

# ECPGR Working Group / Task Force / Thematic Network

## Barley Working Group

### Progress report for the period June 2006 – June 2008

During ECPGR Phase VII, the Barley Working Group had lower priority, therefore, a full working group meeting could not be organised.

This report is based on the tasks for Phase VII defined at the First meeting of the Cereals Network, Yerevan, Armenia, July 2003

([http://www.ecpgr.cgiar.org/Workgroups/barley/Barley\\_Priorities\\_July2003.doc](http://www.ecpgr.cgiar.org/Workgroups/barley/Barley_Priorities_July2003.doc)) and finalised at an *ad hoc* meeting of 1.5 hours during the International Barley Genetics Symposium in June 2004 (Brno, Czech Republic) with participation of 10 members partly funded by ECPGR (cf.

[http://www.ecpgr.cgiar.org/Workgroups/barley/CGRAppI\\_Barley\\_Brno.pdf](http://www.ecpgr.cgiar.org/Workgroups/barley/CGRAppI_Barley_Brno.pdf)).

The report on activities in Phase VII was discussed at the session of the Barley Working Group (21-22 April 2008) during the ECPGR Cereals Network Meeting in Foça, Izmir, Turkey (report under preparation).

| <b>I. RESULTS</b>   |  |   |                        |
|---|--|---|------------------------|
| <b>a. Comparison of workplan (milestones) versus results obtained</b>         |  |   |                        |
| Workplan (milestones)   | Which results have been obtained?  | Which aims/goals have not been (fully) reached? | Completeness ratio (%) |
| <b>Milestone 1. Meeting of the Barley Working Group</b>                       | - Meeting with 21 members and 4 observers during Cereals Network Meeting (April 2008, Turkey)  |   | 100                    |
| <b>Milestone 2. Barley Core Collection (BCC) completion and documentation</b> | - Subset genetic stocks available<br>- BCC documentation improved  | - Ethiopian/Eritrean subset remains unsolved    | 50                     |
| <b>Milestone 3. Pre-breeding</b>  | - Group of interested participants established<br>- Ring tests continued<br>- Project proposal pre-breeding for climate change prepared for Phase VIII | - joint pre-breeding activities not started yet | 70                     |
| <b>Milestone 4. List of wild <i>Hordeum</i> spp.</b>                          | Planned for Phase VIII   |   | 50                     |

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| <b>Milestone 5. EBDB development</b> | <ul style="list-style-type: none"> <li>- transfer to Oracle completed</li> <li>- new web interface developed</li> <li>- contacts with other regional/global barley information systems continued</li> <li>- data contributed to Global Barley Register (ICARDA)</li> </ul> | <ul style="list-style-type: none"> <li>- full integration with other systems not achieved</li> <li>- uploading mechanisms not modernised</li> <li>- contents not updated</li> </ul> |  |
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**b. Contribution to the four ECP/GR priorities for Phase VII**

1. Characterization/evaluation (including use of modern technologies)

*Most genebanks continued characterisation and evaluation of their accessions; however, these activities are not coordinated across the Barley WG.*

**International Barley Core Collection (BCC).** Complete the International Barley Core Collection with an Ethiopian/Eritrean subset and a subset on genetic stocks; further develop the BCC documentation; study the BCC using molecular markers.

*The subset of genetic stocks was defined and developed (initially multiplied) by J. Franckowiak (Fargo, North Dakota, USA) and U. Lundqvist (Svalöv, Sweden) and is now available from the USDA Small Grain Collection (H. Bockelman, Aberdeen, Idaho, USA). Studies towards defining an Ethiopian BCC subset are being carried out under supervision of A. Björnstad, Norway, but the present situation is not known. The problem of creating an Ethiopian/Eritrean subset remains unsolved. An own BCC documentation system was not created, but the BCC accessions can be searched via the EBDB and via the IPK genebank information system (Gatersleben, Germany). A BCC status meeting was held in September 2007 in Tunis, Tunisia, in conjunction with the Barley Strategy meeting of the Global Crop Diversity Trust. The BCC has been used for evaluation and molecular marker studies; an overview of its utilisation and study will be compiled for 2009. The BCC activities have been carried out without any external funding for the last 15 years.*

**Pre-Breeding.** Set up an ECP/GR task force of barley breeders and scientists with an interest in pre-breeding and base-broadening, and develop regional cooperation in this issue in collaboration with FAO.

*This group was formed under the coordination of Marja Jalli (Finland) during the Barley Genetic Resources Workshop in Brno, 20 June 2004. Some pre-breeding and base-broadening has been carried out independently in different research institutes/breeding companies (unfortunately with decreasing funds), some cooperation has existed between institutes but no common structure evolved yet in this area. However, in view of climate change there is an increasing need for pre-breeding and base-broadening through genetic resources, and now, the time could be more 'ready' both for the cooperation and for funding. As a result of the Barley WG meeting during the Cereals Network Meeting in April 2008, a project proposal to convene a thematic meeting for pre-breeding and base-broadening for climate change, with focus on barley, was developed for Phase VIII. Marja Jalli attended a workshop on pre-breeding in China in 2006 with funding from Bioversity International.*

*A ring test on barley net blotch (under the coordination of Marja Jalli, Finland) that started as an activity of the Barley WG in its meeting in Salsomaggiore in 2000 has been carried out since then, with the main objective to test the behaviour of net blotch resistant breeding material under different environments. For example, in 2007 seven countries were involved.*

## 2. Task sharing

**AEGIS.** The Group had previously decided to observe the progress with the four model crops, and especially the cereal, *Avena*, with the objective to adopt the results for barley when available.

*No progress could be made so far with barley. At the barley meeting during the Cereals Network Meeting, AEGIS was a major topic, and steps were decided for involving barley into the AEGIS process, including updating the European Barley Database as a prerequisite, refining the primary and secondary AEGIS criteria, and designating the first AEGIS accessions. Details will be decided upon during the planned Barley WG meeting in Phase VIII.*

### **Safety-duplication.**

*A safety duplication network has not been established. Individual genebanks reported that part of their material is safety-duplicated elsewhere, in other genebanks or in the Svalbard Seed Vault; this will be continued. The Group recommended to widely utilising the Svalbard Seed Vault for safety duplication of barley accessions.*

## 3. In situ/on-farm conservation and development

**List of wild *Hordeum* spp. occurring in the ECP/GR mandate region.** Identify species and areas in need of protection, in cooperation with the EU project PGR Forum and the ECP/GR In situ Task Force.

*This task was carried over to Phase VIII, and the list of species and occurrences will be developed based on the Crop Wild Relative Information System (CWRIS) developed during the PGR Forum Project at Birmingham, UK, and the database of Flora Europaea (Bot. Garden Berlin-Dahlem, Germany).*

## 4. Documentation and information

**EBDB.** Further develop the European Barley Database at IPK, transfer it to Oracle, develop new and user-friendly search interfaces.

*The EBDB was transferred to Oracle and equipped with a new web interface. Due to persisting personnel constraints, no real progress could be made besides this.*

Develop updating mechanisms based on retrieving barley data from EURISCO instead of, or in addition to, requesting new updates from data providers (contributing genebanks). The mutual access procedures between EURISCO and central crop databases need to be clarified.

*The progress in the field of documentation in ECPGR with respect to replacing the present updating mechanisms by webservice-based access is very slow, and the new technology could not yet be applied for the EBDB.*

Seek cooperation and integration between the EBDB and other international databases and information networks on barley genetic resources (such as SINGER, Global Barley Genetic Resources Inventory, GRIN) and the Database on Barley Genes and Genetic Stocks (BGS).

*The EBDB was invited to join the Global Barley Register (developed by ICARDA within the GPG2 programme) and contributed its data. Information from the EBDB was used for an assessment of the importance of European barley collections in the Barley Strategy of the Global Crop Diversity Trust. A closer collaboration to form a global network could not be established due to lack of personnel resources.*

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| <b>c. Relevance (regional / international)</b>   |
| <p>Did your work and/or outputs have inter-regional dimension? (if it did, give precisions)<br/> <i>The chairman was invited to represent the ECPGR Barley Working Group in a meeting of the GPG2 (Global Public Goods) Informatics Work packages (Rome, May 2007) and participated in the development of the Crop Strategy for Barley of the Global Crop Diversity Trust (meeting Tunis, September 2007).</i><br/> <i>A workshop on barley genetic resources, including the BCC, was organised during the 10<sup>th</sup> International Barley Genetics Symposium in Alexandria, Egypt, April 2008.</i></p> |
| <b>d. Lessons learnt (recommendations)</b>   |
| <p>Which lessons learnt are also relevant for other Working Groups?<br/> - <i>A clear specification of AEGIS elements, prerequisites and outputs (especially from the cereal model crop, Avena) will stimulate task-sharing activities.</i><br/> - <i>Collaborative projects involving many partners of the WG are valuable for enhancing the coherence of the WG. It is expected that if the pre-breeding project will be carried out, this will strengthen the WG.</i></p>   |

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| <b>II. ANALYSIS</b>  |   |
| <b>a. Bottlenecks</b>  |   |
| What were the experienced bottlenecks?   | How do you plan to solve the bottlenecks?   |
| 1. The major constraint for further progress in developing the EBDB (updating, technological improvement, day-to-day maintenance) is the lack of permanent core-funded staff.  | A formal agreement between ECPGR and the host country (Germany) and/or the host institute (IPK) concerning the continuous input-in-kind into the ECPGR activities, with commitments to provide the necessary staff capacity, could improve the situation. |
| 2. Task sharing  | The cooperation in implementing AEGIS, planned for Phase VIII, will stimulate task sharing  |
| <b>b. Internal support needed (Secretariat, Steering Committee, other Working Groups, etc.)</b>  |   |
| <p>Support is continuously needed from the Secretariat in preparing and organising meetings, updating the Network and WG websites etc.<br/> Collaboration with the Documentation &amp; Information Network desired for developing novel technology and approaches for PGR documentation networking, for the benefit of the development of the EBDB<br/> Collaboration with the <i>In situ</i> /on farm Network (CWRIS) in developing the list of wild <i>Hordeum</i> species occurring in Europe, participation in the <i>in situ</i> conservation meeting</p> |   |
| <b>c. External resources needed (collaboration, external funding)</b>  |   |
| External funding will be needed to support the planned pre-breeding project for climate change   |   |