

Hutton Highlights

June 2025



The James
Hutton
Institute

In this issue:

Secrets of the sludge

**Crop innovation in the heart
of Tayside**

**The interview: Hutton
Scientific Services**



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Science connecting land and people

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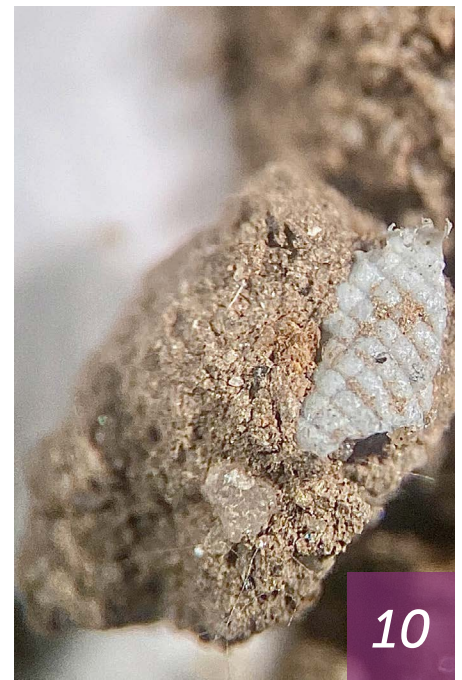
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The James
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Institute

The James Hutton Institute is a well-respected and globally recognised research organisation delivering fundamental and applied science to drive the sustainable use of land and natural resources.

The James Hutton Institute magazine team:
editor@hutton.ac.uk

@JamesHuttonInst @JamesHuttonInstitute @JamesHuttonInstitute @james-hutton-institute @JamesHuttonInst



Introduction

Making a Difference Through Science

Professor Colin Campbell, Chief Executive of The James Hutton Institute

Recently completed quinquennial science reviews have recognised the James Hutton Institute as both *excellent* and *innovative* in our research—qualities that are deeply embedded in our values. But one of our most important values is the commitment to *make a difference* and I'm occasionally asked: *Do we?* Are we truly living up to our mission—*science connecting land with people*—in ways that tangibly improve lives?

I believe we are, and the evidence lies in the growing number of action-based research projects we're undertaking. In this edition, we share just a flavour of how we're responding to the pressing challenges of the climate and nature crises and ensuring the security of our food, energy and water.

One of our key advantages is that we manage three farms. This allows us to test and validate our science at the right scale in the real world. You'll find articles on our research into regenerative agriculture, and how we're using 5G technology to establish a robotics testbed for agricultural innovation—trailing new methods and pushing boundaries in ways others cannot.

Elsewhere in this issue, we spotlight the **Crop Innovation Centre** at our Invergowrie campus, which opened last year with support from the Tay Cities Region Deal. It houses two major innovation centres: the **International Barley Hub**, advancing barley breeding for the future, and the **Advanced Plant Growth Centre**, which is pioneering alternatives to conventional crops, including industrial hemp and plants with high-value natural products.

We've also launched a new feature—**The Interview**—and this time we speak to Jonathan Snape, Head of Hutton Scientific Services. He shares how our science translates into plant breeding, licensing, consultancy, and analytical services for clients across the globe.

Our proud track record of protecting and enhancing the environment continues. This edition highlights important work we're doing on safeguarding against contaminants and understanding the emerging threat of microplastics in soil.

While much of our work delivers practical and economic benefits, science also enriches our culture. You'll read about how our potato collection featured at the Chelsea Flower Show and how our biodiversity research inspired a beautiful art installation at Kew Gardens.

At the heart of all this is our commitment to making a positive difference. We'd love to hear from you—about the magazine, about our work, or just to connect. You can reach us through our website or social media channels, sign up for our monthly newsletter, or join us at summer events like **Potatoes in Practice** or **Fruit for the Future**. Or simply drop in for a coffee on campus.

Have a great summer!

A handwritten signature in black ink that reads "Colin Campbell". The signature is fluid and cursive, with the first name "Colin" and last name "Campbell" clearly distinguishable.



Highlights

Sweet future for raspberries

A consortium set up to bring together a diverse range of partners from the raspberry industry is calling for even more members to join and combine resources to create new, targeted and improved raspberry varieties

The Hutton, which houses one of the largest and most diverse collections of historic, novel, hybrid and commercial raspberry breeding facilities in Europe, is hosting the Raspberry Breeding Consortium. It already has organisations from across the globe but is keen to have even more people bringing their skills, knowledge and cutting-edge technology to meet the ever-changing demands of the raspberry industry and really drive innovation.

Dr Jonathan Snape, Head of James Hutton Institute Scientific Services, said, "Raspberry economics, production methods, and rate of consumption have all undergone significant changes in recent years.

"Meeting the modern-day challenges presented by climate change, labour costs and Brexit has undoubtedly influenced which raspberry traits are in the highest demand and we need to respond to this demand if we are to have a sustainable raspberry industry in the future."

Demand is high for new varieties that balance productivity and picking efficiency, as well as pest and disease resistance. Growers want reliable, resilient crops that offer good flavour and longer shelf life. The consortium recognises that this requires a swift pace of research to produce economical and sustainable solutions so it will collaborate with international partners to understand and replicate desirable genetic traits in new raspberry varieties.



Trees - not the answer to net zero?

Forest restoration and rewilding are seen as an important way to capture carbon, but our scientists have warned that initiatives promoting self-establishing trees might not always be the answer to reaching net zero.

In fact, research by the University of Stirling and the Hutton found that planting birch and Scots pine trees in heather moorland ecosystems with carbon-rich soils was linked to soil carbon losses that were similar to the amount of carbon captured in the trees, meaning that overall, no net carbon was captured in the first few decades following tree planting.

Further research in collaboration with Forest Research into natural colonisation of heather moorland, where trees established from parent trees via seedfall, without human intervention showed that after 25 years the carbon captured in the small, sparsely growing trees did not exceed the carbon lost from the soil, meaning no carbon was captured following the colonisation of these previously unforested ecosystems by trees.

The 25-year timescale is significant, given that Scotland has pledged to achieve net zero carbon emissions (when the carbon released is equalled by the carbon captured) by 2045, partly by increasing tree cover.

While it is certainly true that establishing trees brings other benefits such as increased biodiversity, flood alleviation, or recreation, Dr Naomi Housego, who led the research, stressed that we must consider the potential for soil carbon losses when increasing tree cover with the aim to capture carbon.

It is easy to assume that creating a new woodland will always have a carbon benefit, but this work shows that carbon losses from the soil can cancel out the benefits we see of carbon being stored as the trees grow, even when soils are not physically disturbed by planting.

Carbon stored in forest soils can account for up to 70% of the total forest ecosystem carbon balance so adopting scientifically informed approaches to forest expansion, natural regeneration and colonisation, and sustainable forest management are essential for preserving and enhancing these critical soil carbon reserves.





Unearthing the past

An interesting collaboration between The James Hutton Institute and the National Library of Scotland is using historic maps and AI to locate missing peatland.

The work, which follows on from a project mapping grassland on peat, allows for the classification and localisation of over five million hectares of moorlands as they appear in the first edition Ordnance Survey maps,

produced between 1843 and 1882.

Fraser Macfarlane, Machine Learning Research Scientist at the Hutton, said, "The maps in the collection at the National Library of Scotland are an incredible resource that offer a unique view into the past. The Ordnance Survey is a very reliable source, from which we can extract information from 140 years ago.

"These techniques can be applied to other historic maps, such as the James Hutton Institute collection."

A viewer on the National Library of Scotland's website allows users to compare historic maps with modern satellite imagery, surely something that will be of great interest to anyone involved in the historic moorland coverage of Scotland.



What's in the diary?

We will be hosting Fruit for the Future on 17 July, giving visitors the chance to find out about our soft fruit research. There will be scientific presentations, outdoor demonstrations and walks through experimental plots.

7 August will see our annual Potatoes in Practice at our farm at Balruddery, a must-visit event for all those in the potato industry to enjoy a variety of demonstrations, cutting-edge research, trade exhibits and a wealth of knowledge from experts in the field.

This year's TB Macaulay Lecture, on 1 October, will feature Kate Raworth, an ecological economist, creator of the Doughnut – a concept that aims to meet the needs



of all people within the means of the living planet – and co-founder of Doughnut Economics Action Lab. Register for free tickets [here](#).

Fruit Focus takes place in Kent on 9 July, and provides a great opportunity for business development, knowledge exchange and networking for the fruit growing industry. JHL will be introducing our new berry, Loch Katrine. This blackberry, which came top in blind tasting and shelf-life trials, should be available at Invergowrie in late July.

And, finally, we will be attending Groundswell on 26 and 27 July, the Future Farming Expo in Aberdeen on 2 and 3 December and GreenTech.





Awards, accolades and appointments



Dr Alison Karley

Appointed as Head of the Ecological Sciences department after spending more than 20 years at the institute. She takes over from Professor Rob Brooker, bringing more than 25 years of experience in sustainable agri-food systems research to the role.

Ali began her new role on 1 April.



Dr Ian Archer

Appointed Commercial Director of James Hutton Ltd after leaving the role of CEO at the new BioConnect Innovation Centre in Co. Monaghan.

Ian began his new role on 28 April.



Dr Margaret Currie

Appointed as the new Head of Social, Economic and Geographical Sciences (SEGS), taking over from Dr Tony Craig. She first joined the Hutton at the beginning of 2013, having previously worked as a research assistant at the University of Aberdeen.

She began her role on 1 May.



Professor Ian Toth

Director of the National Potato Innovation Centre (NPIC) and Scotland's Plant Health Centre at The James Hutton Institute, has been appointed as President of the European Association for Potato Research (EAPR) following 35 years of pioneering potato research.



Professor Rob Brooker

Appointed as Executive Director of Science, leaving his previous position as Head of Ecological Sciences. A plant ecologist with more than 25 years of research experience, Rob joined the Hutton (initially the Macaulay Land Use Research Institute) in 2006.

Rob began his new role on 1 March.



Professor Tim George

Appointed as the new Director of the International Barley Hub (IBH), replacing Professor Robbie Waugh.

George is a plant physiologist and soil scientist with more than 25 years' worth of experience.



Dr Kerry Waylen

Appointed as Deputy Director of the International Land Use Study Centre, an innovation centre supported by the Macaulay Development Trust, which focuses on enabling just transition in land use and promoting high-impact land-based science.



Anne Corbin

Appointed Chief Financial Officer. Anne joins the Hutton from social care charity VSA, where she has worked since 2019, serving as CFO since 2021.



Professor Rupert Hough

Appointed as Director of Digital Transformation. Professor Hough will help the organisation take advantage of the new opportunities presented by emerging technologies and continue developing a culture that promotes innovation and efficiency.



Dr Kelly Houston, Dr Sarah McKim and Dr Isabelle Colas

Appointed joint Deputy Directors of the International Barley Hub.

All three have long-term experience of working in the field of barley research and will be leading on Capacity, Community and Collaboration respectively. This new approach will deliver a dynamic IBH and ultimately improve the sustainability of the barley production system.

Hutton earns silver Athena Swan

The Hutton has won silver status under the Athena Swan Charter, the framework used by higher education and research institutions to promote gender equality.

The upgrade from a bronze award in 2019 to a silver in 2024 is credited to an increased commitment to flexible working, as well as clear-cut career pathways for researchers and growing numbers of senior appointments of women.

Professor Deb Roberts, Deputy Chief Executive and Executive Director of Science at The Hutton said, "Equality, diversity, and inclusion are absolute priorities for us, and as co-chair of the ED&I Committee, gaining our silver accreditation has been a cause for celebration. We have a wonderful team at The Hutton, and I'd like to extend my thanks to all of our ED&I Committee members, Board champions, our HR team, and all those who helped make our initiatives a reality."

Professor Colin Campbell, Chief Executive at The Hutton: "The James Hutton Institute remains steadfast in its commitment to advancing equal opportunities. We are proud of the progress we have made but also recognize that there is more to be done."



Leading the way in 5G innovation

James Hutton Ltd (now James Hutton Scientific Services) was one of four winners in the Tay5G Challenge Fund 2 for Promising Innovations in Scotland.

This competitive funding initiative aims to accelerate the development of innovative projects utilising the power of 5G technology to transform various sectors. It is supported with around £600,000 of Scottish Government funding as part of its £2million investment in Tay5G.

The Hutton's winning project integrated robotic platforms with 5G capabilities at Mylnefield Farm. Supported by Soil Essentials and The National Robotarium, the project used 5G's ultra-reliable, low-latency communications to control autonomous vehicles and gather real-

time data, with the goal of establishing a 'robotics test bed' for agricultural innovation

Robotics, like tractors in the past, has the potential to improve efficiency by reducing labour and inputs while minimizing negative environmental impacts through a data-driven approach.

Project lead for the Hutton, Andrew Christie, said, "Agricultural robots are now appearing on the market, but we need successful use cases to provide farmers with the confidence in their ability to perform in challenging field conditions and evidence to justify the cost. This project was also able to evaluate the enhanced capability for robotics offered by 5G."

£6 million to fight potato blight

A project that aims to determine how pathogens cause crop diseases such as potato blight was awarded £5.91 million from UKRI for a five-year study.

Approximately 25% of food is threatened annually by pests and diseases.

Chief amongst these threats are fungal and oomycete pathogens, such as *Phytophthora infestans*, which cause the devastating disease potato blight and contributed to the Irish Potato Famine in the 1800s.

Phytophthora are a group of fungus-like microbes that cause many devastating plant diseases, most notoriously late blight of potatoes and tomatoes, two of the world's most important vegetable crops. This fast-evolving pathogen has overwhelmed most of the resistant varieties, so we need to find new ways to control it to reduce the impact of the disease.

Hutton scientists are partnering with the University of Dundee, the Sainsbury Laboratory, University of Cambridge (SLCU) and Imperial College London.





Improving crop resilience and sustainability

Crop innovation in the heart of Tayside

Our Crop Innovation Centre (CIC) was formally opened in October 2024, with both the UK Secretary of State for Scotland, Ian Murray MP, and First Minister of Scotland, John Swinney MSP in attendance.

The CIC is home to the Advanced Plant Growth Centre (APGC) and the International Barley Hub (IBH), which were created in partnership with the University of Dundee Plants Sciences Division.

Both these centres were funded as part of a £62m investment through the Tay Cities Region Deal (TCRD) by the UK and Scottish Governments, which also facilitated the construction of the Mylnefield Farm building and the IBH Field Centre on The James Hutton Institute's Invergowrie campus.

The investment offers a unique combination of world-leading science and state-of-the-art facilities for field, farm and lab that deliver technological

and digital innovation focussed on future proofing crop production, enhancing food and drink security, managing our natural resources sustainably and supporting thriving rural communities in Scotland and across the globe.

Speaking on the day, Chief Executive, Colin Campbell said, "We received funding for the Crop Innovation Centre in 2020, and the project is underpinned by decades of research at The James Hutton Institute along with partners.

"It cements the reputation of Scotland and the UK as global leaders in research and innovation. It was a pleasure to welcome the First Minister and UK Secretary of State to Scotland, and we're grateful for all the support we have received to make this ambition a reality."

The IBH will promote scientific discovery and innovation to tackle issues faced by the barley industry by piloting new breeding technologies such as precision phenotyping and crop management using data from sensors and drones.

The APGC seeks to address global food, non-food and pharmaceutical crops. It aims to revolutionise crop production systems to produce food locally, 365 days a year, with less environmental impact, using its five facilities: molecular phenotyping centre (to study the characteristics of crops at a molecular level); a high throughput phenotyping platform (which allows the collection and analysis of data in large quantities); a vertical growth tower; a post-harvest storage facility and next-generation controlled environments with the ability to replicate current, and predicted future, global crop production conditions.



UK Secretary of State for Scotland, Ian Murray MP said,

“It was a real pleasure to open The James Hutton Institute’s new Crop Innovation Centre alongside the First Minister. The UK Government is investing £45 million in the Centre through the Tay Cities Region Deal.

“Projects at the world-renowned James Hutton Institute demonstrate Scotland’s cutting-edge research and innovation in practice. The International Barley Hub will deliver world leading research for a crop which is vital to our whisky, beer and food sectors. The Advanced Plant Growth Centre will revolutionise crop production to address critical food security issues.



See inside the CIC



L-R Professor Robbie Waugh, John Swinney MSP, Ian Murray MP and Professor Colin Campbell

“Both projects will be key to our future food security, and to ensuring a thriving future for rural communities everywhere.”

First Minister John Swinney said,

“The James Hutton Institute’s new Crop Innovation Centre is an excellent example of the type of research and innovation infrastructure that is essential for any modern, dynamic country to thrive.

“Through the Tay Cities Region Deal and in partnership with the UK Government, we have invested £17 million in this project, which will provide jobs and help unlock the full potential of Tayside.

“The completion of the Advanced Plant Growth Centre and the International Barley Hub will put Scotland at the cutting edge of agricultural innovation and help provide technological solutions to help improve food security in an ever-changing world.”



Professor Robbie Waugh

“ While the new IBH facilities provide first class research facilities, perhaps more importantly they enhance the opportunity for our multidisciplinary (barley) research group to work together, promoting peer to peer interaction and collective learning. They provide an environment that enhances open communication of results and ideas, ultimately leading to better research outcomes. It is obvious already that the quality working environment is benefitting staff personally and professionally. ”



Scottish Government
Riaghaltas na h-Alba



Funded by
UK Government



Secrets of the sludge

Latest research from the Hutton suggests that hidden threats from the agricultural use of contaminated sewage sludge could be contributing to already diminished poor soil health.

Treated sewage sludge products (or biosolids) are the byproducts of wastewater treatment and are commonly used in agriculture as a cost-effective source of nutrients and organic matter. Around 87% of the 3.6 million tonnes of sewage sludge produced in the UK is recycled to agricultural land. This sludge is not treated for many potentially hazardous contaminants that enter our wastewater system through personal or industrial activities, including microplastics, persistent organic chemicals and pharmaceuticals – allowing them a pathway to re-enter the environment.

The potential harmful effects of these unregulated contaminants on soils have been understudied in recent years.

Now, however, using the same scientific approach to that of a 2018 report that looked at the risks posed by biosolids to human health; a reassessment of the risks to soil health has been conducted by the Hutton. It found that a broad range of contaminants in sewage sludge could be harming the UK's soil ecosystems and the wider environment.

Professor Rupert Hough, author of the report, said, "Using the most recent available data and research, this new assessment builds on existing and growing scientific evidence around the risks that contaminated sewage sludge poses to the environment.

"Impacts on soil biota, when directly exposed to contaminants, are more acute compared to impacts on humans exposed via the food chain. Further research into the long-term fate of unregulated contaminants in agricultural soils and measures to limit their release into the environment is needed."

Dr Joanna Cloy, Senior Project Manager at the environmental charity Fidra that commissioned this research, said of the findings, "Application of biosolids to soils introduces a complex chemical mixture of contaminants and the detrimental nature of many of these contaminants means that we need a precautionary approach to protect the future health of UK soils. If we wish to support a clean and safe circular economy, then the quality of these resources must be improved prior to their recycling to agricultural land.

"Policy makers at the local and national levels need to enforce a more robust regulatory framework for handling well known and emerging unregulated contaminants such as the microplastics and PFAS (forever chemicals)."



Further research from the Hutton has also revealed how long-lasting some of these contaminants can be.

A recent study carried out in collaboration with Robert Gordons' University (RGU) has shown that the level of microplastics in soil treated with sewage slurry rose by 1,450% in just four years of applications – and remained relatively unchanged for 22 years after they stopped.

Researchers drew their conclusions by analysing soil samples from a field in Hartwood, North Lanarkshire, which



Microfilm in soil



Microplastics fibre

was included in a UK-wide sewage sludge experiment between 1994 and 2019. Investigating the long-term impacts of sewage sludge application, scientists applied a variety of sludges to plots of land for four years and maintained the area as grassland. Soil samples were taken every two years over a 25-year period and archived in the National Soils Inventory for Scotland at the Hutton.

These archived samples, along with funding from the Macaulay Development Trust, provided researchers with a unique opportunity to analyse the fate of microplastics in soils over an extended period. In addition to their discoveries around the quick increase in and longevity of microplastics, scientists found that degradation varied between different forms of plastic. Microfibres from clothing (the most common type of microplastic found) and microfilms from packaging both broke down in the soil, while other varieties – such as flakes from plastic containers and bottles – did not. Microplastics that did degrade only formed smaller microplastics and nanoplastics, posing a further hazard to the environment.

Researchers were able to determine the potential sources of the sludges used on the soil samples by examining the types of microplastics present, such as uncommon materials only used in industrial locations.

They also noticed that textile fibres found within the sewage sludge lost their colour over time, however the cause of this is still unknown. It may be that the dyes are degrading, causing the fibres to fade, however it is also possible that dyes are leaching into the environment, which could cause further toxic effects in the soil.



Dr Stuart Ramage, an analytical chemist at the Hutton and lead author of the study, said, “The persistence of microplastics in large numbers in agricultural soils over long periods of time has the potential to damage soil health. By understanding how different microplastics behave over time, we can further examine the impact of microplastic pollution in our soil environment.

“Microplastics in soils may present a pathway for exposure to humans through consumption of microplastic-contaminated crops.”

Dr Eulyn Pagaling, a senior environmental microbiologist, and the principal investigator on the study said, “Our results highlight the long-term consequences of sewage sludge application and the importance of managing these sludges to mitigate against a major source of microplastics to soils.

“We are now working to see what these microplastics and other pollutants are doing to soil and how this affects ecosystem services we rely on, such as growing crops.”

The full publication, titled *Microplastics in agricultural soils following sewage sludge applications: Evidence from a 25-year study*, can be found on the ScienceDirect website.





The interview:

Hutton Scientific Services

The James Hutton Institute has a commercial arm which provides world-class research and technical expertise across a broad range of scientific fields, including agriculture, environment, and food security. Specific services include plant breeding and licensing, scientific research, consultancy, and analytical services for clients worldwide. Jonathan Snape, who heads up this area of our work, explains a bit more about this critical area of our organisation.

What does Hutton Scientific Services do and where you fit in?

James Hutton Institute Scientific Services is the brand name we use for marketing all the different services that can be offered by the Hutton Group. The legal entity is still James Hutton Limited, but the brand for all different markets is Scientific Services. My role is as a managing director. I've been here for almost 28 years and, in that time, the commercial side has grown from four to about 42 people. The range of services that we can offer expanded over these years as well, and the business has grown to reflect the Hutton's broadening research interests.

Tell us a little bit more about the range of services offered?

These fall into four main areas, the first being analytical services. The idea here is for companies to send us samples, which we analyse using our sophisticated, cutting-edge equipment. We then provide both the data and an interpretation of what it means, and we can do that for a whole host of different things. We can analyse crops, soil and water, working across sectors including food and drink, nutraceuticals, regenerative agriculture, and oil and gas.

The second is crop breeding and trialling. We breed new varieties of potatoes - both for the fresh market and the processing market - and a wide variety of berries including raspberries, blackberries, blueberries, black currants and red currants. We also trial crop

protection and crop nutrition products for companies wishing to get products registered in this sector.

The third area is contract research. That includes collaborative research projects funded partially by government bodies such as Innovate UK, as well as direct contract research funded by commercial companies looking for bespoke pieces of work. They cover the whole breadth of research interests within the institute, and we work with all the Hutton science departments, alongside BLOSS, on a wide range of projects - from developing software tools for Scottish Water through to re-engineering rivers at a distillery in Aberdeenshire.

The fourth I describe as being very similar to the tech transfer office at a university. Here we deal with patents, help scientists develop their research commercially and explore potential spin-in and spin-out companies.

What work are you excited about?

We've bred two varieties of berry this year, which we have very high hopes for. There's a new raspberry variety, Glenn Eden, as well as a new blackberry variety, Loch Katrine. We've also spent a lot of time developing our marketing material for our analytical services, and we've produced a range of promotional videos which are available on our website and YouTube channel and will be doing more

What sets you apart from other scientific service providers?

First of all, we offer a holistic range of services.

We can assemble teams of individuals who have expertise in complimentary areas to address real-world problems.

For example, we don't just look at soil physics, but can look at soil chemistry and biology too. We also

have social scientists who get involved in projects, as well as statisticians and bioinformaticians who contribute great insights.

We have a range of different accredited services where we're independently audited to ensure that the work that we're doing is the absolute best-in-class. That would include good clinical practice and good manufacturing practice for some of the analytical work we do, ISO 17025 for other analytical work, as well as ORETO accreditation for our field trial work. These are very important, not only as a marketing tool, but also to ensuring that our work stays at the highest levels of quality possible.



Jonathan Snape



The third area is we have extremely good links to end users, such as farmers, landowners and food processors. This means the work we do remains relevant, as it addresses the needs of what they want and bridges the gap between top-of-the-line academic science and real-world commercial needs.

Do we have any spin-in and spin-out companies?

Yes we have a number of spin-in and spin-out companies at the moment. A spin-out is a commercial venture or new company formed that originates from the Institute's research and intellectual property with the goal to bring that scientific innovation to market. On the other hand, a spin-in is a company that joins the Institute to collaborate and grow by using the Institute's research, facilities, and expertise.

For these companies we can offer office space, lab and field space and glasshouses. We have access to specialist growth facilities through the Advanced Plant Growth Centre, which makes our offering truly unique.

The other thing that we bring is expertise in identifying and working with sources of funding. We know how to manage these projects, whether it's from Scottish Enterprise, high growth programs or the IQ program. We've got experience of delivering all of those. We also have experience in managing IP, and we can work with spin-in and spin-out partners to help them ensure that they've got the most robust, strong IP position possible.

For those who are interested in working with your team, what should they do?

A good first point of call would be our website - www.hutton.ac.uk/scientific-services/ - where we list our expertise and key contacts people to contact.

If you'd rather meet us face-to-face, we have an active program of events that we attend not just in the UK but internationally such as Cereals in England where we showcase our barley work, Potatoes in Practice which we organise at our own Balruddery Farm and we'll also be at Potato Europe in the Netherlands this year. We hold Fruit for the Future on 17 July, and we go to events such as Fruit Focus in Kent, as well as Fruit Attraction in Madrid and Fruit Logistica in Berlin.



SeaDyes

A new spin-in company looking to create a biobased alternative to synthetic dyes has joined The James Hutton Institute.

SeaDyes, founded by marine scientist and biotech innovator Jessica Giannotti in July 2023, aims to revolutionise the fashion and textile industries by producing stunning natural dyes derived from seaweed. These sustainable colourants provide a bio-based, non-toxic alternative to petroleum-based synthetics.

By joining the Hutton, Jessica and her team gain access to world-class scientific expertise, facilities, and collaborative opportunities, along with a £75,000 grant from Scottish Enterprise's High Growth Spinout Programme.

The funding will help accelerate SeaDyes' research and commercialisation efforts, providing an opportunity to scale up their breakthrough technology, develop market-ready products and continue contributing to Scotland's growing bioeconomy.

Jessica said, "The urgent need for alternatives and our unique position at the intersection of marine science, sustainable aquaculture and the fashion industry inspired us to explore sustainable material solutions from the ocean. Nature-based solutions like SeaDyes can support the detoxification of the fashion and textile industries and reduce their dependence on fossil fuels. In exchange, the fashion and textile industries can drive science-led innovation, blue growth and job creation.

"Becoming a spin-in at The James Hutton Institute is a transformative step for SeaDyes. We can now treat seaweed as a crop and our dyes as a natural product, and have the capacity, skills and space to refine our technology, develop a market-ready product and scale. Their research excellence and commitment to sustainability and innovation perfectly align with our vision of providing planet-friendly solutions. We have a bold shared vision for the future driven by creative science-led innovation."



Jessica Giannotti



Improving crop resilience and sustainability

Regenerative agriculture

Hutton soil ecologist Dr Roy Neilson was one of the lead authors of a report published by the British Ecological Society assessing the evidence that regenerative agriculture approaches can achieve positive outcomes like improving soil health, increasing biodiversity and minimising environmental damage.

There are five principles of regenerative agriculture

- Minimising soil disturbance
- Minimising bare soil
- Increasing farm diversity
- Integrating livestock
- Favouring nature-based methods over synthetic input

None of these can deliver meaningful change on its own; that requires a good understanding of the context of the individual farming system and, whenever possible, the adoption of multiple principles.

However, the report found the strongest evidence of benefits come from minimising bare soil. Keeping roots in the ground year-round, through practices like cover crops, can increase soil organic matter, enhance soil structure, improve nutrient availability and increase biodiversity.

The report also found good evidence that integrating livestock into arable land benefits weed, disease and pest suppression.

Science and ecologists have a big part to play in regenerative agriculture. There's a perception that regenerative agriculture or nature friendly farming is going backwards, rediscovering past ways of farming but, in fact, there's a lot of exciting new technology and developments involved.

Clever crops and climate change

Field trials are underway to look for evidence for the ecosystem benefits of legume crops, such as peas, beans and clover and to monitor their social and economic benefits.

The legumES project promotes legume cultivation as a solution to reduce dependence on synthetic nitrogen fertilisers, lower greenhouse gas emissions, improve soil health and create more diverse and resilient cropped systems.

Additionally, the project aims to enhance biodiversity, contribute to sustainable food systems and strengthen rural communities by providing alternative economic opportunities through legume-based agriculture. It will deliver practical, scalable solutions that contribute to agricultural sustainability, and inform supportive policy and governance options across Europe.

Professor Pete Iannetta is co-ordinating the project. He said, "The legumES project looks beyond how legume crops such as peas, beans or clover may be included in crop rotations. It also examines how legume crops might mitigate the impacts that are already being experienced from climate change and biodiversity loss – including crop biodiversity loss - and their effects on nutritional security.

The four-year project was awarded 6.2 million euros from the European Commission and the governments of Switzerland and the United Kingdom. It is being carried out by a multidisciplinary consortium of 22 partners from 12 EU countries, plus Switzerland and the UK, comprising research and technology organisations; micro, small and medium-sized enterprises; large companies and non-governmental organisations.

Making the case for less favoured areas

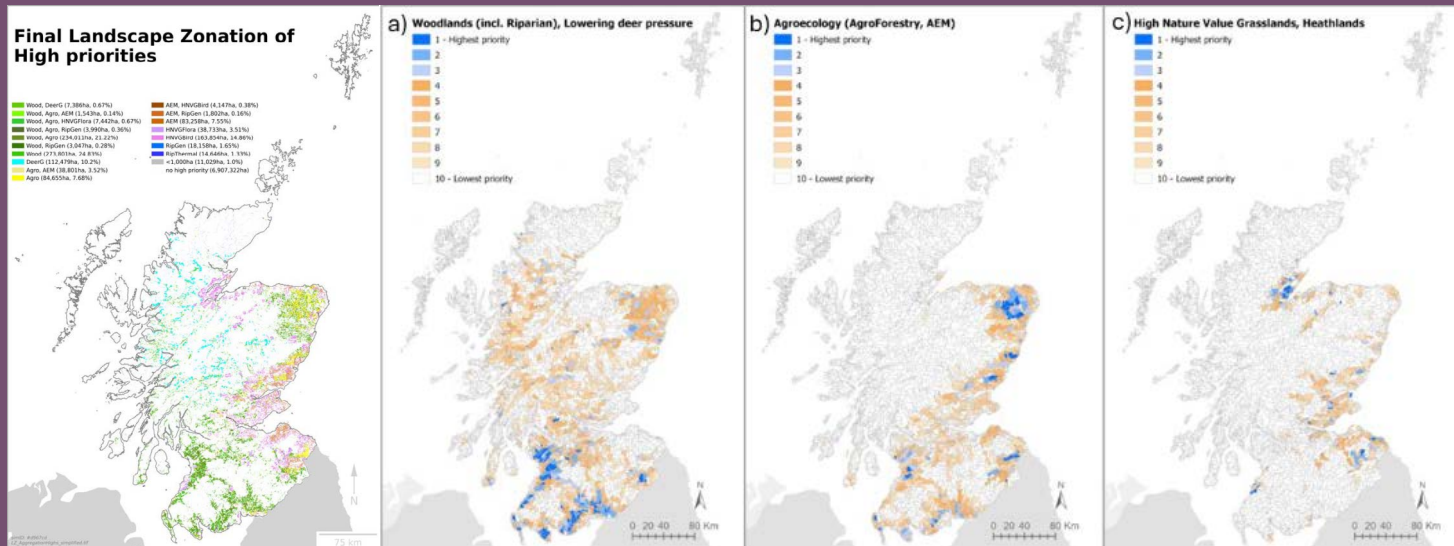
As part of a Scottish Government feasibility study, the Hutton organised a series of workshops, in-person and online, to gain a better understanding of what sustainable and regenerative agricultural practices are currently taking place in Less Favoured Areas (LFAs) around the country and what types of support would help those farming or crofting on LFA land.

The team also asked stakeholders, farmers and crofters about the types

of sustainable and regenerative practices already being carried out, the motivations for doing them and the barriers encountered.

Their findings will inform the development of incentives for these practices in LFAs, particularly those that deliver outcomes for carbon emissions reductions, peatland restoration, tree planting and woodland natural regeneration and biodiversity.





Putting Scotland's priority ecosystems on the map

Researchers at The James Hutton Institute have produced a collection of opportunity maps highlighting areas across Scotland where the landscape could be restored.

The maps, which were published by senior landscape scientist Dr Alessandro Gimona and land use system modeller Dr Marie Castellazzi, detail up to 1.4 million hectares of high-opportunity land which could be used for expanding woodland and agroforestry, increasing hedgerows and field margins, reducing grazing pressure on grasslands and heathlands, and restoring riparian zones.

Scotland's biodiversity and ecosystems currently face significant pressures from intensive land use. Approximately 70% of the country's land is dominated by agricultural practices which can contribute to habitat fragmentation, soil degradation, and reduced ecosystem resilience. While nature-based solutions offer the potential to restore ecosystems, mitigate climate change and enhance both the economy and public health, a strategic and spatially explicit framework is required to ensure that these solutions are implemented in the highest priority areas.

With funding from the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS), Hutton researchers analysed

the country at a 100m resolution, using several modelling approaches and focusing on the expansion or restoration of seven habitat types – woodlands, agroforestry, hedges, cropland, high nature value grasslands, heathlands, and freshwater ecosystems. Using detailed opportunity mapping and a multi-criteria methodology to combine different datasets, they created a three-tiered priority map for each habitat type. These maps were then used to bring the highest-priority locations together on a final composite zonation map.

The work was carried out in support of the Scottish Biodiversity Strategy, and the maps produced can be used by planners, policymakers, farmers, and investors to help target limited resources to the areas where they are most useful.

Peatlands were not included in this mapping exercise, as they are currently being addressed in a separate study.

Dr Gimona said, "Nature-based solutions are about rethinking how we manage land to deliver multiple benefits for people and wildlife. This study provides a strategic landscape framework that can underpin Scotland's Biodiversity Strategy and Land Use Strategy, as well as public and private conservation schemes, addressing the nexus between biodiversity, water, agriculture, and climate change."

LUNZ

The Hutton is delighted to be co-leading, with the University of Leicester, a first of its kind consortium of 34 leading research and stakeholder organisations set up to help all four UK administrations address land use and agriculture as a major greenhouse gas emitting sector.

The Land Use for Net Zero (LUNZ) Hub, backed by £6.5 million funding from UK Research and Innovation (UKRI), will provide UK and devolved nations timely evidence around land use, from renewable energy to soil carbon and green finance, to help drive the land transformations needed to achieve net zero by 2050.

The hub will play a pivotal role in helping to communicate more widely the critical importance of land and how it's used as a major carbon sink or source.

Professor Lee-Ann Sutherland explains, "The science behind land use is highly complex. Our aim is to bridge the gap between researchers and policy makers and our work will be focused on meeting specific policy-maker needs, giving them the evidence they need in the format and timeframe they need it."

Achieving the transformational change in land management needed will depend on government access to world-class research and innovation and a novel approach to collaboration across a variety of critical stakeholders.



Correct flowering time for plants

A recent study has identified a new mechanism by which plants link resource availability to flowering at the correct time. This maximises their chances of reproductive success and is a key determinant for crop yield.

Dr Vanessa Wahl worked collaboratively in the study led by Dr Camila Caldana at the Max Planck Institute of Molecular Plant Physiology in Germany. They found that this occurs via interaction between a well-established component of energy management, the target of rapamycin (TOR) complex, and the protein RAPTOR1B.

TOR is a master regulator of growth and nutrient sensing, conserved not just in plants, but also in animals, including humans.

Previous research has revealed that several molecular pathways, connected through an extensive network, control flowering time, taking internal and external cues. Complex interactions between light perception, sugar signalling, circadian rhythms, plant hormones and temperature sensing allow plants to adapt to seasonal change and therefore to flower at the optimal time. This new study provides a detailed understanding of exactly how TOR integrates into this complex network.

The research found that the TOR complex not only sits at the centre of a plant's energy management, but also directly connects energy sensing with the photoperiod pathway of the flowering network.

Dr Wahl's research delves into the mechanisms by which plants can observe how much energy they have left. She said, "While we understand the role of light and circadian signals, far less is known about signals reporting of nutrient availability."

Dr Caldana said, "We found it is RAPTOR1B which connects the signalling network that regulates cell growth in response to nutrients, growth factors and cellular energy with post-transcriptional regulation of a plant's physiological reaction to the length of daylight.

"Understanding how environmental factors influence a physiological process, as mediated by TOR, can have a huge impact on fine-tuning reproductive success and consequently crop productivity. Elucidation of this new pathway provides opportunities to optimise the process in different environments by selecting genotypes with a modified TOR pathway. These findings provide an opportunity to

improve crop resilience and yield in the face of environmental change."

Agriculture and food systems are experiencing significant challenges related to climate change, including impacts on land availability, crop yields and food nutritional properties. Simultaneously, there is a need to achieve food security for a burgeoning world population alongside transitioning towards more climate-resilient and sustainable farming requiring the implementation of less damaging management systems.

Understanding the plant's ability to coordinate growth and development with environmental signals including nutrient availability, will make a vital contribution towards food security and the sustainable management of our natural resources both in the UK and internationally.

These findings can now be translated to crop species to enhance future production and create more resilient food systems, ultimately shaping the future of sustainable agriculture and global food security.

Two barley papers in *Nature*

Two papers published in the prestigious journal, *Nature*, have highlighted the work of the International Barley Hub (IBH).

Scientists from the IBH played a crucial role in a major international study to create the most comprehensive DNA-based genetic map of barley to date. Their research has provided unprecedented insights into the crop's evolution and adaptation, such as disease resistance, plant architecture and starch mobilisation.

The findings will have significant implications for Scottish agriculture, where barley is the major crop and underpins the iconic malt whisky industry, providing a template for developing barley varieties better suited to Scottish growing conditions and enhancing knowledge to support sustainable farming practices.

The study focused on the pan-genome of barley, which represents the complete set of genomic sequences, that can be found within a species.

Dr. Micha Bayer said, "This pangenome provides a powerful new tool for understanding barley's species-wide genetic diversity at unprecedented resolution. It will accelerate our ability to develop more resilient and productive barley varieties."

A second study was published in *Nature Genetics* on the findings by a 48-strong international consortium, led by scientists from the IBH, which found that different strains have very different patterns of switching genes on and off (known as gene expression).

The findings will form a foundation for future scientific studies that depend upon knowing dynamic patterns of gene expression within and between strains.

Despite all modern barley strains containing approximately the same number of genes, only a few produce 'premium' grains. This is because most genes contain variations that either modify their function or affect where, when or at what level they are switched on or off. As each type of variation can modify a gene's role in the plant, it is the unique combination of barley's >30,000 genes, that are patched together by plant breeders, that define whether a strain is destined to become 'premium' or not.

This study identified where, when and at what level all the genes in a globally representative collection of barley strains are expressed. The resulting data, which in the world of science is called a 'Pan-Transcriptome', showed that different strains may have very different patterns of expression, indicating that there are many ways to make a barley plant.



Oats exploring food security

A study to identify nutritionally superior and yield-stable oat varieties through a combination of experimental and on-farm field trials across a range of diverse environments and organic management systems has been awarded £100,000 from the Novo Nordisk Foundation.

The three-year project will be led by the Innovation Centre for Organic Agriculture in Denmark.

Sustainable production of healthy food for a growing human population is an escalating global challenge and oat could be part of the answer. It is the third most popular cereal crop grown in the UK after wheat and barley and is a uniquely healthy cereal crop, rich in protein, minerals and fibre, especially β -glucan, which is associated with a reduction in cholesterol levels and post-meal glycaemic responses.

Dr Joanne Russell, the Hutton's lead on this study said, "The project brings together experts in plant genetics,

agronomy, and mathematics to harness the unique properties of oat, with its low carbon footprint and significant nutritional and health benefits. The key issue for oat producers is the lack of stability in year-to-year supply and quality, largely due to seasonal fluctuations in environmental factors. We will focus on the need to develop robust organic-ready oat cultivars specifically tailored to sustainable organic production and address some of the emerging challenges in food and help secure food production."

Oat is currently experiencing a global revival. It ranks sixth in cereal production worldwide and in Denmark accounts for 25% of organic cereals grown. Oat production in the UK increased by 19% in 2024, driven by increases in both area and yield.

It is estimated that the oat market will grow by 3.7% annually between 2024 and 2032 because of increasing health consciousness and demand for functional food, that is foods that are highly nutritious and associated with many powerful health benefits.





Drier springs increase wildfire threat

Heather burning, Glen Gairn

With Scotland already beginning to feel the impacts of climate change, the threat of wildfires looms larger each year. Spring of 2025 was the driest on record, with more land burning this year than ever before. Already, wildfires have forced evacuations near Galloway, and climate experts warn this may be the new normal.

Spurred on by this growing danger, researchers at the Hutton are working on a number of projects to help understand wildfire and its impacts. One of these projects involves using statistical models to develop an understanding of how changes in precipitation patterns and drought frequencies may affect the occurrence of wildfires in the future. The models can simulate different Scottish ecosystems and habitats under varied climate change scenarios, allowing scientists to predict where wildfires are most likely to appear if these scenarios become reality.

Meanwhile, ecologists are using spatial mapping to address the factors that influence the severity of wildfires and have conducted follow-up surveys on areas hit by blazes to analyse the

recovery of different plant species. Research has also been conducted into the overlap between muirburn, controlled burning and wildfires.

So far, this research has found that the severity of wildfires in moorlands is affected by a multitude of factors, both small and large scale. Fires are more severe on steeper slopes, during stronger winds and at times when the atmosphere is drier. Dry heath, typical of moorlands in the east of Scotland, faces the highest fire severity and the greatest impact on vegetation, with it sometimes taking years for the plant community to resemble the pre-fire composition. Wet heath and blanket bog are generally less affected and recover more quickly, however recovery tends to take longer at high altitudes, especially as the mosses common in these areas grow back slowly and leave bare ground at risk of erosion.

A study of muirburn and wildfire funded by the Scottish Government found evidence of wildfires across 442 sq km of Scotland's moorlands over a five-year period. While the total affected area is only 1.1% of Scotland's overall moorland, there are concerns that

climate change could increase this in coming years, resulting in greater wildfires with the ability to burn deep into vegetation and even damage soil.

Mapping also found that heather grasslands and peat bogs in the north and west of Scotland were more susceptible to wildfires when compared with other vegetation types, such as the heather heathlands where most muirburn is carried out.

Professor Robin Pakeman, a Hutton plant ecologist working on wildfire research, said, "As climate change increases the risks and impacts of wildfire, we need to start thinking strategically about wildfire.

"Part of this is working out how to build fire breaks into the landscape so fires are easily contained, especially around habitation, as well as working out the cost and benefits of managing land to reduce fuel loads by cutting or managed burning.

"The other part is education. We need to inform the public about the risks of lighting fires and barbecues and highlight better periods of high fire risk."

Hutton research inspires art

At the Hutton, we're always keen to see how our hard work is received by stakeholders and the public. Whether it's farmers changing their practice because of our findings, the Scottish Government shaping policy around our research, or schoolkids' faces lighting up as they learn about the science happening all around them, it never fails to make us feel proud and grateful. That's why we were thrilled to learn that a summer exhibition at the Royal Botanic Gardens, Kew, was partly inspired by our own Dr Ruth Mitchell.

Of the Oak is an interactive digital art installation which allows visitors to peer beneath both bark and soil, learning about the unseen processes that sustain the tree and the life that depends on it. Standing as an enormous 6-metre-high LED portal at the heart of Kew, the installation treats viewers to a 12-minute sensory journey covering the transformation of the gardens' Lucombe oak across four seasons.

The piece was designed by art collective Marshmallow Laser Feast, with their director, Ersin Han Ersin, saying it was "deeply" inspired by Ruth's work on oak biodiversity. He singled out two specific 2019 papers - *OakEcol: A Database of Oak-associated Biodiversity within the UK* and *Collapsing Foundations: The Ecology of the British Oak, Implications of Its Decline and Mitigation Options* – for guiding him towards the oak with their focus on the diverse ecosystems and range of species supported by the tree.

The artist said, "As an artist collective, we seek emotional resonance in scientific stories - stories that connect us to the living world and, through emerging technologies, deepen our

understanding of what it means to be something other than human. What Dr Mitchell and her colleagues revealed is the wondrous realisation that a tree is never an individual—it is a living network of relationships.

"Of the Oak is both a celebration of oak trees as living monuments to ecological relationships, and a call to action for their protection."

Dr Mitchell added, "It's fantastic to have my work inspire something so unique and fascinating.

"I hope this installation can help foster an interest in biodiversity among audiences, and I'll definitely be coming along to see it for myself next time I'm in London."

Of the Oak opened to the public on Saturday 3 May and will close on Sunday 28 September. Admission is free with a ticket for the gardens. More information can be found at www.kew.org.



Chelsea Flower Show

We love to have a Hutton presence at big national events, and they don't come much bigger than the RHS Chelsea Flower Show.

Not only did we have a presence, we had a winner.

Gaynor McKenzie was on the Government's Animal and Plant Health Agency's stand, "Colorado beetle – a threat to our food security", talking to visitors about her work with the Commonwealth Potato Collection and showing off two potato plants chosen for their insect resistance - *S. polyadenium* and *S. berthaultii*.

The exhibit won a gold award AND the best in show GreenSTEM category, which celebrates the intersection of horticulture with science, technology and the environment, and showcases cutting edge innovations and research.

This was not Gaynor's first visit to Chelsea. She was there in 2016 collaborating with Morrice Innes, providing a range of wild potato species as true seed along with primitive cultivated material for his potato tuber display in the floral tent. And guess what? The display also won gold.





Casting a wide net for fertilisers

The Hutton is involved in exciting new research investigating how using seaweed extracts can improve soil health and crop performance.

The project, 'Assessing sugar kelp extracts as a nutrient management tool' is spearheaded by Algapelago Marine Ltd in collaboration with Atlantic Mariculture Ltd and the UK Agri-Tech Centre and aims to foster plant resilience while optimising soil microbial and fungal ecosystems through leveraging the natural properties of seaweed biostimulants and reducing reliance on mineral fertilisers.

The research will also lay the groundwork for larger-scale field trials, further investigating the impact of kelp-derived biostimulants on nutrient use efficiency (NUE).

It will build on previous studies which suggest that applying seaweed extracts to the collection of microorganisms that live in the soil and around plant roots and play an essential role in the degradation of organic matter, nutrient retention and recycling, can significantly enhance microbial diversity and improve crop yield and quality.

Dr Gordon McDougall, research leader at the Hutton, said,

"We are delighted to bring our expertise in seaweed biochemistry, biostimulants and crop trials to this important research project. Understanding how these novel low-energy seaweed extracts can maintain or improve crop yield whilst altering the soil microbiota and reducing inputs of nitrogen and phosphate fertilisers could provide new approaches for greener agriculture."

Cultivated kelp provides a sustainable and scalable alternative to wild-

harvested marine biomass but the potential of novel cultivated seaweed biomass, especially in applications like biostimulants, remains under-explored.

Projects like this can provide real-world use cases for seaweed farmers, enabling sustainable growth of seaweed farming in the UK which, in turn, can provide well-paid, long-term jobs in our coastal communities, helping to shift away from the current boom-and-bust cycle of seasonal employment.



Dr Gordon McDougall



Beef, lamb, milk and eggs most vulnerable to lab-grown competition

Cultivated proteins and a carbon tax are two commonly suggested methods of cutting the emissions produced by food production and the raising of livestock. Often referred to as “lab-grown”, these cultivated alternatives – which include beef, chicken and pork alongside other proteins such as milk and eggs – claim to offer greenhouse gas reductions of up to 97% when compared to conventional products. Meanwhile, taxes on carbon are increasingly being considered across Europe as a way of incentivising faster food sector decarbonisation.

However, a new study from The James Hutton Institute and Norway’s Ruralis Institute for Rural and Regional Research has suggested that these new efforts to curb carbon emissions could lead to a loss of market share for conventional proteins – with beef, lamb, milk and eggs the most vulnerable to lab-grown competition.

Focusing on Norway, the study’s authors modelled two scenarios – one in which a carbon tax is implemented and one where it is not – to explore the socio-economic consequences of cultivated proteins being introduced to the market. Based on related research within the project, it was assumed that consumers would be willing, up to a certain market share, to treat cultivated and conventional proteins as broadly interchangeable, with the main influence on their choice being price.

The study found that conventional beef, lamb, milk, and egg production were more likely to lose their market share to lab-grown proteins than pork and chicken production, regardless of a carbon tax. In the scenario where the tax was introduced, the loss of market share was much more rapid and dramatic due to

the increased cost of conventional meat production. Pork and chicken, which produce much lower emissions, proved more resilient in comparison.

Dr Nick Roxburgh, a social systems simulation modeller at the Hutton, said, “While there are still plenty of uncertainties here – such as whether technologies will ever improve to the point where cultivated proteins are commercially viable – this study suggests that sheep and cattle rearing could be most vulnerable to competition, especially if a carbon tax is introduced. We would expect this to be true in the UK as well as in Norway.

“Given the potential for disruption, it will be important to plan carefully for the possible impacts of cultivated proteins on livestock farming and rural livelihoods.”





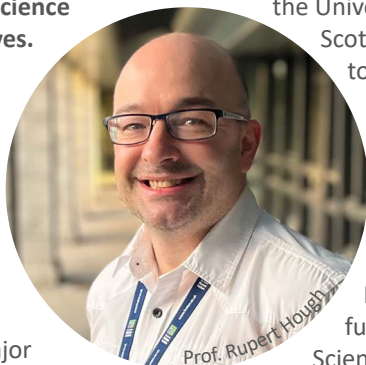
Improving crop resilience and sustainability

Collaboration to aid shrimp farmers

Here at the Hutton, our research stretches far further than you might realise. Though firmly rooted in Scotland, the institute is involved in diverse and impactful projects around the globe, allowing our science to improve millions of lives.

A brilliant example of this international focus is our involvement in the effort to create low-cost, early warning monitoring systems for shrimp farmers in Southeast Asia. The industry is a major economic driver in Thailand and Vietnam, providing millions of jobs and contributing significantly to global seafood exports. However, disease outbreaks and environmental challenges cost the industry billions of dollars every year, and existing monitoring technologies are often too expensive or complex for small farmers, leaving them vulnerable to sudden losses.

A three-year project, launched in spring 2025, now aims to develop a



Prof. Rupert Hough

handheld sensor that rapidly detects pathogens and harmful nitrogen levels in pond water, along with an AI-driven prediction tool which uses climate data to forecast disease risks. Led by the University of the West of

Scotland, the project brings together researchers from Can Tho University in Vietnam, Vidyasirimedhi Institute of Science and Technology in Thailand, the University of Strathclyde and the Hutton, with £3 million in funding from International Science Partnership Funds and UK Research and Innovation. The aim is to combine the local knowledge of shrimp farmers with expertise in biosensing technology, climate modelling, aquatic health, and artificial intelligence, delivering solutions tailored to the communities that need them most.

The study will also pioneer gender-inclusive approaches to aquaculture, ensuring that both men and women in the industry benefit from training and technology adoption.

While the project focuses on shrimp farming in Vietnam and Thailand, the technology is highly adaptable and could be expanded to other aquaculture systems across Southeast Asia and beyond.

The project's success could even reshape aquaculture practices worldwide, offering a low-cost, high-impact solution to one of the industry's most pressing challenges.

Professor Rupert Hough, Director of Digital Transformation at The James Hutton Institute, said, "It's great to be part of this important and innovative project.

"Shrimp farming is vital to the livelihoods of so many people in Southeast Asia and the digital tools we will develop will help support decision making around futureproofing against impacts of climate change.

"The Hutton's computational and digital expertise will help provide excellent results for this worthwhile collaboration."

Feeding the future

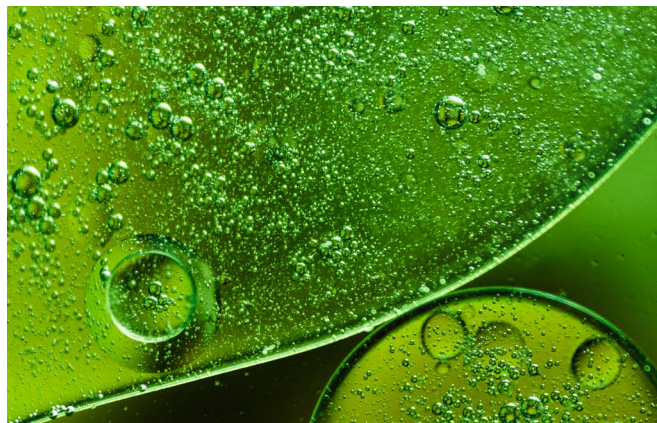
The Hutton is co-leading a new £38m UK-wide centre which could soon see alternatives to animal proteins made from plants, fungi, algae and meat grown in labs become a nutritious and environmentally friendly part of our diets.

The National Alternative Protein Innovation Centre (NAPIC) received £15m of funding from the Biotechnology and Biological Sciences Research Council (BBSRC) and Innovate UK to fund the centre dedicated to developing acceptable and planet-friendly alternatives to animal proteins.

With the global population projected to reach nearly 10 billion by 2050 there is no doubt that demand for protein is expected to rise significantly. Consider that animal agriculture is currently estimated to produce up to a fifth of the world's global greenhouse gas emissions and you can see the need to produce alternative protein sources to meet those demands in a sustainable way.

NAPIC has four pillars: Produce, Process, People and Perform that, together, will produce a clear roadmap for the development of a National Protein Strategy for the UK.

Professor Derek Stewart is leading the Produce pillar and says we have barely scratched the surface of non-animal sources of protein. He explained, "The Produce pillar will be focused on producing tasty, nutritious, safe, and affordable alternative protein foods and feedstocks to safeguard present and future generations, while addressing concerns about ultra-processed foods and assisting a just-transition for producers."



Fresh funding for cannabis research

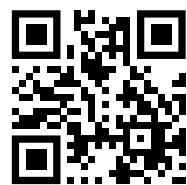
Pioneering research into medicinal cannabis research is taking place at the Advanced Plant Growth Centre, thanks to £350k funding from the Biotechnology and Biological Sciences Research Council (BBSRC).

The project is about supporting the growing need for medicinal cannabis by helping to standardise the product through environment manipulation and the development of new cannabis plant architectures so that it will meet pharmaceutical quality.

Currently the varieties, or cultivars, vary greatly based on the region in which they are grown so they create different cannabinoid profiles. Researchers are using Controlled Environment Agriculture technologies that they hope will create a consistent product that will help the UK maintain its position as one of the world's largest producers and exporters of medicinal cannabis.



Upcoming events at the Hutton



Register here

Plotting the future

Cereal walks

Tuesday 15 July 2025

Balruddery Farm, DD2 5LJ



From Scotland to the world: Revolutionising the future of fruit Fruit for the future

Thursday 17 July 2025, 3pm to 6pm

The James Hutton Institute, Invergowrie, DD2 5DA



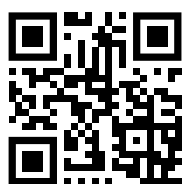
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Reserve your ticket for
Potatoes in Practice now

Future-proofing the potato industry Potatoes in Practice

Thursday 7 August 2025, 9am to 3:30pm

Balruddery Farm, DD2 5LJ



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Contact

Tel: +44 (0) 344 928 5428 info@hutton.ac.uk www.hutton.ac.uk

