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REPORT OF THE
SECOND GOVERNING
BOARD MEETING

Held in Geneva
14-17 December 1981

FAO/UNDP EUROPEAN COOPERATIVE PROGRAMME
FOR CONSERVATION AND EXCHANGE
OF CROP GENETIC RESOURCES



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



UNITED NATIONS DEVELOPMENT PROGRAMME

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Meeting Report

FAO/UNDP EUROPEAN COOPERATIVE PROGRAMME
FOR
CONSERVATION AND EXCHANGE OF CROP GENETIC RESOURCES

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Geneva, 1981

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I. INTRODUCTION

1. The Second Governing Board Meeting of the FAO/UNDP European Programme for Conservation and Exchange of Crop Genetic Resources (ECP/GR) was held in the Palais des Nations, Geneva, Switzerland, 14 - 17 December 1981. A list of participants is given in Appendix I.
2. The meeting was called to order by the Chairman, Mr. M. Pencic, Yugoslavia, who briefly mentioned the various matters that called for decisions by the meeting.
3. Mr. A. de Fauconval, Deputy Director, Agricultural Operations Division, welcomed participants on behalf of the Director-General of FAO saying that the wide country representation was a cause for satisfaction. He felt that one of the most important topics to be considered by the Board was whether or not there should be a Second Phase of the project and how it would be paid for if the decision was in favour. Mr. de Fauconval reminded the meeting that the Executive Secretary's appointment terminated at the end of the year. He was sure that the meeting would wish him to thank Mr. de Bakker for the indefatigable way in which he had worked to further the interests of the project. Finally, Mr. de Fauconval referred to a resolution made in November at the Twenty-first Session of the FAO Conference. It asked the Director-General to prepare a draft international convention to ensure that crop genetic resources would be available without hindrance to all human beings. A further request was that a study should be made of the feasibility of an international bank of plant genetic resources being established under the auspices of FAO. Mr. J.T. Williams would speak about the resolution and study later in the meeting.
4. Speaking on behalf of UNDP, Mr. S. Makiedo welcomed participants; spoke of the important decisions required from the meeting and wished the meeting success in its deliberations.
5. The proposed agenda was adopted (Appendix II).

II. CURRENT MEMBERSHIP

6. The Executive Secretary drew the attention of the meeting to the current membership of the programme as shown in Appendix III.

7. Mr. P.H. Bradhering made a statement on behalf of the Federal Republic of Germany (FRG). He said the Government had not yet signed the Project Document because 1) legal problems concerning immunities and privileges remained to be settled; 2) Government wished to be sure that support was given only to aspects of genetic resources activities not yet being dealt with by other programmes such as the IBPGR, the EC programmes, etc. and 3) Government was instructed by Parliament not to give financial support to new programmes executed by FAO. Nevertheless, despite these reservations, the FRG would collaborate with ECP/GR through the National Gene Bank of Braunschweig-Völkenrode and other institutions dealing with genetic resources and plant breeding. FAO intends to establish an international gene bank and to draft an International Convention on Plant Genetic Resources. As particularly the former might compete, in some ways, with the ECP/GR programme and apparently duplicate the activities of other organizations, these intentions would have to be clarified before the FRG could decide whether or not to join ECP/GR.

8. Mr. C. Hutin, France, informed the meeting that his Government might well participate in Phase II of ECP/GR if it was clear that the programme would not duplicate the work of other organizations. Mr. C. Populer, Belgium, said his Government would decide by mid-1982 at the latest, whether or not to participate in the project.

III. FAO CONFERENCE RESOLUTION ON CROP GENETIC RESOURCES

9. The Chairman invited Mr. J.T. Williams, Senior Genetic Resources Officer, FAO, and Executive Secretary IBPGR, to explain FAO's intentions. The latter said that a resolution was moved at the recent FAO Conference requesting the Organization to consider the establishment of an international gene bank and a convention to ensure that plant genetic resources were fully and freely available to all mankind. The resolution was adopted and in consequence, FAO was charged to appoint a study team to examine

both these matters. Its findings would first be reported to the Committee on Agriculture in 1983 which would then report to the Council with a view to the findings being considered by the Twenty-second Session of the FAO Conference. Mr. Williams stressed that FAO's aim will be to recognize the principles governing the availability, maintenance and use of genetic resources which are often stated but not always ensured.

IV. ACTIVITIES UNDERTAKEN BY THE EXECUTIVE SECRETARIAT

10. The Executive Secretary introduced his Report on Activities* by referring to the role of ECP/GR. It is recognized by IBPGR as the European part of the global network and serves to link sub-regional GR groups, namely Mediterranean, EC and CMEA programmes and the Nordic Gene Bank. The core of the ECP/GR programme was its crop working parties. Funds would be needed in Phase II for these, the Secretariat and training purposes if the programme was to develop properly.

V. ACTIVITIES WITHIN COUNTRIES

11. The Executive Secretary said that Country Reports had been requested by him before the meeting. More were expected shortly.

12. Mr. Williams, Executive Secretary of IBPGR, offered to publish the reports in the IBPGR Newsletter as they were too bulky to be attached as an appendix to the report of the Governing Board meeting. The offer was gratefully accepted.

13. Mr. M. Zacharias, German Democratic Republic, suggested that references to scientific publications should be included in the Country Report.

*Here and elsewhere in the text, an asterisk indicates that the report is not included among the Appendices; copies are obtainable from the Secretariat of ECP/GR

14. Mr. B. Kramski, Poland, informed the meeting that the English translations of descriptors used by CMEA for wheat, rye and flax were now available. He promised more active cooperation with the ECP/GR in future and spoke of a meeting on GR research to be held next May in Poland.

15. Mr. H. Skov, Denmark, informed the meeting that a consultant's report on phytosanitary aspects of GR activities prepared for the Nordic Gene Bank, would be translated into English and sent to the Executive Secretary of the ECP/GR programme.

16. Mr. P. Veyrat, Spain, said that an increased awareness of the importance of plant genetic resources was evident among Spanish authorities. A catalogue of these resources was being prepared. He said his Government would favour continuation of the ECP/GR programme.

VI. MEETING OF THE SCIENTIFIC ADVISORY COMMITTEE

17. The report of the second meeting of the Scientific Advisory Committee, held in Lund, Sweden, 13 - 14 July 1981, jointly with the EUCARPIA extended Gene Bank Committee, was presented by Mr. J.G. Hawkes (Appendix IV).

18. Mr. L. Navarro (Spain), a specialist on sub-tropical tree crops, was nominated by Messrs V.D. Krentos (Cyprus) and P. Veyrat (Spain) to be one of the members chosen by the ECP/GR programme to serve jointly with the EUCARPIA Gene Bank Committee (SAC). In addition, Mr. S. Blixt (Sweden), the Documentation Consultant to the ECP/GR, was nominated by Messrs H. Skov (Denmark) and J.T. Williams (FAO/IBPGR) and this was agreed. They replace the two present members, Messrs L. Djilianov and L. Seidewitz.

19. Mr. S. Blixt observed that the Working Groups would be a valuable source of scientific expertise in addition to the SAC.

20. Mr. M. Zacharias (German Democratic Republic) thought that each "lead institute" in the crop programmes should be represented by a crop specialist.

21. Mr. J.G. Hawkes (EUCARPIA/SAC) said that care should be taken not to make the Committee too unwieldy to function and Mr. V.D. Krentos (Cyprus) asked for flexibility; a technical committee should not be stultified by rules.

22. Mr. A. de Fauconval reminded the Board of the pertinent section about the Advisory Committee to be found in the Consultative Meeting (1979) of which photocopies were circulated later. He suggested that decisions affecting the constitution and functions of the Scientific Advisory Committee should be made before the evaluation of Phase I, due early next year.

23. Mr. J.T. Williams also referred to the section mentioned by Mr. A. de Fauconval. Functions were listed for the SAC and not all of them had been pursued. An important task is the consideration of crop working groups with lead institutes to encourage cooperation and avoid duplication of effort by the ECP/GR and other programmes such as the IBPGR or sub-regional efforts.

24. Mr. M. Pencic (Yugoslavia) closed the discussion remarking that it would be a most useful introduction for the next Board Meeting at which decisions by the SAC could be discussed and implemented.

VII. COOPERATIVE ACTIVITIES ON SELECTED CROPS

25. The Executive Secretary introduced a paper on this subject (Appendix V). He considered working groups on selected crops to be the backbone of activities. The working groups could, of course, be contacted by other institutes as needed.

26. Mr. H. Skov (Denmark) asked if the principle of three or four institutes in a working group was accepted by the Board. Agreement was expressed.

27. Mr. M. Zacharias (German Democratic Republic) asked for reference to be made in the objectives of the working groups to close cooperation with the IBPGR programmes. This was agreed.

28. On the topic of availability of crop genetic resources material, asked separately by Messrs. M. Mota and M. Rives, Mr. J.T. Williams said that this matter would be examined very carefully from an international viewpoint by the team that would be appointed to study the FAO Conference resolutions referred to previously. The aim of FAO and the IBPGR was to overcome restrictive practices wherever possible. He informed the Board that the IBPGR had stated that it had no evidence of restrictions caused by Plant Breeders Rights (Protection des obtentions végétales) on the movement or availability of materials other than breeders' lines.
29. Speaking of the document under discussion, Mr. Williams thought that the IBPGR should be represented in the Working Groups and mention should be made of observers or representatives from sub-regional groups being welcome to attend. The SAC should prepare a schedule of Working Group meetings, taking into account availability of funds. A decision should also be made about the lead institute for the Vitis Working Group due to meet in Greece in April 1982.
30. To meet a point raised by Mr. Hawkes, "exchange" used in paragraph 2.5 (Appendix V, page 39) was qualified to read "availability and exchange of samples".
31. Mr. Skov asked for a definition of the conditions under which institutes that had not signed the ECP/GR Project Document participated in the programme of activities.
32. Mr. G. de Bakker said he did not wish to apply the rules too rigidly; for example, the Potato Working Group could not be active until the middle of 1982. If by then the Federal Republic of Germany had not signed the Project Document, the Institute of Braunschweig could not be a member of the Working Group.
33. Mrs. S. Galanopoulou-Sendouca (Greece) suggested that working groups should be established for cotton and tobacco. For cotton the three countries: Bulgaria, France and Greece should be represented. Vitis and aromatic plants were of interest to Greece and the countries in the Mediterranean Programme and Greece offered to play a major role.
34. Mr. A. de Fauconval reminded the Board that travel costs for those attending Working Groups could only be paid to representatives from the IPF countries, i.e. those in receipt of financial support from UNDP.
35. Mr. E. Porceddu (Italy) thought that Spain should be represented in the Grasses and Clovers Working Group in the light of discussions recently held by the IBPGR Mediterranean Programme.

36. Mr. de Bakker hoped that Spain would agree to serve. (The title of the Working Group was changed to "Forage Grasses and Clover"). Mr. de Bakker was of the opinion that initially an agreed group should hold a meeting. Thereafter, correspondence and visits by individuals to member institutes should suffice to foster the programme. Any proposals for new groups would be considered by the SAC.

37. The composition of the proposed Vitis Working Group was raised by Mr. Skov (Denmark). It was agreed that this would be dealt with at the Vitis meeting to be held next April in Greece. This will be a meeting sponsored by ECP/GR, EUCARPIA and IBPGR.

38. Mr. G. Jenkins was invited by the Chairman to comment on the paper being discussed. He thought it was essential that working groups should meet initially and the IBPGR should always be represented. As regards availability of crop material, it was inevitable that some restrictions would be applied by the trade.

39. Mr. P. Veyrat said Spain would readily accept the responsibilities that would be entailed by membership of the Forage Grasses and Clovers Working Group. He would like to see a Working Group for Lupin established, taking account of the Conference to be held on this crop in Spain next May. In addition, working groups for peaches and apricots would be of great interest for Spain. These proposals were referred to the SAC, as well as that for a Working Group for maize.

40. Mrs. E. Skorda (Greece) pointed out that Italy was the only Mediterranean country included in the proposed Working Groups and it was also represented in the SAC. Mr. de Bakker said this came about because until very recently few, if any, Mediterranean countries had adequate facilities for conservation and evaluation but the programme was sensitive to the needs and wishes of these countries.

41. Mr. C. Populer (Belgium) wondered whether institutes would collaborate with any degree of enthusiasm if they were not represented in the Working Groups. Referring to paragraph 3.3 on Conservation (Appendix V, page 40), although European facilities for seed storage might be adequate, this could not be said about living collections. In reply, Mr. de Bakker thought lead institutes should issue a bulletin of activities for the information of other institutes. This would stimulate interest. Concerning vegetatively propagated crops, the special problem that they raised was also referred to in paragraph 4.III of Appendix V.

42. A proposal by Mr. H.H. van der Borg (Netherlands) that the preparation of written reports for the information of other institutes and the Board should be an additional qualification for an institute to be selected as a Germplasm Centre for one or more crops, was accepted (see Appendix V, page 42).

43. Mr. Williams was of the opinion that the interests of the Mediterranean region in barley, Vitis and forage legumes should be recognized. Mr. de Bakker said he would like to hear of an institute in the Mediterranean region willing to be Germplasm Centre for barley. The Greek delegation replied that Greece would do so.

44. Returning to the subject of new crop working groups, Mr. de Bakker said that none would be formed until the matter had been discussed by the SAC. In the meantime a group for Lupin, such as that suggested by Mr. Veyrat, would meet anyway and the ECP/GR would be interested in the deliberations.

45. The Board agreed that proposals for new groups should be submitted to the SAC to be considered at its next meeting to be held in Greece.

46. The document was adopted with the amendments that had been agreed.

VIII. REPORT AND PLANS FOR TWELVE WORKING GROUPS

47. This information document was adopted with minor amendments (Appendix VI and VI.A).

IX. COLLECTING ACTIVITIES

48. In presenting this document, Mr. de Bakker said it was an up-dated version of a similar document prepared last year (Appendix VII). He thought crop working groups would help in identifying gaps still existing in collections. Mr. M. Mota (Portugal) observed that reports of collecting activities should be as informative as possible and widely distributed.

49. Mr. Williams noted that the collecting activities were those carried out with national and IBPGR funds. Had the Executive Secretary received any requests for financial help? Mr. de Bakker said he had not received any.

50. Mr. Hawkes thought information about future plans would be valuable.

51. Mr. van der Borg said the EC Programme had contracts with appropriate institutes for collecting Brassicas.

52. Mr. Jenkins suggested that the list giving numbers of samples collected should also include species names and other details.

X. INFORMATION AND DOCUMENTATION

53. Mr. S. Blixt introduced a report which had been circulated (Appendix VIII). This laid out general principles and provided a phasing of activities which would ultimately lead to all European institutes practising suitable computer procedures. He stressed that all information about samples is useful, either to assist the effectiveness of exchange or breeding.

54. The Board was informed that much of the thinking behind the report was based on relatively advanced work carried out on Pisum. The IBPGR and the Nordic Gene Bank are to hold a special closed workshop in March 1982 to refine details and to make the findings widely available.

55. Following suggestions of Messrs. Porceddu (Italy) and Williams (FAO/IBPGR) the report was endorsed in principle and the Board delegated the SAC to examine the details and advise the next meeting of the Board on practical actions. In the meantime the report should be made widely available.

56. Mr. Williams emphasized that immediate action was needed. It was time to put order into most of the collections by incorporating basic information into data bases and using these to sort out redundant duplicates thereby leading to the maintenance of perhaps smaller, but well documented and more useful, collections. This action did not need to await the deliberations of the SAC.

57. A number of delegates emphasized evaluation for breeding - whether or not the genetics of specific characters are known - and that data management systems should be open so that all information can be retrieved. Mr. Williams stressed that evaluation is done by breeders and information is not always fed back to gene bank curators. This must be rectified to enhance cooperation between programmes.

58. Several delegates raised the question of compatibility with the approach of the IBPGR. Mr. Williams assured delegates that he and his staff were in close contact with Mr. Blixt, and that the IBPGR Information Officer would also attend the next meeting of SAC.

XI COMPUTER HARDWARE AND SOFTWARE

59. Information on computer hardware and software had been collated by Mr. Blixt from replies to a questionnaire circulated by the Executive Secretary to national institutes only.

60. Mr. Williams said that numbers of accessions listed should be viewed with caution as the amount of redundant duplication was unknown and he reiterated the need to put collections in order.

61. The Secretariat was asked to keep the information up to date and to inform delegates from time to time.

XII. DIRECTORY OF INSTITUTIONS

62. The Executive Secretary said that the Directory issued during 1981 was preliminary and it was hoped that a second improved issue could be made by the middle of next year. The Board agreed that the Directory was useful and a second issue should be produced.

XIII. TECHNICAL ADVICE AND TRAINING

63. The Executive Secretary outlined the procedures of ECP/GR for consultancies, training and exchange of knowledge and personnel. He said that a small sum was available in the programme which could be used for consultative advice to IPF countries on such subjects as cold stores, seed processing, management of information etc. and/or for training purposes.

64. Mr. Skov drew attention to the importance of phytosanitary and quarantine aspects of genetic resources activities. A report on these matters had been prepared for the Nordic Gene Bank. It would be translated into English and sent to the Executive Secretary for wide distribution.

XIV. REVISED BUDGET FOR PHASE I *

65. A paper was tabled showing the budget for Phase I. Mr. de Fauconval said that by using savings the programme will be extended from two to three years without the need for supplementary funds from UNDP.

66. Mr. M. Ingold (Switzerland) asked why the cost of the Executive Secretary differed for the years 1981 and 1982. Mr. de Fauconval said that it was imperative to reduce the cost of the Secretariat in Phase II in which cost-sharing was envisaged. When the Executive Secretary retired at the end of 1981, his replacement would be appointed on a lower salary grade. This reduction was possible now that the project was operational.

XV. SUMMARY OF WORKPLAN FOR 1982*

67. A document was tabled which summarized the planned activities for 1982, many of which had been discussed during the course of the meeting. Mr. Williams asked if the document had been seen by the SAC. The Executive Secretary said individual items had been discussed by the Committee.

68. The plan was accepted as outlined with minor modifications.

XVI. THE SCIENTIFIC ADVISORY COMMITTEE

69. The Chairman asked about the position of the SAC in relation to the ~~evaluation of the project~~ and asked Mr. de Fauconval to explain the position. Mr. de Fauconval said that the Consultative Meeting in December 1979 considered a two part document consisting of the Programme and Plan of Operations. In signing the latter, Governments accepted commitments in the former; among them terms of reference for the SAC.

70. Mr. Hawkes, SAC Chairman, said that experience since then suggested that some of the terms of reference should be revised in order to make them more practical.

71. A point made by Mr. Williams was that rules of procedure should be formulated to show, for example, the relation of the SAC both to the Governing Board of ECP/GR and EUCARPIA as well as reporting procedure.

72. Following lengthy discussion, the decision was taken that the Chairman of the SAC and the Executive Secretary should redraft the terms of reference and list operational procedures suitable for the programme.

73. In the event, this was done right away and the revised version is attached to this report (Appendix IX).

XVII. EVALUATION OF PHASE I

74. Mr. de Fauconval informed the meeting that in the Project Document Phase I was regarded as a preparatory stage. The Project Document referred to the preparation of an interim progress report a few months before the end of Phase I. Evaluation was mandatory. It would be done by a tripartite mission in which UNDP, FAO and participating countries would be represented. The mission would assess progress towards the attainment of the long-term as well as the immediate objectives of the project, and the viability of the objectives of the project in the light of the results obtained. The mission would recommend whether or not a Phase II was justified, and if it was, the main objectives to be pursued and the working methods to be used.

75. Mr. de Fauconval suggested that the mission should have three members, one each from UNDP, FAO and participating countries. To keep costs as low as possible, he proposed a limited number of visits to IPF countries and certain sub-regional groupings. For these he suggested briefing at FAO Headquarters followed by a visit to the Secretariat in Geneva. The three sub-groups named were Mediterranean Programme, EC Programme and Nordic Gene Bank. IPF countries should be one from the Mediterranean region and one from the CMEA Group. In addition the two national institutes that had been offered by Governments as seats for the Secretariat, should be visited. These were Changins, Nyon, Switzerland, and CNR, Rome, Italy. It was thought that 14 to 21 days would suffice for the mission and that it should be carried out as early as possible in 1982.

76. Messrs. Porceddu and Veyrat proposed Mr. Krentos (Cyprus) to represent participating Governments. His nomination was approved unanimously. Mr. Krentos expressed willingness to serve.

77. The Board also approved visits to the following countries and organizations: Hungary, Greece, Poland and Portugal; Nordic Gene Bank, Lund, EC Programme, Brussels and IBPGR Mediterranean Programme, Bari.

XVIII. CONCERNING A PHASE II

78. The Board was asked whether in its opinion the results so far justified a Phase II. There was a consensus in favour, despite a number of reservations concerning organizational aspects and financial implications.

79. Following suggestions from Messrs. Williams and Hawkes, it was decided to give attention to techniques of tissue culture in the items given priority for Phase II (Appendix X).

80. The Executive Secretary submitted a cash budget for Phase II prepared in consultation with UNDP and FAO (Appendix XI). A number of delegates expressed the opinion that the budget was too high, particularly for personnel and that ways should be found of reducing it.

81. The Executive Secretary tabled a document* that showed how Phase II could be financed by cash contributions from participating countries cost-sharing with UNDP, the latter to contribute 70%, 50% and 30% of cash costs in 1983, 1984 and 1985 respectively. For cash contributions, participating countries would be divided into five classes as follows:

Class I	(10 weight units)	Federal Republic of Germany, France, Italy, United Kingdom
Class II	(6 weight units)	Belgium, Denmark, German Democratic Republic, Netherlands, Spain, Sweden, Switzerland
Class III	(4 weight units)	Finland, Norway
Class IV	(2 weight units)	Bulgaria, Greece, Hungary, Israel, Poland, Portugal, Romania, Yugoslavia
Class V	(1 weight unit)	Cyprus, Iceland

The following would be the yearly share of the budget to be paid by countries:

1983 US\$ 135,000; 1984 US\$ 250,000; 1985 US\$ 385,000

The actual amounts to be paid yearly by each country could be determined by using the following values for the weight units:

1983	$\frac{135,000}{106} = \text{US\$ } 1,274$
1984	$\frac{250,000}{106} = \text{US\$ } 2,359$
1985	$\frac{385,000}{106} = \text{US\$ } 3,632$

82. Since no agreement could be reached about the Budget for Phase II, the actual amounts to be paid by countries or the methods of arriving at them, it was agreed that an extra-ordinary meeting of the Board should be held in June 1982, by which time discussions could have taken place at a national level about financial contributions and the report of the Evaluation Mission would be available. With such information it should then be possible to reach a decision about the funding of Phase II.

In the meantime, the Executive Secretary was asked to prepare a document stating options in a clearer form.

83. The delegate from the Federal Republic of Germany stated that although his Government was in favour in principle of a Phase II if it joined the programme, its financial contribution, in the case of becoming member of the programme, could only be paid if the IBPGR was to become the Executing Agency of the programme.

84. The delegates from the German Democratic Republic, Poland and Hungary stated that their Governments would be unwilling to pay contributions in convertible currencies. Mr. Makiedo said that although the UNDP would wish as many contributions as possible to be in convertible currencies, it would be willing to accept them from IPF countries in non-convertible currencies so long as the total sum was not greater than that which could be used to further the work of the project.

85. During the course of the meeting, the majority of delegates expressed the need for a much closer relationship between ECP/GR and the IBPGR. Indeed, the German Democratic Republic and the United Kingdom delegates spoke in favour of the programme being taken over completely by the IBPGR. An added advantage could be large saving in cost of personnel. This proposal was supported by the five Nordic countries, Poland and the Federal Republic of Germany.

86. Asked to comment by the Chairman, Mr. Williams, Executive Secretary of the IBPGR, said that the IBPGR would have to be asked whether or not it was prepared to expand its activities in Europe. However, he could say the policy of the IBPGR is to channel support to field work and technical assistance. It was most unlikely that it would support the level of organizational structure currently envisaged for Phase II.

87. The Board was unanimously in favour of asking the IBPGR whether it would be willing to consider and decide between the several alternatives that could be suggested, to establish clearer links with or the integration of the ECP/GR with the IBPGR. It was recognized in this context that the ECP/GR has moved from a preparatory phase to one requiring a greater technical input.

88. Mr. Skov said that one day he would like to see all the international organizations merged that deal with plant affairs. Such a move should be step by step. The first would be to have secretariats in the same building and later they could perhaps be combined. This proximity would allow specialists in different disciplines to communicate more efficiently to solve problems. The organizations he had in mind were the IBPGR, UPOV (International Union for the Protection of New Varieties of Plants), EPPO (European Plant Protection Organization), ISTA (International Seed Testing Association), OECD (Organization of Economic Cooperation Development) and possibly others.

XIX. DATE AND PLACE OF NEXT MEETINGS

89. Arrangements for 1982 were agreed as follows:

Extra-ordinary Governing Board Meeting: 14-16 June in Geneva
(in English only)

Annual Governing Board Meeting: 18-19 October in Brussels
(By kind invitation of the Secretary of the EC Research Programme who would meet the cost of the meeting room and interpreters for English and French)

XX. OTHER BUSINESS

90. The Vice-Chairman informed the meeting that Mr. Lennart Kåhre, Chairman of IBPGR, was not present at the meeting because he had undergone a serious operation recently. It was agreed that

a telegram should be sent to Mr. Kåhre greeting him and expressing the meeting's good wish for a speedy recovery.

91. As Mr. Gerrit de Bakker, Executive Secretary, was due to retire on 31 December, the Vice-Chairman extended the meeting's thanks to him for the very satisfactory way in which he had fulfilled the duties of his office. Others who spoke on behalf of the meeting paying tribute to the excellent work done by Mr. de Bakker, were Mr. van der Borg (Netherlands), Mr. Krentos (Cyprus) and Mr. Veyrat (Spain). Mr. Makiedo, on behalf of UNDP, wished to be associated with the expression of thanks, as did Mr. de Fauconval, speaking for the FAO. The latter said that Mr. de Bakker would continue to act as Executive Secretary until his successor had been appointed.

92. Mr. de Bakker thanked the meeting for the vote of thanks and said that his work had given him great satisfaction. He very much appreciated the generous support that he had received from scientific and administrative colleagues.

93. The Chairman of the afternoon session, Mr. Skov, then declared it closed.

XXI. CLOSURE

94. The Board read the draft report of the meeting. Some additions and corrections were suggested. Subject to the incorporation of the amendments, the report was adopted.

95. The Chairman thanked the Executive Secretary for the efficient way in which he had organized the meeting and acknowledged the valuable help of the secretaries and interpreters in making the meeting so successful. A special word of thanks was given to Messrs J.T. Williams and K.S. Dodds who had written the report. He then closed the meeting.

APPENDIX I

PARTICIPANTS

1. MEMBERS

1.1 Country members:

BULGARIA

Mr. Ivan KOTZEV
First Secretary
Permanent Mission of Bulgaria
to the United Nations Offices
in Geneva

CYPRUS

Dr. Vlassios D. KRENTOS
Director
Agricultural Research Institute
Ministry of Agriculture and
Natural Resources
NICOSIA

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APPENDIX II

A G E N D A

Monday, 14 December 1981

14.30

- I General Subjects
 - I.1 Opening and Welcome
 - I.2 Adoption of Agenda
 - I.3 Current Membership of the Programme

- II Report of Activities of Past Year
 - II.1 Report of activities undertaken
by the Executive Secretariat
 - II.2 Report of activities undertaken
by the participating countries
 - II.3 Report of Second Meeting of Scientific
Advisory Committee held in Lund, Sweden,
13-14 July 1981, jointly with EUCARPIA
extended Gene Bank Committee

Tuesday, 15 December 1981

9.30

- III Workplan and Budget 1982
 - III.1 Ccooperative European Germplasm Activities
on Selected Crops
 - III.1.1 Report and Plans for 12 Working Groups

- 14.30 III.2 Collecting Activities
 - III.3.1 Information and Documentation
 - III.3.2 Inquiry on Computer Hardware and Software
 - III.3.3 Directory of Institutions
 - III.4 Consultancy, Training and exchange of
knowledge and Personnel
 - III.5 Budget 1982

Wednesday, 16 December 1981

9.30

- IV . Phase II of the Programme ECP/GR 1983-1985
- IV.1 Procedure for reaching decision on continuation of Programme
- IV.2 Evaluation of Phase I
- IV.3 Main items for Workplan Phase II
- IV.4 Revised Project Document
- IV.4.1 Cost Sharing between UNDP and Member Governments (Contribution Scale)

14.30

- IV.5 Recommendation to Governments and UNDP on steps to be taken to continue Programme into Phase II
- V Date and Place for Third Meeting of the Governing Board
- VI Any other business

Thursday, 17 December 1981

14.30

- VII Adoption of Report
- VIII Closure

APPENDIX III

CURRENT MEMBERSHIP OF THE PROGRAMME

Countries fully participating in the project:

Bulgaria	Netherlands
Cyprus	Norway
Denmark	Poland
Finland	Portugal
Germany, Democratic Republic of	Romania
Greece	Spain
Hungary	Sweden
Iceland	Switzerland
Israel	United Kingdom
Italy	Yugoslavia

Countries having indicated their intention to participate in the project:

Belgium
France
Germany, Federal Republic of

Countries not having given a definitive reply:

Albania
Czechoslovakia
Ireland
Luxembourg
Malta
Turkey
Union of Soviet Socialist Republic

Country not wishing to participate in the project:

Austria

APPENDIX IV

REPORT ON THE JOINT EUCARPIA GENE BANK COMMITTEE
AND SCIENTIFIC ADVISORY COMMITTEE

27 participants according to the list attached (app. 1).

1. 1. Prof. L. Kahre and Dr. E. Kjellqvist extended a warm welcome to the participants.
2. Brief reports on activities since last year were given by gene bank directors:

Bulgaria

Prof. K. Kostov summarized recent developments in Bulgaria (app. 4).

DDR

Dr. Ch. Lehmann reported on recent activities at Gatersleben

France

Dr. M. Rives stated that France does not participate in the Genebank system, but large collections exist e.g. at INRA and private breeding companies. A system of coordination of work and information is under discussion but the material will not yet be placed in a central cold store. About 50,000 accessions of different species exist, the largest at Montpellier, where there is an important grape collection. All scientists do not agree on the principle of gene banks. Many breeders stress the importance of using genetic resources by establishing gene pools rather than storage in gene banks, where problems exist with regeneration (risk of genetic drift). A certain coordination is needed in France, but gene banks as such are not to be expected in the near future. This does not hinder cooperation as to the FAO/UNDP European project, and cooperation with other gene banks.

The Chairman welcomed the French interest in participation with the European programme. He felt now that all gene bank directors agree that GR should be used as much as possible in plant breeding work.

Greece

The Chairman directed a special welcome to Greece as the country with the newest gene bank in Europe. Dr. A. Zamanis gave a brief progress report (app. 2).

Italy

Prof. E. Porceddu referred to the recent ECP reports on the Mediterranean programme. Expeditions had been made in Egypt, Greece and Italy partly in collaboration with the gene bank at Gatersleben. Triticum monococcum and T. dicoccum were found even now in cultivation in some remote villages in Italy. These were grown for pig feeding. This year collections will be, or have been, made in Egypt and Libya together with Gatersleben. With Pisum, co-operation has started with NGB to find gaps and duplicates.

Special studies have also been made on Vicia and Aegilops in collaboration with Gatersleben. Ten species of fruit trees are also being subjected to trials in 24 units all over Italy, with Bari as a documentation centre. The project started on January 1st 1981. Finally, chemotaxonomic studies of proteins, especially lysine, are being conducted in Aegilops.

The Netherlands

Dr. H. Lamberts informed the meeting on the Dutch work on agricultural crops (app. 7) and Dr. M. Roelofsen on vegetable species (app.8).

Poland

Dr. B.A. Molski reported on the work at the Botanic Garden of the Polish Academy of Sciences (app.3).

Prof. J. Jakubiec informed that IHAR had now been given responsibility for the central coordination of Polish work on plant genetic resources (PGR) and that the programme will be funded with 150 million Zl. during five years. The good contacts with the Nordic Gene Bank were recognized. Descriptor lists are being developed in collaboration with the NGB, and the institute is undertaking the translation of the Russian descriptor lists into English. A new version in the two languages is being prepared by Prof. Dorofeev (V.I.R.). Further activities during 1980-81 are reported in appendix 3A.

Portugal

Dr. M. Mota presented a report on the Portuguese Gene Bank (app. 5).

United Kingdom

Dr. R. Smith reported on the Kew activities (app. 9) and Dr. Astley on the Vegetable Gene Bank at Wellesbourne (app. 10).

IBPGR

Dr. J.T. Williams informed the meeting that Cyprus is now the newest country to possess a gene bank and should attend future meetings of EEGBC.

In collaboration with IIRB and IBPGR-programme has been developed for genetic resources of beets with the aim to preserve old land races and to collect wild and primitive material to be included in breeding work. Greece, Sicily and Yugoslavia will be of special interest in this connection.

He suggested that a genetic resources programme in Europe for Vitis should be established.

Dr. B. Kramski referred to the rules which are the basis for international cooperation of countries in ISTA and OECD. It could be desirable to establish something similar for ECP.

Some delegates stressed the role of quality in gene bank material, and that some guidelines would be helpful. Recommendations from this committee might be drawn up. Even if some monitoring seems desirable a mechanism of advising the programme directors could be found.

3. Documentation

Dr. S. Blixt summarized a paper written by him in collaboration with Dr. T. Williams (app.11).

Dr. T. Williams underlined the magnitude and needs by mentioning that an estimated number of 750,000 accessions are preserved in Europe. No sample should be exchanged without information attached to it.

Dr. G. de Bakker gave the organizational background for the development of the ECP documentation work. The programme can advise and assist the different gene banks to develop a functional system, but first it is necessary to find out the level and stage of development of the individual centres. It will take some years to develop a well functioning documentation system. With the help of Dr. S. Blixt and his colleagues in the Nordic Gene Bank a report based on a proposed questionnaire shall be presented to the Governing Board meeting.

The meeting found it important to define the developmental phases and to assist in the proper development. It recommended that Dr. S. Blixt in collaboration with NGB should report to ECP as suggested.

Dr. J. Jakubiec found it necessary to have computerization at his disposal. In Poland 500 accessions are evaluated each year. How should such information otherwise become available to others.

Dr. Ch. Lehmann underlined that training and education are important elements in the development. Sometimes it seems difficult to understand what is a duplicate, because it is difficult to combine botanical and agronomic data.

Prof. E. Porceddu informed the meeting about the 3 months computer course recently given at Bari with students from five countries.

Dr. E. Kjellqvist mentioned that NGB will publish an up-dated version of the Pisum catalogue. Perhaps it would be better to compile and work with crop-catalogues than with gene bank catalogues containing all crops.

The meeting agreed that training in computerization is important and should be supported. There is also a need to make available for the plant breeders information about the genes (if available and where), but this work has to be made step by step. Every gene bank should have a botanist-computerist.

4. Collecting expeditions and gaps in collections

Dr. G. de Bakker reminded participants about the report presented at the ECP Governing Board meeting in 1980, which is now published in the IBPGR/FAO Plant Genetic Resources - Newsletter No. 45 and the action as reported by the different gene bank representatives earlier during this meeting. One task for the proposed crop committee will be to reveal gaps in existing collections. This has to be done crop by crop.

5. Seed Indexes

Dr. G. de Bakker stated that another task for crop committees will be to establish an index for "their" crop collections in Europe, a kind of "index plantarum".

6. Seed storage and management

The Chairman announced that a workshop on seed technology will be held in Kew in 1982. He emphasized the role of a close cooperation also with IBPGR and ISTA in this respect.

The discussion underlined the importance of thorough preparation, proper selection and possible number of participants and concentration on the practicalities of a gene bank. The organizing committee (Prof. J. Hawkes, Dr. R. Smith, Prof. L. Kähre and Dr. T. Williams) was asked to make a programme for the Workshop according to these principles.

7. Regeneration

The Chairman reported on the forth-coming symposium on seed regeneration of cross-pollinated species to be held in Nyborg, Denmark, in collaboration between EEC and EUCARPIA.

8. Crop Germplasm centres and working parties

Dr. G. de Bakker developed the idea of germplasm centres in Europe as most useful for the establishment of a genetic resources net-work. He outlined that working parties on crop basis (crop committees) with members of maximum four institutes of different European sub-regions would fit this purpose. He suggested on first hand such committees for 12 crops.

The details of the proposal were presented in a special background paper. As to the fruits, Dr. T. Williams pointed out that an EC committee was already dealing with some of these. However, Dr. de Bakker replied that

the EC committee could not deal with COMECON country interests in fruit germplasm.

Dr. Williams felt that it may be justified to include vines in the first list.

The discussion was concluded by the following recommendations:

1. Working groups are most useful and should be established.
2. The crops suggested should be dealt with by working groups. With reference to fruits, action on Malus and Pyrus should be postponed, but a special group on vines should be added. Institutes in Central and Southern Europe would be considered in this case.
3. It should be left to the working party concerned to decide which grass species should be dealt with. Further, it was recommended to include also Trifolium species. Poland was interested to participate on grasses and Hungary on Trifolium along with Aberystwyth (on both).
4. Detailed information as to requirements and tasks should be given in a covering letter when invitations are being sent to institutes proposed for participation in this work.

9. Training

Dr. G. de Bakker said that only one country had applied for one person to receive an ECP fellowship for training (which is limited to IPF-countries). There is space for more.

It was recommended that the Governing Board should decide what type of training is most desirable for ECP. Short courses and study trips, in order to elevate the level of the practical work should concentrate on handling of seed and documentation.

The Chairman referred to the workshops already arranged and planned by EGBC and hoped that a documentation workshop should be arranged later.

It was decided that the committee should present specific proposals to ECP as to the training needed (workshops, short courses, study centres, etc.)

10. Time and place of next meeting

The Chairman informed the meeting that an invitation had been received from Greece to host the next meeting at Thessaloniki in late April - first part of May 1982. This invitation was unanimously accepted and the dates decided to be in the week 26 - 29 April 1982 (a workshop at the end).

11. The Chairman declared the meeting closed.

List of participants at the Lund meeting July 1981

J.G. Hawkes	Birmingham, United Kingdom
G. de Bakker	Geneva, Switzerland
J.T. Williams	Rome, Italy
H. Lamberts	Wageningen, Netherlands
L. Kåhre	Solna, Sweden
Chr. Lehmann	Gatersleben, German Democratic Republic
M. Mota	Oeiras, Portugal
L. Holly	Tapioszele, Hungary
E. Porceddu	Bari, Italy
J. Jakubiec	Radzikow, Poland
B. Molski	Warsaw, Poland
B. Kramski	Warsaw, Poland
K. Kostov	Plovdiv, Sadovo, Bulgaria
A. Zamanis	Saloniki, Greece
J. Karrayjannis	Thessaloniki, Greece
R. Drummond Smith	Wakehurst Place, Ardingly, United Kingdom
D. Astley	Wellesbourne, Warwick, United Kingdom
B.T. Tyler	Aberystwyth, United Kingdom
H. Roelofsen	Wageningen, Netherlands
M. Rives	Paris, France
E. Åkerberg	Lund, Sweden
S. Ellerström	Svalov, Sweden
S. Blixt	Landskrona, Sweden
G. Andersson	Lund, Sweden

Members of the NGB staff:

E. Kjellqvist
F. Yundgaard
E. Hagen
G. Rydström

A brief progress report from the Greek Gene Bank.

A. Zamanis

A project for support to provide seed storage facilities for conservation of genetic resources in Greece started last year (June 1980).

Funds were allocated from IBPGR (\$ 40,000) and the Ministry of Agriculture (\$ 70,000).

1) Facilities

Storage facilities for Base Collections and Active Collections have been installed this year (one cold room and one cool room). The storage conditions for the base collection are:

a) Temperature range - 10°C - -25°C:

b) Humidity range 50%- 60%

Operating temperature - 20°C

Operating humidity 55%

The storage conditions for the active collection are:

a) Temperature range 5°C - -5°C.

b) Humidity range 30% - 50%

Operating temperature 0°C - 2°C

Operating humidity 30%

These rooms are prefabricated with 48 m³ capacity each (12.000 samples) Drying facilities will be installed next month (this is also a prefabricated room).

Machines for sealing metal cans in air at atmospheric pressure are available and laminated foil packets are also used.

2) Exploration

We have taken part in the following expeditions

a) In 1977 in Algeria (Hoggar-Sachara Oases), West Macedonia, Epirus and the island of Ereia (Greece)

b) In 1978 in the island of Crete (Greece)

c) In 1979 in Peloponnesus and the Aegean islands (Greece)

d) In 1980 in the island of Samothrak and the Aegean islands (Greece)

Next week we are going to the Halkidiki peninsula in northern Greece to collect mainly Beta spp. and Gramineae spp., landraces, cultivars and their wild relatives, especially all forms of Beta and also Aegilops umbellulata, Ae. kotschyi, T. boeoticum and other cereals.

3) Evaluation

From the collected material of these expeditions we have already 200 samples which have been evaluated for some characteristics. I would like to mention that T.boeoticum has been used in a breeding programme. Evaluation will in the future be the most important task of the gene bank.

4) Multiplication

We have multiplied almost all the collects sampled up to now and we plan to extend this work.

5) Documentation

IBPGR has given us a micro-computer to cope with the present needs. For the future we hope to be connected with the FAO AGRI system.

6) Training

I would like to mention here that for accelerating and improving the genetic resources activities in our country we would need the training of 3-4 persons.

Gene Bank activities at the Botanic Garden of the Polish Academy of Sciences

B.A. Molski

The Botanical Garden of the Polish Academy of Sciences has been established in 1974 as the main institution for conservation of plant genetic resources and for studies of plant genetic diversity. The total area of the Garden will comprise 240 ha in the future. At present it has 40 ha, 24 ha for nurseries, scientific experimental plots and workshops etc., and 16 ha for plant collections available for visitors (general public).

The Garden specializes at present in rye collections and rye seed long term storage. The rye collection has at present about 1300 accessions of wild species (1200) and cultivars (900). Regeneration of rye collections is performed simultaneously with a few programmes of evaluation, such as:

- phenological development of species and varieties
- agronomic structure of yield
- protein content in grain with the micro-Kjeldahl method and for selected accessions
- amino-acid composition of grain protein
- isoenzyme spectrum of populations
- snow mould (*Fusarium*) resistance of the seedlings.

The main aim of establishing the rye collection was to perform extensive studies on various biological aspects of the crop such as:

- rye morphology and anatomy
- genetic diversity of species and populations by isoenzymatic analyses and numerical taxonomy techniques
- to study the phylogeny of the genus *Secale* and evaluation of genetic resources: number and relationship of species, diversity of crop varieties, heterogenetics of taxons etc.

The presented aims could be achieved if the proper collection will be kept in the Garden, therefore the preliminary projects have been completed from 1971 such as:

- technical maintenance of living collection and regeneration of seeds
- seed storage (drying, storage in different conditions, etc.)

Storage facilities

Seeds are dried to 5-6% moisture content in a specially designed drying chamber and after drying kept in:

- an underground chamber in exicators with silica gel (for working purposes)
- in a cold chamber closed in moisture proof containers; the Botanic Garden has 3 chambers with 18°C , 10 m^3 each, and 1 chamber with -4°C and 25 m^3 in size.

Besides that, a programme of seed storage in liquid nitrogen is developed.

The second main task of the Botanic Garden is the conservation of the genetic resources of the endangered species of our wild flora. In Poland a list of endangered species has been completed. The list contains about 250 species; about 20% of them are grown in botanical gardens in Poland for their reproduction and reintroduction to wild conditions.

The following two programmes are in preparation:

- a collection of plants fixing nitrogen from the air, and
- a collection of *Fagopyrum* spp. and cultivars.

Draft report on the activities of the National Genetic Resources Department, Poland, in 1980-81.

J. Jakubiec

1. Organization

After the agreement between four Ministries concerning the establishment of the National Genetic Resources Department was signed in August 1979, collecting of information on existing genetic resources in Poland has been started since 1981. New research programme has been initiated, financially subordinated to the Ministry of Agriculture and scientifically to the National Genetic Resources Department. Thus, 22 collections of different species and groups of species located in several institutions and stations are financially and scientifically supervised by one coordinator.

2. Expeditions

The following missions were held in 1980:

- a) Joint meeting with USSR colleagues 6 weeks expedition to Central and Southern Poland was organized focused on grasses, legumes and cereals, their ecotypes and local cultivars.
- b) To gain grass ecotypes a cooperative mission with German colleagues was organized for 2 weeks to the southern region of the German Democratic Republic.

3. In 1981 with respect to genetic resources collection an exchange and evaluation cooperation was established with the Peoples Republic of China. Doc. J. Jakubiec (Head of the Genetic Resources Department) and Doc. Z. Staszewski were invited to China for a 15 days visit. They established valuable cooperation with the Chinese Academy of Science, the Agricultural Science Academy and initiated a seed exchange programme setting the main objectives of this cooperation for the near future.

4. So far Poland does not have storage facilities with controlled temperature. Further improvement of storage conditions was possible by purchasing four dryers and one sealing machine for tin sealing. For long term storage seeds are dried gradually at 25-28°C till 5-7% water content is reached, then they are sealed in metal tins. Short term storage samples are kept in glass containers and sealed in vacuum.

5. Evaluation programme of genetic resources: In cereals about 500 accessions per year of every species undergo evaluation. Data on the best performing accessions are supplied to the breeders.

6. In 1980, 2567 samples of cereals were dispatched on request, and 2066 were received from other institutions or collected during expeditions.

7. A new Index Seminum was edited in 1980 in traditional book form. Further exchange of information will be accomplished by means of computer print-outs.

Short report from the Institute of Introduction and Plant Resources in Sadovo, Bulgaria.

K. Kostov

The introduction and plant resources in Bulgaria are centralized in a separate institute in Sadovo. Its task is to find out, introduce, study, distribute and preserve the variety of cultivated and wild plants from local and foreign origin. The final aim is to improve the breeding of cultivated plants and the direct introduction of varieties in our country.

The gene bank of the Institute of Introduction and Plant Resources keeps seed samples from 118 different crop plants, including wheat, barley, oats, triticale, rye, maize, sorghum and rice as the largest samples.

Every year we receive about 3000 seed samples from abroad. Our gene bank corresponds with more than 600 addresses from 84 countries all over the world. In our country we organize complex and specialized expeditions for collecting and preserving local varieties, populations and forms.

All the samples from abroad are planted in a quarantine area to check their condition. In the course of the following years their agro-biological, chemical, technological and production qualities are studied.

The preservation (in the preliminary seed storage) for the main part of the collection is at $+10^{\circ}\text{C}$. At the beginning of this year we started the preparation of part of the collection for long term preservation. Seed samples have been put in sealed packets at -15°C . Depending on the seed variety, the samples are dried to 5% humidity. In the near future we will be able to store the seed at -18°C .

All the newly received seed samples are registered and a special index is prepared to include both the reproduced and preserved seed samples.

At the present stage we shall use a micro-computer for documentation and information. Later on, when the collection has increased, we will look for possibilities to buy a mini-computer with suitable software and hardware.

All samples are tested during three years in the nursery field where the technological observations are made and also some of the general evaluation and biometric measurements with regard to their chemico-technological properties. On the basis of these data some of the samples are singled out if they are interesting from a breeding point of view, or perhaps for direct introduction in the production (praxis).

The international cooperation in the field of science and technology on the problems of plant introduction has a considerable significance for the development and improvement of the scientific research work on the long-term conservation of plant samples.

The specialists at the IPIGR in Sadovo have participated in international meetings concerning these problems and have become acquainted with the achievements of institutions abroad. As a result of this we are now aware of the use of computer for data processing, the preparation of seed samples for conservation, the use of suitable packings, the methods for maintaining some cross-pollinating crops, and also other methodological questions in the field of introduction.

Report from Portugal.

M. Mota

Collecting seeds with the specific purpose of storing them in a Gene Bank started in 1977 in collaboration with FAO/IBPGR. Zea mays, Secale cereale, Lupinus sp. and Melilotus sp. are the main species collected.

While the cold storage facilities are not ready the material has been kept in a series of home freezers, which proved to be very satisfactory and reliable.

In 1981 two people attended a short course on evaluation in Birmingham, and another person attended the course on the use of computers in Bari.

In 1980 a more direct collaboration with Spain was started. A joint mission to collect Lupinus and Secale was carried out in Portugal and a similar one in Spain. The programme continues in 1981: one joint mission in Portugal was carried out in June and a similar one in Spain started July 10.

Plans are being drafted for a joint mission with Spain in 1982 for durum wheat and either a small workshop (with presentation of papers and a collecting trip), or a collecting mission on Brassica is also considered.

It seems possible in the near future to start a collection of olive trees.

Report from Netherlands

H. Lamberts

There is a good chance that the Dutch gene bank will be realized in the near future.

The Netherlands have participated in one expedition to Pakistan (N.W.) mainly to collect cereals. The expedition was organized together with the Pakistan Agriculture Research Council and paid by IBPGR. Further, we had two Dutchmen on trips to Greece and Sicily collecting wild and primitive Beta's.

The evaluation of material from previous trips continues.

M. Roelofsen

Until the Dutch gene bank will be established, IVT feels responsible for the conservation of vegetable germplasm. Both facilities and working programmes progress steadily.

At the moment the new drying and storage facilities are being tested (15% RH, 15°C). The EC-contract for collection of cruciferous crops was recently signed and will probably start this year. EC-countries that are interested to participate in this programme may contact the Coordinating Committee, consisting of P. Crisp (NVR), B. Mcfarlane Smith (SCRS), H. Roelofsen (IVT) and H. Toxopeus (SVP). The programme's duration is years: 1981, 1982 and 1983.

IBPGR invited IVT to take responsibility for pepper, eggplant and Brassica-crops. The responsibility for the last group will be shared with NVR. The Executive Secretary of ECP invited IVT to accept responsibility for Allium and to become a lead institute for tomato.

These propositions are in agreement with IVT-priorities and may be incorporated in the IVT work programme.

Report from the Royal Botanic Gardens (Kew and Wakehurst Place)

R. Smith

The emphasis remains that previously reported, namely Wild Species, were collected on a world-wide basis.

Three of the staff posts lost recently due to staff resignations, will have been recovered by August 1981, bringing the total gene bank staff to 4½ posts.

The test running at the Data Base programme has at long last begun.

Problems still remain to be solved in the management programme. It is hoped to produce new seed lists in 1982.

A preliminary expedition to Kenya was undertaken in order to investigate and evaluate the practical physiological problems encountered in collecting in a wide variety of tropical habitats.

Report from the National Vegetable Research Station, Wellesbourne

D. Astley

The vegetable gene bank has been established. The initial emphasis of the work will be with Allium and Brassica. The IBPGR has asked Wellesbourne to take a leading role in the conservation of Allium and in collaboration with IVT, the Netherlands, of Brassica oleracea.

The facilities available in the gene bank include a drying room, 18°C and 10% RH, and a base cold store at -20°C. The seed will be packed in foil (Melanex pouches for long term storage). The regeneration programme in this first season has included Brassica, Allium and Raphanus accessions. The initial input to the bank will be breeders collections existant at NVRS, Wellesbourne. This material is being screened for accession weight and viability providing samples for the regeneration programme of for long term storage.

Documentation is progressing. The gene bank will be linked via a micro-computer at NVRS to a minicomputer at the Rothamstead Experimental Station.

Documentation

by Prof. Stig Blixt in collaboration with Dr. Trevor Williams

Presently gene banks are developing in all Europe. The next decade will therefore be a decade of rapid development. At the same time, a few gene banks have been in operation, wholly or partly, already for some time. Inevitably this leads to great differences between gene banks in several respects. Seeing the aim specifically on the documentation side to reach a level of free, easy and direct exchange of information between gene banks, the process leading there can be seen as different phases (see further Germplasm Documentation; the future FAO/UNDP/IBPGR Technical Conference on Crop Genetic Resources, Rome 6-10 April 1981):

- Phase 1 : No electronic storage devices available
- Phase 2 : Computer storage available (Data Input Phase)
- Phase 3 : Data in computer readable form based on passport and full characterization (consolidation phase)
- Phase 4 : Fully computerized (Data Exchange Phase)

An example of work to be done in these phases, e.g. in Phase 3:

1. Obtain existing data from all collections
2. Sort out redundant duplicates
3. Produce simplified data base
4. Fill in characterization data
5. Produce files for evaluation data

For point 2, Sorting out redundant duplicates, an example from peas was given:

Number of collections	20 in 14 countries
Total number of accessions	ca. 17,000
Known redundant duplicates	7,000
Expected redundant duplicates in not checked material	80 per cent
Valid expected number of accessions for base collection	<u>5,000</u>

APPENDIX V

COOPERATIVE ACTIVITIES ON SELECTED CROPS

1. Introduction
 2. Objectives
 3. Activities
 - 3.1 Development of workplan (working groups)
 - 3.2 Collection
 - 3.3 Conservation
 - 3.4 Regeneration and multiplication
 - 3.5 Characterisation and preliminary agronomic evaluation
 - 3.6 Documentation and information
 - 3.7 Exchange of material
 - 3.8 Training
 4. Guidelines for qualification as a European Crop Germplasm Centre
 5. Crop selection
 6. Membership of working groups
-

1. Introduction

The First Meeting of the Governing Board of the European Programme on Crop Genetic Resources decided to make a start with the designation of European Crop Germplasm Centres for a restricted number of crops, and with the formation of a working group for each selected crop, composed of senior staff members of institutes designated as European Germplasm Centres for the crop concerned (see paragraph 36 of Report of the First Governing Board Meeting).

The establishment of working groups, each consisting of not more than 3 or 4 people, representing selected institutions with an excellent research record on the crop concerned, situated in the main sub-regions of Europe, could become the basis of a crop germplasm network in Europe, built on a rational division of labour between the best institutes and the best scientists.

2. Objectives

- 2.1 To stimulate and promote genetic resources activities for selected important European crop species in all European countries where the crop is grown, and of importance.
- 2.2 To organize joint activities between countries or sub-regional groupings, so that the work-load required to execute the programme is divided and the results may be better, in close cooperation with similar groups of the IPBGR.
- 2.3 By calling upon the most appropriate institutes and scientists to manage the European crop germplasm programmes in order to influence positively the overall level of the operations in all participating countries.
- 2.4 To establish closer relations and start effective cooperation between countries and groups of countries which had only superficial and irregular contacts before.
- 2.5 To facilitate the availability and exchange of samples and data between European countries as well as between the European and the developing countries.
- 2.6 To stimulate better use of the material in the genebanks by the plant breeders, who could greatly benefit when access to the collections was better organized, e.g. through circulation of well documented evaluation results of accessions in genebanks in different countries.

3. Activities

3.1 Development of workplan

For each crop a working group will be established, composed of a restricted number (2-4) of senior scientists, experts on the crop concerned, representing institutes which play a leading role in each of the European regions where the crop is grown extensively. It is preferable that representatives of at least two, but in some cases, three or four, of the sub-regional genebank groupings should be represented in the working group. The working group shall decide which activities to start, taking into consideration the state of affairs regarding the germplasm of the crop, which are matters that need to be tackled with priority, and which would benefit from a cooperative international approach. The point is to select a few activities with a good perspective of success. Availability of experienced and enthusiastic people to work on the selected subjects is also a prerequisite.

Based on the foregoing considerations, the working group shall draft its own activities and workplan which may differ in emphasis on aspects of genetic resources activities, depending on the crop priorities that require urgent attention. One of the institutes shall be asked to act as "lead institute" in the working group.

The representative of the "lead institutes" shall be responsible for taking the initiative to call the group together and to propose and prepare the agenda. He shall further be responsible that the workplan is executed as agreed upon and that reports are presented to the Executive Secretariat and to the annual Governing Board meeting.

The workplan for a selected crop may contain elements of the following aspects:

3.2 Completion of collections

Identification of gaps in collection of germplasm material in the region and organization of collecting trips in European countries composed of scientists of one or more interested countries in the region.

An adequate part of the collected samples shall, as a matter of principle, be left in the country where the collection is made.

An experienced scientist of that country, when available, shall preferably be the leader of the collecting team.

The collected material shall, in principle, be freely available for exchange to interested parties.

3.3 Conservation for long- or medium-term storage of crop germplasm material. The lead institute, and/or another institute in the region, shall accept the responsibility of safeguarding all wild and primitive material for long-term storage in adequate cold storage facilities, and for more recent cultivars or breeding lines in medium-term storage. The proposal for the storage network of global or regional base collections and of duplicate collections of seeds of IBPGR shall be taken into account when proposing European storage centres. Moreover, the definitions of IBPGR of base collection, active collection and plant breeders collection shall be applied.

The upgrading of cold storage facilities in IPF-countries may be supported by a grant from IBPGR. The ECP/GR Secretariat can call upon an expert consulting institution to help develop the technical plan.

The special problem of conservation of vegetatively reproduced crops such as fruit trees, potatoes, etc. should be given special attention, e.g. through cooperative networks on tissue culture.

3.4 Regeneration and multiplication

Care should be taken to regenerate the material in such a way that no change in the original genetic composition occurs.

Sufficient quantities of seed samples should be available to exchange with other genebanks or for distribution to plant breeders.

3.5 Characterisation and preliminary agronomic evaluation

Describing the accessions using accepted descriptors is a major and important task and should be organized with great care by the working group. Without proper evaluation the collected material shall remain sterile although the seeds may germinate. The agronomic evaluation should preferably be organized in close contact with the plant breeders, and when possible and feasible, on an international scale.

3.6 Documentation and information

All information on European germplasm material of the crop concerned which is available and alive in European genebanks, should be collected and stored in a computer, preferably in the lead institute, using accepted descriptors and data management systems. Even in the case - which may often occur - when it is impossible to store all the germplasm material of the crop concerned in the genebank of the lead institute, a full documentation on the accessions held in other places must be collected and put in the computer of the lead institute. Crop catalogues could then be composed, containing all data, inclusive agronomically important characters, so that plant breeders have easy access to the specific gene material they need for their breeding programme by perusing the crop catalogue or the tape or disc copy of the computer.

3.7 Exchange of material

It goes without saying that the lead institute and the other members of the working group should take measures so that the required seed material is made freely available in reasonable amounts to other genebanks and plant breeders.

3.8 Training

The crop working party could propose individual or group training activities (e.g. seminars) which could be supported financially by the ECP/GR programme.

4. Guidelines for qualification as a European Crop Germplasm Centre

In selecting institutes to play a leading role in the development of a network of genetic resources institutes for a certain crop in Europe, one may require that they have a generally recognized good reputation for their work on the crop concerned and adequate facilities to accomplish the accepted European role and, perhaps most important of all, the willingness and ambition to promote international contacts and cooperation between countries with differing scientific and political systems.

Being aware of ever ongoing changes and ups and downs, also in the life of institutes, one may apply the following guidelines which should be used rather as a code of conduct than as rigid requirements.

The institute, to be selected within the ECP/GR as a European Crop Germplasm Centre for one or more crops, should:

- 4.1 have specialized knowledge of the crop(s) concerned as a result of recognized past work;
- 4.2 have already a comprehensive collection of the crop(s) concerned and be willing to practise full and free exchange of materials;
- 4.3 have adequate facilities for storing or, in the case of vegetatively propagated material, be able to coordinate living collections, to coordinate characterization and to carry responsibility for regenerating, multiplying and evaluating the crop(s) concerned;
- 4.4 be able to coordinate and accept responsibility for the documentation and exchange of material of the crop(s) concerned according to agreed principles;
- 4.5 be able to coordinate the organization and/or participation in collecting expeditions to enlarge present collections;
- 4.6 prepare and exchange crop germplasm catalogues, either in printed form or on tapes or other adequate equipment, containing all relevant information on accessions in European institutions;
- 4.7 be willing to report regularly to all member countries on the work plan and its progress of the crop working group concerned;
- 4.8 be situated in a country that is a member of the programme.

5. Selected crops

To make a start, and in order to gain experience, a few working groups for representative genera in different crop groups of major importance in Europe are selected (seed and vegetatively propagated crops):

<u>Cereals</u>	- Barley and Rye
<u>Food Legumes</u>	- Peas and Vicia
<u>Root Crops</u>	- Potato
<u>Forages</u>	- Forage Grasses and Clovers
<u>Fruits</u>	- Apricot, Peach and Grapes
<u>Vegetables</u>	- Onion and Tomato

In selecting those crops much attention is given to avoid any overlap in activities with crop committees or working groups of IBPGR or of any of the four European sub-regional groupings. Rather, the proposed working groups endeavour to link activities between those organizations.

If this method proves to be successful, the number of crop working groups could be increased later.

6. The following membership of the working groups is proposed:

BARLEY

Lead institute:	Zentralinstitut für Genetik und Kulturpflanzenforschung,	Gatersleben, German Democratic Republic
Other members:	Nordic Gene Bank,	Lund, Sweden
	Foundation for Agricultural Plant Breeding SVP,	Wageningen, Netherlands
	Cereals Institute,	Thessaloniki, Greece

RYE

Lead institute:	Plant Breeding and Acclimatization Institute IHAR,	Radzikow, Poland
Other members:	Nordic Gene Bank,	Lund, Sweden

PEA

Lead institute:	Nordic Gene Bank,	Lund, Sweden
Other members:	Germplasm Institute,	Bari, Italy
	Zentralinstitut für Genetik und Kulturpflanzenforschung	Gatersleben, German Democratic Republic

VICIA SPECIES

Lead institute:	Germplasm Institute,	Bari, Italy
Other members:	Zentralinstitut für Genetik und Kulturpflanzenforschung	Gatersleben, German Democratic Republic
	Plant Breeding Institute,	Cambridge, United Kingdom

POTATO

Lead institute: Institute für Pflanzenbau und Pflanzenzüchtung, FAL, Braunschweig, Federal Republic of Germany

Other members: Plant Breeding and Acclimatization Institute IHAR, Radzikow, Poland

Chair of Botany, University of Birmingham, Birmingham, United Kingdom

Professor J.G. Hawkes

FORAGE GRASSES AND CLOVERS

Lead institute: Welsh Plant Breeding Station, Aberystwyth, United Kingdom

Other members: Foundation for Agricultural Plant Breeding, SVP, Wageningen, Netherlands

Plant Breeding and Acclimatization Institute IHAR (for grasses), Radzikow, Poland

Research Centre for Agrobotany, N.I.A.V.T. (for clovers), Tapioszele, Hungary

A Spanish Institute, Spain

APRICOT AND PEACH

Lead institute: Institute for Cultivation of Woody Plants (C.N.R.), Firenze, Italy

Other members: Two of three institutes in Eastern and/or Southern Europe

GRAPES

Participating institutes to be selected during meeting of Vitis symposium (May 1982), jointly organized by IBPGR ECP/GR, O.I.V. and EUCARPIA, in Thessaloniki, Greece

ONION

Lead institute: National Vegetable Research Station, Wellesbourne, United Kingdom

Other members: Institute for Horticultural Plant Breeding, I.V.T., Wageningen, Netherlands

Research Centre for Agrobotany, N.I.A.V.T., Tapioszele, Hungary

TOMATO

Lead institute: Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben, German Democratic Republic

Other members: Institute for Horticultural Plant Breeding, I.V.T., Wageningen, Netherlands

Research Centre for Agrobotany, N.I.A.V.T., Tapioszele, Hungary

APPENDIX VI

REPORTS AND PLANS FOR TWELVE CROP WORKING GROUPS

VI.1. Working Group on Barley:

There is quite some activity in Europe going on regarding barley genetic resources: EEC has a programme on barley cultivar evaluation, coordinated by the Foundation for Plant Breeding (SVP) Wageningen, the Netherlands.

IBPGR has invited the Nordic Gene Bank in Lund, Sweden, to hold an European collection and ICARDA in Aleppo, Syria, a global collection as part of their global network of cereal genetic resources.

The Central Institute for Genetics and Research on Crop Plants, Gatersleben, GDR, has an important collection of barley accessions and has done outstanding work on evaluating disease resistance.

In July 1981 IBPGR convened an "ad hoc" meeting of a group of experts from different parts of the world to advise on priorities and actions to be taken. In consultation with the Executive Director of IBPGR, Mr. J.T. Williams, it was decided to invite observers of two European Institutes (Gatersleben and Wageningen SVP) to attend that meeting together with the Executive Secretary of ECP/GR in order to define which programme priorities could be executed by the European group in the wider context of the global programme. The report of that meeting, drafted by the IBPGR Secretariat is attached (app.VI.A)

During a first meeting of the ECP/GR Barley Working Group of Gatersleben planned to held 1 - 3 February 1982 , the following points will be discussed:

1. Information on barley collections in European Institutions
2. Priorities of further collections
3. Common descriptor list for the documentation of European collections
4. Close cooperation between member institutes of the working group (recording system, evaluation trials, maintenance of duplicates)

VI.2. Working Group on Rye

Rye is a major crop in the colder northern regions of Europe. In the countries of that region breeding work on rye and genetic resources collection and conservation takes place in government institutes and with some private firms, although not on a scale comparable with the other major cereal crops.

In Poland and in the Nordic countries important work is undertaken regarding resistance against diseases, adverse weather conditions. Moreover, interesting

results were obtained in Poland in determining and overcoming the nutritional inhibitor in the rye-grain, when fed to animals in a non-processed state.

In the mentioned countries interesting collections of rye are present.

A first meeting of the working group on rye was held in the Plant Breeding and Acclimatization Institute in Radzikow near Warsaw, Poland, 2-4 September 1981.

The meeting was attended by representative of the lead institute, Dr. J. Jakubiec and his staff: Dr. Z. Madly, Prof. K. Bojanowska and rye breeder, Dr. L. Grochowski.

Representative of the Nordic Gene Bank was Dr. E. Kjellqvist.

Prof. Dr. R. Manner, Finland, was not able to attend because of illness.

The Executive Secretary of the ECP/GR, Dr. G. de Bakker.

Conclusions:

- 1) Both gene banks shall prepare computer print-outs with passport descriptors for all their rye-accessions, before the end of December 1981. An attempt to determine the redundant duplicates in both collections can then be made.
- 2) Radzikow translated the provisional version of the COMECON descriptor list for rye into English. The computer print-outs of this translation shall be made available during the Second Governing Board meeting in December 1981. This descriptor list will form a basis for discussion on an optimal evaluation list.
- 3) Both gene banks shall be responsible for the regeneration of the material in its possession. Every accession in both gene banks shall be duplicated to be stored in the other bank for reasons of safety.
- 4) Radzikow shall collect data on rye collections held in other European countries, so that a European Catalogue of Germplasm of rye can be composed.
- 5) Regarding evaluation it was agreed
 - a) that Radzikow shall screen all accessions in both banks for tolerance to low pH.
 - b) Nordic Gene Bank shall screen all accessions for sprouting resistance and for susceptibility to *Fusarium nivale*.
 - c) both banks have selected 12 characters from previous evaluation lists for further evaluation.
- 6) Radzikow will undertake research on determination of methods for rye reproduction, using estimation of the genetic drift as a panmixis indicator.

- 7) In the working group on Secale at the Nordic Gene Bank a representative of the Polish Gene Bank shall be included. In the Polish Gene Bank a similar working group shall be established including a representative of the Nordic Gene Bank.

Representatives of the Polish and Nordic Gene Banks agreed on a closer cooperation, taking into consideration their common interest and active participation in the European Cooperative Programme on crop genetic resources and their similar climatic conditions.

They prepared an agreement to give a more formal basis to the intensified cooperation.

A G R E E M E N T

between the Plant Breeding and Acclimatization Institute at Radzikow, Poland and the Nordic Gene Bank at Lund, Sweden, on the cooperation in genetic resources of plant crops.

1. Considering active participation of both Polish and Nordic Gene Banks in the European Cooperative Programme for Genetic Conservation under UNDP/FAO aegis Parties have agreed to establish cooperation in the field of exploration, collection, taxonomy evaluation, documentation of genetic resources for plant breeding.

Forms of cooperation:

- Parties will organize individual and joint exploration missions on the territory of Poland, Nordic and other countries in order to acquire new accessions to be included into their own collections.
- Costs of the mission within a participating country will be covered by the host-country; in other countries expenditures will be shared by participants.
- Material collected will be shared by both Parties and evaluation will be attempted under supervision from both the Polish and Nordic Gene Banks.
- Parties will make efforts to maintain viability of all accessed rye genetic resources, to accomplish complete evaluation of this material both under Swedish and Polish conditions.

2. Parties are obliged to cooperate in developing a computer based documentation system for genetic resources, as well as exchange of information on collections.

Such cooperation includes:

- establishing standard descriptor lists for plant species as well as methods for evaluation of genetic resources (definitions of descriptor states),
- developing programmes for data management,
- elaboration of programming system enabling transfer of data, thus making systems compatible,
- determining statistical methods of analysis of genetic resources data,
- developing models of plant species,
- analysing data resulting from evaluation of genetic resources material.

3. Both Parties will cooperate in providing initial material for plant breeding such as original mutants, substitution, isogenic, male sterile lines, alloplasmatic intergeneric hybrids and other developed and accessed materials.

4. In order to introduce uniform methods for quality - screening for resistance to diseases and pests, as well as evaluation of plant material under extremes of environmental conditions, it is envisaged that technical and research trainings and seminars will be organized on the understanding that the costs of maintenance and accommodation and cost of travel within the country will be covered by the host country. International tickets will be paid by the country of the trainee.

The training programme will be annually planned and agreed.

5. This agreement is concluded for a period of 3 years and shall enter into force on the day it is signed. It shall be tacitly renewed for a subsequent year if neither Party gives notice of its denunciation 6 months prior to the expiration of the current 3 year period.

6. The agreement can be extended if Parties agree.

--- Done in Lund, Sweden, 1981, in 4 copies in the English and Polish languages ---

APPENDIX VI.A

Report on IBPGR ad hoc Working Group on Barley
Edinburgh, UK, 30-31 July 1981

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

INTRODUCTION

1. A meeting of an ad hoc IBPGR Working Group on Barley Genetic Resources was held at Edinburgh, UK, on 31-31 July 1981, in conjunction with the IV International Barley Genetic Symposium. The following members attended: Dr. B.R. Baum (Canada), Dr. A. Hagberg (Sweden), Professor S. Quiquan (China), Dr. F. Scholz (Germany), Dr. D. Wesenberg (USA), Mr. R.N.H. Whitehouse (UK), and Dr. S. Yasuda (Japan). Drs. G. de Bakker (Executive Secretary, FAO/UNDP Cooperative Programme on Crop Genetic Resources), A.G. Balkema-Boonstra (Netherlands), T. Konishi (Japan) and J.G. Moseman (USDA) attended as observers. Professor J.P. Cooper, member of the IBPGR and Dr. J.R. Witcombe, IBPGR Technical Officer for Southwest Asia, represented the IBPGR. Dr. H. Kuuts (USSR) and Dr. M. Mekni (ICARDA), members of the Working Group, were unable to attend.

2. The meeting appointed Professor J.P. Cooper as Chairman and Dr. J.R. Witcombe as Technical Secretary.

3. Professor Cooper and Dr. Witcombe welcomed the participants on behalf of the IBPGR. Dr. G. de Bakker described the FAO/UNDP ECP Programme and expressed the wish that any efforts on barley germplasm in Europe should be compatible with those made internationally.

REVIEW OF EXISTING COLLECTIONS AND IDENTIFICATION OF GAPS

4. A draft directory of barley collections, produced by the IBPGR Secretariat was tabled and discussed. The meeting recommended that revisions be incorporated and the directory published by the IBPGR. In this respect, Dr. J.G. Moseman supplied the results of a survey carried out on behalf of the Barley Genetics Symposium.

5. The Secretariat tabled a preliminary list of barley collecting expeditions. This was considered and members of the group were able to provide a more comprehensive picture of what field work had been done. It was recommended that a full list should be finalized and published in the FAO/IBPGR Plant Genetic Resources Newsletter. The list of missions was invaluable for the discussions on the priorities for collection.

6. The Working Group identified the following as priorities for collection:

A. Wild and Cultivated Barley

Priority 1

Mediterranean: Algeria, Greece (mainland and islands), Morocco, Tunisia.

Southwest, Southern and Central Asia: China (especially Tibet), Nepal (western hill regions), Pakistan - i) Waziristan (NWFP) and ii) costal region of Baluchistan.

Priority 2

Mediterranean: Egypt, Libya.

Europe: Austria, Czechoslovakia, Poland, Romania, Yugoslavia

Asia: Mongolia, USSR (Caucasus and Turkmenistan regions. (Full data on the collections held at the N.I. Vavilov Institute were not available.)

South-west Asia: Iran, Iraq (Sulaimaniya region), Lebanon, People's Democratic Republic of Yemen

Priority 3

India, Bhutan

Other Priorities

In the following countries, or regions, collecting was thought to be completed, or nearly completed.

Afghanistan, Ethiopia, Israel, Japan, Jordan, Korea, Syria, Turkey, West Europe - countries not listed above.

B. Other Species of the Genus Hordeum

H. arizonicum Covas (6x). Distribution: Arizona

This species may be endangered due to cultivation, the use of lined irrigation canals and herbicides. It is only known from a few localities.

H. intercedens Nevski (2x). Distribution: Baja, California, the Pacific Islands and San Diego to Los Angeles. This species may be endangered due to urbanisation.

H. mustersii Nicora (2x). Distribution: Argentina, Santa Cruz Province. This species is only known from two localities.

7. The Priority 2 accorded to Peru, Chile, PDR Yemen, Libya, Egypt and Mongolia are tentative due to lack of information. It was noted that many of the countries are covered by IBPGR programmes; India will be covered by the National Bureau of Plant Genetic Resources activities.

8. The Working Group considered it highly desirable that information be compiled on landrace material in collections and their collection data. Due to the relatively small numbers of such samples the IBPGR is asked to fund this exercise and Dr. B.R. Baum offered the use of computing facilities in Ottawa for this task.

THE DESIGNATION OF BASE COLLECTIONS

Global Base Collections

9. The meeting was informed by Dr. B.R. Baum that the Central Office for the Plant Gene Resources of Canada, Ottawa, Ontario, Canada, had agreed with the IBPGR to be a global base centre for barley. The Secretary reported that the International Centre for Agricultural Research in Dry Areas (ICARDA) provisionally agrees to be a global base centre for barley when its germplasm storage facilities are completed.

Regional Base Collections

10. Dr. T. Konishi reported that the Barley Germplasm Centre, Institute for Agricultural and Biological Sciences, Okoyama University, had agreed to be a regional base centre for barley. Duplicate base collections would be held at the National Seed Laboratory, National Institute of Agricultural Sciences (NIAS), Japan.

11. With regard to European centres, the Nordic Gene Bank (for west Europe) and Gatersleben (for east Europe) were both willing to hold base material. However, arrangements within the FAO/UNDP European Cooperative Programme have yet to be finalized.

12. The meeting noted that the Ethiopian Plant Genetic Resources Centre had agreed to be a regional base store for eastern African material.

DEVELOPMENT OF DESCRIPTOR AND DESCRIPTOR STATES

13. The meeting discussed a draft list of barley descriptors prepared by the Secretariat and the draft descriptor list of the EEC. A list was agreed and it was recommended that the IBPGR descriptor list be published and widely distributed. Dr. A.G. Balkema-Boonstra agreed to see that several points raised in the meeting will be brought to the attention of those people responsible for the EEC list to try to ensure as much uniformity as possible with the IBPGR list.

OTHER BUSINESS

14. The Working Group recommended that, if it has not already been done, the minimum responsibilities of global and regional base centres be clearly defined. These minimum responsibilities should be made widely known.

15. The Working Group recommended that global centres should have the responsibility of conserving closely related wild species, landraces, old varieties before registration, registered varieties and genetic stocks. A regional centre should (except for genetic stocks) keep all of these but concentrate on regional material. In particular, the Working Group recommended that global base centres should accept genetic stocks of major genes when the genetic stocks had published information relating to them. In addition, the Working Group recommended that old cultivars also be conserved in the global base centres. Dr. B.R. Baum stated that since 1952 about 8,000 cultivar names had been published. Since there are many synonyms, this total would reduce to about 2,000.

VI.3. Working Group on Pea

The pea is perhaps the best known of all plants from a genetic point of view.

The classic work of Mendel, on which he based his famous laws, was done with the same species of which we know today the genetical composition with amazing details regarding the hundreds of loci in the chromosomes.

The Nordic Gene Bank took under its wings the basic collection of peas from Weibullsholms and of an important collection of mutants, which are of unique importance,

The Gene Banks in Gatersleben and in Bari, have both extensive collections of peas which for a great part complement each other.

During the first meeting of the Pea Working Group (held on 13 July 1981 in Lund, Sweden) were present:

- Representing the lead institute (NGB, Sweden): Dr. S. Blixt and Dr. E. Kjellqvist, Director,
- Representing the Institute of Gemplasm (IDG, Bari, Italy) Prof. E. Porceddu, Director,
- The Central Institute for Genetics and Research on Crop Plants (ZGK - Gatersleben, DDR) Dr. Chr. Lehmann, Director of the Gene Bank, and
- The Executive Secretary of ECP/GR, Dr. G. de Bakker

The main conclusions of the meeting were:

1. Responsibility for collections in Middle and Eastern Europe Z.G.K.
 - Mediterrranean and Southern Europe I.D.G.
 - Northern Europe, Great Britain and Ireland N.G.B.
 - Other countries - pending clearing up redundant duplicate situation in three participating Gene Banks
2. Collecting passport information of pea collections shall be initiated soonest by all three Gene Banks.
3. Responsibility for subject matter characterization and multiplication of gene type lines, mutations etc. N.G.B.
 - Evaluation of disease resistance I.D.G. and Z.G.K.
4. I.D.G. will gather and process material in order to determine collection gaps (pilot study).

VI.4. Report on the Meeting of Broad Bean Group of FAO/UNDP/ECP/GR Network
held in Bari, Italy, on 1 September 1981

The meeting was attended by Dr. G. de Bakker, Executive Secretary, FAO/UNDP/ECP/GR, Dr. Bond of the Plant Breeding Institute, Cambridge, Drs. C. Lehmann and K. Hammer of the Central Institute for Genetics, Gatersleben, DDR, Professor E. Porceddu and Dr. P. Perrino of Gemplasm Institute, Bari, Italy.

Dr. de Bakker opened the meeting by presenting the objectives of the network, the purpose and membership of the crop groups and the aims of each of these groups. He observed that although the PBI, Cambridge, is not a formally established gene bank, it holds a large and interesting collection of Vicia and scientists there have vast knowledge on broad bean genetics. For this reason, it was suggested to include the PBI in this group.

Dr. de Bakker then invited Prof. Porceddu to present the topics to be discussed during the meeting. The discussions are summarised below:

1. Inquiries on Broad Bean collections existing in Europe:

Due to the difficulties of performing interspecific crosses in the genus, the group stressed the importance of collections coming from various countries in the different areas, in order to represent the variability existing not only in Europe but also throughout the world. Consequently, the group decided to appoint Prof. Porceddu as the person in charge for conducting an inquiry aimed at ascertaining the total quantity, richness, nature and the evaluation conditions of the collections existing in Europe. He will send out circular inquiry letters to gene banks in Europe and to all institutions involved in research on this group to elicit the following information:

1. total quantity of material existing in the collections at the institute(s).
2. origin of single samples (geographical origin or breeding institute).
3. nature of material (populations, lines or gene pools).

N.B.: The term "gene pools" means group of material coming from specific geographic areas.

4. possibility of providing seeds (at least one sample) to a gene bank which will be responsible for its multiplication, conservation and distribution to scientists/breeders.
Availability of seeds for distribution to scientists/breeders if possessing large quantity of material.
5. evaluation performed on the material and availability of data for distribution .
6. necessity of a visit by the person appointed by the group to clarify some of above-listed points and/or to elicit data from field books.

An inquiry would allow clarifications regarding the amount of material, evaluation for study and research, filling in gaps existing both in terms of specific and geographic areas or countries and for promoting exploration and collection missions to fill those gaps.

II. The meeting stressed the necessity to adopt a common method of evaluation in order to facilitate the exchange of information.

Following the lead already taken by IBPGR for other species the group agreed to prepare two preliminary lists of characters - 1) for characterization, i.e. giving preliminary information on the material, and 2) in-depth evaluation containing characters of interest to breeders. Both these lists would be circulated among scientists for their views.

III. The group felt that an international institute such as ICARDA should be, in some way, incorporated into this programme because of its importance for this group and to help the programme with contacts outside Europe.

IV. Difficulties in distributing the material and the risk of spreading diseases were also discussed. The group recommended that the programme should be discussed in greater details and a common strategy adopted. In the meantime, it was recommended to utilise phytosanitary certification even in those cases where it is not mandatory.

VI.5. The other Working Groups will be convened during the first 5 months of 1982 according to the following schedule:

<u>Potato group</u>	Date of first meeting to be agreed upon
<u>Grasses and Clovers</u>	First meeting in Aberystwyth, U.K. 30-31 March 1982
<u>Prunus sp.</u>	First meeting in Firenze, Italy April/May 1982
<u>Grapes</u>	First meeting in Greece after meeting of Scientific Advisory Committee 27 - 29 April 1982)
<u>Onion</u>	First meeting in Wellesbourne, U.K. 25 - 26 February 1982
<u>Tomato</u>	First meeting in Gatersleben 3 - 5 February 1982

APPENDIX VII

COLLECTING ACTIVITIES

(Information additional to that published in the FAO/IBPGR
Plant Genetic Resources Newsletter No. 45, 1981)

BELGIUM

Nothing new.

BULGARIA

A long term programme has been elaborated to carry out domestic expeditions for collection of local plant plasm. The programme is in action since 1981. Eight expeditions - four complex ones in fixed regions of the country - and four specialized ones - have been carried out for collection of wild forage plants, walnuts and of fruit trees and wine crops. 350 local accessions, mainly of grain-leguminous and vegetable crops, have been collected.

CYPRUS

Nothing new.

CZECHOSLOVAKIA

Nothing new.

DEMOCRATIC REPUBLIC OF GERMANY

Continuation of European land races collections:

Slovakia (CSSR) - 592 samples
South Italy - 201 samples

Collections of land races in:

Gruzinskaja SSR (Georgia, Soviet Union) - 236 samples
Social People's Libyan Arab Jamahiriya - 79 samples

Total collected samples: 1,108

FEDERAL REPUBLIC OF GERMANY

Nothing new.

FINLAND

Most activities in the field of genetic resources in 1981 were undertaken under the auspices of the Nordic Gene Bank for agricultural and garden plants (NGB). The activities of the NGB are outlined in the report "Genetic Resources Activities of the Nordic Gene Bank in 1981".

National activities outside of the NGB were the following:

Collection of new material

Agricultural Research Centre, Plant Breeding Institute, Jokioinen
Collecting expedition 7-17 June 1981 to the province of Lapland. Collected vegetative samples of 16 different localities and areas of grasses and leguminous plants, largely the following species: Phleum pratense, Poa alpigena regens, Agropyron repens and Trifolium pratense.

GREECE

An expedition was organized and conducted by the Cereal Institute of Thessaloniki, Greece, supported by the IBPGR to collect germplasm in Chalkidiki-Athos peninsula region in north Greece, in order to preserve the genetic variability of Beta and Aegilops species. Report of this expedition has been sent to IBPGR.

HUNGARY

About 4,000 samples of fruit trees, local types (most of them belong to Prunus genus) were collected and grafted into root stocks by the Research Institute for Fruit and Ornamental Plant Production during 1980 and 1981. The collecting and seed exchange activities of the Research Centre for Agrobotany are shown in Tables 1 and 2.

ITALY

Nothing new.

NETHERLANDS

The Netherlands have participated in one expedition to Pakistan (N.W.) mainly to collect cereals. The expedition was organized together with the Pakistan Agricultural Research Council and was paid by IBPGR. Further, SVP has collected wild and primitive Beta in Greece and Sicily. The evaluation of material from previous trips continues. In the Netherlands, IVT and SVP have collected Cruciferous crops. Exchange of material is not centralized.

NORDIC GENE BANK

Collecting of particularly cereals and grain legumes has continued in Finland and of forage species in all the Nordic countries. The collection in Norway took place in the south-western parts and was done as a joint venture with forage crop specialists from the Welsh Plant Breeding Station. The collection in Sweden was focused on the central parts, in Iceland to ecotypes from old grazing land, and in Denmark to sand dune ecotypes. A full account of the result of this year's collecting activities will be available by the end of the year.

POLAND

Within the country 1,600 samples of grass ecotypes were collected during a two-weeks' expedition to the north-west region of Poland.

Outside the country, 405 seed samples (133 wheat, 65 barley, 10 triticale, 45, aegilops, 2 rye, 4 oat, 4 sorghum, 2 maize, 63 pulses corps, 53 grasses and 44 others) were collected during a six-weeks expedition in USSR (north Caucasus and Azejberdzan and Gruzia). The mission was organized by W.I.R. (All Union Scientific Research Institute of Plant Industry). Two scientific workers of the Polish National Plant Genetic Resources Department, Dr. W. Kulpa and Dr. M. Gorski, were invited to participate in this mission. It was reciprocation for the participation of two W.I.R. scientific workers in the expedition organized in 1980 by the Polish National Genetic Resources Department into the central and southern regions of Poland. Thanks to the activity of Dr. H. Mackiewicz, Republic of Zaire, Africa, 150 seed samples (139 of beans and 11 of maize) were gained.

PORTUGAL

Collecting seeds for storage at the Gene Bank (Started in 1977 with the collaboration of IBPGR) continued in 1981. One collecting mission, comprising two teams and including participants from Spain, was devoted to Lupinus and Secale and covered the central-south-west of the country. Two persons from Portugal participated in two collecting missions in Spain. Another mission was devoted to Maize and Phaseolus and covered two areas (one in the south-west and the other in the central-north-east). Detailed reports of these missions, including all data on the material (presented in a condensed form) were issued. Two reports of previous missions were published in the Newsletter. Two notes on missions carried out in 1981 were sent to the Newsletter.

ROMANIA

Nothing new.

SPAIN

The following expeditions have taken place in 1981:

- a) In the north of Spain, for the collection of leguminous grains and cereals, in collaboration with the IBPGR and the Genetic Department of INIA in Portugal.
- b) In the Canary Islands (Spain) for the beetroot harvest, in collaboration with the IBPGR and Birmingham University (UK).
- c) In Egypt, for the leguminous grain and cereal harvest, in collaboration with the IBPGR and the Bari Gemplasm Institute (Italy).
- d) In Portugal for the leguminous grain and cereal harvest, in collaboration with the IBPGR and the Genetic Department of INIA.

SWITZERLAND

The Station Fédérale des Recherches Agronomiques de Reckenholz, Zurich, has collected in the Swiss pre-Alpes approximately 600 plants of Lolium perenne. The Station Fédérale de Recherches Agronomiques de Changins, Nyon, has collected in Switzerland 12 populations of Poa pratensis, as well as old varieties cultivated in Switzerland of: Allium ampeloprasum, Beta vulgaris v. esculenta, Beta vulgaris v. cicla, Cynara cardunculus ssp. cardunculus. The exchange is proceeding as usual.

TURKEY

Nothing new.

UNITED KINGDOM

Royal Botanic Gardens, Kew:

A preliminary excursion was made to Kenya to investigate the possibility of making large high quality collections in the wild suitable for direct banking. Kenya was chosen as it offered a wide variety of tropical habitats within close proximity to one another.

In the United Kingdom, several one-day collecting trips were made to the South Downs. A joint collecting expedition of one week was made along with the Welsh Plant Breeding Station to the limestone dales of Derbyshire. The division of labour was such as W.P.B.S. collected forage grasses directly related to their breeding activities, Wakehurst Place took material of fringe interest to them. Germplasm was distributed to 38 other botanical institutes so far in 1981.

Welsh Plant Breeding Station, Aberystwyth

Norway, 14-24 August 1981. Messrs. B.F. Tyler and K.H. Chorlton collected in Norway at the invitation of the Norwegian Agricultural Research Council and the Nordic Gene Bank. Collections were made from Kristiansand along the south coast, to the north along the west coast and islands, then inland to Vangsnes and Vagamo and south to Oslo. The following were collected in natural pastures and hay meadows: 14 populations of Trifolium repens, 9 of Lolium perenne, 20 Festuca pratensis, and 9 of other grass species. The participants presented papers at the Department of Genetics and Plant Breeding at the Agricultural University of Norway, and had discussions with the Director of the Nordic Gene Bank and representatives of the Norwegian ARC.

United Kingdom, 29 September to 2 October 1981. Messrs. K.H. Chorlton and I.D. Thomas (jointly with members of the Physiology Unit of the Royal Botanic Gardens, Kew, collected in the Derbyshire Dales. A 'conservation collection' was made in conjunction with the Nature Conservancy Council on 'threatened' limestone habitats (threatened by ploughing/reseeding, abandonment, etc.); 8 populations of Lolium perenne and 3 of Trifolium repens were collected. The Kew team collected seed of other grass species.

Eire, 17 August to 3 September 1981. Mr. M.O. Humphreys (of the Grass Breeding Department WPBS) joined an EEC contracted expedition to south west Eire, which was organized by the staff of the Oak Park Research Agricultural Institute, Carlow. Some 80 sites were sampled for seed of Lolium perenne and Trifolium and Trifolium repens in three main regions: i) the limestone pastures of Galway, ii) the early spring grazing pastures of Waterford and Cork, and iii) pastures on the heavy soils of Limerick.

YUGOSLAVIA

All plant breeding institutions have collected materials through local expeditions and exchange within the country and with organizations abroad. For major field crops, i.e. maize, wheat, barley, sunflower, sugar beet, potato, the process of collecting on the territory of Yugoslavia is almost completed. Work was especially accelerated in collecting maize varieties due to their quick replacement by hybrids and the actual danger of loosing these varieties.

After classifying all collected materials, which is still in progress, plans will be made for collecting all plant species.

HUNGARY

Table 1

Ecotypes and land-races collected in Hungary
1st January to 30th September 1981

Genus	No. of accessions	Genus	No. of accessions
Agropyron	2	Lathyrus	3
Agrostis	2	Levisticum	1
Allium	13	Linum	1
Alopecurus	1	Lotus	11
Anthoxanthem	1	Lycopersicon	8
Apium	7	Modicago	4
Arrhenatherum	4	Papaver	29
Beta	11	Pastinaca	3
Brassica	9	Petroselinum	15
Briza	4	Phaseolus	162
Bromus	5	Phleum	1
Calamagrostis	2	Pimpinello	1
Cannabis	7	Pisum	6
Capsicum	13	Pea	16
Catheanus	13	Raphanus	7
Citrullus	3	Rheum	3
Cucumis	17	Rumex	5
Cucurbita	38	Sorghum	2
Dactylis	4	Spergula	6
Daucus	8	Spinacia	6
Festuca	19	Trifolium	17
Helianthus	44	Trisetum	3
Holcus	1	Typhoides	1
Lactuca	12	Vicia	45
Lagenaria	5	Zea	34
		Others (not yet identified)	1

Total: 646 accessions

HUNGARY

Table 2

Ecotypes and land-races collected in Czechoslovakia
1981

Genus	No. of accessions	Genus	No. of accessions
Agropyron	2	Helianthus	4
Agrostis	6	Holcus	1
Allium	11	Hordeum	3
Alopecurus	6	Lactuca	3
Apium	1	Linum	1
Arrhenatherum	4	Lolium	6
Avena	3	Lycopersicon	3
Beta	2	Papaver	6
Brachypodium	1	Phaseolus	44
Briza	4	Petroselinum	2
Bromus	1	Pisum	2
Capsicum	4	Pea	15
Carum	1	Raphanus	1
Cucumis	4	Secale	2
Cucurbita	5	Solanum	3
Cynosorus	3	Trifolium	1
Dactylis	10	Triticum	3
Daucus	3	Typhoides	6
Deschampsia	2	Zea	8
Festuca	31	Others (not yet specified)	6
		Total:	<u>224 accessions</u>

APPENDIX VIII

INFORMATION AND DOCUMENTATION

Consultant's report by Professor S. Blixt, Sweden
on Information

New genebanks are presently developing in Europe and this decade will hopefully be a decade of rapid development, not the least on the information side. Some genebanks, however, have been in operation, wholly or partly, for quite some time and a few for many years already. Genebanks, as a group, are therefore at the moment rather heterogeneous regarding documentation. Particularly in one aspect: that concerning free, easy and direct exchange of computerized information, there will be some problems to overcome during the next few years. It should not be too difficult to overcome them but it will take time. Future development could be by a series or steps of phases according to an agreed schedule.

At the meeting of the Eucarpia Extended Genebank Committee and the FAO/UNDP European Cooperative Programme Scientific Advisory Committee at the Nordic Genebank, Lund, Sweden, July 13-14 1981, such a schedule was proposed and some examples given.

What is presented here is a more detailed suggestion evolved from discussions in and following that meeting. The basic idea is that for full and free information and material exchange, all or almost all genebanks should be capable of taking part on a reasonably equal basis. This implies a need for all to have reached a certain minimum level of information handling. It follows that bringing all genebanks to what is here called Phase 3 should have the highest overall priority at present in the ECP programme, and the task of the first years should largely be to bring about the minimum level in equipment and development.

On the following pages a rough schedule for the information side is presented, based on the expectation that all genebanks will endeavour to reach this minimal level of development. Therefore, it is assumed that Phase I was initiated by 1981 to continue and end in 1982. References are made to relevant paragraphs from the Workplan 1981 (Appendix IX in the Report of the First Governing Board Meeting, of ECP, Geneva, 15-18 December 1980) and ECP Activities on Selected Crops (see document GB81/WP.III.1). They are referenced as IX/paragraph and WP/paragraph, respectively. A more full and technical treatment of various details is being prepared to be submitted to the Scientific Advisory Committee in time for the Thessaloniki meeting.

A rough schedule means here that the activities are arranged as far as possible in the order in which they will be undertaken or could be undertaken. It should be the task of the Scientific Advisory Committee to suggest more precise dates for the Board's decision, when relevant, for initiation and finishing of the various activities.

TIME SCHEDULE

of the phases of genebank
information development

Phase 1: Organizing phase

No electronic storage devices available

1.1 IX/1.2 "Drafting of requirements and rules for the European Crop Germplasm Centres"

Rules based on a viable idea of genebank activity could promote development and progress. However, to formulate such rules requires that genebanks:

1.1.1 Consider and adopt a genebank concept.

It is suggested that the genebank as an institution is a new development; its aims and responsibilities are differing from the traditional ones, such as seed collections, botanic gardens, plant breeding institutes, etc. There is therefore a need to formulate these aims and responsibilities into a genebank concept. Such a concept is certainly a necessary base for the construction of a genebank information system, in which meaningful data through meaningful computer processing of these data are expected to produce meaningful results. An outline of such a concept was presented in the Report of the First Governing Board Meeting of ECP in Geneva, December 1980 (Appendix V).

1.1.2 Formulate or adopt information structures for individual banks

In terms of utility, genebank information covers an extremely broad field, from similar disciplines such as agronomy, genetics and botany, to a little further away fields such as biochemistry and biophysics and seemingly even more remote ones such as history and ethnology. Such data constitute a considerable capital which is most efficiently utilized when stored in a system with a meaningful data structure. Such a structure, storing information at different 'levels', is under development at the Nordic Genebank. The common denominator in levels 1 to 7, corresponding to character information, is the number of genes forming a level and the amount of environmental interactions to be considered part of the level, both increasing with increasing level. Levels 8 to 10 correspond more or less to passport information. The genetic content at level 1 is then 100 per cent and at level 8 nil. The construction may be conceived as a restricted sector of an all-embracing system cut out for a specific purpose.

1.1.3 Consider the future responsibilities of and requirements on the Scientific Advisory Committee

With the appearance of the working groups and the beginning of activities the burden on the Scientific Advisory Committee (SAC) is likely to increase and probably also to change character. On the one hand, the working groups can be expected to raise demands on funds and facilities and it seems the task of the SAC to analyse, suggest priorities and give recommendations to the Board for decision.

On the other hand, the working groups, being made up of crop specialists will certainly need in-depth scientific advice from the SAC in, for instance, the following fields:

- Plant genetics and cytology
- Molecular and in vitro genetics
- Tissue culture
- Systematics
- Seed physiology
- Plant pathology including phytosanitation
- Biological computerized documentation
- In situ conservation
- Ethnobotany

It is further suggested that members of the SAC be prepared to devote a certain annual minimum time to ECP actions.

These seem major issues to be clarified before rules are finalized. It is therefore suggested that each genebank formulates a policy on these points during early spring 1982 and further, in view of the importance of this stage in the ECP-development, that all the working groups and the SAC discuss these points at the meeting in Thessaloniki, Greece, 26-29 April, 1982. The adoption of a concept - and especially of a common concept, could this be achieved - would facilitate the making of information systems and their utility, and almost certainly also lead to highly compatible systems. Therefore, these issues should not be rushed but thoroughly discussed. The SAC may then try to reach a consensus and make recommendations to the 1982 Governing Board meeting for decisions.

1.2 IX/4.2 "Advice to genetic resources institutions on computer hardware and software to handle the data of their collections"

The general advice on these points to genebanks in Phase 1 might be phrased as follows:

1.2.1 Make all possible efforts to obtain computer capacity and obtain or produce minimum software

Minimum software could comprise just three rather simple computer programmes: one for handling descriptors, the second for data input and editing and the third for data listing. The software for descriptor handling could, in its simplest form, consist of a programme to enter and edit three files:

- File 1, Descriptor Table (DT)
- File 2, Name of Descriptor (DN)
- File 3, Definition of Descriptor (= character)

- 1.2.2 Produce lists of descriptors in actual use (and reorganize, if necessary, manual records accordingly)

The IBPGR has recently published a definition of DESCRIPTOR (Plant Genetic Resources/PGR/45, 1981, C. Howes, p.26). In the same paper the following types of information or documentation are defined:

1. Passport information
2. Characterization
3. Preliminary evaluation
4. Further evaluation

Regarding different types of descriptors needed in an information system (Germplasm documentation: the future, FAO/UNEP/IBPGR Technical Conference, Rome 1981):

Management Information - passport descriptors
- management descriptors

Result Information = characterization
= preliminary evaluation
= evaluation

Character descriptors

Genetical descriptors
Botanical descriptors
Qualitative descriptors
Metric descriptors
Grading descriptors

It is suggested that ECP adheres to these definitions in essence though some points should be further discussed.

- 1.2.3 Present the existing definitions of the descriptors used.

- 1.2.4 Produce accurate figures of number of accessions stored in documentation systems for each crop and estimates for expected growth to the end of 1985.

These figures would be of value for estimating the sizes of the data bases that have to be dealt with after the possible elimination of redundant duplicates. For the 'lead centres' this will be of considerable interest. In fact, many genebanks with the probable exception of lead centres for large crops may then find that a micro-computer is quite adequate for most of their problems.

- 1.2.5 Classifying accessions

Whenever an accession is entered into a collection it is implicit that the accession may contain valuable gene material. Each accession should, therefore, be provided with management descriptors that show why the accession is held in the collection. This does not mean that we are supposed to know or find out before entering the accession what character or gene is of value in this particular accession - this would be impossible. But at least it must be placed in one or

other of a number of categories in a classification, (see Frankel and Soule 1981, Conservation and Evolution). For many years now, the Nordic Genebank has used the following categories for the pea collections: Landrace, Cultivar, Population, Crossing Derivative, Selection, Mutant and the specific class Type-line; these seem close enough to Frankel's groups of domesticates. Besides what could be called general reasons, specific reasons should be given as far as possible. Such specific reasons are any particular known or suspected valuable characters in an accession, for instance, disease, resistance, protein quality, etc. Genes determining sterility or lethality have to be specifically mentioned. They can only be maintained in heterozytes which must therefore be distributed with particular measures; all this has its place in the information system.

Also the problems listed under 1.2 would benefit from being thoroughly discussed by the SAC and the crop working groups during the April meeting.

- 1.3 IX/1.1 "Designation for each crop of one or more European institutes, which accept to act as leading centres for the conservation, rejuvenation and multiplication, evaluation, documentation and related activities of the Genetic Resources of the crop(s) concerned"

The first proposal of the 'lead centres' and working groups emerged during 1981 (see GB/WP III.1). Much detailed planning, including information systems, must come through these working groups to be executed by the genebanks. It seems therefore essential that the working groups should be enthusiastically supported by all genebanks.

1.3.1 To avoid creating 'lag-crops' working groups should be arranged during 1982 for crops not yet dealt with.

1.3.2 A special working group may be appointed to look after coordination with the IBPGR network.

In view of the recommendation that the IBPGR's definitions of base collection, active collection and plant breeder's collection are to be applied and that the IBPGR network of global or regional base-collections is to be taken into account, it may be necessary to make this coordination a continuing issue.

1.3.3 To obtain an overview of the actual situation with regard to information, each lead centre should initiate a review of the genetical information that it has available on crops, including botanical information relevant to the work of the genebank.

For many crops, including very important ones, such as wheat and barley, a wealth of genetic information is available though perhaps not yet collected and computerized in a form suitable for genebank information use. Similarly, taxonomic treatments of crop plants particularly at the infraspecific level, contain character descriptions of possible applicability; characters tested in good botanic keys are usually highly heritable, often determined by one to a few genes. It should prove very useful for the characterication work to get genetical and taxonomical information into the computer as soon as possible; it might be a suitable task for the crop working groups to start on immediately. The recording of published genes should be followed up by the collection of material and designation of TYPE-accessions for different alleles.

1.4 IX/8 "Preparation and publication of a directory of germplasm institutes with particulars of:

a) manpower, b) facilities, c) data by which institutes characterize their collections"

While the aim should be that all or most genebanks are ready to enter Phase 2, i.e. have acquired computer capacity, by the end of 1982, it should be clear that many other items can only be initiated, including a more comprehensive directory.

Phase 2: Data Input Phase

Computer storage available, all data to be transferred into computer readable form

2.1 A start could be made by acquiring 'minimum software' to allow entering the main descriptor list with definitions of plant characters.

2.2 Enter data using simple sequential database structure.

Computer readable form could simply mean that data are stored on disk or tape in the sequence of a descriptor table. It is recommended that more sophisticated retrieval storing should be left to a later stage or be produced as a superstructure on top of the simpler database.

2.3 When making several databases (e.g. for specific crops) build each database on a descriptor list drawn from the main list.

It is recommended that in Phase 2, after having threshed out the problems involved in Phase 1, genebanks concentrate activities very much on the issue at hand: to get the data into the computer; only when this has been achieved will a number of programme activities in Phase 3 become feasible.

Phase 3: Consolidation Phase

Data in computer readable form: filling information gaps

Before going into joint efforts, such as tackling gaps in collections, evaluation, characterization, etc. the most important tasks in Phase 3 for the individual genebanks and the working groups are:

3.1 After completing the entry of passport data on all accessions, to initiate the elimination or anyway identification of the most obvious redundant duplicates and to sort out arrangements for the safety of duplicates that are to be kept.

Three kinds of duplicates can be recognized commonly in collections.

Redundant duplicates are the completely unwanted duplications within or between collections, with no practical utility. The process of eliminating them may start with updating and comparing passport information followed by comparing character information and should normally end with a field observation. It would probably save much time and effort if the crop working groups can arrange for the field work to be shared by several genebanks, taking care to avoid overlap.

Safety duplicates are the duplicates stored for safety which should be arranged on a global basis, if possible in sealed containers independent of storage room humidity control. Emergency independent long-term storage in permafrost ground to be followed closely.

The third kind is the certain percentage of duplicates stored for practical convenience that will probably always remain, e.g. varieties/accessions very often used for special purposes and therefore deliberately kept in active collections.

It seems practical that before publication of the germplasm material the redundant duplicates are identified, possible eliminated; this certainly also bears on IX/2.3 and particularly IX/3.4. Likewise, safety arrangements should not be made for an excessive number of redundant duplicates.

3.2 WP/3.5 "Characterization and preliminary agronomic evaluation. Describing the accessions using accepted descriptors is a major and important task and should be organized with great care by the working group. Without proper evaluation the collected material will remain sterile although the seeds may germinate. The agronomic evaluation should preferably be organized in close contact with the plant breeders and, when possible and feasible, on an international scale".

This is closely related to:

IX/4.1 "Promotion and utilization of minimal number of descriptors for crops and of standardization of descriptor terminology and taxonomic nomenclature, aimed at better input-output compatibility".

3.2.1 Working groups presenting the agreements on characterization goals in order to initiate fullest possible characterization of accessions.

With descriptor lists and local definitions of the characters/descriptors as a base, the working groups could agree on a 'minimum descriptor list', preferably of highly heritable characters, by which all accessions should be characterized over a certain period of time, the work being shared by as many as possible. It is to be recommended that such a 'minimum list' should contain the genes known for the crop.

3.2.2 Working groups presenting information on sizes of collections

At this stage, the working groups could perhaps be expected to have a fairly good appreciation of the number of redundant duplicates in the collections and thus the actual numbers of duplicates in collections needing to be safely stored and characterized. The information could be presented at the Governing Board meeting at the end of 1983, perhaps in the following form: Institute, crop, total number of accessions, number of accessions in long-term storage, number of non-duplicated accessions (not kept any other place), number of accessions wished to be kept (for different reasons), number of accessions to be kept in proper long-term conditions.

If possible as appendix, list of which accessions kept in which genebank.

3.2.3 Working groups discuss and prepare for the technical aspects of Phase 3, including standards for data exchange in Phase 4.

Genebank information is a fairly recent development which can be expected to develop rapidly in the immediate future. It is therefore now, 1981, premature to try to fix any kind of standards. However, preparations should be made for adopting some standards at the end of the scheduled period.

Such standards and preparations should comprise: Agreements to use one (to a few) standard codes; information on which genebank uses, what codes and channels for exchange of tapes, soft and hard disks, expected use of telecommunication links with the economics of the existing alternatives (e.g. Euronet, Control Data, other data-communication companies); agreements on standard descriptors; discussions on fixed versus free format as exchange standard.

The time to start the discussions seriously may be when most genebanks have some experience in the everyday handling of their information systems, a reasonably accurate estimate of the number of real 'unique' i.e. non-duplicated, accessions, redundant duplicates having been identified, and full characterization has been at least initiated. One solution for the interchange of data has been suggested (J. Konopka, Report AGP: IBPGR/81/33, Appendix III).

3.2.4 Finalize duplicate arrangements

3.3 WP/3.6 "Documentation and information"

"All information on the germplasm of any crop kept in European genebanks should be collected and stored in a computer, preferably in the lead institute, using accepted descriptors and data management systems. Even when, as may often happen, it is impossible to store all the germplasm material of the crop concerned in the genebank of the lead institute, a full documentation on the accessions held

in other places must be collected and put in the computer of the lead institute. Crop catalogues could then be composed, containing all data, including agronomically important characters, so that plant breeders have easy access to the specific gene material they need for their breeding programmes by perusing the crop catalogue or the tape or disc copy of the computer".

This could now be initiated. It is, however, quite a different matter, which should be thoroughly discussed, to what extent and at what level 'lead institutes' should duplicate data already stored in other genebanks. Should it, for instance, be part of the main information system of the lead centre or merely a duplicate kept for safety.

- 3.4 IX/2.3 "Studying what gaps exist in which countries, in order to formulate a long term plan for completing collections of the different crops in Europe".
- 3.5 IX/3.1 "Promotion of evaluation of germplasm material available in individual collections and publication of results".
- 3.6 IX/3.2 "Promotion of characterization of recently collected germplasm material and publication of results".
- 3.7 IX/3.4 "Assist crop germplasm centres to collect information on evaluations done elsewhere in order to complete their documentation of the germplasm of the crop(s) they are responsible for".
- 3.8 IX/4.3 "Promote and assist in preparation and exchange of Crop Germplasm Catalogues, either printed, on tapes or in other forms, containing all relevant information on accessions present in European institutions".

This might be a realistic time to expect tape or disk copies to begin to be generally available. All (or most) genebanks should, by now, be in Phase 3, working to:

- 3.8.1 Acquire or produce computer software capable of handling the main aspects of information management and processing material.

Such software should contain programmes for field planning, sowing lists, observation lists, seed storage, handling, etc. As soon as data have started to accumulate, it becomes essential that this information is transferred without fail to all kinds of field books, lists, etc. used in handling material for multiplication, rejuvenation or observation. The simplest way to assure this is to run everything on the computer and transfer all the information inside the computer directly from file to file. Thus information and material for the exchange phase will be as closely knit together as possible.

The simplest form is probably a rather simple programme to establish a field book by direct input of field number and accession number and then to load in certain data, e.g. passport information, directed by the descriptor table, from the database. For example, lists of observations can be produced simply by using the field book file as a directory and printing again from the descriptor table, existing and/or missing data. In this particular area, it is very difficult to give more precise advice; the greatest benefits from running a genebank might be gained in this very sector, by tailoring programmes to the specific local situation.

3.8.2 Discuss standardization of crop descriptors in a European context with global considerations and make recommendations.

Phase 4: Data Exchange Plan

With internal organization consolidated, it is time to shift emphasis to data exchange with other genebanks. Efforts should first be put into creating a functioning exchange based on tape, soft or hard disks allowing a few standard codes, gradually extending to telecommunications.

- 4.1 IX/4.1 "Advising on and assisting in extending their Germplasm Collections and exchanging material and data with other genebanks".

Phase 5: Retrieval and Research Phase

Information system communicating with users as well as other disciplines of plant science:

Predictive plant breeding models

One of the uses of genebank data should be to produce predictive models for increasing efficiency of breeding. An attempt has been made using pea data (S. Blixt, Problems relating to pea breeding, *Agri Hortique Genetica* 36, 56-87). (See also: Germplasm Documentation: the future - FAO/UNEP/IBPGR Technical Conference on Crop Genetic Resources, Rome 6-10 April 1981).

S U M M A R Y

TIME SCHEDULE
of the phases of genebank
information development

1. Phase I: ORGANIZING PHASE
No electronic storage devices available
- 81 1.1 IX/1.2 "Drafting of requirements and rules for the European
Crop Germplasm Centres"
- 82 GBM 1.1.1 Consider and adopt a genebank concept
- 82 GBM 1.1.2 Formulate or adopt an information structure for individual genebanks
- 82 GBM 1.1.3 Consider the future responsibilities of and requirements on the
Scientific Advisory Committee
- 1.2 IX/4.2 "Advice to genetic resources institutions on computer
hardware and software to handle the data of their collections"
- 82 1.2.1 Make all possible efforts to obtain computer capacity and obtain
or produce minimum software
- 2 1.2.2 Produce lists of descriptors in actual use (and reorganize, if
necessary, manual records accordingly)
- 82 1.2.3 Present the existing definitions of the descriptors in use
- 82 1.2.4 Produce accurate figures of numbers of accessions stored in
documentation systems for each crop and estimates for expected
growth to the end of 1985
- 83 1.2.5 Attempt to classify the accessions
- 1.3 IX/1.1 "Designation for each crop of one or more European
institutes that will agree to act as leading centres for the
conservation, rejuvenation and multiplication, evaluation,
documentation and related activities of the Genetic Resources
of the crop(s) concerned"
- 82 GBM 1.3.1 To avoid creating 'lag-crops' nominate working groups in 1982
for crops not yet dealt with
- 81 1.3.2 A special working group may be appointed to look after the
coordination with the IBPGR network

- 81 1.3.3 To obtain an overview of the actual situation with regard to information, lead centres should initiate a review of genetic information available for each crop including botanical information with genebank applicability
- 81-85 1.4 IX/8. "Preparation and publication of a directory of germplasm institutes with particulars of: a) manpower, b) facilities, c) data by which institutes characterize their collection"
2. Phase II: DATA INPUT PHASE
- Computer storage available, all data to be transferred into computer readable form
- 82-83 2.1 Start could be made by acquiring 'minimum software' to allow entering main descriptor list with definitions of plant characters
- 82-83 2.2 Enter data using simple sequential database structure
- 82-83 2.3 When making several databases (e.g. for different crops) build each database on a descriptor list drawn from the main list
- Phase III: CONSOLIDATION PHASE
- Data in computer readable form: filling information gaps
- 83 3.1 Complete entry of all passport data in order to initiate the elimination or anyway identification of the most obvious redundant duplicates and arrangements for duplicates to be kept for safety
- 83-85 3.2 WP/3.5 "Characterization and preliminary agronomic evaluation ----"
IX/4.1 "Promotion and utilization of minimal number of descriptors for crops and of standardization of descriptor terminology and taxonomic nomenclature, aimed at better input-output compatibility"
- 84 GBM 3.2.1 Working groups presenting the agreements on characterization goals in order to initiate fullest possible characterization of accessions
- 84 GBM 3.2.2 Working groups presenting information on sizes of existing collections
- 84 GBM 3.2.3 Working groups discuss and prepare for the technical aspects of Phase III, including standards for data exchange in Phase IV
- 84 GBM 3.2.4 Finalize duplicate arrangements
- 84 3.3 WP/3.6 "Documentation and information"
All information on the germplasm of each crop kept in European genebanks should be collected and stored in a computer, preferably in the lead institute, using accepted descriptors and data management systems

- 84 3.4 IX/2.3 "Studying what gaps exist in which countries, in order to formulate a long term plan for the completion of collections for the different crops in Europe"
- 84 3.5 IX/3.1 "Promotion of evaluation of germplasm material available in individual collections and publication of results"
- 84 3.6 IX/3.2 "Promotion of characterization of recently collected germplasm material and publication of results"
- 84 3.7 IX/3.4 "Assist crop germplasm centres to collect information on evaluation done elsewhere in order to complete their documentation of the germplasm of the crop(s) they are responsible for"
- 3.8 IX/4.3 "Promote and assist in preparation and exchange of Crop Germplasm Catalogues, either in printed form, on tapes or by other means that contain all relevant information on accessions present in European institutions"
- 84 3.8.1 Acquire or produce computer software capable of handling the main aspects of both information and material processing
- 84- 3.8.2 Discuss standardization of descriptors for each crop in a European
85 GBM context with global considerations, present recommendations
4. Phase IV: DATA EXCHANGE PHASE
- With internal organization consolidated, the time has come to shift emphasis to data exchange with other genebanks. Efforts should first be put into creating a functioning exchange based on tape, soft or hard disks allowing a few standard codes, gradually extending to telecommunications
- 85 4.1 IX/1.4 "Advising on and assisting in extending their Germplasm Collections and exchanging material and data with other genebanks"
- 86 5. Phase V: RETRIEVAL AND RESEARCH PHASE
- Information system communicating with users as well as other disciplines of plant science
- Predictive plant breeding models

APPENDIX IX

REVISED TERMS OF REFERENCE FOR
SCIENTIFIC ADVISORY COMMITTEE OF ECP/GR

The Scientific Advisory Committee will consist of recognized specialists who are known in Europe to have special knowledge or experience in the field of plant genetic resources. Because of successful activities in the EUCARPIA Gene Bank Committee since the late 1960s, and to ensure continuity and avoid unnecessary duplication, it is strongly recommended to let this EUCARPIA Committee as elected at each EUCARPIA technical congress, act as the Scientific Advisory Committee of the ECP/GR. In addition, the Chairman and one other member of the Governing Board, who could be the Vice-Chairman, or the Executive Secretary, should be ex officio members. The Scientific Advisory Committee can seek assistance by inviting other specialists to its meetings, especially drawn from the group of directors and scientific staff of the national institutions for plant genetic resources in Europe, from the sub-regional groups and from other international organizations.

The Scientific Advisory Committee shall have the following functions:

1. To assist the Governing Board and the Executive Secretary in executing their functions by submitting general scientific advice and special reports, both on request of the Governing Board and on the initiative of the Committee itself;
2. To continue constituting a link between the European institutions on plant genetic resources by organizing yearly meetings, to which the directors of these institutions or their representatives are being invited, to discuss problems of mutual interest, as well as joint programmes. When required, these meetings should take place separately from those of the elected EGBC, which together with other members proposed by the Governing Board, constitutes the SAC;
3. To advise on links between the ECP/GR and the European plant breeders, as organized in EUCARPIA and other appropriate organizations;
4. To advise on proposals which will further and stimulate the full and free exchange of plant genetic resources and genetic data related to them;
5. To advise on the use of information management and the preparation of the European Crop Catalogues of Genetic Resources for Plant Breeding;
6. To formulate priorities for the collection and preservation of European genetic resources, which are not yet available in collections and especially those which stand in particular danger of extinction;

7. To advise on the needs for organization of joint evaluation programmes, with breeders, including the distribution of the results;
8. To start the development of plans for the division of responsibilities among European institutions with base and active collections of plant genetic resources for long-term storage and rejuvenation of various crops. Such plans, as well as proposals for duplicate storage for safety, should be drawn up in close contact with IBPGR/FAO and should take into account the possible implications from quarantine legislation;
9. To consult concerning the work, review of work and the annual progress report before it is presented to the Governing Board;
10. The Scientific Advisory Committee to meet at least once a year (or more frequently if necessary) and report to each meeting of the Governing Board.

APPENDIX X

WORK PRIORITIES IN PHASE II

1. The further development of the crop working groups will have first priority. Established working groups will extend their activities and endeavour to facilitate the free exchange of information and of germplasm so that plant breeders have easier access to the genetic material they need. New working groups for other crops will be established.
2. Collecting activities will be intensified in the effort to fill any gaps in collections. The use of international collecting teams could encourage international collaboration in other activities.
3. A development plan for computerized documentation will be phased over three years. Assistance by consultants and in-service training will be offered to documentation units correlated with the sophisticated equipment to improvement of the system of data management being used.
4. Increases in exchange of samples may draw attention to the need to prevent the spread of diseases and pests. Phyto-sanitary measures to prevent this are justified, but not always efficient. A study of this complex subject may be undertaken.
5. Practical methods of conservation should be examined and, in particular, attention given to Meristem culture techniques for the conservation of clonally propagated crops.

APPENDIX XI

CASH BUDGET FOR ECP/GR PHASE II

CASH BUDGET EXPENSES ESTIMATED IN US DOLLARS PER YEAR (1983, 1984, 1985) AND
IN TOTAL:

10.	<u>Project Personnel</u>	Total for 3 years		1983		1984		1985	
		M/M	\$	M/M	\$	M/M	\$	M/M	\$
11.	<u>Experts</u>								
11.01	Executive Secretary	36	275.000	12	85.000	12	90.000	12	100.000
11.02	Consultants	9	90.000	3	25.000	3	30.000	3	35.000
11.99	Sub-total	45	365.000	15	110.000	15	120.000	15	135.000
13.	Other Project Personnel		180.000		50.000		60.000		70.000
15.	Official Travel		135.000		40.000		45.000		50.000
16.	Other Costs		70.000		20.000		25.000		25.000
19.	Component Total		750.000		220.000		250.000		280.000
29.	<u>Sub-Contracts</u>		195.000		60.000		65.000		70.000
30.	<u>Training</u>								
30.31	Individual Training		165.000		50.000		55.000		60.000
30.32	Group Training		205.000		65.000		70.000		70.000
39.	Component Total		370.000		115.000		125.000		130.000
49.	<u>Equipment</u>		95.000		30.000		30.000		35.000
59.	<u>Miscellaneous</u>		90.000		25.000		30.000		35.000
Total Expenses per year:					450.000		500.000		550.000
Total Expenses for three years:				1.500.000					