

# Plant Breeding Matters

Information from the British Society of Plant Breeders

Autumn 2019

## Lord Gardiner applauds the urgent and essential work of plant breeders

Plant breeding in the UK plays a vital role in increasing food production in a sustainable way and helping to achieve global food security, protecting our environment and improving our health and quality of life.

That was the strong message from Lord Gardiner, Parliamentary Under Secretary of State at Defra, speaking at BSPB's Annual General Meeting at the Royal Society. Paying tribute to the work of plant breeders, Lord Gardiner said:

'The work that you and your predecessors have done over hundreds of years is to transform our ability to produce food and improve the health and prosperity of so many people across the world. As minister for rural affairs and biosecurity I am the first to recognise how important it is for government to support our domestic plant breeding industry to enable it to deliver innovation through new crop varieties with improved crop yield, quality and pest and disease resistance, which of course is so vitally important to our farmers and in turn to our consumers.'

'Your work and the success of the businesses of science and crop

improvement couldn't be more urgent and essential.'

Lord Gardiner also noted the importance of plant breeders' rights for the economic success of plant breeding and the value of BSPB's royalty collection systems for future investment in breeding. 'I'd like to congratulate the BSPB on the success of its FAIR PLAY campaign in cooperation with the UK Farming Unions. Defra supports the UK plant breeding industry on its rights to collect royalties on plant varieties and of course to make a return on its investment.'

Looking to the UK's future outside the EU, Lord Gardiner concluded: 'The UK Government considers technical

innovation to be key to increasing productivity and sustainability in agriculture. You're in a sector which couldn't have more potency now.'

**"Your work and the success of the businesses of science and crop improvement couldn't be more urgent and essential"**



## Keeping the breeding focus on farmer challenges



Also speaking at the AGM, BSPB's outgoing Chairman, Dr Richard Summers welcomed Lord Gardiner's words, noting that whatever Brexit has in store for British agriculture and its allied industries, maintaining a competitive, productive and resilient crop production sector would depend on continued investment in UK-based plant breeding programmes and access to genetic improvement through high-performing varieties and quality seed. As he handed over the baton as BSPB Chairman to his successor, Andrew Newby, Dr Summers said that plant breeders remain focused on delivering innovation to address the key challenges facing UK growers, despite the current cloud of Brexit uncertainty hanging over prospects for future farm policy, trade and regulation.

'UK breeding programmes are delivering new and more durable forms of disease resistance across a range of crops to help growers cope with the loss of key crop protection tools, including recent progress with BYDV tolerance in wheat and barley, *Septoria tritici* resistance in wheat and intense research activity into virus yellows tolerance in sugar beet.'

'At the same time, the increased focus of breeding effort on delivering more stress-tolerant varieties has undoubtedly helped maintain crop performance and productivity in the face of greater and more frequent weather extremes, including the prolonged drought conditions of 2018.'



# Farmer Focus

## If I were Defra Secretary of State for a day

BSPB challenged two influential farmers to speak at its AGM about what they would do given the opportunity to be Defra Secretary of State for a day. With Lord Gardiner, Defra Minister for Rural Affairs and Biosecurity in the audience they did not hold back in telling us what matters to farmers.

**Tom Martin** thought he might need more than a day but would use his time as Defra Secretary to encourage honest communication about food and farming to the public, the majority of whom are divorced from farming and the countryside but more interested than ever in where their food comes from. Tom would want to:

- Get closer to the supermarkets who are in the front line of communication to their customers. 'They are not only sellers of food but also educators and purveyors of truth. We shouldn't be afraid of the truth.'
- Encourage farmers to be active and positive communicators, especially to reach the children who are 'not only our future consumers but also our future workforce and decision makers'.

**Joe Stanley** is a strong advocate for boosting the importance of domestic food security in government policy. Quoting former Secretary of State, Margaret Beckett, who believed that the UK did not need to worry about food as it could easily be imported, Joe was deeply concerned that some politicians still did not accept the importance of increasing UK self-sufficiency levels and he saw nothing in the current draft of the Agriculture Bill

to give him comfort on this. He wanted more than warm words about food production from government and as Secretary of State would set up a Food Policy Commission to develop constructive policies to address national food production targets.

Fearful of the politicisation of many regulatory decisions critical for farming and food production, Joe also wanted a more rational and evidence-based approach to regulation, taking greater account of the realities of farming; he would

- Adopt a more science-based regulatory approach to plant protection products 'a political football in Europe and nationally with farmers losing some incredibly vital products which we really do need to be able to produce food efficiently and safely'.
- Take a serious and collaborative approach to environmental measures. 'Farmers are more aware than anyone of the perils of climate change. We need to make sure that the mitigation steps we take are sustainable both environmentally and economically.'
- Ensure that biotechnology, especially gene editing, is not held back by over-regulation: 'the big win would be sustainability, the ability to grow more food on less land'.

Both our speakers concluded that this is an interesting and pivotal time for farmers as we leave the EU and the CAP. Will our policy makers and politicians heed their words?



Lisa Miosi Photography

### Tom Martin

After ten years working in the film industry, Tom returned home to the family farm, a predominantly arable holding in Cambridgeshire. He has a passion for sharing what happens 'behind the farm gate'. He is well known to social media followers as 'Farmer Tom' and founded 'FaceTime a Farmer' in 2016, an initiative now linking over 10,000 UK school children to farms for a fortnightly video call.



### Joe Stanley

Joe farms in Leicestershire on a mixed beef and arable farm. He studied history and worked outside the farming industry for several years before returning to the family farm in 2009. He has an active interest in agricultural policy, both through the NFU and as a regular columnist in the farming press. With his now famous Jack Russells, Joe featured in the BBC's *Focus on Farming* week earlier this year with live broadcasts coming from his farm.



# EU under pressure to reverse European Court ruling on gene editing

Farmers, plant breeders, scientists and politicians across Europe are stepping up efforts to overturn last year's ruling by the Court of Justice of the European Union (CJEU) that new gene editing techniques must be regulated as GM, amid concerns the decision will stifle R&D investment, damage EU farmers' competitiveness, and lead to major trade disruption.

The latest developments in precision breeding – collectively referred to as gene editing – allow targeted changes to be made at the level of individual genes, dramatically improving the speed and accuracy of plant breeding. Gene editing techniques such as CRISPR have already been shown to have potential to improve the climate resilience, disease resistance, nutritional quality and productivity of major crop plants, from drought tolerance in corn to mildew resistance in wheat, gluten-free cereals to healthier cooking oils.

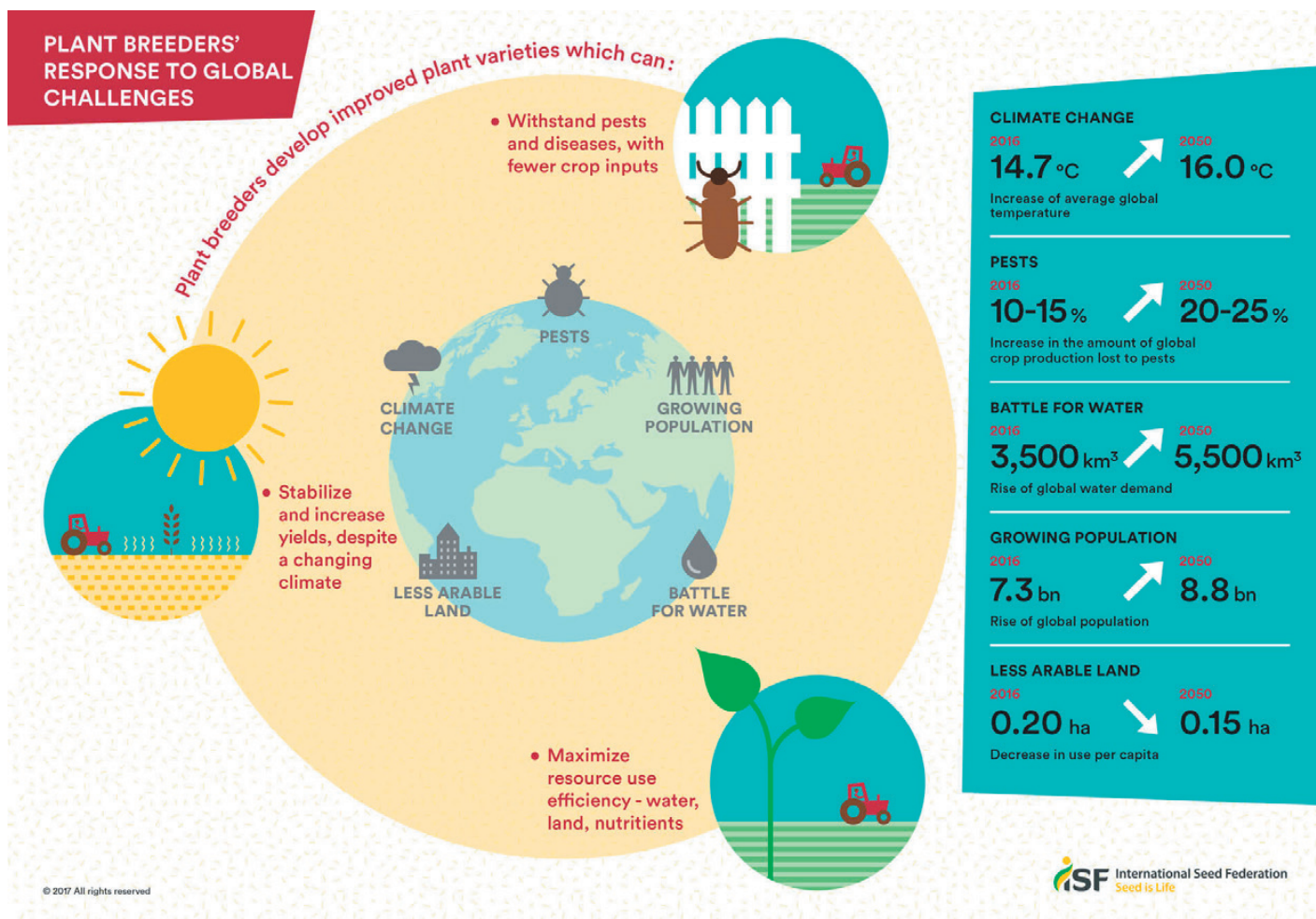
Across Europe more and more people are urging that plant breeding innovation be freed from the constraints

of GM regulation and asking the EU to align with other major agricultural producing/exporting nations such as the US, Canada, Argentina, Chile, Brazil and Japan, where gene editing techniques are not classified as GM. Pressure is building on the new Commission to prioritise this issue, including from 22 European Agri-Food trade bodies, 117 EU research institutes, the EU farmers' organisation COPA-COGECA, a Citizen's Initiative and a growing number of political leaders from EU Member States.

At home, successive Defra Ministers have indicated that gene editing could be an early candidate for regulatory divergence once the UK leaves the EU.

This was reinforced by Boris Johnson's pledge in his very first speech as Prime Minister to 'liberate the UK's extraordinary bio-science sector from the EU's anti-genetic modification rules', although this will ultimately depend on the terms of the trading relationship negotiated between the UK and EU post-Brexit.

Now the spotlight is on the new line-up of EU Commissioners taking office, and whether they will heed the growing calls for urgent action to reverse the damaging effects of the CJEU ruling. Our hope for farming, food and the planet is that they do.



*Genetic innovation is critical to address the big global challenges*

# Training tomorrow's plant breeders

Until its privatisation in the late 1980s, the Plant Breeding Institute in Cambridge was renowned as a prolific stable for young plant breeders, combining the fundamental plant science, applied crop research and commercial breeding activities needed to train and prepare new entrants to the profession.

Many of today's most successful plant breeders, now approaching the latter stages of their careers, entered the industry through this route.

For aspiring plant breeders today, the post-graduate MSc course in Plant Genetics and Crop Improvement – run jointly by the University of East Anglia (UEA) and the John Innes Centre (JIC) – has earned a similar reputation as a recognised entry point for the next

generation of plant breeders.

Now in its twentieth year, the course is unique in its focus on equipping students with a broad understanding of the scientific and practical aspects of crop improvement, and in its partnership with commercial plant breeding companies.

The MSc incorporates scientific modules covering topics such as molecular genetics, plant genomics and statistics for plant science, as well as a six-month

laboratory-based research project.

Alongside the plant science expertise at JIC, the course is strongly supported by BSPB and its member companies through a regular programme of lectures and visits to plant breeding stations.

Here four past students describe their experience of the MSc course, and how it helped prepare them for a career in the plant breeding industry.



## Will Pillinger Pulses Breeder, Limagrain UK

I became interested in plant breeding and crop development after studying agriculture at Harper Adams. In July 2001, I began working for Advanta Seeds at Boothby Graffoe, Lincolnshire, as a member of the field and vining pea breeding team.

I re-located to North Norfolk in 2005 when the company changed ownership to Limagrain UK. By 2007, my main focus had shifted towards vining peas, and a brief spell leading the vining pea programme as maternity cover fuelled my interest in the Plant Genetics and Crop Improvement MSc at UEA.

From 2009-2011, I took the course

part-time over two years whilst continuing my full-time role with Limagrain which, although challenging, was extremely rewarding. The content of the course and the relationship with JIC is second to none and I would recommend the MSc as a great springboard to anyone interested in pursuing a career in plant breeding.

As a result of the additional MSc qualification, I took over responsibility for vining pea breeding, and led the marker-assisted selection programme for Limagrain pulse activities.

In 2017, after a restructuring of the business, I was promoted to global pulses breeder for the Limagrain group.

## Gabriella Everett Assistant Barley Breeder, KWS UK

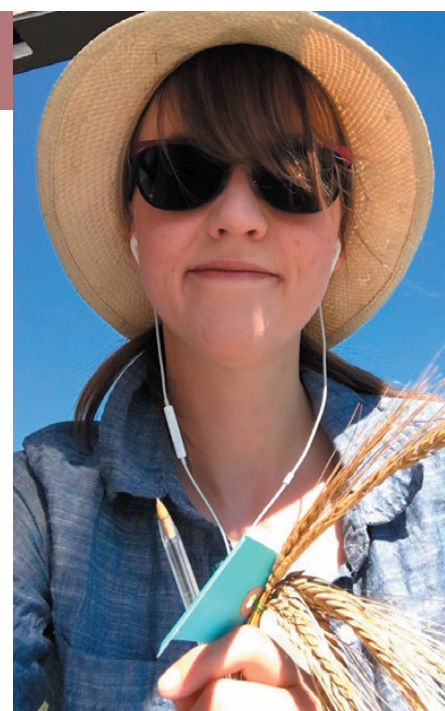
After completing a Biology degree in Brazil, I took on a temporary job working for a multinational plant breeding company. Working alongside the researchers and breeders confirmed my ambition to pursue a career in plant breeding, but I needed further qualifications to move forward.

The MSc in Plant Genetics and Crop Improvement at UEA was recommended to me by my university tutor, and after researching other courses elsewhere in Europe and North America I applied to take the course full-time from 2014-15.

What sets the UEA course apart is that lecturers and tutors are not only up to date with the latest developments in plant genetics and

molecular science, but they are also closely linked to what is happening in the plant breeding industry. These connections are reinforced by the direct involvement of commercial breeders as guest lecturers on the course. For the past two years I've had the opportunity to go back to the MSc to lecture on barley breeding, and I enjoy the chance to give back to a course that was so formative for me.

The knowledge, skills and contacts I acquired on the MSc course led to my current role as Assistant Barley Breeder at KWS UK, where my focus is on releasing elite barley varieties and identifying and introducing new sources of disease resistance and other traits of value to growers.





## Joshua Ham

### Assistant Wheat Breeder, RAGT Seeds

A degree in microbiology at Cardiff University first stimulated my interest in the relationship between plants and bacteria, and the interaction between crops and environmental stresses.

I applied to study the MSc course at UEA full-time from 2014-15, initially thinking it would lead to a role in plant pathology.

However, the technical content of the course, the direct involvement of plant breeders as lecturers, and the opportunity

to visit commercial breeding stations, gave me new insights into plant breeding as a potential career path, and a way to apply plant science in a real-life, practical context.

Through the course I made valuable contacts in business and academia, which led to further opportunities in cereals-related research at Limagrain UK and Rothamsted Research, before I secured my current role as a member of the wheat breeding team at RAGT Seeds.



## Phil Tailby

### Wheat Breeder, Limagrain UK

After working in seed production for seven years and with an interest in pursuing a career in plant breeding, the MSc was recommended by a colleague who had already completed his first year part-time.

Having researched the course contents, which balances broader plant science topics with the specifics of plant breeding, I applied to take the MSc on a part-time basis from 2009-11.

I can honestly say it was the best decision I have taken in my career so far. The knowledge and skills I gained on the

MSc helped further my career from seed production to my current role as a wheat breeder with Limagrain UK.

I particularly valued the opportunity to interact with world leading plant scientists, and during the six-month research project – with access to the support and facilities of UEA and JIC – I learnt skills that have proven invaluable in my plant breeding career.

We are fortunate in the UK to have so many outstanding scientists, especially in plant genetics, and this MSc has many of them contributing to the course.

# Andrew Newby is new BSPB chairman

**Andrew Newby, regional Director UK & France for KWS, has been elected chairman of BSPB for the next three years.**

Speaking after his election at BSPB's Annual General Meeting in October, Mr Newby paid tribute to his predecessor, Richard Summers of RAGT Seeds, and looked to the future.

"As the incoming chairman, I look forward to continuing to support the innovation process, to ensure Britain's farmers enjoy the benefits of continued investment in improved crop varieties, tailored to the UK's specific growing conditions and market requirements," said Mr Newby.

## Profile

Andrew Newby has worked in the plant breeding and seeds sector for more than 30 years, with a varied background from plant breeding to seed production and sales. He joined KWS (then CPB Twyford) in 1996 where he led the business into a fully integrated KWS branded company in 2005.

A hands-on commercial operator, he manages the company's integrated sales and marketing strategy for cereals, oilseed rape, maize, potatoes and sugar beet.

From 2014 Andrew held the position of Managing Director for the UK and in January 2019 took the position of Regional Director for UK and France responsible for leading the strategy for the KWS Group cereals business unit.

Driving the communication between the breeding and

commercial teams has been one of his main business ethics for identifying the most relevant varieties. Operating in the here and now aimed at a firm vision of the future is his main business style.



# Farmers quizzed on FAIR PLAY rules

The BSPB team toured the country this summer promoting the FAIR PLAY message, engaging with farmers at NIAB open days and other events to talk about topical issues, farming practices and, of course, the rules for using farm-saved seed.



*Olivia Herdman presents Adrian Howell with his prize*

Leaflets were also distributed widely through the farming press and by BSPB's partners in FAIR PLAY, the national farming unions. All of this activity was to ensure a level playing field in which all producers recognise and contribute fairly for the benefits of genetic innovation.

This year the Society also held a prize draw quiz for farmers on FSS rules, to get farmers thinking about what they can and cannot do.

With each entry to the quiz BSPB made a donation to the Royal Agricultural Benevolent Institution (RABI) which gives a lifeline to farmers.

Adrian Howell (pictured), who farms at Gayton Thorpe near Kings Lynn in Norfolk, won a luxury hamper brimming with local food and drink products after his quiz entry was selected in the prize draw. See if your knowledge is as good as Adrian's by answering the quiz questions.

**RABI**  
Supporting Farming Families

**FAIR PLAY**  
ON FARM-MADE SEED

Here is a reminder of the FSS Quiz questions and the all-important answers:

**Q1. Is it illegal to fail to declare the use of FSS?**

Yes, by law all use of farm-saved seed must be declared to BSPB

**Q2. Can I use FSS from my neighbour?**

No, it is against the law to transfer FSS from one holding to another for sowing.

**Q3. Do I need to pay for FSS in a cover crop mixture?**

Yes, the requirement to make a FSS declaration to BSPB and pay for the use of eligible varieties applies whether a crop is taken to harvest or not.

**Q4. Can I farm-save a hybrid?**

No, the legal exemption permitting FSS use specifically excludes hybrid varieties.

## Life on the road with BSPB's audit team

BSPB's two auditors, Alan Tuck and Daniel Jefferson journey the length and breadth of the UK. They can be found anywhere from Land's End to John O'Groats, wherever a BSPB-licensed seed merchant or farm-saved seed processor is based.

BSPB auditors visit most merchants and processors once or twice a year to check that the correct amount of royalty has been declared and paid so that it can be returned to plant breeders for reinvestment in genetic innovation through new varieties. As they travel around, Alan and Daniel are also happy to call in to see farmers to help with farm-saved seed declarations and queries. Increasingly they are also able to audit remotely using records supplied by companies, which is helping BSPB to meet its greening targets.

Alan has been with the Society since 2005 and is a well-known face throughout the seed trade and with farm-saved seed processors. Daniel joined in October 2018 and is enjoying getting to know the seed industry.



*Alan Tuck (left) and Daniel Jefferson*



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