreed that there is a need to modernise and improve technical facilities and to place technical information in the context of sustainable development. He considered that plants should not be selected for *in situ* conservation purely because of their economic value. He also suggested that the private sector might have a role to play.



**Tuesday 18 October**

Discussions were held within two working groups, one of which considered aspects of *in situ* conservation and the other considered database issues. Reports of the Working Groups are given below.

### **Report of Working Group 1- *in situ* conservation**

#### **Participants:**

Daniel G Debouck, Efrain Medina, Juan Jose Alán, Carlos Ramirez, Oscar José Gomez, Martin E Mitre, Gerardo Budowski, Mahinda Martinez, Antonio Mora Q., Ismael Ponciano, Salvador Montez, Bruce Benz, Sara Oldfield

The meeting started with a presentation by Bruce Benz on the Sierra de Manantlán Biosphere Reserve in Mexico. This provided the opportunity to discuss the practicalities of managing plant genetic resources *in situ* in this case study, focusing on *Zea diploperennis*. Within the Sierra de Manantlán BR there are a number of other species of interest to REMERFI including *Stenocereus*, *Annona*, *Dioscorea* and *Spondias*. About 8000 local people continue to grow maize as part of their traditional agriculture and in total about half a million people use some of the resources of the Reserve including water resources.

**Bruce Benz** emphasised that without the integration of people and traditional land management into conservation of Sierra de Manantlan the valuable plant genetic resources will be lost.

The presentation led to two key areas of discussion;

- 1 The need to represent the interests of local communities as well as the scientific community and to ensure that local people benefit from conservation.
- 2 The need to recognise that in the conservation of species, safety is not guaranteed within protected areas - we still do not know how to conserve natural resources.

With regard to benefits for local people in the case of Sierra de Manantlán, benefits resulting from the creation of the Reserve have mainly been in the form of services, such as improved transport and electricity. In terms of economic benefits there has been very little investment in Sierra de Manantlán by the plant breeding sector. The scientific sector has shown a lot of interest in the reserve but scientists have not generally been good at interacting with local people.

**Mahinda Martínez** provided information on another Biosphere Reserve, El Cielo BR in Tamaulipas for which a full species inventory and database has been developed. She emphasised the need for caution in declaring reserves and the need to ensure that these function effectively. Within Ei Cielo, tree felling increased when the reserve was created.

Ways to ensure that local people do benefit from conservation of plant genetic resources were discussed noting that the material we want to conserve belongs to the local community. Ideas raised and examples given included development of craft skills in Peten, Guatemala and the taxation on sale of genetic resources.

**Jorge Leon** explained that in Costa Rica it is planned to set aside 25% of the country for conservation and therefore it is essential to think about needs of people who live there. It is important to think of the long term needs of the people and changes in ecosystems. There must be management.



Jorge Leon pointed out that it is very difficult to generate income from native plant resources when there is enormous marketing pressure from overseas, comparing local fruit drinks to coca-cola.

To conserve germplasm there must be *ex situ* collections, very often material is brought in from forest areas which are about to be felled. Bigger collections of live plants are needed.

In general the protected areas of Costa Rica have been selected for their scenic value rather than on genetic material of species. Increasingly, however, there is an emphasis on biodiversity.

Jorge Leon pointed out that in general the level of information on wild relatives of cultivated plants is extremely poor in Central America and often it is not known which the closest relatives are. There is also a lack of knowledge by local people of the wider values of the plant material they hold.

The group agreed that in planning conservation strategies of genetic resources it is essential to take into account social and economic factors.

The group also agreed that existing protected areas form a logical basis for working on *situ* conservation of plant genetic resources because they are part of existing legal and social systems.

Existing knowledge of plant resources in protected areas was then considered using the lists of protected areas in Working Document 6. The state of knowledge for each site in Honduras, Guatemala, Nicaragua, Panama and Mexico was noted. This information will be circulated in an updated version of this Document. Oscar Gomez pointed out that in Nicaragua efforts have mainly concentrated on re-collection of material of economic importance to form germplasm collections rather than collection of herbarium material.

The Working Group also noted the existing *ex situ* collections within the region and that the fact that information is generally available on the holdings of these collections.

The Group agreed that there is a need for further botanical inventory of protected areas, at present habitats are generally inventoried because they are threatened rather than because they are protected. Financial support will be needed to improve the collection of data on wild plants and for material to be studied by taxonomists.

Considering the REMERFI taxa we noted that in some cases it is possible to state what is known about the genera concerned within particular protected areas. There was not, however, time to consider this in detail during the workshop.

The Working Group reviewed the list of REMERFI taxa making a rapid appraisal of priorities for *in situ* conservation at a national and regional level. The highest priorities at a regional level were considered to be *Persea* spp, Sapotaceae (noting that work is already in progress), *Dioscorea* spp and *Xanthosoma* spp.

Secondary priorities were considered to be *Hylocereus* spp., *Capsicum* spp., Cucurbitaceae, *Manihot* spp. and *Pachyrhizus*

These are preliminary recommendations for the development of a programme and further consultation will be necessary to take into account views of experts in Belize, Costa Rica and El Salvador, not represented in working groups. There are also national priorities which should be considered in relation to national programmes and initiatives.

## Report of Working Group 2 - Database issues.

### Participants:

Patricia Dávila Aranda, Daniel Debouck, Harriet Gillett, Mikkell Grumm, Oswaldo Tellez Valdez, Jane Villa-Lobos, Kerry S. Walter, Trevor Williams,

The workshop started with a presentation by **Kerry Walter** of Working Document 7 - database issues. A revised copy of document 7, updated to incorporate feedback from the working group will be circulated to all participants for comment. This will ensure full input to design of the work to be implemented in Phase 3 of the project.

### Issues discussed and agreed within the working group:

- 1 Database formatting. The central importance of standardised data formatting was recognised, in order to facilitate data exchange. The International Transfer Format for Botanic Garden Records (ITF) was discussed (see section 2.1.2 of Working Document 7). It was agreed that this formed a suitable basis on which to develop an extended format, to include fields appropriate to crop genetic resource conservation. Extending the use of an enhanced ITF to the plant genetic resources community will facilitate exchange of data with the botanic garden community and botanists working in other institutions.
- 2 Development of an appropriate ITF
  - 2.1 **Mikkell Grumm** will continue discussions with Kerry Walter concerning addition of appropriate fields needed for the development of an enhanced ITF.
  - 2.2 Following discussions with Mikkell Grumm, Kerry Walter would represent the workshop at the meeting of Botanic Gardens Conservation International to be held at the end of November 1994, to work on a new version of the ITF. This new version will then be presented at the Fourth International Botanic Gardens Conservation Congress in Perth, Western Australia in September 1995.
- 3 Such an updated ITF should continue to be maintained and updated in the future.
- 4 An ITF should be well publicised.
  - 4.1 The group supported development of good contacts network within the region, covering Mexico and Central America including Belize. Existing networks and newsletters could be used, such as those maintained by the UNAM, Smithsonian Institution, IPGRI, IUCN, BGCI as well as *via* WCMC's network of crop genetic experts established as part of the project.
  - 4.2 The value of Internet connections was recognised, and it was considered this should be encouraged.
- 5 Database standards. Other data standards should be followed where possible. For example the geographic and distribution standards outlined in 2.2 of Working Document 7.
- 6 **Oswaldo Tellez** and **Patricia Dávila** presented results from a survey of herbarium databases throughout Mexico and Central America. The paper is included as Annex ???. This paper was

very helpful in identifying regions and genera for which data is available, and to demonstrate the wide range of computer hardware and software currently in use throughout the region.

- 7 There was a clear demand from throughout the region for good working database systems. Such systems should link the strict botanic garden world to the seed storage/gene bank world. However it was clear that funds were very limited within the region, and although the need for good working systems is recognised, funding is essential before any action can take place.
- 8 **Patricia Davila** stressed that the real need is for a system that has proved to be useful elsewhere. Such a system should be easily adapted where necessary. If a good system was made available it would be widely used and would itself become a standard. It was not felt appropriate to develop further systems - "reinventing the wheel" should be avoided.
- 9 **Training** There was strong support for the need for good training for any computer systems. Such training should be on-going.
- 10 It was accepted that the distinction between *in situ* and *ex situ* conservation was not clear cut, and that it would be most helpful to consider the complete range of conservation options. This would encompass conservation of taxa within their natural habitats, within botanic gardens and living collections such as those held by agricultural research centres, as well as conservation within traditional seed banks.
- 11 **Taxonomic needs.** The need for a good understanding of the taxonomy of the genera of interest was stressed. This is fundamental to any work concerning the distribution of those taxa of interest. It was clear that a serious shortage of taxonomists exists throughout the region (with the possible exception of Costa Rica). For example there are currently only two plant taxonomists in Honduras.
- 12 **Training in taxonomy.** Stress was given to the need for more training within the region for plant taxonomists. The University of Peace in Costa Rica was considered as a possible venue to run training courses, under the direction of Dr Gerardo Budowski (formerly Director General of IUCN).
- 13 Following on from the analysis presented by Patricia Dávila and Oswaldo Tellez, the group spent considerable time discussing species and genera most appropriate for further study in Phase 3 of the project. Although the list previously drawn up by REMERFI was used as a basis for this discussion, other taxa were also discussed. Criteria considered were: the extent to which existing botanical expertise was available within the region; suitability of crop for *in situ* conservation; importance of crop; degree of threat to gene pools of wild relatives. A short list was drawn up comprising:

*Persea*  
*Agave*  
*Juglans*  
*Annona*

*Dioscorea*  
*Manihot*  
*Cucurbita*  
*Physalis*

- 14 The workshop continued as an informal group after supper with a demonstration of the WCMC BG-BASE database. There was considerable interest in this as a useful basis on which to develop a data management system as outlined in 6 above.



## Wednesday 19 October

### Reports from the Working Groups

Reports of the Working Groups were presented and used as a basis for discussion on the development of the project. It was agreed that there was a need to give a clear focus to the next phase of the project by selecting key genera for attention. This did not imply that other genera should be neglected in data collection particularly during field work.

It was also agreed that inventory work in protected areas should form an important component of the next phase of the project and that enhancement of the International Transfer Format for data exchange should take into account botanical data requirements of the protected area community.

Taking forward the discussions from the Working Groups, the priority taxa selected were reviewed by the meeting as a whole. Given the degree of overlap in setting species priorities by the two Working Groups, especially given the lack of clear criteria, it was agreed that work should concentrate on the following target taxa during the next phase of the project:

- a) Top priority:
  - Persea*
  - Dioscorea*
  - Cucurbita*
  - Sechium*
  - Manihot*
- b) Second priority:
  - Agave*
  - Annona*
  - Capsicum*
  - Hylocereus*
  - Juglans*
  - Pachyrhizus*
  - Physalis*
  - Xanthosoma*
  - Sapotaceae

Additional priority taxa suggested during discussion were *Chamaedorea*, *Fernaldia* and *Opuntia*. It was agreed that attention should also be given to these taxa in the next phase of the project if sufficient resources were available. Some concern was expressed about the bias towards food genera rather than the inclusion of other regionally important genera. It was agreed however that the selection of taxa represented a pragmatic consensus reached during the meeting and the list should not be extended further at this stage.

The level of current information on the above taxa, expertise, interested institutions, databases, research requirements, including priority areas for field study were discussed and noted. A summary will be circulated for review to ensure a sound basis for developing a funding proposal for the implementation phase of the project. The implementation phase should involve collection of distribution data for priority taxa with carefully targeted field work in areas of high species or genetic diversity, areas at risk and areas which are designated for conservation. The collection of data should be designed to support the selection and management of sites to conserve the genetic diversity of the taxa concerned.

## Training needs

Discussion focused on the general botanical training needs within the region and the specific training needs that will be required for this project. **Bruce Benz** emphasised the need to share experiences on practical aspects of managing plant genetic resources within protected areas.

Differing capabilities within the region were noted. In Mexico, for example, there is already extensive botanical expertise, where in other countries there are very few botanists. **Cyril Nelson** pointed out that in Honduras there are only two taxonomic botanists and parataxonomists are needed to collect plant material. **Jose Alan** agreed that there is a need for collectors with basic training in Honduras, following the example of InBio in Costa Rica. **Patricia Aranda** emphasised the need to also train more taxonomists to work within the region. **Oscar Gomez** reported that there is very little expertise in the particular taxa of interest to this project within Nicaragua. There are experts in tree species but not in traditionally cultivated plants.

**Efrain Guerra** said that the challenge is the need to act quickly. Workshops should be organised on species of particular interest such as wild relatives within protected areas. He also emphasised the need to generate appropriate methodologies.

It was agreed that training would be required in database applications, including GIS, to meet the objectives of the project.

**Luis Gonzalez** emphasised that the training needs will be defined by the objectives of the project. When the objectives are clarified following analysis of the new material provided at the meeting then a detailed programme can be planned with a timetable and training needs built in.

**Jane Villa-Lobos** provided details of a taxonomic training programme at the Smithsonian.

## Development of the field implementation project proposal

The development of a major funding proposal for implementation of a regional programme of field work and documentation was discussed. It was agreed that WCMC would be responsible for drafting the proposal and seeking funding in collaboration with organisations represented at the meeting and other relevant organisations.

It was agreed that the first step in the project would be to assemble data from herbaria and data banks on the geographic distribution of natural populations of the priority crop species and their closest relatives. The next step would be targeted field work to collect additional distribution data and carry out risk assessment. It was agreed that appropriate national organisations should take responsibility for different taxa, with technical assistance provided as necessary. **Daniel Debouck** suggested that in order to coordinate and share data collection a database package developed by WCMC should be in place in each partner organisation. He also suggested that a four year time period would be necessary to carry out the work.

### **Summing up**

**Harriet Gillett** explained that WCMC had to apply to the Darwin Initiative for a further instalment of funding in November 1994. This would cover WCMC involvement in Phase III of the project. The next priorities for WCMC would be to continue data management activities for certain taxa already initiated prior to the Workshop, respond to specific requests for information which had arisen during the meeting and to develop the broader funding proposal.

**Sara Oldfield** thanked all participants for their valuable input to the successful meeting. She thanked CATIE for providing excellent facilities and in particular Dr Alvarez, Juan Carlos Ramirez, Ariane and the interpreters for all their help during the meeting.





# Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

Workshop  
CATIE, Turrialba, Costa Rica 17-20 October 1994

## Agenda

### Monday 17 October

Welcome and introduction to the meeting

- \* Representative from CATIE
- \* Representative from REMERFI
- \* Representative from WCMC - brief introduction to the project and presentation of background documents

### LUNCH

- \* Information requirements for *in situ* conservation planning
- \* existing information on plant genetic resources *in situ*  
- distribution data for taxa identified as priorities at REMERFI preparatory meeting
- \* expertise on priority taxa
- \* assessment of the extent to which these species are held in *ex situ* collections

### Tuesday 18 October

#### WORKING GROUP 1

- \* analysis of existing protected area coverage, the extent to which botanical inventories exist for protected areas, information on the diversity of genetic resources conserved *in situ*, techniques for selection of new protected areas, *in situ* conservation outside the protected area network

#### WORKING GROUP 2

- \* review of database applications and draft transfer formats for data exchange on *in situ* conservation of plant genetic resources.

LUNCH

- \* use of GIS in ecogeographical survey

WORKING GROUPS RECONVENE

**Wednesday 19 October**

- \* training needs
- \* reports from working groups
- \* discussion and drafting of field implementation project proposal

LUNCH

- \* discussion continued
- \* summing up and conclusions

**Thursday 20 October**

- \* Meeting to discuss REMERFI establishment (REMERFI representatives only)

# **Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America**

**Workshop held at CATIE, Turrialba, Costa Rica  
from 17-20 October 1994**

**Funded by SIDA**

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## Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

### WORKSHOP SUMMARY

As a key stage in a project on the conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America, a workshop was held at CATIE, Turrialba, Costa Rica from 17-20 October 1994. The project is managed by the World Conservation Monitoring Centre in Cambridge and is funded by the Darwin Initiative. Workshop costs were met with a grant from the Swedish International Development Association (SIDA).

#### WORKSHOP OBJECTIVES

Prime objectives were: to discuss information requirements for *in situ* conservation planning; to review existing information on plant genetic resources *in situ* and to review mechanisms for data exchange. Working documents and maps were prepared, and database demonstrations were given, as a basis for discussion.

Delegates comprised representatives from the botanical and crop genetic resource communities of the region, protected area experts and representatives from national and international organisations including CATIE, CIAT, INBio, IPGRI, REMERFI, Royal Botanic Garden Edinburgh and the Smithsonian Institution.

#### PHASE 3 OBJECTIVES

Key objectives for the next phase of the project were identified as in-country capacity building to access, manage and exchange information on plant genetic resources and to prepare a final report on the efficacy of this for presentation at the FAO Fourth Technical Conference

#### WORKSHOP DISCUSSION AREAS

##### Information Needs

To provide a comprehensive planning tool for conservation, it was agreed that three different fields of information should be combined into cross-disciplinary computerised systems: floristic data; information related to habitat conservation (e.g. threats and protection status) and information from *ex situ* collections.

##### Key Taxa

The workshop agreed a shortlist of five genera (*Persea*; *Dioscorea*; *Cucurbita*; *Sechium*; *Manihot*) as the main focus for data collection for phase 3. A second shortlist comprising nine genera (or families) was also established (*Agave*, *Anona*, *Capsicum*, *Hylocereus*, *Juglans*, *Pachyrhizus*, *Physalis*, *Xanthosoma*, *Sapotaceae*). Criteria for this list were: economic importance; suitability for *in situ* conservation; centre of origin within the region; availability of taxonomic expertise.

## **Floristic Data**

Good distribution information was seen as a priority for conservation planning, and the availability of such information was considered. It was accepted that the sources used in preparation of the workshop working documents and maps, of mapping locations from *Floras*, herbaria specimens and protected areas inventories, was the most pragmatic approach. Emphasis was given to the need to collect more raw data. Protected areas need thorough inventories, and regional surveys need to be implemented for the key taxa. As the existence of appropriate taxonomic expertise is a critical factor in accurate distribution data collection, provision of taxonomic training was accepted essential.

## **Habitat Conservation**

The workshop agreed that existing protected areas form a logical basis for working on *in situ* conservation of plant genetic resources because they are part of existing legal and social systems. It was also agreed that in planning conservation strategies of genetic resources it is essential to take into account social and economic factors. Case studies should be made of the role played by key protected areas, focusing on examples of good practice. Involvement of local people both in understanding the importance of the plants concerned, and in understanding the conservation requirements posed by these needs was considered critical.

## **Ex Situ collections**

It was accepted that a continuum exists between *in situ* and *ex situ* conservation, and although the project should focus on collection of data relating to *in situ* conservation, data should be managed to provide a complete perspective. With support from both IPGRI and CIAT, and information from living collections, comprehensive information coverage of both *in situ* and *ex situ* conservation becomes an achievable objective.

## **Data management**

The workshop endorsed the need within the region for good computerized information management facilities. It was emphasised that the need for such systems was widely recognised and demand was widespread. However, past experience of data management systems was not good. Either facilities, and hence experience, was lacking, or, where computerised systems were available, experience with their use, was, in general, unsatisfactory.

The clear requirement now is for capacity building to establish effective data management systems, both hardware and software, well tested elsewhere. Comprehensive training systems to ensure such systems are used to capacity was seen as fundamental. The importance for training to be seen as an on-going process was stressed.

## **Information exchange**

Emphasis was given to the need for ensuring ease of data exchange, and adherence to data standards. The existing International Transfer Format (ITF) developed for botanic garden plant records was considered to form a suitable basis for developing a transfer format appropriate to data management needs discussed at the workshop. It was proposed that discussions should be continued with the ITF committee to develop an enhanced system.

## **WCMCs role**

Given adequate national data management facilities within the region, WCMC was recognised as having a key coordinating role to play in providing a regional and global overview. Distribution data on key taxa should be synthesized by WCMC, and repatriated as spatial datasets and as structured databases.

A full account of the workshop is given in the Workshop Report.





## Contacts

This document includes contact details for selected individuals listed on the Plants Database *BG-BASE* at the World Conservation Monitoring Centre. The contact details were built up largely from response to a questionnaire circulated both by post and via the Internet, requesting information on experts on the list of REMERFI priority taxa (given below)

Criteria for listing:

- 1 Expertise in a genus or family considered by REMERFI as a priority for conservation (see below).
- 2 Expertise in some other sphere of interest, notably databases
- 3 Delegate to the workshop on Conservation and Sustainable Utilisation of Plant Genetic Resources of Mexico and Central America, held at CATIE in October 1994
- 4 Response to questionnaire

Please let us know of any corrections or additions.

The list is available either as hard copy or in electronic format.

For further information please contact:

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## REMERFI priority species

**Note:** some additional widely cultivated non-indigenous crops are included in the REMERFI list.

### Fruits

<i>Annona muricata</i>	soursop
<i>Ananas comosus</i>	pineapple
<i>Carica papaya</i>	papaya
<i>Hylocereus ocamponis</i>	pitaya
<i>Passiflora edulis</i>	passion fruit
<i>Persea americana</i>	avacado
Sapotaceae	star apple, sapodilla, sapote
<i>Psidium guajava</i>	guava
<i>Spondias purpurea</i>	Jamaica plum

### Spices and stimulants

<i>Bixa orellana</i>	annatto
<i>Eryngium foetidum</i>	culantro
<i>Fernaldia pandurata</i>	loroco
<i>Pimenta dioica</i>	pimento, allspice
<i>Theobroma cacao</i>	cocoa
<i>Vanilla planifolia</i>	vanilla

### Vegetables

<i>Arracacia xanthorrhiza</i>	Peruvian carrot
<i>Capsicum</i> spp.	capsicum peppers
<i>Chamaedorea tepejilote</i>	pacaya
<i>Chenopodium berlandieri</i>	huanzontle
<i>Cnidoscolus chayamansa</i>	chaya
<i>Crotalaria</i> spp.	chipilin
Cucurbitaceae	cucurbits
<i>Lycopersicon esculentum</i>	tomato
<i>Opuntia</i> spp.	nopal
<i>Physalis philadelphica</i>	Mexican husk tomato
<i>Sechium edule</i>	chayote
<i>Solanum americanum</i>	yerba mora
<i>Solanum</i> spp.	

### Roots and tubers

<i>Dioscorea</i> spp.	yam
<i>Ipomoea batatas</i>	sweet potato
<i>Manihot</i> spp.	
<i>Xanthosoma sagittifolium</i>	tiquisque
<i>Xanthosoma</i> spp.	malanga
<i>Pachyrhizus erosus</i>	Mexican yam bean

### Miscellaneous

<i>Bactris gasipaes</i>	peach palm
<i>Agave</i> spp.	agaves
<i>Amaranthus</i> spp.	amaranth



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CAPSICUM	CROTALARIA
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