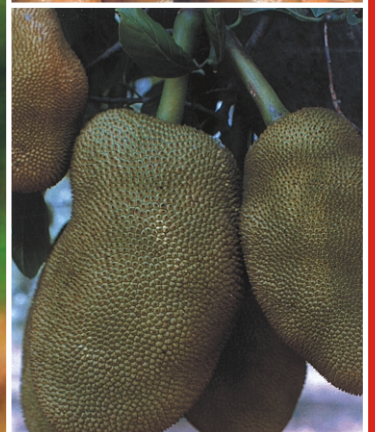




Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia

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Genetic Resources Project, Hanoi, Vietnam
28 February - 2 March, 2002

Bhag Mal, Y.S. Ramamani *and* **V. Ramanatha Rao**, *editors*





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Organized by the International Plant Genetic Resources Institute in collaboration
with Vietnam Agricultural Science Institute, Hanoi, Vietnam and sponsored by the
Asian Development Bank



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Contents

Foreword		iv
Preface		v
Summary of Proceedings		1
Recommendations		2
Steering Committee Meeting		3
Workplan for 2002		3
Action Plan for 2002-2003		4
Annexures		5-24
Annexure I	Minutes of the Steering Committee meeting	5
Annexure II	Workplan for the year 2002	8
Annexure III	Action plan for the year 2002	14
Annexure IV	Technical programme	19
Annexure V	List of participants	22

Foreword

Countries in the region of South, Southeast and East Asia are becoming increasingly aware of the potential importance of native tropical fruit species as largely unexploited sources of income and employment particularly for women, and as good sources of dietary vitamins, minerals and energy. It is recognized that improved production and marketing can help meet the rural and urban demand resulting in increased national revenue. In addition, the role of Asia's enormous diversity of fruit species, both cultivated and wild, as components of stable ecosystems, is now becoming clearer. Over 400 tropical fruit species are found in Asia. They are important for the well being of the populations in the region, as sources of supplemental food, and nutritionally balanced diets, and enhancing both household income and national revenue. Their conservation and use, thus, assumes high priority.

In 1994, IPGRI in collaboration with Malaysian Agriculture Research and Development Institute (MARDI), organized an Expert Consultation meeting wherein 3 major fruits (mango, citrus and jackfruit), 3 minor fruits (rambutan, durian and litchi) and a few other underutilized fruits (longan, carambola, mangosteen, etc.) were identified as target species for work on several PGR related activities. Initially, IPGRI started to synthesize available information and has produced 23 status reports till date in collaboration with several national programmes. This information has been disseminated widely in the region for the use of scientists and institutes engaged in research and development of tropical fruits. Also, several programmes on conservation techniques and maintenance of diversity have been carried out in the region with IPGRI support.

In view of the increased importance of R&D needs in tropical fruits in this region, further strengthening of above integrated approach on PGR activities was considered necessary. The work was, thus, continued during 1998-99, mainly through the Asian Development Bank funded Tropical Fruit Trees (ADB-TFT) Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia'. This project is now operational in collaboration with ten Asian countries, viz., Bangladesh, China, India, Indonesia, Malaysia, Nepal, the Philippines, Sri Lanka, Thailand and Vietnam.

These proceedings deal with the deliberations of the second annual meeting of the project organized by IPGRI-APO at Hanoi, Vietnam from 28 February - 2 March 2002. The objectives of this meeting were to review the progress and outputs of different activities in the collaborating countries, enhance collaboration with regional and international organizations, provide a platform to Country Coordinators to mutually interact and update their information, and to develop annual work plan. These activities and concerns were well covered in four Technical Sessions. The proceedings include highlights of the meeting and a follow-up action plan.

I am indeed thankful to the national coordinators for their cooperation and contribution to the success of this meeting, as also to the other regional and international partners. I am also thankful to my colleagues Dr Bhag Mal, Dr Ramanatha Rao and Ms Ramamani for having synthesized the information in the form of this publication. I am sure, the wider coverage on PGR activities as presented in these proceedings will be very useful to concerned national programmes and also to other organizations in the region interested in conservation and use of tropical fruits.

Percy E. Sajise
Regional Director
IPGRI-APO

Preface

The genetic diversity of tropical fruit species in Asia, the Pacific and Oceania (APO) region is very high and has been used by humans for quite extensively. However, in recent decades, due to preponderance of introduced fruits, the use of native species has been reduced. Over 400 edible fruit species are reported to occur in Asia. People in the region are increasingly becoming aware of the potential importance of these species that are largely underexploited. They are good sources of dietary vitamins, minerals and energy. They can also play a very significant role for the well being of the population through enhancing household income, employment generation particularly for women and environmental protection, especially as the species are well adapted to diverse agroclimatic conditions in the region. Many of the species are threatened due to various human interventions and concerted efforts are required to take corrective measures. The International Plant Genetic Resources Institute (IPGRI) has been very concerned with the effective conservation and sustainable use of plant genetic resources and has taken several initiatives in this direction.

IPGRI, through its project on tropical fruit genetic resources funded by the Asian Development Bank (ADB), is supporting the national programmes in 10 Asian countries, namely, Bangladesh, China, India, Indonesia, Malaysia, Nepal, the Philippines, Sri Lanka, Thailand and Vietnam for the conservation and use of native tropical fruit species biodiversity. The project focuses on locating and collecting diversity; characterization, evaluation and utilization; *in situ* and *ex situ* conservation; information documentation and dissemination; socioeconomic studies and human resources development.

This publication reports the proceedings of the second annual meeting of the Tropical Fruit Species Project held at Bao Son Hotel, Hanoi, Vietnam from 28 February – 2 March 2002. During this meeting, the progress of work done under the project during 2001 was reviewed and the workplan for 2002 was developed. The discussions focused attention on the need for greater regional collaboration for furthering the cause of efficient and effective conservation and use of tropical fruit genetic resources in the region. The deliberations of the Steering Committee of this project were also fruitful, which set the direction for future work.

This publication will be extremely useful to all the Country Coordinators and other researchers involved in the project. The publication will also be a monitoring tool to measure the progress made against the commitments here in. We are highly thankful to the Director, Vietnam Agricultural Science Institute (VASI), Vietnam for hosting this important meeting. We express our sincere thanks to Dr Nguyen Thi Ngoc Hue and her dedicated team for their hard work and all the help and support provided for making this meeting successful.

Bhag Mal	Y.S. Ramamani	V. Ramanatha Rao
South Asia Coordinator	Scientific Officer (Tropical Fruits)	Senior Scientist
IPGRI South Asia Office	IPGRI South Asia Office	(Genetic Diversity)
New Delhi	New Delhi	IPGRI-APO, Serdang, Malaysia

**Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel, Hanoi, Vietnam
28 February – 2 March 2002**

Summary of Proceedings

The second annual meeting of the Asian Development Bank (ADB) funded IPGRI project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' was organized at Bao Son Hotel, Hanoi, Vietnam from 28 February – 2 March 2002. The objectives of this meeting were to review the progress and outputs of different activities on target fruit species in the collaborating countries, assess the impact and sustainability of the project, identify gaps and constraints, develop workplan for the year 2002, explore the possibilities of enhanced collaboration with regional and international organizations and discuss and exchange ideas for developing Phase II proposal of the project.

The meeting was organized in four Technical Sessions, (i) Review of progress and outputs, (ii) Regional/International collaboration, (iii) Project impact assessment and sustainability, and (iv) Developing workplan for the year 2002. The technical programme and the list of participants are given in Annexure IV and V, respectively.

In the Inaugural Session, Dr Bhag Mal, IPGRI South Asia Coordinator and the Technical Coordinator of the project welcomed the Chief Guest and the distinguished invitees and participants. He highlighted the importance of tropical fruits and emphasized on the need for concerted efforts for their conservation and use. Dr V. Ramanatha Rao, Senior Scientist (Genetic Diversity) IPGRI-APO, gave a brief background of the project and the objectives of the meeting. The ADB representative Dr Edy Brotoisworo emphasized that the project activities should focus on poverty reduction in line with ADB's strategy and expressed support to tropical fruit research in achieving that target. Dr Percy E. Sajise, Regional Director, IPGRI-APO in his address as Chairperson stressed on the need to meet the challenge of poverty alleviation by means of various complementary projects which will use the collected, characterized and evaluated materials from the project such as moving it into extension and integrating processing and marketing from other existing projects at the national and regional levels. Special remarks were given by Dr Nguyen Van Bo, Head of Technology and Production Quality Department, Ministry of Agriculture and Rural Development, Vietnam and he reiterated the commitment and efforts towards conservation of biodiversity and tropical fruit germplasm in Vietnam. The Chief Guest, Dr Nguyen Huu Nghia, Director General, Vietnam Agricultural Science Institute (VASI) inaugurated the meeting and highlighted the importance of tropical fruits for the region in general and Vietnam in particular, and assured full support to and cooperation with IPGRI's efforts towards conservation and sustainable utilization of tropical fruit genetic resources.

In the Technical Session I, Dr Bhag Mal, presented a comprehensive overview of the progress and summary of achievements against the expected outputs and targets of the project. The Country Coordinators from 10 countries presented the progress and achievements made under the project in their respective countries, during the year 2001. Technical Session II dealt with the international/regional collaboration highlighting the role of organizations such as Food and Agriculture Organization of the United Nations (FAO), Centre de Cooperation Internationale en Recherche Agronomique pour le Development (CIRAD), International Tropical Fruits Network (TFNet) and International Centre for Underutilized Crops (IUCU), Underutilized Tropical Fruits in Asia Network (UTFANET) on tropical fruit species genetic resources and related aspects. In the Technical Session III, the Country Coordinators presented the reports highlighting the major impacts that the project has made and expected outputs and also described the efforts made to sustain some of the activities

initiated under this project in their respective countries. They also expressed the need for Phase II of the project and indicated a few additional species and the activities that could be included in Phase II proposal and discussed about a framework for its development. The Technical Session IV was devoted to the development of workplan for 2002 for all the 10 countries. The workplan was developed for different countries under the convenorship of Dr D.S. Rathore (Bangladesh, China and India), Dr Felipe S. dela Cruz (Indonesia, Malaysia, Nepal, the Philippines) and Dr Monowar Hossain (Sri Lanka, Thailand, Vietnam). The Steering Committee (SC) meeting was held in which the minutes of the second SC meeting were approved, proposed agenda items were adopted and the implementation of action points were discussed. In the Plenary Session, the convenors presented the finalized workplans for respective countries. Dr V. Ramanatha Rao presented a synthesis of project impacts and sustainability issues based on the presentations made by the Country Coordinators. The recommendations of the Steering Committee were presented by Dr Felipe S. dela Cruz, the Chairperson of the Steering Committee.

Recommendations

The major recommendations and salient points that emerged during the deliberations in the meeting are given below:

Administrative aspects

- It was noted that the implementation of project activities was hindered by frequent changes of Country Coordinators in some countries. The need for continuity of Country Coordinators was strongly emphasized for continuity of work and faster implementation of the activities.
- It was noted that some countries were still having problems because of delayed receipt of funds for research. The delay was in some cases due to internal problems of transfer of funds from their headquarters (HQ) and in some other cases due to delay in transfer of funds from IPGRI which was mainly due to either late receipt of reports from Country Coordinators or delay in receiving endorsed Letters of Agreement (LoAs). It was pointed out that the ADB releases the funds only after the receipt of six-monthly progress reports and budget along with the workplan for the next 6 months. These reports are prepared by IPGRI based on the progress reports submitted by the countries. To alleviate this problem, the Steering Committee recommended that the six-monthly progress reports should be submitted by the Country Coordinators as per the agreed deadline to facilitate IPGRI to consolidate and submit the six-monthly reports in time to get the funds released in time. It was also recommended that the Country Coordinators should ensure timely clearance of LoAs and facilitate release of funds from their HQ to project sites.
- In order to expedite the work on socioeconomic aspects, a socioeconomist is proposed to be appointed on a short-term basis and he/she will liaise with different partners to carry out socioeconomic studies in the relevant countries.

Review of progress and outputs

- It was noted that the project activities, in general, were going on very well in each of the participating countries and the progress made during the year 2001 was quite satisfactory. A few constraints were identified by the partners, which need to be addressed.
- While characterizing the germplasm, attention needs to be given to assess the strengths and weaknesses of the germplasm/ varieties/ species so as to identify the varieties which can address the problem of poverty reduction.
- Carrying out socioeconomic studies was identified as the highest priority item that needs to be addressed urgently in most of the countries that have proposed to conduct such studies.

- It was agreed that for socioeconomic studies, there should be a greater focus on production, post-production, processing and marketing aspects. Much of this work needs to be done in collaboration with other organizations such as ICUC-UTFANET and TFNet.
- Many Country Coordinators expressed strongly that these ongoing activities on different fruit species should become the integral part of the national research and development programme so that the sustainability of work on tropical fruit species genetic resources is ensured.
- It was suggested that fruit exhibitions and diversity fairs might be organized at the national, state/province and district levels in order to quickly view the diversity and if possible, it should be collected through the participation of farmers/growers. The material thus collected should be characterized and the database developed. Through this mechanism, elite materials with specific desirable traits could be selected for further utilization.

International / regional collaboration

- It was recognized by all the partners that there is a need to strengthen collaboration between regional and international organizations in order to avoid duplication of efforts and to enhance the sustainability of the networks. The areas of collaboration between IPGRI and FAO, TFNet, ICUC-UTFANET and CIRAD need to be clearly identified.
- It was suggested that TFNet, ICUC-UTFANET and IPGRI may jointly organize a workshop to deliberate and develop a concrete action plan of joint activities of mutual interest for each organization.
- For better management of the data generated from characterization/evaluation of *Citrus*, all collaborating countries could use EGID software developed by CIRAD.
- Two FAO publications (i) Proceedings of FAO-Expert Consultation held at Bangkok, and (ii) Publication on longan are available on request and those interested in these publications may send their request to Dr M.K. Papademetriou, Senior Plant Production and Protection Officer, FAO Regional Office for Asia and the Pacific, Bangkok, Thailand.

Steering Committee meeting

The third meeting of Steering Committee (SC) of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' was held on 2 March 2002 under the chairmanship of Dr Felipe S. dela Cruz. The Steering Committee approved the minutes of the Second SC meeting, proposed the agenda which was adopted, reviewed the implementation of recommendations of the second SC meeting and discussed new agenda items. The major points and recommendations that emerged out of the deliberations in the Steering Committee meeting are given in Annexure I.

Workplan for 2002

1. Each Country Coordinator reviewed the progress made and discussed the workplan for 2002 and finalized the activities (Annexure II). Activities to be undertaken in 2002 in all the countries on all fruit crops will be collated and distributed.
2. It was suggested that the Country Coordinators should look at the logical framework of the project and see that all the outputs are achieved as per the project objectives. It was also emphasized to see as to how the results would be useful to the ultimate user.
3. It was agreed that whatever work has been done on the agreed activities (some of the activities may have limited results and might not fully achieve the outputs) will be reported and none of them will be eliminated. It was agreed that there was a need for extension of the project for 6-9 months without cost and IPGRI was requested to approach ADB for this purpose. This has become necessary as the project started late due to late receipt of funds.

4. The recommendation was to take the planned activities to their logical conclusions and up-scaling certain others to the next phase, while looking out for complementary funding/projects at the national and international levels.

Action Plan for 2002-2003

In order to expedite implementation of various project activities, an action plan was developed for the remaining period of the project including the expected no-cost extension for six months. The action plan embraced the activities, tasks, resources needed, persons/institutions responsible for each task, and the time frame for completion. The details are given in Annexure III.

Annexure I

**Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel, Hanoi, Vietnam
28 February – 2 March 2002**

Minutes of the Third Meeting of the Steering Committee

The third meeting of the Steering Committee of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' was held on 2 March 2002 under the chairmanship of Dr Felipe S. dela Cruz. The following Country Coordinators/representatives from participating countries, special invitees and IPGRI-APO staff attended the meeting:

1.	Dr Felipe S. dela Cruz, Jr.	Philippines	Chair
2.	Dr D.S.Rathore	India	Member
3.	Dr Monowar Hossain	Bangladesh	Member
4.	Professor Chen Zhusheng	China	Member
5.	Dr Sudarmadi Purnomo	Indonesia	Member
6.	Dr Salma Idris	Malaysia	Member
7.	Dr Kedar Budathoki	Nepal	Member
8.	Dr Shantha Peiris	Sri Lanka	Member
9.	Dr Songpol Somsri	Thailand	Member
10.	Dr Nguyen Thi Ngoc Hue	Vietnam	Member
11.	Dr Edy Brotoisworo	Philippines	ADB Representative
11.	Dr Percy E. Sajise	IPGRI-APO, Malaysia	Special Invitee
12.	Dr V. Ramanatha Rao	IPGRI-APO, Malaysia	Ex-officio Member
13.	Dr Bhag Mal	IPGRI, New Delhi	Member Secretary

Ms Ramamani Yadur Suryanarayan (Scientific Officer, IPGRI South Asia) was requested to record the minutes of the meeting. The highlights of the meeting and the major points/recommendations that emerged are given below:

1. Approval of the minutes of the second meeting of the Steering Committee

Sri Lanka proposed for the approval of the minutes of the second annual meeting held at Pattaya, Thailand on 9 February 2001 and it was seconded by Nepal. The minutes were approved without any amendments.

2. Adoption of the proposed agenda

The items of agenda were discussed. The adoption of the agenda for the meeting was proposed by Malaysia and seconded by India.

3. Review of the decisions/major points agreed upon during the second meeting

i) Release of funds

The possibility of multi-year LoA was explored. However, since the current phase of the project has just one more year left, the release of funds will continue to be in the same manner as being followed currently.

ii) Development passport and characterization database

It was emphasized that the Country Coordinators should closely liaise with documentation focal persons who were provided training to enhance their skills in information management and data documentation. The database development work needs to be expedited in each of the collaborating countries and sharing of information needs to be facilitated for the benefit of collaborating partners.

iii) Germplasm exchange

There was a general agreement to exchange germplasm of tropical fruit species between the collaborating countries. For effective exchange of germplasm between countries, it is extremely important to know what materials can be exchanged by the respective countries. It was suggested that a list of varieties of target species needs to be published by IPGRI and circulated to the partners. It was agreed that IPGRI will develop a simple format and countries will send the information in that format, (including photographs/pictures), to IPGRI to synthesize the information, publish it and distribute to all the 10 partners.

iv) Training needs

Human resource development was considered a very important area and a strong need was felt for organizing training courses on:

- Collecting and analyzing socioeconomic data
- Ecogeographic surveys
- Analysis and interpretation of data on molecular characterization

The Country Coordinators were requested to identify the training courses based on the highest priority in achieving the expected targets of the project. In-country training can be organized by IPGRI by sending the resource persons to different countries and the details can be worked out depending upon the requirements of the countries. Communication between partners needs to be maintained in this regard. It was agreed that the field genebank (FGB) manual which was distributed to the partners for use in FGB management would be checked by Country Coordinators to determine the need for any further training. IPGRI agreed to check the financial status and determine which training activities could be undertaken.

v) Development of descriptors

Draft descriptors for mangosteen have been developed by the Philippines and Indonesia. Thailand and Malaysia have agreed to assist in further refinement of these descriptors.

Draft descriptors for litchi have been finalized. The Country Coordinators were requested to provide the list of reviewers for examining the descriptors so as to finalize and get these published soon.

Draft descriptors for rambutan have been developed by Malaysia. The Country Coordinators from the Philippines, Thailand and Indonesia have agreed to assist in further refinement of these descriptors.

It was suggested that draft descriptors can, however, be made available for use by the countries until these descriptors are published by IPGRI.

vi) Proposals for submission to funding institutions

ACIAR project proposal is in the final stage and the partner countries have been requested for more detailed information in view of additional requirements from Australian Centre for International Agricultural Research (ACIAR). Also, IPGRI is developing a proposal on on-farm and *in situ* conservation for target species covered under this project with United Nations Environment Programme – Global Environment Facility (UNEP-GEF). Also, some

countries have submitted project proposals on tropical fruit species to different funding sources, both national and international.

vii) Website and publication of an in-house newsletter

The agreed name of this fruit network is Asian Fruit Genetic Resources Network (AFGRN). However, website has been registered as TFTGR.net. It was agreed that the name of the website must coincide with the name of the network and, therefore, this discrepancy needs to be corrected. The Country Coordinators should send the information to the IPGRI's documentation focal person Dr Paul Quek, Serdang, Malaysia who will collate and edit the information and forward to Dr Rajan, Central Institute of Subtropical Horticulture (CISH), Lucknow, India who will then update the website information.

vii) Reporting

A concern was expressed that country progress reports are not received in time by IPGRI and this, in turn, delays the release of funds. It was emphasized that Country Coordinators should provide reports in time to facilitate further processing and timely submission of the reports to ADB which in turn will help in timely release of funds.

ix) Purchase of equipments

Country Coordinators are required to submit a request with appropriate justification to Dr Bhag Mal for purchase of additional equipments, if any, and also for change of equipments and this will be followed up with the ADB.

x) Election of chair and vice-chairperson

Professor Chen Zusheng from China was unanimously elected as the Chair and Dr D.S. Rathore from India was unanimously elected as the Vice-chair of the Steering Committee.

xi) Venue of next meeting

China, the Philippines and India were proposed as possible venues for next meeting and China was unanimously identified as the venue for the third annual meeting of the project.

4. Proposal for Phase II of the Project

All the 10 partner countries expressed the need for continuation of the project in Phase II and expressed that this was extremely necessary to undertake additional activities and involve additional species in order to create a good impact of the project.

The meeting ended with vote of thanks to the chair.

Annexure II

**Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of
Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel,
Hanoi, Vietnam
28 February – 2 March 2002**

Workplan for 2002

Bangladesh

Task/ Activity	Jackfruit	Mango	Citrus
1. Locating and collecting diversity			
1.1 Conducting ecogeographic studies	*	*	*
1.2 Preparation of distribution maps	*	*	*
1.3 Collection and estimation of genetic diversity from different crop growing areas	*	*	*
1.4 Organizing fruit shows to collect and identify superior germplasm	*	*	*
2. Germplasm evaluation, characterization and utilization			
2.1 Passport data and morphological characterization at the collecting site and also the flowering and fruit characteristics of the accessions	*	*	*
2.2 Identification of germplasm with valuable traits	*	*	*
3. <i>In situ</i> conservation			
3.1 Selection of sites for <i>in situ</i> conservation	*	*	*
4. <i>Ex situ</i> conservation			
4.1 Seedling raising and grafting in the nursery	*	*	*
4.2 Planting of the accessions in the field	*	*	*
4.3 Maintenance and improvement of field genebank	*	*	*
5. Information and documentation			
5.1 Updating existing databases	*	*	*
5.2 Documentation of collected germplasm	*	*	*
5.3 Documentation of indigenous knowledge	*	*	*
6. Socioeconomic studies			
6.1 Survey of orchards, homesteads and fresh fruit markets for constraint analysis	*	*	*
7. HRD and capacity building*			

China

Task/ Activity	Mango	Citrus	Litchi
1. Locating and collecting diversity			
1.1 Conducting ecogeographic studies	*		
1.2 Preparation of distribution maps	*		
1.3 Exploration and collecting genetic diversity	*	*	
1.4 Estimate genetic diversity in collected germplasm using molecular method		*	

2. Germplasm evaluation, characterization and utilization			
2.1 Assess, evaluate and characterize genetic resources	*	*	
2.2 Identifying germplasm with valuable traits	*	*	
2.3 Carrying out evaluation for identification of better rootstocks and scions		*	
3. <i>Ex situ</i> conservation			
3.1 Complementary conservation strategies	*	*	
3.2 Establishing FGB for collected germplasm	*	*	
3.3 Improving field genebank management practices	*	*	
3.4 Standardizing cryopreservation techniques		*	
4. Information and documentation			
4.1 Documentation of existing information	*	*	*
4.2 Updating existing databases	*	*	*
4.3 Publication of catalogues	*	*	*
5. HRD and capacity building*			

India

Task/Activity	Mango	Citrus	Litchi
1. Locating and collecting diversity			
1.1 Conducting ecogeographic studies to locate and document genetic diversity	*	*	
1.2 Preparing distribution maps	*	*	
1.3 Exploration and collecting genetic diversity	*	*	*
1.4 Estimating genetic diversity in collected materials	*	*	
2. Germplasm evaluation, characterization and utilization			
2.1 Assessing, evaluating and characterizing existing collections	*	*	
2.2 Identifying germplasm with valuable traits (rootstock, scion, biotic stress tolerance, fruit quality)	*	*	
2.3 Carrying out evaluation for identification of desirable clones and potential breeding stocks	*	*	
2.4 Assessing genetic diversity in material with communities and home gardens using indigenous knowledge	*	*	
3. Developing guidelines for <i>in situ</i> conservation			
3.1 Identifying sites for <i>in situ</i> conservation and developing guidelines for their monitoring	*	*	
3.2 Identifying links with <i>in situ</i> conservation sites	*	*	
3.3 Complementary conservation strategies at the national level	*	*	
3.4 Developing guidelines and undertaking community based conservation		*	
4. <i>Ex situ</i> conservation			
4.1 Undertaking specific research to develop/improve conservation methods, viz., seed conservation, <i>in vitro</i> conservation, cryopreservation	*	*	*
4.2 Conserving existing and collected germplasm in genebanks	*	*	*

4.3	Improving field and other genebank management practices	*	*	
5.	Information and documentation			
5.1	Updating existing databases	*	*	*
5.2	Preparing and publication of catalogues	*	*	*
5.3	Documentation of indigenous knowledge	*	*	*
5.4	Sharing database with partners	*	*	*
6.	Socioeconomic studies			
6.1	Surveys of grower and consumer preferences and market opportunities	*	*	
7.	HRD and capacity building*			

Indonesia

Task/ Activity	Rambutan	<i>Garcinia</i> spp.
1. Locating and collecting diversity		
1.1 Conducting ecogeographic studies		
1.2 Exploration and collecting genetic diversity	*	
2. Germplasm evaluation, characterization and utilization		
2.1 Assessing, evaluating and characterizing genetic resources	*	
2.2 Identifying germplasm with valuable traits	*	*
3. <i>Ex situ</i> conservation		
3.1 Establishing field genebank	*	
4. Information and documentation		
4.1 Updating existing databases	*	*
4.2 Preparing and publishing catalogues	*	*
5. Socioeconomic studies		
5.1 Surveys of grower and consumer preferences and market opportunities		
6. HRD & capacity building*		

Malaysia

Task/Activity	Pulasan	Kuini
1. Locating and collecting diversity		
1.1 Preparing distribution maps		
1.2 Exploration and collecting genetic diversity	*	*
2. Germplasm evaluation, characterization and utilization		
2.1 Passport data and morphological characterization of the accessions at the collecting site	*	*
2.2 Identification of potential accessions for budwood collections	*	*
3. <i>Ex situ</i> conservation		
3.1 Raising of seedlings in the nursery	*	*
3.2 Collection of budwoods from selected accessions	*	*
3.3 Establishment of budgrafted planting materials from selected accessions	*	*
3.4 Establishment of field genebank	*	*

- | | | |
|---|---|---|
| 4. Information and documentation | | |
| 4.1 Updating existing databases | * | * |
| 4.2 Documentation of the passport data and
characterization data | * | * |
| 5. Socioeconomic studies | | |
| 5.1 Gathering secondary data on the status of cultivation | | |
| 5.2 Primary survey of household involved in the cultivation,
constraints in the production and marketing of fruits | * | * |
| 6. HRD and capacity building* | | |

Nepal

Task/Activity	Mango	Citrus
1. Locating and collecting diversity		
1.1 Conducting ecogeographic studies to locate genetic diversity		*
1.2 Preparation of distribution maps	*	*
1.3 Exploration and collection of genetic diversity	*	*
2. Germplasm evaluation, characterization and utilization		
2.1 Evaluation and characterization of existing genetic diversity	*	*
2.2 Assessing, evaluating and characterizing collected genetic diversity	*	*
2.3 Identification of germplasm with valuable traits	*	*
2.4 Reproducing superior plants for distribution to farmers	*	*
3. <i>In situ</i> conservation		
3.1 Identification of sites for <i>in-situ</i> conservation	*	*
3.2 Developing guidelines for monitoring of <i>in situ</i> sites	*	*
3.3 Developing guidelines for community based conservation and complementary conservation strategies	*	*
4. <i>Ex situ</i> conservation		
4.1 Gathering and compiling information on current practices and conservation methods	*	*
4.2 Identifying potential sites and establishing field genebanks ((FGB)	*	*
5. Information and documentation		
5.1 Updating existing databases	*	*
5.2 Preparing and publication of catalogues	*	*
5.4 Partners exchange information	*	*
6. Socioeconomic studies		
6.1 Carrying out surveys for production constraints	*	*
7. HRD and capacity building*		

Philippines

Task/ Activity	Mango	Citrus	<i>Garcinia</i> spp.
1. Locating and collecting diversity			
1.1 Collecting germplasm in Regions VI to XV	*	*	*
2. Germplasm characterization, evaluation and utilization			
2.1 Conducting morphological characterization	*	*	*
2.2 Identifying germplasm with valuable traits	*	*	*

3. <i>Ex situ</i> conservation			
3.1 Propagating and maintain newly collected germplasm	*	*	*
3.2 Establishing collection in the field	*	*	*
4. Information documentation			
4.1 Updating existing databases	*	*	*
4.2 Preparing and publishing catalogues	*	*	*
5. HRD and capacity building*			

Sri Lanka

Task/ Activity	Jackfruit	Mango
1. Locating and collecting diversity		
1.1 Conducting ecogeographic studies	*	*
1.2 Preparing distribution maps	*	*
1.3 Collecting targeted germplasm	*	*
2. Germplasm evaluation, characterization and utilization		
2.1 Assessment, evaluation and characterization of existing collections	*	*
2.2 Identifying germplasm with valuable traits	*	*
2.3 Assessment of genetic diversity through indigenous knowledge	*	*
3. <i>Ex situ</i> conservation		
3.1 Conserving existing and collected germplasm in genebanks	*	*
3.2 Improving field genebank management practices	*	*
4. Information and documentation		
4.1 Updating existing databases	*	*
4.2 Preparing and publishing catalogues	*	*
4.3 Documenting indigenous knowledge	*	*
5. Socioeconomic studies		
5.1 Conducting surveys of growers and consumers preferences and market opportunities	*	*
6.0 HRD and capacity building*		

Thailand

Task/ Activity	Rambutan	Mango
1. Locating and collecting diversity		
1.1 Conducting ecogeographic studies	*	*
1.2 Preparing distribution maps	*	*
1.3 Exploration and collecting genetic diversity	*	*
2. Germplasm evaluation, characterization and utilization		
2.1 Assessing, evaluating and characterizing genetic resources	*	*
2.2 Identifying germplasm with valuable traits	*	*
3. <i>Ex situ</i> conservation		
3.1 Establishing filed genebanks	*	*
4. Information and documentation		
4.1 Updating existing databases	*	*
4.2 Preparing and publishing catalogues	*	*
5. HRD and capacity building*		

Vietnam

Task/ Activity	Citrus	Litchi	Mango
1. Locating and collecting diversity			
1.1 Conducting ecogeographic studies	*	*	*
1.2 Exploration and collecting genetic diversity	*	*	*
1.3 Preparing distribution maps	*	*	*
2. Germplasm evaluation, characterization and utilization			
2.1 Assessing, evaluating and characterizing genetic resources	*	*	*
2.2 Identifying germplasm with valuable traits including better root stocks	*	*	*
3. <i>Ex situ</i> conservation			
3.1 Improving genebank management practices	*	*	
3.2 Maintain newly collected materials in field genebanks, <i>in vitro</i> and in greenhouse	*	*	
3.3 Developing guidelines for field genebank management	*	*	
4. Information and documentation			
4.1 Gathering existing information from different research institutes	*	*	*
4.2 Updating existing databases	*	*	*
4.3 Preparing and publishing catalogues		*	
5. Socioeconomic study			
5.1 Carrying out surveys of grower and consumer preferences			
5.2 Carrying out surveys of market opportunities			
6. HRD and capacity building*			

* HRD and capacity building to be undertaken by IPGRI based on the priorities indicated by the partners and availability of funds

Annexure III

**Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of
Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel,
Hanoi, Vietnam
28 February – 2 March 2002**

Action Plan for 2002-2003

Activity	Task/ Action	Resources needed	Persons/ Institutions responsible	Time frame	Remarks
I. Identifying Country Coordinators	Maintaining continuity of Country Coordinators	NPs	Heads of Institutions in different countries	-	Country Coordinators to be instrumental for continuity
II. Release of funds	Facilitating release of funds				
	Actions:				
	(i) Transfer of funds from the place where money is received to the place where work is to be done	NPs/IPGRI	Country Coordinators, IPGRI	-	Follow-up by Country Coordinators essential
	(ii) Request to be sent to ADB for no-cost extension of the project for 6 months	IPGRI	P.E. Sajise, V. Ramanatha Rao, Bhag Mal, IPGRI	November 2002	
III. Appointment of Socio-economist	Appointment of a Socioeconomist on short-term basis	IPGRI	V.Ramanatha Rao/ Bhag Mal/ Percy E. Sajise	July 2002	

(Annexure III Contd...)

Activity	Task/ Action	Resources needed	Persons/ Institutions responsible	Time frame	Remarks
IV. Equipment procurement	Procurement of need based equipments Actions: (i) Request for exchange/ procurement of additional equipments with appropriate justification to be submitted to ADB	IPGRI/ NPs	Bhag Mal, IPGRI	July 2002	
V. Project activities	Actions: (i) Assess the strengths and weaknesses of the varieties/species to identify suitable varieties, which can address to the problem of poverty reduction. (ii) Carrying out socio-economic studies for production, post-production, processing and marketing aspects (iii) Integration of activities	NPs/ IPGRI IPGRI	Country Coordinators/ V. Ramanatha Rao, Bhag Mal, IPGRI Socioeconomist, IPGRI	December 2002 April 2003	Country Coordinators to provide the information to IPGRI at the earliest
	(iv) Fruit exhibitions and diversity fairs to be organized at national, state/province, district levels through farmers' participation for quick view of diversity	NPs	Country Coordinators/ Heads of Institutions in different countries Country Coordinators/ Heads of Institutions in different countries	April 2003 December 2002	Country Coordinators to be instrumental and proactive

(Annexure III Contd....)

Activity	Task/ Action	Resources needed	Persons/ Institutions responsible	Time frame	Remarks
VI. Germplasm exchange	Streamlining the procedure of germplasm exchange; publish a list of exchangeable varieties	IPGRI	V. Ramanatha Rao/ Bhag Mal, IPGRI	May 2002	Country Coordinators to provide input
	Actions: (i) Simple format to be developed				
	(ii) Information to be provided with pictures and photographs (iii) Publish the list of exchangeable varieties	NPs	Country Coordinators	September 2002	
VII. Information Documentation	Development of database of available characterization data	IPGRI	Bhag Mal, V. Ramanatha Rao, IPGRI	April 2003	
	Actions: (i) Liase with documentation focal persons to coordinate activities at the national level	NPs	Country Coordinators/ Documentation focal persons/ Paul Quek, IPGRI		
	(ii) Develop and publish descriptors for mangosteen, rambutan and litchi (iii) Update website for Asian Fruit Genetic ResourcesNetwork (AFGRN)	NPs/ IPGRI	Bhag Mal/ Country Coordinators/ Paul Quek, IPGRI	December 2002	Needs to be done fast so as to enable NPs to use the descriptors for characterization and evaluation work.

(Annexure III Contd...)

Activity	Task/ Action	Resources needed	Persons/ Institutions responsible	Time frame	Remarks
VIII. Human resources development	Enhancing the capability and capacity of national programmes Actions: (i) Identify and organize training course(s) based on country needs/priorities Development of Project Proposals for complementary funding	NPs/ IPGRI	P.E. Sajise, Bhag Mal, IPGRI	July 2003	
IX. Developing complementary project proposals	Actions: (i) Submission of refined Phase II proposal to ACIAR (ii) Develop additional funding proposals in areas complementary to ADB-TFT Project activities (iii) Develop and submit Phase II Proposal of ADB-TFT Project	IPGRI/ NPs NPs/ IPGRI	P.E. Sajise, V. Ramanatha Rao, Bhag Mal, IPGRI Country Coordinators Bhag Mal, V.Ramanatha Rao and Socioeconomist IPGRI V. Ramanatha Rao/ Bhag Mal, Socioeconomist, IPGRI Country Coordinators	June 2002 October 2002	
X. International/ Regional collaboration	Enhancing collaboration and linkage with international/regional organizations Actions: (i) Jointly organize a meeting/workshop to	IPGRI/ NPs TFNet, ICUC-	Bhag Mal, Socioeconomist, IPGRI Country Coordinators P.E. Sajise, Bhag Mal, V. Ramanatha Rao, IPGRI and Country Coordinators Nazmul Haq, ICUC-UTFANET	March 2003 November 2002	

(Annexure III Contd....)

Activity	Task/ Action	Resources needed	Persons/ Institutions responsible	Time frame	Remarks
XI. Reporting	deliberate and develop a concrete action plan of joint activities of mutual interest	UTFANET, IPGRI	K.M.Tahir, TFNet, Ramanatha Rao and Bhag Mal, IPGRI		
	Submission of progress reports Actions: i. Submission of 6 monthly reports and budget - First six monthly report	NPs	Country Coordinators	Last week of May/first week of June	Timely submission of these reports is essential to get the funds released from ADB
	- Second six monthly & annual report	NPs	Country Coordinators	Last week of November/ first week of December	

Annexure IV

Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel, Hanoi, Vietnam

28 February – 2 March 2002

Technical Programme

28 February 2002, Thursday

0830 – 0900	Registration	
0900 – 1000	Inaugural Session	
0900 – 0910	Welcome	Bhag Mal
0910 – 0920	Introductory remarks	V. Ramanatha Rao
0920 – 0930	Remarks by ADB Representative	Edy Brotoisworo
0930 – 0935	Special remarks	Nguyen Van Bo
0935 – 0945	Chairperson's address	Percy E. Sajise
0945 – 0955	Inaugural address by Chief Guest	Nguyen Huu Nghia
0955 – 1000	Vote of thanks	Ha Dinh Tuan
1000 – 1030	<i>Tea/ Coffee</i>	
1030 – 1300	Technical Session I: Review of Progress and Outputs	
	Chairperson: Percy E. Sajise	
	Co-Chairperson: Chen Zhusheng	
1030 – 1100	Project achievements & outputs: An overview	Bhag Mal
1100 – 1120	Country Report - Bangladesh	Monowar Hossain
1120 – 1140	Country Report - China	Chen Zhusheng
1140 – 1200	Country Report - India	D.S. Rathore
1200 – 1220	Country Report - Indonesia	Sudarmadi Purnomo
1220 – 1240	Country Report - Malaysia	Salma Idris
1240 – 1300	Discussion	
1300 – 1400	<i>Lunch</i>	
1400 – 1600	Technical Session I (Contd.)	
	Chairperson: Edy Brotoisworo	
	Co-Chairperson: K. Budathoki	
1400 – 1420	Country Report - Nepal	K. Budathoki
1420 – 1440	Country Report - Philippines	Felipe S. dela Cruz
1440 – 1500	Country Report - Sri Lanka	Shantha Peiris
1500 – 1520	Country Report - Thailand	Songpol Somsri
1520 – 1540	Country Report - Vietnam	Nguyen Thi Ngoc Hue
1540 – 1600	Discussion	
1600 – 1620	<i>Tea/ Coffee</i>	

1620 – 1800 **Technical Session II: Regional/International Collaboration**

Chairperson: M.K. Papademetriou

Co-Chairperson: K.M. Tahir

1620 – 1640	Role of ICUC-UTFANET in tropical fruit species improvement	Merylin J. Rondolo
1640 – 1700	TFNet's activities in Asia-Pacific Region	K.M. Tahir
1700 – 1720	CIRAD's activities on tropical fruit species	Philippe Cao-Van
1720 – 1800	Discussion	

1 March 2002, Friday

0830 – 1300 Field trip / Lab visit

1300 – 1400 *Lunch*1400 – 1830 **Technical Session III: Project Impact Assessment and Sustainability**

Chairperson: V. Ramanatha Rao

Co-Chairperson: Monowar Hossain

1400 – 1540	Brief presentations on impact/benefits to farmers, sustainability and future expectations	Country Coordinators
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1540 – 1600 *Tea/Coffee*

1600 – 1700 Discussion and development of framework for proposal development for Phase II

1700 – 1800 **Technical Session IV: Developing Workplan for 2002**

Convenor: D.S. Rathore

1700 – 1720 Bangladesh, China, India

1720 – 1800 Discussion

2 March 2002, Saturday0830 – 1330 **Technical Session IV: Developing Workplan for 2002 (Contd.)**

Convenor: Felipe S. dela Cruz

0830 – 0930 Indonesia, Malaysia, Nepal, the Philippines

0930 – 1040 **Technical Session IV: Developing Workplan for 2002 (Contd.)**

Convenor: Monowar Hossain

0930 – 1015 Sri Lanka, Thailand, Vietnam

1015 – 1040 Discussion

1040 – 1100	<i>Tea/Coffee</i>	
1100 – 1300	Steering Committee Meeting	
1300 – 1400	Lunch	
1400 – 1700	Plenary Session	
	Chairperson: Percy. E. Sajise Co-Chairperson: Bhag Mal	
	Presentation of workplan for 2002	Convenors
	Synthesis of impact assessment and sustainability issues	V. Ramanatha Rao
	Presentation of Steering Committee meeting's recommendations	Felipe. S. dela Cruz
	Chairperson's remarks	Percy. E. Sajise
	Vote of thanks	Nguyen Thi Ngoc Hue

Annexure IV

**Second Annual Meeting of IPGRI-ADB Project on 'Conservation and Use of Native Tropical Fruit Species Biodiversity in Asia' held at Bao Son Hotel, Hanoi, Vietnam
28 February – 2 March 2002**

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