

UNDP/IBPGR EUROPEAN COOPERATIVE PROGRAMME  
FOR  
CONSERVATION AND EXCHANGE OF CROP GENETIC RESOURCES  
PHASE II

REPORT OF THE FIRST MEETING OF THE  
TECHNICAL CONSULTATIVE COMMITTEE

Changins, Switzerland, 19-21 December 1983

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES  
Rome, 1984

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

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c International Board for Plant Genetic Resources, 1983

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## INTRODUCTION

1. The first meeting of the Technical Consultative Committee (TCC) of the European Cooperative Programme for Genetic Resources (ECP/GR) was held at the Station fédérale de recherches agronomiques de Changins, Nyon, Switzerland, 19-21 December 1983. The Committee was convened to act as the Advisory Body for Phase II of the Programme.
2. The following invited members attended in their individual capacities: Messrs. A. Cauderon (France), L. Holly (Hungary), M. Ingold (Switzerland), G. Jenkins (UK), K. Kostov (Bulgaria), E. Kjellqvist (Sweden), V.D. Krentos (Cyprus), M. Mota (Portugal), A. Skov (Denmark), K. Temiz (Turkey), Mrs. M. Waldman (Israel), Messrs. J.T. Williams (Executive Secretary) and M. Zacharias (German Democratic Republic). Messrs. Pencic (Yugoslavia) and E. Porceddu (Italy) sent apologies for absence, Mr. H. Kurz attended as UNDP Representative, Messrs. A. Mast and A. Heitz on behalf of UPOV, J.S. Bojanowski on behalf of EUCARPIA and L. Kähre on behalf of IBPGR. The ECP/GR Secretariat was represented by Messrs. J.H.W. Holden and P.M. Perret. Mr. S. Blixt was present in his capacity as adviser for documentation. Full addresses of participants are shown in Appendix I.
3. The Committee was welcomed to Changins by Mr. M. Ingold, and on behalf of IBPGR by Mr. Kähre. The meeting opened by Mr. J.T. Williams. Mr. A. Skov was elected as chairman and the agenda as adopted is shown in Appendix II.
4. Mr. Williams informed the Committee of recent decisions by the 1983 Conference of FAO concerning genetic resources.

## REPORT

### Current membership of the programme

5. It was reported that, to date, 19 countries had officially joined Phase II and 7 have declared their intention to join. They are as follows:

IPF countries who have signed the project document and paid the first year's contribution

Bulgaria  
Hungary  
Poland

IPF countries who have signed a project document but have not yet paid:

Czechoslovakia  
Greece

IPF countries who have declared their firm intention to join the programme:

Cyprus  
Portugal  
Romania  
Turkey  
Yugoslavia

Non IPF countries who have signed a letter of agreement and have paid their first year contribution (or will have done so by December 1983):

Austria  
Belgium  
Denmark  
Finland  
France  
Germany DR  
Israel  
Netherlands  
Spain  
Sweden  
Switzerland  
United Kingdom

Non IPF countries who have signed a project document but have not yet paid:

Iceland  
Norway

Non IPF countries who declared their firm intention to join:

Germany FR  
Italy

6. Contributions, to date, total US\$ 27,000 from 14 countries. The Executive Secretary pointed out that Phase II could not be declared formally operational until US\$ 45,000 had been received from countries and the present meeting was therefore "unofficial" due to Phase II not having been formally declared operational.

#### Adoption of rules of procedure

7. The Committee was informed of its terms of reference as proposed by the Governing Board of Phase I and approved by the IBPCR. The Committee made minor modifications to the wording (see Appendix III), and the rules of procedure agreed are shown in Appendix IV.

#### Barley Working Group

8. The Secretariat tabled a progress report on the receipt of barley passport data by the Gatersleben genebank. Further information was provided by members and the present position is as follows:

#### Data received by central data base up to 22.11.1983

<u>Country</u>	<u>No. of Accessions</u>	<u>Form in which received</u>
Cyprus	26	Printout
Germany DR	9 000 Central data base	Computer printout
Germany FR	7 000 Braunschweig	Computer printout
Greece	69	Collecting forms
Italy	661 Bari	Computer printout
Netherlands	72 (Pakistan expedition 1981)	Computer printout
Poland	2 500 Radzikow	Computer printout
United Kingdom	3 500 Scottish Crop Research Institute	Computer printout
	5 000 Plant Breeding Institute	Computer printout

Data expected by central database in near future

Austria	Passport data by February 1984
Belgium	No information
Bulgaria	Passport data on floppy disks, early 1984
Czechoslovakia	Passport data on magnetic tape by March 1984
Denmark	Passport data + 25 characters, January 1984
Finland	Passport data + 25 characters, January 1984
France	Passport data by January 1984
Hungary	Passport data by January 1984
Iceland	Passport data + 25 characters, January 1984
Israel	Identification of constraints by April 1984
Norway	Passport data + 25 characters, January 1984
Portugal	No information
Romania	Will transmit passport data at 500/month
Spain	No information
Sweden	Passport data + 25 characters January 1984
Switzerland	Passport data by January 1984
Turkey	Some data available in Index Seminum
Yugoslavia	No information

It was agreed that countries should be encouraged to transmit data in magnetic form to reduce keying errors and the workload on the central data base.

9. The linkage of this programme with the IBPGR barley network was noted in that observers from ICARDA and the Plant Genetic Resources Centre, Ethiopia, attended the ECP/GR Working Group meeting and active collaboration has begun between the central data base, Gatersleben and Ethiopia.

10. It was noted that much of the barley collection in ICARDA duplicates that held in Beltsville and elsewhere but the Committee recommended that the unique component of the ICARDA collection should be added to the European collection.

11. The Chairman of IBPGR expressed satisfaction with the progress of work on barley in Europe and with the concomitant links established with programmes outside the region.

12. It was agreed that the Secretariat should circulate progress reports to all Country Coordinators to provide information and to stimulate action in those countries where the response is slow.

13. The Committee expressed the wish that Country Coordinators should play a more active role as links in the exchange of information. The Committee stressed the importance of the identification of constraints by Country Coordinators and the Secretariat by April 1984 so that remedial action could be taken by the latter in time to maintain the momentum of data registration and to achieve the target date for the production of the first European list by 1985.

14. It was recognized that the central data base should be established as soon as possible and that this is an essential prerequisite to the rational planning of evaluation and further collecting. A full Inventory might take up to 10 years to be completed.

### Prunus Working Group

15. The Committee noted with satisfaction that, following the meeting of the Working Group in May 1983, final drafts of the descriptor lists for almond, apricot, cherry, peach and plum have been circulated to those involved in their production, and to other interested parties, for final comments, before printing and joint publication with the Programme Committee on Plant Resistance and Better Use of Gene Banks of the European Economic Community. Questionnaires requesting five basic descriptors of passport data had been circulated to Country Coordinators with a deadline for return by January 1984. While it was noted with satisfaction that the first returns were arriving at the Secretariat, and more are expected soon, the Committee stressed the need for observance of the timetable proposed by the Prunus Working Group for the various steps in the establishment of the European Prunus data base. It was pointed out that many data exist, that a passive approach is inadequate and that the intervention of the Secretariat may be necessary in some cases to promote active data capture using data loggers wherever appropriate.

16. It was reported that Turkey had completed an inventory of more than 100 Prunus accessions some 4-5 years ago and that Turkey prefers to adopt a different procedure to that recommended by the Working Group in first sorting accessions, secondly transferring material to in vitro culture and then to engage in international collaboration. The Committee discussed at some length the potential of in vitro methods for the conservation of Prunus germplasm, noted the inadequacies of these techniques and agreed to await the publication of the impending IBPGR status report on in vitro conservation in temperate fruits (see para. 34) before recommending any particular action. It recommended that EUCARPIA be asked to undertake or promote research on the development of culture techniques applicable to a wide range of genotypes.

17. The potential of in situ conservation in the preservation of wild Prunus germplasm was discussed and the need for research into ecogeographical distributions, population variabilities, the incidence of diseases and pests and optimum sites of conservation reserves was stressed in order to provide an adequate scientific basis for this new approach. It was pointed out that IBPGR does not have funds specifically for in situ conservation but that support might be found if well documented and scientifically valid proposals were made.

### Forages Working Group

18. The Secretariat informed the Committee of the membership of a Working Group to be held 7-9 February 1984 in Larissa, Greece. It was stressed that the meeting might have to be cancelled if all countries have not paid their contributions by the end of January 1984. Considering that most of the cultivated species are very close to wild species, the Committee recommended that contacts should be established with botanists to assist in much needed ecogeographical survey of wild ecotypes.

19. It was recommended that a circular letter be sent to all Country Coordinators so that institutions or genebanks not represented in the Working Group could send observers to the meeting because of the interest of all countries in forages.

## Aromatic and medicinal plants

20. A status report had been circulated previously as a working paper, and an up-to-date summary of replies to Questionnaires was tabled at the meeting (Appendix V). The Committee concluded that, in the absence of either documented or anecdotal evidence of significant and widespread genetic erosion, it would not be justified in recommending the formation of a Working Group on medicinal and aromatic plants.

21. The coordination of activities on aromatic and medicinal plants should therefore be undertaken by other organizations. The Committee was gratified to note the interest and initiatives of the EUCARPIA Gene Bank Committee in arranging a symposium in Portugal in May 1984 on the theme of aromatic and medicinal plants, and awaits with interest the report of this meeting.

### Future activities

22. The Scientific Advisory Committee (SAC) of Phase I had recommended that, in addition to barley, Prunus, forages and aromatic and medicinal plants, attention should be paid to some of the following priority crops: Vitis, Beta, Solanum (potato), Pisum, Secale, Avena, Allium, and Vicia faba. Of these, Vitis, Pisum, Secale, Allium and Vicia faba had been the subject of meetings during Phase I. The Committee received a status report on these crops (Appendices VI-XIII).

23. The SAC also requested attention to be paid to four special interest crops: Citrus, Cotton, Tobacco and Sunflower. The TCC agreed to include Citrus and sunflower in their discussions in order to select three additional Working Groups.

24. It was agreed that two Working Groups from Phase I i.e. Pisum and Secale should remain in being and be recognized as Working Groups of Phase II but that these should not draw upon financial assistance from ECP/GR.

25. The following crops were not selected for Working Groups for a number of technical reasons:

Vitis (grape): A comprehensive programme is under way under the auspices of IBPGR and the Office international de la vigne et du vin (OIV).

Beta (beet): There is already an IBPGR programme on this crop and the Committee recommended that this should be accelerated.

Potato: There are extensive collections of European and S. American cultivars and of wild species in Europe. Major attempts to rationalize W. European and Scandinavian collections are being made already.

Vicia faba: There is little risk of genetic erosion, collections are already substantial and the central data base is being developed at CNR Bari.

Citrus: The IBPGR has initiated a regional programme in the Mediterranean. It is recommended that strong links be made between this programme and experts in Israel and due account is taken of the Citrus growing countries of Europe.

26. The following crops were proposed for new Working Groups in Phase II: oat, Allium, and sunflower. For oat the Committee noted the need for evolutionary studies in relation to the origin of cultivated species and that



Despite decline in production it is still an important crop in a number of countries. Great emphasis must be placed on increasing the available gene pool with diploid and tetraploid forms. Allium germplasm is important in all participating countries: action is urgent to foster East-West collaboration and there is significant wild germplasm to be collected. Sunflower is of major interest in a number of IPF countries, there is significant secondary diversity in Europe and action is urgent since landraces are being lost at a great rate since the introduction of F<sub>1</sub> hybrid varieties.

#### Data registration and exchange

27. Mr. Blixt (Consultant on Information) summarized the problems of data registration and exchange (Appendix XIV). It had been envisaged that by the end of Phase II of the programme all passport data will have been registered. Due to the diversity of hardware, in order for crop central data bases to function efficiently it has to be recognized that:

- i) microcomputers, although excellent for registration, pose problems when dealing with large amounts of data
- ii) use of floppy disks presents problems of access time although serial linking of some micros is possible
- iii) demands on the data bases will increase greatly when germplasm collections are interrogated for breeders' programmes.

28. The Committee agreed that those institutes which have agreed to serve as central data bases for crops in the ECP/GR should evaluate the potential computing needs for the foreseeable future and should take into account that the registration needs of Phase II will differ from requirements in Phase III. The basic demands are for hardware, which can run a chain of programs, each of approximately 40 kbts and planning for future needs must start now.

29. The advantages of Winchester drives were noted but in view of their high cost and the need for annual service contracts, the Committee agreed that their supply should be through Country inputs in-kind.

30. In view of the need to speed up data capture the advantages of electronic data logging in the field were emphasized. The IBPGR is requested to allocate ca. \$40,000 to permit five task units to serve the ECP/GR in the immediate future. These task units will help to implement the action proposed by Working Groups in overcoming constraints in the registration of data. The task forces could comprise consultants or experts from institutes of participating countries.

#### In situ conservation and maintenance of fruit tree germplasm

31. The Committee noted the need for systematic work on in situ conservation of wild relatives of tree crops in the region. It was agreed that much more emphasis has to be placed on survey and assessment of population variability so that designation of reserve/protected areas should have maximum scientific justification with the intention of effectively conserving genetic diversity.

32. Country Coordinators are asked to bring to the attention of Academies, Universities and Research Councils the need for multidisciplinary scientific work on this subject including suitable use of biochemical characterization. In addition, the Committee agreed that emergency situations should be identified.

33. The loss of local cultivars and old varieties of fruit species was noted with concern and also the problems of maintenance of large numbers of samples in ex situ collections. Two supplementary approaches were proposed:

- i) where local cultivars occur in areas with wild relatives evolution gardens could be established
- ii) individual samples can be maintained in private gardens, grounds of museums and other institutes providing there is a suitable monitoring system and data bank.

34. The Committee welcomed the information that the IBPGR had commissioned a study on the in vitro techniques for temperate fruits (including downstream checking) and that the IBPGR has established an international data base on all ongoing in vitro work.

35. Due to the complexity of assessing exactly what should be conserved and the impossibility of preserving every genotype, it was agreed that the Secretariat should commission a report to provide guidelines on how to survey the material, on the making of appropriate inventories and on objective criteria for limiting genotypes which should be kept in collections.

#### Phase III of ECP/GR (1986-89)

36. The financial support of UNDP to this project was given on the understanding that the countries would assume full responsibility for the funding of the proposed Phase III, 1986-89, and that they would ensure its continuity as a viable self-supporting programme until its aims had been achieved.

37. It is anticipated that by the end of Phase II (August 1986), many activities such as the registration of available data in data banks, the identification of redundant replicates, and the rationalization of collections for each major crop, will be complete for some crops and substantial progress will have been made on others. A number of training requirements inherent in the programme will have been satisfied. Characterization studies on accessions will have been accelerated but at variable rates and as a result and despite the progress anticipated, there will still be work to be continued in Phase III.

38. Two other activities will remain as major tasks in Phase III. They are likely to be (i) the filling of gaps in the European collections by either selective collecting, or the acquisition of germplasm samples from other parts of the world to increase the representation in the collections; and (ii) evaluation studies. Both of these activities must necessarily appear late in the time table of the Project since they are, to a considerable degree dependent on the outcome of the activities listed above for completion in Phase II.

39. The Committee was strongly of the opinion that the momentum must be maintained in Phase III and expressed the wish for the continuation of a coordinating centre for the programme in the form of minimal Secretariat services. The Committee was unanimous that these could only be effectively provided by the IBPGR and that nearer the time arrangements should be made for voluntary cash contributions to be forwarded to IBPGR for the necessary services. Mr. Kähre thanked the Committee for the confidence expressed in IBPGR and agreed to relay the wishes of the Committee to the Board.

### Other Matters

40. The Committee expressed its concern at a noticeable slowing down in the speed with which communications are received from Rome. It was recommended that important documents and letters should be sent by courier.

41. It was noted that when individuals from different organizations join together in a collecting mission more than one series of collectors' numbers can be assigned to the same samples. The Committee asked national programmes to ensure that such practices are discontinued.

42. The Committee strongly recommended that in view of the unique nature of the ECP/GR an information brochure should be prepared. This should include the aims of the programme and details of the substantial accomplishments to date.

### Future meetings

43. It was proposed that the next meeting of the Committee should take place in October 1984. Mr. Mota offered his institute as host for the meeting and Dr. Temiz said that if for any reasons this proposition did not materialize, ARARI, Turkey would welcome the next meeting. Finally, the Committee asked for the following items to be included on the agenda:

- i) consideration of how to mobilize public opinion including the practical involvement of the public in the preservation of fruit trees
- ii) in situ conservation of wild relatives.

The Chairman expressed the thanks of the Committee to Mr. Ingold for the excellent facilities and hospitality provided. Mr. Kähre thanked Dr. Skov for chairing the meeting.

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AGENDA

I. GENERAL

1. Opening statements including report on the current membership of ECP/GR
2. Election of Chairman
3. Adoption of Agenda
4. Adoption of the Rules of Procedure
5. Terms of Reference

II. REVIEW OF CURRENT ACTIVITIES

6. Barley Working Group. Review of progress in implementation of recommendations of Barley Working Group meeting held on 18-19 May 1983
7. Prunus Working Group. Review of progress in implementation of recommendations of Prunus Working Group held on 24-27 May 1983
8. Forages Working Group. Report on arrangements for meeting to be held in Larissa, 7-9 February 1984
9. Aromatic and Medicinal Plants. Review of information on important species, and genetic erosion

III. FUTURE ACTIVITIES

10. Selection of three additional Working Groups from among those recommended by the Scientific Advisory Committee of Phase I, and incorporated in the Project Document of Phase II:
  - A. Grape
  - B. Beet
  - C. Potato
  - D. Pea
  - E. Rye
  - F. Oats
  - G. Allium
  - H. Vicia faba
11. Review of needs for collaborative activities within the framework of ECP/GR on crops of special interest (Citrus).

cotton, tobacco and sunflower)

12. Consideration of general problems of data registration and exchange
13. Future of ECP/GR. (Phase III).

**OTHER MATTERS**

15. Adoption of report of the meeting and of its recommendations
16. Closing of the Session.



TERMS OF REFERENCE OF THE TECHNICAL CONSULTATIVE COMMITTEE

- The Technical Consultative Committee (TCC) will consist of scientists invited in their individual capacity, empowered to advise IBPGR on decisions regarding the programme.
- The TCC, furthermore, shall consist of ex officio members (Executive Secretary IBPGR, a representative of UNDP, Chairman or designated member of IBPGR), as well as observers (representative of EUCARPIA, UPOV, ad hoc consultants, etc.), all of them without the right to vote.
- The TCC will have the following functions:
  - 1) to review the ECP-GR and its Working Groups so that the objectives are fulfilled in the best possible way;
  - 2) to initiate proposals for funding, both for general and specific activities, from individual countries, international agencies and any other possible source;
  - 3) to advise on any administrative, financial and technical matters, which will foster the advancement of the programme;
  - 4) to stimulate international cooperation in the field of plant genetic resources, within the region between national and sub-regional institutions and also through IBPGR, with other regions, in such a way that Europe will fully participate in the global network of IBPGR;
  - 5) to maintain close contacts with appropriate international organizations in the field of genetic resources and plant breeding, such as EUCARPIA and UPOV;
  - 6) to advise IBPGR on the designation of both base and active collections of plant genetic resources held in participating countries;
  - 7) to encourage inter-country activities in the field of exploration, evaluation, maintenance and storage of plant genetic resources in Europe; and also training;
  - 8) to adopt Rules of Procedure.

RULES OF PROCEDURE OF THE TECHNICAL CONSULTATIVE COMMITTEE

1. Organization

- 1.1 Chairman. The TCC shall elect a chairman annually from among its members.
- 1.2 The Executive Secretary of ECP/GR shall act as Secretary to the TCC and shall be responsible for calling meetings, for the preparation of the agenda, reports and other documentation in support of the activities of the TCC.

2. Procedures

- 2.1 The TCC shall meet annually during the period of Phase II of ECP/GR.
- 2.2 Meetings shall be held whenever possible in IPF member countries.
- 2.3 As far as possible, the working language of the TCC shall be English.
- 2.4 The TCC will proceed through consensus.
- 2.5 Each meeting shall conclude with the preparation and approval of a report, including recommendations, as a guide for action by Governments and IBPGR.

## AROMATIC AND MEDICINAL PLANTS

A synoptic review of available information on important species and on threats of erosion or loss of potentially valuable germplasm in natural populations or in collections.

1. Literature survey

The survey indicates that the following genera are important: Mentha, Matricaria, Digitalis, Anethum, Foeniculum, Papaver, Lavandula, Salvia, Valeriana, Thymus, Atropa, Carum, Achillea, Coriandrum, Petroselinum, Satureja, Origanum, Gentiana, and Artemisia. Mentha and Matricaria appear to be particularly important by this method of assessment. Altogether about 100 genera appear from the survey of 610 literature references. None contained information on genetic erosion and few, if any, referred even indirectly to variation and genetic resources. The majority were concerned with cultural practices, agronomical experiments for maximizing yield of either shoots or roots (involving, for example, studies of planting and harvesting dates, spacing, use of fertilizers, irrigation) or biochemical analysis of constituent substances such as essential oils, alkaloids, steroids and so on.

There are of course serious limitations to the conclusions one can draw from a survey of this kind, but it seems reasonable to assume that there is little general concern for genetic erosion in aromatic and medicinal plants in Europe as expressed in the literature.

2. In the absence of published evidence it is necessary to turn to other sources of information although much of this is anecdotal. This has come partly from discussions between ECP/GR Secretariat members and interested workers in different countries during working visits by the Secretariat, and partly from correspondence and from unpublished reports made available to us:

Greece

Dr. S. Galanopoulou is of the opinion that some 200 species should be collected, conserved, characterized and evaluated in Greece. Dr. B. Skrubis, in response to a request for priorities, defined eight major species in need of attention: Mentha piperita, Rosa damascena, Lavandula vera and L. sticha, Matricaria chamomilla, Origanum spp., Sideritis cretica, Crocus sativus.

Dr. Skrubis kindly provided a copy of a typescript report "Aromatic Plants in Greece" from which the following data were abstracted:

- There are more than 1000 species of aromatic and medicinal plants in the Greek flora.
- Some 65 species are listed as 'important'.
- Twelve species are cultivated on areas ranging from 1700 ha. (Crocus sativus) to 10 ha. (Salvia officinalis) with a total cultivated area of 4500 ha.

- Three species are dominant in cultivation: Crocus sativus (1700 ha.), Foeniculum vulgare (1000 ha.) and Mentha piperita (700 ha.)
- Other species, for example Origanum dictamnus and Sideritis cretica are thought to have commercial potential.

### Hungary

Information from Dr. L. Banyai, Institute for Agrobotany, Tàpiósztele, names five species of economic importance in Hungary, as follows:

<u>Papaver somniferum</u>	3500 ha.	Cultivated
<u>Matricaria chamomilla</u>	200-300 ha	Cultivated and wild
<u>Digitalis lanata</u>	250-400 ha	Cultivated and wild
<u>Foeniculum vulgare</u>	400-700 ha	Cultivated and escapes
<u>Mentha piperita</u>	150-200 ha	Cultivated and wild relatives

In addition, eight other species are listed as wild forms of minor economic importance, namely Adonis vernalis, Atropa belladonna, Filipendula ulmaria, Marrubium vulgare, Inula helenium, Colchicum autumnale, Pulmonaria officinalis, and Galium odoratum.

Professor P. Tétény, Budapest, has stressed the importance of Papaver bracteatum, a species rich in codein and which, unlike P. somniferum, is of no value for the preparation of illegal drugs. Genetic variation of P. bracteatum is said to occur in Israel.

### Israel

Dr. E. Putievski, Research Station Neven Ya'ar, lists eight species of which there are significant collections in Israel, namely Origanum vulgare, Marjorana syrica, Salvia officinalis, S. fruticosa, Laurus nobilis, Coridothymus capitatus, Satureja spp. and Micromeria serpyllifolia. These collections may indicate economic significance as well as academic interest.

### German Democratic Republic

The Gatersleben Genebank collection includes about 2000 accessions of more than 100 species of aromatic and medicinal plants. The Genebank is willing to supply material and data as available, but they do not wish to participate in any active work on Aromatic and Medicinal plants within the ECP/GR.

### Bulgaria

In addition to the species listed in the Questionnaire (see below) Datura, Glaucium and Valeriana are considered to be important species by the staff of the Research Institute for Roses Aromatic and Medicinal Plants.

Prof. Ruminska, University of Agriculture and Medicinal Plants, Warsaw, and Mrs. Zabanska, Poznan Institute for Medicinal Plants, are of the opinion that the following species should be added to those listed on the Questionnaire because of their economic importance: Valeriana, Datura, Ocimum basilicum, Satureja hortense, Origanum majorana and Coriandrum sativum.

The Polish flora is said to contain high genetic diversity for Digitalis, Matricaria, Carum carvi, Atropa, Papaver, Valeriana, and Mentha. It is thought that there is little danger of genetic erosion except perhaps from the use of herbicides; presumably to species which are weeds of arable crops such as Matricaria.

#### International Society for Horticultural Science

##### Section: Medicinal and Aromatic Plants

With the active support of the section Chairman, Prof. P. Tétény, all members of the section have been circulated with a Questionnaire - in October 1983, requesting information on economic importance and genetic erosion of Aromatic and Medicinal Plants. See the summary on replies to Questionnaires.

##### AGRIMED

The AGRIMED programme committee of the EEC has formed a new group called "Spices, Aromatic and Medicinal Plants". It held its first meeting at Angers in May 1983. Its interest seems to be in the development of new crops. A second meeting is proposed in 1984 at Bari to discuss which species should be included in their programme. There is no evidence at the moment of an active interest by this group in genetic resources.

#### International Union for the Conservation of Nature and Natural Resources (IUCN)

In its draft proposal for "A framework for cooperative action...1985-87", the IUCN proposes to set up a project, in collaboration with WHO, to promote the conservation of medicinal plants, beginning 1984.

The critical issue of evidence for erosion or destruction of genetic resources of aromatic and medicinal plants was discussed with Mr. Hugh Syngé (who is also Head of the Threatened Plants Unit, Kew Gardens) and Dr. G. McNeely. IUCN H.Q., Gland, Switzerland. The latter had no information. Mr. Syngé offered to send one or two items, the total available to IUCN.

Mr. Syngé reported that the OECD arranged a meeting in Paris on 15 November 1983 on the conservation of medicinal plants.

#### Individuals who have been approached for information

(1) Mr. Norman Myers, ecologist, writer and author of "The Sinking Ark. A new look at the problem of disappearing species", although aware of a general public and professional interest in medicinal plants, and having been invited to the OECD meeting, was unable to find any evidence of threat of erosion, either from the literature or elsewhere.

(2) Dr. Ian Hedge, Curator of the Herbarium, Royal Botanic Garden, Edinburgh, UK and a recognized authority on the flora of Turkey, particularly the Labiatae, was unable to provide information on genetic erosion but commented in passing on the need for precision when attempting to quantify the problem. He points out that in the genus Salvia there are 86 species in Turkey alone and that to be meaningful, questions should be posed in relation to particular species.

(3) Professor Sven Snogerup and his group at the University of Lund, Sweden, have made extensive field studies of the flora of Greece. He draws attention to the following genera of importance:

Labiatae: Origanum, Sideritis, Satureja, Thymus, Rosmarinus and Melissa.

Umbelliferae: Myrrhis, Pimpinella, Aegopodium, Foeniculum, Anethum, Conium, Apium, Angelica, Levisticum, Peucedanum, Pastinaca and Daucus.

Compositae: Cichorum, Arnica, Artemisia, Tanacetum, Tussilago and Astericus.

He refers to the serious situation of much destruction of natural plant associations but does not provide evidence of species or associations at risk.

### Conclusions

In addition to the interest of some of the member countries of ECP/GR, three other organizations, namely ISHS, IUCN and OECD, are known to have an active interest in the conservation of aromatic and medicinal plants. The exact nature of this concern and of the plans for action have yet to be determined but it is clear that there is a widespread belief that action is necessary in either conservation or exploitation or both.

In contrast, it emerges with equal clarity from the enquiries and studies made by the Secretariat, that there is little or no firm detailed evidence of erosion or destruction of genetic resources.

Without such evidence in relation to particular species of actual or potential economic significance, no sensible programme of collection, conservation (whether as seed or ex situ) and evaluation can be developed for 'natural' medicaments spices or flavourings.

In the event that adequate evidence is not obtained, the question arises whether other strategies can be used which do not require such precision. For example, conservation in situ in nature reserves could be considered. This approach would have the merit of preserving plant associations entire which would seem to be particularly appropriate to Aromatic and Medicinal plants which, though taxonomically diverse, show some degree of ecological homogeneity. It would appear to be at least possible to select several plant associations which would include several or even many of the species and genera listed above. However, for this approach to be effective and justifiable the requirements for selectivity must be satisfied. It requires prior information on which species of economic importance, or potential economic importance, are under threat of erosion or destruction before suitable plant associations and areas can be selected. Therefore, the ability to define species and areas at risk is inescapable and an essential prerequisite to any rationally planned conservation programme. Without this there exists the probability of the wasteful use of resources in the conservation of forms which are not at risk, to the detriment of those that are.

Summary of replies on Questionnaires on size of collections and threats of genetic erosion

Questionnaires were sent at the end of September 1983 to 120 members of the International Society for Horticultural Science, Medicinal and Aromatic plant section with a letter of recommendation from the Section Chairman, and to other known specialists in this field.

This questionnaire asked for (i) estimates of the extent of genetic diversity in situ which is under threat of erosion and which needs to be collected in relation to the following seven genera: Mentha, Digitalis, Matricaria, Salvia, Atropa, Carum carvi and Foeniculum vulgare; (ii) information on the size of collections; and (iii) corresponding information for other species which were important in the opinion of the recipient.

Ten replies were received from ten countries and are summarized on the table below.

Conclusions

The return of only 8 percent of the Questionnaires is disappointing and may reflect a general lack of information on the occurrence of genetic erosion in aromatic and medicinal plants.

The information that was returned suggested serious erosion only in Mentha (3 countries), Digitalis (2 countries) and Origanum (3 countries). Bearing in mind the wide distribution range of these genera and their constituent species, it may be doubted if the danger is great enough to justify collaborative action through ECP/GR.

	BEL	DDR	FRA	DEU	GRC	ISR	NLD	SWE	YUG	HUN	
<i>Matricaria</i>	\$	\$ *	\$	\$	\$ *	\$	\$	\$	\$ *	\$ *	collections insignificant
<i>Mentha</i>	\$	\$	\$ 100 acc. for cultivars 75 acc.	\$	\$ *	\$	\$	\$ **wild forms	\$ **wild forms	\$ *	collections insignificant
<i>Salvia</i>	\$	\$ *	\$	\$ *	\$ *	\$ 140 acc. S. officinalis	\$	\$	\$	\$	
<i>Digitalis</i>	\$	\$ * - ** 50 acc.	\$	\$ *	\$ *	\$	\$	\$	\$ * - **	\$	
<i>Atropa</i>	\$	\$ *	\$	\$	\$ *	\$	\$	\$ *wild forms	\$	\$	collections insignificant
<i>Carum</i>	\$	\$ *wild forms	\$	\$	\$ *wild forms	\$	\$	\$ *wild forms	\$ *culti- vars	\$ *culti- vars	collections insignificant
<i>Foeniculum</i>	\$	\$	\$	\$ *wild forms	\$	\$	\$	\$ *wild forms	\$ *culti- vars	\$	
<i>Origanum</i>	\$	\$	\$ **	\$	\$ **	\$ 230 acc. wild 45 acc. CV's	\$	\$ *	\$	\$	
<i>Thymus</i>	\$	\$ *	\$	\$	\$	\$	\$	\$ *	\$	\$	

\* = Some genetic erosion  
\*\* = Much genetic erosion



GRAPE

1) A Vitis Working Group was held in Thessaloniki, Greece, 29 April-1 May 1982. The meeting was co-sponsored by the Ministry of Agriculture in Greece, IBPGR, ECP/GR, OIV, and EUCARPIA. For the recommendations made by this Working Group, please refer to IBPGR report "Genetic resources on Vitis". The following was stated under the headline "Framework for future action":

"Although a coordinated programme, especially in the Mediterranean basin would rate a high priority, the Working Group agreed that it is too early to address this. The most urgent tasks are outlined in para.9 and these are national responsibilities. Each country should have their collections described, include in them all old cultivars, give attention to the wild species in the country and attempt international collaboration".

Para.9 of the report mentioned above refers to collecting and characterization activities.

2) IBPGR supports a long-term project for collection, characterization, conservation and documentation of Vitis germplasm in Greece, which was rated as first priority for collecting by the Working Group mentioned above.

3) The governments of Hungary, Bulgaria, Romania and Yugoslavia have a collaborative agreement for the collection and conservation of Vitis sylvestris. Further details are required.

4) An FAO/IBPGR/OIV project, effective since May 1983, has the following aims : a) the publication of a worldwide directory of collections; b) the creation of a central data base to publish an inventory of the existing material, to sort out duplicates, to identify gaps in collections as well as potential material for breeders.

OIV has the global responsibility for the implementation of this project, the central data base should begin its activities in Spring 1984. IBPGR will be the active link between OIV and countries which are not members of this association. All data will be freely available.

## BEET

1) The IBPGR convened a consultation in association with the Institut International de Recherches Betteraves (IIRB), Breeding and Genetics Group on 13 September 1979 for priority collecting areas. The following were agreed:

Priority 1: Central and East Mediterranean - Cyprus, Greece and Sicily for wild and weedy forms.

Priority 2: West Mediterranean - Algeria for wild and weedy forms, Yugoslavia, especially for hybrid fodder beets. Bulgaria and Romania have many old cultivars but further information is required on previous collections before positively assigning these countries priority.

Priority 3: Atlantic Islands - The section Patellares is of potential value for nematode resistance (especially B. webbiana and B. patellaris).

2) There is evidence of strong genetic erosion of wild and weedy forms due to effect of increased population pressure associated with tourist development along the coasts. Grazing by goats was recognized as a threat to inland habitats in the Mediterranean basin.

3) Beet collecting missions have been organized under the aegis of the IBPGR in Greece, Sicily, Algeria and the Atlantic Islands.

4) An IBPGR beet descriptor list has been published in 1980.

5) PAL Braunschweig, Federal Republic of Germany, and NGB Lund, Sweden hold the IBPGR base collections for beet although the size of these collections is not known to us. The Greek Gene Bank at Thessaloniki is a regional centre, which is actually multiplying and characterizing the material collected in the Mediterranean basin.

6) Apart from Yugoslavia, where 1,200 accessions have been collected, the University of Birmingham, 701 accessions, and Aula Dei Experimental Station from Zaragoza, Spain, 210 accessions, the size of collections listed in the European Directory is surprisingly small (not exceeding 100 accessions in each collection).

## POTATO

Size and location of collections

The number of accessions in the major European collections of the cultivated potato and its wild relatives are summarized in the table attached. The data have been extracted from the ECP/GR Directory of European Crop Genetic Resources Collections: second edition 1983.

More than 10,000 clonal accessions and more than 5,000 accessions as true seed are being maintained in European collections.

It is widely recognized that there is extensive replication of the same material in many collections but the frequency and extent of this replication have not been determined.

Current activities

Concern for uncoordinated and therefore wasteful individual action has resulted in three different and limited collaborative activities in Europe. These are:

(i) The Netherlands/F.R. Germany potato collection which is maintained with joint funding and management at the Institut für Pflanzenbau und Pflanzenzüchtung der Bundesforschungsanstalt für Landwirtschaft, Braunschweig. This collection was formed from the merging of the major collections in the two countries and has been added to since from further collections in South America.

It is understood that discussions are taking place between representatives of the Scottish Crop Research Institute, the holders of the Commonwealth Potato Collection, and the authorities at Braunschweig on the possibility of the United Kingdom becoming a full participant in this collaboration. The progress or outcome of these talks is not known but clearly the possibility exists of the joint maintenance and management of one rationalized collection. In recent years, collaboration has extended only to the maintenance for safety reasons of a duplicate of the base collection of Braunschweig at Pentland field and vice versa.

It is also possible that the future of the large and valuable collection of material assembled by Prof. J. Hawkes at the University of Birmingham may be included in these discussions though it should be clearly understood that this is speculation on the part of the writer. The views of Prof. Hawkes, the University and of the other parties are not known.

(ii) The five Nordic countries, Denmark, Finland, Iceland, Norway and Sweden founded the Nordic Gene Bank in 1979 and in 1982 set up a representative group to plan and supervise the incorporation of their separate potato germplasm resources into the genebank. The aims and procedures are described in Plant Genetic Resources Newsletter 53 pp.6-7.

(iii) The EEC Potato Working Group of the Plant Resistance and Use of Gene Banks Committee has held several meetings with the aim of producing an inventory of potato varieties held in collections in EEC member countries. Its first aim has been to agree a list of descriptors for the characterization and evaluation of the material in collections. The final draft was approved at a meeting between EEC representatives and IBPGR in November 1983 and will be published jointly by IBPGR/EEC in the near future. It is understood that EEC support for this group will cease at the end of 1983 and therefore its activities will terminate with the publication of the descriptor list.

#### Quarantine issues

In any discussion of collaborative action between countries on potato germplasm, the peculiarly sensitive issue of plant health and of rigorous plant quarantine regulations must receive due attention. The limitations to rapid exchange of both vegetative material and true seed in connection with evaluation studies and rationalization of collections is likely to have an important influence on the nature and extent of international collaboration. For example, countries which enjoy, or suffer long quarantine delays when importing material may be less attracted to the idea of rationalizing collections of germplasm. The prospect of common quarantine barriers, such as that proposed for the EEC countries may alleviate this problem.

#### Types of material

Since there are no indigenous wild species in Europe which are related to S. tuberosum, a potato working group would concern itself mainly with the collections of old cultivars and to a lesser extent with the wild species maintained - usually as true seed, - in existing collections. Costs of maintaining both categories of material are high, since virus disease problems can be severe. Therefore in vitro conservation or cryopreservation techniques appear to offer advantages in the maintenance of cultivars.

#### Conclusions

The essential points seem to be:

- collaboration between collections in Western Europe is well established but subdivided
- collaboration between collections in Eastern Europe may exist but we have no knowledge of it
- collaboration between east and west in the conservation of potato germplasm does not exist on the European scale
- a descriptor list agreeable to countries and to IBPGR is about to be published
- replication of recessions is known to be high
- costs of maintenance - whether as true seed or vegetatively - are high
- quarantine regulations are a barrier to rapid exchange
- there is a general wish to reduce the costs of potato germplasm conservation through collaborative action.

Major collections of potato germplasm in Europe

	Number of accessions	
	<u>S. tuberosum</u>	Related species
Federal Republic of Germany Grünbach	250	
Netherlands/F.R. Germany collection	3310 (all forms)	
U.K. SCRI University of Birmingham	100	1150 350
NGB 5 Nordic countries	930 (approx.)	862
Belgium	80	
Bulgaria, Sadovo Samokov	1100 500	20
Czechoslovakia, Ruzyně	855	
DDR, Gross Lusewitz	1300	2700
Eire	360	
Netherlands, Private Sector Breeders IVP Wageningen	950 1600	
Poland, Bonin	817	40
Spain	165	
Yugoslavia	1950	
	<u>10957</u>	<u>5122</u>

PISUM

1. A ECP/GR Phase I Working Group was held on 13 July 1981 in Lund, Sweden. The Nordic Gene Bank agreed to act as a European lead institute and CNR Bari was given the responsibility for collecting in Southern Europe and Gatersleben in Eastern Europe. NGB, Bari and Radzików are the designated Pisum base collections of IBPGR network.
2. Czechoslovakia, German Democratic Republic and Poland are involved in a cooperative project for evaluation of Pisum germplasm.
3. There is an efficient system of pea data-handling developed by Landskrona in collaboration with the Nordic Gene Bank (see "Documentation of Genetic Resources: a Model", IBPGR/NGB publication).
4. Exchange of information seems to be active between NGB, Bari, Radzikow and the John Innes Institute, Norwich (U.K.).
5. Limited collecting has occurred in the framework of IBPGR missions in Greece, Italy, Portugal and Spain.

RYE

1. The genetic erosion of rye was judged to be strong by an INIA collecting mission in Spain, supported by IBPGR, particularly in the Asturias province where rye is substituted by perennial pastures. It was observed by another collecting mission that rye, particularly the spring varieties, was replaced by crops of better economical interest in the North-East of Portugal; such an erosion does not seem to occur in the South of Portugal, where rye is limited to marginal soils. Heavy genetic erosion of rye was noticed in Southern Italy (Bari-Catersleben collecting mission, 1981). The rye acreages have been constantly diminishing in the more northern countries since the sixties.
2. Secale-Lupinus collecting missions have been organized in Spain and Portugal. The gaps in collections should be identified in order to establish collecting priorities before landraces disappear.
3. The last meeting of a ECP/GR Working Group on Secale was held in Jokioinen, Finland, 4-6 August 1982. It was agreed during this meeting that the evaluation of selected rye samples for snow mould resistance would be achieved at Jokioinen and the one for sprouting resistance at Svälöv, Sweden. Both places can test 50 samples per year. This capacity seems limited, when we consider that the European rye collection consists of more than 8,000 different samples; more than 10 years will be needed if only 10 percent of the samples are selected for such an evaluation. The Botanical Garden of the Polish Academy will test rye for aluminium toxicity and IBPGR has provided this institution with chemical products for such an evaluation.
4. Radzikow is the base collection for rye of the IBPGR network. A first computer printout including the accession of eight institutions (coming from Poland, Federal Republic of Germany, Spain, Hungary, Austria, U.K. and Turkey) was completed in 1983 in connection with the print-out of a European inventory for the genus "Secale". The duplicates of the accessions between these genebanks have been identified. This print-out is now being circulated to 18 institutions throughout Europe for comments and the inclusion of more collections.

## OATS

1. Considerable collections of Avena germplasm exist in Europe. Total number of accessions in the major collections (abstracted from the ECP/GR Directory of European Crop Genetic Resources Collections 1983) are given below:

Belgium, Gembloux	700
Bulgaria, Sadovo	540
Czechoslovakia	406
Denmark	400
France, Rennes	700
Finland, Jokioinen	800
FRG, FAL	597
DDR, Gatersleben	2019
Greece, Thessaloniki	339
Hungary, Tapiosele	1036
Ireland	385
Israel	800
Italy	114
Turkey	(number not stated)
U.K., PBI Cambridge	1200
Total	ca. <u>10000</u>

It seems likely that these collections consist in the main of landraces and old cultivars, although here and there, there may be representation of the wild and weedy diploid and tetraploid forms, and it is likely that these are well represented in the Israeli collection. However, this is speculation. Data are not available. Nevertheless it seems reasonably safe to assume that (i) there is probably extensive replications of the same cultivars between collections, and (ii) that genetic variation of the ancestral wild species and weedy forms is very poorly represented. Indeed it is worth recalling that not all of the ancestral species of A. sativa have yet been conclusively identified.

2. Several of the wild diploid and tetraploid species are known to be suffering severe erosion in their natural habitats due to land reclamation for agricultural and industrial developments.

Erosion of the aggressive, weedy and wild hexaploid Avena sterilis and A. fatua is probably less severe and may be of lesser concern.

3. The figures given below were abstracted from the FAO Production Year-book and demonstrate a dramatic decline in importance of this cereal.

Oats in W. Europe (25 countries)

	Area '000 ha.	Production '000 m tons
1984-52 Mean	12502	19972
1961-65 "	8614	17107
1971	7092	18711
1981	3682	10444
X '81 of '48-'52	29	52

Nevertheless, although in decline this is still an important crop in Europe, particularly when compared with V. faba (279,000 ha) or Medicinal and Aromatic plants.



## ALLIUM

1. An ECP/GR Working Group on Allium was held in NVRS Wellesbourne, UK, 25-26 February 1982. This meeting supported the recommendations outlined in the IBPGR report "Genetic Resources on Allium".

Inter alia, collecting of Allium cepa was rated as first priority in Europe and the collecting of Allium ampeloprasum as second priority.

2. Consequently to this meeting, NVRS, United Kingdom and IVT, Netherlands, which are the base collections for Allium in the IBPGR network, sent to onion breeders all over Europe requests to estimate the urgency and the financial consequences of Allium collecting missions in their own countries. Answers from France, Federal Republic of Germany, Italy and United Kingdom were received. Possibilities for obtaining financial support from the European Community for collecting in EC countries are now investigated by Mr. van der Meer of IVT, Netherlands.

3. ECP/GR Phase I funded a collecting mission in the Netherlands and the IBPGR is supporting a collection, characterization and conservation project in Israel and another one in Greece.

4. A project for a study on in vitro storage has been initiated in Israel by the IBPGR.

5. Cooperation between EC countries and other European countries on Allium genetic resources appears to be quite weak. In COMECON countries good collections of Allium can be found in Gatersleben (DDR), Tapioszele (Hungary) and Ruzyně (Czechoslovakia). It should be noted that Turkey, Poland, Romania and Yugoslavia are quite important dry-bulb onion producers.

VICIA FABIA

1. The major European collections of Vicia faba are located at INIA, Spain ( 1,400 samples), Bari, Italy (1,800), Gatersleben, DDR ( 900), Wageningen, Netherlands ( 700) and Tumenice, Czechoslovakia ( 500).
2. Since V. Faba does not produce fertile hybrids with any other species its gene pool is restricted to itself.
3. To our knowledge, there is no evidence of severe genetic erosion in V. faba. Samples were collected recently in Greece, Italy, Portugal and Spain during IBPGR multi-crop collecting missions, and in Cyprus by a special V. faba mission.
4. A ECP/GR meeting on Vicia faba was held on 1 September 1981 in Bari. Bari was nominated as the European lead institute and agreed to establish a data base on existing collections in Europe (giving origin of samples, nature of material, evaluation performed). CNR Bari has completed the evaluation of 506 genotypes for 36 characters. The data has been processed and summaries are available as computer printout from Bari. In addition, passport data on 881 accessions are now registered in the computer.
5. A workshop was organized at Bari from 25-27 May 1983, under the auspices of the EEC Programme Committee on Plant Resistance and use of genebanks. The workshop discussed descriptors for V. faba and produced a draft list. A copy of this is awaited from CNR Bari.

## CENTRAL DATA BASE REQUIREMENT

1. The Institute maintaining a central database under ECP should recognize the demands on speed and storing capacity of the computer hardware as well as the need of a suitable software. With regard to hardware, microcomputers, such as Apple II, NGB, etc. are as standard equipped with floppy disk drives, which is quite adequate for registration work.

A central database must, however, be prepared to store at least the total data amount of the crop and to process this amount. Then the external memory capacity becomes important.

Firstly, floppy disks usually have a capacity of about 2K to 1Mb, which should be compared to Winchester disk capacity from 5Mb to over 200 Mb or tape capacity from 150Mb and more. In soft disks this would mean from 150-300 diskettes and up.

2. The conclusion from this is that a genebank to hold a central database will need Winchester drives or a large tape-drive in order to have a reasonable practical storage handling. The costs for a minimum constellation would be in the magnitude (1000 US\$):

Central Processing Unit	10
Winchester disk 80 Mb	20
2 terminals	5
Printer (1 - 10)	5
<hr/>	
Total	40

For the exchange of data, tape is, however, much to prefer to hard disks. A tape station would add another 15 - 12 thousand US\$, totalling 60.

If then considering the time factor, access time for a Winchester disk is around 30 milliseconds, for soft disks around 300 and for tape seconds. In other words, 6 minutes work using a Winchester-drive could be an hour with softs and, depending on the type of work, from half an hour to several hours with only tape-drive.

Considering costs of hardware and labour, genebanks having Micros for registration may come out best by acquiring a Winchester-drive for the handling and to use soft disks for data exchange. This requires the Micro to be adaptable to a Winchester.

3. Then considering the software, the demands on processing a central database are drastically different from registration of a single collection. Registration of data can be done with fairly simple programming, where the human time factor normally is so large as to permit any kind of computer programming, i.e., the key-in time is usually the bottleneck. When straight listing of data from the database is the main process, perhaps with one or a few selection criteria, the printer is usually the bottleneck. In this situation the microcomputer with floppy disks will serve adequately, though it should be noted that big differences may be found between different Micros as well as between different softwares.

When handling a central database it must be considered that data from several sources are to be compared, utilized and processed in different ways. This will require, besides selecting and listing, also very efficient sorting and classification routines.

4. Not even the largest computers available today are big in relation to the amount of data genebanks will be handling and the costs are certainly prohibitive. The possible compromise is therefore probably a medium sized computer with quick external memory access, by which constellation sorting and selection can be done stepwise but still within reasonable time. This will probably require a software specifically made for the purpose.