



## All-Party Parliamentary Group on Science and Technology in Agriculture

**To: Rt Hon George Eustice MP, Secretary of State for the Environment, Food and Rural Affairs**

**22 July 2021 - By Email**

Dear George

I wanted to bring to your attention a joint statement issued yesterday on behalf of leading scientists and organisations along the length of the UK's crop improvement pipeline, urging the Government to take action on two fronts – regulation and R&D – to help unlock the enormous potential contribution of crop genetic innovation in delivering a healthier, more resilient food system.

A copy of the statement is included below. The need for bold action by Government on these issues is highlighted not only by the challenges set out in last week's National Food Strategy, but also by a series of recent high-level reviews undertaken on behalf of Government, UKRI and the EU plant breeding and seeds sector.

Of particular concern is the hiatus in research funding between early-stage genetic research and its application in commercial breeding programmes. This was first identified as a problem 17 years ago in a 2004 BBSRC review of crop science led by Professor Chris Gilligan.

According to Professor Jane Langdale's plant science review published earlier this year on behalf of UKRI, a fragmented R&D pipeline in plant genetics still remains a significant barrier to innovation, which means opportunities to exploit major advances in our understanding of plant science are being lost. Given the timescales involved, this must be addressed as a matter of urgency.

The joint statement also urges the Government to put in place a more proportionate and enabling regulatory framework for crop genetic innovation. Members of the APPG on Science and Technology in Agriculture were instrumental in making the case for the Government to regulate the products of gene editing techniques in the same way as conventionally bred varieties, rather than as GMOs.

We welcomed the public consultation issued by Defra earlier this year as a watershed moment for genetic research and innovation, paving the way to bring our rules into line with other countries around the world, and giving a much-needed boost to prospects for more sustainable farming and food production systems here and in less developed parts of the world.

We look forward to early confirmation of how the Government intends to progress the proposals set out in the consultation, as a first step towards a more coherent, science-based and integrated approach to harnessing the unique opportunities of crop genetic innovation.

Best wishes

Julian Sturdy MP  
Chair  
APPG Science & Technology in Agriculture

cc. Victoria Prentis MP, Minister for Farming, Fisheries and Food, Defra  
Professor Dame Ottoline Leyser DBE FRS, Chief Executive, UKRI

## **JOINT STATEMENT ISSUED ON BEHALF OF LEADING UK PLANT SCIENTISTS AND CROP RESEARCH ORGANISATIONS**

21 July 2021 – for immediate release

### **Take action to harness the unique contribution of plant genetic innovation, Government urged**

Responding to last week's National Food Strategy, leading players along the length of the UK's crop improvement pipeline, from fundamental and applied genetic science to commercial plant breeding, have issued a joint call on the Government to take action on two fronts – regulation and R&D – to harness the unique contribution of plant genetics in securing a more sustainable food future.

The John Innes Centre, Rothamsted Research, The Sainsbury Laboratory, NIAB and the British Society of Plant Breeders (BSPB), along with leading plant scientists at Britain's top universities, have welcomed the National Food Strategy's recognition of the importance of crop genetics in delivering the productivity, resource use efficiency and nutritional quality gains needed to support a healthier, more resilient food system.

Specifically, the National Food Strategy highlighted the need to invest in the latest science – including new breeding techniques – “to improve productivity without polluting the land,” and discussed the potential to increase crop yields by up to 30% through advances in crop breeding. The Strategy also set out the need for a Challenge Fund targeted at practical innovation that would shift the nation towards sustainable and healthy eating. Achievable innovations would provide alternative sources of protein, including plants and improved production of fruit and vegetables.

The joint call is for Government to ensure these innovations can take place by providing a proportionate and enabling regulatory framework for genetic innovation, alongside a more coherent R&D strategy for crop genetic improvement which ensures promising new genetic discoveries, for example in model plant species, have a clear translational pathway into crops and products of value to UK farmers and consumers.

In March 2021, a new plant science strategy, [\*UK plant science research strategy: a green roadmap for the next 10 years\*](#), led and authored by Professor Jane Langdale CBE FRS, University of Oxford, reached the same conclusions in relation to the need for a more enabling regulatory framework and a joined up R&D pipeline for crop genetic innovation.

Professor Langdale said:

“The modest and relatively inelastic income from seed royalties limits commercial plant breeders' ability to invest in more speculative or long-term targets. Because of this, and the lengthy timescales involved, the expectations of the current system for financing near-market and applied R&D is not working, and opportunities to exploit major advances in our understanding of plant science are being lost.”

“Sometimes referred to as the ‘Valley of Death’, this long-recognised hiatus between early-stage genetic research and its application in commercial breeding programmes was highlighted by a BBSRC Review of Crop Science, chaired by Professor Chris Gilligan, as long ago as 2004. Yet to this day a fragmented R&D pipeline in plant genetics remains a major barrier to realising the dimension-changing advances called for in Henry Dimbleby’s National Food Strategy.”

In February 2021, the [Dasgupta report](#) on the ‘Economics of Biodiversity’ recognised that while food production is the most significant driver of biodiversity loss, science-based innovation through precision agriculture, integrated pest management and molecular breeding techniques will help reduce this impact, and that innovation itself will also have positive economic impact, including the creation of jobs.

Meanwhile the central role of crop genetic improvement in meeting future food security, climate change and sustainable development goals was also highlighted in a May 2021 [study](#) by HFFA Research GmbH which concluded that, since 2000, progress in plant breeding has accounted for two-thirds of the productivity gains in UK arable crops. Without plant breeding over the past 20 years, the study found that crop yields would be 19.1% lower, and 1.8 million hectares of additional land would be needed in other parts of the world to meet the UK’s food needs, placing additional pressure on scarce global resources and causing more than 300 million tonnes of additional GHG emissions.

Looking forward, the HFFA study highlighted the challenges of maintaining the rate of yield improvement in the face of pressure to reduce pesticide and fertiliser inputs. It underlined the critical importance of access to new breeding techniques, such as gene editing, with the potential to accelerate the rate of progress in crop innovation.

NIAB chief executive Dr Tina Barsby OBE, who last year [brought together](#) a group of leading scientists to encourage the Government to bring the rules around gene editing into line with other countries such as Argentina, Brazil, Canada, Japan, Australia and the US, said the outcome of the subsequent Defra public consultation on gene editing was eagerly awaited by all those involved in crop innovation:

“A positive outcome to the consultation will send an important signal that Britain is set on a more pro-innovation trajectory outside the EU. It will boost prospects for inward investment and international research collaboration given the UK’s strengths in plant science.”

“In terms of breeding objectives, there are virtually limitless possibilities to accelerate the development of a more productive and sustainable food system, with crops more resistant to diseases, environmental conditions and climate change effects, foods with improved nutritional qualities, and reduced need for agricultural inputs such as pesticides,” said Dr Barsby.

Professor Sir David Baulcombe FRS, Royal Society Research Professor and Regius Professor of Botany Emeritus in the Department of Plant Sciences at the University of Cambridge, said:

“These recent reports set out clearly how there are needs and opportunities for bold government action in connection with the science of food and agriculture. The UK has

excellent national capability, based on years of Research Council investment, to address the challenges identified, with a skills base and research infrastructure poised to deliver innovation. We can revolutionise existing systems of food and agriculture and address the grand challenges in crop science. Ambition and imagination by the government will lead to the UK taking a leading role in the science and innovation of sustainable and healthy eating.”

Professor Angela Karp, Director of Rothamsted Research, added:

“Society will only successfully tackle the challenges laid out in the National Food Strategy report by embracing scientific solutions – by developing more nutritious foods that are accessible to all, that are grown in harmony with the natural world, and that allow farmers to earn a fair living.”

“The UK is home to some of the world’s foremost experts in agricultural research, experts who have already made great strides addressing the issues laid out in this report. What is needed now is for industry, government and civil society to help us to build on these breakthroughs and realise them in the wider world.”

Professor Dale Sanders FRS, Director of the John Innes Centre, said:

“We must urgently address the fact that the food we eat is damaging our planet. We need to develop new agricultural technologies and practices to reduce the sector’s contribution to the climate emergency. The production and use of fertiliser and pesticides in agriculture are a major source of greenhouse gas emissions. Genetic approaches offer a real opportunity to decrease their use, and in turn reduce the carbon footprint of food production. The recent rapid expansion of genome sequencing, paired with technologies such as gene editing, offers an opportunity to improve the crops grown for food for the benefit of the environment and human health.”

Professor Nick Talbot FRS, Director of The Sainsbury Laboratory in Norwich, said;

“There is a huge opportunity here to make significant progress in feeding an increasing population with more nutritious food, grown in a more sustainable way. But there is also a risk - that the Government delays in its approval of the use of new technologies in agriculture which would send a strong negative message to academics and investors alike, that the UK does not want to be in the vanguard of this sustainability revolution with all the potential opportunities that would arise from it.”

Samantha Brooke, chief executive of BSPB, said:

“There is widespread recognition that genetic improvement, delivered to the market through improved crop varieties, can contribute not only to more sustainable agriculture and food production, but also to the delivery of wider socio-economic, climate, biodiversity and resource conservation objectives. In fact, it is arguably the most significant factor.”

“BSPB strongly supports this joint call for an explicit focus on the policy measures needed to boost crop genetic innovation, from research funding priorities to the development of a more enabling and proportionate regulatory environment.”

**ENDS**

**Notes to Editors**

Part 2 of the *National Food Strategy* was published on 15 July 2021 – see [The National Food Strategy - The Plan](#)

*Final Report - The Economics of Biodiversity: The Dasgupta Review* was published on 2 February 2021 – see [Final Report - The Economics of Biodiversity: The Dasgupta Review - GOV.UK \(www.gov.uk\)](#)

*UK plant science research strategy: a green roadmap for the next 10 years* was published on 15 March 2021 – see [Ten-year roadmap to guide UK plant science – UKRI](#)

*The socio-economic and environmental values of plant breeding in the EU* was published on 12 May 2021 – see [HFFA-Research-The-socio-economic-and-environmental-values-of-plant-breeding-in-the-EU.pdf](#)