

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

IBPGR 

REPORT OF A WORKING GROUP ON *ALLIUM*

(third meeting) held at the
Institute of Horticultural Research
Wellesbourne, Warwick, UK
5 and 8 September 1988

INTERNATIONAL
BOARD FOR
PLANT
GENETIC
RESOURCES

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EUROPEAN COOPERATIVE PROGRAMME
FOR THE CONSERVATION AND EXCHANGE OF CROP GENETIC RESOURCES
(ECP/GR)

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Rome, 1988

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INTRODUCTION

The IV EUCARPIA Allium Symposium was held at the University of Warwick and the Institute of Horticultural Research (IHR), Wellesbourne, from 6 to 9 September 1988. The ECP/GR Secretariat proposed to the organizers of the Symposium that the third meeting of the ECP/GR Allium Working Group be convened in conjunction with this event, as this would be a unique opportunity to strengthen collaboration and interaction between the activities of curators of Allium collections and those of the breeders/users. Dr. T.J. Riggs, Chairman of the Organizing Committee of the Symposium, welcomed this idea and consequently the meeting of the Allium Working Group was held on Monday 5 September and Thursday 8 September 1988.

Dr. D. Astley welcomed the participants on behalf of Dr. T.J. Riggs. The meeting noted the regrets of Drs. P. Hanelt and S. Samaras who were unable to attend. It was also recorded that the N.I. Vavilov All-Union Scientific Research Institute of Plant Industry (VIR), Leningrad, USSR, had nominated Dr. Pimakhov as USSR representative to the ECP/GR Allium Working Group. Unfortunately, Dr. Pimakhov, due to lack of time, could not arrange his travel to the UK. A list of participants is provided in Appendix I. Dr. D. Astley was unanimously re-elected as Chairman. The Agenda, as approved, is shown in Appendix II. A list of acronyms used in this report is provided in Appendix III.

REPORT

REVIEW OF CURRENT ACTIVITIES

European Allium data base

1. The Group examined the European Allium catalogue (working document edition June 1988) produced by IHR acting as the European Allium data base. It was noted with satisfaction that nearly all significant Allium collections held in Europe had joined the European network since the second meeting of the Working Group (Research and Plant Breeding Institute of Vegetables (OLOMOUC), Olomouc, Czechoslovakia, 7-9 January 1986) by sending their data to the European Allium data base. A few Institutes were identified which are not yet participating in the network. A summary of accessions included in the June 1988 catalogue is provided in Appendix IV.
2. A few contributors were not able to send passport data on all their accessions for the June 1988 edition, as they were in the process of reorganizing their collections/checking data (e.g. Ecole Nationale Supérieure d'Horticulture, ENSH, Versailles, France and Research Institute of Vegetable Crops (SKV), Skierniewice, Poland). Members were informed that additional information would be sent soon to the European Allium data base.
3. The meeting recognized that substantial progress had been achieved in the presentation of the European catalogue, firstly by using the standardized taxonomic list prepared by Dr. Hanelt for the European data base and secondly by classifying accessions following species, subspecies and alphabetical order of names of cultivars. Dr. Astley mentioned that due to work overload he had not yet been able to standardize all acronyms for donors in accordance with the ECP/GR list of institutes' acronyms (editor J. Serwinski, Plant Breeding and Acclimatization Institute (IHAR), Radzikow, Poland). Furthermore, he explained the difficulties he had in some cases in transferring species' names into the ECP agreed taxonomic list, and also with cultivar names, as contributors did not always make a clear distinction between cultivar names and vernacular names. Members agreed on the necessity of a careful checking of the registered data (see para. 15).
4. It was agreed that information on "status of material" was of the utmost importance to users as well as a preliminary assessment on daylength requirement of the material which should be considered as passport data (see paras. 16 and 17).

5. Members noted that some breeding material had been erroneously included in the catalogue. The meeting also expressed concern about the high percentage of accessions which are marked as not available. It was emphasized that all participating governments of the ECP/GR had fully accepted the free exchange of information and genetic resources material, which consists of wild species, ecotypes, landraces and old cultivars (plus genetic stocks and lines representing a milestone in the breeding history and which have been authorized for wide distribution). The meeting reiterated that the European catalogue is registering only the genetic resources as defined above and that the descriptor "availability" has been introduced only in consideration of the temporarily limited size of the accession and the subsequent need to multiply it before distribution (see para. 16).
6. It was agreed that the most efficient way to distribute the European catalogue was in computerized form for easy sorting and search of information by genebank curators as well as users. The ECP/GR officer noted that an ECP/GR Workshop on Exchange of Information (IHAR, Radzikow, Poland, October 1984) had defined rules for exchange of information which apply to magnetic tapes as well as to diskettes with a few modifications. In addition, a few Institutes (e.g. Nordic Gene Bank (NGB) for NGB IRS-83; IHAR, Poland, for Apple II) have agreed to act as file transfer centres between Institutes which have incompatible hardware equipment.
7. The meeting recorded that only the Institute of Plant Introduction and Genetic Resources (IIPR), Sadovo, Bulgaria, had until now provided characterization and evaluation data to the European Allium data base (for 56 accessions). However, a further discussion revealed that many Institutes are now proceeding with the characterization and evaluation of their material following the recommendations of the second meeting of the Allium Working Group. The Experimental Station of Vegetable Crops, Gorna Orjahovitsa, Bulgaria, is continuing characterization/evaluation on more than 100 garlic accessions. In 1990 IIPR and the Vegetable Institute, Maritsa, Bulgaria, will be able to give additional characterization data on 120 accessions (onions and wild species). OLOMOUC, Czechoslovakia, has a very extensive programme and will be able to transfer data on around 300 accession during 1989; ENSH, Versailles, France, is actually describing 66 accessions and will continue this activity during the next year. Israel will be able to provide the European data base with a comprehensive set of data next year. The Centre for Genetic Resources the Netherlands (CGN), Wageningen, the Netherlands, is holding data of material which only need to be computerized and is starting a systematic programme of characterization/evaluation in the coming years. In the SKV, Poland, the 107 garlic accessions and 22 onion accessions which are held, will be characterized starting next year.

The Institute of Field and Vegetable Crops (IFVC), Novi Sad, Yugoslavia, will also be able to provide a full set of data on more than 150 accessions in 1989 (It is planned that IFVC will formally become the active collection for vegetables within the Yugoslavian Genetic Resources Programme.) In addition, it was reported that the Research Centre for Agrobotany (RCA), Taposzele, Hungary, is holding comprehensive data which will be sent to the European Allium data base as soon as it is computerized.

Safety duplication

8. IHR as an international base collection for Allium had received since the second meeting accessions from the Germplasm Institute, Bari, Italy, Politechnic University of Valencia, Spain (IBPGR supported mission) and from INRA, France. In addition, systematic duplication of the material is under process between IHR and CGN which is also acting as a base collection for Allium. Dr. Neykov reported that 38 accessions from IIPR had been sent to RCA, Hungary. It was agreed that Dr. Astley will establish close contact with RCA, the base collection for A. ampeloprasum and A. cepa from south and east Europe in order to have a global view on all progress achieved in Europe for safety distribution of seeds.
9. The field genebank for short day material (Israeli Genebank for Agricultural Crops, (IGB), Bet-Dagan, Israel) had received material from outside Europe (e.g. Algeria, Thailand and Sri Lanka). The field genebank for long day material (OLOMOUC, Czechoslovakia) had received since the second meeting 20 shallots from Landvik Research Station, Norway (NGB) and 82 garlics (21 from Hungary, 15 from Poland, 46 from Spain). In addition it acquired 36 accessions from USSR (see para. 11).
10. It appeared that some Institutes (e.g. Landvik Research Station, Norway and Politechnic University of Valencia, Spain) had sent the totality of their vegetatively reproducing material to the field genebanks as they were not able to maintain it. Members noted that in these cases the purpose of safety duplication of the field genebank has failed. Dr. Havranek and Prof. Rabinowitch, the curators of the two genebanks for vegetatively propagated Allium species, respectively for long day and short day material, explained that their material was at minimal risk of loss. It was also noted that characterization and preliminary evaluation of all the material received by the field genebanks was done after the quarantine stage. The meeting recognized the outstanding role of field genebanks as active collections.

Review of progress in collecting

11. Members reviewed collecting activities in Europe during 1986-88 in relation with the recommendations issued at the second meeting. The following missions have been carried out.

Bulgaria: each year an Allium collecting mission is implemented by IIPR. 70 accessions (including 30 A. cepa) have been collected in total. These collecting missions will continue in 1989 and 1990 in the remaining uncollected parts of the country, by which time the collection in IIPR will be fairly representative of the diversity of the country.

Czechoslovakia: 3 missions were undertaken by OLOMOUC between 1986 and 1988 and 63 accessions were collected. Following complete morphological observation of the material and electrophoretic analyses, 20 original accessions were kept. With the collecting of wild species planned for 1989 (populations have already been identified), it is estimated that the diversity existing in Czechoslovakia will be kept ex situ.

Hungary: A few cultivars and wild species had yet to be collected in Hungary and small collecting missions have been organized by RCA during 1986-88 to fill the gaps.

Yugoslavia: The IFVC has organized an extensive collecting mission (1986-87) within Yugoslavia with IBPGR support. A few onion ecotypes and some wild species are not yet represented in the ex situ collection but IFVC intends to fill these gaps in the near future.

USSR: A collecting mission was organized by VIR, USSR, in Soviet Central Asia (West Tien Shan) to which Drs. Havranek, Kotlinska and Neykov participated. Around 100 very valuable accessions were collected (including 20 A. cepa, 40 A. sativum).

Nordic countries: 28 shallot accessions were collected during 1986-1987 by the Landvik Research Station in Norway and this represents the existing variability for this country.

EC countries: In France ENSH Versailles has started throughout the country a rescue mission to save landraces and old cultivars of onions through announcements in the professional and amateur specialized press. Already 4 landraces and 16 old varieties have been identified and will be collected next year.

In Spain collecting missions have been continued during the period 1986-1988.

Review of progress on other recommendations

12. Dr. Havranek reported briefly on his 1986 trip to Politechnic University of Valencia, Spain, INRA Montpellier and INRA Versailles, France, as well as on the 1986 study tour of Dr. Konviska, also from OLOMOUC, to Nordic countries. Both had been supported by ECP/GR/IBPGR.
13. The Group noted that no tangible progress has been achieved in relation to in situ conservation since the second meeting. However, members were informed that IBPGR was starting a global research project including revision of the structure of the genus and detailed monographic treatment of the parts which contain major crop gene pools. It was agreed that recommendations issued from this research should be studied before any action is taken.

WORKPLAN

European Allium data base

14. Members recommended that the IHR send the content of the European Allium data base to all contributors in computerized form (magnetic tape/diskettes) before the end of 1988. It was further recommended that ECP/GR/IBPGR provide IHR with all necessary advice/assistance in order that the magnetic tape/diskettes follow the recommendations of the ECP/GR Workshop on Exchange of Information (see para. 6). File transfer centres will provide their services for curators who do not have adequate hardware to read magnetic tape/diskettes distributed by IHR.
15. The Group strongly recommended that all contributors check carefully all their passport data and amend them as necessary. This revision should include i) the standardization of donor acronyms following the standardized ECP list of acronyms edited by Mr. Serwinski, IHAR; ii) transformation of species names following the standardized taxonomical list agreed by the ECP/GR edited by Dr Hanelt; iii) the checking of cultivar names and the subsequent deletion of all names which are only vernacular ones (e.g. Cipolla, Cebollada) (ref. para. 3).
16. The Group recommended that information on the status of accessions be added for each accession. In this process, all breeding material which is not available should be deleted. Furthermore, in consideration of para. 5, curators are requested to check the information that they provide on availability of their material and to amend/update this descriptor's field when it is necessary.

It was also recommended that curators provide data for latitude and longitude of their wild Allium ampeloprasum accessions (see para. 30). Latitude and longitude data for other wild species would also be most welcome.

17. In order to render the European Allium data base of more immediate benefit to users, the Group recommended that a preliminary assessment on day length requirements of each accession be inserted for each accession, when original location can be identified. The list of additional passport descriptors requested for the European Allium data base is provided in Appendix V.
18. Members recommended that all contributors return changes in their data, via printouts and diskettes/magnetic tapes, to the European Allium data base with all amendments and additional information as requested in the paragraphs above by latest 31 May 1989.

Minimal characterization and evaluation

19. The members examined the list of minimal characterization and evaluation data for further registration in the European Allium data base as recommended by the second meeting of the Working Group. There was a general consensus that the selection of the descriptors was highly pertinent and that the promotion of this list to all contributors for minimal description of their material should continue. Nevertheless, the practical experience of the members in following this minimal list had shown that it was necessary to modify or add a few descriptor states for one or two descriptors in order to avoid any confusion in the description of the material. This was applying especially for garlic and shallot. Furthermore a new descriptor was added (4.2.7 Ability to produce scape) which will allow better distinction/classification of the garlic germplasm.
20. The Working Group agreed that the recommended list should be provided as a standard form in its right identity with full definition of descriptors and descriptor states for encouraging its use by curators/users. The amended list as approved by the Working Group is shown in Appendix VI.
21. In view of the progress already achieved with recording characterization and evaluation data (refer para. 7) the meeting recommended that all Institutes which already have some available data provide them by the 31 May 1989 at the latest together with the amended list of additional passport descriptors.

It further recommended that the Allium data base distribute a new edition of the European catalogue in computerized form before the end of 1989. It was considered that the distribution of this new edition of the European Allium catalogue with first characterization and evaluation data will greatly increase its value to users and stimulate them to provide their data to their national genebank for further registration in the European Allium data base.

22. The Group strongly recommended that workers who have not yet started a characterization and evaluation programme for their Allium collections take all necessary steps for its implementation.

Further collecting

23. In relation to the achievements in collecting during the period 1986/88 (see para. 11), the Group issued the following recommendations to fill the few remaining gaps.

- i) Poland: 15 local varieties of onion are known but six of them are not yet held by the ex situ collection. It is hoped that IHAR will organize an Allium collecting mission in the near future.
- ii) Nordic countries: there is still an urgent need to collect shallots, potato-onions and chives in Sweden and possibly chives in Denmark.
- iii) EC countries:

Italy: there is a very rich genetic diversity in this country which is slowly disappearing and which is not yet represented in ex situ collections. Urgent action is needed.

Portugal: only seven onion accessions are held in the National Plant Breeding Station (OEIRAS) and more material should be collected, especially garlic.

Greece: collecting of garlic is strongly recommended.

- iv) Cyprus: no information is available on Allium in this country. The Working Group recommended collecting local varieties and wild species.

- v) Turkey: members requested the ECP/GR Secretariat to obtain more information on action undertaken by Turkey in the framework of its national programme.

- vi) USSR: The Working Group recorded with great satisfaction the collecting mission implemented within the context of the COMECON Gene Bank Committee for Allium and the plans of a USSR-USDA collecting mission in 1989. It was hoped that such collaboration for collecting Allium in the USSR will continue in the future.

Safety duplication

- 24. Considering that some genebanks had sent the totality of their vegetatively reproducing material to the current field genebanks (see para. 10), the meeting tried to identify Institutes which would have the facilities and expertise to act as additional field genebanks. Having failed to identify adequate Institutes, the meeting hoped that offers will be sent to the ECP/GR Secretariat. However, there was a consensus that for the time being, the material was safely kept in the two existing field genebanks, even if not held in an active collection.

- 25. The Group strongly recommended that Institutes collecting vegetatively reproducing material take all measures to maintain and characterize it in accordance with the normal duties of an active collection.

- 26. The meeting recommended that reciprocal visits be organized in view of the outstanding role of the two existing field genebanks as active collections, of the necessity for the two curators to compare and standardize their practices and scientific standards and to share material for which status of short or long day is uncertain. It was suggested that Dr. Astley join the first of these meetings to maintain a global overview of the activities within the Group.

- 27. Prof. Rabinowitch reported on the progress of the IBPGR research project for long term conservation of in vitro Allium germplasm which is being conducted in the Hebrew University of Jerusalem, Rehovot, Israel. Presently, the material can be maintained for 1 year in in vitro conditions without alterations (based on variation in 18 isozymes) before subculturing is necessary. The Group encouraged the promotion of work on cryopreservation of explants.

Services of European Allium data base to breeders and users

28. The Group recognized that the most important service which could be provided to users was in the provision of a European Allium catalogue which includes characterization/evaluation data.
29. The meeting recommended that IHR, as the European Allium data base, implement a computerized bibliography of all Allium publications relevant to taxonomy and genetic resources. Prof. Rabinowitch proposed that the references from the forthcoming chapter on taxonomy by Dr. Hanelt from the book edited by Rabinowitch and Brewster could form the basis of this work. It was recommended that curators and users forward copies of relevant papers to IHR for inclusion in the bibliography. This computerized bibliography will be updated and distributed periodically.
30. The Group discussed the value of computerized mapping of species distribution of collected material for genetic resources planning and research. Taking into consideration the wide ecogeographical distribution of wild A. ampeloprasum, it was recommended that this taxon be utilized in a pilot scheme by the European Allium data base (see para. 16).
31. The recommendation of the second meeting that the Chairman publicize the existence of the European catalogue was stressed. Furthermore, it was recommended that members and the ECP/GR Secretariat endeavour to publicize the achievements of the data base at every available opportunity.

Collaboration of the network with other regions of the world

32. The meeting stressed the need to distribute the European Allium Catalogue to all key Institutes dealing with Allium. It was suggested that these Institutes distribute this information throughout their sphere of influence. It was also expected that the above Institutes would reciprocate in the provision of data on their collections, so that a world Allium data base may be established.
33. The Group reviewed the possibilities of supporting developing countries in Allium genetic resources activities. It recognized that IBPGR field officers are the best people to advertise within their region the services which the ECP/GR Working Group could provide (data and material). Members recommended that IBPGR field officers refer any contacts and specific proposals to the Working Group. The field genebank curators emphasized that they are ready to send material coming from similar latitudes to requesting agencies. In addition, any vegetative material which is received would be conserved on their behalf and made available on request.

Coordination of the European Allium network after the end of Phase III

34. In accordance with the Plan of Operations of Phase III of the ECP/GR, self-sustaining networks should be implemented through the functioning of European crop data bases by the end of Phase III. "At this stage, the procedures for a continuous registration and updating of data in data bases will be routine as well as the flow of information among data bases and from them to active collections. This will allow the continuation of collaborative well-planned and effective activities for collecting, characterization and evaluation as needs arise without the necessity for coordination by a central Secretariat" (General Objectives, Plan of Operations of Phase III of the ECP/GR).

In view of progress and the recommendations of this meeting, the Allium Working Group assessed self-sustainability of its network as a possibility by the end of Phase III, at least at the level of scientific and technical exchange. However, it was considered that meetings provided the unique opportunity for in depth discussions on current constraints and were giving further impetus to the workplan. It was stressed that genetic resources activities are an evolutionary process, and that meetings provide the only medium for such evolutionary development. Consequently, the Group strongly recommended that a meeting of the ECP/GR Allium Working Group be convened in 1990 to catalyze and reassess present and future activities including characterization/evaluation of interspecific hybrids which at present are not dealt with because of lack of information.

35. The obvious need for reassessment of the taxonomy of wild species leads the Group to recommend that the above meeting be convened in ZIGuK, Gatersleben, GDR; the timing of the meeting should coincide with the most suitable period to study wild taxa in the field. It was suggested that a practical taxonomic workshop be organized in conjunction with the meeting.
36. The Working Group recommended the internationalization of their activities as limited benefits accrue to developing countries from European holdings consisting mainly of long-day material. The Working Group felt that such internationalization will not be achieved without active involvement of IBPGR.

Further collaborative projects on Allium genetic resources

37. Members recognized the need to promote collaborative projects for evaluation in order to benefit from specific expertise widespread among countries. However, following discussions within the Group and at the IV EUCARPIA Allium Symposium, it was agreed that the submission of these project proposals may now be premature. A careful assessment of current activities within each ECP member country would provide the basis for recommendations at the 1990 meeting (see para. 34). Members and the ECP/GR Secretariat agreed to survey available expertise as well as up-to-date methods for germplasm screening. It was furthermore agreed that this collaboration should also be targeted for the benefit of the developing countries.

Other matters

38. The Working Group stressed the need for a nomination of national Allium coordinators to assume general responsibility (collecting, characterization, exchange of data and material and safety duplication). Present members agreed to clarify their national responsibilities and requested the ECP/GR Secretariat to contact other Country Coordinators to nominate an Allium coordinator.
39. Members recommended that Dr. Kotlinska, who is starting a Polish Allium genetic resources programme in SKV under the aegis of IHAR, be supported by IBPGR for a study tour to the Allium Field Gene Bank in Israel.

The Working Group thanked the Organizing Committee of the IV EUCARPIA Allium Symposium for the opportunity to convene the third meeting with the Symposium. High appreciation was recorded for the excellent facilities which were provided.

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AGENDA

1. Opening Addresses
2. Election of Chairman
3. Adoption of Agenda
4. Review of activities since second meeting
 - 4.1 European Allium data base
 - 4.1.1 Second edition of European Allium list
 - 4.1.2 Documentation of collections for the minimal list of characterization/evaluation descriptors selected by the second meeting
 - a) Data received by the European Allium data base
 - b) Achievements from curators
 - 4.2 Safety duplication
 - 4.2.1 Base collections (seeds)
 - 4.2.2 Field genebanks
 - 4.3 Review of progress in collecting in relation to the recommendations of the second meeting
 - 4.4 Review of progress on other recommendations of the second meeting
5. Formulation of a workplan for strengthening ongoing activities
 - 5.1 Minimum characterization and evaluation as recommended by the Working Group
 - 5.2 Services of European Allium data bases to breeders/researchers
 - 5.3 Safety duplication and transfer of vegetative material
 - 5.4 Recommendations for further collecting
 - 5.5 Collaboration of the European network with other regions of the world
 - 5.6 Recommendations on coordination of the European Allium network after the end of Phase III
6. Proposals for further collaborative projects on Allium genetic resources
7. Other matters
8. Writing of report
9. Consideration of report and approval by Working Group

LIST OF INSTITUTES' ACRONYMS USED IN THE REPORT

AUTBVAL	Agrobiological Department, Agricultural-chemical Research and Testing Institute Linz, Linz, Austria
AUTWIEIPP	Institute for Agronomy and Plant Breeding, University of Agriculture, Wien, Austria
BGRIIPR	Institute of Introduction & Plant Genetic Resources "K. Malkov", Sadovo, Bulgaria
CHERAC	Federal Agronomical Research Station of Changins, Nyon, Switzerland
CSKOLOMOUC	Research and Plant Breeding Institute of Vegetables, Olomouc, Czechoslovakia
DDRGAT	Central Institute for Genetic and Cultivated Plant Research, Gatersleben, GDR
DEUBGRC	Institute of Crop Science and Plant Breeding, Federal Research Centre of Agriculture (FAL), Braunschweig, FRG
ESPDGAZARA	Agricultural Research Service, Horticulture Dept, Zaragoza, Spain
ESPPOLVAL	Genetics Dept, ETSIA, Politechnic University, Valencia, Spain
FINHELSIGU	University of Helsinki, Dept Plant Breeding, Helsinki, Finland
FRAENSH	Ecole Nationale Superieure d'Horticulture, Versailles, France
FRAINRAVAP	Plant Breeding & Genetics Station, INRA, Versailles, France
GBRIHRGRU	Institute of Horticultural Research, Genetic Resources Unit, Wellesbourne, UK
GRCGGB	Greek Gene Bank, North Greece Agricultural Research Institute, Thessaloniki, Greece
HUNRCA	Research Centre for Agrobotany, IPPQ, Tapioszele, Hungary
ISRIGB	Israeli Gene Bank for Agricultural Crops, Bet-Dagan, Israel
ITAIDG	Germplasm Institute, CNR, Bari, Italy
ITAUNIPAC	Faculty of Agriculture, University of Piacenza, Piacenza, Italy
NLDCGN	Centre for Genetic Resources the Netherlands, Wageningen, Netherlands
POLIHAR	Plant Breeding & Acclimatization Institute, Radzikow, Poland
POLSKV	Research Institute for Vegetable Crops, Skierniewice, Poland
PRTEAN	National Plant Breeding Station, Oeiras, Portugal
REGNGB	Nordic Gene Bank, Alnarp, Sweden
SUNVIR	N.I. Vavilov All-Union Institute of Plant Industry, Leningrad, USSR
TURARARI	Aegean Agricultural Research Institute, Izmir, Turkey
YUGIFVC	Institute of Field & Vegetable Crops, Faculty of Agriculture, Novi Sad, Yugoslavia

SUMMARY OF ALLIUM COLLECTIONS REGISTERED IN THE EUROPEAN DATA BASE
(June 1988)

Institutes	<u>A. cepa</u>	<u>A. ampeloprasum</u>	<u>A. sativum</u>	<u>A. fistulosum</u>	Others	Total
AUTBVAL	3					3
AUTWIEIPP			30			30
BGRIIPR	53	17	2		1	73
CHERAC	15	19				34
CSKOLOMOUC	46		149		19	214
GDRGAT	101	71	117	31	623	943
DEUBGRC	4				1	5
ESPDGAZARA	18					18
ESPPOLVAL	100	7	73			180
FINHELSIGU	99					99
FRAINRAVAP	96	18			2	116
GBRIHRGRU	932	81	3	53	132	1145
GRCGGB	37	59	14			110
HUNRCA	157	9	39	5	6	216
ISRIGB		23			197	220
IT AidG	46	3	5		9	63
ITAUNIPIAC			2			2
NLDCGN	187	78				265
POLSKV	12					12
PRTEAN	7					7
REGNGB	21					21
TURARARI	40	28	1			69
YUGIFVC	8					8
TOTAL	1926	413	435	89	990	3853

ADDITIONAL PASSPORT DESCRIPTORS REQUESTED

2.18 PRELIMINARY ASSESSMENT OF DAYLENGTH REQUIREMENTS

This preliminary assessment has to be defined in accordance with the latitude from which the accession originated

1. Short (0–32° latitude N or S)
2. Medium (33–39° latitude N or S)
3. Long (> 40° latitude N or S)

2.11 STATUS OF SAMPLE

1. Wild
2. Weedy
3. Breeders lines
4. Old cultivar
5. Advanced cultivar (bred)
6. Landrace
7. Other (specify)

2.7 LATITUDE OF COLLECTION SITE

2.9 LONGITUDE OF COLLECTION SITE

} For wild Allium ampeloprasum (and as far as possible other Allium wild species accessions)

FURTHER REGISTRATION OF CHARACTERIZATION AND EVALUATION DATA
IN THE EUROPEAN DATA BASE

Minimum data to be provided for onion, shallot and close wild relatives;
garlic, pearl onion and great headed garlic;
leek, kurrat and *Allium fistulosum*

A set of descriptors to be provided to the European *Allium* data base was selected, respectively, for onion, shallot and close wild relatives; garlic, pearl onion and great headed garlic; leek, kurrat and *Allium fistulosum*. The full list of required descriptors is provided in this Appendix for each group and their definitions are given in full.

The data sent to the data base should preferably be in accordance with the definition of descriptors in the IBPGR descriptor list. If data are recorded in another form, the definition of the descriptor states used should be clearly specified.

Characterization data should be recorded by the active collections and evaluation data should be obtained by the active collections from breeders.

Any additional information on the accessions will be welcome by the European data bases, especially with regard to information on susceptibility to pests, diseases and stress conditions.

Minimum data to be provided for any other *Allium* species

Only passport data must be provided. Any other available data will be welcome by the European data base, especially with regard to information on susceptibility to pests, diseases and stress conditions.

Minimum data to be provided for onion, shallot and close wild relatives
(A. altaicum, A. farctum, A. galanthum, A. praemixtum, A. pskemense,
A. oschaninii, A. vavilovii)

CHARACTERIZATION AND PRELIMINARY EVALUATION

3.1 COUNTRY OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 SITE (RESEARCH INSTITUTE)

3.3 NAME OF PERSON IN CHARGE OF CHARACTERIZATION

3.4 SOWING DATE

3.4.1 Day

3.4.2 Month

3.4.3 Year

3.5 HARVEST DATE

3.4.1 Day

3.5.2 Month

3.5.3 Year

4.1.3 Leaf erectness

- 3 Prostrate
- 5 Medium
- 7 Erect

4.1.9 Nature of storage organ

- 1 Bulb, single
- 2 Aggregated bulbs with common basal plate (shallot)
- 3 Rhizomes
- 4 Cloves
- 5 Foliage leaf bases
- 6 Bulb complex enclosed in communal skin (multiplier onion)
- 7 Other (specify)

4.1.10 Shape of full-grown bulbs (see Fig. 1)

- 1 Flat
- 2 Thick flat
- 3 Flat globe
- 4 Globe
- 5 High globe
- 6 Spindle
- 7 Cylinder
- 8 Flat top
- 9 High top
- 10 Rhombic
- 11 Broad obovate
- 12 Broad elliptic
- 13 Ovate
- 14 Elliptic
- 15 Bottle

Bulb shape states 10 to 15 are reproduced from UPOV T6/46/3 as the Working Group felt that these specific shapes could not be transcribed in the shapes as defined by IBPGR (descriptors 1 to 9)

4.1.11 Uniformity of bulb shape

- 0 Irregular
- + Uniform

4.1.12 Bulb skin colour

- 1 White
- 2 Yellow
- 3 Light brown
- 4 Brown
- 5 Dark brown
- 6 Red
- 7 Green (chartreuse)
- 8 Yellow and light brown
- 9 Light violet
- 10 Violet
- 11 Mixed populations (specify)
- 12 Other (specify)

4.2.2 General fertility

- 1 Sterile
- 2 Male sterile
- 3 Female sterile
- 4 Fertile

4.2.6 Mode of reproduction

- 1 Vegetative
- 2 Seed
- 3 Both

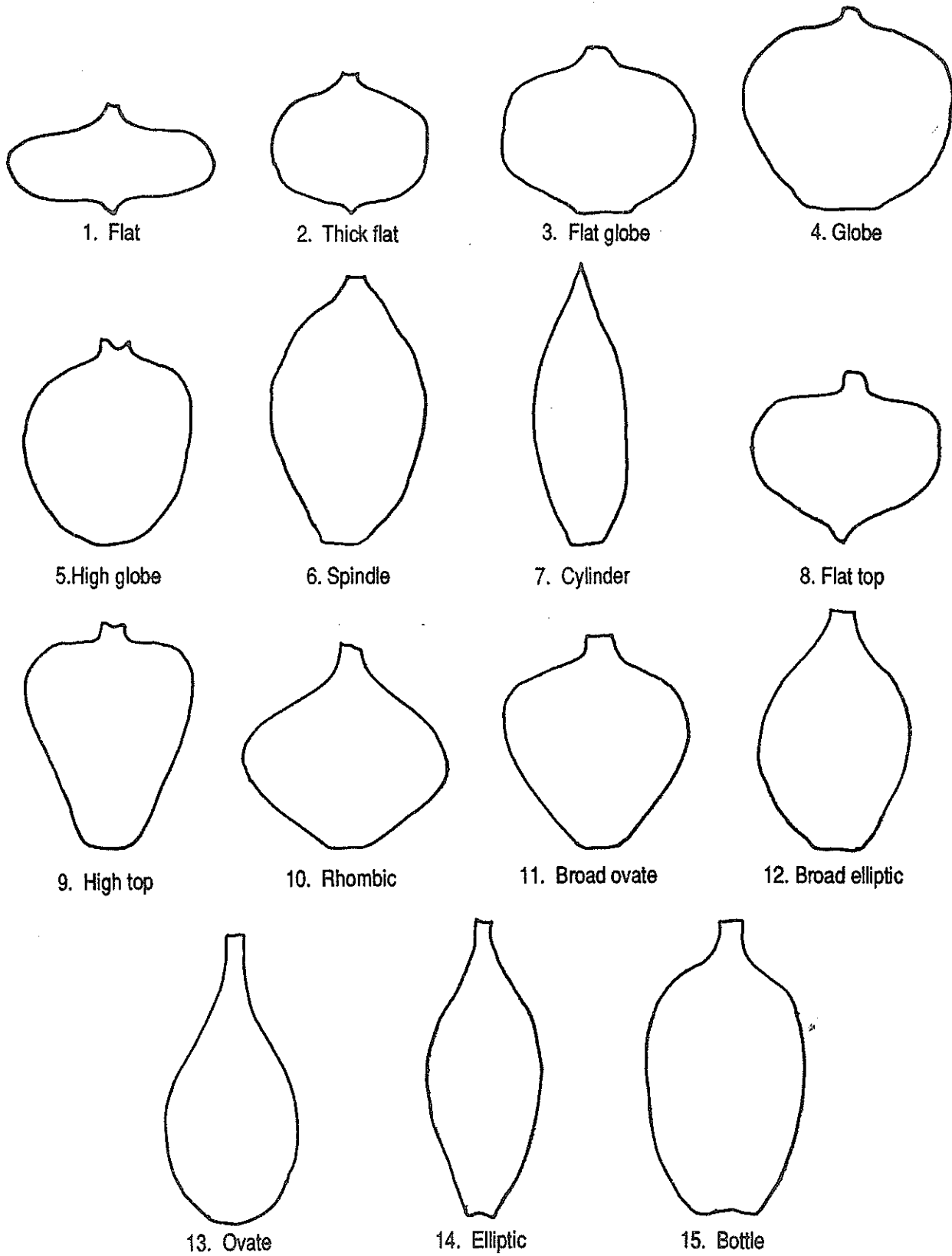


Fig. 1. Shape of full-grown bulbs

FURTHER CHARACTERIZATION AND EVALUATION

Country of further characterization and evaluation, site, name of person in charge of further characterization, sowing data and harvest date (descriptors 5.1 through 5.5) to be provided only if data different from 3.1 through 3.5

5.6 STANDARD CULTIVARS

The applied characteristics to be scored require standardization by comparison with recognized cultivars. The standard cultivars used will be constant at a given evaluation site or named group of sites. Different Allium crops will require a range of standard varieties for each site or group of sites

- 5.6.1 Cultivar 1
- 5.6.2 Cultivar 2 etc.

6.1.1 Bulb skin thickness

- 3 Thin
- 5 Medium
- 7 Thick

6.1.2 Bulb flesh colour

- 1 White
- 2 Green/white
- 3 Yellow
- 4 Red/white
- 5 Other (specify)

6.1.7 Dry matter content of storage organs

Dry matter content (g) should be determined by a refractometer reading on an average of 10 bulbs

6.1.8 Storage life of storage organs

The length of storage life will depend on the temperature of the store. The temperature of this store during storage life trials should be recorded. Storage organs of uniform size and free from bruises, pests and diseases should be used for the trials. The test should be conducted on 5 replications each consisting of 50 units each. A control variety will be included in the test system. The storage life will be assessed as the number of weeks from 100% top fall to 50% breakdown of storage organs. Bulbs with storage roots to be discounted and the sprouting expressed as a percentage of the original number minus the number of rotted bulbs. The storage life to be presented in numbers of weeks

6.2.3 Time of flowering relative to a standard variety

The standard variety and test accessions should be planted at the same time. The commencement of flowering should be recorded for the test relative to the standard. The data to be presented as (-3) i.e. three weeks earlier, or (+2), two weeks later than the standard

6.2.4 Day length requirement

The measurement of maturity time will give an indirect estimation of day length requirement

The recommended procedure for determination of day length requirement of a genotype is: a standard control cultivar should be grown with the test accession at a standard plant density and the response of the test genotype to day length assessed when 50% of the test plants have fallen tops. These data should be related temporally with a similar stage in the control variety. The data to be recorded as plus or minus the number of days to designated lateness or earliness in comparison with the standard, i.e.

+20 = the test accession exhibited 50% fallen tops 20 days before a similar stage in the control

-15 = the test accession exhibited 50% fallen tops 15 days before a similar stage in the control

6.2.6 Cold requirement for bolting

Accessions should be tested relative to a control cultivar. The average degree of bolting of the control and the test accession to be recorded as a percentage. The relative amount of bolting will be calculated as a ratio of the amount of bolting in the control cultivar ($\% \text{ test} \times 100/\% \text{ control}$)

This index will serve to identify the cold requirement for bolting in developmental and introduced material. It may be necessary in certain locations to have several staggered sowing dates to fully assess this character

Minimum data to be recorded for garlic (*A. sativum*) and
pearl-onion/great headed garlic (*A. ampeloprasum*)

CHARACTERIZATION AND PRELIMINARY EVALUATION

3.1 COUNTRY OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 SITE (RESEARCH INSTITUTE)

3.3 NAME OF PERSON IN CHARGE OF CHARACTERIZATION

3.4 SOWING DATE

3.4.1 Day

3.4.2. Month

3.4.3 Year

3.5 HARVEST DATE

3.4.1 Day

3.5.2 Month

3.5.3 Year

4.1.3 Leaf erectness

3 Prostrate

5 Medium

7 Erect

4.1.7 Presence of bulbils (topsets)

0 Absent

+ Present

4.1.12 Bulb (clove) skin colour

4.1.12.1 Outer skin colour of compound bulb

4.1.12.2 Skin colour of the clove

1 White

2 Yellow

3 Light brown

4 Brown

5 Dark brown

6 Red

7 Green (chartreuse)

8 Yellow and light brown

9 Light violet

10 Violet

11 Mixed populations (specify)

12 Other (specify)

4.1.14 Number of cloves/compound bulb

1	1
2	2-10
3	11-15
4	16-20
5	> 20

4.2.7 Ability to produce scape

0	Scape absent
1	Enclosed in bulb
2	Extended with flower only
3	Extended with topset
4	Heterogenous (topset, flower buds)

FURTHER CHARACTERIZATION AND EVALUATION

Country of further characterization and evaluation, site, name of person in charge of further characterization, sowing data and harvest date (descriptors numbered 5.1 through 5.5) to be provided only if data different from 3.1 through 3.5

5.6 STANDARD CULTIVARS

The applied characteristics to be scored require standardization by comparison with recognized cultivars. The standard cultivars used will be constant at a given evaluation site or named group of sites. Different Allium crops will require a range of standard varieties for each site or group of sites

5.6.1 Cultivar 1

5.6.2 Cultivar 2 etc.

6.1.2 Bulb clove flesh colour

1	White
2	Green/white
3	Yellow
4	Red/white
5	Other (specify)

6.1.8 Storage life of storage organs

The length of storage life will depend on the temperature of the store. The temperature of this store during storage life trials should be recorded. Compound bulbs of uniform size and free from bruises, pests and diseases should be used for the trials. The test should be conducted on 5 replications each consisting of 50 units each. A control variety will be included in the test system. The storage life will be assessed as the number of weeks from 100% top fall to 50% breakdown of storage organs. Bulbs with storage roots to be discounted and the sprouting expressed as a percentage of the original number minus the number of rotted bulbs. The storage life to be presented in numbers of weeks

6.2.4 Day length requirement

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

The recommended procedure for determination of day length requirement of genotype is: a standard control cultivar should be grown with the test accession at a standard plant density and the response of the test genotype to day length assessed when 50% of the test plants have fallen tops. These data should be related temporally with a similar stage in the control variety. The data should be recorded as plus or minus the number of days to designated lateness or earliness in comparison with the standard, i.e.

+20 = the test accession exhibited 50% fallen tops 20 days before a similar stage in the control

-15 = the test accession exhibited 50% fallen tops 15 days before a similar stage in the control

7.1 SUSCEPTIBILITY TO LOW TEMPERATURE

Minimum data to be recorded for leek and currat
(A. ampeloprasum) and A. fistulosum

CHARACTERIZATION AND PRELIMINARY EVALUATION

3.1 COUNTRY OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 SITE (RESEARCH INSTITUTE)

3.3 NAME OF PERSON IN CHARGE OF CHARACTERIZATION

3.4 SOWING DATE

3.4.1 Day

3.4.2. Month

3.4.3 Year

3.5 HARVEST DATE

3.4.1 Day

3.5.2 Month

3.5.3 Year

4.1.1 Foliage colour

3	Light green
5	Medium
7	Dark green

4.1.3 Leaf erectness

3	Prostrate
5	Medium
7	Erect

FURTHER CHARACTERIZATION AND EVALUATION

Country of further characterization and evaluation, site, name of person in charge of further characterization, sowing data and harvest date (descriptors numbered 5.1 through 5.5) to be provided only if data different from 3.1 through 3.5

5.6 STANDARD CULTIVARS

The applied characteristics to be scored require standardization by comparison with recognized cultivars. The standard cultivars used will be constant at a given evaluation site or named group of sites. Different Allium crops will require a range of standard varieties for each site or group of sites

5.6.1 Cultivar 1

5.6.2 Cultivar 2 etc.

6.1.4 Length of leaf sheath

The length (mm) to be measured from the stem base to the outer lamina notch

6.1.5 Median diameter of the leaf-base pseudostem

The diameter to be measured in millimetres at the median point between the stem base and the outer lamina notch

6.2.6 Cold requirement for bolting

Accessions should be tested relative to a control cultivar. The average degree of bolting of the control and the test accession to be recorded as a percentage. The relative amount of bolting will be calculated as a ratio of the amount of bolting in the control cultivar ($\% \text{ test} \times 100 / \% \text{ control}$)

This index will serve to identify the cold requirement for bolting in developmental and introduced material. It may be necessary in certain locations to have several staggered sowing dates to fully assess this character

7.1 SUSCEPTIBILITY TO LOW TEMPERATURE

7.2 SUSCEPTIBILITY TO HIGH TEMPERATURE