

## Report to the Ninth ECP/GR Steering Committee meeting (October 2003)

### Working Group on Barley

#### Progress made by the Group during Phase VI (1999 - 2003)

Specific objective	Achievements
<b>Meetings</b>	
Sixth meeting of the Working Group on Barley held in December 2000, Salsomaggiore, Italy	A report of the meeting was published: Knüpfper, H., R. von Bothmer, M. Ambrose, R. Ellis, A. M. Stanca, D. Enneking, L. Maggioni and E. Lipman, compilers (2001): Report of a Working Group on Barley, Sixth Meeting, 3 December 2000, Salsomaggiore, Italy. International Plant Genetic Resources Institute, Rome, Italy. 70 pp.
Barley pre-breeding <i>ad hoc</i> meeting held in December 2000, Salsomaggiore, Italy	A report of the meeting was prepared. No agreement reached on specific project, but on the need to further pursue this initiative. Two possible directions identified: (1) Incorporating useful traits from wild material or landraces in well-adapted cultivar background; (2) base-broadening by adaptation of mixtures or composite crosses to unfavourable environments. Although various participants expressed interest in this topic, none of them took the initiative
WG session during the Cereals network meeting in July 2003, Yerevan, Armenia	Progress reviewed, plans made for Phase VII. Report in preparation (to be included in the report of the Cereals network meeting)
<b>Documentation</b>	
Update and further develop the EBDB	<ul style="list-style-type: none"> <li>- Data have been included of 155,000 accessions from 23 European countries and 3 extra-European genebanks. Also 1293 accessions from the International Barley Core Collection are documented</li> <li>- Descriptions and synonymy of 216 botanical varieties of <i>H. vulgare</i> translated into English and organized in a database</li> <li>- The EBDB searchable on-line at <a href="http://barley.ipk-gatersleben.de/ebdb.php3">http://barley.ipk-gatersleben.de/ebdb.php3</a></li> <li>- Evaluation results from the EU project on barley genetic resources included. Analysis and visualisation tools developed and implemented (cooperation with NGB)</li> <li>- Quality of data generally improved; geographical data included, links between replicates established, etc.</li> </ul>
Database on Barley Genetic Stocks	A database on barley genetic stocks was developed by NGB, using AceDB (system for genomics databases, such as GrainGenes)
Establish an agreed exchange protocol for updating data	<ul style="list-style-type: none"> <li>- EBDB adapted to fit with the IPGRI Multi-Crop Passport Descriptors, including barley-specific data elements</li> <li>- In the future, updates of the EBDB will be carried out by downloading barley data from EURISCO, instead of requesting data from cooperating institutions separately and transforming them individually</li> </ul>

Specific objective	Achievements
Re-engineer the database and prepare it for Oracle	An informatics student was hired at IPK to complete the technical documentation of the EBDB (database structures, coding systems used, etc.), to design a more relational database structure, and to convert it into this structure under Oracle (March-September 2003)
<b>Characterization/Evaluation</b>	
Implement evaluation activities and make data available and easily accessible to breeders, genebanks and researchers	<ul style="list-style-type: none"> <li>- Evaluation of barley accessions, especially of the BCC was carried out for biotic and abiotic stresses with standardized methods, mainly as part of the Gen Res project</li> <li>- ECP/GR-funded evaluation was also carried out by non-EU partners from Czech Republic, Cyprus, Poland, Romania, Russian Federation and Slovakia</li> <li>- After a period of one year, in which the evaluation data were password-protected, the search and analysis feature for biotic stress evaluation data was opened for the whole user community recently (August 2003)</li> </ul>
Further develop the International Barley Core Collection (BCC)	<ul style="list-style-type: none"> <li>- Large parts of the BCC have been established and most of the subsets are existing and available. A documentation system is under development, at present as part of the EBDB</li> <li>- Research towards the establishment of an Ethiopian BCC subset is carried out presently (since spring 2003) by an Ethiopian researcher under the supervision of scientists from Norway (A. Bjornstad) and Sweden (R. von Bothmer)</li> </ul>
<b>Ex situ conservation - Regeneration</b>	
Identify regeneration needs and establish emergency regeneration procedures	Procedures started for genebanks participating in EU Barley Project
<b>In situ conservation</b>	
Improve the level of conservation and management of wild barley species	<p>Wild relatives of crops can be conserved and maintained both <i>in situ</i> and in genebank collections. Worldwide survey of the state of wild and cultivated barleys in genebank collections carried out at CGN, based on the EBDB and data from other sources:</p> <p>Hintum, Th. van, and F. Menting, 2003. Diversity in <i>ex situ</i> genebank collections of barley. In: R. von Bothmer, Th. van Hintum, H. Knüpfper and K. Sato (eds), Diversity in Barley (<i>Hordeum vulgare</i>), pp. 247-257. Elsevier Science B.V., Amsterdam, The Netherlands</p>
<b>EU Res Gen Project (1467/94)</b>	
Submit and carry out an EU project on evaluation and documentation of barley genetic resources	The project ( <a href="http://barley.ipk-gatersleben.de">http://barley.ipk-gatersleben.de</a> ) was carried out successfully from April 1999 to September 2002. The participation of 7 institutions from 6 non-EU member countries was co-funded by ECP/GR
<b>Publications</b>	
Book on the diversity in barley published in August 2003; three of the four editors associated with the Barley WG (presently or in the past)	Bothmer, R. von, Th. van Hintum, H. Knüpfper, K. Sato (eds.): Diversity in barley ( <i>Hordeum vulgare</i> ). Developments in Plant Genetics and Breeding, 7. Elsevier, Amsterdam etc. xvii+280 pp.

## Working Group on Barley

### Plan of action for Phase VII (2004 - 2008)

Specific objective	Action	Timeframe	Request of support from ECP/GR for specific actions	
			Funding requested	Type of support requested
<p><u>Meetings:</u> Hold an open workshop of the Barley WG in connection with the International Barley Genetic Symposium (IBGS) in Brno, Czech Republic</p>	<p>This workshop is intended to inform a broader audience (European and non-European members and non-members of the Barley WG) about progress of the WG's work, and to discuss issues to be resolved by a wider audience, such as:</p> <ul style="list-style-type: none"> <li>• Further development of the EBDB, including linking up with other barley GR information systems such as SINGER, GRIN (to be prepared by EBDB manager &amp; WG chairman; see below "Documentation/cooperations")</li> <li>• Setting up a pre-breeding initiative (to be coordinated by WG vice-chair, in cooperation with Elcio Guimaraes, FAO; see below "Pre-breeding")</li> </ul> <p>According to Z. Stehno (Czech Genebank), the organisers of the IBGS (J. Spunar) are ready to provide the opportunity for a Barley WG meeting. Confirm half-day workshop with organisers of IBGS, after approval by ECP/GR Steering Committee (WG chairman)</p>	June 2004	YES	<ul style="list-style-type: none"> <li>- Travel for few WG members who otherwise could not afford to participate in IBGS</li> <li>- Logistic support (secretariat, reporting)</li> </ul>
<p><u>Documentation:</u> International/interregional cooperation towards an International Barley Information Network</p>	<ul style="list-style-type: none"> <li>• Discussions between EBDB and other major barley GR information systems to form a network. First discussions between EBDB and SINGER started during EPGRIS final meeting (Prague Sept 2003), ideas will further be discussed among the cooperators</li> <li>• Include the Barley Genetic Stocks Database (NGB) in this networking</li> </ul>	2004 onwards, June 2004 (meeting during IBGS)	Possibly	Possibly travel support for participation of EBDB manager in coordination meeting, travel for the consultant of the BGS database (M. Huldén)
<p><u>Documentation:</u> Improve database accessibility and user-friendliness</p>	<p>An informatics student will be hired at IPK to develop new web search &amp; user interfaces for the EBDB as transferred to Oracle, including a "shopping basket" approach</p>	August 2003-December 2003	NO	

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<u>Documentation:</u> Include more characterization, evaluation, pedigree and geographical data into the EBDB	<ul style="list-style-type: none"> <li>Enter new data and link with other existing barley GR information sites, such as the AceDB Barley Genetic Stock Database (BGS database)</li> <li>Adopt new procedures of EBDB updating and feedback to data contributors, based on the availability of EURISCO</li> </ul>	2004 onwards	Possibly	
<u>Publications:</u>	Present a paper on the European Barley Database at the IBGS (EBDB manager)	June 2004	NO	
<u>Ex situ conservation - Safety-duplication:</u> Improve the level of safety-duplication	Set up a system for safety-duplication (cooperation with the ECP/GR Documentation and Information Network) - should not be for barley alone	2004 onwards	NO	
<u>Sharing of responsibilities:</u> Facilitate a mechanism of sharing responsibilities	Identification of duplicates and designation of "primary collection holders", as a concerted action in harmony with other groups of the Cereals network; methodology and database-supported procedures to be developed in a pilot study of the Documentation and Information network (to be submitted by Germany)	2004 onwards	Possibly	
<u>Core Collection:</u> To be further developed	Create an Ethiopian and Eritrean subset, as well a subset of genetic stocks. [state to be requested from Asmund Bjornstad, Norway]	Started, to continue during 2004 (2005)	NO	
<u>Core collection:</u> Further develop the BCC documentation system	To be carried out in the frame of the EBDB and the IPK Genebank Information System (GBIS)	Started, to continue during 2004 (2005)	NO	
<u>Core collection:</u> Molecular marker studies	Make studies with molecular markers - carried out by various research groups	Started	NO	
<u>Pre-breeding:</u> Initiate a project	Form a group of interested. Set up an ECP/GR task force to survey barley workers for interest in pre-breeding and develop regional cooperation in this issue, also in collaboration with FAO. Will depend on initiative of WG members and other barley researchers and breeders	June 2004	Possibly	Travel for meeting participants

Prepared by: Working Group Chair: H. Knüpfner and Vice-Chair: M. Jalli

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