All-Party Parliamentary Group on Science and Technology in Agriculture

12 July 2023 – for immediate release

Parliamentary report highlights farming innovations to deliver Net Zero

Gene editing of crops and livestock, methane inhibitors, green fertilisers and novel proteins such as insect meal are just some of the farming innovations that can help deliver Net Zero in UK agriculture, according to a new inquiry report from the All-Party Parliamentary Group on Science and Technology in Agriculture.

Identifying eight key areas of innovation with the potential to transform UK agriculture's climate impact, the report also highlights a number of potential and actual barriers to these innovations reaching Britain's farmers, and makes recommendations for Government to remove these barriers, covering regulatory, policy and R&D actions.

Launching the report, APPG chair Julian Sturdy MP said the starting point for the inquiry, bringing together both written and oral evidence presented to the Group, was that climate change should be tackled by encouraging new green technologies and scientific innovations, rather than by imposing measures which might harm economic growth and living standards, and ultimately reduce domestic food production.

Mr Sturdy said policy developments under discussion in other countries, such as the imposition of emissions reduction targets, livestock culls and even the buy-out and closure of farms, suggested that agriculture can often be seen as a soft target for climate action. He noted that Defra chief scientist Professor Gideon Henderson had referred to ruminant livestock as the 'low hanging fruit' for short term greenhouse gas (GHG) reductions when he spoke to the All-Party Group in 2022.

"Agriculture is possibly unique in its relationship to climate change - at the same time a major cause, victim *and* a source of solutions," said Mr Sturdy. "It is therefore disappointing that the narrative around climate change and agriculture is often negative in tone, particularly in relation to livestock farming. This diverts attention from the enormous opportunities for agricultural science and innovation to contribute positively to the climate agenda."

"This APPG report highlights many exciting examples of how advances in areas such as plant and animal breeding, precision agriculture, alternative proteins, feed additives, indoor farming and other sectors can support sustainable increases in domestic food production and economic growth while delivering on the Net Zero agenda for British agriculture. The report also identifies the regulatory, policy and R&D actions needed to unlock the full potential of these innovations. I have written to Ministers to underline the need for urgent action on these points."

Farming Innovations to deliver Net Zero

The report focuses on the following eight key areas of innovation with the potential to transform British agriculture's climate impact:

Genetic innovation in crop breeding • Increased crop yields and resource-use efficiency • More climate resilient crop varieties • Nitrogen fixation and improved photosynthetic efficiency	**Precision farming technologies** • Improved productivity and input use efficiency • Enhanced monitoring and decision-making tools • Natural resource conservation, eg water for irrigation
Genetic innovation / Improved control of endemic disease in livestock • Improved productivity and disease resistance, reduced morbidity and mortality and feed use efficiency • Improved feed use efficiency and reduced methane emissions • Climate resilience traits in livestock	**Vertical farming and controlled environment agriculture** • Increased food output per land area • Significant potential to reduce pesticide, fertiliser and water use • Reduced transport emissions and food waste by growing locally, year-round and on-demand
Novel protein sources for animal feed (eg insect meal) • Low carbon, high protein feed source • Reduced food and agricultural waste • Source of low carbon, high value fertiliser (insect frass)	**Green fertilisers and controlled release fertilisers** • Reduced carbon footprint in N fertiliser manufacture using renewable energy • Development of alternative fertilisers using industrial and agri-food waste streams • Reduced nitrous oxide emissions
Strategic development of home-grown protein crops • Significant opportunity to reduce N fertiliser use in UK arable rotations • Home-grown alternative to imported proteins (eg soybean) • Additional healthy-eating, soil health, economic benefits	**Methane reducing feedstuffs and feed additives** • Reduced methane emissions in ruminant livestock • Potential to reduce overall feed intake

Recommendations for action by Government to overcome potential barriers to these innovations include:

- the need for proportionate implementation of the recently adopted Genetic Technology (Precision Breeding) Act 2023;

- the need to adopt consistent, output-related sustainability metrics in agriculture;

- the need for a more strategic, long-term Crop Genetic Innovation Research Fund to help ensure early-stage genetic discoveries have a clear translational pathway into improved crops & products;

- the need for regulatory action to support the development of the alternative protein sector, ensuring the UK is not left behind the EU and other countries;

- the need for a co-ordinated, end-to-end R&D strategy for home-grown pulses; and

- the need to fast-track Food Standards Agency approvals for methane-reducing feed additives already approved for use in the EU and elsewhere.

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Notes
A copy of the full report, entitled *'Farming Innovations to deliver Net Zero'*, is attached as a pdf. It is also available to download via the All-Party Group website here.

The All-Party Parliamentary Group on Science and Technology in Agriculture exists to promote debate among politicians and other stakeholders on the value and role of scientific innovation in UK agriculture. The Group works to ensure that the Government's support for agri-science is maintained and strengthened, that the regulatory environment is evidence-based and enabling, and that the contribution of modern agriculture to our society, economy and environment is valued and understood as widely as possible.

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