



The All Party Parliamentary Group
Nutrition for Development

P & S **Parliamentary and Scientific Committee**
An Associate Parliamentary Committee



A SHOWCASE OF BRITISH SCIENCE EXPERTISE AND PARTNERSHIPS ON NUTRITION



About the All-Party Parliamentary Group (APPG) on Nutrition for Development

The APPG on Nutrition for Development is a cross-party group of Parliamentarians working to raise the profile of global malnutrition in the UK Parliament and champion solutions to end it, to strengthen cross-party Parliamentary support for UK investment in nutrition and food security, and to support and challenge the UK government to maintain their leadership on global nutrition and food security. The current Co-Chairs are the Rt Hon David Mundell MP and Oliver Ryan MP.

About the Parliamentary & Scientific Committee APPG

The Parliamentary and Scientific Committee, founded in 1939, provides a liaison between Parliamentarians and scientific bodies, science-based industry and the academic world. The Committee focuses on issues where science and politics meet, informing Members of both Houses of Parliament. It demonstrates the relevance of scientific and technological developments to matters of public interest and to the development of national policy. The current Co-Chairs are Sam Carling MP and George Freeman MP.

Published: March 2026

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Cover photos: Institute for Sustainable Food, University of Sheffield

The challenge of global food insecurity and undernutrition

The global food system is under mounting pressure from conflict, climate change, economic shocks, inequality, and the degradation of natural resources, driving rising levels of malnutrition and hunger worldwide. In 2023-2024, 2.3 billion people experienced moderate or severe food insecurity — meaning they lacked reliable access to adequate food at some point during the year. This is 683 million more people than in 2015, when the Sustainable Development Goals were adopted. According to the World Food Programme, over a quarter of a billion people across 58 countries and territories are facing acute food insecurity or worse. Malnutrition is linked to almost half of all deaths in children under five years old, claiming more than two million lives each year, and current projections suggest that nearly 600 million people will still be facing hunger by 2030.

There is an urgent need to increase the production and distribution of nourishing and sustainably produced foods to feed a growing world population. Access to good nutrition is foundational to sustainable development, playing a critical role in health, education, economic advancement, and gender equality. Food security and good nutrition are also critical to building healthy economies and labour forces and fostering peace and security. Good nutrition also reduces the risk of cancer and other non-communicable diseases and enhances the effectiveness of vaccines.

Millions of people across the UK are still facing food insecurity with the latest figures from the Food Foundation showing one in 10 households are affected. The UK is deeply interconnected with the global food system, economically, politically, and environmentally, and also highly reliant on global food production for its own food security. Unsustainable agricultural and trade practices, climate change, and conflict all have direct and indirect implications for the UK's food security, with consequences for public health, climate resilience, economic stability, and national security. A more nutritious, sustainable and resilient global food system has benefits that permeate across UK society and beyond.

Across the world, governments, researchers, policy makers, and local communities, are seeking to retain and enhance the positive outcomes of their food systems while mitigating negative impacts relating to health, environmental sustainability, and adapting to a changing climate and increasingly volatile geopolitical context. Addressing these urgent challenges requires action on diversifying food production, strengthening data monitoring systems, building resilient food supply chains, creating healthy food environments and tackling societal inequalities. The role of UK science in global collaboration is pivotal across these goals.

UK universities and research institutes are global leaders and vital partners in the research of food security, sustainable food systems, and nutrition. The work of UK academic and research institutions underpins high-level political engagement,

international and national academic exchange, and collaboration with civil society, private sector, and agri-food system producers and consumers. These institutes work in partnership with researchers, scientists and policy makers in high-burden countries towards the long-term strategy of strengthening mutual capabilities to tackle the root causes of malnutrition, and build more resilient global food systems that are essential for food security and stability.

The role of the UK Government

The UK is home to world-leading universities and research institutions, scientists and researchers, who are making substantial progress on action to address the challenges of global food insecurity. This booklet highlights the work of six institutions in particular - the Agriculture, Nutrition and Health (ANH) Academy at the London School of Hygiene and Tropical Medicine, The University of Exeter, the John Innes Centre, the University of Reading, Rothamsted Research, and the Institute for Sustainable Food at Sheffield University, while recognising that collaboration extends far beyond these institutions alone.

The UK has a unique role to play in contributing to global food security, driving innovation, and delivering mutual benefits for the UK and the world. It is essential that the UK Government safeguards and strategically increases long-term investment in British and global research and development in food systems and nutrition and the partnerships that underpin them.

THE AGRICULTURE, NUTRITION AND HEALTH ACADEMY, AT THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (LSHTM)

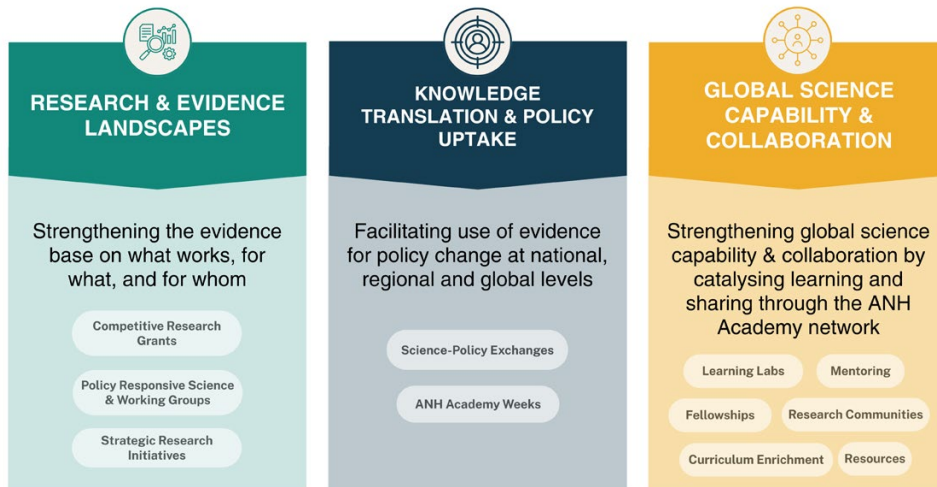
The Agriculture, Nutrition & Health (ANH) Academy Science-Policy Platform is a global evidence platform accelerating actions towards equitable and just food systems for nutrition and health, whilst confronting climate change and protecting nature, through interdisciplinary research, capability sharing and collaboration.

The ANH Academy Science-Policy Platform is an international network of over 13,000 researchers, practitioners and policymakers in 160 countries.

Funded by the Foreign, Commonwealth and Development Office (FCDO) and the Gates Foundation, the programme is led by the LSHTM in partnership with University of Sheffield and Tufts University.

Initiated in 2015 with funding from UK Aid as IMMANA (Innovative Methods and Metrics for Agriculture and Nutrition Actions), it has accelerated the development of metrics, tools, evidence capacity and dialogue to improve food systems, nutrition and health worldwide, sustainably and equitably.

Overview of the ANH Science-Policy Platform



Impacts

Through its interlinking workstreams, ANH Science-Policy Platform and its predecessor programme IMMANA (funded by UK Aid) have changed the landscape of research, practice and policy across food systems and nutrition. Selected impacts include:

- Doubling of the minimum wage in Nigeria to support the affordability of nutritious diets – guided by *Cost and Affordability of Healthy Diets* metric and data initially developed through an IMMANA/ANH grant.
- Strengthening legal protections for women agricultural workers in Pakistan – through science-policy exchanges that catalysed the Sindh Women Agricultural Workers Bill.
- Transforming global monitoring of water insecurity and its impacts on food security – by developing *Water Insecurity Experience Scales* now adopted in 83 countries.
- Generating groundbreaking evidence on plastic pollution’s health impacts – directly informing UN Global Plastics Treaty negotiations.
- Supporting the Government of Senegal to screen out ultra-processed foods to protect healthy diets – using Ultra Processed Food Screener tool developed through an IMMANA/AMH grant.

Advancing African-Led Collaboration for Sustainable and Equitable Food Systems for nutrition and health

To expand and deepen impact across the continent, the ANH Academy is broadening its partnership through the establishment of a new African Regional Collaborative (ARC). Led by the University of Ghana, the Policy Studies Institute (Ethiopia), and Stellenbosch University (South Africa), and working with partners across Africa, this consortium centres African-led research, policy engagement and knowledge exchange. It represents a deliberate commitment to equitable partnership and regionally anchored collaboration to advance sustainable, nutrition-sensitive food systems for health.

For more information, please visit: www.anh-academy.org



UNIVERSITY OF EXETER

Climate, Nutrition and Food Security

The University of Exeter's Strategy 2030 outlines a vision to lead meaningful action against the climate emergency and ecological crisis, make key breakthroughs to transform human health and wellbeing, and lead the progress towards creating a fair, socially just and inclusive society. This vision is central to the University's work in climate, nutrition and food security. With over 1,500 staff working across climate change and the environment, including some of the world's leading academics, this expertise underpins Exeter's research across a range of areas including plant health, food security and environmental forces.

Climate Impact, Food Systems and Plant Health

From aquaculture and food security to plant health including disease, microbial processes (such as nutrient uptake, and environmental interactions) through to environmental changes in the marine environment, Exeter's research tackles critical areas for nutrition in a global context. For example, world leading facilities such as the Global Meteorological Simulator (GMS) mimic current and future weather simulations from around the world, investigating how weather conditions affect plants, and their pollinators, pests and disease-causing microbes.

Exeter's research addresses the issue of climate change, not just as an environmental issue but a direct threat to global food security and livelihoods. Studies such as "Socioeconomic Constraints to Climate Change Adaptation in a Tropical Export Crop" have shown that 60% of the regions currently producing bananas will struggle to grow the fruit unless there are urgent interventions to tackle climate change. Another study has found that about 40% of global crop production is currently lost to pests and diseases as a result of climate change, creating a major challenge for global food security.



Food, Nutrition and Health

Exeter's research spans a broad range of topics including the role of food in planetary and public health. It works with local partners in South West England, as well as throughout the UK, Europe, and internationally, to improve the science, policy, and practice related to food, nutrition, and health and wellbeing. For example, thematic research in Public Health Nutrition and Sustainable Diets explores some of the biggest challenges and opportunities for solving problems around the world related to nutrition.

Food Security, Food Justice and Planetary Health

Exeter's research on food insecurity and hunger engages with communities in the UK and across the world and includes historical and contemporary work on famine and food poverty. This includes research on how food systems and food access are not only shaped by structural inequities but also affected by dynamic processes such as shifting political landscapes, national and global economic events, and environmental forces and public health events.

Work on the burden of malnutrition in small island developing states in the Caribbean and the Pacific, for example, focuses on the relationships between where people source their food (from production through to types of retail outlets) and the quality of their diet.

A key project is the NIHR Global Health Research Group on Community Food for Human Nutrition and Planetary Health in Small Islands (Global CFaH). This project includes research mapping food systems and identifying key contributors to the burden of malnutrition and systemic barriers and facilitators to the production and consumption of healthy local food. It also seeks to understand the impact of natural disasters on food production and recovery and development strategies.

For more information, please visit: www.exeter.ac.uk



UK-CGIAR CENTRE

In 2023, the UK Government launched the UK-CGIAR Centre, as part of efforts to harness UK science and technology to help tackle the interconnected challenges of global food security and climate change. With funding from FCDO, the UK-CGIAR Centre strengthens ties between UK science and CGIAR, the world's largest publicly funded global agricultural innovation network. The Centre has commissioned a number of projects carried out with partners across Africa, Asia-Pacific, Latin America and the Caribbean, to improve locally led innovation and encourage the exchange of agriculture expertise. Connecting British science with the deep expertise of researchers in the Global South is one of the most effective ways in which the government can contribute to addressing the agricultural challenges of the 21st century.

The John Innes Centre is one of the UK partners for the UK-CGIAR Centre, leading on a project titled "Leveraging genetic innovations for accelerated breeding of climate resilient and nutritious crops." Given global population growth, wheat production needs to increase 60% by 2050 to meet global demand. The focus of the project is on developing locally adapted wheat crops with enhanced resistance to wheat rusts and with elevated levels of iron—an essential micronutrient for human health. It does this by accelerating the breeding process and delivering higher genetic gain by adopting new breeding approaches such as genome editing, exploiting novel genetic variation in germplasm banks, and developing data-driven approaches to breeding. The John Innes Centre is undertaking these research activities alongside national partners in Kenya, Egypt, and Pakistan, which have all set goals of becoming self-sufficient in wheat production.

CGIAR's global work on innovations to make agricultural systems more climate resilient has contributed to higher yields and protection from pests for UK farmers, growth in UK exports, and improved affordability of food for British consumers. UK investments in CGIAR reduce the annual groceries bill of a British family of four by £46, representing an annual saving of approximately £800 million for the UK population. This shows that investment in global and domestic research and development in global agriculture, is also an investment in the UK's domestic food security.

UK PARLIAMENTARIANS LEARNING VISITS TO UK AND GLOBAL RESEARCH PARTNERSHIPS

A key strand of the APPG Nutrition for Development's work is to undertake cross-party Parliamentary visits to UK science and research hubs, and global conferences, to understand and champion examples of British innovation and partnerships to address malnutrition and food insecurity.



Steve Race MP, Baroness Hodgson of Abinger, Lord Cameron of Dillington and David Mundell MP visit Rothamsted Research.



David Mundell MP and Baroness Hayman visit John Innes Centre



Steve Race MP and Lord Oates visit the University of Exeter



Abtisam Mohamed MP visits the Institute for Sustainable Food at the University of Sheffield



Lord Oates, Steve Race MP, Monica Harding MP and David Mundell MP visit ANH Academy Conference in Tanzania, June 2025

JOHN INNES CENTRE

The John Innes Centre (JIC) is an independent, international centre of excellence in plant and microbial science. The Centre is a registered UK charity and a UKRI-BBSRC strategically supported institute. It also receives grant funding from government departments and bodies such as Defra, FCDO, Research Councils, Innovate UK, and ARIA, and charities such as Wellcome and the Royal Society.

Its mission is to discover how plants and their associated microbes function for the benefit of people and planet. Our research is aligned to three strategic pillars: sustainable agriculture for a healthier planet; resilient plants in a changing environment; and next-generation medicines and diets.

John Innes Centre's work supporting food security and nutrition

The JIC is developing healthier staple foods with increased nutritional density which can be incorporated into diets in the UK and globally. For example it is:

- **Increasing resilience to climate change by adapting crops to withstand changing environmental conditions.** JIC is developing oil seed rape varieties which are more resilient to temperature changes.
- **Building defences against plant disease outbreaks by identifying key genes and engineering defence capabilities into crops.** Virus Yellowing disease has rocketed in sugar beet since the removal of neonicotinoids. JIC is working with partners to find a genetic solution to protect this key UK crop.

- **Tackling under-nutrition by developing foods with increased nutritional content.** JIC is increasing iron and zinc content in peas to increase nutrients in diets in the UK and globally.
- **Supporting food safety by decreasing levels of toxins or undesirable compounds.** JIC is creating grass pea with lower levels of ODAP, a toxin that can cause paralysis in malnourished people.
- **Boosting plant performance through microbial interactions that enhance plant growth or combat diseases.** JIC has identified naturally occurring bacteria which protect a range of crops such as potato, kiwi fruit and berries from certain plant infections.
- **Developing rapid diagnostic tools to provide early warning of plant pests and diseases.** JIC developed MARPLE Diagnostics, a mobile lab system which genotypes wheat diseases in the field in real time allowing rapid response to wheat disease epidemics.

Work with international partners

JIC works in close partnership with international partners including the Chinese Academy of Sciences and the CGIAR centres, to translate research into global scientific impact such as improved food security.

A recent example is collaboration with CIMMYT, a non-profit organisation that leads efforts to improve the quality and dependability of globally significant crops such as wheat and maize in the global south. JIC is working with them to provide resistance to wheat blast and yellow rust, helping secure global wheat production against climate-aggravated diseases.

By working with international partners, JIC ensures it is working on local crops, which are adapted and accepted so farmers can retain the cultural, nutritional, and ecological benefits of growing native or regionally adapted crops.

For more information, please visit: www.jic.ac.uk



UNIVERSITY OF READING

The University of Reading is internationally recognised for its leadership in agriculture, food, nutrition and environmental science, with a long-standing commitment to improving global food security and addressing the drivers and consequences of malnutrition. It approaches nutrition and food security through targeted research across the entire food system: sustainable production, resilient supply chains, consumer behaviour and food choice, and social equity. It brings together world-leading researchers with governments, industry and communities to co-create processes and solutions that support lasting change.

At the heart of this ambition is Agrifood Futures, the University's new research strategy designed to transform the way the world produces, consumes and thinks about food by 2050. Grounded in systems thinking and co-created with partners from across the agrifood sector, Agrifood Futures provides a framework for tackling food insecurity, multiple forms of malnutrition and associated diet-related disease – alongside interconnected challenges such as climate change, biodiversity loss and economic and social inequalities. Its vision is clear: that everyone across the world should be able to access a sufficient, healthy and sustainable diet that leaves the lightest possible footprint on the planet.

The approach is built around three interlinked priority areas:

- 1. Food that nourishes people and the planet** – improving diets and supporting healthier food environments. With expertise in human nutrition, behavioural science and food systems research, Reading's teams work across Southeast Asia, India, the UK and beyond to understand how cultural, economic and environmental factors shape diets, and to co-design healthier, affordable and culturally appropriate foods. Reading partners widely with communities to address inequalities, from diet-related disease to uneven access to healthy foods.
- 2. A resilient food system for everyone** – ensuring food systems can withstand economic, environmental and social shocks. Reading's researchers work directly with policymakers, farmers, supply chain partners and communities to integrate foresight, risk analysis and evidence-based decision-making, strengthening resilience at local and global levels.
- 3. Farming systems that work with nature and our climate** – developing and testing innovative approaches to responsible food production. From climate-resilient agriculture and biodiversity-enhancing practices to cutting-edge agri-technology and soil science, Reading works with partners worldwide to protect natural resources while meeting growing demand for food. Their research demonstrates how nature-based and regenerative approaches can maintain yields, reduce environmental impact and support livelihoods.

The University's researchers have a strong track record of influencing policy at national and international levels. They contribute to nutrition advisory committees, global panels, international development programmes and major research collaborations focused on addressing hunger and undernutrition. Initiatives such as co-designing solutions with disadvantaged communities in the UK, natural farming projects in India, and food environment research in Southeast Asia exemplify their commitment to co-creation, working directly with communities to design solutions that respond to their lived experience.

Through Agrifood Futures, and through partnerships with institutions across the UK and globally, Reading University stands ready to help deliver the innovation, evidence and collaboration needed to build a resilient, equitable and sustainable food future for all.

For more information, please visit: www.research.reading.ac.uk/engagement-and-impact/transforming-food-and-farming-systems/



In Thailand, where market integration displaces traditional diets, policies could protect traditional food practices, support home gardens and community food networks, and improve the availability of nutrient-dense foods in markets. Photo by Marco Haenssgen

ROTHAMSTED RESEARCH

Founded in 1843, Rothamsted Research is one of the world's oldest agricultural research institutes and a leader in sustainable agriculture. Funded by the Biotechnology and Biological Sciences Research Council, part of UK Research and Innovation, it delivers science to improve food security, environmental sustainability and climate resilience, linking agricultural productivity with better nutrition.

Delivering Sustainable Wheat

Professor Malcolm Hawkesford leads the Delivering Sustainable Wheat programme, co-led with the John Innes Centre and funded by BBSRC (BB/X011003/1). The programme advances nutrient use efficiency, grain composition and climate resilience to develop wheat varieties that require less fertiliser while enhancing mineral content.

Healthier Diets by improving the Nutritional Quality of Wheat

The Wheat Grain Quality for Human Nutrition Group — Dr Alison Lovegrove, Dr Anneke Prins, Dr Ondrej Kosik and Professor Peter Shewry — improves fibre and mineral content in white flour. High-fibre wheat lines reduce glycaemic response, and high-calcium lines offer potential bone health benefits, supporting healthier staple foods.



Work with maize growers in Zambia



CIMMYT field trials

Global Partnerships for Local Impact

The Wheat Grain Quality for Human Nutrition Group collaborates with the International Maize and Wheat Improvement Center, Philippine Rice Research Institute and the International Rice Research Institute to enhance cereal nutrition and mineral bioavailability in low- and middle-income countries.

Addressing Hidden Hunger through Agriculture

Dr Edward Joy leads research on nutrition-sensitive agriculture, integrating soil, crop and dietary data to address micronutrient deficiencies and improve access to nutrient-rich foods, particularly in low- and middle-income countries.

Improving Nutrition through Equitable Global Partnerships

A Royal Society-funded partnership with CIMMYT–Zimbabwe and the University of Zimbabwe led by Dr Muneta Grace Kangara has been supporting biofortified maize and locally adapted grains, developing practical solutions to reduce micronutrient deficiencies in Southern Africa.

Soil Health for Food Security and Nutrition

Dr Stephan Haefele examines soil–crop interactions to promote sustainable intensification, improving nutrient cycling, yield stability and crop nutritional quality.

Strengthening Future Food Systems Expertise by Training the Next Generation

Rothamsted Research is a partner in the UK Food Systems Centre for Doctoral Training, managed by the Partnership for a Sustainable Food Future (PSFF) and supported by UKRI's Strategic Priorities Fund in collaboration with UK research councils and government departments. Through this CDT, Dr Stephan Haefele and Andrew Mead supervise PhD student Apple Espino, strengthening expertise in improving the nutritional quality of UK wheat across the supply chain.

Biotechnology for Healthier Oils

Professor Johnathan Napier leads biotechnology research developing Camelina enriched with omega-3 fatty acids as a sustainable alternative to fish oils.

Through integrated research across soils, crops, biotechnology and nutrition, Rothamsted Research is helping build more resilient and nutritionally secure food systems in the UK and globally.

For more information, please visit: www.rothamsted.ac.uk

UNIVERSITY OF SHEFFIELD - INSTITUTE FOR SUSTAINABLE FOOD

The University of Sheffield is a leading Russell Group university, with a world-class reputation, ranked within the Top 100 universities in the world (Times Higher Education World University Rankings 2025). Over 30,000 students from 150 countries study at Sheffield and in a truly global community, they learn alongside over 1,500 of the world's leading academics.

Driven by outstanding people, staff and students share a commitment to changing the world for the better, through the power and application of ideas and knowledge.

The Institute for Sustainable Food

The Institute for Sustainable Food (ISF) at the University of Sheffield is a flagship interdisciplinary research hub dedicated to transforming global food systems to safeguard human and planetary health. ISF works towards the objective of a resilient, net-zero agri-food system that balances environmental restoration with public health. The Institute draws its membership from a diverse coalition of experts from across the sciences, engineering, social sciences, and arts and humanities, working interdisciplinarily to transform how we grow, produce, and consume food.

ISF's research ranges from the global to the national and the local, e.g. the INFUSION (*Indian Food Systems for Improved Nutrition*) project working to transform traditional food markets in India to boost nutrition; the H3 (*Healthy soil, healthy food, healthy people*) consortium seeking to transform the UK food system 'from the ground up'; and the *Food Systems and Environmental Restoration theme of the South Yorkshire Sustainability Centre*, working towards reducing the carbon footprint and improving health outcomes from the local food system in South Yorkshire.

ISF is equipped with next-generation research facilities that allow the institute to make groundbreaking discoveries and deliver real-world solutions to achieve food security. This includes the Sir David Read Controlled Environment Facility, a world-leading climate-controlled plant growth facility featuring 57 state-of-art chambers capable of simulating climates from the past, present, and future, the Arthur Willis Environment Centre, a sophisticated Growdome for larger-scale controlled experiments, and the Wolfson Centre for Disease Phenomics for the study of physical and biochemical traits of plant disease.

Examples of current research on food systems, food security and nutrition being conducted at the ISF include:

- A new research project "Harnessing Genome Variation to Create Climate Resilient Rice" aims to identify heat and drought tolerant rice varieties. Ultimately, the project hopes to produce crops that can thrive in hotter, drier conditions to improve future food security.
- "Solar Powered Interventions for Resilient and Equitable Food Systems" is a new project aiming to understand the feasibility of co-designing sustainable food waste interventions in rural markets in the Indian state of Odisha.
- Facilitated by the unique Desert Garden project, in Jordan's arid landscape, there are hundreds of cricket wicket-sized desert gardens alive with plants being grown by refugees using mattress foam rather than soil.
- A Co-Centre run jointly by University of Sheffield, Queen's University Belfast and University College Dublin is a first-of-a-kind collaboration across Great Britain, Ireland and Northern Ireland to drive societal and political change in food system transformation and transition to climate neutrality by 2050.
- Researchers at the ISF are working with a network of surplus food redistribution charities in the UK to improve how food is distributed to maximise its social good and change community-based approaches to the problems of food insecurity.

For more information, please visit: www.sheffield.ac.uk/sustainable-food



INFUSION project working to transform traditional food markets in India to boost nutrition



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Unlocking Nature's Diversity



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ROTHAMSTED RESEARCH



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