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Report of a
Working Group
on *Allium*

Held in
Tapioszele
Hungary
29-31 May 1984

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



International Board for Plant Genetic Resources



United Nations Development Programme

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

Allium Working Group

REPORT
of a Working Group held at the Research Centre
for Agrobotany, Tápiószele,
Hungary, 29-31 May 1984

UNDP-IBPGR



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INTRODUCTION

Following the agreement for Phase II of the European Cooperative Programme for the Conservation and Exchange of Crop Genetic Resources (ECP/GR) to be organized on the basis of crop working groups, Allium, sunflower and oat were selected by the first meeting of the Technical Consultative Committee held in Changins, Switzerland, 19-21 December 1983. Accordingly an Allium Working Group was convened, 29-31 May, at the invitation of the Research Centre for Agrobotany (RCA), Tápiószele, Hungary. A list of participants is shown in Appendix I.

The participants were welcomed to RCA by Dr. L. Holly on behalf of the Director, Dr. J. Unk. Members had an opportunity to visit RCA and the Onion Research Station, Makó.

A brief review of the ECP/GR programme was provided by Mr. P.M. Perret of the ECP/GR Secretariat. The meeting elected Dr. D. Astley as Chairman of the Working Group. The agenda, as approved is shown in Appendix II.

REPORT

1. The Working Group reviewed the available information on major collections of Allium in Europe on the basis of the IBPGR Report on Allium genetic resources and the IBPGR Vegetable Directory 1/. Although the number of accessions listed in these reports has slightly increased since their publication, the Working Group agreed that the reports covered most of the major European collections with the possible exception of Poland and Yugoslavia. In addition the Working Group was informed about the plans of the Nordic Genebank to assemble a collection from the five Nordic Countries as well as recent IBPGR sponsored collecting activities in Greece, Israel and Spain. The Working Group noted that many smaller collections of Allium exist in Europe which might contain valuable germplasm.

2. The Working Group was informed that the IBPGR has already designated a number of global Allium base collection centres 2/, of which the following two are located in Europe:

- (i) the National Vegetable Research Station (NVRS), UK, which has accepted responsibility to maintain a global base collection of A. ampeloprasum, A. cepa, A. fistulosum, A. tuberosum and wild species;
- (ii) the Gene Bank Netherlands (GBN) in association with the Institute for Horticultural Plant Breeding (IVT) is considering an IBPGR proposal to maintain a global base collection of A. ampeloprasum, A. cepa and wild species.

1/ Astley, D., N.L. Innes and Q.P. van der Meer (1982). Genetic Resources of Allium species. IBPGR/81/77.

Toll, J. and D.H. van Sloten (1982). Directory of Germplasm Collections. 4. Vegetables. IBPGR/82/1.

2/ Base collections are intended for long-term seed storage at -10°C to -20°C and not for exchange of material unless such material is not available elsewhere.

3. The Working Group discussed the possibility of designating additional European base collections and recommended that RCA should be designated as a base collection for A. ampeloprasum and A. cepa from south and east Europe.
4. The Israeli Genebank, in association with the Faculty of Agriculture, Hebrew University of Jerusalem, has accepted the IBPGR designation to maintain a global field genebank of vegetatively propagated Allium species.
5. The Working Group stressed the need for an additional designated field genebank inside Europe to maintain vegetatively propagated material with long-day requirements. It was recommended that an institute in Czechoslovakia should be requested to accept this responsibility. Alternatively, the Federal Republic of Germany could be approached on this matter.
6. In order to produce a preliminary European Catalogue of Allium accessions, and to be able to identify obvious duplication, a minimum list of basic passport data was agreed upon. This list is presented in Appendix III A. This will be distributed in the form of a questionnaire to ECP/GR country contacts in order to obtain data.
7. NVRS and RCA agreed to collate and process the information obtained through the questionnaires. Considering their respective facilities, NVRS will receive information in the form of magnetic tapes (and other computerized forms), while RCA will accept Apple II diskettes and/or manually completed questionnaires.
8. When all questionnaires have been processed, RCA will transfer its data to NVRS, which will identify obvious duplication and produce a preliminary European Catalogue. A time-scale for the production of this catalogue was agreed upon and is provided in Appendix III B.
9. It was recommended that a meeting be convened after completion of the draft preliminary catalogue, to discuss the rationalization of collections and the responsibility of active collections 1/ in maintaining and distributing the material.
10. It was agreed that the European Allium data base would utilize the IBPGR descriptor list 2/ as a standard format for registering information in the data base. Preferably full details of each cultivated and wild accession in European collections should be provided. A minimum number of descriptors was selected respectively for A. cepa, A. sativum, A. ampeloprasum and A. fistulosum (see Appendix III C). These descriptors are considered as essential information to be registered in the data base.
11. It was realized that a substantial number of accessions have already been characterized/evaluated using descriptor lists other than the IBPGR (e.g. COMECON, UPOV). In order to be able to transfer that information in the standard IBPGR format, the Working Group recommended that a study be initiated to compare existing descriptor lists and to develop a computer transfer programme.

1/ Active collections are intended for medium-term storage, regeneration, multiplication and distribution, characterization and documentation.

12. NVRS, RCA and GBN were considered as the most appropriate institutions to collate full information on each accession in European collections of Allium whereby NVRS would act as the central data base. Although in principle these institutes are in agreement to undertake this task, each of them is faced with a number of limitations (e.g. staff, computer facilities). The Working Group strongly recommended that the ECP/GR Secretariat requests the respective Governments to provide the necessary support as an input in kind to the ECP/GR.

13. The meeting was informed of research on the conservation of Allium species in vitro, which is being carried out by the Faculty of Agriculture, Hebrew University of Jerusalem, Israel with IBPGR support. The potential of different methods was briefly reviewed for vegetatively propagated Allium (e.g. cryopreservation of sets) and the Working Group agreed to postpone any further discussion until the study has been published by the IBPGR.

14. The priorities for the collection of cultivated Allium species as described in the IBPGR Allium Genetic Resources Report, were accepted. During the past few years, collections have been completed in Netherlands and GDR and partly in Czechoslovakia, Greece, Hungary and Poland, while material will be collected in Spain during 1984.

2/ The Working Group agreed to add/change the following descriptors to the IBPGR standard format:

1.5.3 Subspecies

1.5.4 Botanical variety

1.13 AVAILABILITY POSSIBLY LIMITED DUE TO SMALL SAMPLE SIZE

Samples smaller than 15g for cultivated species and 5g for wild species, may not be available for distribution

0 = No
+ = Yes

4.1.14 Number of cloves/head

1 <10 cloves per head
2 10-20 cloves per head
3 >20 cloves per head

6.1.7 Dry matter content of storage organ

Dry matter content should be determined by a refractometer reading on an average of ten bulbs

6.2.4 Day length requirement (1)

For A. sativum maturity time should be observed when 50% of healthy plants show drooping and yellowing of lower leaves

15. Further collection of cultivated Allium species is still required in Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, FRG, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Norway, Poland, Romania, Sweden, Turkey, UK, USSR and Yugoslavia. A plan of action is provided below:

- (i) Bulgaria, Hungary (landraces of A. cepa, A. ampeloprasum and A. sativum): Dr. Batchavarov agreed to undertake this task in Bulgaria during 1984 and RCA will continue its collecting programme in Hungary;
- (ii) Nordic countries (onion and shallot): the meeting urged the Nordic Gene Bank to initiate early action;
- (iii) EC countries (Belgium, FRG, France, Ireland, Italy, Luxembourg, UK): the meeting noted that NVRS had submitted for EC funding, a project to collect Allium species in these countries. It was hoped that the ECP/GR Secretariat could request the EC authorities to approve this project;
- (iv) Remote areas in Czechoslovakia and Poland, southern Greece, Turkey and Yugoslavia: it was recommended that the ECP/GR Secretariat contacts relevant institutions in these countries requesting their cooperation in organizing collecting missions;
- (v) Romania, USSR: it is anticipated that landraces can still be found, but further information should be requested by the ECP/GR Secretariat.

16. The genus Allium consists of about 500-600 species of which only a limited number is available in existing collections. The Working Group noted with satisfaction the support provided by the IBPGR to collect part of this material in India and Israel, as well as the efforts of the Zentralinstitut für Genetik und Kulturpflanzenforschung (ZIGUK), GDR to assemble a collection of this material. The Working Group stressed the importance of the collection of species closely related to cultivated Allium, of which only the A. ampeloprasum species complex shows major diversity in Europe (France, Greece, Italy, Portugal, Spain, Turkey, Yugoslavia).

17. The Working Group noted with interest the activities of the IBPGR on wild Brassica collecting in the Mediterranean area and recommended that the collection of the wild A. ampeloprasum species complex be combined with wild Brassica collecting missions. Material can be collected in the form of seeds, topsets and side bulbs.

18. The following institutions agreed in principle to host individual trainees:

- (i) NVRS (UK), storage, documentation;
- (ii) IVT (Netherlands), characterization and evaluation of A. ampeloprasum collection;
- (iii) Faculty of Agriculture, Hebrew University of Jerusalem (Israel), all activities related to wild species;
- (iv) RCA (Hungary), seed storage and processing;
- (v) ZIGUK (GDR), taxonomy.

19. It was recommended that institutions be approached by the ECP/GR Secretariat to identify interested scientists to avail themselves of these opportunities.
20. The Working Group recommended that a Workshop be organized during 1985 for rationalization of the collections (see also para. 9). This should take place after publication of the draft preliminary catalogue of European Allium collections.
21. In addition to morphological and agronomical descriptions of accessions, the Working Group recognized the importance of alloenzyme composition and cytological characters. It recommended that a Workshop on the use of isoenzyme techniques in describing genotypes and of chromosome identification could be useful.
22. No major constraints were identified for the exchange of material in relation to quarantine regulations. The Working Group recommended that existing quarantine regulations be strictly adhered to in order to avoid the spread of pests and diseases 1/.
23. The meeting noticed with interest the important collection existing in the USSR and suggested that an observer from the USSR be invited to the next meeting of the ECP/GR Allium Working Group.
24. The meeting noted that the third EUCARPIA Allium Symposium will be held in Wageningen, Netherlands, 4-6 September 1984. A special session is devoted to genetic resources and the Working Group recommended its Chairman to present a summary of the report and to promote active participation of European plant breeders.

The Working Group recorded its appreciation of the excellent arrangements and facilities provided by the Director and Staff of the Research Centre for Agrobotany for all aspects of this meeting.

1/ These regulations are regularly published in European and Mediterranean Plant Protection Organization Bulletins (EPPO).

APPENDIX I

LIST OF PARTICIPANTS

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APPENDIX II

AGENDA

1. Welcome by Dr. S. Unk, Director, Research Centre for Agrobotany
2. Statement of objectives of the meeting
3. Election of Chairman and Adoption of Agenda
4. Formulation of a work plan for the ECP/GR on Allium genetic resources for the period of Phase II, 1984-86 and for Phase III, 1986-1989, under the following topic headlines:
 - 4.1 Identification and documentation of contents of European collections
 - 4.1.1 Listing of base and active collections
 - 4.1.2 Definition of minimum passport data necessary to identify accessions
 - 4.1.3 Recommendations on procedures to be followed for rapid transfer of minimum passport data to data base
 - 4.1.4 Recommendations on responsibilities for genus/species Allium data base(s) by different institutes
 - 4.1.5 Production of European Inventories by genus/species based on minimum passport data
 - 4.1.6 The determination of replications of identical material in different collections and production of a revised list of unique accessions
 - 4.1.7 Establishment at responsible institute of full data base (registration of all available passport, characterization and evaluation data) for revised list of unique accessions
 - 4.2 Promotion of the collection and registration of complete characterization data
 - 4.3 Proposals for rationalization of collections between institutes/countries
 - 4.4 Review of in vitro storage
 - 4.5 Urgent collecting requirements
 - 4.5.1 Review of progress in collecting since recommendations of first meeting of Allium Working Group Phase I
 - 4.5.2 Urgent field "rescue" operations" identified by working group members
 - 4.5.3 Proposals on when and by whom these operations will be carried out

- 4.6 Phytosanitary matters
- 4.7 Identification of training needs and recommendations on implementation
 - 4.7.1 Individual training
 - 4.7.2 Group training - seminars and discussions/training
- 4.8 Other business
- 5. Writing of report and recording decisions taken and recommendations made under item 4 above
- 6. Consideration of report and approval by Working Group

EUROPEAN ALLIUM DATABASE

APPENDIX III

A. Questionnaire (basic passport data)

<u>1/</u>	<u>Complete information here 2/</u>
1.1 ACCESSION NUMBER (+ genebank name/ abbreviation)
1.2 DONOR NAME
1.3 DONOR NUMBER
1.4 OTHER NUMBERS ASSOCIATED WITH THE ACCESSION	
1.4.1 <u>Other number 1</u>
1.4.2 <u>Other number 2</u>
1.5 SCIENTIFIC NAME	
1.5.2 <u>Species</u>
1.5.3 <u>Subspecies</u>
1.5.4 <u>Botanical variety</u>
1.6 PEDIGREE / CULTIVAR NAME
1.10 NUMBER OF TIMES ACCESSION REGENERATED
1.12 COMMON NAME/ <u>1</u> = Dry bulb onion, 2 = Shallot, 3 = Bunching onion, 4 = Garlic, 5 = Leek, 6 = Kurrat, 7 = Great headed garlic, 8 = Chive, 9 = Rakkyo, 10 = Chinese chive, 11 = Other (specify) <u>7</u>
1.13 AVAILABILITY POSSIBLY LIMITED DUE TO SMALL SAMPLE SIZE (o = No, + = Yes)
2.1 COLLECTOR'S NUMBER
2.2 COLLECTING INSTITUTE
2.3 DATE OF COLLECTION OF ORIGINAL SAMPLE
2.3.2 <u>Year</u>
2.4 COUNTRY OF COLLECTION OR COUNTRY WHERE CULTIVAR/VARIETY BRED
2.5 PROVINCE/STATE (where sample has been collected)
2.6 LOCATION OF COLLECTION SITE
2.12 LOCAL/VERNACULAR NAME

1/ The numbering follows the IBPGR descriptor list for Allium species, which provides detailed information for completion of this questionnaire. (See also footnote 2 on page 3).

2/ If information for certain descriptors is not available, please leave blank.

EUROPEAN ALLIUM DATABASE

APPENDIX III (Continued)

B. Suggested Time Scale

<u>Stage 1</u>	<u>Listing of cultivars/accessions with minimum passport descriptors and initial detection of duplication</u>	<u>ACTION (deadline)</u>
1.	Finalization of report	ECP/GR (June 1984)
2.	Full distribution of report, questionnaire (Appendix III A), IBPGR Allium report and covering letter to members of the Working Group and country contacts	ECP/GR (July 1984)
3.	Distribution of questionnaire and related documents to curators of <u>Allium</u> collections	Country contacts (August 1984)
4.	Return of completed questionnaires to appropriate data base through country contacts	Curators (30 November 1984)
5.	Collation of information received by RCA and NVRS	NVRS, RCA (15 March 1985)
6.	Transfer of data received by RCA to NVRS	RCA (31 March 1985)
7.	Identification of duplication and preparation of a draft preliminary catalogue	NVRS (15 May 1985)
8.	Circulation of draft preliminary catalogue to all <u>Allium</u> collections through country contacts	ECP/GR (30 May 1985) Country contacts (June 1985)
9.	Return of comments to NVRS through country contacts	Curators (30 September 1985)
10.	Workshop (see paras. 9 and 20 of the report)	ECP/GR (December 1985)
11.	Publication of preliminary catalogue	NVRS, ECP/GR (February 1986)
<u>Stage 2</u>	<u>Registration of all available data</u>	
1.	Circulation of questionnaires (Appendix III C), related documents and covering letter to country contacts	ECP/GR (March 1986)
2.	Return of full data via country contacts to one of the data bases (NVRS, GBN or RCA)	Curators

The Working Group felt that the assignment of target dates at this time, is impracticable for Stage 2.

C. Full Details on Each Accession

It was agreed that all available information should be provided, following the IBPGR descriptor list.^{1/} A minimum number of descriptors was selected which must be provided for A. cepa, A. sativum, A. ampeloprasum and A. fistulosum.

Minimum data to be provided for:

<u>A. cepa</u>	<u>A. sativum</u>	<u>A. ampeloprasum/A. fistulosum</u>
3.1 (5.1)	3.1 (5.1)	3.1 (5.1)
3.2 (5.2)	3.2 (5.2)	3.2 (5.2)
3.3 (5.3)	3.3 (5.3)	3.3 (5.3)
3.4 (5.4)	3.4 (5.4)	3.4 (5.4)
3.5 (5.5)	3.5 (5.5)	3.5 (5.5)
4.1.3	4.1.3	4.1.1
4.1.10	4.1.7	4.1.3
4.1.11	4.1.12	
4.1.12	4.1.14	
4.2.2	4.2.1	
4.2.5		
4.2.6		
5.6	5.6	5.6
6.1.1	6.1.2	6.1.4
6.1.2	6.1.8	6.1.5
6.1.7	6.2.4	6.2.6
6.1.8		
6.2.3		
6.2.4		
6.2.6		
	7.1	7.1
		7.2

^{1/} The numbering follows the IBPGR descriptor list for Allium species, which provides detailed information for completion of data (see also footnote ^{2/} on page 3).