

About the Whealbi Project

The Whealbi project, started beginning of 2014, stems from the strong conviction that to improve wheat and barley production in order to face severe global changes, we need to better exploit knowledge from basic science to develop new varieties and innovative cropping systems.



WHEALBI will combine genomics, genetics, statistics and agronomy to improve European wheat and barley production in competitive and sustainable cropping systems. It will generate original data from expressed genome sequences of 1000 wheat and barley genetic resources and provide models and tools to integrate these data in breeding programmes and crop management.

The results will be disseminated to a broad user community, highlighting the benefits and issues associated with the adoption of what is considered sustainable and environmentally friendly wheat and barley crop production in a European context.

Stay tuned!



A website explaining the goals and presenting the project results is available:

» www.whealbi.eu



The WHEALBI project will deliver many outputs to different stakeholders:

To the plant breeding community:

- › A list of candidate genes and alleles involved in key traits such as grain quality, frost and drought tolerance and resistance against fungal diseases;
- › A list of genes exhibiting signatures of selection and estimates of allelic effects, as potential candidates for marker assisted selection;
- › Pre-breeding pipelines to integrate new useful variation into applied breeding programmes, including those from old varieties and wild relatives;
- › Prediction equations of genome estimates of breeding value (GEBV) for key adaptive traits;
- › A list of ideotypes suited for innovative sustainable cropping systems, with reduced environmental impact, useful for setting new breeding goals.



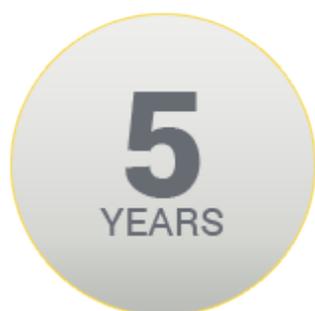
To the scientific community:

- › A “legacy” of genotyping-by-sequencing data of a “thousand genome” set of diverse accessions of wheat and barley;
- › A huge dataset of evaluation data of key-adaptive traits of the 1000 accessions in a wide range of environments across Europe;
- › Guidelines and protocols for Next Generation Valorisation and Utilisation of PGRFA collections;
- › Phenotypic data of a selected subset of wheat and barley accessions from high throughput/precision phenotyping for canopy development, drought tolerance and disease response;

To the farmer’s community:

- › Proposals for new sustainable crop management systems and their economic evaluation at both farm and EU levels;
- › Advices to policy makers at EU level on project related impacts (e.g. in relation to support agriculture, agro-environment and other CAP - Common Agricultural Policy -related issues).

Whealbi by the numbers



Research and innovation
(2014 -2019)



From the European Union
under the FP7 programme
for research and development



European research
area partners



Martonvasar Centre, near Budapest, hosted Whealbi's first annual meeting

The first annual meeting was hosted by the Centre for Agricultural Research of Martonvasar (Hungary) from the 20 to the 22nd of May 2015.

This first consortium meeting after more than one year allowed seeing the advances in the different workpackages. A particular focus was given to the "Common Garden" trials, large field experiments with more than 1000 wheat and barley accessions showing a very broad diversity. These 1000 accessions, cultivated in small plots in 5 different countries (UK, France, Turkey, Hungary, Italy) will be scored for many different morphological and adaptive traits, allowing in a second step with their genotyping to search for specific gene variants, including the genes involved in the adaptation of the accessions to specific environments as well as those selected during the domestication process.

Below are some pictures from the "Common Garden" field experiment



General view of the Common Garden experiment



Example of genetic diversity between different wheat accessions



Members of the consortium scoring barley



Accessions are evaluated both for winter and spring habit. Above, the wheat spring test



News from the european union : new opportunities in horizon 2020 for agricultural research and innovation

Apart from the call for proposals released every two years in the new Framework program Horizon 2020 (open calls can be found on : <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html>), an European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) was launched by the European Commission in 2012 (<https://ec.europa.eu/eip/agriculture>).

The goal is to foster a competitive and sustainable agriculture and forestry sector that “achieves more from less”. It contributes to ensuring a steady supply of food, feed and biomaterials, and to the sustainable management of the essential natural resources on which farming and forestry depend, working in harmony with the environment. To achieve this aim, the EIP-AGRI brings together innovation actors (farmers, advisors, researchers, businesses, NGOs, etc) and helps to build bridges between research and practice.

One EIP focus group is dealing with genetic diversity, topic closely related to WHEALBI: <https://ec.europa.eu/eip/agriculture/en/content/genetic-resources-cooperation-models>.

Focus on companion projects

Other national or European projects share close thematics to WHEALBI. The news are:

- › <http://www.healthyminorcereals.eu/> : this European project, issued from the same European topic than WHEALBI is dedicated to the minor cereals spelt, rye, oat, einkorn and emmer. The project is ending its second year. The second year newsletter with the last results is available on the website.
- › <http://www.breedwheat.fr/> : The French project **BREEDWHEAT** aims at strengthening the competitiveness of the French wheat breeding sector as well as to address the societal demand for sustainability, quality, and safety in agricultural production. It organises the First International Wheat Innovation Workshop the 16 and 17th of November 2015 in Clermont-Ferrand (France).
- › <http://www.dropsproject.eu/> : The European project **DROPS** about Drought Tolerant Yielding Plants (with models on wheat and maize) is finishing, and organising with Eucarpia a final conference in Montpellier the 8th and 9th of June 2015. The conference is at the crossroad of plant and crop physiology, genetics and breeding. It aims at presenting an accurate view on recent advances in the mechanisms associated with plant response to water deficit, on these mechanisms phenotyping, on their genetic variability and on the modelling of relevant allelic effects on plant behaviour under changing climates.

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