

EUROPEAN COOPERATIVE PROGRAMME FOR
CROP GENETIC RESOURCES NETWORKS

IBPGR



REPORT OF A WORKING GROUP ON *PRUNUS*

(fourth meeting) held at
INRA, Bordeaux, France
30 November - 2 December 1992



INTERNATIONAL
BOARD FOR
PLANT
GENETIC
RESOURCES

The International Board for Plant Genetic Resources (IBPGR) is an autonomous international scientific organization under the aegis of the Consultative Group on International Agricultural Research (CGIAR). IBPGR was established by the CGIAR in 1974 and is administered by the Food and Agriculture Organization of the United Nations.

IBPGR's mandate is to advance the conservation and use of plant genetic resources for the benefit of present and future generations.

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CONTENTS

REPORT	1
Preliminaries	1
Recent National Developments	1
European <i>Prunus</i> database and catalogue	1
Standardizing of gene symbols	3
Standard cultivars	3
Transfer of vegetative material	3
European <i>Prunus</i> field genebank and its security	4
Role of national tree fruit germplasm liaison officers	4
Wild germplasm and ecogeographic surveys	5
European <i>Prunus</i> genome mapping group	5
<i>Prunus</i> Genetic Resources Newsletter	6
Research priorities	6
Further action	7
Continuation of the ECP/GR <i>Prunus</i> Working Group after Phase IV	7
Closing remarks	8
APPENDIX I : List of participants	10
APPENDIX II : Agenda	12
APPENDIX III : Papers	13
Situation of <i>Prunus</i> germplasm in Albania (Prof. L. Xhuveli)	13
<i>Prunus</i> field genebank in Czechoslovakia (Dr J. Blažek)	14
Conservation of <i>Prunus</i> species and varieties in France (Dr F. Dosba)	15

<i>Prunus</i> Collections at Porquerolles and at Gap-Charance, France (Ing. M.F. Tarbouriech)	16
<i>Prunus</i> Collections in Germany (Prof. H. Schmidt)	17
Present situation in Greece (Dr I. Hatziharissis)	18
Situation of the Tree Fruit Genebank in Hungary (Dr J. Apostol)	19
Italian plum germplasm (Dr A. Liverani)	20
Germplasm conservation in Portugal (Mr J.O. Salgueiro Pereira)	21
The Spanish fruit germplasm network (Dr R. Socias y Compani)	22
<i>Prunus</i> germplasm in Turkey (Assoc.Prof. N. Gönülşen)	23
The National Fruit Collections of the UK (Mr P. Dodd)	24
APPENDIX IV: List of Crop Coordinators	25
APPENDIX V: Revised descriptor for fruit size of plums	27
APPENDIX VI: List of reference varieties	28
APPENDIX VII: Role of Fruit Tree Liaison Officer	29
APPENDIX VIII: List of Nominated Fruit Tree Germplasm Liaison Officers	30

Preliminaries

1. Dr F. Dosba, Director of the Fruit Breeding Research Station of INRA Bordeaux, welcomed the participants to her Station. She explained that in the case of *Prunus* INRA Bordeaux is particularly involved in breeding programmes and genetic conservation for cherry, peach and plum.

2. There were 16 participants (see Appendix I). Apologies for absence were received from Mr Druart, Station des Cultures Maraîchères, Belgium, Mr Perret, ECP/GR coordinator, Dr Niklasson, Nordic Gene Bank, Sweden, and Dr Kellerhals, Swiss Federal Research Station for Fruit Growing, Viticulture and Horticulture, Switzerland, and also from the representatives of FAO, and of the former USSR.

3. Mr Frison explained the current organization of IBPGR, which has adopted a structure of eight programme groups. Three thematic groups are based in Rome and deal with germplasm maintenance and use, with genetic diversity, and with documentation, information and training. Five regional groups are responsible for: (i) Sub-Saharan Africa, (ii) Asia, the Pacific and Oceania, (iii) the Americas, (iv) West Asia and North Africa, and (v) Europe. The regional office for Europe is also based in Rome. Mr Frison as Group Leader for Europe has taken on responsibility for the ECP/GR programme. ECP/GR was set up in 1980 to foster collaboration between East and Western Europe in the genetic resources of *Prunus*, *Allium*, *Avena*, *Hordeum*, *Helianthus*, and forage crops. Since the last meeting of the *Prunus* working group, several countries have joined ECP/GR. USSR joined the programme in 1990 and Albania in 1991. Romania is currently in the process of signing a Letter of Agreement to join ECP/GR formally.

4. Mr Frison welcomed the fact that following the recommendation of the fourth meeting of the Technical Consultative Committee (TCC) several governments had made a written commitment to conserve the original *Prunus* accessions maintained in their collections and hoped that ultimately all countries would make similar commitments.

5. The meeting appointed Dr Dosba as Chairperson and Dr Tobutt as Secretary. The agenda (see Appendix II) was adopted. The meeting agreed that the *Prunus* working group should include in its activities *Prunus* accessions that have an interest as timber.

Recent National Developments

6. The participants presented brief accounts of recent developments affecting *Prunus* genetic resources in their countries (see Appendix III).

European *Prunus* Database and Catalogue

7. An important development since the last meeting was the publication in 1989

of the European *Prunus* Catalogue in five parts, Almond, Apricot, Cherry, Peach and Plum, by the Nordic Gene Bank. Over 200 copies were initially distributed and a further 20 requested; only 5 requests were for the disk versions. In 1989 NGB indicated that, because of their lack of experience with Almond, Peach and Apricot, they wished to transfer responsibility for the European *Prunus* Database to another country. So there has been little activity since. Mr Frison explained that INRA Bordeaux has recently agreed to take over the database. The formal transfer is planned for early 1993 after the appointment of the INRA officer responsible for this work.

8. Considerable discussion followed on the format of future catalogues and on the composition of the database.

The Catalogues

9. It was pointed out that the existing catalogues suffer from an inconsistent distinction between 'cultivars' and 'accessions except cultivars' and from inconsistent styling of cultivar names. It was agreed that the next versions of the catalogues should be simplified to contain just names, including synonyms, sources, countries of origin, and virus status. They should include European and non-European cultivars and species and numbered selections which have been well characterized or described in publications, but should omit merely numbered selections of the various crop species if those have not been characterized or described. The use of unnecessary clone numbers should be discouraged.

10. The catalogues should include a preface explaining that further data on the accessions are available electronically from the European *Prunus* database. The catalogues should be published in A4 format.

11. It was agreed that INRA Bordeaux would send the national lists to the National Fruit Tree Germplasm Liaison Officers for checking and revision of entries, including the names of indigenous cultivars. Crop lists should then be sent to the crop coordinators for standardizing the names. In general cultivar names should be in accordance with the 'International Code of Nomenclature for Cultivated Plants' and species names with the usage of Krussmann's 'Handbook of Trees and Shrubs'.

12. The list of crop coordinators was revised (see Appendix IV) as various former crop coordinators have now retired or moved to other responsibilities.

The Database

13. It was agreed that the database should be updated and made available for computer searching. Various modifications were agreed. The descriptor 'virus status' should contain as options not only 'virus free' and 'unknown' but also 'free from

sharka'. It was stressed that '**virus free**' should be used *only* for material held under **conditions which prevent reinfection**. A new descriptor should be inserted so that the identification of the material can be recorded as 'verified', 'probable' or 'uncertain'. The scale of fruit size in plum should be changed (see Appendix V).

14. Curators and liaison officers should be encouraged to continue scoring accessions for descriptors using the IBPGR descriptor list. In particular it would be useful to evaluate accessions for resistances to pests and diseases.

15. It was recognized that genetic data would become increasingly important. However, it seemed premature to extend the main database to include these data. As a trial, East Malling will try to produce a smaller database for cherry incorporating data from UK, Germany and elsewhere on incompatibility alleles, other agronomic genes and isoenzyme loci.

Standardizing of Gene Symbols

16. It was considered desirable to work towards standardizing gene symbols to simplify future computerization. Crop coordinators were encouraged to discuss with colleagues at forthcoming crop symposia to obtain consensus as to the symbols to be adopted. In general priority should be given to the symbols first published.

17. Dr Tobutt agreed to circulate some broad guidelines to crop coordinators so that similar conventions be followed in allocating gene and allele symbols in the different *Prunus* crops.

Standard Cultivars

18. The usefulness of standard cultivars was discussed at great length. Since the previous meeting very few requests for standard cultivars had been received by distributing institutes. It was noted that the rating of some standard cultivars varied greatly from one country to another. Many participants doubted the usefulness of standard cultivars but others pointed out their usefulness for phenological studies. It was agreed that their use be optional. The list of standard cultivars was simplified (see Appendix VI), and distributors were omitted as the catalogue lists sources.

Transfer of Vegetative Material

19. Mr Frison drew attention to the FAO/IBPGR technical guidelines for the safe movement of germplasm that are being published for various crops by IBPGR. A meeting to develop guidelines for *Prunus*, *Malus* and *Pyrus* is due to be held in Rome in 1994.

European *Prunus* Field Genebank and its Security

20. The fourth meeting of the TCC agreed that the 'European *Prunus* field genebank' consists of all institutions holding original material. For this reason, the Working Group agreed that in each country priority for conservation would be given to indigenous older cultivars and wild material i.e. originating from that country.

21. Dr Apostol explained how in Hungary the collections are duplicated with one collection at wide spacing and the other at closer spacing.

22. It was stressed that indigenous cultivars should be duplicated, preferably at two sites.

23. The potential role of cryopreservation of pollen and of clonal material was discussed at length. Pollen storage could be an economical and effective means of genetic preservation. Cryopreservation of dormant buds should be explored. At the end of the second day participants heard an interesting account from Dr M.T. de Boucaud of her work on the cryopreservation of *Prunus in vitro*.

24. Concern was expressed about the security of the *Prunus* collections in the former USSR. They need financial support. IBPGR will try and coordinate support and so should be informed of bilateral contacts.

25. Concern was expressed about the future of valuable breeding material at Czechoslovak breeding stations threatened with closure. If it is decided to close the stations, the breeders should be asked to select the most valuable material for incorporation into the national germplasm collection.

26. It was stressed that the most effective safeguard for long-term support of national germplasm collections is their use by national breeding programmes.

27. Concern was expressed about the state of the *Prunus* collections in Belgium. IBPGR will contact the Belgian national coordinator and liaison officer to identify unique material at risk and perhaps to arrange for transfer of threatened cultivars to safer sites.

Role of National Tree Fruit Germplasm Liaison Officers

28. Mr Frison reminded liaison officers of their responsibilities outlined in the Technical Consultative Committee report (see Appendix VII). Important duties include reporting the workshop back to curators and alerting IBPGR to threatened collections.

29. Liaison officers were asked to include ornamental and botanical *Prunus* in the lists submitted to the European database. Liaison officers were asked to try and

standardize names of indigenous cultivars in accordance with the 'International Code of Nomenclature for Cultivated Plants'. And in due course they should inform curators of preferred synonyms of cultivars and species grown under more than one name.

30. Liaison officers were asked to transmit interesting information on *Prunus* genetic resources to the compilers of the Newsletter (see para. 39).

31. Dr Schmidt asked that someone from the Dresden-Pillnitz genebank be nominated as Germany's liaison officer following the reorganization of horticultural research in unified Germany.

32. A revised list of liaison officers is given in Appendix VIII.

Wild Germplasm and Ecogeographic Surveys

33. Dr Tobutt drew attention to surveys or collections of wild cherry that had been conducted in France (F. Santi), Italy (F. Ducci), UK (F. Nicoll) and Yugoslavia (V. Ranković-Rankojac) and of plum in Yugoslavia (R. Boskovic). Dr Bernhard reported French-Italian collaboration in collecting *P. brigantiaca*. It was recognized that foresters and botanic gardens often have valuable information on indigenous *Prunus* species.

34. It was felt that it would be useful if such information could be collected; a Newsletter could be a convenient way of reporting the existence of surveys. It was agreed that the present participants lacked expertise in such surveys.

35. Drs Cociu, Hatziharissis, Gönülşen and Xhuveli drew attention to the rich, unsurveyed diversity of *Prunus* in south-east Europe and the desirability of surveying and collecting. The need for training was stressed. Mr Frison explained that although surveying and collecting were the responsibility of the various countries, IBPGR could offer advice on methodologies. In addition IBPGR is seeking funds to carry out a survey of temperate fruit genetic resources across Asia and Europe, and *Prunus* would be included.

European *Prunus* Genome Mapping Group

36. Dr Tobutt explained that five institutes (HRI East Malling, INRA Bordeaux, INRA Orléans, ISF Rome, and IRTA Cabrils) are collaborating to produce a linkage map of the *Prunus* genome. Initially they are concentrating on analyzing two progenies, one peach x almond and one cherry, for cosegregations of molecular markers to produce an outline map. To this they will add agronomic genes by analyzing further segregating progenies of cherry, peach, almond, apricot and plum. They also intend to analyze about 20 cultivars and 20 wild accessions of each of these crops for perhaps 30 isoenzymes and 70 DNA markers. Such information should be valuable not only for

cultivar identification but also for assessing variability in wild populations. Collaboration is currently informal but EC funds are being sought. Dr Arus (IRTA Cabrils) is coordinator.

37. Mr Frison said Dr Kellerhals (Switzerland) had expressed his interest in this group.

38. The working group expressed strong support for this initiative and requested the Secretariat to write a letter of support to the EC, the potential sponsor.

***Prunus* Genetic Resources Newsletter**

39. Dr Tobutt suggested that an annual Newsletter produced by the *Prunus* working group could be a good way to report items of interest to the group and so maintain momentum between meetings. Dr Dodd and Dr Tobutt could compile the first issue.

40. This suggestion was supported. The *Prunus* Genetic Resources Newsletter was an acceptable title.

41. A list of topics for possible inclusion was drawn up by Dr Schmidt and generally agreed upon:

- threats to collections;
- the database and new catalogue;
- surveys of wild *Prunus*;
- progress in molecular markers;
- guidelines on gene symbols;
- reports of stonefruit symposia;
- cryopreservation and such techniques.

Research Priorities

42. Priorities for research in the area of *Prunus* genetic resources were discussed.

43. The working group recommends that research be encouraged on:

- cryopreservation of dormant buds of *Prunus* spp.;
- biochemical and molecular characterization;
- evaluation of germplasm for resistance to drought and to other abiotic and biotic factors.

Further Action

44. **Catalogue and database** - These should be revised as agreed according to the following schedule. The officer to be responsible at INRA Bordeaux will be recruited in the first half of 1993. By July INRA Bordeaux will distribute to liaison officers the output of the database pertaining to their countries. Liaison officers will update and amend the listings and return them to INRA Bordeaux by 1 December 1993. Bordeaux will promptly despatch crop lists to crop coordinators for verification. By 1 March 1994 crop coordinators will return verified lists to INRA Bordeaux. INRA Bordeaux will update the database and will issue the new catalogues by 1 December 1994.

45. **Newsletter** - Liaison officers are asked to provide information for the first newsletter to UK by 1 September 1993. Turkey expressed interest in compiling the second issue pending local approval, and Italy, France and Spain expressed willingness to compile further issues. UK offered to help with English editing.

46. **Security** - Liaison officers were reminded of their obligation to inform IBPGR of endangered *Prunus* collections. IBPGR will seek funds for supporting endangered collections in Eastern Europe and the former USSR.

47. **Action by crop coordinator** - Crop coordinators should ensure that this meeting is reported to forthcoming crop symposia. They should seek consensus on genetic symbols, and should seek views on possible revision of descriptors for the next meeting.

Continuation of the ECP/GR *Prunus* Working Group after Phase IV

48. It was unanimously agreed that the activities of the working group should continue into Phase V. A greater input from the ECP/GR secretariat would be essential to stimulate activities and to ensure objectives are attained. The current allocation of staff time of a quarter of a person to serve all ECP/GR working groups is insufficient.

49. The group recommends that the budget of ECP/GR should in future include a contingency fund for the emergency transfer of threatened collections. Funds for workshops to plan activities such as ecogeographic surveys should be sought from the EC COST scheme.

50. In view of the timetable for the review of the database it was recommended that the next meeting of the Working Group be held in 1995. Topics proposed for inclusion in the agenda are:

- scope for surveying wild species;
- report on database from INRA, Bordeaux;

- revision of descriptors;
- clarification of descriptors for virus status;
- progress in cryopreservation;
- progress in molecular markers;
- reports on sources of pest and disease resistance;
- scope for surveying wild species;

Closing Remarks

51. A visit to the experimental farm of Toulence which is part of the Fruit Research Station was organized. This showed the participants the importance and interest of the collections maintained at INRA.

52. The group thanked Dr Dosba and her staff at INRA, Bordeaux for their hospitality. It also thanked IBPGR and Mr Frison for organizing such a productive meeting.



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AGENDA

1. Opening remarks
2. Election of the Chairperson
3. Adoption of the Agenda
4. Implementation of the 'European *Prunus* field genebank'
 - 4.1 Progress since last working group meeting
 - 4.2 Revision of the role of National Tree Fruit Germplasm Liaison Officers
 - 4.3 Possible new strategies for an effective security system to ensure the safety duplication/avoid disappearance of collections
5. Documentation
 - 5.1 Report on status of European *Prunus* Database by NGB
 - 5.2 EPDB transfer to INRA Bordeaux
 - 5.3 Future activities and responsibilities of the EPDB (registration of additional descriptors, mechanisms for recording of gene symbols, coordination...)
6. Use of standard varieties
 - 6.1 Review of progress since the third meeting
 - 6.2 Further recommendations
7. Transfer of vegetative material
8. Wild germplasm
 - 8.1 Ecogeographic surveys
 - 8.2 Specific population studies
9. Links with the EC *Prunus* mapping project
10. Plan of action and recommendations for the future of the ECP/GR *Prunus* working group
Visit to Field genebank
11. Consideration of report and approval by Working Group

PAPERS

Situation of *Prunus* germplasm in Albania

Prof. Dr L. XHUVELI

Albania is very rich in plant genetic resources; there are more than 3,200 species of plants.

The species of plums, cherries, peaches, almonds and apricots are spread throughout the districts, but especially in south (dry climate) and northeast parts of Albania. At present there are a great number of primitive cultivars and landraces as well as wild species:

- Plums: there are a great number of primitive cultivars and landraces of *P. domestica*. *P. cerasifera* (wild myrobolan) is usually used as a rootstock.
- Cherries: are growing everywhere in Albania. There are primitive cultivars of *P. avium* as well as wild species of *P. sylvestris* and *P. nigra*. *P. Mahaleb* and *P. cerasus* are less spread.
- Almonds: there are both cultivated and wild forms (*A. communis*, *A. fragilis*).
- Peaches and apricots: there are only cultivated varieties.

For many years now this germplasm suffers from "genetic erosion". Unfortunately very little is done so far to study, collect, store and use the *Prunus* germplasm. Only during the last years (1989-1990) some activities were organized by the Research Institute of Fruit-Trees and Vines in Tirana.

At present, the most complete fruit-tree collection of Albania is located in the Vlora District. Some other smaller collections are situated in different districts. Nevertheless, during the last two years, these collections have been partially damaged.

In order to safeguard the Albanian plant germplasm from further genetic erosion, it is necessary to organize collecting missions (starting from 1993) with technical support from IBPGR and financial support from other donors in Europe.

Prunus field genebank in Czechoslovakia

Progress since last group meeting

Dr J. BLAŽEK

In Czechoslovakia, the maintenance of genetic resources of fruit species was historically divided between the Research Institute for Fruit Growing and Breeding at Holovousy which was specialized in all top fruit species and the Research Institute for Fruit and Ornamental Woody Plants at Bojnice-Slovakia which concentrated on small fruit and less known fruit species. Plums and peaches are maintained in both states, mostly in duplication.

Now, with the planned splitting of the federal republic, there is a tendency to duplicate all collections in both new states, but probably because of money shortage this may not be realized.

At present, the Holovousy collections of *Prunus* include:

- 451 accessions of sweet cherry (351 cultivars and 100 breeding selections)
- 126 accessions of sour cherry
- 242 accessions of plums
- 50 accessions of apricots and peaches.

Besides this, in the Czech Republic 200 accessions of apricots are kept at Lednice (University of Agriculture) and about 25 accessions of plums (mostly old varieties and landraces) are being maintained by the Ethnographic Museum of nature in Roznov p.R. So that the total extent of *Prunus* collections was enlarged in Czechoslovakia by about 25% since the last meeting. Moreover, a new big screenhouse was built at Holovousy for preservation of plum cultivars and clones in virus free state; 35 of them were successfully cleaned by different methods during the 3 last years. However, there is a new very pressing problem. Because of the poor economic situation of Czechoslovakia the total budget for fruit research was cut by 50% during 1992 and about 30% further reduction is expected in 1993. This makes further maintenance of *Prunus* collections (total acreage of 8ha) very uncertain, especially since the staff will be proportionally reduced.

Conservation of *Prunus* species and varieties in France

Dr F. DOSBA

The conservation of *Prunus* varieties is mainly done by INRA:

- at the Station de Recherches Fruitières de Bordeaux for cherry, peach and domestic plum varieties;
- at the Station de Recherches Fruitières Méditerranéennes d'Avignon for almond and apricot varieties.

In these stations, the varieties of local origin are now more systematically separated from varieties introduced from other countries for agronomic study and for which conservation is done in the framework of the plant variety protection.

The Botanic Conservatory of Porquerolles (Porquerolles Island, 83400 Hyères) is also active in the conservation of local varieties of peach, apricot, cherry and domestic plum.

A few other regional conservatories, are involved at a smaller scale in the conservation of some *Prunus* varieties:

- the regional plant genetic group of Aquitaine, 48 rue du Cdt Cléré, Résidence le Coteau, 40000 Mont-de-Marsan;
- the Regional Conservatory orchard of Puycelsi, Ferme du Roc, 81140 Puycelsi;
- the conservatory orchard of plum trees from Eastern France (clones of mirabelle plums and local plums), Association Régionale d'Expérimentation Fruitière de l'Est, 5 rue de la Vologne, 54524 Laxou.

The research stations of INRA also maintain a number of ecotypes of indigenous wild species: *P. avium*, *P. mahaleb*, *P. spinosa*, *P. armeniaca*, *P. brigantiaca* as well as a large number of interspecific hybrids.

Prunus Collections at Porquerolles and Gap-Charance, France

Ing. M.F. TARBOURIECH

The National Botanic Repository of Porquerolles and the Alpine Botanic Repository of Gap-Charance are working in close collaboration. The Botanic Conservatory of Porquerolles even took part in the establishment of the Botanic Conservatory of Gap-Charance. One of the roles of these repositories is the conservation of the fruit trees cultivated in France. The Porquerolles Conservatory is dealing with *Prunus* and Mediterranean species (almond, apricot, plum, prune, peach, cherry, fig, olive, mulberry...) while the Gap-Charance Conservatory is interested in apple trees, pear trees and a few *Prunus* varieties growing in higher altitudes (peach trees species needing cold climate and *Prunus brigantiaca*).

National Botanic Conservatory of Porquerolles

The Conservatory has a collection of some 50 apricot varieties, 25 almond varieties, 150 peach varieties, 30 plum varieties and some 5 cherry varieties.

Most of these species were collected after prospecting in Provence and in the Rhone Valley (South-East of France).

A part of the collection is located on Porquerolles Island, completely isolated (so as to avoid plum pox), with peach, apricot and almond. Another group can be found at St Maximin (in Var) with plum, peach, cherry, and was the subject of a research project in collaboration with INRA. A third plantation is located in Manosque in the Alpes de Haute Provence (peach trees).

Alpine Botanic Conservatory of Gap-Charance

The Conservatory maintains 90 peach varieties needing a colder climate, taken from the Porquerolles collection. The plantation is located at an altitude of 1100 m.

The repository also has 26 trees of the *Prunus brigantiaca*, a species well-represented in the alpine zone along the French and Italian border from Briançon to the Mediterranean sea. The almond oil extracted from *P. brigantiaca* was a popular oil in the past. A survey of this species found *in situ* has been carried out which provided information on its distribution (cartography).

Prunus Collections in Germany

Dr H. SCHMIDT

After the reunification of the two Germanies research in plant breeding was reorganized. Under the Federal Ministry of Agriculture, a new Federal Research Station for the Breeding of Cultivated Crops (BAZ) was founded at Quedlinburg in January 1992, including 10 eastern institutes among which the Institute for Fruit Breeding at Dresden-Pillnitz. In January 1993, 3 western institutes will join the BAZ, including the Institute of Horticultural Plant Breeding at Ahrensburg, near Hamburg, as an Institute of Ornamentals Breeding.

The fruit breeding material is due to be transferred to Pillnitz within a period of about 5 years. The newly founded Institute of Fruit Breeding mainly consists of the former department of fruit breeding of the large Fruit Research Institute at Pillnitz.

Genebank work was separated from fruit breeding as part of the Institute of Plant Genetics and Research on Cultivated Crops, the German Genebank, at Gatersleben, funded partly by the Federal Ministry of Science and Technology and the Lands. The separate unit 'Genbank Obst' Dresden-Pillnitz has 2 scientists and 3 technicians; 2 gardeners shall join in 1994.

There are 15 ha field and sufficient technical equipment. The collections of *Prunus* include:

- sweet cherries: 240 cultivars + advanced selections
- sour cherries: 115 cultivars + " "
- plums: 192 cultivars + advanced selections
- wild species: 27 accessions

There are data available on fruit quality, yield, flowering time, spring frost susceptibility, cracking in cherries, morphology of crown, vigor and about some resistances.

West Germany had no genebank officially. Collections were held by 14 research and experiment stations with a lot of duplication. They account for another 187 accessions of sweet cherries, 60 sour cherry cultivars, 5 dukes and 108 plums.

Present situation in Greece

Dr I. HATZIHARISSIS

In Greece, the conservation of *Prunus* genetic material is assured by the Pomology Institute, Naoussa.

Prunus preservation and evaluation collections established in the fields of the Pomology Institute (Naoussa and branches) include:

- Spontaneous wild species, natural hybrids, old local varieties, their clones etc., collected from several Greek regions during the 1984 and 1986 IBPGR collecting missions programs.
- Old varieties, still in use in some regions and wild species, suitable as rootstocks, collected after national programs.
- Standard local and foreign varieties of economic or genetic interest.

The measurements and observations for the evaluation of the above mentioned material are very limited due to little available funds and specially to insufficient staff. Furthermore, part of this material disappears every year due to the persisting drought during the last years.

We are forced, by all these problems, to restrain gradually the quantity of the preserved material.

The partition and distribution among the countries of the preserved standard varieties with financial support of this activity would help and improve the situation.

The simplification of the formalities for transfer of vegetative material among institutions of different countries seems to be a good measure.

Listing and mapping of all the *Prunus* genetic material has not been carried out in our country and it is not in the scope of national programs.

The presidential decree 80/16-3-90 about the protection of the vegetative genetic material (official journal 40/22-3-90) comprises very important arrangements for the *in situ* protection of the genetic material. Unfortunately, it has not started functioning yet as the responsibilities of two ministries are overlapping each other.

Situation of the tree fruit genebank in Hungary

Dr J. APOSTOL

The fruit genebank collection exists in three different places in Hungary. All the 3 living plantations belong to the Enterprise for Research and Extension in Fruit Growing and Ornamentals.

The small fruits collection is in the Fertöd station (north-western part of Hungary), the apple, pear and quince collection is in the Újfehertó station (north-eastern part of Hungary), and the *Prunus* collection is in the Erd station, in the central part of the country.

In addition to the germplasm plantations, there are some other cultivar collections that belong to research stations and are the basis of breeding programmes. There are approximately 4,000 sweet cherry, 1,600 sour cherry, 2,000 apricot and 1,400 plum hybrids in the breeding collections.

Number of *Prunus* accessions in Hungarian collections

Crops	Varieties	Breeders selections
Sweet cherry	203	270
Sour cherry	425	63
Apricot	374	652
Peach	199	176
Plum	397	329
Almond	136	47
TOTAL	1734	1537

The items of genebank plantation comprise 2 specimens each, one of them at 7m x 4m, traditional tree spacing and the other in a narrow spacing plantation (4m x 1m).

Funding provided by the Government for the genebank is insufficient for the normal activities of the genebank, it can cover only the maintenance of the material.

There is no money for collecting, experiments and documentation. There is no computer nor any descriptor programmes.

**Italian Plum Germplasm:
Collection, description and maintenance**

Dr A: LIVERANI

Awareness of the high degree of genetic erosion in fruit trees in Italy led the C.N.R. (National Research Council) to the creation, in 1980, of a working group, divided into several sections for each species, among which Plum.

The Plum Section comprises seven operative units distributed throughout the country. The CNR devised a programme to create germplasm banks for plum varieties to be collected *in vitro*, including spontaneous species, local varieties, old cultivars and recently introduced cultivars.

The activity of the Plum Section contributed to the identification and description of about 450 plum accessions, which are now conserved in Research Institutions. About 19% of these accessions are indigenous, 28% are from USA and 12% are from France. Of the 78 Italian local varieties, 20 vegetative and reproductive parameters have been recorded following the Plum descriptor list. This list and a synonymous list are being printed.

Our goal is now to gather all the accessions in only one location in order to evaluate their characteristics in the same environment and also to verify their phytosanitary status.

Germplasm conservation in Portugal

Mr O.J. SALGUEIRO PEREIRA

Most of the research carried out at the National Fruit Research Station (ENFVN) of Alcobaça is based on the collection of local Portuguese and foreign varieties, and their subsequent analyses in experimental plots to determine their potential.

The purpose of this research is threefold:

- select cultivars of particular interest for commercial growers;
- identify genetic characters useful in breeding;
- clarify varietal synonymy.

In the last ten years, among the genus *Prunus*, over 280 varieties of the following species have been observed, 75 peach, 46 plum, 32 cherry, 89 apricot, 29 almond and 20 rootstock.

These actions resulted in the selection of the most interesting cultivars for each species, for current and future growing methods, for each particular area; the collecting of indigenous peach trees which aptitude as rootstocks and breeding potential to produce late ripening varieties.

The Spanish Fruit Germplasm Network

Dr R. SOCIAS I COMPANYY

In Spain, the National Institute for Agricultural Research (INIA) has recently announced that germplasm will be a long-term programme, separately funded outside of the framework of research projects, and thus not submitted to the period of three-four years of the normal research projects. A ministerial decree is prepared to establish this programme, but a few details are still to be defined.

For the moment there is a fruit germplasm network which considers a base collection for each species. Each collection is located at a different site and has a curator, a researcher working on this collection in any aspect, as breeding, varietal study, propagation, prospection, etc... Most of the collections are at Zaragoza, either at the Servicio de Investigación Agraria (pears, almonds, northern peaches and cherries) or at the Aula Dei (apples and plums). Other locations are: Asturias (cider apples), Reus (hazelnuts and northern walnuts), Murcia (southern peaches and walnuts and apricots), El Encin (part of grapevines), Cordoba (olive), Jerez (part of grapevines), Malaga (cherimoya) and the Canary Islands (mangoes and bananas). Only species with indigenous material (with the exception of chirimoya due to the situation of its countries of origin) were considered, so Japanese plum, pistachios, persimmons and loquats were not included but in the near future other species, such as pomegranate and fig could be considered. El Encin has also the database for all Spanish germplasm.

Some regional organizations have organized the collection of local varieties. They are mostly private and as an example in the Island of Majorca, a group of amateurs has collected the traditional varieties, which now have been included in a Natural Museum, including also the representatives of the Island flora at large.

Prunus germplasm in Turkey

Assoc. Prof. Dr N. GÖNÜLŞEN

Turkey is located in the "Near Eastern Centre" and the "Mediterranean Centre" of crop plant origin.

Sweet cherry (*P. avium* L.), sour cherry (*P. cerasus* L.), plum (*Prunus* spp. L.) are indigenous in Turkey. Some others such as apricot (*P. armeniaca* L.), almond (*P. amygdalus* Batsch.) and peach (*P. persica* Batsch.) were first introduced to Turkey 2,000 to 4,000 years ago.

The responsibility of the fruit tree and grape genetic resources project as a part of National Plant Genetic Resources Research Project includes exploration, collection, conservation, multiplication, evaluation and documentation. The fruit tree genetic resources unit has been working with the *Prunus* group besides other fruit tree species.

The exploration and collection activities of the Izmir centre started in 1964. Collections are arranged according to the needs of breeding programmes and, more systematically since 1978, according to the amount of genetic erosion threatening the germplasm.

The maintenance of all *Prunus* material has been centralized in the different research institutes on the basis of species. Every institution is involved with one or more fruit species under the patronage of Plant Genetic Resources Project.

Prunus genetic resources have been systematically evaluated for their potential use as rootstock or variety. This kind of studies are carried out in cooperation with the National Breeding Programmes.

A plant tissue culture laboratory supports the studies on rapid propagation, long-term conservation and obtaining virus-free plants in relation to plant genetic resources material.

The National Fruit Collections of the UK

Mr P. DODD

In 1990 the Ministry of Agriculture in the United Kingdom closed Brogdale Experimental Horticulture Station the home of the National Fruit Collections. The Ministry had however agreed to continue funding the fruit collections recognizing their importance as a genetic resource. Initially the Ministry proposed repropagating the collections and moving them to Wye College, the agricultural faculty of the University of London, but the Brogdale site was purchased by the newly formed Brogdale Horticultural Trust and a tripartite agreement was drawn up whereby the Ministry would continue to fund the collections, with Wye College being responsible for their scientific direction whilst the Trust are responsible for their maintenance. The contract is such that the long-term future of the collections is secure and allows the College to develop them as an increasingly valuable genetic resource.

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REVISED DESCRIPTOR FOR FRUIT SIZE OF PLUMS

Dr R. BERNHARD

Fruit size/ Grosueur du fruit			Average weight of fruits/ Poids moyen	Reference varieties/ Variétés de référence
1=	very small	très petit	<10 g	Mirabelle
3=	small	petit	11 to 25 g	Early Rivers, Bonne de Bry
5=	medium	moyen	26 to 40 g	Stanley, Reine Claude, Prune d'Agen (French Prune, Greenage)
7=	large	gros	41 to 55 g	California Blue, Reine Claude d'Oullins
9=	very large	très gros	>55 g	Yakima, Président

LIST OF REFERENCE VARIETIES

I	<u>Almonds</u> Cavaliera Ardéchoise Marcona Tardy non pareil	IV	<u>Peaches</u> Springtime Redhaven Babygold 7 Cresthaven
II	<u>Apricots</u> Canino Luizet Hungarian Best <u>Wild apricots</u> Manicot Haggit		<u>Wild peaches</u> Nemaguard GF305 Siberian C
III	<u>Cherries</u> <u>Sweet cherries</u> Burlat Van Hedelfinger <u>Wild diploid cherries</u> F 12/1 <u>Sour cherries</u> Meteor Korai Montmorency Schattenmorelle	V	<u>Plums</u> <u>Cultivated plums</u> Bonne de Bry Reine claude P1380 Hakman Stanley <u>Wild hexaploid plums</u> Brompton S. Julien GF655-2 <u>Japanese plums</u> Methley Shiro Friar <u>Wild diploid plums</u> Myrabolan B

APPENDIX VII

THE ROLE OF THE FRUIT TREE LIAISON OFFICER

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

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

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