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13TH INTERNATIONAL BARLEY GENETICS SYMPOSIUM, RĪGA, LATVIA, 3–7 JULY 2022

The International Barley Genetics Symposiums (IBGS) has been organised since 1963, usually every four years, but these meetings had never been held in the Baltic states before, and the last meeting in Europe was in 2004. The international barley research community has always been active and involved in a wide range of research as one of the most collegial, collaborative, and downright friendly scientific groups in the world. IBGS are most important scientific events for barley researchers and breeders and have played a significant role in fostering scientific interchange and social interaction for many years and attracted participants from all around the world to discuss progress of their state-of-the-art research.

Overall, the organisation of IBGS13 in Rīga, originally scheduled for July 2020, was challenging, but this event reaffirmed the resilience of the barley community in the background of the difficulties that have faced society in the past few years.

The IBGS13 symposium was organised by the Institute of Agricultural Resources and Economics (AREI), which is the leading crop breeding organisation in Latvia. The research directions of the institute are related to crop genetics and breeding, crop management and agroecology for sustainable farming, provision quality requirements of raw materials for processing of different end-use, as well as development of sustainable rural space, economic analysis for agriculture, food industries and fisheries. Breeding of spring barley in Latvia is carried out at the AREI Priekuļi Research Centre and Stende Research Centre located in Vidzeme and Kurzeme regions of Latvia, respectively, and their rich history extends for more than 100 years. Bearing in mind the priorities such as yield and its stability, lodging and disease resistance, grain quality criteria for malt, feed and food purposes, and specific criteria for organic farming, in total 25 barley varieties have been developed.

The venue for the 13th International Barley Genetics Symposium was the Academic Centre of University of Latvia,

Opening address by Professor Nils Stein on behalf of the IBGS International Organisation Committee.

Working atmosphere during one of ten Symposium sessions.

A view of one of the three poster sessions together with degustation of the wide range of products, including from barley, produced by Latvian food and beverage production companies.

Rīga. During the IBGS13, 46 oral presentations and 82 posters were presented, and 187 participants represented 30 countries spanning the globe. Invited speakers shared the recent and most important findings covering the hottest topics in ten thematic sessions:

IBGS13 thematic sessions	**Key speaker and the title of presentation**
The barley genome: from reference genome to structure and function	Martin Mascher (IPK Gatersleben, DE), "Pangenomics in barley and beyond"
Biotic stresses under climate change	Brian J. Steffenson (Department of Plant Pathology, University of Minnesota, USA), "Pan-genome enabled disease resistance gene discovery in wild barley"
Abiotic stresses under climate change	Sergey Shabala (School of Agricultural Science, University of Tasmania, AU), "Cell-based phenotyping approach for improving abiotic stress tolerance in barley"
Barley breeding and new breeding techniques: a way forward?	Jochen Kumlehn (IPK Gatersleben, DE), "Site-directed genome modification in barley — methods and applications"
Barley breeding: success stories	Birger Eriksen (Sejet Plant Breeding, DK), "Barley cultivar development in Europe — success in the past and possible changes in the future"
Genetics and breeding of biomass (resources use efficiency)	Daniel Julio Miralles (University of Buenos Aires, AR), "What were the physiological attributes modified by the breeders"
Barley end use: from food and feed to malting, brewing and novel products	Henrik Brinch Pedersen (Aarhus University, DK), "New potentials of the barley grain" Christoph Dockter (Carlsberg Research Laboratory, DK) "Acceleration with a purpose — ultrafast barley trait development for sustainable beer production"
Genetic and database resources: harnessing diversity	Nils Stein (IPK Gatersleben, DE), "At the dark side of barley diversity — the gap between discovery and user-friendly access"
Morphology, phenology, and development	Maria von Korff Schmising (Institute of Plant Genetics, Heinrich-Heine-University, Düsseldorf, DE), "Inflorescence development and floral abortion under stress in barley"
Baltic and Nordic barley: a regional perspective	Therese Bengtsson (Swedish University of Agricultural Sciences, Alnarp, SE), "Together we are stronger — United forces to promote Nordic pre-breeding in spring barley"

New tools, methods, most original findings and hypotheses as well as original ideas in barley research were presented also by new generation of scientists. Sixteen participants, including graduate students, post-doctoral researchers had the opportunity to present short presentations during a Flash and Dash session.

Professor Jerome D. Franckowiak presenting "Barley Chromosome Walk" along his collection, in which 14 genes from each chromosome are introduced into the variety Bowman background.

Three Evening Workshops included topics about some strategic directions defined by European Plant Science Organisation (EPSO) and discussion of how the Barley Community Initiative (BCI) could actively develop hereafter; and about the recent activities in research of barley genetic resources in the gene banks NordGen, ICARDA, and IPK-Gatersleben. Two candidate institutions representing Argentina and Scotland presented the potential venue of the next symposium in 2024.

On the final day of the symposium, a Barley Field Day was organised with a possibility for participants to observe their material in Latvian conditions. The Barley Field Day took place in Priekuļi, near the town of Cēsis, approximately 100 km from Rīga at the Priekuļi Research Centre of AREI. There were 11 contributors and 786 barley samples were received and sown including:

– different groups of induced Swedish Mutants originally for IBGS13 submitted by Udda Lundqvist from the Nordic Genetic Resource Centre;

– mutant lines from the collection of Michele Stanca ordered by CREA;

– OWB Doubled Haploid lines;

– CGIAR Barley Breeding Toolbox; Chromosome Walk;

– three ICARDA barley nurseries from Lebanon;

– large plot demos received from Ackermann Saatzucht GmbH & Co. KG, Estonian Crop Research Institute, University of Guelph, Ontario & University of Saskatchewan, ICARDA, KWS LOCHOW GMBH, Institute of Agricultural Resources and Economics and the University of Copenhagen;

– demo of Baltic barley varieties.

The summaries of the Symposium oral presentations and posters were published in the Abstracts e-Book.*

* https://ibgs.arei.lv/wp-content/uploads/2022/09/Abstracts_E_Book_15_09_2022.pdf

Group photo of IBGS13 participants during Field Day at Priekuļi Research Centre of AREI.

More detailed information about the IBGS13 programme, including also recordings of all presentations, can be found on the website: https://ibgs.arei.lv

The IBGS13 Local Organising Committee truly appreciates the sponsorships of ICARDA, Valmiermuiža, Latraps, Nordic Seed, Sejet Plant breeding, Boreal Plant Breeding, the Royal Physiographic Society of Lund, and the wide range of Latvian seed producers, food and beverage production companies.

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Māra Bleidere
Institute of Agricultural Resources and Economics
Head of the Local Organising Committee

13. STARPTAUTISKAIS MIEŽU ĢENĒTIKAS SIMPOZIJS, RĪGA, LATVIJA, 2022. G 3.–7. JŪLIJS

Sniegta īsa informācija par kongresa gaitu un galvenajām aplūkotajām tēmām.