

**Report of a
Working Group
on *Prunus***
(Second Meeting)

**Held in Florence
22-24 Oct. 1985**

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



International Board for Plant Genetic Resources



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

Prunus Working Group

REPORT

of the second meeting of a Working Group held at
Istituto di Coltivazioni Arboree,
Florence, Italy

22-24 October 1985

UNDP - IBPGR
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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 was established by the CGIAR in 1974 and its Executive Secretariat is provided by the Food and Agriculture Organization of the United Nations. The basic function of the IBPGR is to promote and coordinate 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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INTRODUCTION

In order to assess progress made since the first meeting of the Prunus Working Group, Lund, Sweden, 24 - 27 May 1983 and to formulate a plan of action for Phase III of the European Cooperative Programme for the Conservation and Exchange of Crop Genetic Resources (ECP/GR), a second meeting was held at the Istituto di Coltivazioni Arboree, Florence, Italy, 22 - 24 October 1985. A list of participants is shown in Appendix I.

The participants were welcomed by Prof. P.L. Pisani, Director of the Istituto di Coltivazioni Arboree, who briefly outlined the great interest of his institute in the work of the Prunus Working Group. Prof. P. Fiorino, Director of the Istituto sulla Propagazione delle Specie Legnose, further described the fruit genetic resources programme in Italy, which is coordinated by the National Research Council (CNR).

Mr. P. M. Perret (ECP/GR Coordinator) briefly reviewed activities undertaken in Phase II of the ECP/GR as well as the continuation of the programme in Phase III. Mr. Perret further amplified a need to carefully review the implementation of the recommendations of the first meeting of the Prunus Working Group and to formulate a detailed action plan for Phase III for consideration by the Technical Consultative Committee of the ECP/GR and thereafter by participating Governments.

The Working Group unanimously elected Prof. R. Bernhard as its Chairman and adopted the modified Agenda. The Agenda is provided in Appendix II.

REPORT

REVIEW OF CURRENT ACTIVITIES

European Prunus data base(s)

1. Mrs. A. Kurki of the Nordic Gene Bank (NGB) provided an explanation of the preliminary Prunus European List on accessions held in genebanks (almond, apricot, cherry, peach, plum, rootstocks and wild species), print-outs of which were available before the meeting. A more detailed status report on the implementation of the data base at the NGB is provided in Appendix III. The meeting expressed its appreciation to the NGB for the excellent work done to date.
2. In addition to the work at NGB, for practical reasons, the Polish Genebank had agreed to computerize the data on European cherry collections, under the guidance of the cherry Crop Coordinators, Dr. H. Schmidt and Prof. S.W. Zagaja. A preliminary print-out of this data base was available at the meeting, but final verification is still required. The meeting appreciated the efforts of the Polish Genebank and agreed that this activity should continue; however, in order to arrive at a central data base for all Prunus material, it was recommended that the cherry data be duplicated in the NGB and incorporated into the central data base.
3. It was recognized that a number of important Prunus collections in Europe are not yet represented in the central data base. Data from conservation centres, other than recognized fruit research institutes, should also be included in the central data base. The meeting urged those institutes, and their respective Governments, to provide the requested data as early as possible.
4. It was noted that the degree of comprehensiveness of the data provided differed from country to country. In some instances data were provided only for local cultivars, while in other cases commercial cultivars were included. Some countries had prepared a consolidated list of cultivars available in the particular country, although in most cases data were provided on an institute basis. The meeting resolved that for further registration, data should be provided on an institute basis since they are most useful in this form, and that, further, these data need to be restricted to local and exotic non-commercial cultivars and rootstocks (see also para. 11).
5. An initial estimate of duplication in the NGB list revealed that only 1148 duplicates existed among a total of 7148 accessions (16%). This estimate is based on cultivar names and needs to be verified by using other descriptors (see further registration of data, Appendix IV). Because of the apparent low percentage of duplication, the meeting agreed that rationalization of collections was not urgent.

Descriptor lists

6. Agreed IBPGR descriptor lists have been published for apricot (revised, December 1984), peach (December 1984) and plum (December 1984). Descriptor lists for almond (revised) and cherry have been finalized and will be published before the end of 1985.

Progress in collecting

7. The first meeting of the Working Group recommended that some emergency collecting be carried out (Appendix VI of report of first Working Group meeting). Progress in this area was reviewed on a country-by-country basis:

(i) France

Old peach cultivars were collected from the Vendée region (29 accessions) and Poitiers region (28 accessions) by the Station de Recherches d'Arboriculture Fruitières, of the Institut National de Recherches Agronomiques (INRA), Bordeaux. This activity will continue, especially to search for sources of resistance to leaf curl. Action to collect wild forms of P. armeniaca and P. brigantia will be initiated in 1986 by the Station de Recherches Fruitières Méditerranéenne, INRA, Montfavet;

(ii) Greece

An IBPGR-supported collecting project was initiated in 1984 by the Pomology Institute, Naoussa, and 163 samples of different Prunus species were collected from Greek Macedonia, northern Thessaly and northern Sporades;

(iii) Italy

Apricot populations in the area of Naples have partially been collected through the Caserta substation of the Istituto Sperimentale per la Frutticoltura, and this activity will continue;

(iv) Romania

Collecting of diploid Euro-asiatic Prunus species has been initiated by the national programme;

(v) Spain

Some work has been initiated in collecting sweet cherry (self-fertile, exceptional flesh firmness) and this will continue;

(vi) Turkey

Collections of cultivated almonds and apricots are being expanded through the national programme;

(vii) Yugoslavia

An IBPGR-supported collecting project in Yugoslavia for hexaploid P. domestica and P. insititia was recently completed. A total of 64 cultivars had been collected and these are fully described for 91 characteristics.

8. Action appears to have been taken on most of the recommendations made by the first meeting, with the exception of bitter almonds in all Mediterranean countries and wild cherry forms in Tunisia. There is a need for further collecting and this is specified in para. 19.

PROPOSED WORKPLAN 1986-1989

Further registration in Prunus data bases

9. There was a general agreement that descriptors used for registration in the central data base should be in accordance with published IBPGR descriptor lists for almond, apricot, cherry, peach and plum. However, in the case of plum, for identification purposes, 3 additional descriptors from Union internationale pour la Protection des Obtentions Végétales (UPOV) guidelines were selected.
10. The Working Group identified 4 additional passport descriptors as essential for further registration in the central data base. A limited number of characterization/evaluation descriptors was selected for further registration on a crop specific basis and 1 category for all rootstocks. A listing of all descriptors for further registration, including those already registered in the central data base, is provided in Appendix IV.
11. It was agreed that for commercial cultivars and for wild species, which are of no direct use as rootstocks, only passport data be included in the central data base. Further registration of data on the selected characterization and evaluation descriptors therefore applies only to local and exotic non-commercial cultivars and rootstocks.
12. Experience has shown that verification of data from collections requires the expertise of Crop Coordinators. The Working Group, therefore, agreed that Crop Coordinators continue to act as intermediaries between the curators and the central data base. A list of the Crop Coordinators is shown in Appendix V.
13. The meeting recognized that the further registration of data heavily relies on the input of Crop Coordinators, and therefore recommended that:
- (i) Each Crop Coordinator establish, as far as possible, a computerized data base, which will facilitate the links between Crop Coordinators and the central data base;
 - (ii) ECP/GR provide some financial support until Government input-in-kind is organized; and
 - (iii) Crop Coordinators receive from their respective Governments all necessary support as soon as possible.
14. The meeting agreed on the following procedures for obtaining further data:
- (i) NGB, with the assistance of Crop Coordinators, will update and correct the preliminary European List, and include all data on cherry registered by the genebank of the Plant Breeding and Acclimatization Institute, Radzikow, Poland (by January 1986);
 - (ii) NGB will provide the registered data to Crop Coordinators in the form of print-outs/magnetic tape for each collection/institute (by February 1986);
 - (iii) ECP/GR Secretariat will forward to Crop Coordinators printed reports of the second meeting of the Prunus Working Group and a covering letter outlining procedures to obtain the required data (by February 1986);

- (iv) Crop Coordinators will forward all necessary documentation (report of the second meeting, covering letter, print-out, questionnaire) to curators of collections (by April 1986);
- (v) Crop Coordinators will receive data from curators, correct and return these to curators for final verification, if necessary (May 1986 - January 1987);
- (vi) Final list prepared by Crop Coordinators will be forwarded to NGB (by March 1987); and
- (vii) Distribution of first edition of crop catalogues (printed or as magnetic tape) will be undertaken by NGB (by June 1987).

Conservation

15. The meeting recognized that the maintenance of collections in the form of field genebanks is essential and cannot be substituted by other methods because adapted clones are needed by breeders. Countries where a cultivar originated should assume primary responsibility for its maintenance in at least 2 different locations within the country.

16. It was further agreed that the assignment of field genebank responsibility to particular institutes within countries is of utmost importance, and that this can only be undertaken by a specific national fruit germplasm liaison officer. The meeting strongly recommended that each country nominate such a liaison officer, not only to ensure that the maintenance of fruit germplasm is guaranteed, but also to coordinate all other activities related to the collection, conservation, characterization, evaluation, documentation and use of fruit germplasm.

17. The meeting noted with interest that IBPGR studies on seed storage and in vitro conservation of temperate fruit germplasm were recently completed. It was recognized that long-term seed storage of Prunus species appears to be possible. The meeting suggested, while noting however that IBPGR priorities are mostly directed towards tropical species, that this method be used for the conservation of wild Prunus populations. It was also suggested that further studies be initiated on practical aspects of in vitro conservation of temperate fruits, especially for old cultivars/landraces. Further work on pollen storage (both for cultivated and wild material) was considered of importance to the user of fruit germplasm.

18. The Working Group noted with interest the initiative of the ECP/GR Secretariat in producing a preliminary survey of wild Prunus species in Europe. The meeting agreed that:

- (i) In situ conservation of wild Prunus species in Europe should receive more attention, but this needs to be complemented through the collection of wild populations as a security back-up;
- (ii) Attention should specifically be given to the survey, in collaboration with botanists, of wild (or semi-wild) populations of P. amygdalus, P. armeniaca, P. avium, P. brigantiaca, P. cerasus, P. cerasifera, P. domestica, P. fruticosa, P. insititia, P. mahaleb, P. nana, P. persica, P. spinosa and P. webbii; and
- (iii) Actual field surveying of wild populations is essential and standard survey cards for scoring diversity should be developed. All participants will forward detailed suggestions for the development of these survey cards to the ECP/GR Secretariat.

Collecting

19. The meeting recognized that action had been initiated in several countries for collecting Prunus species as recommended by the first meeting of the Prunus Working Group (see paras. 7 and 8). The meeting recommended that work already initiated be continued and that specific emphasis be given to collecting:

- (i) Sweet cherry in Spain;
- (ii) Wild apricot and almond in Turkey; and
- (iii) Local cultivars of almond, apricot, cherry and plum from specific areas in Greece (Chios, Rhodes, Crete, Peloponnesus and the district of Chalkidiki).

20. Members noted the recommendation of the Technical Consultative Committee (second meeting) to urgently collect seeds of Prunus genotypes in gardens and backyards. There was a general consensus among the members of the Working Group that it is preferable to collect these genotypes in vegetative form.

Training

21. The meeting was informed that in July 1985 an IBPGR-sponsored training course on the conservation of temperate fruit germplasm had been held in Davis, California, USA with participants from Czechoslovakia, Greece, Hungary, Poland, Turkey and Yugoslavia. The members expressed the need for the participation of young scientists from Europe in any future course of this nature organized by the IBPGR. Individual training supported by ECP/GR is recommended on an ad hoc basis.

Other matters

22. Efforts of Groupe de Recherche et d'Etude Méditerranéen pour l'Amandier (GREMPA) for promoting the use of almond genetic resources were greatly appreciated. Dr. A.J. Felipe (Secretary of GREMPA) clarified that the activities of ECP/GR were complementary to the work of GREMPA. Further collaboration between both programmes was recommended.

23. A delegate of the Working Group was requested to present the activities of the Prunus programme at the next European Association for Research on Plant Breeding (EUCARPIA) Congress, to be held in Czechoslovakia in 1987. This may also present an opportunity for convening the third meeting of the Working Group.

24. The Working Group expressed its appreciation to the Istituto di Coltivazioni Arboree, and especially to Prof. E. Bellini, for the excellent organization of the meeting.

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AGENDA

1. Opening
2. Election of Chairman
3. Adoption of Agenda
4. Review of current activities
 - 4.1. European Prunus data base(s)
 - 4.1.1 Discussion of European list(s)
 - 4.1.2 Identification of gaps
 - 4.1.3 Identification of duplicates
 - 4.1.4 Rationalization of collections
 - 4.2 Descriptor lists
 - 4.3 Review of progress in collecting in relation to the recommendations of the first meeting
5. Formulation of a workplan for 1986-89
 - 5.1 Further registration in Prunus data base
 - 5.1.1 Completion of passport data
 - 5.1.2 Selection of characterization/evaluation descriptors for further description and registration
 - 5.2 Conservation
 - 5.2.1 Field genebanks
 - 5.2.2 Seed/pollen storage
 - 5.2.3 In vitro conservation
 - 5.2.4 In situ conservation
 - 5.3 Further collecting required
 - 5.4 Training
 - 5.5 Other matters
6. Writing of report and recording of decisions reached
7. Consideration of report and approval by Working Group

STATUS REPORT ON THE ECP/GR PRUNUS CENTRAL DATA BASE 1/

ACTIVITIES

Descriptors and their definitions

In February 1985 a registration set of 13 descriptors was defined for the ECP/GR Prunus central data base in order to register the data from Prunus questionnaires.

Descriptors of Prunus are as follows:

country
institute name, number code
curator
scientific name, genus
scientific name, species A
scientific name, species B
crop name
inventory number
accession name
accession name, synonym
fruit use
plant use
origin (country)

Data entry

Registration of 6841 accessions was made by Prof. I. Fernqvist during March-April 1985.

Print-out for proof-reading

Draft lists were printed out during April-May and sent to 44 institutes for proof-reading.

Twenty of the 44 institutes returned the data by mid-July. To the remaining 24 institutes a reminder was sent for returning the proof-read lists by 15 August 1985.

Updating of data

Correction of errors and updating was made in July-August 1985. In the first half of September the lists were updated in final form and a further 338 accessions were registered. About 75% of the data has now been proof-read and returned to the Nordic Gene Bank (34 institutes of 44).

Sorting data

In total 7148 accessions of Prunus were sorted according to 2 different models each with 4 "sort keys".

1/ Status report as of October 1985 by Mrs. A. Kurki, Nordic Gene Bank

Sorting

List I	List II	List III
1. Crop name	1. Country	The same as I
2. Accession name	2. Institute name	
3. Country	3. Crop name	
4. Institute name	4. Accession name	

Production of the first edition

In September the first edition of the ECP/GR European Lists of Prunus (I, II, III) was produced. The number of accessions, respectively, in List I and List II is 7148. List III (415 accessions) is a special list including only accessions which have a synonym registered.

In order to save space 2 of the registered descriptors are not included in the Lists, i.e. curator and inventory number. The inventory number, which was used to register the running numbers on the inventory forms, is sometimes used for breeding numbers or clone numbers.

Table I. Number of Prunus accessions and duplicates in the the ECP/GR European List of Prunus

Crop name Crop classification	No. of accessions	No. of possible duplicates ^{1/}
not classified	81	
1. Peach	2162	345
2. Nectarine	552	121
3. Apricot	1398	266
4. Almond	563	74
5. Plum, European	1465	302
6. Plum, Chinese-Japanese	150	40
7. Cherry	5	0
8. Hybrids, other	771	

7147

1148

^{1/} Blank accession names not counted

Copies of the European Lists of Prunus were printed-out in September 1985 and sent to the members of the Prunus Working Group and to the institutes which sent the data to the central data base. NGB expects to receive all relevant corrections of the lists in writing.

The Prunus Working Group is asked to update those descriptors and to add further descriptors.

APPENDIX III (Continued)

Table 2. Number of Prunus accessions per institute in country order.
 Crop name: +=not classified, 1=peach, 2=nectarine, 3=apricot, 4=almond,
 5=plum (European), 6=plum (Chinese-Japanese), 7=cherry, 8=hybrids, other

Country	Inst. No.	+	1	2	Crop name					8
					3	4	5	6	7	
BEL	1						30			125
	44									52
BGR	21				73		104			4
CHE	7	16	44	33	37		34	1		
	8						38			
CSK	22						37			6
	38				34					
	43					2				
DDR	20						54	15		7
DNK	45						105			
ESP	24		15							
	25		110			45				8
	26		13		71	11				8
FRA	2		34	4	17		4			
	3	2	152	37			75			175
	39				240	130				
GBR	10	51	6		5	1	39		5	129
	17		1							
	27	4								9
	28		3	7						
	29	1	10	7						
	30		10							
GRC	31		12		10	25				2
HUN	19				63	114	232			3
ISR	33		8	2	3	10				
	4		92	61	87		14	25		11
	5	4	53	14	9	6	10	20		2
ITA	35	2	1424	331						
	40				430					
	6					95	192	52		108
NLD	34		10	4	17					
NOR	37						35			1
POL	18				3		6			8
ROM	17		12	2	42	11	101			25
SWE	23						100	8		4
	36						123	11		9
TUR	41				49					
	42					28				
	9		18		25	25	30			
YUG	11		30	10	36		44	5		1
	12	1	65	18	98	53	27	8		74
	13						10			
	14						16			
	15		40	22	11		3	5		
	16				38		2			
	4					7				

7147: 81 2162 552 1398 563 1465 150 5 771

Corrections: GBR 17 should be ROM 17 = ECP/GR NR: 1920, YUG 4 should be YUG 15 = ECP/GR NR: 4305, 4410, 4452, 4562, 4574, 4629, 4716.

APPENDIX III (Continued)

Table 3. Prunus accessions present per country.
 Crop names: +=not classified, 1=peach, 2=nectarine, 3=apricot, 4=almond,
 5=plum (European), 6=plum (Chinese-Japanese), 7=cherry, 8=hybrids, other

Country	Crop name								
	+	1	2	3	4	5	6	7	8
BEL						*			*
BGR				*		*			*
CHE	*	*	*	*		*			*
CSK				*	*	*	*		*
DDR						*			
DNK				*	*	*			*
ESP		*		*	*	*			*
FRA	*	*	*	*	*	*		*	*
GBR	*	*	*	*	*	*			*
GRC		*		*	*	*			*
HUN				*	*	*			*
ISR	*	*	*	*	*	*	*		*
ITA	*	*	*	*	*	*	*		*
NLD		*	*	*					*
NOR				*		*			*
POL				*	*	*			*
ROM		*	*	*		*	*		*
SWE				*	*	*			*
TUR		*		*	*	*			*
YUG	*	*	*	*	*	*	*		*
of 20	6	11	8	15	11	17	5	1	17

FURTHER REGISTRATION OF PASSPORT, CHARACTERIZATION AND
EVALUATION DATA IN CENTRAL DATA BASE, INCLUDING DATA
ALREADY REGISTERED ^{1/}

DATA ALREADY REGISTERED

- 1.5 Scientific name
- 1.13 Country where maintained
- 1.14 Site where maintained
- 1.15 Curator
- 1.16 Local name
- 2.4 Country of collection or country where cultivar/variety bred (=Origin)
- 2.20 Fruit use
- 2.21 Plant use

DATA TO BE REGISTERED:

PASSPORT DATA (ALL ACCESSIONS)

- 1.22 Genetic name
- 1.23 Clone/mutant/variant name
- 2.11 Status of sample
- 2.18 Virus disease status (including mycoplasma)

CHARACTERIZATION/EVALUATION DATA (ROOTSTOCKS, LANDRACES, OLD CULTIVARS)

Almond

- 4.2.1 Season of flowering
- 4.2.2 Harvest maturity
- 4.3.2 Kernel shape *
- 6.2.13 Nut shape
- 6.2.15 Marking of outer shell *
- 6.2.18 Softness of shell
- 6.3.4 Kernel taste

Apricot

- 4.2.1 Season of flowering
- 4.2.2 Harvest maturity
- 4.2.3 Flesh colour
- 4.3.1 Kernel taste
- 4.3.2 Separation of stone

* Strongly recommended if data on this descriptor are available

^{1/} All descriptor numbers refer to the published IBPGR descriptor lists, unless otherwise indicated

Cherry

- 4.2.2 Harvest maturity
- 4.2.3 Fruit skin colour
- 4.2.4 Cropping efficiency
- 6.2.3 Fruit size

Peach

- 4.2.2 Harvest maturity
- 4.2.3 Flower type (shape)
- 4.2.5 Flesh colour
- 6.1.5 Petiole gland shape (nectaries)
- 6.3.3 Stone adherence to flesh of fully ripe fruit

Plum

- 4.2.2 Harvest maturity
- 6.2.5 Fruit size
- 6.2.8 Ground colour
- 6.3.2 Stone shape (lateral view)
- UPOV G.L. 22 1/ Shape of blade leaf *
- UPOV G.L. 37 1/ Length of flower peduncle *
- UPOV G.L. 64 1/ Hairiness of ovary of a very young fruit *

Rootstocks ** (all crops)

- 4.1.1 Propagation method
- 4.1.4 Dwarfing
- 4.1.5 Induction of precocious bearing scions
- 6.1.4 Scion/rootstock compatibility

* Strongly recommended if data on this descriptor are available
** The descriptor numbers refer to the IBPGR cherry descriptor list

1/ UPOV Guidelines for the Conduct of Tests for Distinctness, Homogeneity and Stability (Plums)

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