Virtual Wheat Genetic Improvement Network (WGIN) Stakeholder Meeting

Wednesday morning 3rd March 2021

Time 9.30 am to 1.30 pm (entry via the MS_Teams lobby open from 9.15 am). The **panel discussion** section will start at approximately **12.25 pm**.

Chair - Peter Shewry (Rothamsted Research)

AHDB section

1. Wheat Market Update – 15 mins – ***Anthony Speight*** (AHDB Market Analyst)

Domestic grain market update and what could drive markets going forward by giving an outlook of global supply & demand. Further to that, what could happen to domestic markets as we approach harvest.

WGIN section

2. WGIN Introduction – 10 mins – ***Kim Hammond-Kosack*** (Rothamsted Research) WGIN project PI and Deputy Head of the Department of Biointeractions and Crop Protection

Since 2003, WGIN has been providing a research platform for the delivery of tools, resources and expertise for the identification of naturally occurring (useful) genetic variation in new traits. In WGIN phase 4 (2018-2023) we aim to deliver a suite of new resources and bioinformatics information that takes advantage of the fully sequenced wheat genomes now available. We are also focussing on 'in field' characteristics that could improve the resilience and sustainability of the wheat crop. WGIN also acts as a catalyst giving rise to multiple and diverse areas of research which are taken up by breeders, academic researchers and other funding agencies. In this presentation, I will give an overview of the activities ongoing within the WGIN 4 core project. (http://www.wgin.org.uk/)

3. Developing Genetic Strategies for UK Drought Tolerance – 15 mins – ***Clare Lister*** (John Innes Centre, Norwich) Research Scientist, Department of Crop Genetics

After four years of drought trials in Norfolk we have identified stable yield effects coming from the Spanish variety Garcia. We will present data to suggest that Garcia increases yield in drought conditions by adjusting the timing of spike development.

4. An evaluation of recent trends in nitrogen use efficiency (NUE) of UK wheat – 15 mins – ***Malcolm J Hawkesford*** (Rothamsted Research) Head of the Department of Plant Sciences

In this presentation I will summarise a Defra commissioned report to analyse trends in NUE in the WGIN Nitrogen Diversity trial (see link). Yields and nitrogen use parameters have been collected on this trial since 2004 using more than 60 commercial UK varieties at up to 4 nitrogen input rates. Trends in relation to the year of introduction of each variety as well as the influence of weather variables over this time period will be presented. All raw data are available via the WGIN website. The report to defra is available from http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=19975&FromSearch=Y&Publisher=1&SearchText=CH0109&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

BREAK - 10 mins – attendees please stay online.

Designing Future Wheat (DFW) section - to start at ~ 11.05 am

5. DFW - a BBSRC Coordinated Wheat Programme – 10 mins – ***Graham Moore*** (John Innes Centre) DFW Programme Leader

The BBSRC has funded an integrated programme bringing together wheat research at RRes, Earlham Institute, Quadram Institute, NIAB, EBI, JIC and the Universities of Nottingham and Bristol around four work packages. I will provide a brief overview of the Designing Future Wheat (DFW) programme, and the research being carried out.

6. **DFW WP4 – From Farm to FAIR: A Data Sharing Infrastructure for Designing Future Wheat** – 15 mins – ***Chris Rawlings*** (Rothamsted Research) Head of Computational and Analytical Sciences

This will be a description of the approaches we have taken in DFW to ensure that data generated in the project is openly available to the national (and international) wheat research community.

7. **DFW WP3 – Toolkits for Breeding** – 15 mins – ***Simon Griffiths*** (John Innes Centre) Department of Crop Genetics, Leader of the DFW Germplasm development

Academic discoveries have potential benefit for UK farmers, environment, and consumers. But there is no guarantee that this potential impact is realised. The Designing Future Wheat Breeders Toolkit (BTK) is an attempt to make sure that the outputs from this BBSRC programme are exploited as fully as possible. Here we aim to show WGIN stakeholders how the BTK operates and give some encouraging examples of outputs from it.

General interest section

8. **The CIMMYT Global Wheat Program: accelerating impact** – 15 mins – ***Alison Bentley*** (CIMMYT) Director of the Global Wheat Program

Over half of the world's wheat is produced in the developing world, providing an important source of food, nutritional and income security. Small farm sizes, over- or under-supply of agrochemical inputs and climatic instability all present major challenges to both productivity and sustainability. This talk will highlight the ongoing work of the CIMMYT Global Wheat Program to provide advanced germplasm to support wheat production in the developing world, including current priorities in accelerating genetic gains in breeding.

BREAK 10 mins – attendees please stay on line

Panel discussion section - to start at ~ 12.25pm

Topic: Gene editing and innovative breeding opportunities for wheat

Currently, the UK government is holding an open consultation on Gene Editing (https://consult.defra.gov.uk/agri-food-chain-directorate/the-regulation-of-genetic-technologies/) which is due to close on 17th March 2021.

How to submit your questions - Attendees will be invited to send in questions either in advance via the WGIN email – wgin.defra@rothamsted.ac.uk or during this virtual stakeholder event via the 'chat' function in Teams.

9. **Introductory talk on what is Gene Editing and what are the regulations** – 15 mins – **Huw Jones** (Aberystwyth University) Chair in Translational Genomics for Plant Breeding

10. **Wheat research projects using Gene Editing** – 15 mins – **Emma Wallington** (NIAB) Head of Crop Transformation

Panel Chair – Professor Peter Shewry (Rothamsted Research)

11. **Discussion period – 40 mins**

Invited Panel members

Johnathan Napier is a plant biotechnologist, interested in making high value lipids in plants. He is Flagship Leader at Rothamsted Research and Honorary Professor at the University of Stirling

Tom Allen Stevens is an Oxfordshire arable farmer and Editor of Crop Production Magazine (CPM). He has a passion for science and innovation in farming, and leads the British On-Farm Innovation Network (BOFIN) and the Gene-Editing for Environmental and Crop Improvement initiative (GEECI).

Emma Wallington *is the Head of Crop Transformation at NIAB. Her team* have greatly expanded the range of germplasm which can be utilised for transformation and GE to include UK elite varieties and durum wheats.

A UK wheat breeder – tbc