

BIBLIOGRAPHIC DATA SHEET1. CONTROL NUMBER
PN-AAJ-2332. PROJECT OR ORGANIZATION NUMBER (100)
AF30-0000-0000**3. TITLE AND SUBTITLE (300)**

Annual report, 1979

4. PERSONAL AUTHORS (100)**5. CORPORATE AUTHORS (101)**

Int. Board for Plant Genetics Resources

6. DOCUMENT DATE (110)

1980

7. NUMBER OF PAGES (120)

108p.

8. ARC NUMBER (170)

631.52.I61a-1978

9. REFERENCE ORGANIZATION (150)

IBPGR

10. SUPPLEMENTARY NOTES (500)**11. ABSTRACT (950)****12. DESCRIPTORS (920)**Plant genetics
Seed production
Agricultural trainingConservation
Agricultural products
Plant breeding**13. PROJECT NUMBER (160)**

931005600

14. CONTRACT NO. (140)

AID/DSAN-G-0084

15. CONTRACT TYPE (140)**16. TYPE OF DOCUMENT (140)**

631.52
I61a
1978

PN- AAJ-233



Annual Report 1978

International Board for Plant Genetic Resources

AGPE: IBPGR/79/8
May 1979

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

ANNUAL REPORT 1978

IBPGR SECRETARIAT
Rome, 1979

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the International Board for Plant Genetic Resources, the United Nations or the Food and Agriculture Organization of the United Nations concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

IBPGR Executive Secretariat
Crop Ecology and Genetic Resources Unit
Plant Production and Protection Division
Food and Agriculture Organization of the United Nations
Via delle Terme di Caracalla, Rome 00100, Italy

The International Board for Plant Genetic Resources (IBPGR) is an autonomous, international, scientific organisation under the aegis of the Consultative Group on International Agricultural Research (CGIAR). The IBPGR, which was established by the CGIAR in 1974, is composed of 15 members from 13 countries (see Appendix I); its Secretariat is provided by the Food and Agriculture Organization of the United Nations. The basic function of the IBPGR, as defined by the Consultative Group, is to promote an international network of genetic resources centres to further the collection, conservation, documentation, evaluation and use of plant germplasm and thereby contribute to raising the standard of living and welfare of people throughout the world. The Consultative Group mobilises financial support from its members to meet the budgetary requirements of the Board.

The International Board for Plant Genetic Resources received major financial support and pledges in 1978 from the following governments and government agencies:

*Australia
Belgium
Canada
Federal Republic of Germany*

*Netherlands
Norway
Sweden
UK
USA*

and from the following international institutions:

*World Bank
UNEP*

C O N T E N T S

	<u>Page</u>
ACRONYMS USED IN REPORT	vii
FOREWORD	ix
SUMMARY AND HIGHLIGHTS OF 1978	1
Summary	3
Highlights of 1978	6
Cooperation with International Centres	7
ACTIVITIES IN THE REGIONS	9
Mediterranean	11
Europe	13
Southwest Asia	14
South America	17
Southeast Asia	19
Eastern Africa and Ethiopia	23
West Africa	28
Meso-America	30
South America	31
SPECIFIC CROP ACTIVITIES	35
Committees and Working Groups	37
Wheat	37
Maize	39
Rice	41
Sorghum and Millets	43
Grain Legumes	43
Phaseolus Beans	45
Groundnut	47
Banana and Plantains	47
Coconut	49
Forestry	49
Coffee	50
Forage Plants	50
Cotton	51
Vegetables for the Tropics	51
Crop Descriptors	52
CONSERVATION	53
Network of Base Seed Collections	55
Support for Seed Storage Facilities	56
Seed Physiology	57
INFORMATION	59
General	61
Descriptors	62
Acquisition and Organization of Data	63
Investigation and Development of Information Management Systems (IS/GR)	63
Technical Assistance by IS/GR	63

<u>CONTENTS (Continued)</u>	<u>Page</u>
TRAINING	65
Support to University Courses	67
Short Technical Courses	67
ADMINISTRATION	69
Membership and Meetings of the Board	71
Secretariat	71
Committees of the Board	71
Publications	71
APPENDICES	
I - Membership and Secretariat of the IBPGR in 1978	73
II - Membership of Advisory Committees and Working Groups in 1978	75
III - Membership of Regional Committee for Southeast Asia	81
IV - IBPGR Publications	83
V - Statement of Account as at 31 December 1978	85
VI - List of IBPGR Grants	87
RESUME	91
RESUMEN	97

ACRONYMS USED IN REPORT

AAASA	- Association for the Advancement of Agricultural Science in Africa
ARARI	- Aegean Regional Agricultural Research Institute (Turkey)
ARC	- Agricultural Research Council
BIOTROP	- Southeast Asia Ministry of Education Organization: Regional Center for Tropical Biology
CATIE	- Tropical Agricultural Centre for Research and Education (Costa Rica)
CENARGEN	- National Centre for Genetic Resources (Brazil)
CIAT	- International Centre for Tropical Agriculture
CIDA	- Canadian International Development Agency
CIMMYT	- International Maize and Wheat Improvement Centre
CIP	- International Potato Centre
CMEA	- Council of Mutual Economic Assistance (USSR)
CRIA	- Central Research Institute for Agriculture
CSIRO	- Commonwealth Scientific and Industrial Research Organization (Australia)
DGRST	- Secretariat of State for Scientific and Technical Research (Senegal)
EMASAR	- Ecological Management of Arid and Semi-Arid Regions
EUCARPIA	- European Association for Research on Plant Breeding
EXIR	- Executive Information Retrieval
FAO	- Food and Agriculture Organization of the United Nations
GR/CIDS	- Genetic Resources/Communication, Information and Documentation System
IAR	- Institute of Agricultural Research (Ethiopia)
IARC	- International Agricultural Research Centre
IBP	- Institute of Plant Breeding (Philippines)
IBPGR	- International Board for Plant Genetic Resources
ICAR	- Indian Council of Agricultural Research
ICRISAT	- International Crops Research Institute for the Semi-Arid Tropics
ICTA	- Institute for Agricultural Science and Technology
IDB	- Inter-American Development Bank
IFCC	- French Research Institute for Coffee and Cocoa
IICA	- Inter-American Institute of Agricultural Sciences
IITA	- International Institute for Tropical Agriculture
INIA	- National Institute of Agricultural Research
INTA	- National Institute for Agricultural Technology (Argentina)

ACRONYMS (continued)

IPB	- Bogor University of Agriculture (Indonesia)
IRAT	- Institute for Tropical Crops Research (France)
IRRI	- International Rice Research Institute
IS/GR	- Information Sciences/Genetic Resources Program
MARDI	- Malaysian Agricultural Research and Development Institute
NBPGR	- National Bureau of Plant Genetic Resources (India)
NGBF	- New Guinea Biological Foundation
NIAS	- National Institute of Agricultural Sciences (Japan)
NSSL	- National Seed Storage Laboratory (USA)
ODM	- Ministry of Overseas Development (UK)
ORSTOM	- Office for Overseas Scientific and Technical Research (France)
PCARR	- Philippine Council for Agriculture and Resources Research
SIDA	- Swedish International Development Authority
SPII	- Seed and Plant Improvement Institute (Iran)
UNDP	- United Nations Development Programme
UNEP	- United Nations Environment Programme
UNESCO	- United Nations Educational, Scientific and Cultural Organization
UPLB	- University of the Philippines at Los Baños
USAID	- United States Agency for International Development
USDA	- United States Department of Agriculture
USDA-SEA	- USDA-Science and Education Administration
VIR	- N.I. Vavilov Institute of Plant Industry (USSR)
WARDA	- West African Rice Development Association

FOREWORD



The work of the International Board for Plant Genetic Resources expanded significantly in 1978. In particular, important new components were added to the rapidly growing international network of plant genetic resources centres. The development of this network is the Board's main task.

As in past years, the Board's efforts continued to have a catalytic effect upon genetic resources activities in many different parts of the world. The pace of such activities increased markedly, reflecting both the direct support given by the Board to individual programmes and, more importantly, the positive impact the Board has had on building up institutional capabilities, stimulating collection, conservation, evaluation and other necessary programmes, and influencing policy making at large.

The work of the Board has three main components: work in countries and in regions where there is significant genetic diversity; work related to specific priority crops; and work on documentation of the information about plant collections. All these activities depend on the availability of qualified manpower to carry out the tasks of collection, conservation, evaluation, documentation and ultimately use of germplasm. The Board, therefore, regards training as one of its important priorities, essential for the mounting of an effective global effort.

In view of the recent rapid development of genetic resources activities on a global scale, the Board, during 1978, attempted to evaluate its past work to assess the strengths and weaknesses of its programmes and it took first steps towards the forward-planning of its activities. A tentative five-year plan of action was formulated, which is now, and will be for some time to come, subject to continuing refinement.

The Board's main goal - to safeguard for mankind the genetic variation of cultivated plants and to ensure its better and speedier availability to breeders all over the world - seemed far from reality a few years ago. The progress of the Board in 1977-78 has shown that, while there is still much to be done the goal is not unattainable.

**SUMMARY
AND HIGHLIGHTS OF 1978**



- National institutes
- International centres
- f FAO
- UNEP

THE EMERGING NETWORK: Centres which worked with IBPGR in 1977-78 specifically for collecting, conservation and documentation.

SUMMARY

Activities in Countries and Regions



During 1978 the Board's activities continued in most priority regions. The map on the opposite page shows the geographical spread of these activities. The number of national centres collaborating with the Board is now substantial.

The Mediterranean regional programme, led by the Italian National Research Council's Germplasm Laboratory at Bari, in cooperation with FAO, attained Board support for the establishment of seed storage facilities in Spain and Portugal and considerable collecting work has been done in Algeria, Cyprus, Greece, Libya, Portugal and Spain. The collecting missions have been cooperative efforts and plans have been advanced for a regional meeting of all the countries in the region in March 1979. This meeting is expected to establish a detailed programme for future operations.

The Board assumed financial responsibility in 1976 for a programme on plant genetic resources in Southwest Asia, which encompassed activities in Afghanistan, Iran, Iraq, Pakistan, Syria and Turkey. A reassessment of the situation in 1977 led to a new approach whereby the Board began to emphasize support for national programmes rather than regional linkages. The Board's support has been supervised by a senior officer in the Secretariat, under whose direction two officers posted in the region have sought to provide technical assistance in the field. By the end of the year the governments of five countries - Afghanistan, Iran, Iraq, Pakistan and Syria - had signed a final plan of operation and Turkey had expressed willingness to do so. 1978 saw considerable collecting activities in Afghanistan, Iran, Iraq and Turkey.

Both the Mediterranean and the Southwest Asia programmes overlap with two efforts in Europe. Firstly, EUCARPIA has stimulated collaboration among European plant breeders through the creation of a network of genebanks. Secondly, UNDP has, through a proposed European Cooperative Programme, initiated discussions on cooperative work on the conservation and exchange of genetic resources for plant breeding. This Cooperative Programme will eventually be an integral part of the global network.

In South Asia (Bangladesh, Bhutan, Burma, India, Nepal and Sri Lanka) a regional meeting was held in 1978. Unfortunately, Bangladesh and Burma did not send delegates. Nevertheless, progress was made and agreement was reached on the need for expanded national programmes with a number of cooperative regional links.

The cooperative programme in Southeast Asia completed its first full year of operation in 1978 and the Regional Committee met for the first time. This region includes Indonesia, Malaysia, Papua New Guinea, Philippines and Thailand. Collecting progressed in most of the countries. A regional seed store was established in the Philippines, as was also a regional banana collection. Towards the end of 1978, on the recommendation of the Regional Committee, recruitment of a regional IBGCR officer was initiated.

During 1978 a meeting of countries of the Andean zone called for the establishment of cooperative regional activities on genetic resources. Shortly after the close of the year, the Board held discussions with the regional genebank at CATIE in Turrialba, Costa Rica, funded by the Federal Republic of Germany, which established a basis for future collaboration. In order to encourage activities in the whole of Latin America, it has been agreed that the Board will, in 1979, appoint a senior consultant to advise where necessary and to establish suitable links in the region. The IBGCR supported expeditions to continue the collection of groundnut germplasm in Argentina, Bolivia, Brazil, Paraguay and Peru; the collection of maize in Argentina, Bolivia, Brazil, Colombia, Paraguay, Peru and Uruguay; the

collection of forages in Argentina and Uruguay; and the collection of *Phaseolus* in association with CIAT in Central and South America. Support was also given to Argentina and Chile to collect and increase potato germplasm, particularly from Chiloé and in the northeastern region of Argentina.

In Africa south of the Sahara, collections of sorghum and millet were made for the IBPGR by ORSTOM in Western Africa, and the Board's Secretariat organized similar work in Kenya and Tanzania. The activities of the Genetic Resources Unit of IITA expanded as the Unit became fully staffed in 1978 and collections were made in many parts of Western Africa as well as in Eastern Africa. In 1978 the IBPGR also supported the collection of African rice in Tanzania and Zambia by IRAT and ORSTOM. In Ethiopia, the Genetic Resources Center, funded by the Federal Republic of Germany, continued to be hampered by political conditions but it carried on a number of useful activities during the year and maintained links with the Board's Secretariat.

New collaborative arrangements were made by the Board with several countries with significant national genetic resources programmes: with the United States in connection with the development of a programme to assemble and organize information on the major germplasm collections in the country and through agreement with the NSSL at Fort Collins, Colorado, to maintain global base collections of several important crops; with Australia (a new donor to the Board) in relation to a CSIRO/IBPGR Symposium for Forage Genetic Resources in 1979; and with Japan in relation to future work in the Far East. The Board has also had an exchange of letters with the People's Republic of China with a view to future cooperation.

Crops

The Board has established Advisory Committees to guide its work on five important crops - wheat, maize, rice, sorghum and millets, and *Phaseolus* beans. There is no Advisory Committee for potatoes since CIP has links with work on this crop in many countries, so that it has sufficed for the Board to look to CIP for advice. The tasks of the committees include advice to the Board on existing collections, areas where new collections are needed, facilities where base collections should be stored, and descriptor systems for the crops.

During 1978 four of these committees met for the second time. In addition, consultations were convened on coconuts and on forages in South America.

As noted above, collections on all of these crops were supported, either specifically or as part of regional activities in one or another region. All were recommended by the Crop Committees.

Work on descriptors progressed in all these crops. It was completed for maize and wheat in 1977 and in 1978 reached the stage of finalization for *Phaseolus*, rice and sorghum. The Southeast Asia Regional Programme held two Working Groups to establish agreed minimum lists of descriptors for winged bean and five tropical fruits. The IS/GR Program, which had spent some time developing inventories of major crop collections, sent out tapes of machine-readable, standardized information to the institutes which provided the raw data and to the IBPGR Secretariat.

As in previous years, in all its work on crops the Board has been very effectively helped by the IARCs in the Consultative Group system. The Board offers its grateful thanks to the Directors-General of the Centres and to their colleagues. In several cases the Centres have agreed to provide long-term base storage for world collections of crops for which they have research responsibility. Moreover, the Centres help the Board by co-sponsoring the Crop Advisory Committees.

The Information System

Only computers can handle the very large numbers of items of information generated in genetic resources work. Breeders will be able to communicate with computers elsewhere through computer terminals; others will be able to use telecommunications; yet others, and perhaps most, will send their data or their queries by post to other centres equipped to provide the required services. It is evident that advances in micro-circuitry and computer design are bringing ever closer the day when small computers will be able to handle important parts of the information systems necessary for genetic resources work.

Up to 1978, the Board sub-contracted its work on information to the IS/GR Program of the University of Colorado at Boulder. A data base system known as EXIR, developed by the IS/GR Program, has been made generally available and has been set up in a number of centres around the world. Very large quantities of data about existing collections were assembled by IS/GR and put on to tape in standardized form. With this information, the Crop Committees made important progress on descriptor systems.

Apart from the research and development done by the IS/GR Program, the work at Boulder has contributed greatly to making centres and breeders aware of the needs for standardized descriptors and data base compilation and management in order to enable quick and reliable retrieval of information and thereby use material more effectively. A good example has been the cooperation of the IS/GR Program with the Science and Education Administration of the USDA to develop a unified register of all genetic resources holdings in the United States, compatible with the Board's system. This contract has now been transferred from the University of Colorado at Boulder to Colorado State University in Fort Collins and those members of the IS/GR Program staff who were working primarily on the USDA project have been transferred to Fort Collins.

The Board realized in 1978 that striking advances were being made in information work at several centres around the world, and so proposed in 1979 to rearrange the organization of its support to information work. The details of this reorganization are still being worked out.

Training

The Board continued to help finance the University of Birmingham, UK, to provide training in the conservation and utilization of plant genetic resources for students from developing countries. In 1977-78, 15 such students were trained, and in the 1978-79 course there are 9. Much of the Board's support to this important aspect of its work is financed out of UNEP's contribution to the IBPGR.

To aid the regional programme in Southeast Asia, the IBPGR funded a training course in Indonesia on methods of exploration and collection in the field. In collaboration with FAO, the Board also helped to fund a training course on information management in genetic resources work given by the staff of the IS/GR Program at Boulder. Most of the participants came from genetic resources centres in developing countries and from International Centres in the Consultative Group System. A new innovation was a technical training course on seed technology for genebank work given by the University of Edinburgh, UK. This course, the first of its kind, was limited to participants from genebanks in developing countries or centres in such countries where genebanks are to be established.

Personal contacts and the recognition of shared purpose among the mixed groups of students in all these courses are helping greatly to foster cooperation in the world network of centres.

Seed Conservation

Following the Board's recommendations on the physical and engineering design of long-term seed stores, the IBPGR has helped to fund the equipment of new stores and the improvement, to the recommended standards, of older ones. A survey in cooperation with FAO has recently been made and it is gratifying to note the large increase in seed stores around the world. The Board also supported investigations on seed physiology at the University of Reading, UK, designed to determine the most effective methods of conservation.



HIGHLIGHTS OF 1978

- * The Board intensified its support of collections of priority crops, largely in accordance with the recommendations of its Crop Advisory Committees.
- * Implementation of genetic resources programmes moved into high gear in several priority regions which are centres of crop diversity.
- * The way was paved for cooperative action in several other regions of diversity, particularly in South Asia, Meso-America and the Andean zone.
- * National centres in all regions of diversity cooperated actively with the IBPGR.
- * The IBPGR fostered the installation of computer-based information and retrieval systems in several national centres.
- * Significant amounts of materials were moved into the conservation centres which have accepted responsibility for maintaining base collections of designated seed stocks.
- * There was a growing awareness among breeders of the value of the Board's work.
- * The Board increased its support for practical field training through financing several short technical courses.

COOPERATION WITH INTERNATIONAL CENTRES

During 1978, the Board received excellent cooperation from the IARCs dealing with crops. As in previous years, the International Centres effectively assisted the IBPGR in coordinating many aspects of the conservation of the crops for which they have research responsibility. To date, several of the IARCs have agreed to hold major world base collections of these crops and CIAT, CIMMYT, ICRISAT and IRRI have continued to co-sponsor Germplasm Advisory Committees (see p.37). Until 1978 four committees - for rice, maize, sorghum and millets and *Phaseolus* - were co-sponsored by IARCs; at the end of the year, CIMMYT informed the Board of its willingness to co-sponsor the Advisory Committee on wheat, and ICARDA will be represented on that Committee.

CIAT

In association with CIAT, the IBPGR continues to support the collection of *Phaseolus* bean species and forage germplasm in Central and South America (see p.30). In April 1978, the IBPGR co-sponsored a Regional Workshop on Forage Plant Genetic Resources of South America which was held at CIAT (see p.31). CIAT holds ca. 21,000 samples of *Phaseolus* beans, 2,400 cassava, and 4,780 forage legumes and grasses, and the CIAT genebank has been designated to hold a world base collection of *Phaseolus*. The *Phaseolus* Germplasm Advisory Committee, which is co-sponsored by CIAT, held its second meeting in July 1978 at the University of Cambridge, UK (see p.45).

CIMMYT

As a result of discussions between representatives of CIMMYT and the Board in 1978, CIMMYT has agreed to co-sponsor the Advisory Committee on Wheat, in addition to the Maize Committee. The maize germplasm bank in CIMMYT holds ca. 13,000 samples of maize and its wild relatives from 46 countries. This collection is being duplicated for long-term storage at the NSSL, Fort Collins, USA. A catalogue of maize germplasm held at CIMMYT is currently being prepared in collaboration with the IBPGR.

CIP

The IBPGR collaborates with CIP and looks to it, rather than to an Advisory Committee, to keep the Board informed on the exploration and conservation of the genetic resources of potato (see p.4). CIP has the responsibility of maintaining a world collection of potato germplasm. At present, over 13,000 accessions of primitive cultivars are in the collection, of which approximately 10,000 have been classified and about 1,600 duplicate accessions identified.

ICARDA

ICARDA with its mandate for *durum* wheat, barley, lentils, chickpeas and broad beans in Southwest Asia and North Africa has indicated that it intends to collaborate closely with the IBPGR in the formulation of a genetic resources programme. At present, this Centre does not have facilities to assume major responsibility for long-term conservation of a particular crop; however, ICARDA keeps important working collections (ca. 9,000 lentil, 4,000 broad bean, 4,000 chickpea and 1,200 pea accessions). It is also planning to build, within the next two years, storage facilities for the long-term conservation of a "world" collection of lentils and broad beans and a duplicate set of the ICRISAT collection of chickpeas.

ICRISAT

ICRISAT has progressively taken a leadership role in the genetic resources activities of the crops falling within its research mandate. In 1978, ICRISAT made internal rearrangements to establish a Genetic Resources Unit. The IBPGR, in collaboration with ICRISAT, continued to support the collection of groundnuts in South America, and sorghum and millets in Eastern and Western Africa. The Advisory Committee on Sorghum and Millets, co-sponsored by ICRISAT, held its second meeting at ICRISAT in January 1978 (see p. 43). ICRISAT is in the process of building base storage facilities for germplasm of sorghum, pearl millet, groundnut, chickpea, pigeonpea and minor millets.

ICRISAT invited CIAT, ICARDA and IITA to meet in ICRISAT in January 1978 to discuss cooperation in the collection of pulse germplasm (see p.43).

IITA

IITA has been in close touch with the IBPGR Secretariat in connection with collecting in both Eastern and Western Africa. In 1978, the Genetic Resources Unit of IITA became fully operational and launched a series of explorations in Africa (see p. 28). The IBPGR provided IITA with funds for the purpose of training postdoctorate fellows and also some transitional financing for storage facilities. IITA has accepted responsibility to store major base collections of African rice and cowpea.

IRRI

To implement a five-year collection plan developed at the 1977 IRRI/IBPGR Rice Genetic Conservation Workshop, IRRI assisted countries in South and Southeast Asia in collecting rice germplasm. With financial support from the IBPGR, IRRI helped workers of national programmes in Bangladesh, Indonesia and Thailand to collect rice germplasm and to ship the material to IRRI for long-term storage. The second meeting of the Rice Advisory Committee, which is co-sponsored by IRRI, was held at Beltsville, USA in 1978 and finalized a minimum descriptor list for rice.

ACTIVITIES IN THE REGIONS



Overleaf:

*Participants at the Workshop held
to formulate action in South Asia.*



Mediterranean

Collections have been made in the Mediterranean region since 1975, first with UNEP-funding and subsequently with funding from the IBPGR. Initially, exploration was concentrated in North African countries, especially Algeria and Tunisia, with the emphasis on traditional wheat and barley cultivars. In 1977, activity in the Mediterranean region increased considerably, under the leadership of the Germplasm Laboratory of the Italian National Scientific Council at Bari, Italy. The collection activities were expanded to cover a range of important crops, including forage and grain legumes, and also to involve more countries - Cyprus, Greece, Libya, Spain and Portugal, as well as Algeria and Tunisia.

The Germplasm Laboratory at Bari played a key role during 1978 in the collecting work and in storing the seed samples. Documentation for samples collected in the Mediterranean region is temporarily centred at Bari and this Laboratory also plays a central part in evaluation. Scientists in each of the countries where collections have been carried out participated fully. In particular, during 1978, collaboration increased with INIA (Madrid) and INIA (Lisbon).

A regional meeting of all the countries in the region will take place at FAO headquarters, 5 - 7 March 1979. The participants in this meeting are expected to formulate a detailed programme for future operations.



Collecting site in Algeria at Ouen Djanet

The major collecting missions of 1978 are described below:

(i) Exploration and collection in the Tassili mountains of Algeria and in Crete, Paros, Naxos and the Lesbos region of Greece by the Bari Germplasm Laboratory

This work forms only part of a programme which will last for several years. The principal germplasms collected were wheat and grain legumes. The collecting in Crete and the other Greek islands is part of a systematic programme to retrieve important genetic variability in Greece where genetic erosion is very far advanced. After collection, germplasm samples are subject to detailed evaluation for protein content, disease resistance and many agronomical characters. A team from Bari also undertook, with Ford Foundation funding, a short reconnaissance mission in the Upper Nile valley in preparation for a cereal collecting mission in 1979.

(ii) Exploration in Spain

A joint mission organized by INIA (Spain) and Gatersleben (DDR) explored for grain legumes in Spain over a three-month period. Approximately 400 accessions were collected.

(iii) Forage legume collection in Libya

In the early months of 1978 a large-scale mission was organized by Libya, FAO, IBPGR and EMASAR to collect desert and semi-desert forage species. The main objective was to collect populations of wild annual species of *Medicago* and also to collect other potentially useful forage legumes, both annual and perennial. The mission involved a total of 40 participants, including several consultants funded by the IBPGR. As a result, one of the largest collections of North African *Medicago* germplasm ever made has now been collected and is undergoing preliminary study. Approximately 450 sites were visited and, by the end of June 1978, 513 populations had been sampled. These were made up of 54 different varieties or subspecies belonging to 16 different genera (12 belonging to the *Leguminosae*). Plans have been made to continue the collection of forage legumes and possibly useful woody perennial range species in Libya in 1979. It is intended to make collections each spring over the next three years so that all areas will be covered. Libya plans to establish a genebank for the material and to carry out taxonomic and agronomic evaluations.

(iv) Collection of small grains in Cyprus

A joint IBPGR/FAO mission to collect *Triticum durum* and barley in Cyprus was undertaken in response to an appeal from the Agricultural Research Institute at Nicosia. Collections were made in May-June in central and southwest Cyprus. A total of 105 samples were collected; of these, 79 were hard wheat (*T. durum*) and 26 were barley (*Hordeum vulgare*).

(v) Collections in Portugal

An IBPGR/INIA mission in Portugal collected 210 populations of rye, 205 populations of maize and 145 populations of *Phaseolus*. A duplicate set of these samples has been sent for storage to the Germplasm Laboratory at Bari. Evaluation of the maize and rye samples has already begun in Portugal. The maize will form part of the collection of the Braga Genebank.

Genebanks in the Mediterranean Region

To the present most of the seed material collected by the IBPGR Mediterranean Programme has been stored at the Germplasm Laboratory at Bari. It is planned that there will be a network of depositories with each assuming a major role for specified crops within the region. During 1978 the IBPGR approved two grants as follows:

- (1) INIA (Spain): A grant was made to help equip a genebank for national and regional seed collections with emphasis on grain legumes. The facility was nearly completed by the end of 1978 and is expected to be fully operational in 1979.
- (2) INIA (Portugal): A grant was made to help equip the genebank at Braga, which will assume regional responsibility for maize collections.

Training

Two students from the Mediterranean commenced training at the University of Birmingham, UK, in September 1978, one from Cyprus (funded by UNEP through the IBPGR) and one from Greece. Both Spain and Portugal were represented by trainees at the training course on seed technology for genebank work at the University of Edinburgh, UK, and one trainee from Greece attended the IS/GR short course in Boulder, Colorado, USA.

Europe

Although Europe has not been designated by the IBPGR as a priority region for action, a large proportion of the world's collected germplasm is maintained by European institutions.

Since 1966 European plant breeders, through EUCARPIA, have sought to strengthen their international contacts to promote genetic conservation and exchange of material in Europe. The Genebank Committee of EUCARPIA was established in 1968 and, stimulated by its activities, genebanks were established at Bari (Italy) and Braunschweig (Federal Republic of Germany), whilst another has just been established at Lund (Sweden). Each bank serves a distinct major agroecological zone. In addition, a cooperative German/Dutch programme has been established at Braunschweig and Wageningen for the maintenance of potato germplasm.

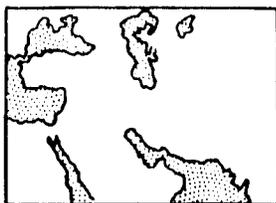
In Eastern Europe, plant germplasm is an object of priority attention by appropriate government ministries in most countries and some eastern European genebanks enjoy high international repute.

In recent years the EUCARPIA Genebank Committee has devoted particular attention to establishing collaborative relationships among genebanks throughout Europe, stimulated by a recognition of the need to improve the exchange of information and germplasm material among European breeders.

During the same period the UNDP has followed a parallel path by selecting proposals for cooperation in the conservation and exchange of genetic resources for plant breeding in Europe as the subject of one of a number of European Cooperative Programmes. The UNDP, recognizing the importance of the work already begun by the EUCARPIA Genebank Committee, the CMEA Consultative Group on Genetic Resources, and by similar bodies, has agreed to support the European Cooperative Programme during a take-off phase by providing for the services of a coordinator, an information specialist as required, and also such consultants as may be needed during the preparatory phase. It is envisaged that the

European Cooperative Programme will eventually form part of the global network being developed by IBPGR.

During 1978, under preparatory assistance financing, work progressed in two directions. First, an extensive series of visits was made and discussions held to prepare an inventory of all European institutes, personnel and ongoing programmes involved in genetic conservation and the provision of germplasm to plant breeders and plant breeding programmes. Second, contacts were made with the most important European genebanks to assess methods used in storing, retrieving and exchanging information about accessions. A Government Consultation is to be convened, in March 1979, to finalize plans for this programme.



Southwest Asia

Although the IBPGR assumed financial responsibility on 1 July 1976 for a project on plant genetic resources in Southwest Asia, a formal agreement to fund it was not signed between the IBPGR and FAO until March 1978 owing to protracted discussions on where and how to provide aid.

Originally the intention was to support the national genetic resources programmes of the six member countries of the project (Afghanistan, Iran, Iraq, Pakistan, Syria and Turkey) by means of a regional unit at ARARI, Menemen, near Izmir, Turkey, with a sub-station at the SPII, Karaj, Iran. In effect this would have been a continuation of a regional project funded up to 1976 by UNDP/FAO and SIDA in which the six countries participated.

This idea was abandoned as impractical following a reassessment of the situation in 1977 and a national approach was substituted for a regional one. It was decided to give direct support to national programmes and to have a senior officer at FAO headquarters coordinate the aid. Two genetic resources advisers were also appointed and stationed at SPII, Iran. They were to collaborate in the development of the Iranian programme and upon request to provide similar help to other countries of the region.

To date, five countries have signed the Plan of Operation of the project - Afghanistan, Iran, Iraq, Pakistan and Syria - and Turkey has expressed willingness to do so. The two genetic resources experts who took up their field appointments in January and March 1978 respectively have provided assistance to Iran, Afghanistan and Iraq. The senior officer has paid special attention to Turkey and to discussions with officials in Pakistan. Turkey has a well-staffed, vigorous ongoing national programme. It therefore requests help from the project only for special technical aspects of genetic resources activities, notably data processing, and for the acquisition of certain equipment.

The main accomplishments during the year are summarized in the following paragraphs:

Afghanistan

National staff made four collecting trips during the year, primarily for wheat, in provinces of Kandahar, Helmand Nimroz, Farah, Kunduz, Takhar, Badakhsan, Baghlan, Kunduz, Takhar, Badakhsan, Bamyan and Ghor and collected a total of 658 samples of which 366 were cultural wheats and the rest was made up mostly of *Grainoae* and *Leguminosae*.

One of the FAO/IBPCR genetic resources experts stationed in the region was at Kabul, from 12 October to 10 November. He helped to set up a simple seed processing laboratory, brought equipment supplied previously into use, and started the job of sorting out the extant collections which had been largely neglected up to then. About 2,000 samples were assembled, of which about a quarter had relatively few seeds. A start was made to weigh, can, label and document samples prior to entering them in the small medium-term cold store that is available. Steps were also taken to arrange germinability tests and the rejuvenation of deficient samples.



Primitive barley is still to be found in marginal habitats in the Southwest Asia region.

Iran

A Plant Genetic Resources Division was established at the SPII, Karaj, early in the year, more or less coinciding with the arrival in the field of the first FAO/IBPCR genetic resources officer. Since then, considerable progress has been made towards the establishment of a genebank.

Contacts have been made to acquire duplicate samples of extant Iranian collections. As these become available they are numbered, recorded on special forms for these data and entered into the genebank. This is an ongoing activity that will not be completed for several years; for example, 2,400 wheat accessions and 1,000 sugar-beet samples are held by SPII research divisions and there is a large collection of pulses at the College of Agriculture (Teheran University) and safflower at Varamin Research Station.

In 1978 four expeditions were made in Iran to collect germplasm of a variety of crops; these missions collected a total of 1,395 samples.

A range of both wild and cultivated *Graminae* together with various vegetables was obtained in Baluchistan. The August expedition to Saveh was mostly concerned with local bean varieties and that to Gilan collected mostly rice. Work in the Zagros Mountains yielded a rich collection of cultivated wheats (158), wild wheat (102), other cereals (152), *Leguminosae* (136) and others (13). Valuable data on the distribution of *Triticum* spp. were obtained. Most of the samples have now been cleaned, threshed, documented and stored in a cold store that was brought into operation in April. Processing the cereal collections awaits the delivery of a single ear thresher that was supplied at short notice from the Germplasm Laboratory, Bari. Unfortunately, it is still held in customs owing to the political disturbances which by the end of December led to an interruption of project activities for the time being.

Iraq

A medium-term cold store was brought into operation in July but teething troubles have been experienced with it since then. The construction and insulation of the store is satisfactory but correct adjustment of the cooling units is proving troublesome. It is thought that a voltage stabiliser and supplementary cooling for the condenser units will solve the problem.

Collecting trips to the farms between Baghdad and Basrah and to the northeastern region were made in April and May, respectively. Vegetable seeds were the main objective of the first expedition since the local varieties are rapidly being replaced by imported ones. The second trip yielded 82 samples of *Gramineae* *Triticum* spp. 54, *Aegilops* spp. 18 and *Hordeum* spp. 10.

Mr. A. T. Sharif, Leader of the Unit, spent September at the Germplasm Laboratory, Bari, to become familiar with the practicalities of genebank management, and in November one of the FAO/IBPGR genetic resources experts went to Iraq to help get the genebank into effective operation. Most of the routine activities have now started.

Pakistan

When the senior officer met Dr. Hashamul Haque, Director General of the Agricultural Research Council, Islamabad, keen interest in the work of the IBPGR and a willingness to participate in the project were expressed. The Plan of Operation was subsequently signed on behalf of the Government in November, 1978.

Syria

Genetic resources activities at the Agricultural Research Directorate, Douma, Damascus, were brought to a halt early in the year when the leader of the Genetic Resources Unit became ill. He returned to duty in September and since then work on the installation of a medium-term cold store has started. When finished, Pakistan will be the only one of the six countries in the project without this facility.

Turkey

A vigorous national genetic resources programme is being carried out in Turkey by ARARI at Menemen, Izmir.

Changes were made recently in the organization of the programme in an endeavour to spread the work load among ARARI, the agricultural faculties of Ankara, Ege and Ezerum Universities, and the regional plant breeding institutes.

Under the new arrangement, the collection of annuals on a country-wide basis will still be done from ARARI, which remains responsible for documentation,

seed storage and seed physiology. For vegetative crops, however, each regional institute will take responsibility for a particular set of vegetatively propagated crops.

The national project embraces all plants of economic significance. They are classified into eight groups with a committee for each - cereals, food legumes, forage plants, industrial plants, vegetables, ornamentals, fruits and others (e.g., medicinal, essential oils, etc.).

A number of collecting trips were made during the season by personnel of ARARI, either alone or in collaboration with foreign collectors. Collections of *Triticum*, *Hordeum*, *Avena* and *Aegilops* were made in the eastern and southeastern regions of the country, in the case of the latter region by a joint Turkish-Canadian group. An ARARI-ICARDA team collected annual forage legumes, particularly species of *Medicago*, *Onobrychis*, *Vicia*, *Lathyrus* and *Trifolium*.

Several students from Turkey have been trained at the University of Birmingham in the past and in 1978 a trainee attended the IS/GR short course at Boulder, Colorado, USA.

South Asia

At the request of the IBPGR, a workshop on the genetic resources of the region was held at Vigyan Bhavan in New Delhi, 9 - 12 May 1978. It was co-sponsored by the Government of India through the National Bureau of Plant Genetic Resources. Representatives from Bangladesh, Bhutan, Burma, India, Nepal and Sri Lanka were invited to attend; unfortunately the governments of Bangladesh and Burma did not send delegates. The meeting recommended that cooperation should be encouraged towards a future regional programme including all the countries of South Asia. The report of the meeting is available from the IBPGR Secretariat.

The situation in the region, as reported by the various national delegates, is as follows:

- 1) India has a comprehensive programme in which the National Bureau of Plant Genetic Resources, Central Institutes and State Agricultural Universities participate. India also has substantial manpower trained for genetic resources work and purposeful plans.
- 2) Sri Lanka has the basis of a national genetic resources programme which is making progress, especially on rice.
- 3) Bhutan has no existing programme.
- 4) Nepal, although having no national programme for food crops, has initiated action to collect and bring into cultivation medicinal plants.

The meeting recommended that genetic resources units be established in Bhutan, Nepal and Sri Lanka to coordinate genetic resources activities within those countries and to maintain liaison with corresponding institutions elsewhere in the region.

A list of national priorities for crops was finalized. Due to their high priority in several countries or throughout the region, the delegates agreed that some crops require immediate action for their collection and conservation. These crops are:

Rice, maize, soyabean, oilseed
brassica species, *Citrus* species,
cinnamon, and medicinal plants.

It was agreed that cooperative action should be taken in the region on these priority crops in the immediate future. In the case of rice, a five-year programme for the region was formulated at an IRRI/IBPGR Workshop held at Los Baños, Philippines in December 1977. These plans were endorsed with the addition of Bhutan as a participant. In addition, the meeting noted a suggestion that priority areas for rice should include the rainfed uplands as well as lowlands.

Although the seven crops or groups of crops listed above were considered to be of the highest priority for action on a regional basis, the following were recommended for secondary consideration: wheat, *Eleusine*, coconut, banana, cotton, jute, tea, pepper (*Piper*), ginger and large cardamom.

The meeting regarded it as essential and urgent that a long-term seed storage facility be established to serve as a base collection for countries of the region and also to supply to the active centres seed stocks required for multiplication and subsequent distribution to breeders. The intention of the Government of India to build such a facility was warmly received by the meeting and the hope was expressed that this facility would be available to serve the needs of the region as a whole. It was recommended that the IBPGR give every possible help in ensuring the establishment of this facility. In the latter half of 1978, the IBPGR was informed of discussions between the Government of India and the ODM (UK) concerning such a storage facility and the Board is following with interest the progress of these discussions.

Vegetatively propagated crops are among those of high priority in the region: e.g., sugarcane, *Citrus* spp., banana, mango and many other horticultural, forest and medicinal plants. In several countries of the region, there are important existing collections which it is hoped will become fully representative of the germplasm of the region. The meeting recommended that appropriate collections be established in the participating countries in view of essential quarantine barriers which may restrict the free exchange of vegetative material among countries.

There is a need for the conservation of natural areas, especially those containing species of importance. Countries within the South Asia region were asked to pay close attention to the conservation of such areas. Examples of species now threatened in their natural state include important medicinal plants in India and Nepal (*Dioscorea*, *Ephedra*, *Aconitum*, *Rauwolfia*) and wild relatives of sugarcane (e.g., *Sclerostachya* and *Rapidium*) in Northeast India. These and many others should be preserved in appropriate sanctuaries. It is noted that the Government of India intends to declare a sanctuary for *Citrus* and the wild relatives of sugarcane in the Northeast Himalayas, and a 50-acre plot in the Kurunegala district has been proclaimed a national reserve for medicinal herbs by the Government of Sri Lanka.

The meeting recognized the importance of continuing liaison between participating countries but regarded the establishment of a formal regional committee as premature. It recommended, as an interim measure, that liaison officers be designated by the governments of the region.

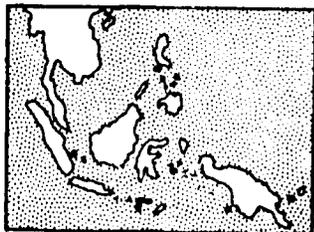
Discussions were held during the meeting on a national programme in Sri Lanka to collect *Citrus* and banana germplasm. Both banana and *Citrus* germplasm are at present threatened and therefore collection is urgent. It is hoped that this programme will get underway shortly.

ICRISAT

India is the host country for ICRISAT, one of the world's important IARCs. The mission of ICRISAT, which is located in Hyderabad, is to serve as a world centre for the improvement, in terms of yield and nutritional quality of five crops of major importance for the semi-arid tropics: sorghum, pearl millet, pigeonpea, chickpea and groundnut. ICRISAT is concerned with the genetic resources of these five crops on a worldwide scale. Smaller quantities of minor millets are held at the request of the IBPGR.

In 1978 the Germplasm Unit of ICRISAT collected from seven areas in Asia and Africa a total of 3,185 samples of the crops for which it has research responsibility. In addition, 21,101 accessions were grown for seed increase, of which 19,145 samples were evaluated for various morpho-agronomic traits. ICRISAT distributed a total of 17,470 samples to various research institutes all over the world.

At present ICRISAT is an "active" centre but plans are proceeding for "base" storage facilities.



Southeast Asia

As reported in a previous Annual Report, the IBPGR approved a proposed cooperative regional plant genetic resources programme for Southeast Asia following a workshop held in December 1976. In addition, a Regional Committee has been organized and this met for the first time in Bogor, Indonesia, 4 - 6 July 1978. Official government representatives from the five founder members of the programme were present at this meeting. On the basis of a comprehensive report presented by each delegation on the genetic resources work in progress in its country, the status of ongoing activities in the region was examined and future requirements for the continuation or expansion of these activities were discussed. A current list of significant existing collections of crop germplasm in the area was compiled and made available in the report of the meeting from the IBPGR Secretariat.

The priority list of crops which had been drawn up at the 1976 Philippine workshop was reviewed. It was agreed that the list should be amended to include banana for Indonesia and Malaysia and tuber crops for Indonesia, Malaysia and Thailand. The list now stands as follows:

Rice in Thailand

Durian in Indonesia, Malaysia and Thailand

Rambutan in Indonesia, Malaysia and Thailand

Soyabean in Indonesia, Philippines and Thailand

Coconut in all countries, especially Malaysia and the Philippines

Mango in Malaysia, Philippines and Thailand

Banana in Indonesia, Malaysia, Philippines and Thailand

Indigenous vegetables, especially: (i) Winged bean in Papua New Guinea and Thailand, and (ii) *Vigna* spp. in Indonesia, Philippines and Thailand.

Tuber crops, especially wild species (*Dioscoreaceae*, *Araceae* and *Zingiberaceae*) in Indonesia, Malaysia and Thailand.



Durian: a regional priority treefruit

Exploration targets drawn up at the original meeting were updated and specific crops, such as banana, coconut, forage crops and rice, were discussed.

An important development in the region has been the establishment of national genetic resources committees. The following act as national coordinators:

Indonesia	National Committee on Plant Genetic Resources (Secretariat at the National Biological Institute, Bogor)
Malaysia	MARDI
Papua New Guinea	Department of Primary Industry
Philippines	PCARR
Thailand	National Plant Genetic Resources Coordinating Subcommittee of the National Research Council

Towards the end of 1978, a regional officer was recruited by the IBPGR Secretariat to assist the countries of the Southeast Asia region in their genetic resources activities. He will take up his post early in 1979 and will be attached to the FAO Regional Office in Bangkok.

IBPGR-Funded Exploration Programmes

The IBPGR is funding a number of exploration projects through its Southeast Asia programme, viz:

- (i) Collection and evaluation of several tropical fruit tree species in Indonesia.

This is the second year of what is envisaged as a ten-year programme to collect, evaluate and conserve durian, rambutan, mango and *Canarium* spp. The work is being carried out by IPB. The aim of the collection is to save species from further genetic erosion and to identify superior clones and specific characteristics. Rootstock nurseries have been prepared for mango, durian and rambutan material.

- (ii) Collection and evaluation of winged bean (*Psophocarpus tetragonolobus*) in Thailand and neighbouring countries.

Winged bean is an important minor crop, grown in backyards and villages throughout Thailand. It is in danger of genetic erosion due to the introduction of other species. Exploration and collection have been undertaken throughout the country and 127 accessions have been collected and evaluated. The IBPGR started funding a two-year project in June 1978. As a result, further exploration was carried out during the last months of 1978 and will be continued during the early part of 1979. In the future, collections need to be made in neighbouring countries, especially Burma, where winged bean has been grown commercially for a long time.

During evaluation of the collections, an unexpectedly wide diversity was found. All accessions seem to be resistant to false rust and all are of the non-shattering type.

- (iii) Collection, maintenance and evaluation of Banana and Plantains in Southeast Asia.

This is a programme for exploration, collection and evaluation with the aim of assembling at the regional genebank at Davao, in the southern Philippines, a complete collection of the bananas and plantains of Southeast Asia. Surveys are planned for all areas.

A survey of Indonesia in 1978 indicates that this country's wealth of genetic resources has been grossly underestimated. Plant explorers who surveyed the villages and jungles of Southeast Asia searching for banana cultivars and wild *Musa* spp. for two large breeding programmes essentially bypassed Indonesia. The survey further showed that, although banana variety collections in East Java are rich in genetic diversity, the variety collections in West Java do not reflect the actual wealth in genetic diversity of cultivars and species growing in farms and villages of the surrounding region. Explorations and collecting expeditions need to be undertaken in Kalimantan, Sulawesi and Sumatra. The materials collected in South Sulawesi will have to be maintained and evaluated on that island due to diseases, but the survey recommended that the collections from Kalimantan and Sumatra should be incorporated in a national banana collection garden, the site to be identified and decided by the Indonesian authorities.



Pisang kates ('papaya-like' banana) in Indonesia



Pisang susu: one of the best varieties sold in East Java

A review of the banana collection of the NGBF at Lae, Papua New Guinea, was carried out by a member of the IBPGR Banana Working Group in May 1978 to assess the general state of the collection, and this resulted in an up-to-date classified inventory of the accessions as far as was possible. The Faculty of Agriculture at Lae is to be reintegrated with the remainder of the University of Papua New Guinea at Port Moresby. For this reason, NGBF has agreed to set up what will in the first instance be a duplicate collection on a station near Port Moresby.

- (iv) Exploration and collection of tuber crops in West Sumatra by the National Biological Institute, Bogor.

This project is to collect *Curcuma*, *Costus*, *Zingiber*, *Kaempferia*, *Languas* (*Zingiberaceae*), *Dioscorea* and aroids in West Sumatra, an area which has been underexplored botanically.

- (v) Collection and evaluation of edible legumes in the central and northern part of Thailand by Kasertsart University.

This is a two-year project, started in 1978, in which the classification, ecology and physiology of edible legumes will be studied. Collections are being made from the central and northern parts of Thailand. Field trips have been made every two months, except during the flowering and seed maturation stage - January to April - when they are carried out every month.

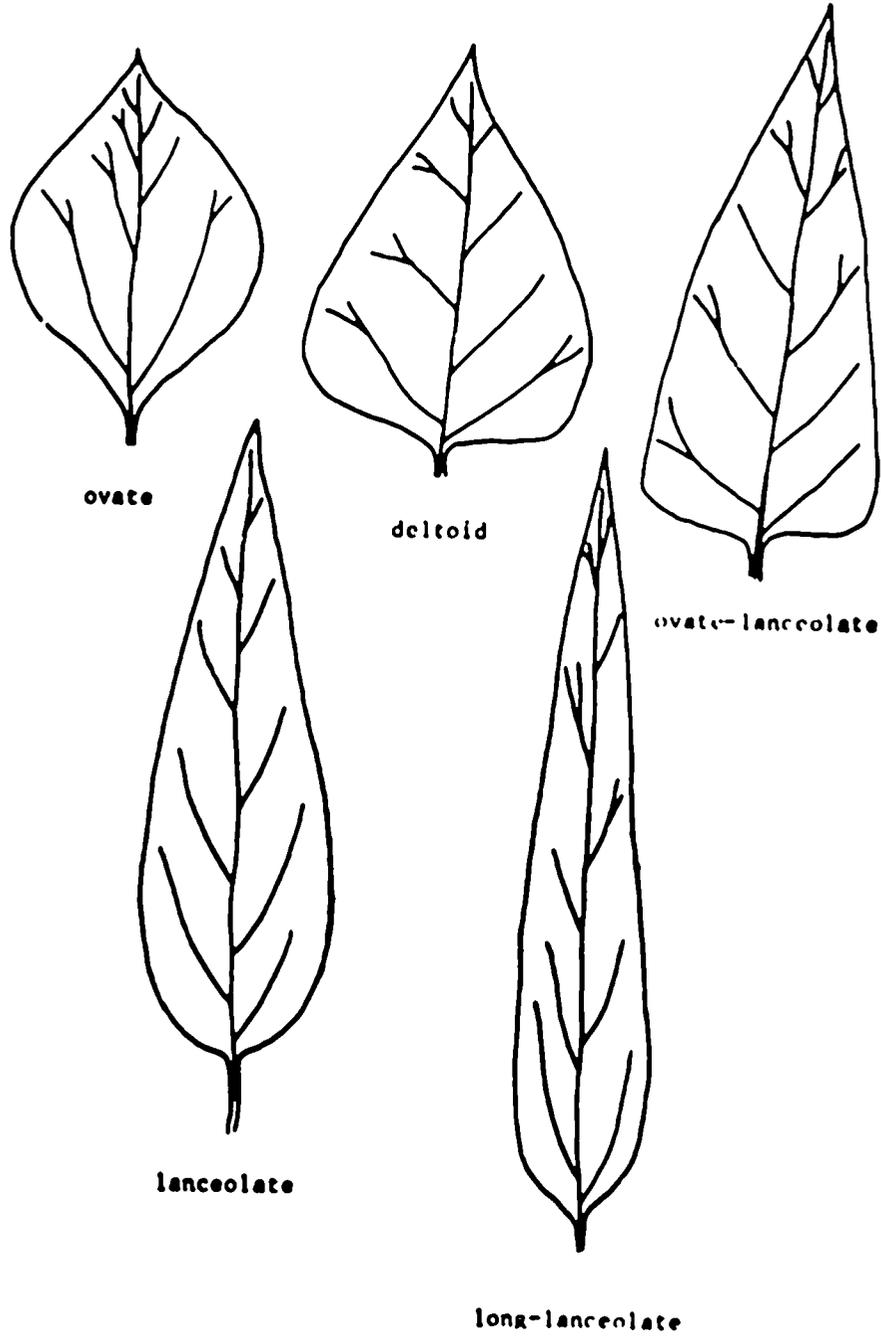
- (vi) Collection of three economic fruits in Thailand.

This is a five-year programme involving the collection of mango, durian and rambutan. A collection orchard for mangoes has been set up at U-Thong (Suphanburi province) 170 km north of Bangkok, and for rambutans and durians at Khun Tuli (Chum Phon Province). Three exploration missions have been made to collect mango and one each for durian and rambutan. Although mangoes are grown all over the country, the exploration will be confined to the major mango production areas: Greater Bangkok, Nakhon Phanom, Rat Buri, Chachoengsao, Rayong, Chiang Mai and Chiang Rai. Explorations for rambutans and durians are being made in the area of Greater Bangkok, Chanthaburi and the provinces of Southern Thailand.

- (vii) Banana exploration in Thailand by Kasertsart University.

1978 was the first year of this three-year project to collect samples from vast cultivated and forested areas. Live collection sites are now being prepared for the propagation and evaluation of collected samples.

In view of the rapidly developing programme of genetic resources exploration and collection in Southeast Asia, the Regional Committee has decided that there is an urgent need for information management. The Philippines and Thailand have computing facilities which they have offered to make available to other countries participating in the regional programme.



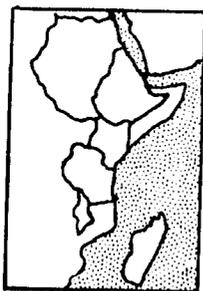
Descriptor states agreed for winged bean leaflet shape

Towards the end of 1978, on the advice of the Regional Committee, the IBPGR hosted two Working Groups within the region to agree on minimum lists of descriptors for the winged bean and five of the major tropical fruits (see p. 52).

The long-term seed storage facility in the Philippines, designed to serve as a regional base collection, will be fully operational by 1979. This has been established with IBPGR financial assistance. The regional banana germplasm collection at Davao, Philippines, is now ready to accept materials from Lae, Papua New Guinea, as well as materials from other countries in Southeast Asia.

A short training course on field collecting techniques was hosted by the National Biological Institute, Bogor, Indonesia (see p. 67).

In addition, four trainees from the region attended the postgraduate course at the University of Birmingham, UK, 1977-78, and three started the 1978-79 course. Three young scientists from the region attended the seed technology course for genebank work at the University of Edinburgh and two the IS/GR short course on information at Boulder, Colorado.



Eastern Africa and Ethiopia

The Ethiopian Plant Genetic Resources Centre was established in 1976 in Addis Ababa under a bilateral agreement between the Ethiopian Government and the Federal Republic of Germany. Construction of the Centre was expected to be completed by the end of 1978. The building will include two units for cold storage: one with 75 m³ to operate at -20° C, another with 50 m³ to operate at +4° C.

The Centre carried out a useful programme of activities in 1978, despite constraints imposed by the political situation. During the 1977-78 crop season a total of 705 samples of different crops, mainly barley, wheat and oilseed crops, were collected from the Shewa and Arusi regions of Ethiopia. The Centre also assembled from other institutions more than 11,000 accessions of various crops. About 1,800 wheat and 2,300 barley samples were grown for seed increase and evaluation.

The Centre became more or less fully staffed during 1978. Two staff members finished postgraduate training at the University of Birmingham, UK. A technician in refrigeration was trained in the Federal Republic of Germany. Two other staff members are at the University of Reading, UK, for training in seed physiology and documentation respectively. The Federal Republic of Germany provided financing for all of these trainees.

IBPGR-Funded Exploration Missions

1. Sorghum and Millets in the Sudan

The Sudan has long been regarded as an important area of genetic diversity for both sorghum and the *Pennisetum* millets. The two crops are an integral part of the country's traditional agriculture. Many varieties of the crops still exist, especially in the remote areas.

A national programme for the collection of sorghum and millet germplasm was started in November 1977. The exploration concentrated on areas of maximum variability and genetic erosion.

Two collecting missions working together covered the western region, Jebel Marra and Nuba mountains. Another team collected in the Equatoria Province. The most important variation found within both sorghum and millets were: drought tolerance, early maturity, bird-resistance, disease susceptibility and high yields on infertile soils. The collecting missions were organized in conjunction with the IBPGR which provided genetic resources consultants.

2. Sorghum and Millet collecting in Tanzania

A sorghum and millet reconnaissance mission was conducted in Tanzania in 1978 in association with ICRISAT. The aim of this mission was to survey areas for collecting wild and primitive cultivars of sorghum and *Pennisetum* and *Eleusine* millets. Since only a limited governmental clearance was received for exploration, the expedition confined itself to visiting the relevant research institutions in the sorghum and millet-growing areas in order to plan a collecting mission for the following season. Following this reconnaissance survey, an ICRISAT breeder collected 97 sorghum, 62 pearl millet and 9 finger millet samples.

Sorghum accessions included *guinea*, *caudatum*, *bicolor*, *durra* and various combinations of these cultivars. Only one wild species was collected but several combinations of wild and cultivated varieties were among the accessions. Pearl millet accessions included 10 samples of wild species.

The survey team recommended that further explorations for sorghum be undertaken in those parts of Tanzania from which little or no collections have been made: i.e., the Mwanza, Musoma, Tabora, Shinyanga and Ruvuma regions.

3. Sorghum and Millet collecting in Kenya

During the period June-August 1978, FAO/IBPGR carried out a collecting mission in Kenya in close collaboration with the Kenyan Ministry of Agriculture and the FAO Sorghum and Millet Development Project, Nakuru, Kenya. Material was collected during the harvesting period after the long rains in western, eastern and coastal Kenya. The former area still maintains a strong tradition of sorghum and millet cultivation and the latter regions cultivate them in marginal conditions. A total of 602 sorghum, 208 finger millet and 47 pearl millet accessions were collected.

The samples of sorghum included accessions of races *durra*, *caudatum*, *guinea*, and *bicolor* and hybrid combinations of these as well as occasional samples of race *nervosum*. Several indigenous landraces possessing twin seeds in each spikelet were also encountered. The wild sorghums were almost exclusively of the race *verticilliflorum*, often appearing in huge stands, whereas the weedy shattercanes of race *drummondii* were comparatively infrequent.

The finger millets were more variable and widespread in western Kenya, particularly in Western Province, and the sampling frequency decreased towards the coast. *Eleusine indica* was often found in association with finger millet cultivars. It was generally found that the distribution of finger millet corresponded with that of sorghum.

Pearl millet was found mainly in the extremely dry areas of Eastern Province and to a lesser extent in the hinterland of Coast Province. It was not observed in Western Province. The shattering types invariably accompanied the local land races in their areas of cultivation.

There was wide variability in the sorghum and millets in respect of time to maturity, height, degree of tillering, head shape and size, grain colour, size, texture and threshability.

In the East African area in general and Kenya and Tanzania in particular, sorghum and millets have been suffering a rapid decline in popularity among local farmers and are being widely replaced by maize. Although there is no foreseeable danger of the replacement of local varieties by improved hybrids, there is an urgent need for effective germplasm collecting because of their replacement by maize.



Some variability for head shape and size of pearl millet collected in East Africa



A bird-damaged type commonly grown as an insurance against bird damage

4. Rice

IBPGR fully supported IRAT/ORSTOM in 1978 in their collections of rice in several regions of Tanzania and Zambia.

Other Activities

5. Coffee

In December 1977 FAO started making an inventory of the existing collections of *Coffea* spp. in Africa and Madagascar. IFCC cooperated in surveying the collections in Madagascar, while ORSTOM surveyed existing collections in Uganda, Kenya and Tanzania. A list of coffee germplasm resources is also being compiled in Ethiopia. This work was nearing completion at the end of 1978.



West Africa

The collection of germplasm of sorghum and millets in Western Africa, which has been supported by the IBPGR since 1976, continued in 1978. Although there is no regional infrastructure in West Africa for genetic resources work, the IBPGR has asked the Genetic Resources Unit of IITA to act regionally. The major emphasis of the unit is on the collection and conservation of grain legumes, roots and tubers, African rice and the associated wild *Oryza* species. IITA has also agreed to store germplasm of crops important to the region but which do not come within its research mandate.

IITA

During 1978, the unit became fully staffed: it now has three scientists, two postdoctoral fellows and two research assistants.

By the end of 1978, the unit had launched 13 exploration missions (of which 11 were in West Africa) and had collected a total of 5,474 samples. Expeditions were made to Benin Republic (2 missions), Egypt, Gambia, Ghana, Nigeria (4 missions), Tanzania, Togo (2 missions) and Upper Volta. These expeditions collected grain legumes (2,778), African rice (1,836), roots (166) and other species (694). In addition, IITA received 478 rice and 1,557 bambara groundnut samples from various other sources.

A total of 15,523 samples were sown for maintenance and evaluation in 1978. These were: *Oryza glaberrima* (828), *O. nativa* (800), *Vigna unguiculata* (3,552), *Glycine max* (142), *Cajanus cajan* (6,720), *Pisophanopus tetragonolobus* (59), *Spenontylis stenocarpa* (64), *Voandzeia subterranea* (440), *Echyprrhima erosa* (1), *Manihot esculentus* (2,290) and *Dioscorea* spp. (627). Of the large collection of *Cajanus* many were not viable. The collection had last been grown in Uganda 10 years previously and had since been stored in a variety of conditions. IITA has commenced regeneration.

Many of the above mentioned accessions were evaluated and most inspected for phytosanitary certification.

A -20° C long-term seed store of 80 m³ volume for the preservation of base collections of cowpeas and *glaberrima* rice will be in operation at IITA in 1979; this facility was partly financed by the IBPGR.

IITA has developed a manual germplasm store inventory system and has put this into use. The system is designed for eventual adoption in a computerized seed store inventory.

During 1978, discussions between IITA and the IBPGR resulted in a proposal for the organization of a practical training course for African personnel in genetic resources collection techniques. Support for such a course was approved in principle by the Board and the course will start in 1980, with IBPGR paying for the preparatory work.

AAASA

A workshop on Crop Genetic Resources in Africa was convened by the AAASA in collaboration with IITA. The workshop was held 4 - 6 January 1978. The roles of international and regional organizations in Africa were discussed and papers presented dealing with African genetic resources in the following groups of crops:

Coffee, oil palm and cocoa
 Oil seeds and fibres
 Vegetables, food legumes, roots and corms
 Cereals
 Forests.

Recommendations were formulated for action to conserve African crop genetic resources. The delegates acknowledged the important work of regional and international organizations in Africa, but strongly recommended that crop genetic resources conservation should be stimulated and supported at the national level. They further recommended that a permanent committee be established by AAASA to promote and coordinate crop genetic resources activities in Africa.

A panel of experts expressed the view that, despite past efforts to survey crop genetic resources on the continent and the allocation of priorities for action, there was a lack of sufficient precise up-to-date information to enable them to identify priority crops and regions. Consequently, they recommended that a detailed African survey be made as soon as possible with the following objectives:

- (a) to create awareness of the importance of crop genetic resources conservation at the national level in Africa, especially among policy makers in governments, agricultural research institutes and universities;
- (b) to determine the capabilities, including available scientific manpower, of national organizations to undertake such work and the external inputs which may be required to help them;
- (c) to review existing data on the importance and distribution of genetic diversity in African crops, and to suggest priority crops and regions for future exploration;
- (d) to examine germplasm collections now held by national organizations in Africa and to report upon their status in detail;
- (e) to assess the demand and need for training in Africa for crop genetic resources conservation;
- (f) to present a report on the survey to the African Committee on Crop Genetic Resources and to the IBPGR.

The management of IITA agreed in principle to employ a well-qualified visiting scientist for one year to make this survey.

IRAT/ORSTOM

In 1974 a team from IRAT/ORSTOM began a study of the genetic variability of the cultivated *Oryza* species and its wild relatives in Africa. In January 1977 a meeting was held in Paris, jointly organized by IRAT and ORSTOM. A cooperative programme was agreed upon by IRAT, ORSTOM, IITA, IRRI and WARDA for the intensified collection and study of African rice in 1977. This programme was approved by the IBPGR, which also helped to finance its implementation.

A joint IRAT/ORSTOM exploration mission was carried out during the last quarter of 1977 for African rice in Cameroon, Ivory Coast, Mali, Senegal and Chad. In 1978 the IBPGR supported an IRAT/ORSTOM collecting mission in Zambia, Guinea Bissau and Guinea.

Detailed plans were drawn up by ORSTOM for collecting sorghum and millets in Benin, Mali, and North Guinea. At the end of 1978 collecting in Benin was completed. When all these materials have been cleared by quarantine authorities and added to the world collection, many of the conspicuous gaps in the sub-Saharan pearl millet belt will have been filled.

ORSTOM has produced catalogues of all the millet samples sent to the ICRISAT centre in Upper Volta and to the DGRST, Senegal.

WARDA

Active assemblage and evaluation of mangrove swamp rice were initiated by the WARDA research staff at Rokupr, Sierra Leone. A total of 150 cultivars were assembled and have been evaluated and characterized. Collection of cultivated rice in Casamance, in southern Senegal, was undertaken in December 1978.

WARDA assisted the ORSTOM/IRAT team to collect rice in Guinea Bissau. The genetic resources activities of WARDA are expected to increase in the future and, in view of the importance of African rice, the IBPGR provided a UNEP-funded fellowship for a young scientist to be trained at the University of Birmingham, UK, 1978-79.



Meso-America

National institutions in Mexico, Guatemala and Honduras are collaborating with CIAT to survey first and then collect germplasm of *Phaseolus* species. This is a part of a four-year programme organized by CIAT with initial funding in 1978 from the IBPGR (see p.47).

CATIE

The Genetic Resources Programme of CATIE, Turrialba, Costa Rica, was established in 1976 as a regional facility with support from the Federal Republic of Germany. The programme became fully operational in the second half of 1977. Its 1978 activities concentrated on:

1. Genetic conservation of several thousand entries of 228 different species kept as vegetative collections and many others kept as seed collections in cold storage. The major collections are of coffee, cacao, cassava, beans, cucurbits and tomatoes.
2. Exploration of plant genetic resources in the region: Missions have been conducted or are still underway in the following areas: the Pacific slopes of Guatemala, and in Alta and Baja Verapaz (also in Guatemala); the highlands of Chiapas and Oaxaca in Mexico; the north coast of Honduras; the eastern region of El Salvador; eastern Honduras; the highlands of Costa Rica; and the Amazonian area of Peru. The main priorities for collection are native fruits and vegetables, cacao, bixa and native root and tuber crops.
3. Other genetic resources activities: Inventories of the collections existing in the region; investigation of new methods for the conservation of species with seeds which cannot be dried or stored in cold conditions; and documentation.

Following a Board mission in 1975, collaboration is being fostered between CATIE and the IBPGR and an exchange of letters in 1978 has led to a proposal for a Regional Advisory Committee. This will be discussed further in January 1979 between representatives of the IBPGR and CATIE. It appears likely that the Genetic Resources Programme of CATIE will form a focus for activities within the region. In addition, the IBPGR funded one scientist from CATIE to participate in the short course on Seed Technology for Genebank Workers at the University of Edinburgh, UK, in August-September 1978.

CIMMYT

CIMMYT, Mexico, held discussions with the Board during 1978 and agreed to co-sponsor the Wheat Advisory Committee. This is in line with a recent CIMMYT decision to give a more formal character to the collection, evaluation, documentation and storage of wheat and barley germplasm. New storage facilities are going to be built and the staff will be expanded for this work.

The maize germplasm bank at CIMMYT holds about 13,000 different accessions which represent a large proportion of the variability found in this crop throughout the Americas. It is an active, working collection which undergoes constant evaluation and seed increase. However, following the advice of the Maize Advisory Committee, the collection is currently being duplicated for safety as a base collection at the NSSL, Fort Collins, Colorado, USA. CIMMYT does not currently have a programme to make new collections itself to increase the size of the maize bank. However, new collections of maize are being made by the national programmes of many countries, a number with funding from the IBPGR (see p. 39), and duplicates of the accessions collected are being sent to CIMMYT and to the NSSL at Fort Collins for conservation.



South America

During 1978, the IBPGR supported 12 national or regional collecting programmes in South America. In addition, it co-sponsored a Regional Workshop on Forage Plant Genetic Resources and participated in, and helped to finance an Andean Subregional Seed Symposium.

The Workshop on Forage Plant Genetic Resources of South America was held at CIAT in April, 1978, simultaneously with a workshop to coordinate and programme the collection, preservation, distribution and characterization of germplasm resources of tropical forage plants. The former was sponsored by IBPGR, CIAT, INIA (Argentina) and EMBRAPA (Brazil) and the latter by CIAT, the University of Florida and USAID.

Livestock production in South America is an important economic activity and it is therefore essential to improve forage production. A wide range of native forage species exists in South America and there is a need to assess any risk of erosion of the indigenous germplasm as a result of overgrazing, fire, or changes in land use and agricultural practices.

Representatives of most South American countries gathered together to discuss both national and regional priorities for forage species. Through small working groups, the meeting identified all ongoing work, listed the existing collections, and finalized priorities for collecting (see p. 50).

The responsibility of individual countries for the preservation of germplasm was emphasized. It was recommended that countries where forage plant genetic resources are still available should consider the establishment of natural vegetation reserves where the risk of the genetic erosion of potentially useful plants could be reduced.

The first Andean Subregional Seed Symposium was held in Peru, 30 October - 3 November 1978. The Symposium was sponsored by the Junta del Acuerdo de Cartagena and the Universidad Nacional Agraria, La Molina, Peru, with financial support from CIDA and the cooperation of the IBPGR. Although its objectives were to analyze the situation with regard to production, marketing and seed legislation, the following suggestions were put forward:

1. The Junta del Acuerdo de Cartagena, with IBPGR assistance, should create a mechanism to coordinate the efforts of the Andean Zone countries in the collection, maintenance, evaluation, documentation and distribution of germplasm.
2. The Junta del Acuerdo de Cartagena and IBPGR, with the cooperation of universities or specialized institutions, should contribute to the training of professionals in the strategy of genetic resources.

The IBPGR, on the advice of the Maize Advisory Committee, funded seven missions to collect and maintain maize germplasm in seven different countries: Argentina, Bolivia, Brazil, Colombia, Paraguay, Peru and Uruguay (see p. 39). Some of these missions will extend over more than one collecting season. In each case the mission has been organized by the appropriate national institution in the country concerned. The collections by these missions should complete much of the necessary work on this important crop.

The collection of groundnut germplasm continued in 1978 (see p. 47) and, following discussions with ICRISAT, funds have been approved to cover future work. The South American countries involved in 1978-79 are Argentina, Bolivia, Paraguay and Peru.

A project to collect forage plants in Uruguay is being undertaken by the national institutions in cooperation with CIAT.

A three-year project to collect (particularly from Chiloe) and to increase potato genetic resources under long-day conditions in Southern Chile was begun in 1978. The project is co-sponsored by the IBPGR and the Universidad Austral de Chile and supplements the work of CIP.



Variability found in local cultivars of potatoes in Chile

In 1978 the IBPGR provided funds to INTA, Argentina, for the construction of a screen house for the increase of wild species of tuber bearing *Solanum* collections.

The IBPGR commenced funding for a cooperative project with CIAT and several national institutions for the collection of *Phaseolus* germplasm in three South American countries (Argentina, Brazil and Peru) as well as in other parts of the centre of diversity.

To date, Brazil is the only country in South America which has established a central national genetic resources agency, CENARGEN. This was created in 1976 by EMBRAPA to coordinate plant introduction, including inspection and post-entry quarantine, collecting, evaluation, conservation and use of germplasm. A national network of 44 active germplasm banks is being established: 25 are already organized; and 13 are fully operational. These banks are located throughout the country, generally as part of EMBRAPA's research units. CENARGEN has expressed its willingness to cooperate with the IBPGR and the maize collecting is an example.

A major activity developed by CENARGEN concerns germplasm exchange. A tissue culture laboratory is fully operational at CENARGEN; potato germplasm *in vitro* is being exchanged with CIP and a programme for *in vitro* cassava germplasm exchange is under way with CIAT.

Students from Argentina and Colombia attended the short training course on information at Boulder, Colorado; two from Brazil attended the short course on Seed Technology for Genebank Workers at the University of Edinburgh. Four scientists from Peru and Surinam attended the one-year Birmingham course 1977-78 and two others from Argentina and Peru commenced the session for 1978-79, the one from Argentina funded by a UNEP fellowship.

The Board has received excellent cooperation from the IARCs in Latin America. Mention has been made above of advice and help provided by CIMMYT and CIP. CIAT continues to co-sponsor the *Phaseolus* Advisory Committee, which met in Cambridge, UK, 26 - 27 July 1978 (see p. 45). CIAT is also holding the major world base collection of seed of *Phaseolus* at the request of the IBPGR and the Board was pleased to note that 4,881 duplicate samples from different countries were sent to CIAT in 1978.

A Cooperative Agricultural Research Programme in the Southern Cone Countries (Argentina, Bolivia, Brazil, Paraguay and Uruguay) has been financed by IDB and is being implemented by IICA. The programme emphasizes the improvement of wheat, maize, soyabean and livestock production. The collection, evaluation and conservation of genetic resources of these crops will therefore be of primary interest. A similar IICA-IDB regional programme will be implemented in the Andean Zone. Both these programmes should help to promote regional activities of the IBPGR in the future.

To accelerate work in the region, two projects have been favourably considered by the IBPGR for funding in 1979. The first is a training course to improve the level of professional staff working in genebanks in Latin America (INTA, Argentina). The second is a germplasm collection of Andean grain and tuber crops in Bolivia, Peru and Ecuador (IICA). The Board is particularly interested in developing activities in Latin America and in 1979 will employ a Senior Consultant to survey all ongoing activities in the region and to propose further action to the Board.

OTHER WORK ON SPECIFIC CROPS



Overleaf:

*Minimum descriptors have been agreed
for winged term since it is a priority
crop in Southeast Asia.*

COMMITTEES AND WORKING GROUPS

The Board has five Crop Advisory Committees co-sponsored (except for wheat) with the appropriate IARC. They are: a Rice Committee (co-sponsored by IRRI), a Maize Committee (co-sponsored by CIMMYT), a Sorghum and Millets Committee (co-sponsored by ICRISAT), a *Phaseolus* Committee (co-sponsored by CIAT) and a Wheat Committee, the organization of which was originally undertaken by the Board's Secretariat, but the co-sponsorship of which will be assumed by CIMMYT in 1979.

The Crop Committees are an invaluable aid in obtaining the views of the scientific community working on each of the crops.

During 1978, the *Phaseolus*, Sorghum and Millets, Wheat and Rice Advisory Committees each met for the second time. In addition, the Board convened *ad hoc* consultations or working groups on coconuts and on forages in South America. Details of these activities are provided below as well as other crop specific activities.

WHEAT

At its second meeting held in September, 1978, the IBPGR Wheat Advisory Committee reviewed the priority areas for collecting in the light of the activities which had taken place in the previous two years. Priorities discussed at the Leningrad Wheat Symposium 1975 and the first meeting of the IBPGR Wheat Committee in 1976 have now been considerably revised as follows:

<u>Priority 1:</u>	<u>Turkey</u>	southeast and east
	<u>Caucasus</u>	especially Armenia and Georgia (The Committee thought that the collections of the Vavilov Institute are relatively comprehensive, but until full information is available, this region must remain a high priority).
	<u>Syria</u>	particularly the north of the country
	<u>Iraq</u>	particularly the Zagros Mountains
	<u>Iran</u>	mountainous regions, eastern oases and a plateau to the west
	<u>Afghanistan</u>	the north and mountains of Hindukush across the centre of the country
	<u>Albania</u>	
	<u>Greece</u>	Northern Peloponnese
	<u>Egypt</u>	Upper Egypt
	<u>Northern Yemen</u>	mountainous area bordering on Saudi Arabia
	<u>Saudi Arabia</u>	region along the Red Sea, adjacent to North Yemen
	<u>People's Republic of China</u>	especially the mountains in the west and Tibetan regions.
<u>Priority 2:</u>		
	<u>Spain</u>	
	<u>Portugal</u>	

<u>Yugoslavia</u>	(especially for <i>T. monooocorum</i>)
<u>Morocco</u>	
<u>Libya</u>	coastal highlands and wadis, south of Tripoli
<u>Sudan</u>	Jebel Marra region
<u>Ethiopia</u>	
<u>Pakistan</u>	south Baluchistan, borders of Afghanistan and the edge of Kashmir
<u>Nepal</u>	hill regions
<u>Bhutan</u>	
<u>India</u>	hills of Uttar Pradesh, Himachal Pradesh, Madhya Pradesh and Kashmir; and some parts of peninsular India
<u>People's Republic of China</u>	regions other than those mentioned above
<u>Mongolia</u>	
<u>Brazil</u>	improved descendants of European varieties selected for acid soils

Priority 3:

<u>Tunisia</u>	
<u>Algeria</u>	
<u>Italy</u>	
<u>France</u>	
<u>Mexico</u>	northern plateau and in the south in Oaxaca
<u>Paraguay and Uruguay</u>	
<u>Bolivia</u>	
<u>Peru and Ecuador</u>	old <i>durum</i> from Spanish colonial introductions (in the highlands)
<u>Chile</u>	

Priority 4:

<u>Burma</u>	
<u>Korea</u>	northern region
<u>Mozambique</u>	
<u>Angola</u>	
<u>Chad</u>	

The Committee recommended that regions and countries listed as Priorities 1 and 2 should be collected within two to three years. This recommendation is of particular importance for IBPGR regional activities in the Mediterranean and Southwest Asia.

The following regions and countries need to assemble the material and information which is scattered in collections: Northwest Europe, Eastern Europe, and temperate USSR, USA, Canada, Kenya, South Africa and Rhodesia, Australia and New Zealand, and Japan.

Following the recommendations of the first meeting of the IBPGR Wheat Advisory Committee, and also an IBPGR Working Group on Wheat Descriptors, a pilot evaluation programme on wheatgermplasm has been started. Wheat accessions of both spring and winter varieties (200 each) were received from the following three genebanks: (a) Genebank, Institut Pflanzenbau, Braunschweig, Federal Republic of Germany, (b) Small Grains Collection, Beltsville, Maryland, USA, and (c) Centro Nazionale della Ricerche, Laboratorio del Germoplasma, Bari, Italy. This material was sent to seven evaluating sites together with copies of identifier descriptors and a copy of a working manual describing the evaluating process and specifying the characters on which scoring was required. The centres participating in the evaluation are: INTA, Buenos Aires, Argentina; EMBRAPA, Passo Fundo, Brazil; Genetic Resources Center, IAR, Addis Ababa, Ethiopia; Genebank, Institut Pflanzenbau FAL, Braunschweig-Völkenrode, Federal Republic of Germany; NBPGR, New Delhi, India; ARC, Islamabad, Pakistan; and ARARI, Menemen, Izmir, Turkey.

MAIZE

Following the Workshop co-sponsored by EMBRAPA/IBPGR in 1977, on collection, conservation and evaluation of maize germplasm from the southern cone region of South America, collections have been and are being made in Argentina, Bolivia, Brazil, Paraguay and Uruguay. Other collections have been carried out in Peru and Portugal. A project to put Colombia's collection of maize germplasm into order has also been supported.

In Argentina, the maize explorations supported by the IBPGR were carried out by INTA in a joint effort with the Faculty of Agronomy of Buenos Aires University. The missions were spread over the years 1977-78, with four areas being covered each year.

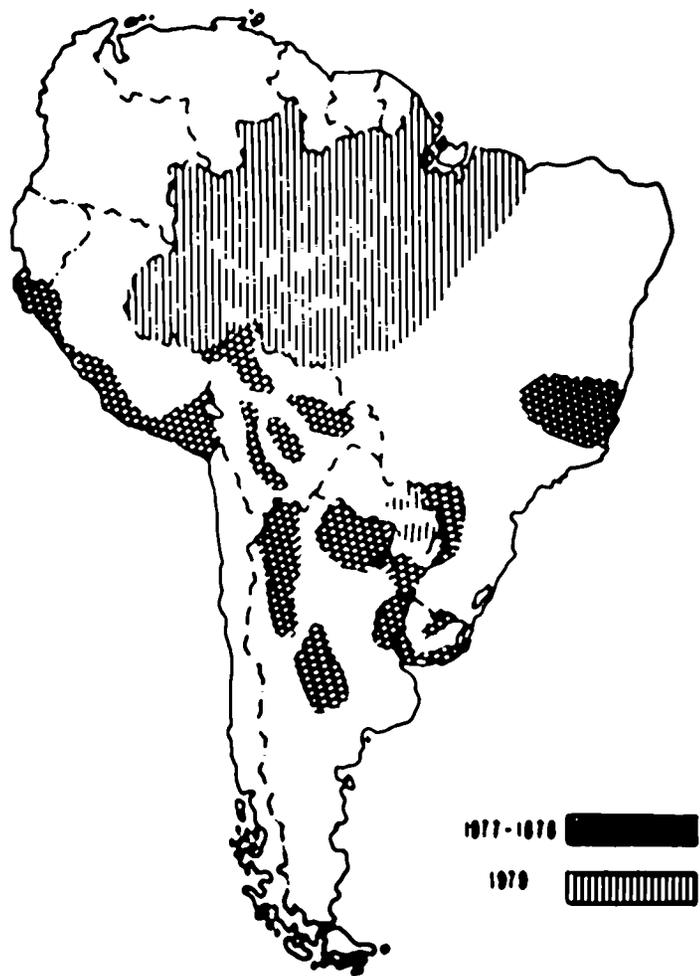
As a result of the 1977 missions, 1,005 samples were collected from the provinces of La Rioja, Catamarca, Jujay Misiones, northeastern Corrientes, west of Santiago de Estero and northwestern border of Salta. In 1978, the areas covered were: the provinces of Formosa, Salta, Chaco, northeast of Santiago del Estero, Entre Ríos, Southern Corrientes, Córdoba and San Luis mountains.

In Bolivia, a collection expedition to preserve maize germplasm from peripheral regions and from the Altiplano was funded by the IBPGR in cooperation with the Centro Fitotécnico y Ecogenético of the Fundación Pro-Bolivia. Scarce attention had been paid to collecting in this country before, and now there is an urgent risk of erosion of germplasm due to the rapid spread of new varieties and hybrids. This is a 15-month programme, with 16 areas to be covered by two-person teams in the four main regions of Bolivia: northern pluvial, eastern lowlands, central valleys, and Altiplano and southern Valles.

In Brazil, a 16-month project to collect and conserve maize germplasm in the southern region in the neighbourhood of Argentina and Paraguay, and also in North Minas and South Bahia and in the whole Amazonian region has been funded by IBPGR and EMBRAPA. The collecting has been planned in two phases. The first phase was organized during March - May 1978 covering west of Santa Catarina, southeast and northeast of Paraná, South Mato Grosso, North and northeast Minas Gerais, and south and southeast Bahia.

Previous collections had been made 15 years ago in Brazil, and these had been done mainly in Rio Grande do Sul, part of Sta. Catarina, Paraná, São Paulo, Minas Gerais and northeast Brazil. The 1978 expeditions resulted in collection of 255 accessions.

In Paraguay, a collection expedition to preserve indigenous maize germplasm is being supported by the IBPGR and the Instituto Agronomico Nacional of Paraguay. This is a 12-month programme and the collection areas include the region bordering Brazil and the eastern parts of Paraguay to which little attention had been paid in the past.



IBPGR-supported Collecting Missions for Maize 1977-1978

In Uruguay, a one-year project to collect maize was completed by the Facultad de Agronomía of the Universidad de la República, supported by the IBPGR. Maize is becoming an important cash crop in Uruguay and the increased use of hybrids has resulted in an increased loss of land varieties. There was, therefore, an urgent need to collect.

More than 50 percent of farms grow maize in Uruguay and it is traditionally grown on the small farms, mainly for self-consumption. It was on such farms that the main proportion of autochthonous indigenous populations were found. In all, 872 samples were collected, most consisting of 15 ears. The use of commercial hybrid cultivars varied according to the zone. It was in the western region that the maximum concentration of farmers using such cultivars was found.

The total collection could be divided into: red-orange-yellow flint (62%); floury endosperm (11%); white dent and white flint (11%); semi-dent-semi-flint and yellow-orange endosperm (10%); yellow dent (3%); and popcorn (3%). Duplicate samples have been sent to INTA, Argentina, and CIMMYT, Mexico.

In Peru, a project to collect native maize varieties in the coastal regions has been carried out by the Universidad Nacional Agraria, La Molina, with financial assistance from the IBPGR. The collection started in 1977. The coastal area of Peru has traditionally been an area of importance in maize growing and great genetic variability is present. Collecting expeditions were made in 1977 and 1978 to the areas in Tumbes, Piura, Lambayeque, La Libertad, Ancash, Lima, Ica, Arequipa, Moquegua and Tecna.

In northern Portugal, 205 samples of local maize varieties have been collected by INIA with the collaboration of the IBPGR Mediterranean programme.

In Colombia, the IBPGR provided financing in 1978 to the Instituto Colombiano Agropecuario to enable it to purchase additional equipment and services necessary to maintain and augment its maize germplasm collection.

RICE

The IRRI/IBPGR Workshop on the Genetic Conservation of Rice, held at Los Baños, the Philippines, 12 - 15 December 1977, developed an action plan for collection during the next five years. The plan was described in the IBPGR's Annual Report for 1977 and it is set forth in full in the proceedings of the Workshop issued by IRRI during 1978. ^{1/} The IBPGR regards the plan as a model of its kind.

IRRI has now initiated an accelerated field collection programme in the countries of South and Southeast Asia. This work is being carried out in cooperation with institutes in Bangladesh, Bhutan, India, Indonesia, Iran, Nepal, the Philippines and Thailand. The IBPGR is providing some financial support for the work being undertaken by the national institutes.

In India, a three-year (1978-80) national plan for collection of rice germplasm from different states has been drawn up and priority areas identified. A total of 24 collecting units, including ICAR research organizations, agricultural universities and State Departments of Agriculture, have initiated collection from various parts of the country.

In Indonesia, the CRIA at Bogor, acquired 930 accessions of rice collected by the Agriculture Extension Service in 19 Provinces. CRIA also, in collaboration with IRRI, collected 89 samples in South and Central Kalimantan. IRRI participated in collection in Malaysia, Sri Lanka and Thailand.

^{1/} Proceedings of the Workshop on the Genetic Conservation of Rice, co-sponsored by IBPGR and IRRI, available from IRRI, P.O. Box 933, Manila, Philippines.



Rice Germplasm Collection in Africa 1976-1978

During 1978, IITA collected *Oryza sativa* and *O. glaberrima* (and wild relatives of the *longistaminata-glaberrima* complex and others) from Benin, Egypt, Gambia, Ghana, Nigeria, Tanzania, Togo and Upper Volta. IRAT and ORSTOM, with financial assistance from the IBPGR, collected in Guinea Bissau, Senegal and Zambia.

SORGHUM AND MILLETS

The Sorghum and Millets Advisory Committee met for the second time 9 - 12 January 1978. The meeting re-affirmed the basic priorities decided at the first meeting and the needs for collecting in Eastern and Western Africa. The Committee recommended the appointment of two working groups in 1978 to devise minimum descriptors for sorghum and millets. During the year, ICRISAT produced a satisfactory list of descriptors for millet and therefore the IBPGR funded only one working group to devise the sorghum descriptors (see p. 52).

ICRISAT has progressively taken on a more important leadership role in the collection of germplasm. During 1978, ICRISAT continued to collect sorghum and millets from the Indian sub-continent. Sorghum was collected from the tribal areas of Madhya Pradesh and the Eastern Ghats and millets from the States of Tamil Nadu, Maharashtra, Gujarat and Rajasthan. ICRISAT also participated in an IBPGR exploratory survey for the collection of sorghum and millets in Tanzania.

The IBPGR organized a collecting mission for sorghum and millet in Kenya in association with the Kenyan Ministry of Agriculture and the FAO Sorghum and Millet Development Project (see p. 26). The material collected included cultivated, wild and weedy types. All seed has been subdivided and, apart from samples left in Kenya, material has been sent for base storage to NSSL, Fort Collins, USA and to ICRISAT.

Collections were made in the Sudan at the end of 1977 and the report was available in 1978 (see p. 25). These expeditions were coordinated by the University of Khartoum and supported by UNEP through the IBPGR.

In 1978, ORSTOM continued the work supported by UNEP and later by IBPGR in Western Africa (see p. 30). ORSTOM issued three detailed technical reports on the sorghum and millet explorations in Western Africa.

Dr. B. R. Murty, a member of the Sorghum and Millet Advisory Committee, visited Senegal during December 1978 to examine Western African material (especially millets). In diverse ecological zones where wild and cultivated forms of millet co-exist, he collected a number of natural hybrids.

GRAIN LEGUMES

ICRISAT, after consultation with IBPGR, invited representatives of four IARCs which have in their mandates responsibility for research on pulses - CIAT, ICARDA, ICRISAT and IITA - to meet in January 1978 to discuss cooperation in collecting and sharing germplasm of the following crops: chickpea, pigeonpea, groundnut, lentil, cowpea, *Phaseolus* bean, *Vicia* beans, soyabean, and winged bean.

The meeting decided that there was need to expand existing collections, taking into account genetic erosion and breeders' needs. Each Centre agreed that when it put exploration missions into the field, they will not only collect the crops in which the sponsoring centre is interested, but also material for the other Centres. The Centres also agreed to provide logistic support for personnel from other Centres who collect in their region and to welcome the participation of personnel from other Centres in their own explorations.

The meeting recognized that the IARCs cannot undertake this task alone and to complete it in reasonable time they will have to enlist the cooperation of national and



Sorghum and Millet Germplasm Collection in Africa 1975-1978

regional institutions. To do this, they may need to provide limited funds or assist in identifying other sources of finance. Where urgent situations are identified, it was recommended that request for special assistance, both for funds and personnel, be addressed to the IBPGR.

The following responsibilities for genetic resources work were agreed:

- (a) IITA will collect (for ICRISAT) groundnuts in Sierra Leone and pigeonpea in Western Africa, the Sudan and Tanzania, and will request its staff resident in Tanzania to continue such collection.
- (b) IITA will notify the Plant Genetic Resources Center, Addis Ababa, that the international centres desire its cooperation in collecting food legumes.
- (c) As part of its 1978 exploration programme in North India and Bangladesh, ICRISAT will collect *Phaseolus* spp., cowpea, lentils, and broad beans for other Centres.
- (d) As part of its 1978 exploration in the Americas (tentatively in Guatemala and Mexico), CIAT will endeavour to collect legumes for other Centres.

The meeting noted that the collection of *Rhizobia* is very important and should be done when feasible although there are difficulties in combining these activities with the collection of germplasm.

Finally, in order to cooperate in genetic resources work, the following regional responsibilities were agreed for 1978:

- South and Southeast Asia - ICRISAT
- Pakistan, Near East, Mediterranean region - ICARDA
- Africa - IITA
- The Americas - CIAT
- People's Republic of China, Eastern Europe, and others - requests will be made to FAO.

During September 1978, the IBPGR co-sponsored an International Legume Conference at the Royal Botanic Gardens, Kew, UK, and paid for the attendance of several scientists from developing countries working on genetic resources of important legume crops. The proceedings will be available in 1979.

Phaseolus Beans

The second meeting of the IBPGR Advisory Committee on *Phaseolus* was held 26 - 27 July 1978 at the University of Cambridge, UK.

In 1976 the Committee had proposed that CIAT should hold the major world base collection of *Phaseolus* seed. The IBPGR asked the Committee to consider at its second meeting whether one or more duplicate base collections were necessary for safety. The Committee recommended that the IBPGR should approach the NSSL, Fort Collins, Colorado, USA, and the genebank at Braunschweig-VBI Fenrode, Federal Republic of Germany (for European material) to hold samples for long-term conservation.

Since the first meeting of the Committee, breeders have come to realize the potential of the wild species of *Phaseolus*. The Committee therefore decided to recommend that the University of Gembloux, Belgium, be requested to act as a major repository for seed of wild species and their hybrids.



Groundnut collection in South America 1976-1980

The Committee agreed that collecting should be accorded a higher priority than was previously thought necessary. However, the Committee essentially confirmed its earlier recommendations: i.e., that emphasis should be placed on *P. vulgaris*, *P. coccineus*, *P. lunatus* and *P. acutifolius*. It was originally thought that major emphasis would be placed on *P. vulgaris* with opportunistic collecting of the other species. The Committee, however, was of the view that collecting of all species is now needed, and that an emergency situation is arising for *P. lunatus* and *P. acutifolius*. In addition, the Committee noted that the non-cultivated species are in some danger and that collection of these species is required because they are represented by such a low number of accessions in collections; in fact, many are only represented by a single sample.

The highest priority areas for future collecting are:

- (a) northeast Brazil for *P. lunatus* and others,
- (b) lowland west Mexico and Guatemala for *P. acutifolius* and *P. vulgaris*.

A proposal from CIAT to coordinate collecting work was accepted. This is designed to facilitate and expedite the collection of *Phaseolus* germplasm in Mexico, Guatemala, Peru, Brazil, Honduras and Argentina in association with national institutions. The IBPGR agreed to fund this work for an initial period (see p. 30) and work began in 1978 in Mexico.

CIAT envisages a four-year programme which will be extended beyond Latin America to cover Turkey, the Balkans and Eastern Africa. Collecting in Asia, Africa and the Balkans will be done in cooperation with other international centres.

Groundnut

Since 1976 IBPGR has funded the collection of groundnut germplasm in South America by Dr. W. Gregory and Prof. A. Krapovickas. The team collected material from the Gran Pantanal in Western Mato Grosso and Southern Pantanal (Brazil), northwestern Argentina, Bolivia and Paraguay. Samples were obtained from 251 locations: 125 localities for wild species and 126 for cultivated strains. Samples included both living plant specimens and seeds. The team also collected *Rhizobia* nodules from all living *Arachis* and a few other legumes. The representative herbarium specimens of the wild *Arachis* material have been deposited at Corrientes, CTES, Argentina. The living plant specimens have been deposited in Campinas, São Paulo, Brazil; Corrientes, Argentina; and Santa Cruz, Bolivia. Seeds have been distributed to Argentina, Bolivia, Brazil and the United States. When the seeds collected in 1978 are multiplied, samples will be sent to ICRISAT. Dr. Gregory, during 1978, distributed the germplasm collected during explorations he had carried out between 1959 and 1968 to ICRISAT, CENARGEN, INTA, USDA-SEA, Texas Agricultural Experiment Station and North Carolina Agricultural Experiment Station.

ICRISAT collected groundnut samples in 1977 from Karnataka and Andhra Pradesh states in India and in 1978 from North Karnataka, Palghat district of Kerala, North Andhra Pradesh and South Maharashtra.

In Western Africa IITA continued in 1978 to collect groundnut material for ICRISAT as per the recommendations of the panel on grain legumes (see p. 45).

BANANA AND PLANTAINS

The Report of the IBPGR Working Group on Genetic Resources of Banana and Plantains which met in Rome in July 1977 was published in 1978 and made available to a wide audience.

An IBPGR Regional Working Group for Southeast Asia, which met in 1976, designated the Philippines to host the major collection of bananas. The proposal was endorsed by the Board and a site at the Experiment Station, Davao, was selected. During 1978, duplicates of banana and plantain cultivars and wild and ornamental *Musa* spp. kept at the University of the Philippines, Los Baños, were established in Davao. Local cultivar collections by UPLB and the Philippine Bureau of Plant Industry have replaced four banana cultivars lost



*Collecting additional (d.s.) and still open (d.s.) of groundnuts
(Photos by E. C. Gregory)*



from the old collection and also introduced 16 new accessions. The Davao collection is now ready to accept duplicate material from Lae, Papua New Guinea, and other countries in the region.

Following the discussions of the Banana and Plantain Working Group, Mr. K. Shepherd of the Banana Board, Kingston, Jamaica, visited the NGBF banana collection, Lae, Papua New Guinea, during May 1978 to assess the general state of the collection and to make a complete, up-to-date and classified inventory of the accessions. As a result of the visit, NGBF agreed to set up a duplicate collection at one of the Department of Primary Industry stations in Port Moresby.

Dr. R. V. Valmayor, a member of the Banana and Plantain Working Group, visited Indonesia and reported that the banana and plantain cultivars in collection gardens do not reflect the actual genetic wealth of cultivars found growing in farms and villages of the region. He stressed the need for exploration in Kalimantan, Sulawesi and Sumatra, and this recommendation will be considered by the Southeast Asian Regional Committee.

COCONUT

The IBPGR held an Expert Consultation on Coconut Genetic Resources at FAO headquarters, Rome, 24 - 26 January 1978. The Directors or their representatives of the major coconut centres attended in order to discuss future action on coconut genetic resources.

In regard to the global status of coconuts, the Consultation agreed that the crop should receive priority consideration for the following reasons:

1. There is an urgent need to collect germplasm for breeding;
2. There are large replanting schemes causing loss of material;
3. The variation in the existing collections is inadequate;
4. Coconut is of high social and economic importance.

The Consultation discussed the major existing collections on the basis of reports provided by delegates and concluded that the variation represented in the major existing collections is inadequate for either conservation or breeding in relation to the considerable range of diversity known to exist in the species. The identification of gaps in the collections led the Consultation to recommend that collecting should be carried out in Southeast Asia and the Pacific Region, and also in parts of South Asia. Note was taken that the IBPGR, at its fourth meeting had recommended a high priority for action on coconut germplasm in Southeast Asia and the Pacific Region. The Consultation suggested that the IBPGR should consider, in particular, mobilizing support for surveys and collecting in the remote areas of the Pacific as well as the small islands of Indonesia and the Philippines. It further suggested that the Board should consider the need to collect in parts of South Asia and for some work to be done in Latin America. It was recognized, however, that collection in Latin America is of low priority and should await a full survey of the variability in the region. The Consultation concluded that there was no urgent need to collect material in Africa.

Sampling techniques were discussed and a strategy agreed to standardize the existing diverse procedures.

FORESTRY

The IBPGR has recognized that tree fruit crops are within its mandate and that in addition it should support limited projects in forest genetic resources, particularly the exploration and surveying of the genetic resources of a few species important for rural development in more arid regions in connection with either fuel or timber requirements or the stabilization of marginal environments.

At its fifth meeting, the Board confirmed its intention to start in 1979 an exploratory phase to provide the basis for possible future action. It was agreed that the programme will:

- (a) concentrate on genetic material of tree species which will be of value for planting by rural communities;
- (b) concentrate on arid and semi-arid areas where problems are most acute;
- (c) give high priority to species for production of firewood, which is the crux of the problem in most rural communities, at the same time recognizing that some fuel wood species will provide additional benefits in the form of food or fodder, shelter, and soil protection.

The proposed species for examination are:

1. *Acacia albida* Del.
2. *A. nilotica* (L.) Willd. ex Del.
3. *A. senegal* (L.) Willd.
4. *A. aneura* F. Muell.
5. *Prosopis cineraria* (L.) Druce
(Syn. *P. spicigera*)
6. *P. alba* Gris.
7. *P. ohilensis* (Molina) Stuntz
8. *P. juliflora* (Swartz) DC
9. *P. nigra* (Gris.) Hieronymus
10. *P. tamarugo* F. Philippi
11. *Eucalyptus camaldulensis* Dehnh.
12. *E. microtheca* F. Muell.

The objective of the exploratory phase will be to survey needs and possibilities for a cooperative programme in the genetic resources of tree species for the improvement of rural living in arid and semi-arid areas of Latin America, Africa, India and Southwest Asia and to make proposals for an early action programme, with estimates of costs and of the results to be expected.

COFFEE

FAO, in close cooperation with IFCC, is carrying out a survey of existing coffee collections in Africa. Western African collections were recorded in 1978 and the survey is expected to be completed in early 1979. The IBPGR plans to convene a Working Group on Coffee in the second half of 1979 to determine what collecting is necessary and what arrangements should be made for duplication and exchange of existing material.

FORAGE PLANTS

A workshop to programme the collection, preservation, distribution and characterization of germplasm resources of tropical forage plants was held in conjunction with a Workshop on Forage Plant Genetic Resources of South America at CIAT, Cali, Colombia, in April 1978.

The following priorities were agreed:

Tropical South America

Priority 1 - Legumes: *Stylosanthes*, *Centrosema*, *Zorina*, *Phaseolus*, *Microtilium*, *Aeschynomene*, *Clitoria*, *Vigna*, *Leucaena*, *Dermodium*, *Calapogonium*, *Crotolaria*, *Indigofera*

Priority 2 - Grasses: *Brachiaria, Hemarthria, Digitaria, Rottboelia, Axonopus*

Temperate South America

Priority 1 - Grasses: *Bromus auleticus, Paspalum dilatatum, Bromus catharticus, Agropyron scarbifolium*

Priority 2 - Grasses: *Paspalum notatum, Bromus brevis, Poa lanigera, Elymus patagonicus, Setaria fiebrigii, Sorghum almun, Trichloris crinita, Paspalum urvillei, Sorghastrum pellitum*

Priority 3 - Legumes: *Desmodium, Trifolium, Vicia, Lathyrus.*

In 1979 the IBPGR is co-sponsoring a symposium on the Genetic Resources of Forage Plants to be hosted by CSIRO, at Townsville, Australia. The report on the forage plants of South America will be available to the Symposium and it is hoped that the Townsville meeting will be able to advise the Board on global priorities.

During 1978 the Board funded two collection programmes for forage grasses in South America (see p. 31) and important work was also carried out in Libya as part of the IBPGR Mediterranean programme (see p.12).

COTTON

Mr. L. C. Hughes was engaged in 1978 to gather together from Eastern and Western Africa such material of the now defunct Cotton Research Corporation as remains available. Visits were made to Malawi, Tanzania and Zambia and a similar visit will be paid to northern Nigeria in January 1979. Malawi, Tanzania and Zambia have all agreed to provide material for temporary safekeeping in the UK.

VEGETABLES FOR THE TROPICS

Following the issuance of the Consultants' report on Tropical Vegetables and their Genetic Resources, commissioned from the Royal Tropical Institute, Amsterdam, Netherlands, the Board continued discussions on probable support. An Expert Consultation will meet in January 1979 and the recommendations will be discussed by the Board at its sixth meeting. However, the Board has recommended that primary emphasis be put on those species which are marketed for sale.



Local markets in the tropics are important outlets for locally produced vegetables

CROP DESCRIPTORS

Considerable advances were made during 1978 in developing lists of descriptors for priority crops of the Board. Four meetings were held for this purpose:

1. Tropical fruits (mango, durian, rambutan, *Lansium* and jackfruit)

Since the IBPGR endorsed tropical fruits as a first priority for the Southeast Asian programme, the Regional Committee recommended that a Working Group should meet to devise the descriptors. This Group met on 17 November 1978 in Bali, Indonesia, under the chairmanship of Dr. Setijati Sastrapradja, a former member of the IBPGR. Representatives from Indonesia, Malaysia, the Philippines and Thailand attended the meeting.

It was agreed that a list of standardized descriptors was necessary to compare the identity and performance of material in the various collections. A proposed basic list of descriptors was prepared in advance and sent to the participants. The participants agreed that, for the time being, only basic descriptors were necessary and a minimum list was agreed. This will be published early in 1979.

2. Winged bean

As proposed by the Southeast Asia Regional Committee, a Working Group on Winged Bean met at Pattaya, Thailand 20 - 21 November 1978, under the Chairmanship of Dr. Narong Chomchalow, a member of the Board. Representatives from the five countries participating in the IBPGR regional programme attended and a minimum list of descriptors and descriptor states was agreed. This will be published early in 1979.

3. Phaseolus beans

When the *Phaseolus* Advisory Committee held its second meeting in July 1978 (see p. 45) it updated the descriptors agreed at its first meeting and approved a mechanism whereby a comprehensive list of annotated diagrams will be made available.

4. Rice

The Rice Advisory Committee met for the second time 30 November - 1 December 1978 at Beltsville, USA and agreed on a final list of descriptors for rice species. This list will be available in 1979.

5. Sorghum

Following the advice of the Sorghum and Millets Advisory Committee, a Working Group met at the University of Illinois, USA, 8 - 9 December 1978. Considerable progress was made in finalizing a list of descriptors and this will be available in 1979.

Several descriptor tests have already been published (see p. 62) and are available from the IBPGR Secretariat in Rome.

CONSERVATION



Overleaf:

*Inside the medium-term seed storage room at IRRI
-- seeds are stored in 2-gallon jars containing
silica gel; 3 - 40 C, 60 - 70% R.H.*

NETWORK OF BASE SEED COLLECTIONS

During 1978, the FAO Crop Ecology and Genetic Resources Unit, in association with the IBPGR Secretariat, listed the known storage centres which might be recommended for long-term seed conservation. A previous survey in 1973 had indicated that there were only eight centres in the world which had cold stores operating at temperatures "down to at least 0° C". The recent survey shows that there are now 25 centres possessing adequate long-term seed storage facilities. The report will be available early in 1979.

The IBPGR has requested certain important conservation centres to accept responsibility to serve as "world" or "regional" repositories for major base collections of specific crops. Five international centres - CIAT, CIP, ICRISAT, IITA and IRRI - and 11 national or regional centres have been so designated up to the end of 1978, but the list is continually kept under review and will be expanded when necessary. The following list gives the position at the end of 1978:

CEREALS

<u>Rice</u>	<i>Oryza sativa - indica</i>	IRRI Los Baños, Philippines
	<i>javanica</i>	" " "
	<i>japonica</i>	NIAS, Japan
	Mediterranean forms, temperate South America and intermediate types from the USA	NSSL, Fort Collins, USA
	Wild species	IRRI, Los Baños, Philippines
	African forms	IITA, Ibadan, Nigeria
<u>Wheat</u>	Cultivated species	VIR, Leningrad, USSR; CNR Germplasm Laboratory, Bari, Italy; NSSL, Fort Collins, USA (each institute's collection duplicated at one of the others)
	Wild species of <i>Triticum</i> and <i>Aegilops</i>	Plant Germplasm Institute (University of Kyoto), Japan (duplicated in one of the above institutes)
<u>Maize</u>	New World material	NSSL, Fort Collins, USA
	Asiatic material	NIAS, Japan
	European material	VIR, USSR and another centre to be designated
<u>Sorghum</u>	Cultivated and wild	NSSL, Fort Collins, USA
<u>Millet</u> s	Cultivated and wild <i>Pennisetum</i> spp. (pearl millets)	NSSL, Fort Collins, USA Canadian Genebank, Ottawa
	<i>Eleusine</i> spp.	ICRISAT, Hyderabad, India
	Minor Indian millets	Indian Council for Agricultural Research, New Delhi, India
	<i>Eragrostis</i> spp.	Plant Genetic Resources Center, Addis Ababa, Ethiopia
	<i>Panicum miliaceum</i> <i>Setaria italica</i>	ICRISAT, Hyderabad, India ICRISAT, Hyderabad, India

<u>Oats</u>	Cultivated and wild	Canadian Genebank, Ottawa
LEGUMES		
<u>Phaseolus</u>	(New World) All species, but emphasis on <i>P. vulgaris</i> , <i>P. coccineus</i> , <i>P. lunatus</i> and <i>P. acutifolius</i>	CIAT, Cali, Colombia (duplicated in NSSL, Fort Collins, USA)
	European material	Genebank, FAL, Braunschweig-Völkenrode (designation not yet formally accepted)
	Wild species	University of Gembloux, Belgium (designation not yet formally accepted)
<u>Pigeonpea</u>		ICRISAT, Hyderabad, India
<u>Groundnut</u>		ICRISAT, Hyderabad, India
<u>Chickpea</u>		ICRISAT, Hyderabad, India
<u>Cowpea</u>		IITA, Ibadan, Nigeria
VEGETABLES		
	Southeast Asian species	IBP, Los Baños, Philippines
SUGAR BEET		Genebank, FAL, Braunschweig-Völkenrode

SUPPORT FOR SEED STORAGE FACILITIES

The IBPGR approved a grant of \$60,000 in 1978 to the INIA in Madrid towards the equipment of a genebank for indigenous and introduced seed material with an understanding that it will store grain legumes and possibly other crops on a regional basis as well as acting as a national repository for all crops.

Funding was also approved for the equipment of a genebank at Braga (Portugal) which will be responsible for maize germplasm on a regional basis. A grant of \$25,000 was approved in 1978 and additional funds of \$50,000 will be made available in 1979.

Conservation facilities in Peru for maize and in Bolivia for quinoa and indigenous roots and tubers, which were given IBPGR financial support in 1977, became operational during 1978.

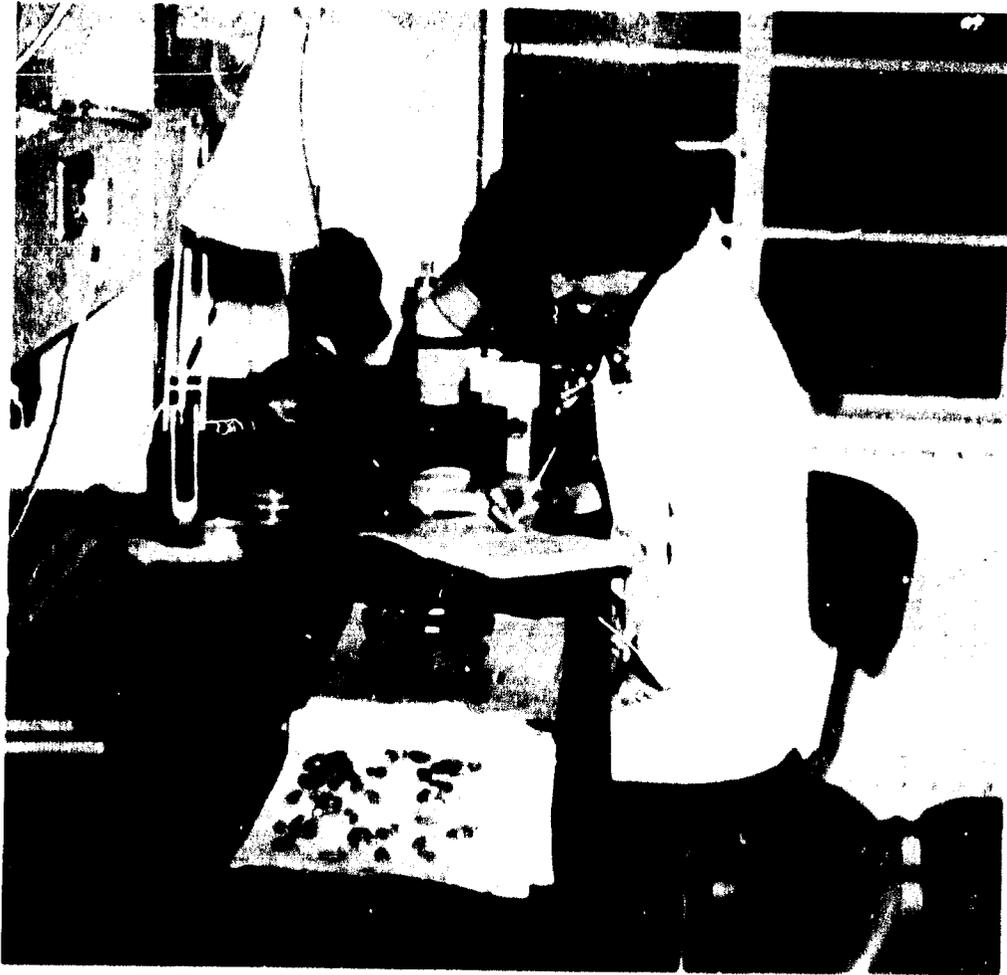
A regional storage facility for Southeast Asia, established at the IPB, University of the Philippines, Los Baños, was under construction during 1978 and will be completed in the first part of 1979. Towards the end of 1978, on the advice of the Regional Committee for Southeast Asia, IBPGR helped to finance a seed store at the National Biological Institute, Bogor, Indonesia, to act as a national repository and to hold duplicates of some of the material in the regional genebank at Los Baños.

The long-term seed store at IITA (Nigeria), partly funded by the IBPGR (see Annual Report for 1977), will become operational during 1979.

In addition to these long-term facilities, the Board's Southwest Asia programme has helped to bring into operation medium-term seed stores in several of the countries of the region (see p. 16).

SEED PHYSIOLOGY

Two research projects supported by IBPGR were started at the University of Reading, UK, late in 1977. Both deal with important aspects of seed physiology, the results of which will aid the seed storage activities of the IBPGR. The first is concerned with determining the longevity of many major crop species under the long-term storage conditions recommended by the Board: i.e., at about -20°C and at a seed moisture content of 5 - 7 percent. In order to avoid the accumulation of genetic damage, the Board has recommended that accessions in genebanks should be regenerated as soon as there is a significant fall in viability. This means that the viability of seed stocks needs to be monitored at regular intervals: not too frequently since this unnecessarily depletes stocks; on the other hand, frequently enough to assure early detection of loss of viability. The task, therefore, is to predict probable longevities of various seeds under very good storage conditions so that the Board will be able to recommend with what frequency monitoring tests should be undertaken for different species. The research project aims to obtain such information for many of the non-leguminous species in the IBPGR Priority Lists 1 and 2 as well as for a limited number of oily and non-oily legumes.



*Research on seed physiology is vital
in understanding optimal storage conditions*
(Photo - University of Reading)

The frequency of routine germination tests in seed banks to monitor viability of each species should be governed by four factors: (1) the expected regeneration interval (i.e., the time taken for viability to fall by 5 percent); (2) the gradient of the slope of the survival curve; (3) the range of genotypic variation in seed longevity within the species; and (4) the extent to which the species shows variation in seed "quality" caused by pre-storage environmental factors.

The required frequency of regeneration will, of course, influence the optimum accession size and this, in turn, will affect the number of samples which need to be gathered by collectors.

While the research at the University of Reading on this important problem is still in progress, results already achieved make the researchers optimistic that it will be possible to provide a simple table for an expected regeneration interval in each species which takes into account differences in seed quality due to genotype and pre-storage environment.

In addition, the Board has provided funds for a literature survey on "recalcitrant" seeds. The seeds of a number of important crop species show very short viability periods before they are killed by desiccation. For such seeds, conventional storage methods cannot be used. There are a number of approaches which could be tried: further investigation of controlled drying techniques, modification of cryogenic techniques successfully used for other organisms of high moisture content, and the development of imbibed storage techniques which have been shown to be feasible in some seeds which respond to desiccation and low temperatures. In order to provide the necessary background for studies of these different approaches and for assessment of which may be most promising, a literature survey has been undertaken during 1978. This has involved an examination of over 1,000 original publications. In addition, numerous personal communications have provided unpublished manuscripts and current opinions on various aspects of recalcitrant seed storage. The review will be completed in 1979 and is expected to contain proposals outlining the most promising lines of future investigation.

INFORMATION

N O M E	ORIGINE	PROVENIENZA	DONATORE	DATA DI ARRIVO	P. I.	C. I.	PORT. GIOV. CESPI	SPIGATURA	ALTEZZA	No. INTERNODI	SPESSORE PARETI	RUGGINE
2 PERENODKA	RUSSIA	DON	ARS-USCA	1971	2954	1350	SEE	63	125	6	1	7
3 KJBANKA	RUSSIA	DON	ARS-USDA	1971	2758	1354	SEE	62	125	6	1	7
4 KUBANKA	RUSSIA	DON	ARS-USDA	1971	5639	1440	SEE	61	132	6	1	7
7 GIRGEN	EGITTO	DON	ARS-USDA	1971	7422	1580	ERE	33	87	5	6	7
11 MOHAMED BEN BACHIR	ALGERIA	DON	ARS-USDA	1971	7793	2087	ERE	37	127	5	6	7
12 ALBACE TE	SPAGNA	DON	ARS-USDA	1971	7428	2091	SEE	38	141	6	6	12
15 BLANCO	SPAGNA	DON	ARS-USDA	1971	7464	2192	SEE	42	110	7	8	20
17 MARUANI	ALGERIA	DON	ARS-USDA	1971	7464	2235	ERE	42	115	7	8	20
19 ---	EGITTO	DON	ARS-USCA	1971	11715	2235	ERE	42	115	7	8	20
29 AGILI GLABRE AC 2	TUNISIA	DON	ARS-USDA	1971	10388	2428	SEE	40	120	6	6	12
30 AGILI PUBESCENTI AC 1	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	41	135	6	6	12
31 JERICHO	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	39	115	6	6	12
32 AOUFJ BOSSEE	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	40	113	6	2	1
33 AZIZI AP 1	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	37	129	6	7	1
35 AZIZI AP 5	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	36	127	5	3	1
BISKRI GLABRE RP 1	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	37	130	7	9	1
BOENRI AP 1	TUNISIA	DON	ARS-USCA	1971	---	---	ERE	35	120	6	9	1
CHERHETIFA RP 1	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	34	110	6	5	1
ADRE AC 1	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	38	131	5	9	1
8	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	40	125	6	9	1
	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	37	110	7	2	1
	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	38	115	6	3	1
	TUNISIA	DON	ARS-USDA	1971	---	---	---	32	100	6	2	1
AC 1	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	41	125	6	9	1
	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	38	116	6	9	1
	TUNISIA	DON	ARS-USCA	1971	---	---	SEE	39	120	6	6	1
	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	40	119	7	7	1
	TUNISIA	DON	ARS-USDA	1971	---	---	SEE	38	115	6	6	1
	TUNISIA	DON	ARS-USDA	1971	---	---	ERE	34	101	6	6	1

Overleaf:

*Once data is in machine-readable form
it can be used in many ways; as well as
being easily printed in catalogues
(Extract from Bari Data Bank)*

GENERAL

Since no accession in a germplasm collection is worth anything more than the information which is available about it, the Board has from its inception supported a range of activities designed to facilitate the acquisition, management and exchange of information about germplasm collections.

Up to October 1978 most of the Board's work on information was performed under contract by the IS/GR of the University of Colorado at Boulder. In 1977 and 1978, IS/GR began to work also for the USDA on a national plant germplasm information system for the USA. The Board strongly approved the development of such a system, which is intended to be fully compatible with the international system. In October 1978 the staff associated with this work left Boulder and established a separate Laboratory in Information Science in Agriculture at Colorado State University, Fort Collins. All the work on the USA system is now conducted from Fort Collins.

The changes in Boulder made it opportune to review the IBPGR's overall information programme. This review was carried out in Boulder in October 1978. The review group concluded that the work needed by the IBPGR in the information field, in order of priority, could be summarized as follows:

- "(i) Help Crop Committees and others to develop descriptor systems for all major crops.
- (ii) Provide help to individual centres, ^{1/}on the spot, to organize their data and to assemble them in a form readable by a computing machine which may be available at each centre. This should be done in such a way as to minimize the difficulties of subsequent transfer of computer output to other machines. This work should concentrate on centres which have major collections.
- (iii) Facilitate the flow of genetic resources information among centres, where appropriate in machine-readable form.
- (iv) Encourage the dissemination of the results of evaluations so that they can be incorporated in appropriate data banks.
- (v) Advise centres, upon request, how best to meet their genetic resources information needs. This may include advice on hardware and software needs to support all their genetic resources activities, such as inventory control, statistical packages, data base management systems, plotting and other analytical devices. It should also include advice on new technical procedures relevant to the foregoing functions.
- (vi) Help centres to acquire and commission computing facilities in appropriate cases.
- (vii) Ensure, and where necessary support, training relevant to all these functions at the centres, or on an international, regional or national basis."

This assessment has since been accepted by the Board. It also appeared evident that the Board's experience in developing descriptor sets was sufficiently large to make it no longer necessary to call on IS/GR for further work of this kind. Accordingly, responsibility for this work, and for the general management of the information programme, was transferred to the Secretariat, which is to be appropriately strengthened to enable it to execute these new tasks. In agreement with the Boulder group, the role of the IS/GR Program was changed from a primarily developmental role to one of providing technical assistance to a number of designated genetic resources centres in organizing their data, to the extent possible in machine-readable form, and in training their personnel to carry out appropriate information functions.

^{1/}"Centres" include networks of centres, and is not restricted to the International Centres funded through the CGIAR.

The Advisory Committee on GR/CIDS did not meet formally in 1978, though several of the members participated in the October review at Boulder. The Committee will be known in future as the Advisory Committee on Information Management and will receive appropriate new terms of reference.

The information work of the Board in 1978 fell into five main parts: the development of lists of descriptors, the acquisition and organization of data, the development of information management systems, technical cooperation, and education and training.

DESCRIPTORS

Descriptor lists are developed by institutes which specialize in particular crops, by the Board's Germplasm Advisory Committees, which are continuing bodies representing the large user communities associated with the major crops (wheat, rice, maize, sorghum and millets, and *Phaseolus* bean) or by *ad hoc* working groups, which may meet once or twice only for other crops whose user communities are relatively small. In addition, in 1978, work was done on descriptor lists for several crops which are important in the United States as part of the USA national plant germplasm programme.

In 1978 descriptor lists were published by the Board for wheat and *Aegilops*, and substantial progress was made on descriptor lists for *Phaseolus* beans, sorghum and millets, coconuts, and bananas and plantains. Staff of IS/GR assisted the Crop Advisory Committees in this work. The working groups for coconut and for bananas and plantains were assisted by the Secretariat, which also helped the Southeast Asia Regional Committee in developing descriptor lists for tropical fruits and the winged bean. Within the USA system, work was done on descriptor lists for potatoes, sorghum, tomatoes, forage crops, groundnuts, rice and alfalfa (lucerne).



*Scoring plants for frost resistance
according to agreed descriptors
(Photo - CIP)*

ACQUISITION AND ORGANIZATION OF DATA

Up to October, IS/GR acquired data (mostly samples of larger collections) on more than 90,000 accessions of 19 crops from the USA and 15 other countries. The numbers of descriptors ranged from 11 to 95. Much of this information was put into systematic order and organized into data banks. Towards the end of the year copies of the very large number of sets of organized data which had been accumulated at Boulder during the past five years were sent to those who had provided the original data, on tapes prepared specifically - wherever possible - for use on the computing equipment available to them.

INVESTIGATION AND DEVELOPMENT OF INFORMATION MANAGEMENT SYSTEMS (IS/GR)

The stock maintenance and control module, devised by IS/GR for CIMMYT to manage information about the quantity and condition of seeds in storage in CIMMYT's collection, went into operation there and has since been used and kept up-to-date successfully. It has also worked successfully on five different types of computer and at three centres in the United States (Beltsville, Maryland; NSSL at Fort Collins, Colorado; and Pullman, Washington).

Some experimental work was done on equipment for recording data in machine-readable form in the field, and on computer procedures for extracting related information from tables of differing structure (data base management systems). A pre-processing procedure was devised to make it easier to transfer EXIR to different types of computers; some features were added to it to meet requests from users; and the operating system was improved to make it more efficient and lessen maintenance costs. The improved version is known as EXIR 3.0.

Along with the rapid and continuing decrease in the costs of computers, the work on low cost computing led to the very effective use of small portable equipment in the field in Latin America, described below.

TECHNICAL ASSISTANCE BY IS/GR

After the group working on the USDA Program had left Boulder, it was decided that IS/GR should concentrate on a programme of technical assistance to five designated centres, in Latin America and Turkey, to help the staff of those centres to put the data about their accessions into order and, to the extent feasible, into machine-readable form, and to utilize it on whatever computing equipment was available to them.

The centres proposed were the national centres in Mexico, Argentina and Brazil, the CATIE Institute in Costa Rica, and ARARI at Menemen in Turkey. During the last 2 1/2 months of the year agreements were reached for cooperation with Mexico (INIA and the Agricultural University at Chapingo) and Argentina (INTA, Pergamino and Castelar) and with Turkey.

A microcomputer system (costing \$5,700) was identified for use on a data-entry device (keyboard to disc); and it was equipped with some basic computer programmes, to demonstrate to the scientists that they could themselves not only put their data into machine-readable form but could also analyse it, extract subsets and perform statistical operations. In starting this new work, the help of Dr. Wilfredo Salhuana (Director of the National Maize Improvement Programme at La Molina Agricultural University, Peru), a member of IBPGR's Advisory Committee on the GR/CIDS programme, who began a sabbatical year at Boulder in October, and of Dr. Walter Kugler, a member of the Board, was invaluable.

TRAINING



Overleaf:

Postgraduate trainee during his project work at Birmingham

SUPPORT TO UNIVERSITY COURSES

The IBPGR has continued to support the International Training Course on Conservation and Utilization of Plant Genetic Resources at the University of Birmingham, UK, to enable more students from developing countries to participate. During the academic year 1977-78, 16 of the 23 students in this one-year M.Sc. course came from developing countries. Financial support for these students was provided by various sources, including UNEP, ODM (UK) and the Overseas Aid Organization of the Federal Republic of Germany. Countries represented during the 1977-78 session were: Ethiopia, Ghana, India, Indonesia, Iraq, Malaysia, Mexico, Surinam, Nigeria, Peru, Philippines, and Yugoslavia, as well as the Federal Republic of Germany, USA and UK.

The scheme whereby the University allowed a limited number of students to undertake their research projects at IITA in Nigeria had to be discontinued in 1978. This scheme arranged through the generous help of the Director-General of IITA and his staff, gave four of last year's students an opportunity of working on crops under conditions appropriate to their countries' needs. This year, three students were selected, but despite all efforts, visas from the Nigerian Government could not be obtained for them.

Most of the students undertook their dissertation work at Birmingham but, in 1978, three worked at the National Vegetable Research Station at Wellesbourne, Warwick, UK, which has close links with the University of Birmingham, and another student worked at the Tropical Products Institute in London. All students completed the course, except one who had to return home early due to illness.

For the session commencing in late September 1978, students came from the following countries: Argentina, Cyprus, Greece, Indonesia, Iraq, Peru, Philippines, Sierra Leone, Thailand, and the UK. Funding for several students was again provided by UNEP (through the IBPGR) and ODM (UK).

The continued close collaboration with the University of Birmingham has proved to be of great value and students trained there have become active in genetic resources programmes in all parts of the world. The University, following discussions with the Secretariat, has recognized for some time that it is not always possible for young scientists to be released by their institutes for a full year, and hence has decided to offer a series of short specialist courses lasting from 5 to 13 weeks. Each course offers lectures, seminars, practical laboratory classes, and project work. Four such courses are available: (1) Crop plant diversity, (2) Genetic exploration and conservation, (3) Documentation and information management and (4) Evaluation and utilization.

SHORT TECHNICAL COURSES

Early in 1978, the Secretariat planned for two short technical training courses to be given on Techniques for Field Collecting, one for the Southeast Asian region and the other for the South Asia region. The latter was to have been hosted by Sri Lanka but government clearance was unfortunately not forthcoming in time.

The course for the Southeast Asian region was hosted by the National Biological Institute, Bogor, Indonesia, 11 September - 7 October, with 12 participants from 9 countries. Some of the teaching for this course, which aimed at providing practical field and laboratory training for junior scientists and graduate technicians, was provided by staff from the University of Birmingham, UK, through an ODM (UK) bilateral linkage between Birmingham and the National Biological Institute.

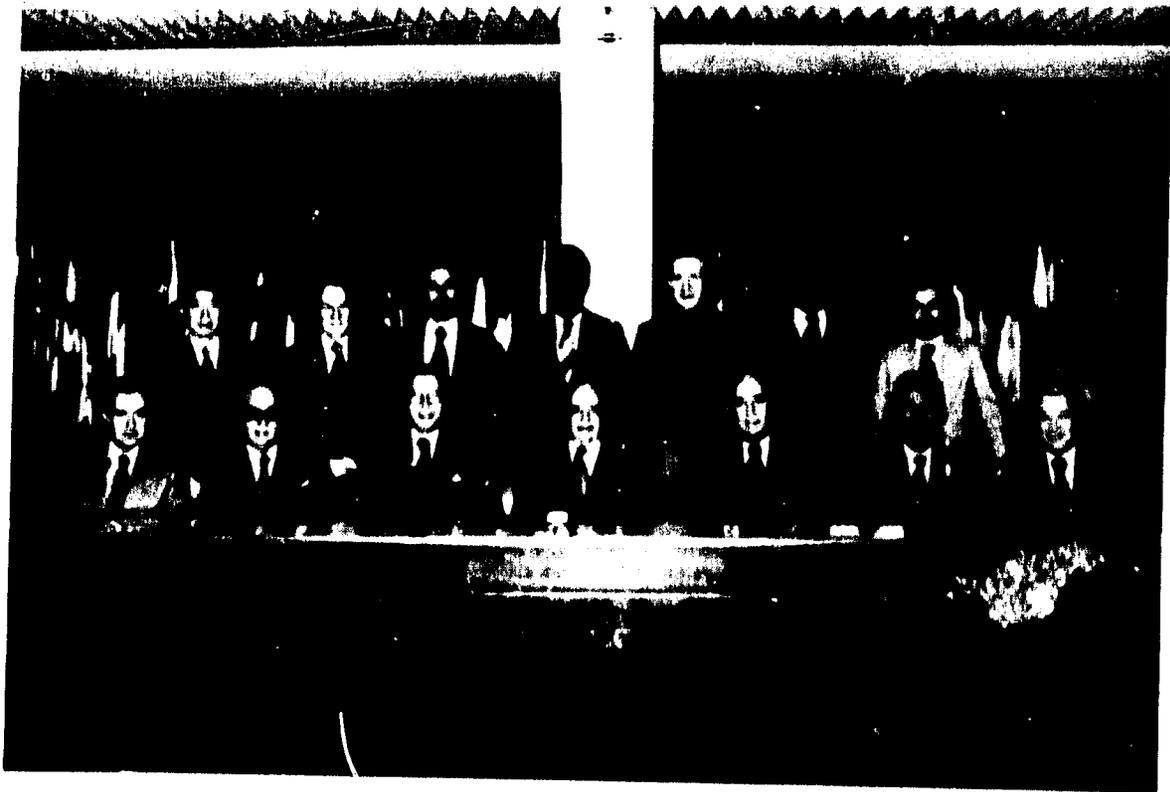
The technical training for collectors has made a substantial impact within the region. The first course was held in 1975 with support from UNEP, BIOTROP, and the National Biological Institute. Since then, UNESCO, the UK and the IBPGR have continued to support the endeavour. The Regional Committee for Southeast Asia has discussed technical training within the region and it is anticipated that additional specialist courses will be available in 1979.

A technical training course on Genetic Resources Information was organized by the IS/GR Program at the University of Colorado, Boulder, USA, between 4 June and 14 July. This was an intensive course aimed at exposing noncomputer-oriented scientists to the value of modern information management as applied to the exchange and communication of genetic resources data and information. The 1978 course had financial support from FAO, with the IBPGR providing fellowships for two participants. Twenty-two students from 13 countries participated,

In 1978, the IBPGR organized a short technical training course on Seed Technology for Genebank Workers, the first of its kind ever to be held. This was hosted by the School of Agriculture of the University of Edinburgh, UK, 28 August - 16 September, and lecturers were provided by the University, the Department of Agriculture and Fisheries for Scotland, the Scottish Seed Testing and Plant Breeding Stations, the Royal Botanic Gardens, Edinburgh, the Royal Botanic Gardens, Kew, and the Universities of Stirling and Reading. Participants in the course were scientists working in a genebank or in an institute where a genebank is to be established. The participants came from Brazil, Costa Rica, Greece, India, Indonesia, Philippines, Portugal, Spain and Thailand.

During 1978, discussions were held with INTA (Argentina) to arrange for a short technical training course on collecting techniques to be run in Spanish in 1979, and with IITA (Nigeria) to arrange for similar short technical training courses for African nationals starting in 1980.

ADMINISTRATION



Overleaf:

The IBPGR meeting, 1978

Front Row (left to right)

Prof. M. Dokuzoguz, Dr. W. F. Kugler, Dr. G. de Bekker
(*Vice Chairman*), Mr. R. H. Demuth (*Chairman*),
Dr. L. M. Roberts, Dr. N. Chomchalow, Prof. G. Fischbeck

Back Row (left to right)

Prof. M. Iizuka, Dr. J. L. Creech, Prof. E.A.L. De Langhe,
Prof. R. J. Olembo (*UNEP*), Prof. L. Kähre, Dr. K.F.S. King,
Dr. J. T. Williams (*Executive Secretary*)

MEMBERSHIP AND MEETINGS OF THE BOARD

The membership of the Board during 1978 is shown in Appendix I. The term of office of four Board members, Messrs. Brezhnev, Bouvarel, Bunting and Majisu, expired at the end of 1978. On the recommendation of the Board, the Consultative Group elected four new members, Messrs. de Langhe, Iizuka, King and Schmaraev, to serve for three-year terms commencing January 1979.

The Board met in Rome 20 - 24 February 1978 and the Executive Committee met three times, twice in Rome and once in Washington, D.C.

Elected members of the IBPGR serve in their personal capacities. Although in some cases members report to donors, the Board has agreed that any donor may, if desired, send an observer to attend Board meetings. The Board has expressed the hope that donors will designate as observers persons having a professional interest in the work of the IBPGR. At the fifth meeting of the Board in 1978, Australia, Belgium and the USA sent observers.

SECRETARIAT

Since the IBPGR does not have a substantial scientific staff of its own, members of the Board have frequently assumed executive functions. Thus, some members have accepted responsibility for regional activities and others have attended, with the Secretariat, meetings and symposia to represent the viewpoint of the Board. However, in 1978 the Secretariat was strengthened by the Board's designation of an Executive Secretary. Dr. J. T. Williams has headed the Secretariat since 1 June 1978 when Mr. R. J. Pichel relinquished this post because of the demands of his other duties in FAO. Two new staff officers were appointed in 1978. Other FAO officers have continued responsibility for two regional activities: Dr. K. Dodds for Southwest Asia and Miss Erna Bennett for the Mediterranean. The composition of the Secretariat as of the end of 1978 is shown in Appendix I. The Secretariat has been supplemented at various times by the use of consultants and temporary secretarial help. It is expected that the Secretariat will be strengthened in 1979.

COMMITTEES OF THE BOARD

The membership of the Executive Committee is shown in Appendix I. Membership of the Board's Advisory Committees is shown in Appendix II, which also lists the participants in the Board's Expert Consultation on Coconut Genetic Resources.

The Crop Advisory Committees of the Board were appointed to serve, in the first instance, for a three-year period and this expires in 1979. At its meeting in 1979 the Board will review the membership to see how a system of rotation can be introduced to ensure wider representation. All of the Committees, with the exception of the Wheat Advisory Committee, have been co-sponsored by the appropriate International Centre. The Board is pleased to report that CIMMYT agreed in December 1978 to co-sponsor the Wheat Committee and ICARDA has agreed to send a representative to attend the meetings of that Committee.

The first Regional Committee recognized by the Board is that approved by the governments participating in the regional programme for Southeast Asia; its membership is shown in Appendix III. As a result of discussions during 1978 and early 1979 with CATIE, Costa Rica, agreement was reached on the establishment of a Regional Advisory Committee for Meso-America. It is expected that this Committee will be organized shortly.

PUBLICATIONS

A current list of IBPGR publications is shown in Appendix IV. During 1977 and early 1978, discussions were held with FAO on the possibility of issuing the FAO Plant Genetic Resources Newsletter in a new format and as a joint publication. This was agreed and the first issue of the Newsletter in its new form was available in March 1978 and two more were issued during the year. The FAO/IBPGR Newsletter has received an enthusiastic reception and has already established itself as a means of disseminating widely notes and news of genetic resources activities all over the world.

MEMBERSHIP AND SECRETARIAT OF THE IBPGR IN 1978Chairman:

Mr. R. H. Demuth 1/
Partner
Surrey, Karasik and Morse
1136 " 15th Street, N.W.
Washington, D.C. 20005
USA

Members:

Mr. P. Bouvarel
Inspector General of Agricultural
Research
Chief of Department of Forestry
Research
Centre National de Recherches
Forestières
Champenoux
54370 Einville, France

Dr. O. Brauer 1/
Director, Plant Production and
Protection Division
Food and Agriculture Organization
of the United Nations
Via delle Terme di Caracalla
00100 Rome, Italy
(*ex officio* member, representing
FAO)

Acad. D.D. Brezhnev
Director
N.I. Vavilov Institute of
Plant Industry
190000 Leningrad, USSR

Dr. A. H. Bunting 1/
Professor of Agricultural
Development Overseas
Plant Science Laboratories
University of Reading
Whiteknights
Reading RG6 2AS, UK

Dr. J. L. Creech
Director
U.S. National Arboretum
Washington, D.C. 20002
USA

H.S. Dr. G. de Bakker (Vice Chairman) 1/
Minister Plenipotentiary of the
Netherlands to FAO
Permanent Representation of the Kingdom
of the Netherlands to FAO
Via delle Terme Deciane 6
00153 Rome, Italy

Dr. N. Chomchalow
Deputy Governor
Research I and Director of Agriculture
Applied Scientific Research Corporation
of Thailand
196 Phaonyothin Road
Bang Khen
Bangkok 9, Thailand

Prof. Dr. M. Dekuzoguz
Head
Department of Pomology and Viticulture
Ege University
Bornova
Izmir, Turkey

Prof. Dr. G. Fischbeck
Technische Universität München
Lehrstuhl für Pflanzenbau und
Pflanzenzüchtung
8050 Freising-Weißenstephan
Federal Republic of Germany

Dr. A. E. Joshi 1/
Vice-Chancellor
Mahatma Phule Agricultural University
Ayluri, Ahmednagar
Maharashtra, India

Prof. L. Kihoro
Director
Swedish State Seed Testing Institute
S-17173 Solna, Sweden

1/ Members of Executive Committee

APPENDIX I
(Continued)**Members (continued)**

Dr. W. F. Kugler 1/
Project Manager
UNDP/FAO Project on Increase and
Development of Wheat Production
C.P. 351
99 196 PABUC Fondo
Rio Grande do Sul, Brazil

Dr. B. N. Najisu
Director
Chief, Scientific Officer (Research)
Ministry of Agriculture
P.O. Box 30028
Nairobi, Kenya

Prof. R. J. Olembo
Deputy Director, Division of
Environmental Management
United Nations Environment Programme
P. O. Box 30552
Nairobi, Kenya
(*ex officio* member, representing UNEP)

Dr. L. M. Roberts
Associate Director for Agricultural
Sciences (retired)
The Rockefeller Foundation
702 Ellen Lee Court
Bryan, Texas 77801
USA

Secretariat:

Mr. R. J. Pichal (Executive Secretary
until 1.6.78)
Chief, Crop Ecology and Genetic
Resources Unit
Plant Production and Protection Division
FAO, Rome, Italy

Dr. J. T. Williams (Executive Secretary
from 1.6.78)
Senior Genetic Resources Officer
Crop Ecology and Genetic Resources Unit
Plant Production and Protection Division
FAO, Rome, Italy

Dr. K. S. Dodds
Senior Consultant

Dr. N. Murthi Anishetty
Genetic Resources Officer

Dr. J. T. Esquinas-Alcazar
Genetic Resources Officer

Mrs. A. L. Zaniboni
Programme Assistant

Mrs. J. Buccini
Secretary

Miss D. Quaye
Secretary

Miss M. Bonomi
Machine Operator

1/ Members of Executive Committee

MEMBERSHIP OF ADVISORY COMMITTEES AND
WORKING GROUPS IN 1978A. ADVISORY COMMITTEE ON THE GENETIC RESOURCES COMMUNICATION, INFORMATION
AND DOCUMENTATION SYSTEM (GR/CIDS)Chairman:

Dr. A. H. Bunting
 Professor of Agricultural Development Overseas
 Plant Science Laboratories
 University of Reading
 Whiteknights
 Reading RG6 2AS, UK

Members:

Dr. L. M. Branscomb
 Vice President and Chief Scientist
 IBM Corporation
 Armonk
 New York 10504
 USA

Mr. J. L. Fyfe
 (formerly Deputy Director, Scottish
 Plant Breeding Station)
 Thornielee Cottages
 Clovenfords
 Selkirkshire TD1 3LN
 Scotland, UK

Dr. K. W. Finlay
 Deputy Director General
 CIMMYT
 Apartado Postal 6-641
 Londres 40
 Mexico, D.F., Mexico

Dr. Wilfredo Salhuana
 Director
 Centro Estadístico y Procesamiento
 de Datos
 Universidad Nacional Agraria
 Apartado 456, La Molina
 Lima, Peru

B. CROP GERMPASM ADVISORY COMMITTEESMAIZEChairman:

Dr. W. L. Brown
 President
 Pioneer Hi-Bred International, Inc.
 1206 Mulberry Street
 Des Moines, Iowa 50308
 USA

Members:

Dr. A. Brandolini
 Via Mazzini 30
 Bergamo
 Italy

Dr. F. H. Scheuch
 ICTA
 5A Avenida 12-31
 Edificio Cortes, Zone 9
 Guatemala City
 Guatemala, Central America

Dr. Sujin Jinsayom
 Department of Plant Science
 Kasetsart University
 Bangkok
 Thailand

Dr. E. W. Sprague
 CIMMYT
 Apartado Postal 6-641
 Londres 40
 Mexico, D.F., Mexico

MAIZE (Continued)Members:

Dr. V. Trifunović
 Director
 Maize Research Institute
 (Institute Za Kukuruz)
 P.O. Box 89
 11081 Beograd-Zemun
 Yugoslavia

PHASEOLUSChairman:

Dr. Alice M. Evans
 Department of Applied Biology
 University of Cambridge
 Pembroke Street
 Cambridge CB2 3DX, UK

Members:

Dr. H. Bannerot
 Station de Génétique et
 d'Amélioration des Plantes
 Centre National de Recherches
 Agronomiques
 Etiole de Choisy
 Route de St. Cyr, 78000
 Versailles, (Yvelines) France

Dr. L. W. Hudson
 Regional Plant Introduction Station
 Washington State University
 Pullman
 Washington 99163
 USA

Dr. G. le Marchand
 Faculte des Sciences Agronomiques
 de l'Etat a Gembloux
 5800 Gembloux, Belgium

Prof. Dr. R. Reimann-Philipp
 Federal Research Institute for
 Horticultural Plant Breeding
 207 Ahrensburg/Holst
 Bornkampweg
 Federal Republic of Germany

Dr. C. Vieira
 Department de Fitotecnia
 Escola Superior de Agricultura
 Universidade Federal de Viçosa
 36570 Viçosa
 Minas Gerais
 Brazil

D. H. F. Winter
 Research Horticulturist
 Germplasm Resources Laboratory
 USDA
 Beltsville, Maryland 20705
 USA

RICEChairman:

Dr. T. T. Cheng
 IRRI
 P. O. Box 933
 Manila
 Philippines

RICE (Continued)Members:

Mr. C. R. Adair
3 Bedwell Lane
Bella Vista
AR 72712
USA

Dr. K. Hayashi (until 1.11.78)
National Institute of Agricultural
Sciences, Division of Genetics
1-24 Ohara, Hiratsuka
Kanawaga, Japan

Dr. J. Kawakami (from 1.11.78)
National Institute of Agricultural
Sciences, Division of Genetics
Kannondai
Yatabe-cho
Tsukuba-gun
Ibaraki-Pref.
Japan

Dr. J. K. Roy (from 1.11.78)
Central Rice Research Institute
Cuttack 753006
India

Dr. S. D. Sharma
International Institute of Tropical
Agriculture
P.M.B. 5320
Ibadan
Nigeria

Dr. B. H. Siwi
Central Research Institute for
Agriculture
Department of Agriculture
Jalan Merdeka 99
Bogor, Indonesia

Dr. H. Will
Research Coordinator
MARDI
P.O. Box 1019
Monrovia, Liberia

BORGHUM AND MILLETSChairman:

Prof. J. P. Harlan
Plant Genetics
Crop Evolution Laboratory
University of Illinois
Urbana, Illinois 61801
USA

Members:

Mr. D. J. Andrews
ICRISAT
1-11-256
Hyderabad 500 016, A.P.
India

Prof. A. F. Bilques
Technical Adviser
Delegation Générale à la Recherche
Scientifique et Technique
du Senegal
Bambey, Senegal

Dr. L. R. House
ICRISAT
1-11-256 Begumpet
Hyderabad 500 016, A.P.
India

Prof. A. E. Kamhal
Head, Department of Agricultural
Botany
University of Khartoum
Faculty of Agriculture
Shambat
Democratic Republic of Sudan

BORGHUM AND MILLETS (Continued)Members (Continued):

Dr. B. R. Murty
Project Director
Nuclear Research Laboratory
Indian Agricultural Research
Institute
New Delhi 110 012
India

Dr. A. R. Sotomayor
Research Geneticist
USDA, Agricultural Research Service
Southern Region, Mayaguez Institute
of Tropical Agriculture
Box 70
Mayaguez
Puerto Rico
USA

WHEATChairman:

Prof. Dr. W. Hodelmann
Director - Genebank
Institut für Pflanzenbau und Saatgutforschung
Bundesforschungsanstalt für Landwirtschaft
Bundesallee 50
3300 Braunschweig-Völknerode
Federal Republic of Germany

Members:

Dr. R. G. Anderson
CIMMYT
Apartado Postal 6-641
Londres 40
Mexico, D.F.
Mexico

Prof. E. Porceddu
Director
Laboratorio del Germoplasma
Via G. Amendola 165/A
70126 Bari, Italy

Dr. J. C. Craddock
Small Grains Collection
USDA, Agricultural Research
Center-West
Beltsville, Maryland 20705
USA

Dr. M.V. Rao
Project Coordinator
All India Coordinated Wheat Improvement
Project
Cummings Laboratory
Indian Agricultural Research Institute
New Delhi 110 012
India

Dr. V. F. Dorofeev
Head, Dept. of Wheat
M.I. Vavilov All-Union Institute
of Plant Industry
44 Herson Street
190000 Leningrad USSR

Prof. K. Yamashita
Kihara Institute for Biological Research
Yata-Ohara, Misima
Sizuoka-ken 411
Japan

EXPERT CONSULTATION ON COCONUTS**Chairman:**

H.E. Dr. G. de Bakker (Vice Chairman)
Minister Plenipotentiary of the
Netherlands to FAO
Permanent Representation of the Kingdom
of the Netherlands to FAO
Via delle Terme Deciane 6
00153 Rome, Italy

Members:

Ir. Hasman Asis
Director
Industrial Crops Research Institute
Jalan Cimanggu 1
Bogor, Indonesia

Mr. H. C. Harries
Botanist/Plant Breeder
Coconut Industry Board
18 Waterloo Road
Half Way Tree
Kingston, Jamaica

Dr. N. M. Nayar
Director
Central Plantation Crops Research
Institute
Indian Council of Agricultural
Research
Kasaragod 670 124
Kerala, India

Mr. de Nuce de Lamothe
Coconut Geneticist
Institut de Recherches pour les
Huiles et Oléagineux
11 Square Pétrarque
75016 Paris, France

Mr. A.M.R. Mendoza
Senior Deputy Administrator
Philippine Coconut Authority
P.O. Box 3386
Manila, Philippines

Dr. M.A. Manthiraratne
Botanist
Coconut Research Institute of Sri Lanka
Lunuwila, Sri Lanka

MEMBERSHIP OF REGIONAL COMMITTEE FOR SOUTHEAST ASIA

<u>Member</u>	<u>Alternate</u>
INDONESIA	
Dr. Sutijadi Sastrapradja Director National Biological Institute P.O. Box 110 Bogor	Dr. B. H. Siwi Central Research Institute for Agriculture Jalan Mordeka 99 Bogor
MALAYSIA	
Mr. N. T. Arasu Malaysian Agricultural Research and Development Institute Universiti Pertanian Post P. O. Box 202 Serdang, Selangor	Dr. K. G. Singh Head, Quarantine Section Crop Protection Branch Ministry of Agriculture Tingkat 9 Bangunan Bank Negara, Kuala Lumpur
PAPUA NEW GUINEA	
Mr. A. E. Charles Chief Agronomist Department of Primary Industry P.O. Box 2417 Konedobu	Mr. Kana Aburu Agronomist Department of Primary Industry P.O. Box 2417 Konedobu
PHILIPPINES	
Dr. Ramon V. Valmayor Deputy Director General for Research Philippine Council for Agriculture and Resources Research Los Baños, Laguna	Dr. Emil Q. Javier Director Institute of Plant Breeding University of the Philippines at Los Baños College, Laguna
THAILAND	
Dr. Narong Chomchalow Deputy Governor, Research I Applied Scientific Research Corporation of Thailand 196 Phahonyothin Road Bangkhon, Bangkok 9	Mr. Pairoj Polprasid Director Northern Region Agricultural Development Centre P.O. Box 1101 Chiang Mai

IBPGR PUBLICATIONS

1. Available on request from the Secretariat in Rome (by writing to the Executive Secretary, IBPGR Secretariat, FAO, 00100 Rome, Italy):

- Report of first meeting IBPGR, Rome, 5-7 June 1974
- Annual Report 1974 (1975)
- Annual Report 1975 (1976)
- Annual Report 1976 (1977)
- Annual Report 1977 (1978)
- The Conservation of Crop Genetic Resources, edited by Eleanor Lawrence (1975)
- A Bibliography of Plant Genetic Resources by J.C. Hawkes, J.T. Williams and Jean Hanson (1976)
- A Bibliography of Plant Genetic Resources: Supplement by J.T. Williams (1977)
- Priorities among Crops and Regions (1976)
- Report of a Working Group on Engineering, Design and Cost Aspects of Long-term Seed Storage Facilities (1977)
- A Cooperative Regional Programme in Southeast Asia (1977)
- Tropical Vegetables and their Genetic Resources by G.J.H. Grubben and edited by H.D. Tisdall and J.T. Williams (1977)
- Descriptors for the Cultivated Potato by Z. Huaren, J.T. Williams, W. Salhuana and L. Vincent (1978)
- Descriptors for wheat and Aegilops (1978)
- Report of IBPGR/COI Workshop on South Asian Plant Genetic Resources (1978)
- Genetic Resources of Bananas and Plantains (1978)
- IBPGR Consultation on Coconut Genetic Resources (1978)
- Report, First Meeting, IBPGR, Regional Committee for Southeast Asia (1978)
- Seed Stores for Crop Genetic Conservation (1978)
- FAO/IBPGR Plant Genetic Resources Newsletter No. 33 (1978)
- FAO/IBPGR Plant Genetic Resources Newsletter No. 34 (1978)
- FAO/IBPGR Plant Genetic Resources Newsletter No. 35 (1978)

2. Available from the National Biological Institute, Bogor, Indonesia: (This publication was partly sponsored by the IBPGR)

- Plant Genetic Resources of Southeast Asia, edited by J.T. Williams, C.H. Lamireux and N. Sontjipito (1976)

3. Available from the N.I. Vavilov Institute of Plant Industry, Leningrad, USSR: (This publication was sponsored by the IBPGR and the V.I. Lenin Academy of Agricultural Sciences):

- Wheat Genetic Resources: Proceedings of an International Symposium held 14 - 22 July 1975 (1976)

4. Available from the IS/GR Program, University of Colorado, 1229 University Avenue, Boulder, Colorado 80309, USA:

- Annual Report 1976 of the Information Sciences/Genetic Resources Program
- EXIR Users' Manual (1976)
- Data Organization Manual by A.L. Shafton (1976)
- Maize Director (1977)
- Wheat Directory (1977)
- General Data Summary (1977)
- Data Preparation Manual (1977)
- EXIR Brochure (1977)
- EXIR Ready Reference Guide (1977)
- EXIR Error Messages and Dimensions (1977)
- Data base management systems: an initial assessment for the agricultural research centre (1978)
- Small-scale, low-cost computer systems. An investigation of their potential value to genetic resources management and research programmes (1978)

5. Available from Philippine Council for Agriculture and Resources Research College, Laguna, Philippines

- Proceedings of Southeast Asian Workshop on Genetic Resources (1977)

6. Available from CRC Press Inc., 2255 Palm Beach Lakes Blvd., West Palm Beach, Florida 33409, USA)

- Treatise on Plant Health and Quarantine in International Transfer of Genetic Resources edited by W.B. Hewitt and L. Chiarappa

STATEMENT OF ACCOUNT AS AT31 December 1978

(expressed in US dollar equivalents)

Receipts

Balance as at 1 January 1978		(80,536.80)
Various Government Contributions	1,840,011.29	
Interests credited in 1978	7,333.69	<u>1,847,344.98</u>
		1,927,881.78

Deduct:Cash Expenditure 1978

Personal Services	304,016.40
Official Duty Travel	222,855.82
Contractual Services	1,055,603.53
General Operating Expenses	29,660.42
Supplies and Materials	20,017.41
Furniture and Equipment	24,987.38
Acquisition and Improvement of Premises	-
Fellowships, Grants and Contributions	<u>28,192.49</u>
	1,687,333.45
Project Servicing Costs	
14 percent on \$200,517.55	<u>28,067.89</u>

1,715,401.34

Balance as at 31 December 1978

212,480.44

APPENDIX V
(Continued)

International Board for Plant Genetic Resources

Australia, Government of	79,282.00
Belgium, Government of	125,794.71
Canada, Government of	133,989.00
Germany, Government of Federal Republic	149,882.73
International Development Association, USA	200,003.75
Netherlands, Government of	100,000.00
Norway, Government of	124,133.65
Sweden (transfer from Cooperative Programme Suspense Account)	300,429.20
United Kingdom, Government of	166,496.25
United States of America, Government of	<u>460,000.00</u>
	US\$ <u>1,840,011.29</u>

APPENDIX VILIST OF IBPAC GRANTS

Funds committed initially in 1978:

	<u>Total Commitment (US Dollars)</u>
<u>For Collecting and Related Activities</u>	
Argentina: Instituto Nacional de Tecnología Agropecuaria (INTA), Salcarce (Construction of a screen house to increase wild apple tuber-bearing seed)	18,000
Brazil: Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), Brasília (Collection of maize)	19,000
Colombia: Instituto Colombiano Agropecuario, Tibaitará (Provide additional equipment and funds to maintain and augment germplasm seed collection of maize varieties)	5,000
Colombia: Centro Internacional de Agricultura Tropical (CIAT), Cali (Collection of Phaseolus in Latin America)	33,100
Cyprus: Agricultural Research Institute, Nicosia (Collection of old races of Cyprus wheats)	3,500
France: Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM), Paris (Collection of sorghum, millets and minor cereals in Mali and Benin)	60,000
France: Institut de Recherches Agronomiques Tropicales et des Cultures Variétés (IRAT) (Continuation of work under grant made in 1977 in West Africa)	
Indonesia: National Biological Institute, Bogor (Exploration and collection of tuber crops in West Sumatra)	15,000
Indonesia: Institut Pertanian Bogor (Continuation of work under grant made in 1977 for tropical fruits in Indonesia)	5,875

APPENDIX VI
(Continuing)

Total
Commitment
(US Dollars)

For Collecting and Related Activities (continued)

Italy: Germplasm Laboratory(CNR), Bari (Exploration and collection of wheat and grain legumes in Algeria and Greece)	22,500
Philippines: International Rice Research Institute (IRRI), Manila (Collection of indigenous rice in South and Southeast Asia)	20,000
Spain: Instituto Nacional de Investigaciones Agrarias (INIA), Madrid (Joint mission with DDR for collection of grain legumes)	14,615
Thailand: Applied Scientific Research Corporation of Thailand, Bangkok (Collection and evaluation of winged bean)	8,000
Thailand: Northern Regional Agricultural Development Centre(NADC), Chiang Mai (Collection of three economic fruits)	20,260
Thailand: National Research Council (at Kasetsart University) (Collection and evalua- tion of edible legumes)	15,000
Thailand: National Research Council (at Kasetsart University) (Exploration for banana genetic resources)	20,000
Uruguay: Facultad de Agronomía, Universidad de la República, Montevideo (Collection of maize)	16,040
Uruguay: Facultad de Agronomía, Universidad de la República, Montevideo (Collection of native forage grasses and legumes)	25,000
UK: University of Southampton (Collection of winged bean in Bangladesh)	5,000
USA: North Carolina State University, Raleigh (Collection of groundnuts in South America)	48,500

TOTAL

374,390

APPENDIX VI
(Continued)

	<u>Total Commitment</u> (US Dollars)
<u>Conservation</u>	
Indonesia: National Biological Institute, Bogor (Provision of storage facilities)	45,000
Nigeria: International Institute of Tropical Agriculture (Continuation of work under grant made in 1977 for regional storage facilities)	
Philippines: Institute of Plant Breeding (Con- tinuation of work under grant made in 1977 for regional storage facilities for the SE Asian regional programme)	
Portugal: Instituto Nacional de Investigaçao Agraria, Lisbon (Improvement of storage facilities)	75,000
Spain: National Agricultural Research Institute (INIA), Madrid (installation and equipment for two cold storage and drying rooms)	60,000
UK: University of Reading ((1) Determination of regeneration interval in orthodox seeds; and (2) literature survey on recalcitrant seeds)	<u>49,151</u>
TOTAL	<u>229,151</u>
<u>Documentation</u>	
USA: University of Colorado, Boulder (IS/OR Program on CR/CIDS)	<u>479,950</u>
TOTAL	<u>479,950</u>

APPENDIX VI
(Continued)

Total
Commitment
(US Dollars)

Training

Indonesia: National Biological Institute, Bogor (Training Course on practical field and laboratory training in plant genetic resources exploration)	30,000
UK: University of Edinburgh, Scotland (Training Course on Aspects of Seed Technology related to Genebank Work, 28 Sept. - 15 Sept. 1978)	7,400
UK: University of Birmingham (Allocation to International Training Course on Conservation and Utilisation of Plant Genetic Resources to enable additional students from developing countries)	30,000
USA: University of Colorado, Boulder (Support to participants attending IS/GR)	5,174
USA: University of Colorado, Boulder (Sabbatical training programme for Peruvian scientist)	<u>17,500</u>
TOTAL	<u>90,074</u>
GRAND TOTAL	<u>1,173,565</u>

RESUMEActivités dans les pays et les régions

Au cours de 1978, les activités du Conseil International des Ressources Phytogénétiques (IBPGR) se sont poursuivies dans la plupart des régions prioritaires. La carte figurant sur la page 2 montre l'extension géographique de ces activités. Le nombre de centres nationaux qui collaborent avec le Conseil est maintenant important.

Le Programme régional méditerranéen, conduit par le laboratoire des ressources phytogénétiques du Conseil national italien de la recherche à Bari, en coopération avec la FAO, a aidé le Conseil à mettre en place des installations d'entreposage des semences en Espagne et au Portugal et a effectué un travail considérable de collectes en Algérie, à Chypre, en Grèce, en Lybie, au Portugal et en Espagne. Les missions de collectes étaient des entreprises coopératives, et la préparation d'une réunion régionale de tous les pays de la région qui devrait se tenir en mars 1979 a progressé. Cette réunion devrait élaborer un programme détaillé pour de futures opérations.

Le Conseil a assumé, en 1976, la responsabilité financière d'un programme sur les ressources génétiques végétales en Asie du Sud-Ouest, dont les activités s'étendent à l'Afghanistan, l'Iran, l'Irak, le Pakistan, la Syrie et la Turquie. Une réévaluation de la situation en 1977 a abouti à une approche nouvelle par laquelle le Conseil insiste sur l'appui aux programmes nationaux plutôt qu'aux liaisons régionales. L'action du Conseil est placée sous l'autorité d'un fonctionnaire supérieur du Secrétariat, sous les directives duquel deux fonctionnaires en poste dans la région ont commencé à fournir des avis techniques sur le terrain. A la fin de l'année, les gouvernements de cinq pays - Afghanistan, Iran, Irak, Pakistan et Syrie - avaient signé un plan final d'opérations et la Turquie avait exprimé le désir d'en faire de même. L'année 1978 a vu se réaliser des activités considérables de collectes en Afghanistan, Iran, Irak et Turquie.

Les programmes Méditerranée et Asie du Sud-Ouest se chevauchent l'un et l'autre avec deux actions conduites en Europe. Premièrement, EUCARPIA a encouragé la collaboration entre sélectionneurs européens moyennant la création d'un réseau de banques de gènes. Deuxièmement, le UNDP a, par le biais d'une proposition de programme coopératif européen, entamé des discussions concernant des travaux en commun sur la conservation et l'échange de ressources génétiques pour la sélection végétale. Ce Programme de coopération fera en dernier lieu partie intégrante du réseau mondial.

En Asie du Sud (Bangladesh, Boutan, Birmanie, Inde, Nepal et Sri Lanka) une réunion régionale a eu lieu en 1978. Malheureusement, le Bangladesh et la Birmanie n'ont pas envoyé de délégués. Néanmoins, des progrès ont été accomplis et on est parvenu à un accord sur la nécessité de programmes nationaux élargis comportant un certain nombre de liaisons régionales coopératives.

Le Programme de coopération en Asie du Sud-Est a accompli sa première année d'opérations en 1978, et le Comité régional s'est réuni pour la première fois. Cette région comprend l'Indonésie, la Malaisie, la Papouasie Nouvelle-Guinée, les Philippines et la Thaïlande. La collecte a avancé dans la plupart des pays. Un dépôt régional de semences a été créé aux Philippines, ainsi qu'une collection régionale de bananiers. Vers la fin de 1978, sur la recommandation du Comité régional, les opérations de recrutement d'un fonctionnaire régional du IBPGR ont commencé.

Au cours de 1978, une réunion des pays de la zone andine a demandé que soient mises en route des activités régionales de coopération sur les ressources génétiques. Peu après la fin de l'année, le Conseil a tenu des discussions avec la banque régionale de gènes au CATIE à Turrialba (Costa Rica), financé par la République fédérale d'Allemagne, qui ont jeté les bases d'une future coopération. Afin d'encourager les activités dans l'ensemble de l'Amérique Latine, il a été convenu que le Conseil nommera, en 1979, un consultant

principal qui donnera des avis le cas échéant et établira des liaisons appropriées dans la région. Le IBPGR a appuyé des expéditions chargées de poursuivre la collecte de souches génétiques d'arachides en Argentine, Bolivie, Brésil, Paraguay, et Pérou; la collection de maïs en Argentine, Bolivie, Brésil, Colombie, Paraguay, Pérou et Uruguay; la collection de fourrage en Argentine et Uruguay; la collection de *Phaseolus* en association avec le CIAT en Amérique centrale et du Sud. Un appui a également été apporté à l'Argentine et au Chili pour collecter et augmenter les ressources génétiques de la pomme de terre, en particulier de Chiloe et de la région nord-est de l'Argentine.

En Afrique au sud du Sahara, des collections de sorgho et de maïs ont été faites pour le IBPGR par le ORSTOM en Afrique de l'Ouest, et le Secrétariat du Conseil a organisé une activité analogue au Kenya et en Tanzanie. Les activités de l'unité des ressources génétiques de l'IITA se sont étendues quand l'unité a été entièrement pourvue en effectif en 1978, et des collections ont été faites dans de nombreuses parties de l'Afrique de l'Ouest ainsi qu'en Afrique orientale. En 1978, le IBPGR a aussi aidé l'IRAT et l'ORSTOM à réaliser la collecte de riz africains en Tanzanie et Zambie. En Ethiopie, le centre des ressources génétiques que finance la République fédérale d'Allemagne, a continué d'être géré par la situation politique, mais a effectué un certain nombre d'activités utiles pendant l'année et a entretenu la liaison avec le Secrétariat du Conseil.

De nouveaux arrangements de collaboration ont été conclus par le Conseil avec plusieurs pays dotés de programmes nationaux importants concernant des ressources génétiques: avec les États-Unis à propos de la mise au point d'un programme en vue de réunir et d'organiser des informations sur les grandes collections de matériel génétique dans le pays, et dans le cadre d'un accord avec le NSSL à Fort Collins, Colorado, en vue de conserver les collections mondiales de base pour plusieurs cultures importantes; avec l'Australie (nouveau donateur du Groupe) à l'occasion d'un colloque CSIRO/IBPGR sur les ressources génétiques fourragères en 1979; et avec le Japon en ce qui concerne de futures activités en Extrême-Orient. Le Conseil a également été en correspondance avec la République populaire de Chine, en vue d'une future coopération.

Cultures

Le Conseil a créé des comités consultatifs pour guider des travaux sur cinq cultures importantes - blé, maïs, riz, sorgho et mil et haricot (*Phaseolus*). Il n'existe pas de comité consultatif pour la pomme de terre dans la mesure où le CIP est en liaison avec de nombreux pays en ce qui concerne les travaux sur cette culture, de sorte qu'il suffit que le Conseil s'adresse au CIP pour avoir des avis. Les tâches des comités consistent notamment à donner des avis au Conseil sur les collections existantes, les secteurs dans lesquels de nouvelles collections sont nécessaires, les installations dans lesquelles on vient d'entreposer les collections de base, et les systèmes de description pour les cultures.

Au cours de 1978, quatre de ces comités se sont réunis pour la seconde fois. En outre, des consultations ont eu lieu sur la noix de coco, et les fourrages en Amérique du Sud.

Comme mentionné plus haut, les collections de toutes ces cultures ont reçu un appui soit spécialement soit dans le cadre d'activités régionales dans l'une ou l'autre région. Toutes ont fait l'objet de recommandations des comités des cultures.

Le travail sur les descripteurs a avancé pour toutes ces cultures. Il a été achevé pour le maïs et le blé en 1977 et en 1978 a atteint le stade de mise au point définitif pour *Phaseolus*, pour le riz et le sorgho. Le Programme régional du Sud-Est a réuni deux groupes de travail pour établir des listes minimums agréées de descripteurs pour le haricot "ailé" et cinq fruits tropicaux. Le Programme IS/GR, qui avait passé un certain temps à mettre au point des inventaires pour les grandes collections de cultures, a envoyé aux instituts qui avaient fourni les données brutes et au Secrétariat du IBPGR des bandes magnétiques contenant les données d'informatique normalisées, utilisables sur un ordinateur.

Comme les années précédentes, dans tous ces travaux sur les cultures, le Conseil a été aidé très efficacement par les IARCs, dans le système du Groupe Consultatif. Le Conseil

exprime sa reconnaissance et ses remerciements aux Directeurs généraux des Centres et à leurs collègues. Dans plusieurs cas, les centres ont accepté de fournir un entreposage de base de longue durée pour les collections mondiales de cultures pour lesquelles ils assument la responsabilité de la recherche. De plus, les centres aident le Conseil en co-patronnant les comités consultatifs des cultures.

Le Système d'Informatique

Seuls des ordinateurs peuvent traiter le nombre considérable de données d'informations produites par le travail sur les ressources génétiques. Les sélectionneurs auront la possibilité de communiquer avec des ordinateurs situés ailleurs au moyen de terminaux; d'autres pourront se servir des télécommunications; d'autres encore, peut-être le plupart, enverront leurs données ou leurs demandes par la poste à l'autres centres équipés pour fournir les services demandés. Il est évident que les progrès accomplis dans le domaine des microcircuits et de la conception des ordinateurs nous rapprochent chaque fois davantage du jour où de petits ordinateurs seront capables de traiter d'importants secteurs des systèmes d'informatique nécessaires pour le travail sur les ressources génétiques.

Jusqu'en 1978, le Conseil sous-traitait ses travaux d'informatique au programme des le IS/GR de l'Université du Colorado, à Boulder. Un système de données de base, connu sous le nom d'EXIR, mis au point par le programme IS/GR a été rendu accessible d'une manière générale et a été mis en place dans un certain nombre de centres dans le monde. De très grandes quantités de données sur les collections existantes ont été rassemblées par le IS/GR et mises sur bandes magnétiques sous une forme normalisée. Grâce à ces informations, les comités des cultures ont fait d'importants progrès sur les systèmes de descripteurs.

En dehors des travaux de recherche et de mise au point effectués par le programme IS/GR, les activités conduites à Boulder ont grandement contribué à faire prendre conscience aux centres et aux sélectionneurs des besoins de descripteurs normalisés, ainsi que la compilation et de l'organisation d'une base de données, pour assurer une récupération rapide et fiable des données d'information et ainsi les utiliser plus efficacement. Un bon exemple en a été la coopération du programme IS/GR avec le USDA-SEA en vue de dresser un registre unifié de toutes les ressources génétiques détenues aux Etats-Unis, compatibles avec le système du Conseil. Ce contrat est maintenant passé de l'Université du Colorado de Boulder à l'Université d'Etat du Colorado à Fort Collins et le personnel du programme IS/GR qui travaillait essentiellement au projet USDA a été transféré à Fort Collins.

Le Conseil s'est aperçu en 1978 que des progrès frappants en matière d'informatique se manifestaient en plusieurs centres répartis dans le monde, et a donc proposé en 1979 de revoir l'organisation de son aide au travail d'informatique. Les détails de cette réorganisation figureront dans le rapport à moyen terme du Conseil sur le Programme et Budget pour 1979/80.

Formation

Le Conseil a continué d'aider à financer l'Université de Birmingham (Royaume-Uni) à dispenser à des étudiants provenant des pays en développement une formation en matière de conservation et d'utilisation des ressources génétiques végétales. En 1977/78, 15 de ces étudiants ont reçu une formation, ils étaient 9 à suivre le cours de 1978/79. Une bonne partie du soutien du Conseil à cet aspect important de son activité est financée par la contribution du UNEP au IBPGR.

Pour aider le Programme régional de l'Asie du Sud-Est, le IBPGR a financé un cours de formation en Indonésie sur les méthodes de prospection et de collecte sur le terrain. En collaboration avec la FAO, le Conseil a aussi aidé à financer un cours de formation sur la gestion informatique pour le travail sur les ressources génétiques, qui a été donné par le personnel du Programme IS/GR à Boulder. La plupart des participants provenaient de centres de ressources génétiques des pays en développement et de centres internationaux appartenant au système du Groupe Consultatif. Un cours de formation technique sur la technologie des semences appliquées au travail des banques de gènes, donné par l'Université

d'Edimbourg (Royaume-Uni) a constitué une innovation. Ce cours, le premier de ce type, s'adressait uniquement aux participants provenant de banques de gènes des pays en développement ou de centres situés dans des pays où des banques de gènes doivent être établies:

Les contacts personnels et la découverte d'objectifs communs entre les étudiants appartenant à ce Groupe divers dans tous ses cours, contribuent pour beaucoup à favoriser la coopération à l'intérieur du réseau mondial de centres.

Conservation des Semences

Suite aux recommandations du Conseil concernant la conception matérielle et technique des dépôts de semences pour conservation prolongée, le IBPGR a aidé à financer l'équipement de nouveaux entrepôts et l'amélioration des plus anciens, pour les élever au niveau des normes recommandées. Une enquête a été conduite récemment, en coopération avec la FAO, et il est agréable de noter le fort accroissement des dépôts de semences à travers le monde. Le Conseil a aussi appuyé des études sur la physiologie des semences à l'Université de Reading (Royaume-Uni) conçues pour définir les méthodes de conservation les plus efficaces.

LES POINTS SAILLANTS EN 1978

- * Le Conseil a intensifié son appui aux collections de cultures prioritaires, en grande partie suivant les recommandations de ses comités consultatifs des cultures.
- * La mise en oeuvre des programmes de ressources génétiques a pris de l'élan dans plusieurs régions prioritaires qui sont des centres de diversité des cultures.
- * On a préparé la voie pour une action coopérative dans plusieurs autres régions de diversité, en particulier en Asie du Sud, en Amérique centrale et dans la zone andine.
- * Des centres nationaux de toutes les régions de diversité ont coopéré activement avec le IBPGR.
- * IBPGR a favorisé l'installation de systèmes d'informatique et de récupération des données sur ordinateur auprès de plusieurs centres nationaux.
- * Des quantités importantes de matériel ont été transférées dans les centres de conservation qui ont accepté la responsabilité de l'entretien de collections de base de stocks de semences de certaines espèces.
- * On a assisté à une prise de conscience croissante parmi les collectionneurs de la valeur du travail du Conseil.
- * Le Conseil a accru son soutien à la formation pratique sur le terrain en finançant plusieurs cours techniques de brève durée.

COOPERATION AVEC DES CENTRES INTERNATIONAUX

Au cours de 1978, le Conseil a reçu une excellente collaboration des le IARCs s'occupant des cultures. Comme dans les années précédentes, les centres internationaux ont efficacement aidé le IBPGR à coordonner de nombreux aspects de la conservation des cultures pour lesquelles ils ont des responsabilités en matière de recherche. A ce jour, plusieurs des IARC ont accepté de détenir de grandes collections de base mondiale de ces cultures et le CIAT, le CIMMYT, l'ICRISAT et l'IRRI ont continué de co-patronner des comités consultatifs de matériel génétique (voir p. 37). Jusqu'en 1978, quatre comités - pour le riz, le maïs, le sorgho et les millets et le *Phaseolus* étaient co-patronnés par les IARC; à la fin de

l'année le CIMMYT a informé le Conseil qu'il était désireux de co-patronner le Comité consultatif sur le blé; l'ICARDA sera représenté auprès de ce comité.

CIAT

En association avec le CIAT, le IBPGR continue d'apporter son soutien à la collection de matériel génétique de espèces de haricot *Phaseolus* et de plantes fourragères en Amérique centrale et du Sud (voir p. 30). En avril 1978, le IBPGR a co-patronné un cercle d'études régionales sur les ressources génétiques des plantes fourragères d'Amérique du Sud, qui s'est tenu au CIAT (voir p. 31). Le CIAT détient près de 21.000 échantillons de haricot *Phaseolus*, 2,400 échantillons de manioc et 4,780 de légumineuses et graminées fourragères; la banque de gènes du CIAT a été conçue pour garder une collection de base mondiale de *Phaseolus*. Le Comité consultatif du matériel génétique du *Phaseolus*, qui est co-patronné par le CIAT, a tenu sa seconde réunion en juillet 1978 à l'Université de Cambridge (Royaume-Uni) (voir p. 45).

CIMMYT

Le Directeur général du CIMMYT a eu des entretiens avec le Conseil en 1978 et le CIMMYT a accepté de co-patronner le comité consultatif sur le blé, en plus du comité sur le maïs. La banque de matériel génétique du maïs au CIMMYT détient près de 13,000 échantillons de maïs et de plantes sauvages apparentées provenant de 46 pays. Un double de cette collection est préparé en vue d'un entreposage de longue durée au NSSL, Fort Collins (Etats-Unis). Un catalogue du matériel génétique du maïs détenu au CIMMYT est en cours de préparation, avec la collaboration du IBPGR.

CIP

Le Conseil n'a pas créé de comité consultatif pour le matériel génétique de la pomme de terre, car le CIP a précédemment donné des avis au Conseil. Le IBPGR collabore avec le CIP et compte sur lui pour tenir le Conseil informé de la prospection et de la conservation des ressources génétiques de la pomme de terre (voir p. 4). Le CIP a la responsabilité de conserver une collection mondiale de matériel génétique de pomme de terre. A l'heure actuelle, plus de 13,000 exemplaires de cultivars primitifs figurent dans la collection, dont 10,000 approximativement ont été classés et 1,600 exemplaires doubles ont été identifiés.

ICARDA

L'ICARDA, dont le mandat porte sur le blé dur, l'orge, les lentilles, le pois chiche et la grosse fève en Asie du Sud-Ouest et l'Afrique du Nord, continuera de collaborer étroitement avec le IBPGR pour l'élaboration d'un programme de ressources génétiques. A l'heure actuelle, ce centre ne dispose pas des installations nécessaires pour assumer de grandes responsabilités en matière de conservation à long terme d'une culture donnée, néanmoins, l'ICARDA conserve d'importantes collections de travail (près de 9,000 lentilles, 4,000 grosses fèves, 4,000 pois chiches et 1,200 pois). Il prévoit aussi de construire, dans les deux années à venir, des installations d'entreposage pour la conservation prolongée d'une collection "mondiale" de lentilles et de grosses fèves et un double de la collection de pois chiche de l'ICRISAT.

ICRISAT

L'ICRISAT a progressivement pris un rôle de premier plan dans les activités en matière de ressources génétiques pour les cultures tombant dans le cadre de son mandat de recherche. En 1978, l'ICRISAT a procédé à une réorganisation interne pour créer une unité des ressources génétiques. Le IBPGR, en collaboration avec l'ICRISAT, a continué de donner son appui à la collection d'arachides en Amérique du Sud, et de sorgho et mils en Afrique de l'Est et de l'Ouest. Le Comité consultatif sur les sorghos et les mils, co-patronné par l'ICRISAT, a tenu sa seconde réunion à l'ICRISAT en janvier 1978 (voir p. 43). L'ICRISAT est en train de construire des installations d'entreposage de base pour le matériel génétique du sorgho, du mils-chandelles, de l'arachide, du pois chiche, du pois cajan et des mils secondaires.

L'ICRISAT, en consultation avec le IBPGR a invité le CIAT, l'ICARDA et l'IITA à se réunir à l'ICRISAT en janvier 1978 pour parler de la coopération en matière de collection de matériel génétique des légumineuses (voir p. 43).

IITA

L'IITA a été en contact étroit avec le Secrétariat du IBPGR en ce qui concerne la collecte en Afrique orientale comme en Afrique occidentale. In 1978, l'unité des ressources génétiques de l'IITA est devenue pleinement opérationnelle et a lancé une série d'explorations en Afrique (voir p. 28). Le IBPGR a fourni des fonds à l'IITA pour la formation de boursiers au-delà du doctorat et aussi pour des installations d'entreposage. L'IITA a accepté la responsabilité d'entreposer de grandes collections de base de riz africain et de doliques.

IRRI

Pour mettre en oeuvre un plan quinquennal de collection mis au point lors du cercle d'études. IRRI/IBPGR sur la conservation génétique du riz, l'IRRI a aidé les pays de l'Asie du Sud et du Sud-Est à collecter du matériel génétique de riz. Avec le soutien financier du IBPGR, l'IRRI a aidé des chercheurs des programmes nationaux du Bangladesh, de l'Indonésie et de la Thaïlande à réunir du matériel génétique de riz et à expédier ce matériel à l'IRRI pour un entreposage de longue durée. La seconde réunion du Comité consultatif du riz, qui est co-patronné par l'IRRI, s'est tenue à Beltsville (Etats-Unis) en 1978 et a mis définitivement au point une liste minimum de descripteurs pour le riz.

RESUMENActividades en países y regiones

Durante 1978, las actividades del Consejo Internacional de Recursos Fitogenéticos (IBPGR) continuaron en la mayoría de las regiones prioritarias. El mapa de la página 2 muestra la distribución geográfica de estas actividades. El número de centros nacionales que actualmente colaboran con el Consejo es grande.

El Programa Regional del Mediterráneo, encabezado por el Laboratorio de Germoplasma del Consejo Nacional de Investigación de Italia en Bari, en cooperación con la FAO, obtuvo el apoyo del Consejo para el establecimiento de almacenes de semillas en España, Portugal y para recolectó considerablemente en Argelia, Chipre, Grecia, Libia, Portugal y España. Las misiones de recolección fueron esfuerzos cooperativos y se avanzaron planes para una reunión de todos los países de la región en marzo de 1979. Se prevé que esta reunión establecerá un programa detallado de las operaciones futuras.

El Consejo asumió en 1976 la responsabilidad financiera del Programa de Recursos Fitogenéticos del Asia Sudoccidental, que contempla actividades en Afganistán, Irán, Irak, Pakistán, Siria y Turquía. Una revisión de la situación en 1977 dio origen a un nuevo método, en virtud del cual el Consejo está enfatizando el apoyo a los programas nacionales, en vez de los enlaces regionales. El apoyo del Consejo está sujeto a la supervisión de un alto funcionario de la Secretaría, bajo cuya dirección dos funcionarios destacados en la región han comenzado a dar ayuda técnica en campo. A fines de año, los gobiernos de cinco países - Afganistán, Irán, Irak, Pakistán y Siria - habían firmado un plan final de operaciones y Turquía había expresado su voluntad de hacerlo. En 1978, se recolectó intensamente en Afganistán, Irán, Irak y Turquía.

Los programas tanto del Mediterráneo como del Asia Sudoccidental se duplican con dos esfuerzos de Europa. En primer lugar, EUCARPIA ha estimulado la cooperación entre los fitogenetistas europeos, a través de la creación de una red de bancos de genes. En segundo lugar, el UNDP, a través de un proyecto de programa cooperativo europeo, ha iniciado conversaciones sobre una labor cooperativa de conservación e intercambio de recursos genéticos para la mejora de plantas. Este programa cooperativo a la larga pasará a formar parte integral de la red mundial.

En el Asia del Sur (Bangladesh, Bhután, Birmania, India, Nepal y Sri Lanka) se celebró en 1978 una reunión regional. Por desgracia, Bangladesh y Birmania no enviaron delegados. No obstante lo dicho, se avanzó y se llegó a un acuerdo sobre la necesidad de ampliar los programas nacionales, con varios eslabones regionales cooperativos.

El programa cooperativo del Asia Sudoriental completó su primer año de operación en 1978 y el Comité Regional se reunió por primera vez. Esta región abarca Indonesia, Malasia, Papua Nueva Guinea, Filipinas y Tailandia. La recolección continuó en la mayoría de los países. Se estableció un almacén regional de semillas en Filipinas, así como una colección regional de banano. Hacia fines de 1978, por recomendación del Comité Regional, se inició la contratación de un funcionario regional del IBPGR.

En 1978 tuvo lugar una reunión de los países de la zona andina, en la que se trató la creación de actividades regionales cooperativas sobre recursos genéticos. Poco después de fines de año, el Consejo mantuvo conversaciones con el banco de genes regional para Meso-América situado en el CATIE, Turrialba, Costa Rica, financiado por la República Federal de Alemania y se echaron las bases para la colaboración futura. A fin de fomentar las actividades en toda la América Latina, se acordó que el Consejo nombre en 1979 un consultor principal para asesorar en caso necesario y establecer vínculos idóneos en la región. El IBPGR apoyó expediciones para continuar la recolección de germoplasma de maní en Argentina, Bolivia, Brasil, Paraguay y Perú; la recolección de maíz en Argentina, Bolivia, Brasil, Colombia, Paraguay, Perú y Uruguay;

la recolección de forrajeras en Argentina y Uruguay y la recolección de *Phaseolus* en asociación con el CIAT en Centro y Sudamérica. También se dio ayuda a Argentina y Chile para recolectar y aumentar el germoplasma de papa, particularmente de Chiloé y de la región del nordeste de Argentina.

En Africa el ORSTOM hizo una recolección de sorgo y mijo al Sur del Sahara para el IBPGR y la Secretaría del mismo organizó labores semejantes en Kenia y Tanzania. Las actividades de la Unidad de Recursos Genéticos del Instituto Internacional de Agricultura Tropical se ampliaron; la Unidad completó su personal en 1978 y se hicieron recolecciones en muchas partes de Africa Occidental y Oriental. En 1978 el IBPGR también ayudó a la recolección de arroz africano realizada por IRAT y ORSTOM en Tanzania y Zambia. En Etiopía, el Centro de Recursos Genéticos, financiado por la República Federal de Alemania, siguió tropezando con dificultades debido a las condiciones políticas, pero realizó varias actividades útiles durante el año y mantuvo enlace con la Secretaría del Consejo.

Se concluyeron nuevos acuerdos de colaboración entre el Consejo y varios países que tienen programas de recursos genéticos nacionales significativos: con Estados Unidos, en relación con el desarrollo de un programa para reunir y organizar la información sobre las principales colecciones de germoplasma del país y, a través de un acuerdo con el NSSL, Fort Collins, Colorado, para mantener colecciones base mundiales de varias plantas agrícolas importantes; con Australia (nuevo donante del Consejo), en relación con un simposio CSIRO/IBPGR sobre recursos genéticos forrajeros en 1979 y con Japón en relación con la labor futura en el Lejano Oriente. El Consejo, además, sostuvo un intercambio de correspondencia con la República Popular China, con miras a la cooperación futura.

Plantas agrícolas

El Consejo estableció cinco comités asesores para que lo orienten en su labor sobre plantas agrícolas importantes - trigo, maíz, arroz, sorgo y mijo y *Phaseolus*. No hay ningún comité asesor para la papa, porque el CIP conoce bien la labor relacionada con esta planta en muchos países, de manera que al Consejo le ha bastado solicitar el parecer del CIP. Entre las labores de los comités figuran las de informar al Consejo sobre las colecciones existentes, las áreas donde se necesitan hacer nuevas colecciones, los establecimientos donde podrían almacenarse las colecciones base y el sistema de descriptores de las plantas agrícolas.

Durante 1978, cuatro de estos comités se reunieron por segunda vez. Además, se celebraron consultas sobre cocos y forrajeras en Sudamérica.

Como ya se dijo, las recolecciones de estas plantas fueron apoyadas específicamente, ó como parte de actividades regionales, en una u otra región. Todas las recolecciones sido recomendadas por los comités respectivos.

Progresó la labor de los descriptores de todas estas plantas agrícolas. Se completó en 1977 la del maíz y la del trigo y se llegó a la etapa final de la *Phaseolus*, arroz y sorgo, en 1978. El Programa Regional del Sudeste celebró dos reuniones de grupo de trabajo para establecer las listas mínimas convenidas de descriptores de frijol careta y de cinco frutas tropicales. El Programa IS/GR, que ha dedicado algún tiempo a la preparación de inventarios de las colecciones de las plantas agrícolas principales, envió a los institutos que suministraron los datos en bruto y a la Secretaría del IBPGR, cintas de información estandarizada legibles a máquina.

Como en los años anteriores, en toda su labor sobre plantas agrícolas, el Consejo recibió una ayuda muy eficaz de los centros de investigación agrícola internacional que forman parte del sistema del Grupo Consultivo. El Consejo expresa su agradecimiento a los Directores Generales de los centros y a sus colegas. En varios casos los centros han acordado suministrar almacenamiento a largo plazo de las colecciones mundiales de plantas agrícolas de cuya investigación están encargados. Además estos centros ayudaron al Consejo, copatrocinando los comités asesores de las plantas agrícolas respectivas.

El Sistema de Información

Sólo con computadoras se puede manejar el gran número de unidades de información que genera la labor de recursos genéticos. Algunos mejoradores de plantas podrán comunicarse con las computadoras de otras partes a través de los terminales, otros utilizando las telecomunicaciones y otros, quizás la mayoría, enviará por correo sus datos o sus consultas a otros centros equipados para suministrar los servicios requeridos. Es evidente que los progresos en microcircuitos y en diseño de computadoras están haciendo que se aproxime el día en el que las computadoras pequeñas puedan manejar partes importantes de los sistemas de información necesarios para la labor de recursos genéticos.

Hasta 1978 el Consejo subcontractaba su labor de información con el Programa IS/GR en la sede de Boulder de la Universidad de Colorado. Un sistema denominado EXIR, elaborado por el Programa IS/GR, ha sido puesto a disposición del público en general y se ha establecido en varios centros alrededor del mundo. IS/GR reunió cantidades muy grandes de datos sobre las colecciones existentes y los grabó en cinta en forma estandarizada. Con esta información los comités de las respectivas plantas agrícolas avanzaron mucho en la labor del sistema de descriptores.

Fuera de la investigación y desarrollo del Programa IS/GR, la labor de la sede de Boulder ha contribuido mucho a dar a conocer, a los centros y a los mejoradores de plantas, las necesidades de descriptores estandarizados y de compilación y manejo de datos, para efectuar una localización rápida y fiable de la información y utilizar así el material con mayor eficacia. Sirva de ejemplo la cooperación del Programa IS/GR con la Administración de Ciencia y Educación del USDA, en la elaboración de un registro unificado de todas las existencias de recursos genéticos de Estados Unidos, compatible con el sistema del Consejo. Este contrato se traspasó desde la sede de Boulder de la Universidad de Colorado a la sede de Fort Collins de la Universidad del Estado de Colorado y el personal del Programa IS/GR que trabajaba principalmente en el proyecto USDA fue trasladado a Fort Collins.

El Consejo constató en 1978 los sorprendentes progresos que estaba logrando la labor de información, en varios centros de todo el mundo y propuso en 1979 reestructurar la organización de su apoyo a esta labor. Los detalles de esta reorganización aparecerán en el informe del programa y presupuesto a medio plazo del Consejo para 1979-80.

Capacitación

El Consejo siguió ayudando a financiar la Universidad de Birmingham, Reino Unido, para dar capacitación en conservación y utilización de recursos fitogenéticos, a alumnos de países en desarrollo. En 1977-78 se capacitaron 15 alumnos y para el curso 1978-79 hay nueve. Gran parte de la ayuda del Consejo a este importante aspecto de su labor se financia con un aporte del UNEP.

Para ayudar al Programa regional del Asia Sudoriental, el IBPGR financió un curso de capacitación en Indonesia, sobre métodos de prospección y recolección en el campo. En colaboración con la FAO, el Consejo ayudó también a financiar un curso de capacitación sobre manejo de la información en la labor de recursos genéticos, ofrecido por el personal del Programa IS/GR en Boulder. La mayoría de los participantes provenían de centros de recursos genéticos de los países en desarrollo y de los centros internacionales del Consejo Consultivo. Otra novedad fue el curso de capacitación en tecnología de semillas para la labor de bancos de genes, ofrecido por la Universidad de Edimburgo, Reino Unido. Este curso, primero en su género, se limitó a participantes de bancos de genes de los países en desarrollo, o centros de los países en los cuales se crearán bancos de genes.

Los contactos personales y el reconocimiento de los propósitos compartidos por un grupo mixto de alumnos en todos estos cursos están contribuyendo mucho a fomentar la cooperación en la red mundial de centros.

Conservacion de Semillas

Siguiendo las recomendaciones del Consejo sobre el diseño físico y la ingeniería del almacenamiento de semillas a largo plazo, el IBPGR ayudó a financiar el equipo para almacenes nuevos y la mejora de los viejos de acuerdo con las normas recomendadas. Se acaba de hacer un estudio en colaboración con la FAO y es grato constatar el gran aumento de los almacenes de semillas en todo el mundo. El Consejo además apoyó investigaciones sobre fisiología de las semillas, en la Universidad de Reading, Reino Unido, que tienen por objeto determinar los métodos más eficaces de conservación.

HECHOS SOBRESALIENTES EN 1978

- * El Consejo intensificó su apoyo a las recolecciones de plantas agrícolas prioritarias, en gran parte de acuerdo con las recomendaciones de sus Comités Asesores de las plantas respectivas.
- * La ejecución de programas de recursos genéticos se aceleró en varias regiones prioritarias que son centros de diversidad de plantas agrícolas.
- * Se allanó el camino a la acción cooperativa en varias otras regiones de diversidad, particularmente en el Sur de Asia en Meso-América y en la Zona Andina.
- * Los centros nacionales de todas las regiones de diversidad cooperaron activamente con el IBPGR.
- * El IBPGR patrocinó la instalación en varios centros nacionales del sistema de información y localización basado en computadoras.
- * Se trasladaron cantidades significativas de materiales a los centros de conservación que han aceptado la responsabilidad de mantener colecciones base de las semillas designadas.
- * Entre los mejoradores de plantas aumentó la conciencia del valor de la labor del Consejo.
- * Se aumentó la ayuda a la capacitación práctica en el campo, a través del financiamiento de varios cursos técnicos breves.

COOPERACION CON CENTROS INTERNACIONALES

Durante 1978 el Consejo recibió una cooperación excelente de los IARC que se ocupan de plantas agrícolas. Como en años anteriores, los centros internacionales ayudaron eficazmente al IBPGR en la coordinación de muchos aspectos de la conservación de aquellas plantas agrícolas de cuya investigación están encargados. Hasta la fecha varios IARC han acordado mantener importantes colecciones base mundiales de estas plantas agrícolas y CIAT, CIMMYT, ICRISAT e IRRI han seguido copatrocinando los comités asesores de germoplasma (véase p. 37). Hasta 1978 los IARC habían copatrocinado cuatro comités - los de arroz, maíz, sorgo y mijo, y *Phaseolus*; a fines de año, CIMMYT informó al Consejo que estaba dispuesto a copatrocinarse el Comité Asesor de Trigo, en el cual estará representado ICARDA.

CIAT

En asociación con CIAT, el IBPGR sigue apoyando la recolección de germoplasma de *Phaseolus* y de forrajeras en Centro y Sudamérica (véase p. 30). En abril de 1978 el IBPGR copatrocinó un taller regional sobre recursos fitogenéticos forrajeros de

de Sudamérica el que se celebró en CIAT (véase p. 31). CIAT mantiene alrededor de 21,000 muestras de *Phaseolus*, 2,400 de yuca y 4,780 de leguminosas y gramíneas forrajeras y el banco de genes de CIAT ha sido designado para que mantenga una colección base mundial de *Phaseolus*. El Comité Asesor de Germoplasma de *Phaseolus*, copatrocinado por CIAT, celebró su segunda reunión en julio de 1978, en la Universidad de Cambridge, Reino Unido (véase p. 45).

CIMMYT

El Director General de CIMMYT celebró conversaciones con el Consejo en 1978 y CIMMYT acordó copatrocinar el Comité Asesor del Trigo además del Comité del Maíz. El Banco de Germoplasma de Maíz de CIMMYT mantiene alrededor de 13,000 muestras de maíz y de sus parientes silvestres de 46 países. Esta colección se está duplicando para su almacenamiento a largo plazo en el NSSL de Fort Collins, Estados Unidos. Actualmente se está preparando, en colaboración con el IBPGR, un catálogo del germoplasma de maíz mantenido en CIMMYT.

CIP

El Consejo no ha establecido un Comité Asesor de germoplasma de papa, porque CIP ha asesorado anteriormente. El IBPGR colabora con CIP y éste lo mantiene informado sobre la prospección y conservación de recursos genéticos de papa (véase p. 4). CIP tiene la responsabilidad de mantener una colección mundial de germoplasma de papas. Actualmente hay en dicha colección más de 13,000 cultivares primitivos, de los que aproximadamente 10,000 han sido clasificados y alrededor de 1,600 duplicados han sido identificados.

ICARDA

ICARDA, con su mandato de trigo duro, cebada, lenteja, garbanzo y haba en Asia Sudoccidental y Africa del Norte, seguirá manteniendo estrecha colaboración con el IBPGR en la formulación de un programa de recursos genéticos. Actualmente este centro no tiene medios para asumir la responsabilidad principal de conservar a largo plazo una planta agrícola en particular; sin embargo ICARDA mantiene colecciones de trabajo importantes (alrededor de 9,000 muestras de lenteja, 4,000 de haba, 4,000 de garbanzo y 1,200 de arveja). También está proyectando construir en los próximos dos años almacenes para la conservación a largo plazo de una colección (mundial) de lenteja y haba y un duplicado de la colección de garbanzo.

ICRISAT

ICRISAT ha ido asumiendo poco a poco el papel principal en las actividades de recursos genéticos de las plantas agrícolas que caen dentro de su campo de investigación. En 1978 ICRISAT hizo reestructuraciones internas para crear una unidad de recursos genéticos. El IBPGR, en colaboración con ICRISAT, siguió apoyando la recolección de maní en Sudamérica y de sorgo y mijo en Africa del Este y del Oeste. El Comité Asesor de sorgo y mijo, copatrocinado por ICRISAT, celebró su segunda reunión en enero de 1978 (véase p. 43). ICRISAT está construyendo almacenes base para germoplasma de sorgo, mijo perla, maní, garbanzo, rindul y mijos menores.

ICRISAT, en consulta con el IBPGR, invitó a CIAT, ICARDA e IITA a una reunión en enero de 1978, para tratar de la cooperación en la recolección de germoplasma de leguminosas de grano (véase p. 43).

IITA

IITA ha estado en contacto con la Secretaría del IBPGR en relación con la recolección en Africa tanto del Este como del Oeste. En 1978 la Unidad de Recursos Genéticos de IITA llegó a ser plenamente operacional e inició una serie de prospecciones en Africa (véase p. 28). El IBPGR suministró a IITA fondos para la capacitación de becados de postgrado y también para almacenes. IITA aceptó la responsabilidad de almacenar colecciones base importantes de arroz y caupí africanas.

IRRI

Para ejecutar un plan quinquenal de recolección, preparado en el Taller de Conservación de Germoplasma de Arroz IRRI/IBPGR, IRRI ayudó a los países de Asia del Sur y del Sudeste a recolectar cultivares de arroz. Con ayuda financiera de IBPGR, IRRI ayudó al personal de los programas nacionales de Bangladesh, Indonesia y Tailandia a recolectar germoplasma de arroz y a enviar el material a IRRI para su almacenamiento a largo plazo. La segunda reunión del Comité Asesor del Arroz, copatrocinada por IRRI, se celebró en Beltsville, Estados Unidos, en 1978 y completo una lista mínima de descriptores del arroz.