

APPG on Science & Technology in Agriculture

**Notes of a meeting held on Wednesday 10 October 2018
Committee Room 18, Palace of Westminster**

Impact of Brexit on genetic innovation in the UK

Present:

Members

Earl of Selborne (chair)
Professor Lord Trees
Adam Barnett (pp Kerry McCarthy MP)
Dr Robert Thomas (pp Owen Paterson MP)

Guest Speakers

Graham Brookes, PG Economics
Professor Johnathan Napier, Rothamsted Research
Dr Julian Little, Bayer Crop Science

Stakeholders

Professor Jim Dunwell, Reading University; Jaine Chisholm Caunt, GAFTA; Garance Hadjidj, BASF; Paul Temple, Farmer/AHDB; James Wallace, IAR Agri; Hera Yanikian, FDF; Jennifer Wilson, USDA; Martin Jenkins, Farmer; Tom Allen-Stevens, CPM; Rob Clayton, AHBD; Professor Graham Jellis, AFCP; Paul Rooke, AIC; Mark Buckingham, Bayer; Vladimir Nekrasov, Rothamsted Research; Adam Dyster, National Trust; Dr Helen Ferrier, NFU; Mark Jacob, Defra; Saskia Hervey, Earlham Institute; Andrew Marshall, British Sugar; Anthony Keeling, Elsoms Seeds; Tom Atkins, National Trust; Jonathan Carruthers, Royal Soc of Biology; Oliver Hill-Andrews, BBSRC; Paul Smith, IRTL; Harry Brown, Farmer; Fiona McLoughlin, BEIS; Dr Bill Parker, AHDB; Hannah Smith, Defra; Tom Sheldon, Science Media Centre; Scott Pepe, NFU; Alastair Leake, GWCT; Harriette Roberts, Sainsburys; Alessandro Coatti, RSB; Professor Brendon Noble, UK Stem Cell Foundation; Dr Rich Clubbe, Sense About Science; Alex Waugh, nabim; Catherine Barrett, AIC; Jonny Hazell, Royal Society; Emma Wallington, NIAB; Daniel Pearsall, APPGSTA Group Co-ordinator

1. Welcome & Introduction

Lord Selborne welcomed members, guest speakers and stakeholders to the meeting, and briefly introduced the topic for discussion – the impact of Brexit on genetic innovation in the UK. He observed that access to new breeding technologies would be of critical importance for the future competitiveness and resilience of UK crop production, and that the All-Party Group had previously written to former Defra Secretary Rt Hon Andrea Leadsom MP in July 2016 urging the UK Government to take the lead in developing a science-based and enabling approach to the regulation of techniques such as gene editing, and to promote a harmonised approach to regulation on an international basis. The background to today's session, he noted, was the recent ruling delivered by the Court of Justice of the European Union in July 2018 that newer forms of gene editing should be regulated as GMOs, and concerns that the UK Government's proposals for a common rulebook with the EU in return for frictionless trade in agri-food might mean that Britain's farmers and scientists would continue to be bound by EU decisions in these promising areas of genetic research and innovation.

2. Guest speakers

[Guest speakers' slides are available to download via the meetings section of the All-Party Group web-site at www.appg-agscience.org.uk]

Graham Brookes, PG Economics

The session opened with the Parliamentary launch of a new report, commissioned by the Agricultural Biotechnology Council (ABC), examining the impact of future options for the regulation of genetic innovation in the UK. The full report is available to download at <https://pgeconomics.co.uk/pdf/abc%20brexit%20report%20final.pdf>.

Presenting the headline findings, agricultural economist and report author Graham Brookes (GB) noted that the failure of the EU regulatory framework for plant biotechnology to operate as originally intended had already contributed to a significant loss of high value-added research scientist jobs, leaving the UK subject to a crop trait research and development 'gap'.

According to GB, UK farmers and citizens were missing out on significant economic and environmental benefits – for example, the global adoption of herbicide tolerant GM oilseed rape had delivered an extra £44/ha in farm-level earnings, while the introduction of GM sugar beet in the US had increased farm income by £90/ha.

As a direct result of the EU's dysfunctional GM approvals system, private sector research and development expenditure in the UK biotech sector had fallen dramatically in the past 20 years, from about £50 million per year in the late 1990s to around £1.25 million today, he said.

From this baseline, GB explained that the report considered three future scenarios for the regulation of gene edited crops and genetically modified organisms (GMOs), ranging from maintaining current alignment with the EU, through improved UK implementation of EU rules, to the UK setting its own regulatory path on both GMOs and gene editing techniques.

This analysis concluded that a failure to break away from EU regulation in this area, including the recent CJEU ruling on gene editing, would prevent the UK from closing a research gap that is undermining the UK's ability to exploit rapid advances in crop-based innovation.

By contrast, GB suggested that if the UK was able to set its own sound-science-based regulatory system post-Brexit, it could provide the basis for a first-class food safety assessment system that would potentially strengthen investment in UK research, improve farmers' competitiveness, and optimise long-term economic and wider societal benefits to the UK.

GB highlighted the positive opportunities for UK growers of exploiting home-grown research advances such as the GM potato developed by scientists at the John Innes Centre combining blight resistance, bruising resistance and low acrylamide in a single variety. He suggested that diverging from the EU would be feasible even in the context of a free trade deal with the EU, since most UK crop production is used domestically and segregation of harvested crops is routine. In addition, GB considered that leaving the EU would open up new opportunities for trade, increasing the value and importance of new markets outside the EU.

Furthermore, any commercial development of GM or gene-edited crops would take a number of years to reach the UK market, by which time GB expressed the hope that pressure on the EU to make its rules work, potentially combined with a WTO case based on

the bloc's failure to comply with phytosanitary and other international standards, may prompt a re-evaluation the EU's approach to GM regulation.

Professor Johnathan Napier, Rothamsted Research

Johnathan Napier (JN) described his team's pioneering research using both GM and gene-editing techniques to develop Omega-3 enriched camelina as an alternative, more sustainable feedstock for the aquaculture industry.

He observed that recent progress in DNA sequencing had transformed biological science 'from a black box to an open book', adding that public sector scientists in the UK had always been world leading in plant biotech, feeding ideas and providing a strong knowledge base for development by the private sector.

But JN agreed that the translation of fundamental science was constrained by EU regulation. While gene editing techniques such as CRISPR were now routine in early stage laboratory research, providing the basis for faster and more accurate genetic improvement, the recent CJEU ruling represented a major blow for future crop genetic innovation.

JN suggested that plant scientists would not only be deterred by increased regulatory compliance, but the prospect of conducting field trials under high-security conditions was wholly disproportionate and would also send a misleading message to the public that these were dangerous technologies.

Continued regulatory alignment with the EU might mean that this year's first UK field trial of gene-edited camelina could also be the last, he warned, adding that the regulatory burden facing research scientists in this area might also deter investment by R&D funders who increasingly demanded a demonstration of societal or economic impact from research.

Dr Julian Little, Bayer Crop Science

Providing a private sector R&D perspective, Dr Julian Little (JL) asked whether the CJEU's shock ruling might represent a line in the sand for the UK Government and its plans for the UK to be a global leader in high efficiency agriculture.

He highlighted the strategic importance of maintaining access to new and emerging agricultural technologies in the context of more extreme weather events and a shift to global food deficit, with a 10% reduction in grain stocks forecast over the next 12 months.

The EU's anti-science approach to agricultural innovation was a major deterrent to commercial R&D investment. Research funding in plant biotech and crop protection specifically directed towards the needs of European farmers had been progressively withdrawn and was now virtually zero, he said.

In relation to gene editing, JL suggested that plans for a common rulebook post-Brexit could put Britain's farmers and scientists in a worse position than the current status quo. Not only would the UK would have no say over future decisions, but producers would also face the prospect of reduced support and increased competition from agricultural economies around the world where these new breeding technologies are not being regulated as GMOs.

JL highlighted the positive opportunities for the UK of re-aligning with these countries and pursuing a more enabling, science-based regulatory approach, not only in attracting inward investment and supporting innovation in UK agriculture, but also in developing new global markets. For example, the Netherlands' leading global position in vegetable seed exports,

worth €2.7 billion, could be seriously threatened by the CJEU ruling and this could present new openings for the UK, he said.

Underlining the importance of securing public acceptance for new agricultural technologies, JL challenged the assumption that consumers overwhelmingly rejected GM foods. He cited the recent launch of non-browning GM Arctic Apples in the US, which had sold out in their first year of marketing.

3. Questions and discussion

The following key points were raised during discussion:

The need to restore sound science as the basis for regulation, but also to create an environment in which the members of the public are engaged and encouraged to understand what scientists are doing and why.

The opportunity to capitalise on the current high-profile media debate surrounding climate change and the risks to global food security, declining food stocks etc to highlight the strategic importance of new breeding technologies in agriculture.

In particular, discussion highlighted the need to engage and inspire the next generation of consumers – recent survey work conducted in the UK has suggested that younger people are more willing to accept the use of new technologies in agriculture and food production.

While regulatory requirements for GMOs are similar around the world, the additional costs and delays of compliance within the EU are due to politicisation of the issue and an anti-science culture in relation to hi-tech agriculture.

The diverging regulatory approach being taken in other parts of the world was highlighted – eg Brazil, USA, Canada, Australia, Japan – where gene editing techniques are not being regulated as GMOs. This not only puts EU farmers and scientists at a disadvantage in the context of the CJEU ruling, it also risks major trade disruption without a common regulatory approach.

Publication of recent research by US and Chinese scientists has demonstrated the enormous potential of gene editing technology to deliver stable breeding improvements, avoiding off-types and offering the prospect of compressing the delivery of major genetic advances from decades to a matter of years. The UK must seek to exploit its global leadership in this field post-Brexit and not allow itself to be bound by the anti-science influence of the EU.

Recent comments by Defra Minister George Eustice MP at the Conservative Party Conference provide some encouragement that the UK Government is willing to ignore the CJEU ruling and pursue a more progressive and enabling approach to the regulation of genetic innovation post-Brexit.

Closing the meeting, Lord Selborne thanked guest speakers and attendees for their contribution to a lively and informative session, noting that the All-Party Group would have an opportunity to pursue this issue directly with Defra Ministers at the Group's AGM on 30 October, when George Eustice would be guest speaker.