

**Report of a
Working Group
on Barley**

**Held in
Gatersleben
18-19 May 1983**

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



International Board for Plant Genetic Resources



United Nations Development Programme

AGP:IBPGR/83/68
July 1983

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

Barley Working Group

REPORT

**of a Working Group held at the Zentralinstitut für
Genetik und Kulturpflanzenforschung der Akademie der Wissenschaften der DDR
Gatersleben 18-19 May 1983**

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

Corrigendum for:

UNDP/IBPGR European Cooperative Programme for Conservation and Exchange of Crop Genetic Resources.

Report of a Working Group on Barley: held in Gatersleben, 18-19 May 1983.

Page

1 Paragraph 1, line 7. Insert sentence after DDR:

The Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben, had been designated the lead Institute for the ECP/GR programme on Barley at the Second Governing Board Meeting of Phase I of ECP/GR on 14-17 December 1981.

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, priorities were identified by the Scientific Advisory Committee of Phase I and endorsed by the Governing Board meeting in Brussels in October 1982. A high priority was accorded to barley. Accordingly, a Working Group was convened, 18-19 May 1983, at the invitation of the Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben, DDR. A list of the participants is shown in Appendix I.

The participants were warmly welcomed by Prof. R. Reiger, Acting Director of the host institute. It was pointed out that a Working Group had met during Phase I, 3-4 February 1982, which had established some of the principles for cooperation but now there is a clear need for action.

Dr. J.H.W. Holden, representing IBPGR/ECP/GR, stressed the need to formulate a detailed workplan for the ECP/GR on barley genetic resources in Phase II of the Project (1983-85) and Phase III (1986-88). The intentions are that the workplan shall be the basis for collaborative action by participating countries and that it shall be recommended to Governments by IBPGR - the operating agency - with requests for the implementation by appropriate Genebanks or Institutes within their countries. The Terms of Reference of the Working Group, as set out in the Report of the Third Annual Meeting of the Governing Board, December 1982, are reproduced in Appendix II.

REPORT

1. Aims of the Project

The Working Group made recommendations with the objective of realizing the aims of the Project as set out below:

- 1.1 The complete documentation of European barley collections with respect to passport and characterization data using the standard IBPGR descriptor list.
- 1.2 The registration of this data in computer data bases.
- 1.3 Free and effective data exchange between genebanks and between genebanks and breeders and research workers.
- 1.4 The detection of replication of accessions.
- 1.5 The rationalization of collections by agreement between participating genebanks with consequent elimination of potential waste of resources in the storage, multiplication, characterization and evaluation of redundant accessions.
- 1.6 The detection of gaps in the representation of barley germplasm under threat of erosion.
- 1.7 The rational planning of further collecting.

- 1.8 The improvement in the level of expertise in genebank personnel through the provision of training in appropriate skills in, for example, storage procedures, seed physiology, computer/documentation methods, or multiplication techniques.
- 1.9 The promotion of the free exchange of germplasm between genebanks and between genebanks and breeders.

2. Recommendations

The recommendations of the Working Group are given below. They are ordered in the same sequence as outlined under heading 1. Aims of the Project.

2.1 Documentation

A list of significant European barley germplasm collections was presented to the meeting by Dr. Lehmann. The information which it contains was derived in part by abstracting from the European Directory of Crop Genetic Resources, Second Edition 1982 and otherwise from Gatersleben records. The list is given in Appendix III. Dr. Balkema-Boomstra provided data on the size and origin of the Dutch collections. In addition, numbers of samples in the Dutch and Gatersleben collections were provided according to country of origin. Information on wild species and special lines is provided in Appendix IV.

It is the opinion of the Working Group that of the total of approximately 85,000 accessions listed, some 60 per cent occur in more than two collections while some are thought to occur in most collections, underlining the need for documentation and rationalization.

Dr. Holden presented, in tabular form, a summary of collecting expeditions known to have deposited (or likely to have deposited) Hordeum germplasm in European collections. These expeditions range in time from 1926 to 1982. The list includes numbers of accessions from 30 countries, and indicates the range of diversity which may exist in Europe (Appendix V).

Members of the Working Group had been asked to bring to the meeting information on and, if possible, computer printouts of, collections in their own countries, and those in specified neighbouring countries.

It was noted that information had been provided to the meeting as computer printouts only by Cyprus; Gatersleben, DDR; the Mediterranean Genebank, Bari, Italy; and Radzikow, Poland. It was reported also that part of the Dutch collection was computerized.

It is recognized by the Working Group that availability of passport data, and if possible of characterization data also, registered in a computer data base is an essential first step in achieving the aims of the project.

It recommended, therefore, that all countries should take urgent action to complete minimum documentation - passport and characterization data - of barley material in their possession.

It recommended that whenever possible, the standard IBPGR barley descriptor list should be the basis of the documentation system.

2.2 Registration of data

The Working Group recognizes that from the point of view of genebank management barley accessions, which can include wild species landraces, old cultivars, genetic stocks and mutation lines, can differ in their requirements for successful maintenance.

It recommended that appropriate management descriptors be developed. The attention of genebanks is drawn to the current efforts of the Nordic Gene Bank to develop such a system of management descriptors.

It further recommended that these management descriptors should be sent to the lead institute, together with explanatory text, before the end of 1983, for circulation by the lead institute to all barley genebanks and IBPGR for comment and approval.

The use of "principal attribute descriptors" was strongly advocated by Dr. Blixt and was accepted by the meeting. A principal attribute descriptor informs genebank staff of the original reason for the inclusion of the accession in the genebank when a specific reason existed. For example, the reason may have been the existence of one or more disease resistances or of quality factors. The principal attribute descriptor is seen as an alerting signal to curators for use during seed regeneration and evaluation procedures.

It recommended that the Nordic Gene Bank drafts an alpha-numeric code of likely descriptors and descriptor states for submission to Dr. Lehmann for circulation to IBPGR and all barley genebanks for comment and approval.

The Working Group recommended that in cases where facilities or manpower limit the acquisition and registration of characterization data, significant immediate benefits can accrue and progress can be made solely from the computer registration of passport data.

The Working Group recommended that ECP/GR country representatives be asked by IBPGR to identify barriers to progress in the registration of data in their countries, so that appropriate assistance may be provided.

Depending on the nature of the problems identified, the Working Group envisaged that solutions could be found either through collaborative help between participating countries or, if necessary, by provision of consultants/equipment by IBPGR.

2.3 Data exchange

It recommended that, as soon as arrangements can be made, and not later than March 1984, IBPGR should arrange a meeting of appropriate genebank staff who are active in data processing. The purpose of this meeting would be to establish a network for computer-readable data exchange.

This proposal is seen by the Working Group as a key issue in the essential process of rapid data exchange between genebanks and in the development of an effective European Cooperative Programme in barley. The meeting is expected to define and solve technical problems of hardware and software compatibility.

It recommended that as soon as computer data bases are established, genebanks should strengthen their efforts to inform breeders and research workers of the range and potential value of the genetic resources which are available to them.

2.4 Detection of replications in accessions

The Working Group recognized the probable high frequency of redundant accessions in most collections and recommended that a start should be made, using unique identifiers, on the identification of the replicates.

The Working Group was firmly of the view that it is not necessary to delay the start of this work until the computerization of data bases is complete. As a first step, the Working Group recommended that genebanks should supply the lead institute with sorted lists, from computerized or manual records of such basic passport data as collectors' number, varietal name or other designation, accession number, and donor's name and number.

2.5 Rationalization of collections

The Working Group recognized that the realization of this highly desirable aim is dependent on the successful implementation of the recommendations listed above, and therefore must be considered as a long-term objective. However, the Working Group wished to stress the importance of this aim and recommended that as soon as appropriate, the lead institute should initiate discussions between representatives of genebanks to explore the practical methods by which this rationalization can be achieved.

2.6 The detection of gaps in the representation of the range of threatened barley germplasm

The Working Group recognized that the analysis of accessions according to geographical origin and by other criteria can most usefully be done after the detection of replications of accessions in collections has been completed (2.4 above). It recommended that for the detection of areas from which the representation is poor or absent, full passport data should be used in order that the analysis shall be sufficiently sensitive.

2.7 Purposive planning of further collecting

This is clearly dependent on the outcome of progress in detecting gaps, in establishing a data exchange network and in the computer registration of data, discussed in 2.6, 2.3 and 2.2 respectively above. Therefore, the Working Group does not think it useful to pursue this point further at this time. Furthermore, it should be recorded that the Group was unable to identify any needs for urgent rescue operations to collect material under severe threat of erosion or extinction in Europe.

2.8 Training

The Working Group recognized that training needs can be of several kinds. For example, in the case of individuals, the Working Group considered it likely that training in computer skills for biologists and in biological skills for computer

personnel will be required. In addition and with regard to evaluation work, training in some aspects of biochemical analysis, in disease resistance and screening procedures, is an example of specialized evaluation techniques which for a variety of reasons are not available at present in all genebanks but which it will be necessary to provide if the aims of the project are to be achieved.

The Working Group considered it likely that group "training" in the form of meetings or workshops will be required. Indeed a recommendation for one such group 'training' activity has already been made under 2.3 above. Others are foreseen to establish standardized procedures and to agree definitions of descriptors for evaluation of quantitative characters.

The Group was not in a position to specify the training needs in detail and recommended that the ECP/GR Secretariat be asked to establish needs through contacts with country representatives and to determine the possibilities for provision of training by participating countries as inputs to the Programme.

Where training needs cannot be met by collaborative action it further recommended that the ECP/GR Secretariat should meet the needs, insofar as resources allow, by funding the visits of consultants to genebanks or the visits of genebank personnel to centres of relevant expertise.

2.9 Exchange of seed material

It is explicitly stated in the instrument by which countries join the Project that countries undertake to make available for exchange the genetic resources of crops dealt with by Working Groups, and information about them.

The Working Group recommended that this exchange of germplasm should be understood to include exchange between genebanks and bona fide breeders and research workers as well as exchange between genebanks.

The Working Group wished to stress that recipients of germplasm should recognize a responsibility to reciprocate by providing data derived from the material - for example data from genetic analysis or evaluation studies - to the donor genebank. The Working Group recommended that donors should remind recipients of this obligation whenever material is sent out.

The Working Group was grateful for the presence at the meeting of Dr. Worede, Head, Ethiopian Genetic Resources Center who attended at the request of IBPGR, and Dr. Somaroo, Head of Genebank, International Centre for Agriculture Research in the Dry Areas. Their contributions to discussions served to emphasize the point that the wide and continuous distribution of wild and cultivated barley provides a strong link between the activities and their genebanks and the ECP/GR. The Working Group recommended, therefore, that a close and active collaboration be maintained through the lead institute and the ECP/GR Secretariat with the barley germplasm work in ICARDA and in the EGRC.

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TERMS OF REFERENCE FOR ECP/GR WORKING GROUPS

1. To organize joint activities between sub-regional groupings and countries.
2. To collect information on germplasm material available in European genebanks of the crop(s) concerned, and study this information with the aim of identifying redundant duplicates and gaps in the collections.
3. To organize or stimulate collecting trips to fill the gaps in existing collections.
4. To agree on measures to conserve the crop germplasm material in long-term and/or medium-term storage.
5. To arrange for the regeneration of material so that minimal change takes place in its genetic composition.
6. To organize or stimulate characterization and preliminary agronomic evaluation of accessions, using accepted descriptors.
7. To see that acquired data are stored in an acceptable way in computers, using agreed descriptors and data management systems.
8. To arrange for the compilation of catalogues for the crop(s) concerned.
9. To encourage free exchange of germplasm between genebanks and between genebanks and plant breeders.
10. To propose and/or organize individual or group training activities.
11. To encourage close links between those dealing with plant genetic resources and plant breeders.

909 acc.

Urbic 'vandal' view:

Lindeman RM (800)

Johnson FIN. (400)

Fin. (20)

To send letter to
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APPENDIX III

EUROPEAN BARLEY COLLECTIONS

(N.B. Many of the samples are held in less than optional conditions)

Country/Collections	Land-races	Cultivars	Total accessions	Characterized	Documentation ^{1/}
AUSTRIA					
Linz	169	148	317	25	M
Rinn	20		20		M
Vienna	85 _{x)}		85 _{x)}		M
	300		300		
BELGIUM					
Avelgem-Kerkhove	40	263	314 ^{2/}	283	M
Gembloux-sur-Orneau		1000	1000 ^{2/}	→	Letter D to see if more.
Heverlee			303 ^{2/}	0	
					<i>received, more complete data</i>
BULGARIA					
Sadovo		2400	2400	2400	M <i>sent</i>
CYPRUS					
Nicosia	26		26		M ✓
CZECHOSLOVAKIA					
Piestany			1460 _{x)}		✓
Prague			2500		
DENMARK					
Copenhagen			800		C ^{x)}
Risø		200	200	200	M & C
		mutants			
FEDERAL REPUBLIC OF GERMANY					
Berlin-West			580 ^{2/}		C ^{x)}
Braunschweig		5017	5017 ✓		C
Freising Tech. University, Munich			100-200		
Grünbach	10	390	400		M

x Source: IBPGR Directory of Germplasm Collections: Barley (1982)

1/ M = Manual; C = Computerized.

2/ As of the end of 1980

Country/Collections	Land-races	Cultivars	Total accessions	Charac-terized	Documen-tation
Stuttgart			630		M
FINLAND					
Hyryla Jokioinen ✓			1900 50 ?	?	C ^{x)}
FRANCE					
Annoeulin			500-1000	Hermit - Fennel 1,682 ✓	
GERMAN DEMOCRATIC REPUBLIC					
Gatersleben	6988	2428	9416	9416	C (6131)
GREECE					
Thessaloniki (Gene Bank)	70	961	1031 (1333)	1031 31	M <i>letter</i>
HUNGARY					
Kompolt		7	7	7	M
Martonvásár		5	5	5	M
Szeged		60	60		M ^{x)}
Tápiószele			2890 ✓		C
ICELAND					
Reykjavik			2		
IRELAND					
Co. Kildare Midleton/Co. Cork		100	100 500	<i>not being</i>	M
ISRAEL					
Bet-Dagan	30	170	200 _{x)} 1000	200 ✓	M
ITALY					
Bari			620 _{x)}	1,240	C ^{x)}
Fiorenzuola			600 ?		<i>share to Penno</i>
Padua		15	15 _{x)}	15	M
Rome			90 ? 650 ?		<i>to classify</i>

Country/Collections	Land-races	Cultivars	Total accessions	Charac-terized	Documen-tation
NETHERLANDS					
Lelystad			20		
Ottersum			10	10	M
Wageningen			2249		
NORDIC GENE BANK					
Lund		2000 ^{x)}	2000 ^{x)}		C ^{x)} ✓
NORWAY					
Bodø		2	2		✓
Tromsø			1		
POLAND					
Baków			1504 (included)		
Powsin	15	84		99	M C ^{x)}
Radzików			4700		
(probably includes 1504 for Baków)			<i>Spring Barley</i>		
PORTUGAL					
Elvas					<i>was a plant 1.504</i>
ROMANIA					
Fundulea	427	1843	2272 ^{x)} (3500)	1128	M
SPAIN					
Lleida	12	30	42		
Madrid (INIA)			808	- 1.966 ✓	M
Sevilla			300		
Zaragoza	99	211	310	310	
SWEDEN					
Uppsala			<u>200</u>		

x) Source: IBPGR Directory of Germplasm Collections: Barley (1982)

Country/Collections	Land-races	Culti-vars	Total accessions	Charac-terized	Documen-tations
SWITZERLAND					
Zürich	800		800	✓	C
TURKEY					
Adana	9	41	50	50	M
Izmir	321		405 ^{x)} (834)	685	(TR) other N.E. wheat complementary type (6/5) 1 month ago.
UNITED KINGDOM					
Cambridge (PBI)	2748	2295	5043	5043	C
Cambridge (NIAB)			600		
Edinburgh (Penlandfield)	115		3111	9.000	✓
Leeds					Former Welsh wild C disappeared.
Lincoln			2500		
USSR					
Leningrad			17,459 ^{x)}		C ^{x)}
Moscow			120		
YUGOSLAVIA					
Kragujevac			1005	600-700	(send letter find out what is happening very poor)
TOTAL			84684		2 descr. acc. n acc. n (donor wa donor to Guter Belen

Additional information provided at meeting:

- ICARDA USDA Collection 13000 - Planned collecting in Syria etc. and N. Africa
- Ethiopia Genetic Resources Centre 4-5000 - Indigenous landraces. Some from existing collections. Some collecting de novo and still increasing.

28 countries

to see if to send somebody?
and her station?
Zagreb?

Dr. Mikic
Novi Sad

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donors: Zagreb,
Novi-Sad
Zemun
so already received

APPENDIX IV

WILD SPECIES AND SPECIAL LINES IN EUROPEAN COLLECTIONS

A. Gene Bank Gatersleben

Species	Accessions
<u>Hordeum vulgare</u>	9416
<u>H. spontaneum</u>	143
<u>H. bogdanii</u>	2
<u>H. brevisubulatum</u>	9
<u>H. bulbosum</u>	44
<u>H. jubatum</u>	17
<u>H. marinum</u>	9
<u>H. maritimum</u>	9
<u>H. murinum</u>	
subspecies <u>glaucum</u>	2
" <u>leporinum</u>	9
" <u>murinum</u>	21
<u>H. nodosum</u>	10
<u>H. turkestanicum</u>	4
<u>H. violaceum</u>	7
<u>H. vulgare</u> , mutant lines	1163
Material from major collections	
USDA - Beltsville	2226
VIR - Leningrad	791
Gene Bank, Bari (Ethiopia collection)	300
Gene Bank Wageningen (Pakistan collection)	71

B. Other European Barley Wild-Species and Special Collections

DENMARK

Copenhagen 50 Hordeum spontaneum, H. agriocrithon

ITALY

Bari 74 Wild species

POLAND

Warsaw 47 Wild species

SWEDEN

Nordic Gene Bank 2200 Wild species
200 Isogenic lines
500 Marker genes
9700 Mutant lines

SPAIN

Madrid (INIA) 39 Hordeum bulbosum

UNITED KINGDOM

Cambridge (PBI) 51000 H. spontaneum (single seed samples)
Edinburgh 115 H. spontaneum

COLLECTING EXPEDITIONS

Collecting expeditions known to have deposited (or likely to have deposited) Hordeum germplasm in European collections. (Source Witcombe unpub., Bari Gene Bank, various reports on file in IBPGR and quoted references)

MEDITERRANEAN

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
CNR Bari Italy/IBPGR	P. Perrino M. Bueno G. Eremin <u>et al.</u>	Spain (South)	1977	106 9 4	<u>H. vulgare</u> <u>H. distichon</u> <u>H. bulbosum</u>	AGPE: IBPGR/78/53	Bari INIA Leningrad
INIA Spain/Univ. Kyoto / Bari	J. Salazar S. Sakamoto B. Polignano	Spain	7/1979	2	<u>H. vulgare</u>	IBPGR Print-out	Bari INIA
Gatersleben DDR	H. Stubbe	Albania & N. Greece	1941-42	85	"Barley"	Lehmann 1963	Gatersleben
CNR Bari, Italy/Cereal Institute, Greece/IBPGR	G. B. Polignano A. Zamanis I. R. Denton	Greece (Peloponnes) Greece (Crete)	1977	177 53			
CNR Bari Italy/Cereal Institute, Greece/IBPGR	E. Porceddu P. L. Damiani C. Goulimis A. Zamanis	Greece (Evvoia) Greece (Epiros)	1977	9 16	<u>Hordeum</u> <u>Hordeum</u>	AGPE: IBPGR/78/51 AGPE: IBPGR/78/52	Bari Bari
CNR Bari/Italy Cereal Institute Greece/IBPGR	E. Porceddu A. Zamanis <u>et al.</u>	Greece (Crete)	1978	17	<u>H. vulgare</u> Landraces	AGPE: IBPGR/78/48	Bari

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
CNR/Cereal Institute Greece/IBPGR	E. Porceddu G. Polignano N. Theulakis	Greece (Peloponnesos)	6-7/1979	19	<u>Hordeum</u>	Bari printout	Bari
Cereal Institute Thessaloniki	E.A. Skorda	Greece	1979-80	36	<u>H. vulgare</u> landraces	Anon. 1981	Greek Gene Bank
CNR Bari/Cereal Inst. Greece/IBPGR	G.B. Polignano S. Benedettelli S. Galanopoulou	Greece	1980	21	<u>Hordeum</u>	Bari printout	Bari
Cereals Institute Greece/ IBPGR	A. Zamanis P. Euthemiadis S.T. Samaras	Greece (Thessaly)		2	<u>H. vulgare</u>	IBPGR printout	Greek Gene Bank
Greek Gene Bank	A. Zamanis et al.	Greece (Pieria and Thessaly)	1982	2	<u>Hordeum</u> <u>vulgare</u>	Greek Gene Bank	Greek Gene Bank
Gatersleben DDR	R. Maly	S. Italy	1950	22	Barley	Lehmann 1963	Gatersleben Bari
CNR Bari	P.O.	Italy	1971	10	<u>Hordeum</u>	Bari printout	Bari
CNR Bari	E. Porceddu	Algeria	1973	9	<u>Hordeum</u>	Bari printout	Bari
CNR Bari	P.K.	Italy	1974	5	<u>Hordeum</u>	Bari printout	Bari
CNR Bari	P.R.	Italy	1975	3	<u>Hordeum</u>	Bari printout	Bari

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
CNR Bari	Bari/Gatersleben	Italy	1982	?	<u>Hordeum</u>	Porceddu 1982	Bari Gatersleben
CNR Bari/IBPGR	P. Perrino G.B. Polignano E. Porceddu	Algeria	1975	44	Barley	Perrino <u>et al.</u> 1976	Bari
CNR Bari/IBPGR	P. Perrino A. Zamanis	Algeria (Hoggar)	1977	31	<u>H. vulgare</u>	AGPE:IBPGR/77/31	Bari
CNR Bari/IBPGR	G.B. Polignano G. Celli	Algeria (Tassili)	1978	14	Barley	AGPE:IBPGR/78/47	Bari
CNR Bari/IBPGR	E. Porceddu <u>et al.</u>	Algeria Tunisia	1976 1976	24 7	Barley Barley	AGPE:IBPGR/76/22 AGPE:IBPGR/76/22	Bari Bari
CNR Bari/IBPGR	G.B. Polignano L. Impiglia	Tunisia	1977	45	<u>H. vulgare</u>	AGPE:IBPGR/77/31	Bari
Agric. Res. Inst. Cyprus/ IBPGR	A. Farias A. Della L. Dannieel C. Josephides	Cyprus	1978	26	<u>H. vulgare</u>	Della <u>et al.</u> 1980	Cyprus Bari
CNR Bari/IBPGR/ ARC Tripoli	A. Al Alazzeh K. Hammer C. O. Lehmann P. Perrino	Libya	1981	27	{ <u>H. vulgare</u> <u>H. spontaneum</u> }	Al Alazzeh <u>et al.</u> 1982	Gatersleben Bari

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
MPGR Centre	C. Lehmann K. Hammer Agric. Res. Center Tripoli	Libya	1982	2 15	<u>H. spontaneum</u> <u>H. vulgare</u>	Porceddu 1982	Gatersleben, Bari
Malting & Brewing Co. Sevilla, Spain	J.L. Molina-Cano J. Conde	Morocco	1978	-	<u>H. spontaneum</u>	Molina Cano & Conde 1980	?
CNR, Bari, Italy/IBPGR	P. Perrino	Egypt	1980	7	<u>Hordeum</u>	Bari printout	Bari
IBPGR/CNR, Bari, Italy/ Field Crops Res. Inst. Giza, Egypt	P. Spagnoletti G. Olita H. Terrats G. Ayad	Upper Egypt	1981	31	<u>Hordeum</u>	AGP/IBPGR 81/114	Bari
IBPGR/CNR Bari, Italy/ Field Crops Res. Inst. Giza, Egypt	P. Spagnoletti Zeuli G. Polignano	Egypt	1982	10	<u>Hordeum</u> <u>vulgare</u>	AGP: IBPGR/82/120	Bari
IBPGR/CNR, Bari, Italy/ Field Crops Res. Inst. Giza, Egypt/INIA Madrid	P. Spagnoletti Zeuli H. Pascual-Terrats	Egypt	1982	30	<u>H. vulgare</u>	AGPG: IBPGR/82/61	Bari
PBI Cambridge, UK/ Hebrew University Jerusalem, Israel	-	Israel	1977	?	<u>H. spontaneum</u>	Anon. 1981	U.K.

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
ARARI Izmir, Turkey	-	Turkey	1966-73	216 171	<u>H. distichon</u> <u>H. vulgare</u>	Sencer 1975	Turkey Sweden
Kyoto University, Japan	M. Tanaka M. Muranatsu H. Suemoto Y. Makai	Turkey	1976	226 47 9 161	<u>H. distichon</u> <u>H. vulgare</u> <u>H. spontaneum</u> <u>Hordeum spp.</u>	Tanaka 1978	Turkey
ARARI, Izmir, Turkey	-	Turkey	1978 1979	94 13 14	Landraces Wild Barley landraces	Anon. 1981	Turkey
ARARI, Izmir, Turkey/ Agriculture Canada	A. Comeau C. Tuten	Turkey	1981	25	Barley	Comeau & Tuten 1982	Turkey

SOUTH-WEST ASIA

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in
IBPGR/FAO/ GRC Douma Syria	R. Rifaie J.R. Witcombe J.-J. Bourgois	Syria	1980-81	80 50 21	<u>H. spontaneum</u> <u>H. distichon</u> <u>H. vulgare</u>	Witcombe <u>et al.</u> 1982	ICARDA Bari
ICARDA/Munich	E. Weltzien	Syria	1981	10	Barley	Jana 1982	ICARDA
University Saskatchewan, Canada/ICARDA	S. Jana	Syria Jordan Turkey	1978-80-81	Many	<u>H. spontaneum</u>	Jana 1982	ICARDA
ICARDA/FAO/IBPGR	J.-J. Bourgois J.R. Witcombe M.N. Shequara K.K. Al-Bawab	Jordan	1981	37 38	Barley <u>H. spontaneum</u>	Witcombe <u>et al.</u> 1982	ICARDA
ICARDA/Munich	E. Weltzien	Jordan	1981	60	Barley	Jana 1982	ICARDA
PGRC Abu Ghraib Iraq/ IBPGR/FAO	A.T. Sharif M.N. Hussain J.R. Witcombe	Iraq	1975-80	79 15	Barley <u>H. spontaneum</u>	-	BARI
GTZ Germany	D. Wood	Yemen A.R.	1979	53	Barley	Anon. 1979	Braunschweig, FRG
IBPGR	W.G. Ayad R.P. Croston M.A. Al Khawlani	Yemen A.R.	1980	77	<u>Hordeum</u> <u>vulgare</u>	Ayad <u>et al.</u> 1980	Bari

EAST AFRICA

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in
	N.I. Vavilov	Ethiopia	1927	93	Barley	Qualsets 1975	Leningrad
	G.R. Giglioli	"	1937	14	"	"	?
	K. Troll	"	1937-38	82	"	"	?
	R. Schottenholer	"					
	H.E. Myers	"	1945	49	"	"	?
	W.A. Archer	"	1951	255	"	"	?
	I.E. Siegenthaler	"	1961	42	"	"	?
	E.L. Smith C. Thomas	"	1963-64	396	"	"	?
CNR Bari	P. Perrino E. Porceddu	Ethiopia	1/1973	54	<u>Hordeum</u>	Bari printout	Bari
CNR Bari	E. Porceddu O. Goulimis	Ethiopia	12/1973 -2/74	142	<u>Hordeum</u>	Bari printout	Bari
CNR Bari	P.O.	Ethiopia	9/76	3	<u>Hordeum</u>	Bari printout	Bari
PGRC Addis Ababa/IBPGR	J. Toll	Ethiopia	1977-81	c2,500	<u>H. vulgare</u>	Toll (pers. comm.)	Braunschweig
	K.W. Campbell	Ethiopia	1980	335	<u>H. vulgare</u>	IBPGR printout	FRG,
	B. Hika		1980	129	"	"	"
	A. Demissie						Ethiopia

ORGANIZER	TEAM	COUNTRY	YEAR	NO.ACC.	SPECIES	REFERENCE	Seed deposited in
PGRC Addis Ababa/IBPGR	J. Toll D. Astley M.H. Gyorgis H.H. Mariam	Ethiopia	1982	2	<u>H. vulgare</u>	IBPGR Printout	Braunschweig FRG? Ethiopia
		IRAN, AFGHANISTAN, PAKISTAN, INDIA					
FAO/Iran	H. Kuckuck	Iran	1952-53-54	?	?	Kuckuck 1956	
IBPGR/FAO / SPII Karaj Iran	D. Sami J.R. Witcombe	Iran	1978	86 13	<u>H. vulgare</u> <u>H. spontaneum</u>	-	Bari? ICARDA?
IBPGR/SPII Karaj, Iran	P. Perrino M. Askarian	Iran	8/1978	18 11	<u>H. vulgare</u> <u>Hordeum spp.</u>	TF REM/31 IBPGR 1978	Bari
- do -	P. Perrino M. Nikpoor	S.E. Iran	6/1978	27	<u>H. vulgare</u>	TF REM/31 IBPGR 1978	Bari
Reading University, U.K.	Gray, Beetson Thomas, Halloran	Afghanistan	1965	94	Barley	Private Report	U.K.?
German Hindu Kush Exp. (DHE)	-	Iran, Afghanistan Pakistan, India	1935	538	Barley	Freisleben 1940a	Braunschweig?
USSR	N.I. Vavilov	E. Afghanistan	1924	?	?	Vavilov & Bukinich 1929	USSR

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in:
USSR	D.D. Bukinich	E. Afghanistan	1926-27	?	?		USSR
FAO	E. Bennett G.S. Abmadi	Afghanistan	1968	16	Barley	Bennett (unpub.)	?
IBPGR/FAO/ PGRC Kabul	M. Yasin A. Rahmon	Afghanistan	1977	27	Barley	-	Kabul ?
IBPGR/FAO/ PGRC Kabul	A. Rashid H. Esmati	Afghanistan	1978	31	Barley	-	Kabul ?
Germany	C. Troll	N. Pakistan	1937	-	Barley	Friesleben 1940b	Braunschweig?
Bangor/Lyallpur Universities	J.R. Witcombe A.R. Rao	N. Pakistan	1974	22 69	Covered 6R Naked 6R	Witcombe 1975b	Braunschweig/ U.K./Netherlands Bari
IBPGR/Netherlands/ Pakistan	M. Mesken A.R. Rao <u>et al.</u>	N. Pakistan	1976	216	<u>H. vulgare</u>	M. Mesken (pers.comm.)	Netherlands Braunschweig

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in
IBPGR/Netherlands/ Pakistan	N.I. Hashmi L.J.M. van Soest A.R. Rao Zahoor Ahmad	SW Pakistan	1980	97	Barley	Hashmi et al. 1981	S.V.P. Wageningen
UCNW, Bangor, U.K.	J.R. Witcombe P.D. Bibby A.D. Ford R. Kadimali	N. India	1976	86 50 8	Covered 6R Naked 6R Wild 2R	Witcombe 1978	Braunschweig FRG/ Gatersleben DDR/ Bari, Italy/ PBS, PBI, WPBS, UK/ SVP, IVP, NL.
Germany	Herrlich	NW India/Nepal	1937-38	-	-	Freisleben 1940 (a)	Braunschweig?

NEPAL, BHUTAN, SIKKIM, TIBET

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in
UCNW, Bangor, UK	J.R. Witcombe A.M. Mortimer	E. Nepal	1971	87 42	Covered 6R Naked 6R	Witcombe 1975(a)	UK/ Netherlands/ Sweden/ FRG/ Italy
UCNW, Bangor, UK	L.W. Beer	E. Nepal	1975	25 6	Covered 6R Naked 6R	Beer 1976	?
IBPGR	W. Erskine J.-J. Bourgois P.M. Shrestha	C. Nepal	1979	81 7	Covered 6R Naked 6R	Erskine et al. 1979	Bari
FAO/IBPGR	P. Whiteman	Nepal	1979	17	Barley	Whiteman 1980	?
IBPGR/HMG Bhutan	R.P. Croston Tenzenia (=Tenzing Dorji)	Bhutan	1981	29 1	Naked 6R Covered 6R	Croston & Tenzing Dorji 1981	ICARDA
Germany	E. Schafer	Sikkim/Tibet	1938-39	> 100	-	Brucher & Åberg 1950	Braunschweig? Sweden?

EUROPE

ORGANIZER	TEAM	COUNTRY	YEAR	NO. ACC.	SPECIES	REFERENCE	Seed deposited in Europe
Botanical Institute of the USSR	F. Bakhteyev	Southern Rep's of the USSR	1958 1960-61	?	<u>H. spontaneum</u>	Bakhteyev 1963	Leningrad?
Gatersleben DDR/ Czechoslovakia	F. Kuhn K. Hammer P. Hanelt	Czechoslovakia	1974	52 5	Covered Naked	Kuhn et al. 1976	Gatersleben, DDR Czechoslovakia
Gatersleben, DDR/ Polish Scientific Inst./ Plant Breeding and Acclimatization Inst. Warsaw, Poland	W. Kulpa M. Gorski A. Jastrebski H. Utrata W. Doboszynski P. Hanelt K. Hammer F. Warner	Poland	1976	22	Barley	Hanelt & Hammer 1977	Gatersleben, Warsaw
Gatersleben GDR/Plant Breeding and Acclimatization Inst. Warsaw, Poland	-	Poland	1978-79	29	<u>H. vulgare</u>	Anon. 1981	Gatersleben, DDR Warsaw
Gatersleben GDR/Agricultural College Brno, Czechoslovakia	F. Kuhn K. Hammer F. Werner	E. Czechoslovakia	1977	30	Barley	Hammer 1978	Gatersleben Brno
IBPGR/Svalov/IBPGR/ Copenhagen	R. von Bothmer N. Jacobsen	U.S.A.	1980 1982	46	<u>Hordeum</u> spps.	AGP: IBPGR/82/105	Nordic Gene Bank

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