



**International Board for
Plant Genetic Resources**

IBPGR

THE STRATEGY

Approved and issued by the
Board of Trustees, IBPGR, Rome

May 1988

CONTENTS

	Page
SUMMARY	1
IBPGR – ORIGIN AND MANDATE	3
BACKGROUND	4
LONG TERM AIMS	5
NEW DIRECTIONS	5
1 Facilitating world-wide co-operation and advancement	6
2 Promoting germplasm acquisition	6
3 Strengthening the global network of genetic resources centres	7
4 Developing standards of documentation and management	9
5 Understanding the origin, evolution and variation patterns of crop species	10
6 Promoting strategic research	10
7 Providing training opportunities	11
8 Maintaining a world-wide overview of genetic resources programmes	12
RELATIONSHIPS WITH OTHER CENTRES AND INSTITUTIONS	12
CONCLUSION	15

SUMMARY

The late 1980s mark a period of significant change for IBPGR. After the second external programme and management review, February 1986, the CGIAR approved an expanded mandate to enable IBPGR to catalyse whatever actions are needed to sustain a viable international genetic resources network. Important new directions were identified which will guide the evolution of IBPGR well into the 1990s.

Staffing changes approved by the CGIAR are enabling IBPGR to take its place among the CG Centers as a fully functional scientific agency. A team of scientific staff is being assembled that will allow the Centre to undertake, in-house, much of the work previously assigned to consultants and committees. This change in method of operation will enable IBPGR not only to fund work contracted out to other agencies but also to take a much more active role in co-ordination of effort on a global scale and to assume a share of direct responsibility for its effectiveness.

The designation of a Head of Field Programme, appointment of a Head of Research and expansion of the professional staff have led to a major restructuring of the programme. Some initiatives have already been taken and results are becoming evident. Others are still on the drawing boards.

After an extensive programme of germplasm acquisition in its early phase, IBPGR will now consolidate that investment by completing the registration and processing of all passport and characterization data and ensuring that all material is duplicated in at least two base collections. The network of base collections will be strengthened by encouraging advances in germplasm storage technology and improving methods of exchanging information on collection holdings.

Arrangements will be developed to assist plant breeders to obtain germplasm through a network of active collections. A system to ensure that data on genebank accessions reflect changes in botanical nomenclature will be introduced.

A 'genetic resources early warning system' is being developed to enable IBPGR to take all possible steps to collect germplasm from areas under immediate threat of genetic erosion and not already collected. IBPGR Field Officers based in key locations around the world will play a major part in this process.

Maximum use will be made of scientific information from previous collecting missions and many other sources to identify needs for further collecting to complete the sampling of the full range of genetic diversity of crop species and their wild relatives. Special attention will be given to collecting germplasm that could contribute to forage improvement in impoverished areas. In this section of its programme IBPGR will seek to collaborate with all other agencies active in forage improvement in the regions concerned.

Training of personnel to strengthen national genetic resources programmes, which has always been an IBPGR priority, will be expanded to offer more training opportunities in languages other than English and to base a higher proportion of training courses in developing country institutions.

A sharply focused research programme is being developed, in which IBPGR will set clear objectives and priorities and, in this context, will commission research to strengthen the scientific basis of genetic resources activities.

Research will focus on strategic studies utilising the best expertise available anywhere in the world and involving developing country scientists to the greatest extent possible. Results and follow-up research will be transferred to national programmes at the earliest opportunity.

Recognising that IBPGR's co-ordinating role and world-wide mandate demand that special attention be given to developing and maintaining good working relationships with many other agencies, IBPGR has established a Public Affairs Office to work closely with all staff to this end. The Public Affairs Office is committed to raising awareness of the importance of genetic resources conservation internationally.

A new mandate, a reconstituted Board of Trustees, a restructured staff and a new focus for its programme have equipped IBPGR to respond to the changing needs for genetic resources conservation well into the 1990s.

IBPGR – ORIGIN AND MANDATE

In the past few decades, the development of high-yielding varieties of food plants has brought great gains in the fight against world hunger. Genetically superior crop varieties and improved production practices have enabled farmers to increase production steadily, but only at the cost of progressive loss of the genetic diversity that was bound up in the traditional varieties which are, de facto, replaced.

The world community faces the challenge of conserving genetic resources for future needs, and of balancing the total effort involved in resources conservation against the constraints of available time, space, funds and manpower, while continuing to meet current food requirements. To find the right balance is imperative. To get it wrong could imperil the future of sustainable crop production.

While the toll that genetic erosion was taking on the wider gene pools of crop species was perceived as early as the 1940s, it was not until the 1960s that most plant scientists began to understand how serious the situation had become. A series of international technical meetings organised by FAO in the 1960s and early 1970s recommended the establishment of a world-wide network of centres for the conservation of genetic resources. A meeting of the Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research (CGIAR) was convened in 1972 to consider the possibility of creating such a network. The direct result was the establishment of IBPGR in 1974 as an independent entity reporting to and receiving funds through the CGIAR system. The function of IBPGR, as defined by the CGIAR in 1973-74, was, in essence, to identify needs for exploration, collection, conservation and evaluation of plant genetic resources, with particular reference to crops of major economic importance and their wild and cultivated relatives, and to develop a world-wide network of institutions, organizations and programmes able and willing to undertake these tasks.

The first decade of the IBPGR programme focused on collecting of threatened germplasm and establishing facilities and methods for long-term conservation through a co-ordinated international network. Based on the findings of the Second External Programme and Management Review of IBPGR, which reported in February 1986, the CGIAR approved an expanded mandate to enable IBPGR to catalyse whatever actions are needed to sustain this international genetic resources network. Such actions include, in particular, important elements of research and training.

The mandate of IBPGR is to further the study, collection, preservation, documentation, evaluation and utilization of the genetic diversity of useful plants for the benefit of people throughout the world. IBPGR shall act as a catalyst both within and outside the CGIAR system in stimulating the action needed to sustain a viable network of institutions for the conservation of genetic resources of these plants.

IBPGR's role in the CGIAR has been endorsed by TAC in the following terms:

"To ensure that breeders have access to a broad spectrum of genetic materials in the future, the CG system has developed a strong effort to conserve relevant genetic resources. In addition to the germplasm banks at the Centers, the CG system, in collaboration with FAO, has a specialized institution - IBPGR - dedicated to the preservation of genetic resources. It catalyzes and backstops the work of the national research systems and provides leadership and advice on establishing and managing germplasm collections throughout the world"

(CGIAR/TAC: 1987).

BACKGROUND

In the early 1970s scientific priorities for genetic resources conservation were defined in only the broadest terms. Faced with tremendous losses in genetic variability that were reaching crisis proportions in some areas, IBPGR adopted a priority system for crop germplasm collecting. The priorities reflected the relative importance of the crops as staple foods or as sources of economically important commodities, the threat of genetic erosion (loss of genepools as a result of modernization of agriculture, land clearing, desertification, changes in farming systems and other factors) in specific geographic areas, and the need to fill gaps in existing germplasm collections.

In the first decade of operation, IBPGR stimulated a major expansion of germplasm collections of selected priority crops, often in collaboration with organizations already active in areas concerned. During this period IBPGR's priorities were confined, for the most part, to cereals and other staple food crops, including food legumes, oil seeds, vegetables, roots, tubers and fruits.

The building up of germplasm collections was accompanied by an effort to develop suitable conservation facilities, usually at centres where active genetic resources programmes were either established or being developed. High priority was given to an international training programme to strengthen expertise in germplasm conservation in the developing world. As a result of these activities a network of base collections was developed. The base collection network consists of a limited number of centres which have accepted a responsibility to the international community to provide safe, long-term storage for germplasm of particular crops.

In a little over a decade IBPGR had been active in over 100 countries and had entered into numerous collaborative agreements to achieve co-operation between developing and developed countries so as to maximize achievements in germplasm conservation and to ensure the speedy transfer of technology.

As the base collection network was developing, and as gaps in knowledge relating to germplasm storage became apparent, the involvement of IBPGR in strategic research became necessary to provide much-needed technical advice. The report of the Second External Review recommended that IBPGR assume a much larger role in this area in order to sustain the global activities and because appropriate research was lacking elsewhere. IBPGR accepted this challenge and re-organized its programme and staffing to meet new requirements.

LONG TERM AIMS

As a basis for its strategy for the next decade, IBPGR has adopted the following aims:

- 1 to facilitate world-wide co-operation and advancement in conservation and utilization of plant genetic resources by providing scientific leadership, setting scientifically based standards for storage and multiplication of germplasm ex situ and in vitro, and making information freely available and readily accessible within and outside the CGIAR system;
- 2 to promote the acquisition of germplasm of landraces and wild relatives of species important as crops and forages, especially where threatened by genetic erosion or not adequately represented in existing collections;
- 3 to strengthen and sustain the global network of plant genetic resources centres for long-term, cost-effective conservation of seeds and in vitro collections (as appropriate) of crop species and their wild relatives;
- 4 to promote effective utilization of materials deposited in the global network of genetic resource centres by developing high standards for genebank documentation and management;
- 5 to improve the capacity to design efficient genetic resources acquisition programmes and to evaluate and utilize the collections by gaining a better understanding of the origin, evolution and variation patterns of crop gene pools;
- 6 to promote strategic research relating to conservation of germplasm of crop species and their wild relatives;
- 7 to provide training opportunities to increase conceptual, technical and management skills in plant genetic resource conservation.
- 8 to maintain a world-wide overview of genetic resources programmes to achieve maximum complementarity in crop genetic resources programmes.

NEW DIRECTIONS

Changes recommended by the 1986 Review, and a series of internal reviews by the Centre and its Board of Trustees, have identified important new directions which will form the basis of the evolution of IBPGR in the next decade. Some of these initiatives have already been taken and progress resulting from them is already becoming evident. Others are still on the drawing boards.

In addition to a new Mandate the review recommended significant changes in both programme emphasis and institutional management. Recommended changes involved new approaches to seed storage, data management, interaction with national programmes, training, publication of results, and financial reporting. These changes are being implemented progressively. The Board of Trustees was urged to take a stronger policy-making role, to transfer operational responsibility to the Secretariat (Director and Staff), and to renegotiate the relationship between IBPGR and FAO.

1 Facilitating world-wide co-operation and advancement

Staffing changes approved by the CGIAR and implemented in part in 1987, enable IBPGR to take its place among the CG Centres as a fully functional scientific agency. A team of scientific staff is being assembled that will enable the Centre to undertake, in-house, much of the work previously assigned to consultants and committees. This change in method of operation will enable IBPGR not only to fund work contracted out to other agencies but also to take a much more active role in co-ordination of effort on a global scale and to assume a share of direct responsibility for its effectiveness.

By early 1988 a team of 15 professional staff had been assembled at IBPGR Headquarters. This team is complemented by 6 Field Officers serving East and Southern Africa, West Africa, East Asia, South and Southeast Asia, Europe, the Mediterranean and Southwest Asia, and Latin America, and by IBPGR Collectors undertaking 1-2 year programmes of field work and research at key locations.

The strategy for the future is to charge this group of Staff - whose collective professional experience, geographic spread, and first-hand knowledge of problems, achievements and opportunities in plant genetic resource conservation is unparalleled - with increasing responsibility to design and lead a sharply focused programme based on collaboration with developed and developing country programmes and, where appropriate, with other international centres.

IBPGR has already moved away from the collective decision-making by committees which was appropriate to the early phase of its development. The strategy henceforth will be to strengthen staff-directed programmes developed after thorough research, investigation, and consultation with appropriate specialists and potential users of genetic resources in both the developed and developing world.

Subject to satisfactory progress and budgetary constraints IBPGR's involvement with particular genetic resource conservation initiatives will be continued for as long as is necessary to complete the work or ensure that it is fully viable without IBPGR support. It is intended that, where possible, full control of activities begun as collaborative projects will be transferred to national programmes as soon as this becomes a viable option.

2 Promoting germplasm acquisition

IBPGR's germplasm acquisition programme was instrumental in adding 170,000 samples to the world's germplasm collections between 1974 and 1987. The programme was reviewed in 1987 and it was decided that, given the progress that had been made in broad-scale collecting, more emphasis would be placed on detailed planning of selective collecting missions.

The job of collecting germplasm from the field is by no means complete. The next major task for IBPGR is to analyse carefully the information that is now available on species distributions and collection holdings and to design a scientifically based and cost effective germplasm acquisition programme to fill the important remaining gaps. Now that a great deal of broad-scale collecting has been completed it is necessary to fill outstanding gaps by acquiring material on a much more selective and informed basis. The IBPGR Board of Trustees has decided to reorientate the germplasm acquisition programme in this direction, recognising however that imminent environmental threats may still require high priority to be given to general collecting in particular areas not previously covered.

In 1982, recognizing constraints in receipt of germplasm from African centres and difficulties in distributing it quickly to genebanks elsewhere, IBPGR established a small Seed Handling Unit at the Royal Botanic Gardens, Kew, UK to facilitate movement of seeds between Africa and other continents. At the Unit seeds are cleaned, dried and packaged for direct deposition in genebanks, thus avoiding, as far as possible, reductions in seed quality and viability. In view of the success of this venture, arrangements have been made to establish a similar facility at the National University of Singapore to facilitate distribution of materials to and from Asia. The feasibility of developing another such Unit for Latin America will be explored.

It is intended that, within the next few years, all seeds collected by or in collaboration with IBPGR will be forwarded without delay to a Seed Handling Unit, apart from the duplicate samples which are always retained by the country of origin. The functions of Seed Handling Units will be expanded to include providing, to IBPGR Headquarters, records of the destinations of all samples handled, and advice of any samples requiring multiplication to provide enough material to be deposited in two base collections. These developments will help to ensure that all IBPGR-funded collecting is accompanied by basic documentation, that all samples are safely conserved in duplicate and that small samples are not mislaid. These measures are designed to upgrade the quality, and hence the usefulness, of germplasm collecting sponsored by IBPGR and, by example, to improve the quality of germplasm collecting procedures generally. Where possible, the procedures will be applied to past acquisitions which have not always received desirable standards of treatment.

Despite the reduction in the number of collecting missions inherent in this new collecting strategy, IBPGR will continue to respond quickly to known threats of genetic erosion by initiating collecting missions and will seek to improve its forecasting capacity by refining and using a genetic erosion early warning system.

An attempt will be made to co-ordinate information on all germplasm collecting planned by national and international organizations and to encourage collaboration in the planning of collecting missions as far as possible. When resources become available, information on all known collecting missions will be incorporated in a global database.

IBPGR takes the view that neither political factors nor administrative difficulties should be accepted as irresolvable impediments to germplasm collecting and thus allowed to become excuses for failure to conserve genetic resources. IBPGR is committed to strengthen its efforts to overcome obstacles to the collection and safe storage of crop germplasm.

The germplasm acquisition programme received a major impetus from the appointment of a full-time Germplasm Acquisition Officer in August 1987. IBPGR intends to maintain a cadre of full-time Collectors, at least for a considerable period into the next decade, and to involve them fully in the action to improve the quality of documentation which accompanies the material collected.

3 Strengthening the global network of genetic resources centres

Initially the perception – and perhaps the reality – was that only a very limited number of institutions would have the interest and the facilities to undertake long-term storage and management of crop germplasm. Already about 40 institutions have accepted responsibility for these tasks; these include IARCs within and outside the CG system and large national programmes in both developed and developing countries. These organizations form a network of base collections.

An urgent priority for IBPGR is to ensure that all accessions are duplicated in two base collections. Whereas this principle was adopted as an IBGPR policy from the beginning, the process of duplication is not yet completed and some centres holding base collections are looking to IBPGR for help in duplicating their material.

During the past 10 years many more countries have become involved in conservation and use of plant genetic resources and have sought IBPGR's assistance to establish their own germplasm collections for short-term use in crop breeding programmes and for longer term storage.

The major work-load associated with genetic resources conservation falls on active collections. These have responsibility for characterization of their accessions and for multiplication to provide material for users and to replenish stocks in base collections periodically as viability declines. Both processes are expensive in terms of financial and human resources.

The plant breeder seeking new germplasm for crop improvement cannot obtain it directly from base collections. Active collections, therefore, have a central role in a genetic resources network, which depends on their collaborating with each other and functioning as a link between base collections on the one hand and plant breeders on the other. This component of the global network has yet to be established. It will be a major area of activity for IBPGR in the coming decade, based on preliminary studies commenced in 1987.

The global network of genetic resources centres, comprising both base and active collections, will be strengthened by exchange of information on accession holdings and by fostering of collaboration between members with common interests and problems, e.g. on a crop or regional basis. Improved communication and information exchange within the network must be developed to provide a sense of cohesion and facilitate exchange of germplasm and sharing of expertise. Participation of all countries located in regions of major crop diversity is the most important goal. These happen to include some of the poorest nations and IBPGR will continue to stimulate action by other International Centres, donor countries and neighbouring countries, to support the efforts of those willing to collaborate in germplasm conservation but unable to carry out the desired programmes from their own resources. Each participating country will be asked to designate a Liaison Officer to act as a co-ordinating link for that country's collaboration in the network. The effectiveness of the Liaison Officer scheme will be monitored and procedures improved or training provided, as appropriate.

Most of the pre-1988 achievements of the global network of plant genetic resources centres have been in conserving, in base collections, seed resources for which appropriate technology is comparatively well established. Arrangements for the conservation of vegetatively propagated crops and of those with recalcitrant seeds (which do not survive desiccation or freezing) are much less advanced. Most of the tropical fruits, some tuber crops, and some important plantation crops such as banana, coconut and cocoa, fall into this group.

A major IBPGR objective is to promote the development of in vitro collections of these crops and their wild relatives, and to make complementary arrangements in other crops where both in vitro and seed collections are needed. It is envisaged that the promotion and support of research to develop cost-effective technologies for ensuring long-term preservation of germplasm in vitro will be a key element in achieving this objective. The eventual recovery of field-grown plants which have undergone the minimum of genetic change during in vitro conservation is an essential requirement. As the science of cryopreservation of plant material is in its infancy, a considerable amount of basic methodological research is envisaged, in parallel with conservation of living collections in field genebanks.

The handling of in vitro material – especially its international exchange – presents special problems of quarantine since tissue cultures are much more likely to be vectors of viral pathogens than are consignments of dry seeds. IBPGR recognizes the need to enable the free and safe exchange of in vitro germplasm collections and to ensure that international in vitro genebanks are established within the network as quickly as possible. Accordingly, IBPGR will undertake a programme of research on methods of disease indexing for application, in the first instance, to materials collected in its own germplasm acquisition programme. In addition, IBPGR will collaborate with FAO to investigate quarantine practices and capabilities, and will study the contribution that new technologies in the field of molecular biology could make to facilitating quarantine screening and hence the speedy and safe transfer of germplasm. This action is expected to stimulate a review of quarantine regulations to take account of new technologies.

4 Developing standards of documentation and management

Whereas IBPGR is not, itself, a collection management agency it has a particular responsibility to take all possible steps to ensure the safe storage of materials acquired with its own and its collaborators' funds, as well as a general responsibility for promoting the safety of plant genetic resources world-wide. To this end, IBPGR has substantially upgraded its germplasm data base and undertaken the development of a Genetic Resources Assessment Scheme (GRAS) which will enable genebank managers to assess the quality of their collections. GRAS will be introduced to the managers of all base genebanks in the global network and will be made available for use in any genebank.

Scientific standards for the maintenance of base collections were drawn up by a committee of experts on the basis of the most up-to-date research. IBPGR has completed an initial round of monitoring of the management of base collections in relation to these standards. The strategy for the next decade is to ensure that all material stored in designated base collections is made secure by compliance with acceptable standards.

A programme of research on germplasm storage technology will be conducted with the objective of improving cost-effectiveness in storage of base collections. As the cost of germplasm storage in genebanks is substantial, especially in countries with high ambient temperatures, IBPGR accepts an obligation to pursue vigorously any line of research which offers prospects of significantly reducing this cost.

The base genebank holdings of some of the major crop species have now reached such a size that replication and characterization of all accessions could not be carried out with the resources likely to be available for these tasks. It is important therefore to be able to designate, from amongst the total holdings, a core collection representing most of the genetic diversity and yet containing a number of samples that is small enough to be intensively studied and managed. It is expected that the vast majority of user requirements could be met, through active collections, from such a core. IBPGR has begun to investigate the theoretical principles of designating core collections and, after completing these studies, will develop practical guidelines for use by genebank managers.

It is recognized that some of the base collections in the network are not afforded legal protection by the countries of ownership. High priority will be given, in consultation with FAO, to encouraging and, where possible, assisting national programmes to seek statutory protection for their germplasm collections as a means of guaranteeing germplasm security and ensuring that national and international investments in genetic resources conservation cannot be negated by administrative decisions. Where

continued safe storage of collections cannot be guaranteed, either for administrative or practical reasons, IBPGR will assist in arranging transfer of materials to safer storage and will ensure further duplication of the duplicate collection in the event of all or part of a base collection being lost.

IBPGR will continue to maintain and extend its computerized database of summary information of all germplasm collected through IBPGR-supported missions. Work on international crop data bases, which hold information on samples maintained in major collections will be expanded. Other databases – for example on ecogeographic distributions, species relationships, *in vitro* technologies and quarantine issues – will continue to be developed and expanded. High priority will continue to be given to encouraging and assisting genebank managers to improve the documentation of their collections in accordance with standards developed by IBPGR in consultation with managers and users.

5 Understanding the origin, evolution and variation patterns of crop species

A better understanding of the origin and evolution of many crop species, and of the genetic variation within their wider gene pools, is essential to develop adequate and cost-effective collecting strategies. This work is dependent upon international collaboration because gene pools transcend national and regional boundaries and are distributed differently for every crop. By virtue of its broad mandate, IBPGR is the organization best placed to co-ordinate such research.

Much information on variation patterns and species relationships has been gathered by the scientific community and exists in many forms. However, apart from that appearing in scientific journals – which nowadays rarely publish more than brief summaries of information – little is readily available and even less has been collated in ways that would make it useful for purposes such as designing germplasm acquisition programmes or determining the optimum size for a collection from either a scientific or an economic perspective. In the next phase of its programme IBPGR intends to emphasise the analysis of patterns and ranges of genetic variation using both conventional methods and new biotechnology.

6 Promoting strategic research

Research was a secondary function of IBPGR in the first decade although the First TAC Quinquennial Review (1980) found that it had "unavoidably and properly figured in the programme". The Second Review called for a strong new research thrust and highlighted areas urgently requiring research attention. It recommended research on several topics including methods of collection and storage of germplasm, plant health (as it relates to international transfer of genetic resources), molecular biology, breeding systems, and techniques for sampling and measuring genetic variability (in order to alleviate the evaluation work needed for breeding purposes). The review panel recommended that IBPGR establish an in-house research capacity with appropriate expertise and facilities. It further recommended that IBPGR, in expanding its research activity, develop a strategy that would ensure an integrated and sharply focused research programme.

The IBPGR Board of Trustees agreed with and accepted the thrust of these recommendations and has given high priority to the development of a more clearly defined research programme. The major emphasis will be on strategic research but upstream research will be undertaken on topics where fundamental advances in knowledge are essential before strategic or applied research can be undertaken. A gradual and balanced shift towards the upstream levels of research is in line with TAC priorities for research within the CGIAR system.

The research staff will be expanded to a level that is realistic in terms of the overall level of secure funding available to IBPGR and that will provide an appropriate balance between field and research elements of the programme. There are no plans, however, to establish research facilities to undertake laboratory-based scientific research at IBPGR Headquarters in the foreseeable future. The Board of Trustees has taken the view that, to establish an effective research unit within IBPGR to cover such a large research mandate as the review suggested, would require a much larger team of scientists than the 8-10 envisaged by the panel.

The strategy for the foreseeable future will be for the IBPGR research team to identify research priorities, promote and develop projects by bringing together (either physically or in networking arrangements) collaborative research efforts based around the best available expertise, facilities and geographic locations, to address problems with direct application to genetic resources conservation. Particular emphasis will be given to participation of scientists from countries especially concerned with the problems being researched and those best placed to extend or apply the results of the research through national research programmes.

The research staff of IBPGR will have an important role in monitoring progress and providing continued co-ordination and advice, as appropriate, throughout the course of the research. Where feasible, arrangements will be made for them to participate in projects as research collaborators.

7 Providing training opportunities

One of the most important long-term contributions of IBPGR is the training provided to scientists and technicians for national, regional and international institutions engaged in plant genetic resources conservation. Over 1,300 trainees, mostly from developing countries, have already participated directly in IBPGR's training activities, including 300 who have received postgraduate degree training. The training programme has also included short-term specialized technical courses, workshops, individual study tours, and intern fellowships at genetic resources laboratories and centres of academic excellence in this field.

Trained manpower in the genetic resources field remains in short supply in most developing countries and IBPGR sees a need to continue to upgrade scientific, technical and management skills to meet the essential needs of national and regional programmes. The established pattern of activities has proved very successful in meeting clearly identified manpower needs and the same overall strategy for training will be continued.

Trainees will continue to be drawn from developing countries. In the case of IBPGR-sponsored strategic research carried out at international institutions or in developed country laboratories, researchers from developing countries will be involved, wherever possible, as collaborators. Opportunities will be taken to have young scientists from developing countries trained in research by participating in such projects through the IBPGR intern programme or similar arrangements.

There are two important aspects in which the training programme will follow new directions. First, in order to make training programmes more relevant to the situations in which the skills will be applied, IBPGR intends to make greater use of national centres in developing countries as training sites and to encourage and assist these centres to develop training plans related to specific requirements for personnel in the genetic resources conservation field. Secondly, the Board has adopted a policy to increase substantially the proportion of its training programmes offered in languages other than English.

8 Maintaining a world-wide overview of genetic resources programmes

More than a decade of experience in stimulating and participating in germplasm conservation projects in many countries has given to IBPGR a unique body of experience which is of particular value in carrying out its function to catalyse action within and outside the CG system. One of the essential requirements of this function is a broad overview of world-wide activities in this field. Experience to date has shown very clearly that, without the benefit of co-ordinated planning, resources can be dissipated in unnecessary duplication of work. In line with its mandate as a catalytic organization IBPGR will concentrate on stimulating integrated, collaborative activity.

The fact that IBPGR owns no laboratories, collections or real estate is important in conferring on the organization the responsiveness and flexibility necessary to deal with the changing range of problems and challenges in genetic resources conservation. IBPGR's advantage lies in its role as a catalytic organization. By operating in collaboration with well over 100 countries, it has access to a very broad information network. Increasing use will be made of opportunities to apply this information in co-ordinated programme planning. By so doing, it will be possible to improve the capacity to respond quickly to opportunities and needs, especially those affecting developing countries.

RELATIONSHIPS WITH OTHER CENTRES AND INSTITUTIONS

The Technical Advisory Committee to the CGIAR made a specific recommendation that IBPGR's Strategy should include an elaboration of the specific responsibilities of IBPGR in relation to other CG centres, and to regional and national institutions that deal with plant genetic resources. Furthermore, the co-ordinating role of IBPGR and its worldwide mandate make it essential that much attention be given by the Centre to establishing and maintaining good working relationships with a wide range of other agencies. Recognising the importance of this element of IBPGR's operation, the Board of Trustees approved the establishment of a Public Affairs Office within the Centre. The first Public Affairs Officer was appointed in 1987. The Public Affairs Office will participate in all major endeavours of the Centre and work with all Centre staff across the whole range of their activities.

Relationships with international centres and agencies

IBPGR shares common objectives with most other CG centres (IARCs) insofar as they have genetic resources conservation functions for the crops covered by their respective mandates. Clearly, there is much to be gained from close liaison between IBPGR and IARCs, in terms of benefits from the total CG effort in this field. IBPGR has already developed co-operative arrangements with all the IARCs concerned with the biology of crops and intends to work progressively to improve both the spirit and scope of collaboration with these centres. In this respect the expansion of the research element of the IBPGR programme creates new opportunities. IBPGR is committed to evolve collaborative working arrangements and mutually satisfactory divisions of function with the centres individually, with emphasis on building bridges rather than fences. High priority will be given to keeping inter-centre relationships under review. The Board of Trustees welcomes the initiative of TAC in developing a CGIAR policy on plant genetic resources as a means of clarifying various issues that are relevant to IBPGR's relationships within the CG system and firmly believes that the best use of the system's collective resources must be the ultimate objective.

Three of the IARCs – IFPRI, ISNAR and IBPGR – have mandates that are neither crop- nor region-specific. These three have global mandates which, inevitably, impinge on the specific mandates of other centres. The Board sees advantages in sharing experiences and developing policies for inter-centre collaboration jointly with IFPRI and ISNAR.

Close working relationships have been established with other international organizations whose mandates include conservation of natural resources, e.g., FAO, UNEP, Unesco, IUCN. In the past, these relationships have been mainly on an ad hoc or a project basis, except for the history of close ties with FAO. It is intended to strengthen and where appropriate formalise links with other international organizations, where closer co-operation would further the overall objectives of plant genetic resources conservation.

IBPGR has continued to function, administratively, as a unit within the Plant Production and Protection Division of the Agriculture Department of FAO.

In 1983, FAO established a Commission to provide a legal and political umbrella for world-wide plant genetic resources conservation and utilization. The programme of the Commission is expected to be clarified at a meeting scheduled for April 1989, at which IBPGR has been requested to present its Strategy. The terms of reference of the Commission impinge on the mandate of IBPGR and there is a need to clarify the respective roles. Further developments of a working relationship between IBPGR and the Commission will be possible following clearer definition of the Commission's programme at its 1989 meeting.

Collaboration with national and regional programmes

For each country included within its programme IBPGR has adopted a strategy of developing projects in collaboration with national institutions and local scientists, to provide a package of assistance tailored to the country's individual requirements. These arrangements take account of the strength of the national programme, the expertise and physical facilities available within the country, the specific crops that are important in the area, and the work already accomplished. Most participating countries recognise the need for a genetic resources improvement programme as an essential part of their crop improvement efforts and are prepared to allocate resources to collaborate with IBPGR. These arrangements have proved to be mutually satisfactory and will be continued.

During its first decade IBPGR did not attempt to stimulate national programmes in countries that have not, themselves, attached importance to genetic resources conservation. It is not that their participation has been seen to be unimportant – in fact, some such countries occupy critical ecogeographical positions with respect to the distribution of crop gene-pools – but rather that a policy of collaborating with those eager to collaborate seemed to offer the best return for IBPGR's limited resources. However, as a next step, IBPGR will make strenuous efforts to develop collaboration with – at least – those countries whose native floras contain germplasm that is especially important in the global genetic resources conservation effort and is under threat of erosion.

IBPGR programmes have proved most effective, in the main, when crop-based rather than region-based. Nevertheless, regional co-operation has been advantageous in particular cases and will continue to be promoted where appropriate, for example, in obtaining agreement on joint arrangements for long-term storage of collections, organizing training courses, and sharing information, experience and technology among

IBPGR-supported genetic resource activities. Although direct collaboration with national programmes will continue to be the norm, it is intended that co-operation between IBPGR and regional institutions should be pursued whenever it would be mutually beneficial.

Like several other CG centres, IBPGR has gained advantage from developing its own regional infrastructure. As a means of strengthening linkages with national programmes and international centres, IBPGR has adopted a policy of establishing field offices mainly to facilitate co-ordination of field activities in areas of great genetic diversity.

Small IBPGR Field Offices are established, either in IARC premises or associated with strong national genetic resources conservation programmes, using shared facilities wherever possible. The Field Officers are the IBPGR representative in the developing world and are responsible, among others, in their area of operation to:

- . create awareness of plant genetic resources at the national agricultural research centres, universities etc.;
- . participate in workshops, training courses etc. and assist in organizing them;
- . participate in scientific work to strengthen national efforts, including hands-on demonstrations, maintenance of IBPGR standards for germplasm conservation, monitoring of all genetic resources activities, monitoring of genetic erosion, information gathering and periodic assessment of activities;
- . establish and maintain computerized data bases for plant genetic resources activities;
- . liaise with IARCs, bilaterally funded genetic resources projects and relevant non-governmental organizations e.g. local representatives of WWF, IUCN;
- . provide a scientific evaluation of all field project proposals submitted for IBPGR support; and
- . organize and participate in field surveys and collecting work.

This regional infrastructure has proved effective and will be expanded to cover, at least, the following areas: Latin America; Europe/Southwest Asia/North Africa; West Africa; East and southern Africa; South and Southeast Asia; and East Asia.

CONCLUSION

Recent policy initiatives by the Board of Trustees based on guidance from the CGIAR have lifted IBPGR to a new dimension. Actual and planned increases in staff resources, and a clear mandate for IBPGR involvement in research, provide many new opportunities to strengthen the scientific basis of germplasm conservation throughout the global genetic resources network. The work of the next 10 years will enable the investment of the early years of the programme – especially in germplasm collecting, establishment of base genebanks and training of genebanks managers – to be fully capitalized.

Much now needs to be done in terms of increasing the understanding of germplasm diversity, supporting research into storage technology, and improving the documentation and management of material already collected. IBPGR does not have a mandate to enter the crop breeding arena but its role clearly involves ensuring the provision of germplasm in such a condition and with such a body of reliable accompanying information that plant breeders can readily make use of it. This will be a major focus of IBPGR's activities in the next decade.