



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

**Notes of a Meeting held on Tuesday 29 November 2022**

**Meeting Room W1, Westminster Hall and via Zoom**

### **UK food security in a volatile world – the case for sustainable intensification in UK commodity crops**

#### **In attendance:**

##### **Members:**

Julian Sturdy MP (Chair)  
Earl of Caithness  
Lord Carrington  
Lord Curry of Kirkharle  
Earl of Leicester  
Lord Cameron of Dillington  
David Duguid MP

##### **Guest speakers:**

Jonathan Halstead, Head North-West Europe & Managing Director, Syngenta UK  
Dr Chris Brown, Senior Director Sustainable Supply Chains, ASDA  
Andrew Crossley, Farms Director, Thurlow Estate Farms Ltd  
Professor Richard Tiffin, Chief Scientist, Agrimetrics

##### **Stakeholders:**

Prof Sir David Baulcombe, Cambridge University; Jim Duncumb, Syngenta; Prof Helen Sang, Roslin Institute; Rob Hill, Rothamsted Research; Joe Brennan, UK Flour Millers; John Royle, NFU; Prof Jane Langdale Oxford University; Simon Crawford, Burpee; Jim Godfrey, NIAB Chair; Graham Teakle, Warwick University; Prof Richard Napier, Warwick University; Martin Jenkins, MJ Farming; Prof Brendon Noble, Westminster University; John Shropshire, G's; Dr Helen Riordan, Defra; Thomas Wornham, NFU; Prof Huw Jones, Aberystwyth University; Prof Graham Jellis, ACFP; Ikrah Ul Hassan, Croplife UK; Jennie Wilson, Trade Roots; David Roberts, JIC; Stephen Walsh, Defra; Hugh Oliver-Bellasis, farmer & East Malling Trust; James Clarke, ADAS; Dave Bench, Croplife UK; Julian Smith, Rothamsted Research; Catherine Harries, AHDB; Christina Baxter, ADAS; Toby Townsend, ADAS; Pete Berry, ADAS; Jamie Smith, James Hutton Institute; Nick Anderson, Velcourt; Tony Pridmore, Nottingham University; Andrew Clark, NFU; Shandana Khan, Croplife UK; Martin Collison, Collison Associates; Dave Ross, Agri-EPI Centre; Peter Gadd, NFU; Sacha Mooney, Nottingham University; Siobhan Hillman, AHDB; Kristina Grenz, AHDB; Rose Riby, AIC; Jim Orson, BCPC; Tom Allen-Stevens, BOFIN; Liz Scott, NIAB; Olivia Seccombe, British Sugar; Henrietta Appleton, GWCT; Spencer Claydon, Claydon Drills; Oli Claydon, Claydon Drills; Jeff Claydon, Claydon Drills; Luke Gibbs, Syngenta; Jim Morton, Syngenta; Chris Baylis, Sir Richard Sutton Ltd; Richard Profit, Cool Farm Alliance; Mark Tucker, Yara UK; Dr Alastair Leake, GWCT; Vicky Robinson, LEAF; Charlie Whitmarsh, Frontier Agriculture; Harry Fordham, Syngenta; Bethan Postle, NIAB; Daniel Pearsall, Group Co-ordinator.

## 1. Introduction

APPG chair Julian Sturdy (JS) welcomed members, guest speakers and stakeholders to the meeting and introduced the topic for discussion, “*UK food security in a volatile world – the case for sustainable intensification in UK commodity crops*”. JS noted that the All-Party Group had long advocated a renewed policy focus on sustainable intensification in agriculture to meet future food needs in the context of a ‘perfect storm’ of population growth, climate change and pressure on finite natural resources, and that the meeting would provide an opportunity to hear first-hand what this means in practice from leading practitioners across the agri-food supply chain.

## 2. Guest speakers

(Copies of guest speakers’ slides are available to download via the Meetings section of the All-Party Group web-site [www.appg-agscience.org.uk](http://www.appg-agscience.org.uk))

### **Jonathan Halstead, Head North-West Europe & Managing Director, Syngenta UK**

Jonathan Halstead (JH) briefly introduced the members of a value-chain group with a shared interest in promoting the viability, sustainability and competitiveness of UK cereal production. He explained that four representatives of the group would provide perspectives from a food retail (Dr Chris Brown, ASDA), farming (Andrew Crossley, Thurlow Estate Farms), data science (Prof Richard Tiffin, Agrimetrics) and from himself/Syngenta as a R&D-based technology provider.

### **Dr Chris Brown, Senior Director Sustainable Supply Chains, ASDA**

Chris Brown (CB) opened by emphasising that the average consumer spends 20 seconds on each purchasing decision at the supermarket shelf. As a food retailer he also underlined ASDA’s support for good science, well applied, noting that the importance of maintaining a viable and competitive production chain for home-grown combinable crops did not always receive the prominence and attention it warranted.

CB noted that the concept of ‘food security’ was sometimes used as a proxy for food price spikes, suggesting that a longer-term perspective was needed to enable people to access enough safe and nutritious food to lead a healthy life, produced in ways the planet can sustain in the future. He highlighted the importance of consistent, output-related metrics in determining the impact of food production on natural capital factors such as soil, water and biodiversity, and in evaluating the productivity and sustainability of farming systems given the increasingly diverse pressures on precious land resources.

CB also observed that the sustainability and resilience of farming systems was increasingly driving the ESG (environmental, social and governance) policies of businesses within and associated with the food chain, including banks and finance companies.

Highlighting the importance of wheat as a key product for ASDA supply, CB noted that: 99.8% of households buy bread; 35% of 7k ASDA own brand products contain wheat; ASDA customers average 2.4 bakery items per shop; and over 95% of baskets contain bakery products.

Describing the ESG drivers for ASDA customers, CB suggested that people still care about greener choices and rank them highly in their priorities, but cost-of-living challenges are inevitably driving macro-level concerns over issues such as energy costs and general price inflation.

Concluding, CB emphasised the importance of a strong and positive domestic cereal sector providing surety of supply, innovative and internationally competitive, delivering attractive products, and deploying science in the right way to balance food production with other land uses.

### **Andrew Crossley, Farms Director, Thurlow Estate Farms Ltd**

Providing a farmer's perspective, Andrew Crossley (AC) briefly explained the historical background to Thurlow Estate Farms beginning with the family acquisition of just over 3200 ha in 1942 on the Cambs/Suffolk/Essex border, previously farmed by 36 different tenants, to 4800 ha today all farmed in-hand with an unashamed focus on efficient food production.

AC noted that the business is currently trialling regenerative farming practices on 4% of the farmed area, comprising a block of land in each crop and soil type to evaluate the impact on costs and output within the existing farm operation.

AC added that the farm has been an 'early-adopter' of precision farming techniques to optimise the targeting and efficiency of input use.

Following a switch from risk-based to hazard-based regulation of crop protection (CP) products, AC highlighted concerns over the declining CP toolbox available to growers, particularly in relation to fungicides, warning that a loss of 'curative' products to tackle disease issues may result in resistance build-up to remaining products and/or greater dependence on 'preventative' products which could increase overall CP use.

He highlighted the loss of clothianidin-based seed treatments which had led to increased use of pyrethroid sprays to control disease in cereals, questioning whether this was a step forwards or backwards, and suggested that growers had the technology and were well-placed to manage farm-level risk effectively.

Turning to other challenges for cereal growers, AC accepted that the pressures of ag-input inflation running at three times RPI had to date been adequately buffered by higher output prices as a result of war in Ukraine and a tighter supply and demand balance, but at some point he warned that those prices would "fall off a cliff".

AC pointed to gene editing and new breeding techniques as a way to reduce input dependence without reducing output, but the transition period before those traits became available needed to be managed to keep productive cereal farms in business.

In relation to farm policy, AC questioned how the shift to ELMs would help buffer the volatility in input and output prices, noting that Thurlow Estates had seen a £467k cut in Basic Payment Scheme receipts to date, of which only 20% had been clawed back through other schemes, leaving the business £300k out of pocket, and raising serious questions over how these new support systems would be sustainable. He warned that ELMs looked complicated, appeared to be based on an obsession with creating something new rather than evolving existing knowledge, and risked side-lining food production and/or economic outcomes.

AC accepted that 'public money for public goods' was a good concept in delivering environmental policy goals when farmers were responsible for managing such a large proportion of the UK land area, but he cautioned that farming businesses must remain profitable to deliver those environmental goods.

Noting that cereal production accounts for 68% of the UK arable area of 4.5m ha, AC raised a number of questions for policymakers in recognising the sector's importance and safeguarding its future:

- If an active ingredient (AI) is banned from use in the UK, why should we allow imports produced using the same AI?
- How can food and energy security be managed strategically – eg land use for renewables vs food production, crops for biodiesel vs food etc?
- How can trade agreements not take into account factors beyond trade – eg environmental, climate change and other sustainability issues?

### **Professor Richard Tiffin, Chief Scientist, Agrimetrics**

Providing a scientist's perspective, Richard Tiffin (RT) highlighted the challenge of getting world-class UK bioscience out into practical application, the so-called 'Valley of Death'.

Noting that a number of initiatives such as Knowledge Transfer (scientists communicating their research) and Knowledge Exchange (scientists interacting with practitioners) had sought to address this issue, RT suggested that it was now becoming possible to move beyond KT/KE to the field of translational research where scientists, researchers and practitioners are brought into much closer proximity, with *in situ* research used to support and augment the basic bioscience by providing a better understanding of the farm-level context in which it is applied, with advanced data tools such as Artificial Intelligence (AI) and Machine Learning (ML) transforming the speed and manner in which these findings can be interpreted.

RT suggested that access to much greater volumes of data at farm level relating to crop and livestock performance is also transforming the way research is carried out, and by whom, supported by data from remote observation such as satellites and drone technology.

Future translational research pipelines might take data from highly instrumented research platforms such as the Hands-Free Hectare project at Harper Adams to develop models and insights which can be transferred to normal fields which do not have the same level of technology or instrumentation.

RT highlighted the exciting opportunities of these developments but also the challenges of managing and accessing data in the agri-food sector, with issues of fragmentation, interoperability of data collection systems, security and trust all presenting potential barriers to data access. He indicated that AgriMetrics was working to develop the kind of data infrastructure which would help overcome these challenges.

RT considered that data-informed translational science provided a potential route to democratise the research and innovation process, moving it on from the exclusive preserve of an elite group of scientists, and allowing everyone in the agri-food sector to become more engaged.

### **Jonathan Halstead, Head North-West Europe & Managing Director, Syngenta UK**

Providing an R&D based company perspective, Jonathan Halstead (JH) reiterated the economic significance of the UK cereals sector, and described Syngenta's involvement, primarily through the provision of seed (eg first to develop hybrid barley, with hybrid wheat expected in the coming years as a potentially transformative technology) and crop protection products (chemical and biological), but also through application and nozzle technology, biodiversity stewardship, digital tools and collaborations with others.

Describing the steps to producing a new crop protection product, JH explained that it begins with the discovery of a molecule. For every molecule that reaches the market, which takes 12-15 years, hundreds of thousands are de-selected. Syngenta spends £200m every year on R&D in the ag sector. JH noted that the UK regulatory system for CP inherited from the EU is one of the most stringent in the world, and only a very small number of new molecules gain regulatory approval here compared to other markets such as the US.

JH recognised that the market context is changing, and this presents opportunities for research-based business such as Syngenta, whether in delivering innovations to help farmers improve their decision making and forecasting, using data and precision technology to benchmark and improve their performance and efficiency, or to respond to increased demands for supply chain traceability and transparency.

JH explained how new technologies and innovation are continuously delivering opportunities for more targeted and site-specific application of CP and fertiliser products, moving from broadcast

and band-spraying to field-map application informed by satellites and drones, right through to optical spot spraying of single plants within a field. But JH underlined the challenge that advances in these precision application technologies are completely divorced from the existing CP regulatory framework for getting new molecules to market, and cannot be submitted as risk-mitigation to ensure the use of new CP technologies is highly controlled in the field. He indicated that this would be an area of particular focus for the industry as the UK considers options for regulatory reform outside the EU.

With a reducing chemical CP toolbox, JH highlighted the exciting opportunities of biological products such as biocontrols and biostimulants in providing additional tools and mode of action for Integrated Pest Management, to help manage resistance in chemical products, and to deliver wider benefits such as reduced residues and improved soil health. But he cautioned against an assumption that biologicals are safe because they are based on naturally occurring materials. In conclusion he highlighted the need for clarity on post-Brexit registration requirements and a science-based regulatory framework for novel biopesticides.

### **3. Questions and discussion**

The following key points arose during questions and discussion.

JH confirmed that while research and development timescales are relatively consistent around the world, regulatory approval timelines vary considerably, with the UK and EU currently among the slowest, although he suggested that there were some encouraging signs that UK regulators recognise the need for a more risk-based and enabling approach to future regulation outside the EU. Clarity was needed on what that regulatory framework might look like.

AC supported the view that innovative engineering and precision application solutions should enable a more risk-based approach to CP approvals – and re-approvals.

The opportunity for farmers to help with the pull-through and early-stage co-development of new technologies and innovations, not only in relation to crop protection products but also new breeding technologies such as gene editing, was highlighted. Greater interaction with farmer-led research could also help engender trust among farmers and throughout the supply chain.

The opportunity, through the Retained EU Law Bill, to consider a timely and thoughtful change in the UK from the EU legacy of a hazard-based approach to crop protection regulation was also highlighted.

Discussion highlighted potential intra-UK and EU trade issues and barriers in the event of regulatory divergence on crop protection and genetic technologies, and the need to prioritise science-based decision-making given the urgent challenges of food security, soaring input costs and the impact of a changing climate.

The example of Argentina was highlighted, which some years ago moved ahead of neighbouring countries to change its approach to regulating gene edited crops – along the lines of the Precision Breeding Bill currently before Parliament. This prompted a significant research dividend, particularly for SMEs and public sector institutes, and neighbouring countries are now following Argentina's lead in treating gene edited crops differently from GMOs. Equally, early-stage commercial development in Argentina focused on products and supply chains which would not lead to trade disruption. It was suggested that a similar situation could be envisaged here, with an initial focus on the boost to research and investment in our world-leading public sector bioscience capabilities.

Discussion also highlighted the case for primary producers to receive a more equitable share of the retail price, or for retail prices to increase to reflect the additional sustainability and environmental requirements placed on growers. It was suggested that consumers should also be

fully informed about domestic requirements compared to the standards of imported products. CB reiterated the commitment by retailers to long-term, transparent supply chain relationships and openness of information with customers.

Recognition that the cost of access to new technologies will be related to the value delivered to individual growers.

In relation to farming labels such as 'regenerative farming' and 'sustainable intensification' driving particular perceptions of different farming systems, AC confirmed that there is not a clear definition or coherent understanding of what constitutes 'regenerative farming', but that from his perspective, technologies such as gene editing would be integral to a regenerative approach and the aim to minimise input use. At the same time, sustainable intensification would involve optimising production on the farmed area while also managing for biodiversity and habitat on unproductive or unfarmed areas.

Discussion on the need for a coherent land use strategy to reconcile competing demands of food, energy, nature, recreation, housing etc.

In relation to the Precision Breeding Bill currently before Parliament, CB suggested that these issues are not front of mind for consumers. He confirmed that he had not received a single communication from a customer expressing concern about gene editing technology. Equally, products containing GM ingredients are on sale in ASDA and purchased by customers, many of whom will also have visited the US on holiday in recent years without taking particular steps to avoid GM food. It was also noted that the EU imports the equivalent of 100kg of GM feed for every European each year.

Concluding the meeting, JS thanked guest speakers and attendees for their contribution to an informative and thought-provoking meeting.