

The first GINie and the path to innovation.

The first ever joint meeting (GINie) of all the Defra funded Genetic Improvement Networks (GIN) was a success. Kindly hosted by the John Innes Centre, a landmark institute for plant science research, the meeting brought together, on a cold Monday morning, over a hundred people from the UK plant breeding community and wider sector.

There were delegates from different crop breeding companies, academics, AHDB, NFU, BBSRC and Defra, making the GINie a unique event for networking and indicating strong support for the role of pre-breeding research as an important part of the solution to challenges for the cropping sector.

The conference, skilfully chaired by Tom Heap (BBC Countryfile) opened with an outlook for British farmers, with Jack Watts, lead analyst from AHDB, identifying key strengths and challenges for the main UK crops and Dr. Peter Werner (KWS), representing BSPB, highlighting the influential role of the GINs in providing an indispensable platform for networking and open access data in crop improvement.

The Minister for Farming, Food and Marine Environment, George Eustice, keynote speech, was introduced by Heloise Tierney (Defra, GMO and EU Crops regimes) who focussed the discussion around the Defra Food and Farming 25 year plan, aimed at making the UK one of the great food nations. The themes of increasing crop productivity via new varieties, better crop protection and more precise inputs were highlighted by the Minister as key aspects to deliver this ambitious plan.

Almost as an answer to a staged question, in came each GIN presentation to show their systems view of crops improvement, whose aim is not to achieve only higher yields but a broader, deep rooted resilience. The GINs over the years tackled crop issues scientifically; creating an incubator of novel populations, traits, markers and skills that was publically available, and has accelerated the response to new threats, providing effective answers to agricultural challenges as they arose.

Resources like the Avalon-Cadenza (wheat) and the Saladin-Iceberg (lettuce) mapping populations produced, fixed and genetically analysed within WGIN and VeGIN respectively, fostered follow-on research in the UK and worldwide, underpinning the development of varieties with better resource use efficiency, disease and pest resistance, and longer shelf-life as well as automated phenotyping platforms and precision farming appliances. Germplasm studies and marker assisted selection within PCGIN and OREGIN are paving the way for the production of better quality seeds.

Stakeholders involved in each project confirmed that industry had particularly benefitted from and valued the networking nucleus of activity that had not previously existed and the genetic resources developed in partnership with them.

The lifespan of the GINs paralleled the genomics revolution, the sequencing in the last 16 years, of over a hundred plant genomes including rice, wheat, potato and oilseed rape, that provided breeders with a new set of tools and techniques to study the genetic make-up of a plant and its relationship with the phenotype.

Genomics is essential to develop more efficient plant cultivars and the limitations of this new green revolution, around the capacity to use, analyse, share and store the data produced and the need to integrate molecular biology in breeding programmes, have all been addressed in the GINs. This is what makes these Defra flagship projects a fundamental element of the mechanism that leads to innovation intended as a combination of creativity, science and market success.

Therefore the take-home message of this unique event was that the GINs ensure the UK's crops sector is ready to face the challenges and embrace the opportunities of the future, and the wish expressed by all the participants to the GINie was that these important networks do not disappear.

This special event was possible thanks to the excellent work of the John Innes Centre Knowledge Exchange and Commercialization team led by Dr. Gordon Jamieson, showing once again the importance of networking and collaboration among different people involved in agriculture to deliver excellent results.