All-Party Parliamentary Group on Science and Technology in Agriculture

International perspectives: Helping farmers reduce emissions while driving productivity and profitability

Notes of Meeting held on Monday 19 May 2025
Meeting Room S, Portcullis House

In attendance:
George Freeman MP (Chair)
Charlie Dewhirst MP
Lord Krebs
Lord Trees
Ann Davies MP

Guest speakers:
Wayne McNee, Chief Executive, AgriZeroNZ
Rob Chester, CEO, Supply Chain In-Sites (SCI)

Stakeholder attendees:
Katherine Paulson, Thomson Reuters; Olivia Seccombe, British Sugar; Mark Suthern, EA; Andrij Dovbenko, UK-Ukraine Tech-Exchange; Dr Susan Twining, CLA; Nick Major, SSA; Phil Garnham, Breckland Council; Martin Emmett, NFU; Prof Stefan Kepinski, Leeds Uni; Jon Williams, BASF; Richard Corden, BASF; Chris Jackson, UK TAG; Dr Alan Bullion, Labour Food Security Forum; James Wallace, IARAgri; Anne-Marie Neeteson, Aviagen; Martin Collison, Collison Assoc; Prof Simon Pearson, LIAT; Jim Godfrey, RASE; Ariane Derimay, UK Flour Millers; James Truscott, AI Ltd; Diane Dalton, SCI; Dave Walker, SCI; Johnny Mackey, MSD Animal Health; Dr Lydia Collas, Green Alliance; Dr Louise Sutherland, Ceres Agri-Tech; Peter Button, SSA; Meinhard Kist, German Embassy; Dave Hughes, Syngenta; Angela Gibson, Viterra; Andrew Prentis, Imperial College; Jonathan Westlake, dsm-firmenich; Adian Packington, dsm-firmenich; Dennis Rjinders, dsm-firmenich; Mimi Tanimoto, John Innes Centre; Dana Clouston, Barclays Bank; Judith Batchelor, Food MI; Nick Goodwin, NRP; Nigel Culkin, Univ of Herts; Dmitry Feoktistov, NFU; Dr Daniel Kindred, ArcAgSci; Dr Jen Vanderhoven, BBIA; Wayne Astridge, Barclays Bank; Christina Baxter, ADAS; Roz Bird, NRP; Corinna Urquhart, BASIS; Prof Louise Manning, Univ of Lincoln; Josh Cameron, FTI Consulting; Daniel Pearsall, Group Co-ordinator.

1. Chair's welcome and introduction

George Freeman (GF) briefly introduced the meeting by noting that it coincided with a major UK-EU Summit on potential areas of regulatory realignment between the UK and EU. He highlighted the All-Party Group's very active role in seeking to ensure that the progress made over the past five years in seeking more enabling and progressive regulation of gene editing technologies in agriculture should not be sacrificed as part of the reset deal.

GF also reminded attendees that the All-Party Group recently launched its 30:50:50 Innovation Agenda for UK Agriculture, inspired by a recent meeting with high-level USDA officials, setting out an ambitious, high-level objective to increase domestic food production by 30% by 2050 while reducing UK agriculture's environmental footprint by 50% in terms of greenhouse gas emissions, land use, water use and soil health. He explained that the 30:50:50 initiative had been developed in response to the urgency of UK and global food security, affordability and sustainability

challenges, which demand clear, long-term objectives to help farmers produce 'more from less' by closing the widening gap between the potential agricultural productivity gains offered by latest advances in agricultural science and innovation, and their practical uptake and application in UK agriculture.

Since launching the initiative during Agri-Science Week in Parliament, GF indicated that over the coming months, the All-Party Group would be taking the 30:50:50 conversation forward through a programme of focused presentations, site visits, expert roundtables, participation in agricultural events and a written call for evidence. The aim was to set out a recommendation for Government action to re-frame the policy, regulatory and R&D agenda, to be unveiled at a major Agri-Science Summit at Westminster in early November.

He noted that this meeting was very much part of that evidence-gathering process, learning from two international case studies. GF introduced guest speakers Wayne McNee, chief executive of AgriZeroNZ, a public-private partnership between the New Zealand government and major NZ agribusinesses, set up to deliver new technologies and tools to reduce on-farm emissions, and Rob Chester of Supply Chain In-Sites (SCI), to provide an insight into the work his team have been doing on behalf of a global food retailer to deliver significant reductions in GHG emissions and water use among rice farmers in SE Asia.

2. Guest speakers

(NB Guest speakers' slide presentations are available to download via the Meetings section of the APPGSTA website - https://www.appg-agscience.org.uk/meetings)

Wayne McNee, Chief Executive, AgriZeroNZ

Wayne McNee (WM) introduced himself as a former director general of the Ministry for Primary Industries, the equivalent of Defra in New Zealand. Originally a pharmacist, he previously also served as chief executive of Pharmac, the NZ equivalent of NICE.

WM explained that AgriZeroNZ was unique in NZ, and possibly in the world, as a public private limited partnership, half-owned by the NZ Government and half by leading primary sector businesses – three dairy companies, two meat processors, four banks and a fertiliser company - with an objective to secure the NZ agricultural sector's future by helping farmers reduce emissions without compromising profitability and productivity. WM added that AgriZeroNZ also works closely with the state-funded Agricultural Greenhouse Gas Research Centre as a strategic partner.

WM summarised AgriZeroNZ's mission as getting new tools and technologies in the hands of NZ farmers that help reduce emissions, and does so by investing in companies worldwide with a goal (not a legislated target) of reducing GHG emissions by 30% by 2030 and of enabling development and adoption of solutions to achieve 'near zero' by 2040.

WM emphasised that although investments had been made in number of other countries, including the UK, USA and Sweden, AgriZeroNZ's primary focus is on getting access to emissions-reducing innovations for NZ farmers. He explained that industry funding is matched dollar-for-dollar by Government with NZ$191m (~£85m) committed over the first four years (beginning mid-2023), with further fund-raising activity under way.

WM explained that technologies and innovations of interest cover dairy, beef and sheep. He underlined the economic importance of sheep farming in NZ, with 22 million ewes, but also noted the corresponding lack of research and investment taking place to reduce emissions in sheep relative to beef and dairy. He added that NZ livestock farming is largely pastoral, with not a lot of compound feed used, so reducing the current relevance of methane-reducing feed additives such as Bovaer for NZ farmers.

With 53% of NZ emissions associated with agriculture, and increasing as a percentage all the time as other sectors of the economy decarbonise, WM suggested that this posed a unique combination of challenges for the sector and this explained why AgriZeroNZ had been set up.

Whether or not farmers believe in the contribution of enteric methane emissions from livestock production to climate change, WM emphasised that the farming industry's customers are pushing deeply for reductions to meeting trading agreements and Scope 3 emissions requirements, listing a number of global companies and their 2030 reductions targets ranging from 16-50%, all reducing to net zero by 2050.

Although NZ farmers are among the most emissions efficient in the world, WM acknowledged that technologies available in non-pastoral farming systems, such as Bovaer and advanced slurry handling systems, mean farmers in other countries are quickly catching up.

WM also stressed the importance of agriculture as the backbone of the NZ economy, earning NZ$34.5bn in export trade revenue in 2024, with 95% of the nation's dairy output and 90-95% of beef and lamb exported to more than 130 countries, of which 80% have mandatory or proposed climate disclosure schemes. Maintaining market access for NZ exports is critical, he explained.

AgriZeroNZ invests about 80% of its capital in new ventures and promising new technologies with potential application in NZ, including support with regulatory access, with the remainder spent on horizon scanning, building global partnerships (eg with Innovate UK) and unblocking barriers and constraints to broader impact.

Looking ahead, WM indicated that at least 4-6 new tools are expected to be in widespread use across NZ by 2030, with the first tool, a bolus, expected to become available in 2026, subject to regulatory approval. Other products coming forward include vaccines and genetic solutions. He described AgriZeroNz's role at each stage in the process for development and adoption of a new innovation from proof or concept through research trials, regulatory approval, and early adoption leading to more widespread commercialisation and application.

Providing incentives for farmers to adopt these tools to reduce methane is an important part of the equation, particularly after the NZ Government decided not to include agriculture in its emissions trading scheme. WM noted that some companies have indicated that they will offer financial incentives for producers so a market-driven approach seems most likely to drive adoption.

Summarising progress to date, WM reported that AgriZeroNZ has committed NZ$60.7m in funding to nine new ventures and five catalyst projects, with a further 63 potential investments on the radar and undergoing due diligence evaluation with university partners in NZ and the USA.

WM provided a brief snapshot of each investment as follows:

• **Agroceutical Products NZ**: Partnership with a UK company to develop a methane inhibitor from a daffodil extract. Potential revenue stream for NZ sheep farmers
• **Agteria Biotech**: Swedish startup utilising a patent-pending molecule to reduce methane emissions from cattle.
• **ArkeaBio**: US startup developing a methane vaccine, with an innovative approach.
• **BioLumic**: Agri-biotech company founded in NZ harnessing UV light to develop a low emissions farm pasture with increased productivity gains.
• **Bovotica**: Pioneering Australian startup developing a probiotic to reduce methane and boost productivity.
• **Hoofprint Biome Inc**: US company developing natural enzymes and probiotics to improve cattle health while reducing methane emissions and improving productivity.
• **Lucidome Bio**: New company setup by AgriZeroNZ to spearhead the next phase of New Zealand's methane vaccine research.

• **Methane inhibitor research**: NZ programme looking at ways to develop and deliver a methane-reducing compound to animals on pastoral farms.
• **Ruminant BioTech**: NZ company developing a slow-release, biodegradable methane-inhibiting bolus.

WM added that AgriZeroNZ's engagement with the primary sector to support adoption and ensure tools are fit-for-purpose included the appointment of and regular interaction with a 12-strong farmer focus group including farmers from diverse backgrounds and farming systems.

WM concluded with a slide showing the AgriZeroNZ scorecard, published every quarter as a demonstration of the organisation's commitment to accountability and transparency, showing where funding has been invested and the resulting progress towards emissions reduction.

Rob Chester, CEO, Supply Chain In-Sites (SCI)
Rob Chester (RC) described his background in the food retail and supply chain sectors, having graduated from 'Saturday lad' to Tesco store manager, becoming a lawyer at the same time, then managed compliance for Tesco around the world (and wrote its first CSR report in 2001), then Walmart in a similar role, before establishing SCI four years ago with the ambition to provide a new model for 'real-time assurance'.

RC observed that the farm assurance and compliance world today is based on lagging indicators of what has already happened. SCI is focused on using moving indicators which can tell you what is happening now and in the future, and so add value by influencing real-time decisions and practices.

After recently being commissioned by one retailer to benchmark its performance and claims relating to emissions, and after studying competitor CSR and ESG reports for comparison, RC made the following three observations about current practice:

(i) The primary focus is on offsetting emissions rather than insetting, so passing the issue elsewhere rather than addressing internal problems at source. That would not be acceptable in compliance terms with an issue like food safety, and should not be in relation to emissions;
(ii) There is significant overstating of carbon neutrality claims in the retail sector, primarily because it started out as a voluntary process. However, green claims are now becoming increasingly regulated and subject to validation legal challenge;
(iii) There is also over-dependence on questionable certification standards, with a recent investigation reported in The Guardian revealing that 94% of carbon offsets certified by Verra, one of the leading carbon credit certification bodies, were deemed worthless.

RC suggested that there was currently a chasm between words and action. Globally, the food industry accounts for 26% of total greenhouse has emissions. For comparison, aviation accounts for 2.5%. 82% of those food industry emissions are from on-farm production, not retailer activities. And of the top 20 global food retailers, only six have adopted Scope 3 emission reduction targets.

So why are retailers not putting 82% of their effort into the 82% challenge? RC suggested four key reasons:

- Fear of introducing changes and adding cost;
- Limited control over fragmented supply chains beyond their usual sphere of influence;
- Insufficient data and mechanisms through traditional assurance and compliance schemes;
- Low consumer awareness and willingness to pay more means no or limited market return.

RC added that there was a trust gap in the market, between data modelling companies, whose information can be fast but inaccurate because it is not validated on the ground (and therefore

does not reflect the enormous variability between individual farms and different farming systems), and audit companies, whose service is slow, focused on what has already happened, and unsuited to agriculture.

RC then described a telephone call in March 2024 with the newly installed CEO of an Asian food retailer seeking help to benchmark and validate the climate impact of its rice supplies, and concerned about the potential 'greenwash' implications of simply relying on management consultant recommendations. As a major climate impact crop, RC noted that rice accounts for ~6% of this retailer's Scope 3 emissions, and globally contributes 22% of agricultural methane and 11% of nitrous oxide emissions.

RC explained that this was the starting point for a pioneering project working with 30 jasmine rice growers in Thailand. The initial focus was on engaging and training the farmers in lower emission 'wet and dry' production systems and optimised fertiliser use. Compliance was then verified using a specially developed smartphone app, delivering real-time information in the form of 37,000 individual images sent by growers, and also enabling corrective advice to be provided as necessary. RC added that the smartphone reporting was verified by spot on-farm audits during the programme, and methane gas measurements were also recorded to validate the projected emissions reductions.

RC reported that over a 15-month period, this approach succeeded in reducing GHG emissions by 36% (40.5 tonnes) without reducing yields, with 95% compliance and with a clear pathway to reaching 50% emissions reduction as the programme is rolled out to more growers.

RC described it as genuine win:win:win:win outcome for the retailer, farmers, Government and consumers.

The retailer is delighted, and proudly featured the project in their latest sustainability report as well as providing information for consumers in the form on an on-pack QR code.

Farmers queued up to join the next phase of the programme, because it resulted in input savings without reducing yields.

Thai Government are pleased to see a domestic initiative and scalable methodology resulting in reduced emissions from the country's major climate impact crop.

And consumers are happy because they can trust the information on the pack, and the low-cost methodology does not increase prices.

RC reported that SCI are now developing plans with the retailer to scale the programme up to 50% of their rice production as low-carbon verified supply by 2030, beginning with 1000 rice farmers signed up this year. Plans are also in hand to expand the programme to three more product areas by 2026-27, (eg shrimp, salmon, clothing).

This project has attracted interest from other retailers, and SCI has also been asked by a different retailer to explore the potential to scale the verified low carbon emissions model developed for rice to its beef and dairy supply chains.

RC concluded by summarising what SCI has achieved in 15 months as proven, fast, efficient, trusted and inspiring.

Questions & discussion
The following key issues arose during questions and discussion:

The importance of having standardised, harmonised methodologies and inventories for emissions reporting to enable meaningful comparisons, particularly on an international basis.

Also, addressing questions such as ‘are we producing the right things where it makes most sense’ can have a significant impact on resource use efficiency and emissions reduction.

The opportunity to build AI and machine learning into the digital compliance model is possible because the information collected is very repetitive, and this builds further efficiency and speed into the process.

In crop 1 of the low carbon rice programme, the first 30 farmers were offered a price premium to join the scheme, as it was a departure from their long-established practices. No premium was necessary for the second crop, however, which had a queue of farmers wanting to sign up.

Any additional costs for the rice farmers, eg in terms of time spent training, uploading images etc, were more than offset by the added value delivered.

The importance of the NZ approach in prioritising access for NZ farmers to the tools resulting from NZ taxpayer R&D investment, a lesson for the UK?

The parallel contribution of developing practices, tools and technologies which help farmers adapt to the effects of a changing climate, as well as those focusing on climate change mitigation through emissions reduction.

The potential value of mutual recognition across regulators internationally in relation to approvals for emissions-reducing technologies and innovations to help accelerate access and adoption on a global basis.

The potential benefits of communicating to consumers the complexity, variability and challenges of reducing emissions at farm level on a per unit basis given the inherent yield volatility seen in recent years, much of it driven by climate change.

Recognition of the potential opportunities of new breeding technologies such as gene editing to mitigate the climate impact of ruminant livestock through reduced enteric methane emissions, although progress was expected to be slow and such approaches were expected to pose political and consumer challenges in NZ.

Concluding the meeting, George Freeman MP thanked guest speakers, members and stakeholder attendees for their contribution to a lively and thought-provoking session which would contribute significantly to the thinking behind the All-Party Group’s 30:50:50 programme and recommendations for Government action.