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Leading UK international development scientists back APPG call for Ag Bill amendment on precision breeding techniques

The All-Party Parliamentary Group (APPG) on Science and Technology in Agriculture is calling on the Government to support changes to the Agriculture Bill which would pave the way for the UK to ditch damaging EU rules blocking access to precision breeding tools vital for agricultural improvement at home and overseas.

On 7 May the Group's chair, farmer, EFRA Committee Member and York Outer MP Julian Sturdy, wrote to Defra Secretary Rt Hon George Eustice MP, urging the Government to introduce an enabling amendment during the Lords stages of the Bill.

The proposed amendment would provide new powers for Ministers to consult on and, if appropriate, make a simple change to the UK Environmental Protection Act giving Britain's scientists, farmers, plant breeders and animal breeders the same access to new gene editing technologies as their counterparts around the world.

In developing this proposal, the APPG considered evidence and views received from a wide range of stakeholders across the R&D, food, farming, plant breeding and international development sectors.

This note summarises three of the most compelling testimonies the Group received from UK-based plant scientists working to develop crops and traits of relevance to farmers in less developed regions of the world. All three scientists cited are 100% behind the All-Party Group's call for the Government to adopt an amendment to the Agriculture Bill paving the way for better UK regulation of plant breeding innovation.

Dr Sean Mayes, Associate Professor of Crop Genetics, University of Nottingham

Dr Mayes is an expert in crop genetics and marker assisted selection. He is focused on the improvement of major crops, such as wheat and oil palm, but also explores the potential of underutilised crops to complement the staple crops, for a more resilient and nutritionally diverse future agriculture. You can find out more about his research [here](#).



Dr Mayes considers that the UK adopting a more science-based and proportionate approach to regulating gene editing techniques could mark a 'water-shed moment' for agricultural development and improvement in poorer regions of the world.

"Early action on this issue by the UK would be seen as a water-shed moment, not only giving a significant boost to UK-based

research into under-utilised species and exploration of beneficial traits of relevance to developing world agriculture (resource use efficiency, stress tolerance, nutritional quality and yield), but also, when many African and Commonwealth countries have largely taken their lead from the UK, paving the way for policy and regulatory change in many developing countries to make available the key research tools needed to tackle some of the problems faced in the countries where population increase is most concentrated,” said Dr Mayes.

Professor Giles E.D. Oldroyd FRS, Russell R Geiger Professor of Crop Science, Crop Science Centre, University of Cambridge

Professor Giles Oldroyd is a plant scientist at the University of Cambridge, working on beneficial microbial associations that plants form to help in the uptake of nutrients, such as nitrogen and phosphorus. He has been a Royal Society Wolfson Research Merit Award winner and the Society of Biology (SEB) President's Medal winner. Since 2014 Giles has been in the top 1% of highly cited plant scientists across the world. He is director of the recently established Crop Science Centre in Cambridge, an alliance between the University of Cambridge and the National Institute of Agricultural Botany (NIAB).

Asked about the concerns of people who suggest his research strays into the realms of tinkering with Nature, or ‘playing God’, Professor Oldroyd does not mince his words:



“I do take their concerns seriously, and it is our responsibility as scientists to be as transparent and open as possible, and take time to explain the nature and purpose of our research. The primary objective of plant breeding is to generate novel sources of genetic variation and then select the most promising offspring for further testing and development. Over a period of many years, plant scientists and breeders have developed increasingly targeted ways of generating genetic diversity. The advanced breeding techniques under discussion in the amendment proposed by the APPG are the most precise crop improvement methods available today. They produce genetic diversity at very targeted locations, allowing an unprecedented level of precision. Varieties bred using these techniques have few off-target effects, in stark contrast to approaches used in the past, such as gamma ray radiation, that have been used to create many varieties still grown in both conventional and organic farming systems.”

“Much of the food we eat is grown with high dependency on chemical inputs, in order to sustain the high yields the world has grown to expect and needs. Finding alternatives to high-input farming is critical to deliver sustainable and equitable food production. I don’t believe the answer to this problem is organic, because of the significant yield losses associated with this system. I am hopeful that in the 21st century we can develop crops that deliver on productivity for all of the world’s farmers, but do so in a manner that is environmentally sustainable. The solutions lie in biological innovations in farming, and the new precision tools for plant breeding are an essential component to deliver productive, equitable and sustainable crops,” said Professor Oldroyd.

Professor Steve McGrath, Head of Sustainable Agriculture Sciences, Rothamsted Research

Professor Steve McGrath is a Soil and Crop Scientist at Rothamsted Research, where he is Head of the Sustainable Agriculture Sciences department. His key areas of research interest include GeoNutrition – understanding the bioavailability of nutrients from soils; their effects on yield and quality of food and feed, and biofortification of wheat with selenium and zinc to increase human dietary intake. Steve holds a BSc and PhD from the University of Sheffield and is an Honorary Professor in the School of Biosciences, University of Nottingham. His other honours include: Clarivate Highly Cited Scientist in agricultural science since 2001; the Royal Agricultural Society's Research Medal; Distinguished Visiting Scientist; Waite Institute Adelaide Australia; and Presidency of the International Society for Trace Element Biogeochemistry.

Professor McGrath believes that the effect of the APPG-led initiative in moving the UK away from Europe's current regulatory system, which holds back innovation, towards a more science-based approach, could deliver significant benefits for developing countries.



“The UK’s contribution to international efforts to use precision breeding techniques to help solve urgent issues in developing countries could be very great, including improving crop yields and thus alleviating poverty in the face of intense climate change. This is a very urgent issue in less developed regions, particularly in staple crops. Gene editing has great promise to speed up breeding of lines with improved traits for increased yields, resistance to pests and disease, improved nutrient value, enhanced diversity of diets and improving health. In future it could speed up improvement in local so-called ‘orphan crops’ that are underdeveloped in terms of their agronomic characteristics and economic value. Safe, nutritious and affordable food has to be a priority – this amendment would mean that the relative low-cost and accessibility of using gene editing techniques in research programmes such as ours could be genuinely transformative,” said Professor McGrath.

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Note to Editors

Julian Sturdy MP, chair of the All-Party Parliamentary Group on Science and Technology in Agriculture, wrote to Defra Secretary Rt Hon George Eustice MP on 7 May 2020 calling on the Government to support a targeted amendment to the Agriculture Bill, paving the way for the UK to adopt a regulatory definition of GMO compatible with the internationally recognised Cartagena Protocol, and thereby exempt simple gene editing applications from the scope of GM regulation and bring UK law into line with the regulatory stance of other countries around the world, such as the US, Argentina, Brazil, Australia and Japan.

A copy of the text of the letter is available [here](#)

A statement by the APPG is available [here](#)

Follow the progress of this initiative on Twitter @appg_agscience

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