

**EUROPEAN COOPERATIVE PROGRAMME FOR THE
CONSERVATION AND EXCHANGE OF CROP GENETIC RESOURCES**

**Report of the fourth meeting of the
Technical Consultative Committee**

**held at Szeged, Hungary
4-6 October 1989**

**IBPGR
Rome, 1989**

The International Board for Plant Genetic Resources (IBPGR) is an autonomous international scientific organization under the aegis of the Consultative Group on International Agricultural Research (CGIAR). IBPGR was established by CGIAR in 1974. The basic function of IBPGR is to promote and coordinate an international network of genetic resources centres to further the collecting, conservation, documentation, evaluation and use of plant germplasm and thereby contribute to raising the standard of living and welfare of people throughout the world. Financial support for the core programme is provided by the governments of Australia, Austria, Belgium, Canada, China, Denmark, France, FRG, India, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the UK and the USA, as well as the United Nations Environment Programme and the World Bank

Citation:

IBPGR. 1989. International Crop Network Series. 3. Report of an International Workshop on Beta Genetic Resources. International Board for Plant Genetic Resources, Rome

ISBN 92-9043-192-x

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INTRODUCTION

The Technical Consultative Committee (TCC), of Phase III of the ECP/GR was convened at the Cereal Research Institute (CRI), Szeged, Hungary, 4-6 October, 1989. The CRI provided the full accommodation costs of the participants as a cash contribution to Phase III of the ECP/GR. 18 countries were represented (refer to Appendix I for the list of participants). Prof. Czembor, Poland and Dr. Byrne, Ireland sent their apologies for being unable to attend due to unforeseen circumstances.

Prof. Erdei, Director of the CRI welcomed the participants and gave a short introduction on the activities of his Institute. Dr. Göhri, Head of the Research Department, Ministry of Agriculture, Budapest, Hungary emphasized the role of national genebanks for breeding programmes and the division of labour at an international level for more rational management of genetic resources. Mr. Perret, ECP/GR Coordinator, gave on behalf of the IBPGR Acting Director, Mr. van Sloten, a short historical review of the ECP/GR

Mr. van Sloten, who arrived late on the first day of the meeting, provided a general overview on recent developments in IBPGR, and especially its relationship with FAO. He also conveyed apologies for absence from Dr. J.T. Williams, the Director of IBPGR.

Dr. S. Galanopoulou was unanimously elected as Chairman. The Agenda, as approved, is shown in Appendix II.

REPORT

EVALUATION OF PHASE III OF ECP/GR

Reporting on ECP/GR membership and financial accounts

1. The formal membership of the ECP/GR, financial accounts and the budget revision for government cash contributions (refer Appendix III) were presented by the ECP/GR Coordinator. The latter outlined that a third of the expected contributions for Phase III, which is ending in December 1989, had not yet been received by IBPGR in October 1989. This situation has created serious bottlenecks for the proper management of the Programme and several planned meetings (e.g. Brassica meeting, Workshop for wild Prunus spp.) had to be cancelled. The TCC meeting agreed that prompt action from governments in fulfilling their obligations would have resulted in greater activity for the same costs. Members, whose governments had not yet met their commitments for cash contributions, promised to make a plea to the appropriate authorities.

The operational running of this special project has required an additional amount of funds, subtracted from the IBPGR core budget (publication of reports, participation of IBPGR staff in ECP/GR meetings, administrative expenses which have largely surpassed the budget item 'Miscellaneous'); the ECP/GR Coordinator reported on IBPGR difficulties in meeting such additional charges in the future. The revised budget, as presented in Appendix III, was accepted by the TCC with no particular comments and with the understanding that 1989 expenditures were estimates and therefore still subject to modification.

Formal Working Groups

2. The members divided into six subgroups, each to assess one of the formal Working Groups of the ECP/GR (Allium, Avena, barley, forages, Prunus and sunflower). The conclusions of these subgroups were then presented in a plenary session and these statement, as approved by the TCC, are provided in Appendix IV.

Ad hoc action

3. Beta, Brassica, Pisum and Vitis were crops for which ad hoc action had been recommended by the third TCC meeting (Reykjavik, Iceland, 17-19 December 1985) for Phase III. Mr. Perret presented the events which lead to the development of an international Beta network. The latter was initiated in November 1987 by the implementation of an ECP/GR Beta network at the opportunity of a Workshop held in the Centre for Genetic Resources the Netherlands, (CGN) Wageningen, Netherlands. Subsequently, an international Beta Genetic Resources Workshop held in CGN in February 1989, and funded by IBPGR, recommended an international plan of action and members elected a Beta Coordinating Committee to follow up the progress until a new meeting, including all participants of the network, could be organized. Dr. Hardon, Director of the CGN, which as the international Beta database is playing a key role in this network, gave further explanations on the scientific collaboration which is carried out or aimed at by the members. The TCC members expressed their high appreciations of the achievements and objectives of this network.

4. Some explanations on the prospects of a European Economic Community project on Cruciferae genetic resources, which includes collecting, regeneration, characterization and some specific evaluation of Brassica, were provided by the ECP/GR Coordinator. The latter participated in all meetings of this EC programme to insure the further development of a harmonious collaboration with other ECP/GR countries which are not members of the EC. Unfortunately the EC Cruciferae project has not materialized yet due to lack of financial support.

The ECP/GR Secretariat was unable to convene an ad hoc meeting for developing an European Brassica collaborative programme due to financial constraints. Nevertheless the Plant Breeding and Acclimatization Institute, Radzikow, Poland accepted at the end of 1988 to act as an European database for cultivated Brassica and to date more than 5 countries have sent their passport data to this database. IBPGR support to the wild Brassica database at the University of Madrid, Madrid, Spain was also mentioned.

5. Insufficient funding to the Programme has also impeded the convening of Workshops for Pisum and Vitis. Nevertheless, in the case of Pisum, leading Pisum curators/scientists met during the EUCARPIA Congress, Göttingen, FRG, February, 1989 at the request of the ECP/GR Secretariat. It was agreed during this short Pisum working session that the Plant Breeding Station, Wiatrowo, Poland, should act as a European Pisum database. Consequently, the ECP/GR Secretariat supported the visit of the curator of this new European database, Dr. Swiecicke, to the John Innes Institute, UK, for data transfer from this important database to Wiatrowo and for discussions on the future structure of the European database.

General assessment of Phase III

6. The TCC applauds the considerable progress of the European databases, which is apparent through the increased number of European collections/institutions exchanging data, as well as through the increased extent and quality of data registered in these databases. Most of the recommendations for collecting missions during Phase III have been fulfilled. The TCC also notes with satisfaction that collaborative activities of Working Groups are now going beyond the necessary level of information exchange and collecting activities, and includes achievement of plans of action which will greatly improve the management of genetic resources collections sensu lato, e.g. use of reference varieties for better evaluation, rationalization of collections, implementation of core collection, enhancement of use of wild species. This demonstrates that Working Groups have now reached maturity and that the concept of European crop specific networks is fully operative. The TCC noted that many of the achievements, especially those of the European databases, have been performed without additional support from respective Governments and members commend the scientists who have been instrumental in this; they outline that the results up to now are astonishingly high in comparison to the low level of cash contributions and additional support provided by Governments.

Finally, the TCC recognizes that financial constraints explain the lack of substantial progress for collaborative action on wild Prunus spp., Brassica, Vitis and Pisum.

SPECIFIC PROPOSALS

Pilot study for establishment of European forages core collections and European barley core collection

7. The forages Working Group had agreed at its third meeting in Montpellier, France, January 1989, that the implementation of forages core collections was necessary to enhance the evaluation of forages germplasm, improve services to users and help in focusing the scarce funds which are available for regeneration to most valuable accessions. Consequently a task force met in Aberystwyth, UK, in July 1989 and its proposal for the establishment of two pilot core collections (Lolium perenne and perennial Medicago) is provided in Appendix V.

Similarly, the barley Working Group, at its third meeting, Gatersleben, GDR, April 1989, considered that the establishment of a European barley core collection was a prerequisite to better use of available genetic resources and to deeper collaborative evaluation of a subset of the entire collection. The recommendations of the Barley Core Collection Committee, which met in CGN, Netherlands, September 1989, are provided in Appendix VI.

The TCC enthusiastically supported the concept of a core collection as presented by both Working Groups. However, it was noted that such projects were requiring substantial funding and a lengthy discussion followed on possible ways to ensure their execution. Members concluded that the TCC, as a matter of principle, should limit its role to requiring funds which are absolutely vital to the continuation of the Programme in its globality and that the TCC had no mandate to ask for financial support of specific Working Group projects, which have some research components. Nevertheless TCC members agreed that these types of projects, which require extra funding, are essential for the good development of European collaborative activities, and in this context the TCC recommends that IBPGR and other international organizations identify donors, when and where required. Concerning the two core collection projects, the following was recommended:

Forages: The first step of the establishment of two pilot European forages core collections is a national and logical expansion of the duties of European databases (requests for additional data from European forages collections and full exploitation of data by diverse statistical methods, e.g. component analysis for selecting accessions to be included in the core collection). Therefore countries which have accepted responsibilities for these two databases should be approached by IBPGR and should be requested to support this first step as contribution-in-kind to the ECP/GR (refer to para. 15, institutional duties of European databases).

The second step which consists in testing the core collection concept in one or more locations with further recording of evaluation data may be quite expensive, and at this stage, cannot be requested of any specific countries. It was agreed that the funding of this second step should be considered only after the selection of accessions to be part of the core collections (first step) so that the best approach to seek funds can be discussed on a concrete basis.

Barley: The institute responsible for the European barley database should commit itself to ensure necessary staff time and expertise to fully exploit data available in its database. Members of the TCC agreed that additional funds necessary for the implementation of this barley core collection, should be included in the budget of the future ECP/GR programme in consideration of the importance of this project to barley curators and users and, also, because these funds will be entirely dedicated to the convening of additional small meetings of barley specialists which will directly continue to enhance collaboration between European Institutes.

Collaborative enhancement of wild *Avena* germplasm

8. The Avena Working Group, since its creation, has given particular attention to the collecting, characterization and evaluation of wild species. At its third meeting, members noted that only two institutions (Svalöv, Sweden and WPBS, UK) had until now been involved in these activities; and they recognized that, although good progress had been achieved, the rate of work should be accelerated in order to enhance the use of wild Avena material into breeding programmes. In addition the Avena Working Group outlined that use of wild germplasm was not only dependent on its multiplication, characterization and evaluation, but that integration of genes into cultivated genotypes (pre-breeding) was a prerequisite. Consequently a proposal for the implementation of a wild Avena programme which will require substantial funds to be fully successful was presented to the TCC (refer Appendix VII).

TCC members commend the scientific approach which was taken and recognized that, indeed, the enhancement of wild genetic resources would only be achieved through a truly collaborative action involving as many national programmes as possible. Furthermore, the TCC expressed its strong concern about the actual decrease of funds directed to pre-breeding. These activities, compared to biotechnology, may not bring major scientific recognition from the academic community, but they are absolutely vital to ensure, at long-term, the genetic variability of cultivated crops. The TCC recommends that IBPGR, eventually in collaboration with other international organizations such as FAO, approach donors for funding of this project. It was recommended furthermore that members of the Avena Working Group as well as TCC members help in their personal capacity to identify the appropriate donors.

Long-term commitments from Governments for European *Prunus* conservation network

9. The Prunus Working Group in its third meeting, assessed the existing status of European Prunus collections (refer to Appendix VIII). In view of the dangers of disappearance of invaluable material in many ex situ collections, Prunus Working Group members asked the TCC to call for more governmental support to ensure the future maintenance of these ex situ collections. Following a detailed and vivid discussion, the TCC agreed that each participating country should take a firm commitment for the long term maintenance of its original material and that the "European Prunus field genebank" should ultimately consist of all institutions holding original material, each committing through a formal agreement to inform the European Prunus network/database of unavoidable eradications at least two years in advance. The TCC also agreed that there was an urgent need for the nomination of a tree fruit Liaison Officer who would stimulate exchange of data between Prunus curators and the European Prunus database, follow-up the situation of ex situ collections in his country and report and liaise with other tree fruit Liaison Officers in the framework of the Prunus Working Group.

RECOMMENDATIONS FOR THE FUTURE OF THE ECP/GR

10. Positive indications had already been given by many Governments on their intention to continue the ECP/GR and on their willingness to ensure necessary funds for its continuation. Members whose governments had not been able to give a preliminary statement reported on the position of their countries. It appeared that a large majority of countries are willing to fund the programme at the level of Phase III, but it was also obvious that due to governmental budget constraints the substantial increase of funds necessary to carry out the different projects envisaged by the Working Groups, could not be expected. In addition, a few countries announced that they would be unable to contribute in convertible currency to the future of the Programme, but representatives of these countries informed the meeting that they would be ready to contribute with specific input-in-kind (e.g. hosting of Working Groups with payment of full accommodation of members, outstanding services of databases, etc.) which could largely counterbalance the cash contributions in convertible currency provided by other countries.

Considering the need to ensure meetings of Working Groups for the continued development of the ECP/GR, considering the new fields of collaborative activities, e.g. core collection, enhancement of wild species, in situ studies, which will be tackled by Working Groups in the future, the TCC unanimously recommends the continuation of the ECP/GR under a Phase IV. Members also note that IBPGR, to which the ECP/GR Secretariat belongs, has provided coordinating services which were commended by the Working Groups and which were also functioning to the general satisfaction of Country Coordinators; the TCC therefore recommends that IBPGR continues to ensure the general coordination of the Programme. Members recommend that IBPGR, as coordinator of the European Programme, continue for the benefit of all participating countries to strengthen its collaboration with all other organizations dealing with genetic resources and especially FAO. The latter should receive invitations, as an observer, to all Working Group meetings as well as TCC meetings. They also recommend that all efforts be undertaken for convincing the few European countries, which are not yet formally participating in the ECP/GR, to join.

Taking into account that the conservation and exchange of crop genetic resources was now mainly due to the efforts of the ECP/GR, a practice between European countries which cannot be denied, the TCC agreed that the project be retitled "European Cooperative Programme for Genetic Resources Crop Networks" in order to give more emphasis on the development of European crop networks, but it was outlined that the programme should continue to be known and publicized under the abbreviation "ECP/GR", so that its specificity and previous achievements in reaching a successful European collaboration on genetic resources may not be forgotten in the course of time.

11. The TCC recommends to governments the budget which is provided in Appendix IX. Members stressed that the funds which are required are of a rather small scale compared to the extent of the objectives for Phase IV. Cash contributions for Phase III of the Programme (1986-1989) had remained at a constant level, and the 5% annual inflation increase for Phase IV was considered as vital to ensure the development of the programme.

12. A lengthy discussion followed on the internationalization of some of the Working Groups. The TCC agreed that ECP/GR had a natural European vocation, so it was emphasized that the budget (as provided in Appendix IX) should be exclusively dedicated to the strengthening of European activities. This, of course, does not mean that a stronger interaction of European Crop Working Groups with other regions of the world was not called for. It was noted that the International Interim Committee on Barley Genetic Resources had taken the objectives and achievements of the ECP/GR Barley Working Group as a model for future international barley collaboration.
13. The TCC fully endorsed the general objectives of each Working Group for the future phase of the European Programme, as prepared by the ECP/GR Secretariat, in accordance with the working plans of the Working Groups. These Working Group objectives are provided in Appendix X.
14. Members considered at length which additional crops should be included in the activities of Phase IV. A first list of potential crops was agreed as follows: Brassica, Citrus, maize, olive, Pisum, potato, Vitis, wheat.

Dr. Del Piero, representative of the FAO Regional Office for Europe, informed participants about the activities of the FAO European Research Networks, including crop networks on olive, sunflower and maize. Recognizing that IBPGR and FAO are already collaborating on sunflower, the TCC recommends that similar collaboration be extended to maize and olives. The TCC was looking forward to receive reports of both organizations on progress of collaboration in this area.

A lengthy discussion followed on wheat. The extent of the work to be achieved in comparison to the limited available budget, as well as the already existing coordinating activities in the Mediterranean region by ICARDA, led the meeting to withdraw this crop. Citrus and potato are certainly crops of high interest but the main genetic diversity is located in non European regions. The implementation of European Working Groups for Brassica, Vitis and Pisum was unanimously agreed by the TCC. Ad hoc action had been planned for these three crops in Phase III of the ECP/GR but financial constraints had impeded the convening of ad hoc meetings (see para. 3).

15. The TCC examined at length the best mechanisms to ensure self sustainability of Crop Working Groups. As the achievements of Phase III were mainly due to the goodwill of scientists, members were anxious to formalize arrangement in order that the participating institutions receive stronger support from their authorities. Members agree that the role and responsibilities of the Country Coordinators and of the European databases should be better defined..

In summary it was agreed that IBPGR will ensure that one-quarter of the time of its Crop Genetic Resources Network's Coordinator and one-quarter of the time of a secretary is made available for overall coordination of Phase IV of the ECP/GR. IBPGR will furthermore, make available at no extra costs its overall infrastructure and expertise to the benefit of the project.

Country Coordinators should be clearly identified by their sponsoring Ministries as acting on their behalf in ECP/GR matters. The Country Coordinator will liaise between IBPGR, sponsoring Ministry and any participating institutes and he will ensure that inputs-in-kind are accurately identified and mutually agreed before Phase IV commences.

Institutes holding databases have the primary responsibility to maintain and update the European database in cooperation with data providers, but this is only a necessary first step. There was a general consensus that database holders are also expected to use and exploit them for defined objectives, e.g. analysis of gaps in existing collection, identification of duplications for rationalization of collections, analysis of existing data for establishment of core collections, etc.

The Fruit Tree Liaison Officer ensures the liaison between the national fruit tree germplasm collections, the European Prunus database and the Prunus Working Group, and the IBPGR. In case that one or more of the field genebanks will be at risk, he will alert the Country Coordinator, the Chairman of the Prunus Working Group and IBPGR.

Full statements on role and responsibilities of IBPGR, Country Coordinators, European database holders and tree fruit Liaison Officers are provided in Appendix XI. Members outline that the role and responsibilities of European database holders, as described in Appendix XI, is presented as an ideotype. The workplan of each European database should be defined in accordance with the recommendations of the respective Working Groups and agreed jointly by the Institute holding the database, the Country Coordinator and IBPGR.

The TCC outlines that a clear position from Governments on their readiness to support financially Country Coordinators, databases and tree fruit Liaison Officers is an absolute necessity for the survival of the Programme. Governments should together with their approval for cash contributions provide IBPGR with a clear statement on the extent of support that they are envisaging for Country Coordinators, databases and tree fruit Liaison Officers. Members agree that the IBPGR should decide to withdraw this programme in case that the commitments obtained from governments are too far below the expectations of the TCC.

16. It was also emphasized that Institutes which for diverse reasons, were not any more wishing to act as an European database should officially inform members of the Programme at the opportunity of a TCC meeting. In this context, NGB informed the meeting of its wish to offer the Prunus database to other Institution(s) in consideration of the lack of active research on some of the crops which are involved, e.g. almond and peach. Nevertheless, NGB is ready to continue to assume the work until another Institution has accepted to take this responsibility. NGB expressed its strong wish to assume responsibility for another database which is more adapted to its genetic resources activities.

Any other business

Dr. G. Kleijer, Switzerland, expressed his concern about the possible acceptance of a law for gene patenting by the Swiss Government. The TCC strongly emphasized that the patenting of any naturally occurring genes would put in danger the exchange of genetic resources and would therefore undo much of the progress made through ECP/GR.

All members of the TCC expressed their thanks and gratitude to the CRI for the very kind hospitality.

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AGENDA

1. Opening statements
2. Election of Chairman
3. Adoption of Agenda

EVALUATION OF PHASE III OF ECP/GR

4. Reporting on formal participation, cash contributions from Governments and expenses (refer to background paper)

FORMAL WORKING GROUPS

5. Allium (refer to background paper)
6. Avena "
7. Barley "
8. Grass and legume forages "
9. Prunus "
10. Sunflower "

AD-HOC ACTION

11. Beta "
12. Brassica "
13. Pisum "
14. Vitis "
15. General Assessment of Phase III

SPECIFIC PROPOSALS

16. Pilot study for establishment of European forages core collections (refer to background paper)
17. Pilot study for establishment of European barley core collections (refer to background paper)
18. Collaborative enhancement of wild Avena germplasm (refer to background paper)
19. Long-term commitments from Governments for European Prunus conservation network (refer to background paper)

.../...

PROPOSALS FOR CONTINUATION OF THE EUROPEAN NETWORK

20. Summary of Working Group views/recommendations on their own future
21. Consideration of future of the ECP/GR by TCC
22. Final recommendations on future of the Programme

OTHER ITEMS

23. Any other business
24. Consideration of report and approval by Technical Consultative Committee

ECP/GR MEMBERSHIP AND FINANCIAL ACCOUNTS

I. MEMBERSHIP OF THE ECP/GR

The status of official participation from countries in Phase III of the ECP/GR is provided below:

Member countries

Austria	Israel
Belgium	Italy
Bulgaria	Netherlands
Cyprus	Norway
Czechoslovakia	Poland
Denmark	Portugal
Finland	Spain
France	Sweden
GDR	Switzerland
FRG	Turkey
Greece	United Kingdom
Hungary	Yugoslavia
Ireland	

II. FINANCIAL ACCOUNTS

The current status of contributions from participating countries as of 31 December 1988 is as follows:

	Received	Not Yet Received
Austria	11844	5922
Belgium	11844	5922
Bulgaria	---	8883
Cyprus	4442	
Czechoslovakia	5922	2961
Denmark	17766	---
Finland	5922	2961
France	44415	---
FRG	44290	---
Greece	5922	2961
Ireland	8883	
Israel	5922	2961
Italy	---	44415
Netherlands	17766	
Norway*	11744	
Poland	5922	2961
Portugal	---	8883
Spain	17766	
Sweden	17766	
Switzerland	17766	
Turkey		8883
United Kingdom	19078	9538
Yugoslavia	8883	
Total	283963	107251
	budget:	391214

* A contribution of Phase II amounting to US\$2,901 was included in Phase III.

**FINAL BUDGET REVISION FOR GOVERNMENT CASH CONTRIBUTIONS
THROUGH IBPGR**

	TOTAL	1987	1988	1989
Experts	176522	55820	59687	61015
Direct Administrative support	54010	350 ^{1/}	29555	24105
Official Travel	23057	9136	6043	7878
Working Group meetings/ Consultations	67169	9483	20298	37388
Technical Consultative Committee	16144			16144
Miscellaneous	15625 ^{2/}	2337	0	13288
Overhead (indirect support)	17960 ^{3/}	5597	5252	7111
Total	370487	82723	120835	166929

^{1/} IBPGR was able to organize a temporary saving on personnel

^{2/} IBPGR is providing financial input for mailing, telexes, telephone calls, etc. as well as for the printing of the reports of the Working Groups (mailing, telexes and telephone calls for ECP/GR are amounting to around US\$8000 per annum, whereas the printing and distribution of six Crop Working Group reports cost approximately US\$12000)

^{3/} IBPGR overhead, but this has been used in 1987 and 1988 for travel costs, etc., directly related to ECP/GR

ASSESSMENT OF WORKING GROUP ACTIVITIES
DURING PHASE III

ALLIUM

The objectives of Phase III, as discussed by the TCC in 1986 in Reykjavik were:

- i) to strengthen the European network
- ii) to develop a European Data Base for Allium
- iii) to organize collection in a long-term collection strategy

1. Network

The network has succeeded in getting together a small group of scientists from various European countries interested in Allium. However a few countries are missing. Also it seems that many working group members lack adequate support from their home institute necessary to achieve the Phase III objectives.

The TCC notes that so far use of genetic resources of Allium is rather limited. This may point to a need for a closer link to plant breeding. It is suggested that some plant breeders, including the commercial section, should be invited to participate in working group activities.

Different forms of Allium are growing worldwide. Improved varieties are being introduced also in regions outside Europe where they replace traditional landraces. There is therefore imminent danger of genetic erosion, notably in short day Allium in tropical and sub-tropical regions. It is understood that IBPGR is considering Allium to become a priority crop while AVRDC also is becoming active in Allium, suggesting cooperation. It is suggested that IBPGR implement an international Allium network, in which the ECP/GR Allium Working Group could play a key role.

2. Database

During Phase III considerable progress was made in data collection and a catalogue published. It provides a good start but obviously does not yet satisfy the need of main users such as plant breeders, biotechnologists and others. Clearly passport data by themselves are of little interest and information on characterization and especially evaluation are required. Steps to achieve such objectives need to be pursued vigorously.

A good database is in addition a useful tool in the management of collections in a network: what should be regenerated and by whom, identification of duplication, identifying gaps and overlaps in collection, developing collection strategies and so on. This requires an institute willing to assume responsibility for such coordination to make full use of the available data and possibilities of modern information technology. It applies equally to other crop working groups. It is suggested that in Phase IV institutional commitment to ECP/GR needs to be strengthened.

A special effort should be made to identify the need of users, notably plant breeders. There is an unfortunate trend in research away from the pre-breeding and biosystematic research which so far provided plant breeders with more diverse breeding populations. Genebanks may have to become more actively involved in stimulating the use of more genetic diversity in breeding e.g. by providing information on sub-sets of collections with potential relevance for specific breeding objectives.

It has even been suggested that genebanks enter into collaborative programmes with plant breeders in pre-breeding. The Allium Working Group should address such issues in Phase IV. Finally the TCC agrees that the database should include an Allium bibliography continuously updated and distributed.

3. Collection

The TCC noted with satisfaction progress made in collection in a number of countries. However more needs to be done, notably in the Mediterranean region. Italy and Turkey deserve high priority and national institutions should be asked to indicate what constraints prevent them realizing such collections. In the USSR, an important center of diversity of a number of Allium species, several collecting activities are in progress. It is assumed that collected materials are or will be available to the network.

Regeneration of Allium is complicated because of specific day length requirements. The network should identify logical sites for regeneration and seek the necessary institutional commitments to do so.

A major problem area is insuring proper quarantine measures for vegetative materials. Israel and Czechoslovakia are maintaining vegetative collections in the network; there would seem to be a need for standardization of quarantine regulations.

Finally, the Working Group should identify the need for research needed on in vitro storage techniques including cryopreservation, and look for institutions prepared to contribute to such research.

4. Summary recommendations

- The TCC is generally satisfied with the achievements so far and commends the scientists that have been involved. The Working Group provides an essential platform for such cooperation.
- The TCC commends IBPGR for its programme to standardize taxonomic classification and urges it to come to develop recommendations as soon as possible.
- Ways and means should be explored to realize more direct contacts with users of genetic variation, notably plant breeders.
- Collection in Europe should be completed in the next few years.
- Active steps should be taken for expansion of the European network to include other Allium growing regions.
- All these recommendations require institutions in developed countries, notably Europe, to accept responsibilities beyond the commitment of individual scientists.

AVENA

Introduction

The panel endorses the activities of the Avena Working Group during Phase III which were focused on three main issues:

- i. the maintenance of collections and production of the European Oat Catalogue;
- ii. collection of specific wild species, and
- iii. handling of the oat collection and training.

1. European Avena Data Base (EADB)

A comprehensive database is operational at Braunschweig Genetic Resources Centre (BGRC) comprising ca. 17,000 accessions from 21 countries including Canada and USA. The information available is mainly passport data. It is expected that BGRC will continue to update its database which will include characterization and evaluation data. The Working Group recommended that BGRC serves as a coordinator for the next phase. To ensure the effectiveness of this responsibility, the panel feels that BGRC should continue to provide adequate time of trained staff and operational expenses.

2. Collecting

Collection of the five targeted wild species is expected to be completed in 1990.

3. Rationalization of collections

There is slow progress in the identification of duplicate accessions. Redundancy is estimated at approximately 50%. This is a major task of curators and the coordinator database.

4. Safety duplication

Only minor progress has been made to ensure safety duplication of the Avena base collection. This activity needs to be encouraged but it has financial implications.

5. Characterization and evaluation

Data and 12 descriptors are being compiled but this understandably is a slow, time-consuming activity.

6. Enhancement of Avena germplasm

This effort is in progress in some institutions while other institutions are interested to participate. This topic will be discussed under agenda item 18.

BARLEY

The Barley Working Group has focused with three major tasks which have progressed up to a certain point without being completed at the moment. These are:

- i) the establishment of the European barley database (EBDB);
- ii) the definition and realization of a European barley network; and
- iii) guidelines for rational management of barley genetic resources.

At the end of Phase III the working group considered itself as self sustaining with a request of a neutral follow up for further activities especially in the field of internationalization.

The European barley database is completed, with more than 55000 accessions.

The prerequisite for a European barley network have been achieved, e.g. database, European barley list, safety duplicate collections for Europe, preliminary identification of duplicates, need for other activities.

The concept of a European barley core collections is defined and could be realized by 1991. The BCC is felt to be a prerequisite for internationalization.

The TCC recommends that the barley working group continue its work with the following major topics:

- 1) continuation and updating of the EBDB;
- 2) continuation in duplication identification (expected to be about 40 percent);
- 3) encourage evaluation of germplasm on the basis of major descriptors;
- 4) making available special collections such as disease (mildew) phenotypes and genetic stocks;
- 5) finalize the safety duplication in a base collection;
- 6) identification of gaps and recommendations for subsequent activities; and
- 7) establishment of the barley core collections and organization of its rational use.

The continuation of the working group is recommended as a self sustaining group with inputs-in-kind from Governments and support by ECP/GR-IBPGR for further meetings. The concept of an international network needs considerable support as concretely expressed in the report of the International Barley Working Session (Gatersleben, GDR, 21 April, 1989).

FORAGES

1. European Forage Data Bases

The TCC applauds the increase of institutes holding databases covering more than 15 species at the end of Phase II to the present position of eleven institutes holding databases covering more than 17 species with four more species databases in draft form involving a further institute.

The TCC welcomes the increased quality of the databases following the agreement of a standardized format for all European forage databases with a much larger array of descriptors, including latitude, longitude and altitude, than registered at the end of Phase II.

The TCC strongly recommends that institutes holding collections are reminded of the importance in a cooperative programme, of a positive attitude in replying to data requests and information on new accessions.

The TCC urges that both existence and methods of access to the databases should be promoted.

2. Mapping of collected accessions

Whilst no maps have been produced to enable the areas, as yet uncollected, from within the species range to be identified, the efforts to secure latitude, longitude and altitude coordinated for each collection within the databases represents progress.

The TCC supports the Working Groups request that the documentation section of IBPGR should assist in locating electronic methods for the production of maps from these databases. The TCC regrets that the supporting herbarium and literature studies to identify the geographical ranges of the species has not proceeded as recommended by the TCC (Phase II). However, the TCC recognizes that there are limits to non-institutional "goodwill" activities and that these may have been reached. The TCC strongly recommends that governments are called upon to make good their "in-kind" payments specified in the Letters of Agreement so that this work can be undertaken.

3. Progress in collecting

The TCC is content that the collecting that was incomplete at the end of Phase II has now been carried out successfully.

The lack of mapping (identified in the previous section) has made the assignation of collecting priorities less certain than would otherwise have been the case. Nonetheless, the TCC supports the new list of collecting priorities identified in paragraphs 20 and 21 of the report of the Working Group meeting (9-12 January 1989).

4. **Maintenance and availability of forage genetic resources**

The TCC shares the concern of the Working Group that regeneration of collections is severely limited by financial constraints resulting in the unavailability of seeds for exchange (see forage catalogues).

Furthermore, the TCC urges that the security of these collections be greatly increased, preferably through the establishment of base collections.

The TCC accepts that the concept of core collections (combining, as proposed, geographic climatic, macro + micro ecological data together with evaluation and characterization to identify a smaller more manageable number of collections which contain most of the wide diversity) will allow the constraints outlined previously to be most rapidly and cost effectively removed.

5. **Consideration of the possibilities for in situ conservation**

The TCC supports the call of the Working Group that the relevant agencies (IUCN? WWF?) be made aware of the needs and priorities of plant breeders when considering the establishment of in situ reserves.

Furthermore, the TCC suggests that one forage species is chosen as the subject for a pilot study for in situ conservation by such agencies. This study should develop to the point of practical implementation of an in situ conservation programme, capable of application throughout Europe so that the practicability and financial implications of this suggested conservation can be accurately assessed.

6. **Future work**

The TCC supports the call for the continued existence of an umbrella organization to support, monitor and stimulate the activities of the ECP/GR Forages Working Group.

PRUNUS

Introduction

In accordance with the plan of operation for Phase III of ECP/GR, four different goals were set up for the Prunus Group:

- i) completion of urgent collecting missions;
- ii) strengthening and development of the European Prunus Database (EPDB);
- iii) construction of European networks of national collections;
- iv) studies on wild populations of Prunus.

The Prunus Group had one meeting during Phase III. The efforts made during this Phase have been focused on the first two points; collection activities and the development of the European Prunus Database. This work has been successful for these two points. Regarding the two other points, they have been seriously hampered by lack of available funds.

1. Completion of urgent collecting mission

Although many successful collections have been carried out in different countries, two urgent collecting missions seem not to have been done, i.e. collection of wild population of apricot and almond in Turkey, and collection of sweet cherries in Spain. For the latter the Prunus Group has agreed on maintenance of this material in situ. We recommend that more information about this material should be received from the authorities in Spain (see point 4).

2. Strengthening and development of EPDB

At the first meeting of the Prunus Group the Nordic Genebank was requested to maintain a European Prunus Database. The work was initiated during Phase II of the ECP/GR. The second meeting of the Prunus Group recommended that additional passport and evaluation data should be included in the EPDB. At the third meeting of the Group a printout of the database was distributed and the members of the group recognized that there had been very low activity in the development of the database. By a combined effort from the various Prunus curators, the Crop Coordinators and the Staff at the Nordic Genebank, these additional data were included in the database during 1989 and in September five catalogues containing passport and evaluation data for over 12000 Prunus accessions located at 94 institutes were published. We therefore conclude that the Group has made considerable achievements in the development of an EPDB and fulfilled this objective of Phase III.

3. Construction of European networks of national collections

We recognize that the European cooperation so far has not led to national or supranational security systems for collections in danger of disappearing. Collections for instance at Universities are in danger when the curators retire, or for other reasons. It must be ensured that endangered collections are evaluated to detect important germplasm and ways must be found to transfer valuable and unique material to other places.

APPENDIX IV (cont.d)

It should now be possible to use the EPDB as a basis for a network in which one can ensure that each accession is kept at least in two locations.

The survey on wild material appears particularly important as erosion and land reclamation may result in rapid loss of this material. The knowledge about ecogeographical distribution of genetic diversity is an essential base for long-term in situ preservation. In this view population studies - as recommended by the Working Group on Prunus - should have high priority in future work.

4. Conclusion

A lot of the work done during the last years has been as "input-in-kind" from Prunus curators, Prunus Coordinators and NGB from their own budget and without additional support from respective governments. The TCC is very concerned about the future of Prunus preservation in Europe if no funds can be made available for dealing with this aspect at a European level.

Increased responsibilities might lead to a situation where the involved institutes can no longer fulfill their commitments.

We therefore propose that all involved institutes make an agreement with ECP/GR-IBPGR where it is clearly stated what proportion of a contribution is input-in-kind and how much cash the institute will provide. If it becomes clear that the contribution will be insufficient to cover all activities, IBPGR should assist the institutes in obtaining additional funds from the respective governments.

SUNFLOWER

There are two databases, one for wild (Novi Sad) and one for cultivated forms (Szeged). Passport data have been included, but it is difficult to add characterization and evaluation data, that often do not exist.

Nevertheless, the TCC recommends a more dynamic management of the database, stimulating participants to send their data by regularly sending updates through diskettes, e.g. on a yearly basis.

There is consensus to continue the Sunflower Working Group of Phase IV. The Group has become more or less international. Sunflower is one of the specific crops with which FAO is engaged, through the Sunflower Evaluation Network. The TCC therefore recommends strengthening of collaboration with FAO.

The main issue is to develop research work in characterization and evaluation. The TCC recommends to national governments to fund such work, as input-in-kind. This could be done with the participation of private breeders.

Cooperation with the US will allow European participation for further collecting. But it has to be stressed that difficulties in maintaining wild species and their limited use by breeders make basic studies on wild species a major priority. Except for endangered species, in situ conservation would be the best way to deal with them for conservation. The distribution of wild populations should be known and their evolution monitored.

The recommendation to test several less photosensitive lines has not been followed. It could be recommended to use protected lines for testing.

**PROPOSALS FOR THE EFFECTIVE USE OF GENETIC RESOURCES
WITHIN THE ECP/GR FRAMEWORK: THE ESTABLISHMENT
OF EUROPEAN FORAGE COLLECTIONS**

Mr. B. Tyler, Welsh Plant Breeding Station, UK
Mr. M. Falcinelli, University of Perugia, Italy
Mr. G. Charmet, INRA, Clermont-Ferrand, France

The third meeting of the ECP/GR Forages Workshop at Montpellier made the recommendation that a small subgroup should discuss the direction the group should take in order to capitalise on the progress already made, and prepare a draft for consideration by TCC. The meeting also proposed that the identification of core collections would be a move in that direction. The following is a consensus of opinion reached after a meeting held at Aberystwyth on 6 July by representatives from France, Italy and UK.

Introduction

Over the past five years European forage genetic resources workers have constructed databases of the main forage genera, initiated and coordinated through ECP/GR. The aim was to include all European holdings together with as much passport data as was available. This has largely been achieved although some existing passport data still requires entry e.g. the L. Perenne database with 1830 records has only 679 with latitude and longitude. Hard copy editions have been produced and distributed but response in terms of requests for seed has been disappointing. This is due to a number of causes, of which availability of seed, apparent complexity and size of the catalogues, shortage of rudimentary characterization and evaluation data and lack of publicity, are major factors. Full use of genetic resources by breeders and research scientists must be a major objective of all genebanks and genetics resources groups and any project aimed to implement this should be given high priority.

One means to achieve this would be to identify core accessions within existing collections which would represent the range of genetic variation, but with a much reduced number of accessions. This would ease the burden of regeneration of whole collections, thus improving seed availability, would simplify and focus attention on the most important accessions and indicate those accessions where in-depth characterization/evaluation should be concentrated.

The following proposal attempts to set out a scheme whereby this could be implemented in the forages within the ECP/GR framework. Previously all activities within ECP/GR have been pursued within existing institutes' programmes and without extra funding or resources. However, the next phase will not be possible unless more resources are obtained either directly from international funds or by individual national commitment.

Formation of core collection

The identification of core collections can be based on a combination of geographic, ecological and characterization/evaluation data and obviously the more data available the more realistic will be the resulting core. So the choice of species database on which to work would be governed by the amount of data available, as well as the agricultural importance of the species. The group therefore suggested that the Lolium perenne and Medicago sativa databases would be the best representatives of forage grass and legume resources.

Experience, particularly with the forage grasses, suggests that geographical and climatic data alone would not be sufficient to enable a reliable core to be extracted. This would be improved by the addition of both macro- and microecological data. Grassland management is often of overriding significance in determining genetic variation but this information is usually not available, so that it would be necessary to include some characterization/evaluation data. True characterization of forages is extremely difficult due to the low heritabilities of most agronomic and physiological characters and high genotype/environment interactions exhibited, hence the ideal type of data is not available. However, the group considered that it is likely that some observations have been made on most collections, if only in terms of maturity group and information on growth pattern and resistance to stress. Using this type of data, together with data from relevant controls, meaningful parameters could be extracted which could then be used in the classificatory analysis. Every effort should be made to obtain this from donor curators together with missing passport data. Again this would rely on the collaboration of individual curators, but resources would need to be found for personnel to assemble and standardize the data and assist in the updating of the existing two databases.

Methodology

Considerable experience is available within the group (Falcinelli and Charmet) on the use of cluster analysis for identification of core collections in national collections. One method suggested (Charmet) would initially involve constraints with a geographical continuity matrix and hierarchical clustering using characterization and evaluation data within the geographical clusters. Another approach would use ecological and management data, on the geographically constrained clusters. It was suggested that the methodology and the technical expertise are available once the data have been assembled.

When the constituents of the various clusters have been identified and assuming a meaningful biological basis to the clusters, one population would be chosen to represent that cluster. This population would then be regenerated and form part of the core collection. Bulking and regenerating all populations within a cluster was discussed, but the possibility of recombination giving genetic variation outside the cluster limits meant that for the present purpose, bulking should not be undertaken.

Evaluation of the utility of the designated core collection

In order to test the validity of the derived core collections it is suggested that a limited number of characterization/evaluation characters are measured on all core constituents.

It is envisaged that a core collection derived from the Lolium perenne database for example, with approx. 1800 accessions, would reduce realistically to 10% (Brown ref). It would however be possible by applying further constraints in the analysis to reduce the numbers further to a more acceptable level and yet still retain the extremes of variation, for in-depth characterization/evaluation.

APPENDIX V (cont.d)

The choice of characters is of considerable importance as together they should combine those characters with higher heritability and a minimum of G/E interactions which may have no value for breeding, together with less stable characters of greater relevance.

The descriptors should be taken from the appropriate IBPGR descriptor list and in the characterization/preliminary evaluation category, flowering date, leaf shape, vernalization requirement, aftermath heading and growth habit would be recommended in addition to measurement of allele frequency using isoenzymes.

However, in order to interest breeding and research institutes in this pilot study and eventually in the catalogue itself, a number of physiological measurements are suggested. Physiological characters such as cold tolerance, drought or water utilization and disease resistance can best be evaluated in specified controlled environments and expressed relative to controls.

Seasonal and agronomic yields in field plots, although the basis for national evaluation, have limited value for cross environment extrapolation. Multisite trials for yield, whilst providing useful data, are notoriously difficult to organize, standardize and interpret and their cost effectiveness is doubtful.

Ultimately, the results derived from the evaluation of the core populations would provide a measure of the validity of the core collection itself and provide indicators for the eventual rationalization of regeneration and evaluation in other collections.

Estimated Budget

1. Derivation of 'Core' Collections

It is likely that some of this could form part of our ongoing programme but we would certainly need computer assistance at this stage. Cluster analysis and other statistical treatment would be payment-in-kind.

Year 1 - cost approx. US\$ 15500 each per institute, i.e. WPBS for Lolium and Lusignan, France for Medicago

Total - approx. US\$ 30000.

2. characterization of Core Collection

This would be a minimum of 2 years and would require short term appointments at the appropriate grades. US \$45000 for each year would be a reasonable estimate and our facilities and expertise would be payment-in-kind.

THE BARLEY CORE COLLECTION
**Report of the first meeting of the BCC Working Group,
Wageningen, 25-26 September 1989**

Introduction

Since 1985 the European Cooperative Programme for Conservation and Exchange of Crop Genetic Resources (ECP/GR) has had a Working Group on Barley. During the third meeting of this group (18-20 April 1989, ZIGuK, Gatersleben) there was a lively discussion on the establishment of a barley core collection across European institutes, and the meeting agreed that a subgroup had to be nominated for drawing more elaborate recommendations on this topic. Barley is a well-studied, major crop. There are many, often extremely large, collections with a high degree of duplication amongst them. The work of the ECP/GR Working Group, and especially the efforts of the ZIGuK, have resulted in a European Barley Database giving an overview of the European holdings. This makes barley a very suitable crop in starting the use of the core concept in the network approach for genetic resources conservation, and what is more, genetic resources utilization.

Definitions and concepts

A general problem in discussions on the concept of core collections is the confusion considering the terms. To avoid these problems in the attempts to get a Barley Core Collection (BCC), a definition of core collection, and the objectives of such a collection, have been defined as follows:

The Barley Core Collection is a selected and limited set of genebank accessions, optimally representing the genetic variability of cultivated barley (*H. vulgare sensu lato*) and wild species of *Hordeum*, and providing well-known genetic standards.

The objectives of the Barley Core Collection are three-fold:

- to provide adequate material for the needs of standardization in scientific work with barley;
- to allow for rationalization of evaluation and thus utilization of existing collections; and
- to provide for a manageable and representative selection of the barley world holding for use in research and breeding

The BCC is a fixed set of barley accessions; within the BCC reduced sets of any size can be selected for any purpose. If genetic variation is considered to have a hierarchical structure, it can be illustrated in a dendrogram. In the dendrogram of the BCC, to each branch the most representative accession will be appointed, allowing for an efficient and reproducible selection of the desired material.

The accessions in the BCC are so far as possible homozygous lines, to allow for identical multiplication of the material over generations and locations, avoiding genetic changes due to natural selection or random drift. This means that of heterogeneous material random pure lines will have to be selected for inclusion in the BCC. Each accession in the BCC should be considered to be representing a group of lines, varieties, landraces, etc. The composition of the BCC is not fixed; on the basis of new scientific insights it will be possible to add or delete accessions from the BCC.

Scale

Barley is well represented in genebanks of the world. Approximately 190000 accessions are available, of which the major collections in Europe, USDA, Canada, ICARDA, Japan and VIR (USSR) hold probably two thirds. Many accessions are duplicates, but how many can at present not be estimated.

The size of the BCC must, as mentioned earlier, be kept very restricted. A manageable core should not exceed 2000 accessions, made up by subsets in a hierarchical structure.

Barley is basically a temperate crop which is very tolerant to abiotic stresses like salt and drought, and is hereby very important in many 'marginal areas', now found in developing countries (cf. the ICARDA region). The need for the creation of a BCC thus has implementations for many areas of the world and will facilitate breeding efforts and research. Barley shows also a great genetic diversity on a world-wide scale and if a core collection should be meaningful and have wide acceptance, the ultimate goal must be a full international collaboration. However, within the framework of ECP and the creation of EBDB it is desirable and practical to start on a European basis (Europe can now be regarded as 'one holding'). International contacts have been established with the major barley collections and they will get the information worked out in Europe.

Accessions

Considering the accessions to be included in the BCC three major groups can be distinguished: cultivated barley, H. spontaneum/landraces and wild species. These groups will be discussed separately.

Cultivated barley

Accessions from cultivated barley in the core collection are determined to represent and to provide

- landraces (treated the same way as H. spontaneum, see second group),
- genetic diversity within cultivated materials derived from barley breeding activities,
- well defined genetic stocks, and
- standard lines for research in barley genetics.

It is suggested to develop a set of accessions representing genetic diversity within cultivated materials for each sector of agricultural use of barley (winter-spring, two row-six row, malting-feeding barley) which includes the major barley-growing regions and the more advanced stages of barley breeding. By cooperation with regional experts the set should be made up from important donor/genitors and trace back the pedigrees of the major barley cultivars of each region. This part of the BCC may be of specific value for early phases of the breeding process (e.g. in developing countries) in providing access to the most useful sources for relevant breeding programmes.

Well-defined genetic stock should be included in the BCC to represent the major groups of cytogenetic diversions (translocations, duplication, inversions, trisomics) and genetic markers (marker genes, mutations, isozyme markers, RFLP markers). Selections should be made from the large number of existing lines which mark each of the 7 barley chromosomes with a minimum number of BCC accessions upon advice of a group of scientists serving as chromosome coordinators.

APPENDIX VI (cont.d)

Scientific research on genetic diversity needs to be based upon well-chosen standard lines which either serve as the reference for exact measurements of the size or location of deviations of the standard or are designed to represent the range of diversity which has evolved from earlier research. Another type of standard material is needed when new scientific fields are opened, like e.g. in molecular genetics.

The scientific community of barley workers will have to determine in which sectors earlier research has reached the level that standard lines are needed for future work and also which materials meet the requirements and are generally accepted to be used for this purpose.

Landraces and *H. spontaneum*

Accessions of *H. spontaneum* and landraces of *H. vulgare* are included in the BCC in order to represent the most common ecotypes from major ecogeographic regions of their natural habitats and to indicate their genetic diversity.

Since neither *H. spontaneum* nor the landraces which are still used in some substantial parts of the barley acreage seem to be well represented in existing collections this part of the BCC may have to be derived from native stands upon the advice of cooperative scientists and rely to some degree on the function of *in situ* conservation.

The results of the evaluation of the core collection are expected to lead the way to a systematic approach for exploitation of genetic resources stored within both these groups of barley materials in future breeding work.

Wild species

Apart from *H. vulgare sensu lato* including highly improved varieties, landraces and the conspecific wild forms (*spontaneum*), the genus *Hordeum* consists of ca. 30 species, altogether ca. 40 taxa (cytotypes). The genus is distributed in most temperate areas of the world, but major centers of diversity (defined as holding most number of species) are the Mediterranean, central Asia, southern South America, and western North America. For the BCC one species of each taxon/cytype should be included, thus representing the 'total variation of the genus'.

Since some of the taxa are rather closely related, e.g. containing similar genomes, it would be possible to have an even more restricted core, by choosing one 'representative' species within each group and thus reducing the number of accessions even further. In the hierarchical structure of the BCC, ecogeographical considerations should be made for the selection of another 2-3 accessions per species for representing genetic diversity within the particular species (e.g. see the increased interest of *H. chilense* and *H. lechleri* for use in interspecific and intergeneric hybridization programmes). Special considerations should be made for *H. bulbosum*, which is already in use for the production of double haploids in barley and has got an increased interest for gene transfer to barley. It is also the single species representing the secondary genepool of the crop.

Planning and organization

The proposal is that the preparation of the BCC should be finished in time for the 6th IBGS (International Barley Genetics Symposium), which will be held 22-27 July, 1991. At this meeting virtually all barley breeders/specialists are assembled, therefore it should be possible to get general approval for the basic concepts as well as for the recommended accessions. A business meeting (closed) and a workshop (open) should be held during the Symposium.

The group including von Bothmer, Fischbeck, van Hintum and Knuepffer should continue the coordination of the work, with van Hintum as secretary.

It is highly desirable that the BCC project is carried out under the supervision of ECP/GR.

Phase I

The timetable up to the IBGS in 1991 is as follows:

- Winter 89/90: contacts with specialists to work out the basic concepts for each major group included under 'accessions', they should also give their recommendations for future work.
- March 90: the coordination group meets in Gatersleben, where the suggestions from the specialists are worked out. A short publication in the Barley Genetic Newsletter (BGN) is prepared in which the BCC is presented, asking for opinions on the concept and suggestions for accessions. Also a selected group of specialists is defined which will continue the work on more precise items.
- Late fall 90: the coordination group meets in Svalöv or Munich where the final proposal is worked out. This should, if possible, be included in the second or third circular distributed to the participants of IBGS.
- July 91: business meeting (before the IBGS) where an extended group finally pre-treat the BCC. A workshop during the IBGS where the BCC is discussed among all participants.

The costs for the BCC project up to the stage of the preparation of the list of accessions will include travelling expenses for the coordinating group, plus eventually some secretarial expenses (typing, printing, and distribution). For the business meeting at the IBGS some extra daily allowances for an extended group may be necessary.

Phase II

When the agreed list for the BCC is finalized, the practical arrangements for the creation of the collection starts. However, it is important that the strategy for future work is considered and planned already at this initial stage, so that the genebank work can start immediately when the list of accessions is available.

APPENDIX VI (cont.d)

The following questions must be considered:

- How many and which genebanks should be responsible for holding the BCC (including the entire core and subsets of the core)?
- Which organizations should be responsible for multiplication and distribution of the BCC?
- Are there any political, practical or economic problems involved and how should they be solved?
- Which measures can be taken to finance cooperative programmes in order to assemble a basic set of evaluation data of the BCC.
- Should the available information on the BCC be centralized at one institute?
- How should the continuation of the BCC be organized, once created?
- Should, after the initial distribution, each genebank or organization be responsible for the multiplication of its own set of BCC accessions?
- Should there be an overall responsibility for the whole BCC or should a certain genebank or organization have a responsibility for a certain subset (e.g. one for wild species, one for genetic diversity in cultivated barley, etc.)

Proposals for solutions to these questions (and probably others) will be worked out during the coming year (1990).

It is too premature to present any ideas about the costs for Phase II of the BCC project. It depends on the size of the BCC and how much the contributing genebanks or organizations are willing to finance out of their own budgets.

ENHANCEMENT OF WILD OAT COLLECTIONS

by H. Thomas and G. Ladizinsky

Introduction

At a meeting of the oat genetic resources working group it was proposed that an effort should be made to establish collaborative work involving different laboratories to accelerate the enhancement of wild genetic resources to enable their more rapid use in current breeding programmes. Collections of wild oat species often contain unique genetic diversity outside the range of cultivated germplasm. This variation includes resistance to pest and diseases e.g. resistance to powdery mildew in genotypes of A. barbata, A. hirtula, A. prostrata and A. ventricosa, resistance to crown and stem rust in A. strigosa, A. barbata and A. longiglumis and other important agronomic characters such as higher levels of grain protein of A. maroccana and A. murphyi and tolerance to low temperatures of A. macrostachya. However, the presence of strong isolation barriers which separate wild species from cultivated oat makes this source of variation inaccessible to conventional breeding programmes. Wild oat species can be conveniently classified into three categories according to the degree of difficulty in introducing the variation into the cultivated oat, viz: primary, secondary and tertiary gene pools.

In the primary pool there are no genetic restrictions to the transfer of genes from the wild species into cultivated oat and such collections can be utilized in a breeding programme through backcrossing.

In the secondary pool there are only slight restrictions on the recombination between genes of the wild species and cultivated form but differences in ploidy result in hybrid sterility. Limited female fertility allows a low percentage of success when the sterile hybrids are pollinated by cultivated oat pollen.

In the tertiary gene pool there is a combination of hybrid sterility and restriction on recombination between the wild species and the cultivated oat. Gene transfer can only be achieved by protracted programmes which require the genetic induction of recombination. This renders the variation within this group totally inaccessible through the use of conventional breeding methods.

To increase the effectiveness of the use of the variation within wild species in oat improvement programmes there is an urgent need to speed up the provision of enhanced germplasm which incorporates desirable genes of the wild species, especially those of lower ploidy. If it was possible to coordinate the input of a number of participating laboratories there should be a good chance of speeding up the production of enhanced germplasm. Ongoing programmes are proceeding at the Welsh Plant Breeding Station, Aberystwyth and at Svalöv in Sweden, and there is considerable expertise on the handling of oat species at the Hebrew University, Israel. A programme of research has been initiated at IHAR, Radzikow, Poland. Any other laboratories that would be able to participate would be welcome.

Objectives of the research programme

1. To improve embryo rescue techniques for obtaining a greater range of interspecific hybrids.
2. To induce interspecific recombination by the use of a specific A. longiglumis genotype which interferes with the regular bivalent pairing of the hexaploid cultivated species.
3. To transfer the effective cold tolerance of A. macrostachya into the cultivated oat background.
4. To transform the tetraploid species A. maroccana and A. murphyi which have a high grain protein content into domesticated forms through the introduction of part of the adapted genome of the cultivated oat.
5. To initiate intergeneric crosses with various Helicotrihon and Arrenatherum species.
6. To locate genes on species chromosomes using conventional monosomic analysis and RFLP techniques.

Plan of collaboration

The collaborative effort to enhance wild oat germplasm is a new and promising approach to speed up evaluation and exploitation of that germplasm. Each of the parties involved in the proposed project has long experience of identifying and manipulating genetic diversity of wild species. The combined expertise of the various laboratories and the diverse climatic conditions prevailing in the countries where they are located can be used for maximizing the evaluation and enhancement of desirable genetic diversity. Transferring of the outstanding cold tolerance from A. macrostachya has been initiated at the WPBS but the evaluation of the hybrids and derivatives could best be undertaken in the Nordic countries under natural winter conditions. The ecological and climatic conditions prevailing in Israel, which allow considerable pollen shedding and dispersion during flowering would be exploited for massive back-crossing of highly sterile interspecific hybrids. By planting these hybrids amongst the recurrent parent in the field, natural pollination will provide back-crossed seeds at little expense compared with hand pollination.

Testing for disease resistance of accessions of wild species and hybrid derivatives could be undertaken at the different locations to test their effectiveness against the races of the pathogen prevalent in the diverse areas. Finally, combined with the effort to produce enhanced germplasm the coordinated programme should also monitor the effectiveness of the transferred genes over as wide a spectrum of environmental conditions as possible.

Coordinating the programme

To achieve the listed objectives will require a body to be responsible for the coordination of the work. This could be a role IBPGR would undertake to ensure the continuity of the effort already put into oat germplasm by the ECP/GR Working Group. In order to accelerate the process utilizing the genetic variation within wild species extra funding will be required by the different centres and IBPGR would be able to assist and advise on the identification of appropriate financial sources to set up this coordinated effort.

Budget estimate

Although all the laboratories that intend to participate in the programme have not submitted details of their budget requirements, it is obvious that funds would be required for operational and coordination costs.

Operational cost

The project should run for five years. Operational costs would include the employment of extra personnel mostly at the technician level.

Two centres have submitted estimates of the minimum amount required to undertake the project.

Hebrew University, Israel - \$50000 over the five year period, which includes 25% overhead.

Welsh Plant Breeding Station, Aberystwyth - 15000 pounds sterling (\$20000) per year, full economic costing would be 25000 pounds per year.

It must be assumed that the other participating laboratories would require some financial assistance, minimum \$50000.

Coordinating costs

It is envisaged that the collaborators would need to meet and discuss and evaluate progress during the five year period, requiring a budget of \$15000.

THE EXISTING STATUS OF EUROPEAN PRUNUS COLLECTIONS

Replies from 18 countries (Belgium, Bulgaria, Czechoslovakia, Denmark, FRG, Finland, France, GDR, Greece, Israel, Italy, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom, Yugoslavia) were received to the questionnaires sent with the letters of invitation for the third meeting of the Prunus Working Group. In each of these countries, fruit tree ex situ collections are kept in governmental institutes. In addition, in 5 of them private or semi-private associations also have a complementary role. (In FRG only, the role of botanic gardens as maintainers of collections was mentioned; in France national parks were cited).

A governmental law/decreed ensuring the long-term existence of the genetic resources collections exists in two countries (Poland and GDR), and in only 5 other countries the maintenance of these collections is officially recognized as a major responsibility by the institutes. For the remaining 11 countries, it appeared that costs of maintenance of the collections are not really recognized in the institutes' budget or at least not planned in the long-term (with the exception of Israel, where maintenance depends on contributions from the fruit industry). It seems that genetic resources collections are not specifically maintained as such but included within variety evaluation trials or breeding fields.

In fact, in 8 countries the actual maintenance of the collections is mainly due to the interest/goodwill of a few persons and their retirement from employment or other factors may change the situation. Simultaneously, insufficient funding is threatening the maintenance efforts in 5 of these 8 countries, whereas in 3 countries, where funding seems to be adequate for the time being, cuts in the budget will most probably affect the collections first. The absence of national coordination between different initiatives was also considered as an obstacle.

Only 4 countries have a systematic policy of duplicating their accessions, i.e. keeping them in two locations (2-4 trees/locations). In 4 countries accessions are kept as a general rule only in one location (from 2 to 5 trees and sometimes only one). In the remaining 10 countries, the number of locations depends on the institutes holding the collections or may vary following species, but, to summarize, it appears that the conservation of accessions in one single location is more a general practice than an exception.

Only 3 questionnaires mentioned the spread of disease as a threat to mid/long-term maintenance of fruit tree genetic resources (some collections were destroyed in an attempt to eradicate Sharka). Poland and Czechoslovakia suffer cold winters; in Poland the collections are replanted every 10 years, as they observed that young trees are more resistant to low temperatures than old fruiting trees.

Currently the in vitro storage of material seems to be practised only for wild Prunus avium as forest trees (INRA, France). Spain is planning to implement this practice for Citrus, Czechoslovakia for subsets of the germplasm and GDR for varieties registered in the official variety list. In vitro storage is also envisaged in Yugoslavia and FRG, but no details were provided.

To finish this overview with an encouraging note, the implementation of a new law in favour of in situ and ex situ conservation is under discussion in Greece, whereas national programmes for conservation of fruit trees are envisaged in Spain and Yugoslavia.

PHASE IV OF ECP/GR
FOR GOVERNMENT CASH CONTRIBUTIONS THROUGH IBPGR ^{1/}

	<u>Total</u> US \$	<u>1990</u> US \$	<u>1991</u> US \$	<u>1992</u> US \$
1/4 time IBPGR Crop Networks Coordinator	49500	16000	16500	17000
Direct administrative support 1/4 time IBPGR secretary	22500	7000	7500	8000
Official travel	42000	14000	14000	14000
Crop meetings/Consultations ^{2/}	200000	40000	120000	40000
Technical Consultative Committee ^{3/}	40000	---	---	40000
Programme administration (telephone telex publications etc).	60000	20000	20000	20000
Contingencies	15000	5000	5000	5000
Subtotal	429000	102000	183000	144000
Overhead (indirect support) - 13% ^{4/}	56000	13000	24000	19000
TOTAL	485000	115000	207000	163000

1/ Some countries facing difficulties with foreign exchange will be allowed to pay their contribution by hosting working group meetings or the TCC and covering local expenses (see also 2/ and 3/).

2/ One meeting each of working groups on Allium Avena barley forages Prunus sunflower Brassica Pisum and Vitis and preparation meetings on barley core collections (\$20000 for each activity). Covering local expenses will be considered as an input equivalent to US \$5000.

3/ Covering local expenses considered as input equivalent to \$10000.

4/ This includes provision of space in IBPGR Headquarters the overhead of 5% which IBPGR has to pay to FAO the input and time of IBPGR, Professional Staff etc.

PROJECT BUDGET FOR PHASE IV OF ECP/GR
FOR GOVERNMENT CASH CONTRIBUTIONS THROUGH IBPGR

<u>Country</u>	<u>Contribution (US \$)</u>
Austria	20000
Belgium	20000
Bulgaria	10000
Cyprus	5000
Czechoslovakia	10000
Denmark	20000
Finland	10000
France	50000
FRG	50000
GDR	20000
Greece	10000
Hungary	10000
Ireland	10000
Israel	10000
Italy	50000
Netherlands	20000
Norway	10000
Poland	10000
Portugal	10000
Spain	20000
Sweden	20000
Switzerland	20000
Turkey	10000
United Kingdom	50000
Yugoslavia	10000

TOTAL	485000
	=====

PROJECT BUDGET FOR PHASE IV OF ECP /GR
FOR GOVERNMENT CASH CONTRIBUTIONS THROUGH IBPGR

Assumptions

- working groups already in being in Phase III to be largely self-sustainable
- an enhanced role for crop databases in coordination
- an enhanced role for country coordinators
- only part-time coordination by IBPGR
- a minimum increase in budget to cover inflation only (5% per annum over 3 years)
- payment to be made as follows: 50% of the contribution in 1990, 25% in 1991, and 25% in 1992 (100% in 1990 is obviously also welcome)
- a minimum budget requirement of US\$ 400000 which will guarantee the continuation of existing working groups
- maximum payment-in-kind by hosting meetings will be US\$ 60000
- pledges above the minimum threshold of US\$ 400000 will be used to initiate new working groups in the following order of priority: Vitis, Brassica, Pisum (each \$25000 will allow the start of one of these working groups).

WORKING GROUPS OBJECTIVES FOR PHASE IV

Barley

- Documentation - upgrading of the EBDB every three years with first exercise starting in 1990.
- Compilation of evaluation descriptors used in each genebank with number of accessions evaluated for each descriptor (in 1990 together with first updating of the EBDB).
- Rationalization of collections - EBDB to achieve identification of most original accessions within a set of duplicates (for named cultivars) by end of 1990, commitments from curators to regenerate/multiply these accessions under the best possible conditions during 1991.
- Establishment of a core collection - selection of the basic core and entire core by 1991, establishment of basic and entire core in different European genebanks starting 1992.
- Safety duplications - all unique European accessions to be duplicated in a European 'safety duplication collection'.

Avena

- Documentation - further development of the database with characterization/evaluation data. Services to users.
- Rationalization of collections - European Avena database to identify most original accessions (namely cultivars) within a set of duplicates by end of 1990, commitments from curators to regenerate/multiply these accessions under the best possible conditions during 1991.
- Safety duplication - Braunschweig Genetic Resources Centre, as European Avena database, to act as Avena base collection, systematic safety duplication of original accessions.
- Wild species - establishment of a subnetwork for enhancement of wild germplasm (the funding necessary for reaching this objective is not included in the proposed budget, refer agenda item 18).

Allium

- Documentation - development of the database with registration of recommended characterization/evaluation data.
- Establishment of a computerized bibliography on Allium genetic resources.
- Mapping of distribution (collected material) of A. ampeloprasum.
- Collecting - further collecting in agreement with recommendations of third meeting.
- Evaluation - promotion of collaborative projects for evaluation.

Forages

- Documentation - continuation of completion of passport data and regular updating of the databases, mapping of collected material in each database, wide distribution of databases to breeders/Universities, publication of a booklet summarizing contents of databases.
- Collecting - continuation of the programme in accordance with priorities of the third meeting.
- Standard varieties - implementation of distribution of reference varieties of forage legumes in the Mediterranean through the respective databases.
- Duplication for safety - initiation of safety duplication within constraints of seed availability.
- Core collection - implementation of two pilot core collections, one for Lolium perenne and one for Medicago sativa (the funding necessary to reach this objective is not included in the proposed budget, refer Agenda item 16).
- In situ conservation - through a pilot study (genus species to be identified) to make priorities and requirements for in situ conservation known to the relevant conservation organization.

Prunus

i) Cultivated Species

- Documentation - continuation and expansion of the European Prunus database.
- Standard varieties - inclusion in each collection of virus-free clones of the ad-hoc reference varieties.
- Implementation of an effective conservation Prunus network.

ii) Wild Species

- Enhancement of collaborative strategy/action for field surveys, further research on wild species.

Sunflower

- Documentation - extension of the database and selection of major agronomic descriptors for further documentation/registration in the database, regular updating of the computerized bibliography.
- Further collecting - continuation of the US/European collaboration for collecting in North and Central America.
- Rationalization of collection - sharing of workload/responsibilities to ensure the provision of sufficient seed quantities of all collected genotypes. Special attention will be given to the problems of maintenance of wild species.

- Safety duplication - to accelerate multiplication of open-pollinated varieties for provision of good quantities of seeds (1 kg), safety duplication of smaller quantities of other accessions (base collections: Research Institute of Plant Production, Praha Ruzyně, Czechoslovakia).

Vitis, Brassica and Pisum

- Implementation of Crop Working Groups to define collaborative programmes and implementation of these programmes.

**ROLE AND RESPONSIBILITIES OF IBPGR, COUNTRY COORDINATOR
EUROPEAN DATABASE HOLDERS AND TREE FRUIT LIAISON OFFICERS**

Role of IBPGR

IBPGR will be pleased to execute Phase IV of the European Cooperative Programme on the understanding that European countries will fund the activities of the specific crop networks in Europe through special project funding to IBPGR as outlined in the budget see Appendix IX) and with considerable inputs-in-kind. In executing the project over the years 1990-1992, IBPGR will ensure that one-quarter of the time of its Crop Genetic Resources Networks Coordinator and one-quarter of the time of a secretary is made available to service the project. IBPGR will furthermore make available at no extra costs to the project, its overall infrastructure and expertise to the benefit of the project.

IBPGR will endeavour to draw into the project those European countries which have not so far participated in the European Cooperative Programme.

In addition, and at the request of the TCC, IBPGR would wish to foster the European Cooperative Programme as it has developed over the past years. On the one hand because it provides a forum for exchange of information and ideas within Europe, but also because it has provided, and hopefully will continue to provide an important forum for developing new concepts in dealing with the conservation and utilization of plant genetic resources. Needless to say that this activity requires specific funding by participating European countries.

The role of IBPGR in Europe relates to strengthening of and cooperation with national genetic resources programmes. This includes relations of IBPGR Management with European donors to IBPGR, the activities of IBPGR's Regional Coordinator for Southwest Asia, North Africa and Europe and direct contacts with other IBPGR staff working in conservation research, germplasm acquisition, etc. In addition IBPGR will involve European collections/genebanks, in its pilot programme for the implementation of international crop networks, when these genebanks hold/have an active programme with the crop concerned. This is a continuing activity and is considered part of IBPGR's core programme.

The role of Country Coordinators

The increased elements of self-sustainability of crop networks within ECP has moved the emphasis from external coordination to national coordination to ensure that the agreed objectives of Phase IV are met.

Country Coordinators should be clearly identified by their sponsoring Ministries as acting on their behalf in ECP matters and modest national budgets to support internal coordination must be considered.

The Country Coordinator will liaise between IBPGR and the sponsoring Ministry to seek funds, stimulate their prompt payment and provide reports of national activities in support of ECP when required.

APPENDIX XI (cont.d)

The Country Coordinator will liaise between IBPGR, sponsoring Ministry and any participating institute and ensure that 'inputs-in-kind' are accurately identified and mutually agreed before Phase IV commences, so that both institute directors and participating scientists involved with ECP databases are both able and willing to make the expected inputs. The Country Coordinator will annually monitor these inputs and will inform both the sponsoring Ministries and IBPGR of any national shortcomings of 'inputs-in-kind'.

The Country Coordinator will also assist national institutes in removing any funding or other obstacles to progress.

The Country Coordinator will liaise either directly or indirectly with crop working party Chairmen to: (i) identify working party members, if so required, and (ii) obtain their support for ECP activities, if necessary.

The Country Coordinator will liaise either with working party Chairmen and national working party members to identify within the country others interested in ECP to ensure that ECP activities are brought to their attention.

The institutes as well as IBPGR should ensure that copies of all relevant correspondence be sent to the Country Coordinators.

Institutional responsibilities for data base holders

The strengthening of a network depends largely on the added value of the network to the individual programmes and scientists. Potential benefits of a network to individual programmes are:

- information on and access to other collections
- the possibility of rationalizing individual collections and avoiding duplications of effort in maintenance, regeneration and evaluation
- identifying gaps and overlaps in collection and rationalizing collection strategies, i.e. identifying what needs to be collected and who can do it.

The main instrument in realizing such added benefits depends on the availability of a good database system and the use of such a system for these objectives.

Modern information technology provides the means to do much more than publishing crop catalogues. In fact general crop catalogues have proved to be of little value to users (genebank curators, plant breeders) beyond providing an overall view of material in collections.

Hence, establishing a crop database by itself is a necessary first step but the operational benefits beyond providing an overall inventory require effective use of such a system for defined objectives. In addition, updating the information must be done continuously. The most logical way of achieving this is for one institute to assume overall responsibility for maintaining the crop database and consequently act as a coordinator for the network.

It is not difficult to transfer a crop database system from one institute to another. Neither is it difficult to transfer data contained in one system into another system. However, the effectiveness of a network would seem to depend on the willingness of one institute to assume primary responsibility for maintaining the system at any one time. Hence, an institute willing to develop and maintain a crop genetic resources database should agree to act as a coordinating institute and provide the following services:

APPENDIX XI (cont.d)

- maintain and update the system in cooperation with participating institutes
- include information relevant to the management of collections such as:
 - passport data
 - amount of seed
 - date of regeneration
 - % viability checked at regular intervals by holders of the accessions
- update evaluation data
- update new accessions achieved from collection activities of participating institutes.

Some institutes may prefer to hold a duplicate of the global database and rely on the coordinating institute to provide regular updates. Other institutes may refer to the coordinating institute to respond to specific requests for information such as:

- gaps in collection and deciding on collection strategies
- the need for regeneration of specific accessions possibly duplicated in other collections.

A major task of genebanks is to advise users, notably plant breeders what material is potentially useful for their programmes. In first instance, evaluated accessions provide an answer. However, systematic analysis of data may allow extrapolation to other accessions not evaluated but having an increased likelihood of having the required characters (i.e. based on ecogeographical data).

The definition of core collections representing a sub-sample of the total collection as a basis for evaluation should be the responsibility of the coordinating institute.

Linked with the core collection concept is the need to get a better understanding of how genetic variation is distributed and what constitutes a minimum collection conserving a major part of genetic diversity in the crop, the species or a group of species. The institute responsible for the central crop database should play a major role in executing or proposing research necessary to get a better understanding of such problems.

In summary, institutions willing to assure responsibility for maintaining crop database systems should be prepared to exploit the full potential of modern information technology in increasing the efficiency of genetic conservation and use.

The role of the Fruit Tree Liaison Officer

The Fruit Tree Liaison Officer ensures the liaison between the national fruit tree germplasm collections and ECP/GR and will be nominated by the respective Government.

For this purpose, the Fruit Tree Liaison Officer will send once a year a report to the Country Coordinator, the Chairman of the Prunus Working Group, and to IBPGR, on the situation of fruit tree collections in his/her country. He will be the representative of his country to attend the Prunus Working Group meetings.

APPENDIX XI (cont.d)

In the case that one or more the field genebanks will be at risk, the Fruit Tree Liaison Officer will alert the Country Coordinator, the Chairperson of the relevant Working Group and IBPGR. At the same time, the Fruit Tree Liaison Officer will take appropriate action to ensure that the endangered germplasm is transferred to other collections, possibly within the same country.

The Fruit Tree Liaison Officer will stimulate the collation of data on fruit germplasm collections in his/her country and their transmittal to the central database. He/she will keep continued relationship with the Country Coordinator.



EVALUATION OF PHASE IV of ECP/GR

The fourth meeting of the Technical Consultative Committee of the European Cooperative Programme for the Conservation and Exchange of Crop Genetic Resources (ECP/GR) was held in Szeged, Hungary in October 1989. The meeting recommended a continuation of the programme through a fourth phase, a recommendation which was subsequently accepted by the participating countries. However, in order to emphasise that the focus of effort would be on strengthening activities within the framework of the crop network system, it was decided to rename the programme the European Cooperative Programme on Crop Genetic Resources Networks, while retaining the abbreviation ECP/GR.

Phase IV began formally in June 1990, six months after the end of Phase III; it ended in December 1992 and, as with the two previous phases, was executed as a special project of IBPGR.

During Phase IV the USSR and Albania formally joined the programme. It is likely that Romania will do so in the near future. Thus with the exception of the newly-independent states of former Yugoslavia and the CIS ? all countries of Europe (except Luxembourg) have now participated in at least one phase of the programme. Iceland and Ireland did not formalise their participation in Phase IV.

The following Working Groups held their fourth meetings: *Prunus*, *Allium*, Sunflower and Forages; and the first meeting of the *Brassica* Working Group took place. The *Prunus* database was transferred to INRA Bordeaux from the Nordic Gene Bank. Meetings of the Barley and *Avena* Working Groups will be held in 1993.

General Recommendations for Phase IV from 4th TCC

in the following section the recommendations/observations of the 4th TCC are listed, together with a brief statement of the action taken during Phase IV that addressed them:

-that IBPGR continue to ensure coordination of the programme through ¼ time of the Network coordinator and of a secretary

The network coordinator Mr. P.M. Perret carried out this role until ?????, when responsibility for coordination was passed to Ir. E. Frison, the IBPGR Group Leader for Europe. Secretarial assistance was also provided. It was found that the workload of the ECP/GR took up significantly more than ¼ of the time of the coordinator

- that IBPGR continue to strengthen its collaboration with other organizations especially FAO and that FAO should receive invitations to all Working Group meetings as an observer.

IBPGR and FAO formalised their cooperation on programme matters through the signing of a Memorandum of Understanding in September 1990.

?????

- non-member countries be encouraged to join Phase IV

The former USSR joined Phase IV through the signing of a Memorandum of Understanding with IBPGR in June 1990

- that IBPGR and FAO collaborate on maize and olive in the manner of sunflower

?????

- the implementation of Working Groups for *Brassica*, *Pisum*, *Vitis*

the first meeting of the ECP/GR Brassica Working Group was held in Czechoslovakia on 21-23 May 1991. A Working Group was established for *Brassica*; it held its first meeting in May 1991, in Czechoslovakia.(see below) A meeting for *Pisum* will be held this year.

Vitis ????

- the role and responsibilities of country coordinators and of European databases should be better defined

???

The TCC also endorsed the specific objectives for Phase IV of the various Working Groups. The Working Group objectives and TCC comments are presented below, again with a brief statement of the activities undertaken:

1. Barley

WG - documentation: upgrading of the EBDB every three years with first exercise starting in 1990

TCC- continuation and updating of the EBDB

WG - compilation of evaluation descriptors used in each genebank with number of accessions evaluated for each descriptor (in 1990 together with first updating of EBDB)

TCC- encouragement of evaluation of germplasm on the basis of major descriptors

WG - rationalisation of collections - EBDB to achieve identification of most original accessions within a set of duplicates (for named cultivars) by end of 1990, commitments from curators to regenerate/multiply these accessions under the best possible conditions during 1991.

TCC- continuation in identification of duplicates

WG - Safety duplications - all unique European accessions to be duplicated in a European safety duplication collection'

TCC- finalise the safety duplication in a base collection

TCC- identification of gaps and recommendations for subsequent activities

WG- establishment of a core collection - selection of the basic core and entire core by 1991, establishment of basic and entire core in different European genebanks starting 1992

TCC- establishment of the barley core collection and organisation of its rational use; funds to be included in phase iv budget

TCC- make available special collections such as disease (mildew) phenotypes and genetic stocks

Avena

WG - documentation - further development of the database with characterisation/evaluation data. Services to users.

TCC- Braunschweig GR Centre to continue as coordinator of database and should continue to provide adequate staff time and operational expenses

TCC- updating to include characterisation and evaluation data

TCC- collecting of five targeted wild species expected to be completed in 1990

WG - Rationalisation of collections - database to identify most original accessions (namely cultivars) within a set of duplicates by end of 1990. commitments from curators to regenerate/multiply these accessions under the best possible conditions during 1991.

TCC- identification of duplicate accessions is a major task for curators and database coordinator

WG Safety duplication - Braunschweig Genetic Resources Centre, as European Avena database to act as Avena base collection systematic safety duplication of original accessions.

TCC- safety duplication should be encouraged

TCC- characterisation and evaluation should continue

WG - Wild species - establishment of a subnetwork for enhancement of wild germplasm (the funding necessary for reaching this objective is not included in the proposed budget)

TCC- support should be sought for collaborative enhancement of wild *Avena* germplasm

As mentioned above, working group meetings took place for the following crops and so they had the opportunity to modify their workplans during the course of Phase IV:

Allium

TCC- plant breeders, including commercial sector, should be invited to participate in activities to encourage GR use

WG - promotion of collaborative projects for evaluation

TCC- Working Group to address issues of stimulating use of collections, pre-breeding, biosystematic research

TCC- implementation of an international *Allium* network to counter threats of genetic erosion

WG- development of database with registration of recommended characterisation and evaluation data

TCC- effort needed to include characterisation and evaluation data in database

This was proceeding slowly, but incorporation of passport data had continued and now covered all significant Allium collections.

WG - Establishment of a computerised bibliography on *Allium* genetic resources

TCC- database should include an *Allium* bibliography

No references were sent in by Working Group members and it was agreed that other suitable bibliographical systems already existed which could perform this function.

TCC- institutional commitment to Phase IV needs to be strengthened with a view to making the database an effective management tool

WG -mapping of distribution (collected material) of *A. ampeloprasum*

WG - further collecting in agreement with recommendations of third meeting.

TCC- Italy and Turkey should identify constraints limiting high priority collecting activities

TCC- sites for regeneration should be identified (with respect to daylength) and institutional commitments sought

TCC- research needs in *in vitro* storage and cryopreservation should be identified and potential contributors identified

TCC- IBPGR should develop recommendations on standardised taxonomy

Allium Working Group Workplan from fourth meeting, 10 & 14.6.91 (Phase IV)

Promotion of Working Group activities

- article on conclusions of 4th WG meeting to be submitted to Diversity

- preparation and distribution of a biannual newsletter, starting end 1991

European *Allium* database

- new versions of the EADB to be distributed to members by spring/summer 1992
- members to increase efforts for sending data to EADB

Collecting

- Greece: garlic collecting planned
- Italy: collecting promised
- Spain: need for wild species collecting to be clarified
- Sweden: NGB to be contacted for information on collecting of shallots, potato onions and chives
- Cyprus & Turkey: better contact needed with specialists to organise collecting
- Albania & Romania: more information to be sought on potentially valuable landraces
- USSR: systematic collection needed in Soviet Central Asia & West Siberia
- China: details required on material collected, especially from western part
- Cuba: re-collection and safety duplication needed

Ecogeographic surveys

- Symposium on *Allium* taxonomy to be approached for distribution data
- detailed surveys needed in Soviet Central Asia & West Siberia with the aim of *in situ* preservation

Evaluation

- attempts to be made to obtain feed-back from users of genetic resources
- paper to be prepared and submitted to IBPGR Newsletter on genealogy of open-pollinated varieties

Research

- sets of wild species accessions to be distributed to specialists studying phylogeny or genetic diversity
- intensified research needed on *in vitro* maintenance methods

Genetic stocks

- conservation in genetic resource collections required as stocks become available for distribution

Future of ECP/GR *Allium* Working Group

- next meeting to be combined with 5th EUCARPIA *Allium* Symposium

International collaboration

- implementation of a tropical *Allium* genetic resources network recommended
- an *Allium* Working Group representative should participate in 1993 symposium in Thailand

4. Forages

WG - continuation of completion of passport data and regular updating of the databases, mapping of collected material in each database, wide distribution of databases to breeders/Universities, publication of a booklet summarizing the contents of databases

TCC- institutes holding collections are encouraged to respond to requests for data

TCC- information on the databases to be promoted

Databases for Phleum, Lolium, Trifolium, Vicia, Phalaris and Medicago have all been updated and circulated; mapping of perennial Medicago has been undertaken. The publication "Guide to the European Forage Databases" was produced in 1991.

TCC- computer mapping to be used to identify areas in need of collection

TCC- herbarium and literature studies to be undertaken with government 'in-kind' payments

WG - continuation of the collecting programme in accordance with priorities of the third meeting

TCC- collecting priorities of WG III supported

Collecting had been carried out in Bulgaria, Czechoslovakia, Italy, Canary Islands, Spain, Greece, Germany, Switzerland, Hungary, Turkey, Poland, and the USSR

WG - implementation of distribution of reference varieties of forage legumes in the Mediterranean through the respective databases

Sufficient seed stocks of nearly all the recommended standard varieties are available. Use of the standard varieties had not been as extensive as originally hoped and there was some need to revise the lists.

TCC- regeneration of collections encouraged

WG - implementation of two pilot core collections for *Lolium perenne* and *Medicago sativa* (the funding necessary is not included in the budget)

TCC- core collections to be implemented

*A preliminary meeting was held in 1992 to discuss establishment of the *Lolium* core collection. Financial constraints have prevented further development.*

WG- through a pilot study to make priorities and requirements for in situ conservation known to the relevant conservation organisation

TCC- relevant agencies to be informed of needs and priorities of plant breeders when considering establishment of *in situ* reserves

TCC- one species to be suggested for pilot study of *in situ* conservation

Studies on in situ conservation of Lolium perenne have been initiated in Germany, outside the direct framework of the ECP/GR, and a project in the Nordic countries is continuing; however, there has been no possibility to promote further studies at an international level.

5. Prunus

WG - continuation and expansion of the *Prunus* database

TCC- database to be used to ensure safety duplication of collections

There has been little activity since NGB indicated its desire to transfer the database to another institute. This has now been accomplished.

WG - inclusion in each collection of virus-free clones of the ad-hoc reference varieties

Very few requests for standard varieties have been received. At its fourth meeting the Working Group decided to make their use optional and to simplify the recommended list.

WG - Implementation of an effective conservation *Prunus* network

TCC- collection of wild populations of almond and apricot in Turkey

TCC- obtain more information on collecting sweet cherries in Spain and maintenance *in situ*

WG - enhancement of collaborative strategy/action for field surveys, further research on wild species

TCC- population studies and surveys of wild material should have high priority

Surveys or collections of wild cherries were carried out in France, Italy, UK and Yugoslavia and of plum in Yugoslavia.

TCC- institutes should clearly indicate inputs that they can provide for maintenance of collections

TCC- fruit tree liaison officers to be nominated

*Several governments have made written commitments to conserve original *Prunus* accessions maintained in their collections. The fourth WG meeting was informed of concerns as to the safety of collections in the former USSR, Czechoslovakia and Belgium.*

6. Sunflower

WG- extension of the database and selection of major agronomic descriptors for further documentation/registration in the database, regular updating of the computerised bibliography

TCC- regular updating of the database to be encouraged

It was reported in 1990 that the database for wild sunflower included information on 1588 accessions. Little progress has been made in updating the cultivated sunflower database. Data for both databases from the USSR were expected to be forthcoming. A second version of the bibliography was to be made available in September 1992.

WG- further collecting - continuation of the US/European collaboration for collecting in N & C America

WG - rationalisation of collections - sharing the workload/responsibilities to ensure the provision of sufficient seed quantities of all collected genotypes. Special attention will be given to the problems of maintenance of wild species.

WG- safety duplication - to accelerate multiplication of open-pollinated varieties for provision of good quantities of seeds (1 KG) safety duplication of smaller quantities of other accessions

In 1990 about one third of all known sunflower varietal populations had been entered in the base collection. Requests had been sent to many institutes requesting samples for conservation.

TCC- collaboration with FAO network to be strengthened

The fourth meeting of the Working Group was held just before the seventh consultation of the FAO network, allowing many participants to attend both meetings.

TCC- research in characterisation and evaluation should be undertaken

TCC- basic studies on wild species to be undertaken to encourage their use

TCC- protected lines (?) to be used for testing

Other

TCC - Working groups for *Brassica*, *Pisum* and *Vitis* to be implemented to define and commence collaborative programmes

A Working Group for Brassica was implemented and held its first meeting. The initial steps to develop a European database of cultivated Brassica accessions had also been taken by IHAR, Poland and a wild Brassica spp. database had been developed by Prof. Gomez-Campo (Spain) and Prof. Gustafsson (Sweden).

ECP/GR Phase IV : Contributions and Payments Received

Country	Contribution	1990	1991	1992	1993	Total paid	Contrib. in kind	Still due	
Austria	20,000	5,922			14,078	20,000		0	
Belgium	20,000		9,985		10,000	19,985		15	
Bulgaria	10,000					0		10,000	Host TCC '92
Cyprus	5,000	2,500	1,250	1,250		5,000		0	
Czechoslovakia	10,000			5,000		5,000	5,000	0	Brassica +5000
Denmark	20,000	10,000		10,000		20,000		0	
Finland	10,000	5,000		5,000		10,000		0	
France	50,000				50,000	50,000		0	
FRG	50,000	50,253				50,253		0	
GDR	20,000					0	20,000	0	
Greece	10,000		7,500		2,500	10,000		0	
Hungary	10,000					0	10,000	0	Host WG
Ireland	10,000		2,961			2,961		7,039	
Israel	10,000	3,300				3,300		6,700	
Italy	50,000	25,000	12,500		12,500	50,000		0	
Netherlands	20,000			15,000		15,000		5,000	
Norway	10,000	5,000		5,000		10,000		0	
Poland	10,000	5,000	2,500		2,479	9,979		21	
Portugal	10,000			10,000		10,000		0	
Spain	20,000	10,000		5,000	5,000	20,000		0	
Sweden	20,000		15,000	5,000		20,000		0	
Switzerland	20,000		15,000	5,000		20,000		0	
Turkey	10,000					0		10,000	
UK	50,000	25,000		25,000		50,000		0	
Yugoslavia	10,000	10,000				10,000		0	

Total	485,000	156,975	66,696	91,250	96,557	411,478	35,000	38,775
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	1990	1991	1992	Phase IV
Overhead			30,253	30,253
Other Expenditure	52,812	115,170	64,734	232,716
Total Expenditure	52,812	115,170	94,987	262,969
Balance	104,163	55,689	51,952	148,509

1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1910