Duxford Monitor Farm

Meeting Title: Yield and breeding

Date: 9 December 2019

Speakers: John Miles (KWS), Cathy Hooper (RAGT), Andrew Creasy and Henrietta Wells (Saaten Union), Sean Burns (AHDB)

Recommended List Sean Burns

- The new Recommended List is now available for the 2020/21 year at: ahdb.org.uk/rl
- There are highlights for all crops, including for example the new specialist varieties for OSR with clubroot resistance, Clearfield, HEAR and semi-dwarf.
- No CTL has been used in RL trials list for this new edition
- Further to industry consultation, the Recommended List is implementing new changes, such as:
    - Pocketbooks are changing to an app, available in summer 2020
    - Variety selection tool, available at: ahdb.org.uk/vst

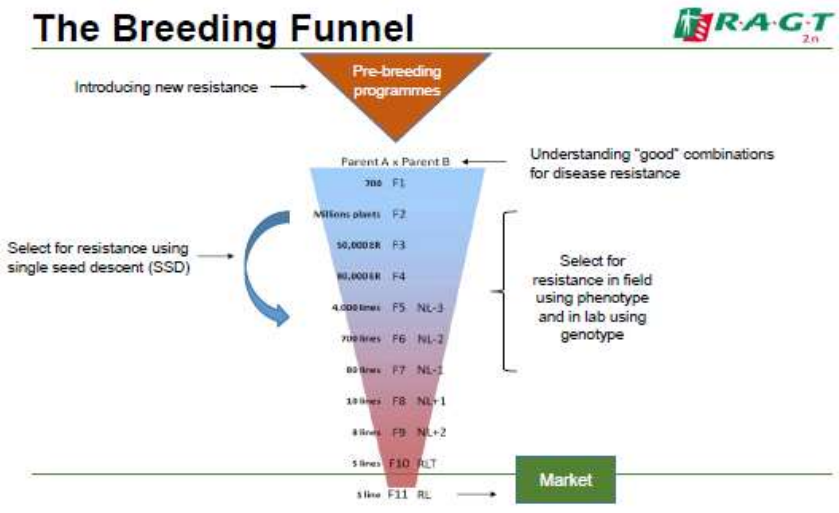
Further information

- Recommended Lists for cereals and oilseeds
- RL look ahead

Future traits and breeding opportunities

Breeding for the 21st Century, RAGT, Cathy Hooper

- The global breeding programme takes place at Ickleton
- The use of marker technology has transformed the breeding of varieties, reducing the analysis of one part of the process, from taking 1.5 days down to 30 minutes
- Genotypes and phenotypes (what it looks like in the field) are both examined to look at a successful variety.
- AI and machine learning is enabling large leaps forward again, eg. they are teaching the machines to look at septoria advantages.
- An illustration of the path for a new variety coming to market is pictured:



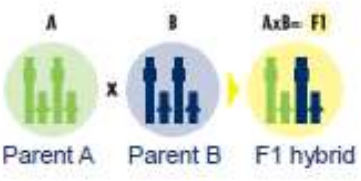
Septoria Resistance Breeding, KWS, Nick Bird

- Resistance is an area that is being looked at in detail with R & D – there is currently no known effective complete resistance available.

- Currently working on synthetic bread lines – many have high disease resistance and need adaptation to the UK situation
- There needs to be an awareness in agriculture of robust management to assist with genetic resistance. It takes approx. 10-15 years to bring a new resistance to the breeder with a cost of approx. £0.5M plus approx. £1M to breed a new variety
- New technologies are being embraced, such as improved phenotyping and genomic selection – originally used for yield, markers are also being placed for resistance

Hybrid Wheat Breeding, Saaten Union, Andrew Creasy and Henrietta Wells

- Hybrid wheat breeding involves taking two parents and crossing them, as below:



- The benefits, as a result, is called the heterosis effect and can include improvements in:
  - Root and shoot biomass
  - Tillering capacity
  - Ear fertility
  - Specific weight
  - Bigger leaves
  - N efficiency
  - Stress tolerance
  - Disease resistance

Take-home messages

- Ensure to protect any resistance from traits that are bred into varieties to keep them for use into the future
- Engage with breeders to understand developments of varieties and genomic selection
- Make full use of the details in the Recommended List for effective variety selection for your farm.

Further information

- Variety selection tool
- Why plant breeding matters video

AHDB resources

- Understand your business costs with AHDB's benchmarking tool Farmbench at ahdb.org.uk/farmbench
- Monitoring tools are available at ahdb.org.uk/tools
- Sign up to market information and research newsletters at ahdb.org.uk/keeping-in-touch
- Find out what's going on at other Monitor Farms and Strategic Farms at ahdb.org.uk/farm-excellence
- All AHDB events can be found at ahdb.org.uk/events
- For guidance on how Brexit will impact your business, see ahdb.org.uk/brexit

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CEREALS & OILSEEDS

