

# Hutton Highlights

## Summer 2026



The James  
**Hutton**  
Institute



### In this issue:

**New climate-smart farming network for Africa**

**Three important new papers from the IBH**

**Tree planting's impact on net zero**



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The James Hutton Institute

The James Hutton Institute is Scotland's pre-eminent interdisciplinary scientific research institute at the forefront of transformative science for the sustainable management of land, crop and nature resources that support thriving rural communities in Scotland and across the globe.

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

 @JamesHuttonInstitute

 @JamesHuttonInstitute

 @james-hutton-institute

 @JamesHuttonInst



# Introduction

## Shaping the future; science with purpose

*Colin Campbell, Chief Executive of The James Hutton Institute*

This edition of *Hutton Highlights* showcases the breadth of our work and the real-world impact of science that connects land and people. From advancing climate-smart farming through to new international networks, to world-leading discoveries from the International Barley Hub and fresh insights into achieving net zero in agriculture; our scientists continue to deliver innovation that responds to some of the greatest challenges of our time.

A defining moment this year is the tercentenary of James Hutton. His pioneering, systems-based view of the natural world continues to shape how we understand the connections between soils, crops, water, climate and people.

That legacy is deeply embedded in everything we do today and remains a powerful source of inspiration as we look to the future.

That future will soon be articulated through our new Corporate Plan. It sets out an ambitious vision for the next five years, building on our strengths in collaboration, innovation and impact. I encourage you to look out for further communications across our channels as we share more detail in the months ahead.

As summer approaches, we also look forward to a busy season of field-based events including the Royal Highland Show, Potatoes in Practice and Fruit for the Future; all providing important opportunities to showcase our science, strengthen partnerships and engage directly with those shaping the future of land and agriculture.

It is inspiring to see the growing support for initiatives such as our recently launched Friends of the Hutton, helping us build deeper connections with those who share our vision for a sustainable future. I encourage everyone to sign up and be part of driving forward the science that will shape a more sustainable and resilient world.

Have a great summer!

A handwritten signature in black ink that reads "Colin Campbell". The signature is written in a cursive style with a large initial 'C'.

*Colin Campbell*  
Chief Executive, The James Hutton Institute

# Highlights

## Hutton scientist recognised with Damehood in New Year Honours List

**A leading forensic soil scientist at the Hutton has been recognised in the New Year Honours List with one of the UK's highest awards.**

Professor Dame Lorna Dawson has been appointed Dame Commander of the Order of the British Empire, an honour recommended by His Majesty the King in recognition of her contributions to soil and forensic science.

Known around the world for her contributions to both science and criminal cases, Professor Dame Dawson has over 35 years of experience

managing and conducting research into soil and plant interactions.

She has applied her scientific expertise to the criminal justice system both in the UK and abroad, reporting and advising on over 200 cases and writing over 150 Expert Witness reports. Additionally, Professor Dame Dawson has presented evidence in more than 25 cases, including the World's End murders and the Sheku Bayoh Public Inquiry.

Reflecting on the honour, Professor Dame Dawson said, "I am deeply honoured and immensely humbled

to be recognised with a Damehood in His Majesty the King's New Year 2026 Honours List. This award reflects the extraordinary contributions of the Centre for Forensic Soil Science at The James Hutton Institute and the many dedicated collaborators who work with us."



## New Hutton Hub opened by the First Minister

**Scotland's First Minister John Swinney visited the Hutton's Craigeibuckler campus to launch the new Hutton Hub in March.**

This multi-million-pound development offers a space for academics, businesses and the public to work towards a just transition to net-zero using collaboration and cutting-edge technology.

Financed by the Scottish Government's Just Transition Fund, the Macaulay Development Trust and the UK Department for Science, Innovation and Technology, the Hub features top-of-the-range technology and facilities which are available for hire, including two spacious lecture theatres, a podcasting suite, VR and augmented reality headsets, touchables and an open science café where members of the public can drop by to grab a coffee and learn more about the Hutton's research.

It also hosts an Immersive Suite, where a media server, a games engine and surround sound can be used to project videos, graphics, models and simulated environments onto the walls in an all-encompassing experience.

Speaking after the visit, the First Minister said, "The James Hutton

Institute is at the forefront of driving net zero innovation in Scotland, using expertise in science and technology to respond to the challenges posed by climate change. Supported by over £7 million of Scottish Government funding from the Just Transition Fund, the new Hutton Hub in Aberdeen will provide a state-of-the-art centre for scientific excellence for the north east, offering training and expanding capacity for green economic development.

"The Hub will create six new direct jobs and aims to support around 200 more across The James Hutton Institute and partner organisations. This shows that driving economic growth and tackling the climate emergency go hand-in-hand, helping create green jobs for the industries of the future."



## STEM for BRITAIN gold award



**Zoe Marshall, a second year Barley Industrial Training Network (BARIToNE) student, triumphed at this year's STEM for BRITAIN competition, winning the gold award in the biological and biomedical sciences category, and the prestigious G.J. Mendel medal, for her poster presentation exploring how ancient Scottish Bere barley landraces can be used to genetically map manganese-use efficiency.**

STEM for BRITAIN, organised by the Parliamentary & Scientific Committee, is a major annual scientific poster competition that has been held in the Houses of Parliament since 1997. The event showcases cutting edge research from early career scientists, engineers, technologists and mathematicians from across the UK, providing MPs and peers with a window into innovative work happening in UK institutions. Prizes are awarded for the posters which best communicate high level science, engineering or mathematics to a lay audience.

Zoe's project, *Back to the future: using ancient barley in a changing climate*, offers new insights that could help improve nutrient use in today's British crops.

## Hutton reduces emissions

The Hutton has reduced its greenhouse gas emissions by approximately 1,750 tCO<sub>2</sub>e or 14% in 2024/25, more than doubling its annual reduction target of 6%.

Overall emissions are now 35% lower than the baseline set in 2019/20, easily surpassing its long-term target of a 25% reduction.

Sustainability coordinator Stefan Jindra said, “The Hutton offers world-leading scientific solutions for the sustainable management of land, crops and natural resources that support thriving communities, but is keenly aware that the work it does to reduce the impact on the environment and to ensure that agriculture can adapt to a changing climate, has an environmental impact itself.”

Emissions in 2024/25 are already below the target set for 2025/26.



## Scottish islands animal disease discussions

In February, representatives from Lewis and Harris, Shetland and Orkney gathered at the new, state-of-the-art Hutton Hub in Craigiebuckler for their second inter-island meeting.

The meeting was arranged by a team of scientists from the Hutton and the Moredun Research Institute as part of the two organisations’ ongoing animal disease research collaboration, which is funded by the Centre of Expertise on Animal Disease Outbreaks (EPIC).

The two-day event gave islanders the opportunity to meet and build upon the accumulation of research intervention and networking activity which has taken place over the past four years of the project.

As part of the meeting, attendees experienced the Hutton’s 360-degree Immersive Suite. Equipped with a media server, games engine and surround sound, this new facility enables scientists to model simulated crofting and farming environments. Additionally, gaming software has been used in the Hub to play out scenarios that can occur in response to livestock disease management.

Updates on the collaboration’s sheep scab project were also presented at the meeting by Moredun researcher Dr Stew Burgess, and farmer/vet Tim Geraghty gave a presentation on the spread of Johne’s disease in cattle.

Additionally, vet Susan Duthie spoke on current testing and management provision for the disease and Dr Dave Bartley from the Moredun Research Institute gave a presentation on round worm control. Attendees were also asked to identify the livestock diseases they wanted to see prioritised in their areas.

The collaborative project is set to continue with the aim of establishing methods of disseminating information on animal health diseases and empowering sheep keepers to effect positive change throughout the islands. Organisers hope to host three to four online workshops over the next year, as well as a third in-person gathering in 2027.



## Bere Barley Participatory Network

The Bere Barley Participatory Network aims to identify which Bere varieties are best suited to particular locations and production systems, helping growers select the right barley for the right place.

Bere barley is an ancient cereal, once grown throughout Scotland but now largely confined to a handful of sites in the Highlands and Islands. One of the oldest cultivated barleys in Europe, Bere is renowned for its rapid maturation, making it especially well adapted to short, cool growing seasons.

It also shows a remarkable tolerance of marginal growing conditions compared with modern barley varieties.

Project co-ordinator, Lawrie Brown, said, “In 2023, we established a participatory network of Bere barley growers, spanning a diverse range of sites across mainland Scotland and the islands. Trial locations ranged from hobby farms, crofts, organic farms, and community projects to urban gardens.

“Participants were motivated by a wide range of interests: bread making,

crop heritage, film projects, whisky and beer production, and even larger-scale commercial opportunities. In subsequent years, the network has expanded beyond Scotland to include growers elsewhere in the UK, Ireland, and as far afield as Patagonia.”

2026 also sees the trial of a new app, *Dijalo*, Swahili for ‘crop’, developed by SRUC for the project. It will allow trial growers to submit information to the research team without the need for paper records, making data collection and processing much easier.



# Events roundup

## Arable Futures

Over 100 people attended Arable Futures, Arable Scotland's new-format in-person conference in February. The event focussed on the real challenges and opportunities facing Scottish arable farming and provided practical insight, informed discussion and forward thinking for farm businesses planning for the years ahead.

After much discussion on what arable farming may look like in 2035, how natural capital can be viewed as a farming product and future crops for climate resilience; the day finished with a 'reverse panel' of young people (agriculture students and PhD students) who challenged the audience with questions that could help everyone understand what skills are needed to navigate into the future of arable farming.

The key outcomes will form a report, to be shared with all stakeholders.



## PCN Action Scotland

PCN Action Scotland held its end-of-project meeting, acknowledging that it has successfully delivered the largest potato cyst nematode (PCN) knowledge exchange programme ever undertaken in Scotland.

The multi-partner project, led by the Hutton, was established in response to the growing crisis posed by PCN. They are currently considered the most serious pest and disease threat to the UK's potato sector, with projections suggesting they could

lead to the collapse of the Scottish seed potato industry by 2050 if left unmanaged.

As the project concludes, its legacy lies in transforming industry awareness, fostering collaboration, and equipping Scotland's potato sector with the knowledge and tools needed to respond to the ongoing PCN challenge.

More information is available on the [PCN Action Scotland website](#).

## The Hutton at the Edinburgh Science Festival

It was a pleasure to be part of this year's Edinburgh Science Festival at the National Museum of Scotland where we offered visitors a chance to try DNA extraction from raspberries and daffodils and to explore plants and artifacts

from our Commonwealth Potato Collection. We also presented a panel discussion chaired by Professor Dame Lorna Dawson on forensic science in international crime, a recording of this can be found on our YouTube page.



## IBH stakeholder meeting

More than 80 professionals from across the barley supply chain gathered in Invergowrie for the annual International Barley Hub (IBH) Stakeholder Meeting in February.

It gave the IBH management team the opportunity to outline a refreshed operational structure designed to meet

the evolving challenges of the barley supply chain and transition toward a more collaborative partnership model, shaped directly by industry needs, that will ultimately secure the future for barley.

All stakeholders were encouraged to play their part through planned new industry

and technical advisory boards and to help shape a future barley breeding programme. If you have any thoughts about shaping next year's stakeholder meeting please contact [tim.george@hutton.ac.uk](mailto:tim.george@hutton.ac.uk).



# What's on

SCAN HERE  
to find out more



## Hutton back at the Royal Highland Show (RHS) this year

After a two-year absence, the Hutton will be back at the RHS this year, where it will join forces with the Rowett Institute to showcase our work on crops and land use for security, resilience, health, safety and environmental stability as well as the health of humans and animals.

The Hutton will spotlight its internationally recognised innovation and study centres and the Rowett will demonstrate how sustainable diets and food systems can enhance health and wellbeing across society. The RHS runs from 18 – 21 June.

## Cereals

The International Barley Hub (IBH) will showcase a suite of ground-breaking research projects at Cereals 2026 in June at Diddly Squat Farm, Chipping Norton, highlighting how cutting-edge science is reshaping the future of UK arable farming.

Key research highlights will include demonstrating pioneering research

to speed up the domestication of wild barley, nitrogen-use efficiency research which is being carried out with the Scotch Whisky Research Institute, turning whisky by-products into sustainable phytonutrients and introducing camelina as a new crop for sustainable aviation fuel.

## Potatoes in Practice

Potatoes in Practice will take place on Thursday 13th August (a week later than usual) at Balruddery Farm.

This year's theme is *Future-proofing the potato industry*, so expect seminars that cover the key pressing issues facing the sector such as viruses, the latest research on PCN, adaptation to climate change and sustainability.

The event will include a working demonstration from the National Robotarium's dog robot, SPOT and will, for the first time, feature a cookery demonstration from Sarah Rankin, former *MasterChef* finalist who will highlight the versatility and value of potato.



## Volvo Environment Prize winner to deliver this year's TB Macaulay Lecture



A leading scholar of global sustainability governance and winner of the Volvo Environment Prize in 2024 is set to deliver this year's TB Macaulay Lecture.

Professor Frank Biermann, founder and first chair of the global Earth System Governance research alliance, will take to the stage at the National Museum of Scotland on Wednesday 21st October to introduce a new framework for understanding politics in the modern age: planetary politics.

Hosted by the Macaulay Development Trust in partnership with The James Hutton Institute, the TB Macaulay Lecture aims to connect scientific evidence with civic society on the big issues affecting our land and people and specifically to reach those who influence

and make decisions on policy.

In addition to leading a world-wide network of more than 600 researchers focused on advancing knowledge on global environmental change and governance, Professor Biermann is the first political scientist to be awarded the prestigious Volvo Environment Prize for his work in "defining new pathways for international environmental governance in a period of global change".

In his lecture, Professor Biermann will explore how accelerating climate impacts, geopolitical tensions, democratic backsliding and persistent inequalities have rendered traditional approaches to environmental governance insufficient

and how planetary politics offers a fresh perspective for understanding and navigating the profound transformations shaping our future.

Tickets are free and can be reserved by going to the event page on the Hutton website.





# The International Barley Hub cements its reputation for world-leading science

## 50-year barley mystery solved

A study published in the [Journal of Experimental Botany](#) solved the mystery of a barley mutant called *desynaptic8*, first discovered in the 1970s and why its chromosomes do not separate properly during reproduction, resulting in fewer seeds.

The team discovered that *desynaptic8* is caused by damage to HvXRCC2, the barley version of a DNA repair gene also found in humans.

Lead author and deputy director of the IBH, Dr Isabelle Colas, said,

**“At the heart of the breeding process is a natural event called meiosis, where plants mix their genetic information to create the next generation.**

In barley and other cereal crops, genes do not mix evenly, which makes breeding new varieties slower. We hoped that removing a gene called XRCC2, known to improve gene mixing in the model plant *Arabidopsis thaliana*, might also help barley breeding.”

However, without HvXRCC2, cell division during reproduction in barley goes wrong, gene mixing drops by about 40%, and chromosomes do not separate properly.

The study shows that genes can behave very differently across species and highlights the importance of crop-specific research to avoid wasted effort.





# Convergent selection history of wheat and barley

Hutton researchers working within an international consortium have had their findings published in the prestigious *Nature Plants*, after identifying genomic evidence of ‘convergent selection’, a process where unrelated, or distantly related, crop species independently evolve similar genetic adaptations to the same environmental pressures.

The team undertook a comparative genome wide molecular analysis of over 1,300 domesticated barley, emmer, durum and bread wheat lines searching for signs of perfectly or partially conserved molecular variants between the evolutionary counterparts of the same genes to understand whether the genetic changes reflecting such adaptations were the same among the different species.

They discovered that different species often adapted using similar genetic changes and identified shared variants in genes that control key domestication traits.



Speaking of their findings, Professor Robbie Waugh said, “These discoveries provide access to trait-associated gene sequence variants identified in one species that can be used as a guide to the creation or selection of the parallel variants in other species.

“Combining these discoveries with modern precision breeding or targeted, chemical, mutagenesis has great potential as we address challenges in current and future crop production”.

# Pre-harvest sprouting breakthrough

Another research project which was headed by Professor Robbie Waugh, involved Hutton scientists as a part of a multi-national team investigating ways to combat pre-harvest sprouting (PHS), a phenomenon that negatively impacts the production of high-quality cereal crops and causes annual losses of billions of dollars around the world.



years and have been selected by farmers and end-users to control a delicate balance between seed dormancy, sprouting risk and the rapid, even germination demanded by industry.”

Dr. Joanne Russell, a member of the team said, “Given that many of our observations will likely apply to other major cereal crops like wheat and rice, our new understanding of MKK3

could have a major impact on cereal breeding.”

Their study, published in the journal *Science*, reveals how the gene complex MKK3 controls seed dormancy and sprouting in cereal crops and could lead to new ways to breed crops, resilient to climate extremes and suitable for diverse agricultural needs.

Professor Waugh said, “We found that MKK3 in barley isn’t a single gene, but a complex system. Different versions of MKK3 have evolved over thousands of

These publications came as the IBH celebrated four decades of Robbie and Joanne’s transformative barley research at the annual Barley Away Days where Wayne Powell, Chief Executive of SRUC, credited them in shaping the Hutton’s global standing and the very existence of the International Barley Hub (IBH).





# Tree planting's impact on net zero

**While it is often thought that tree planting alone is enough to achieve net-zero carbon emissions, a new study from the Hutton has suggested that may not be the case.**

The study, which was authored by senior landscape scientist Dr Alessandro Gimona and published in Science of The Total Environment, investigated how tree planting and livestock reduction could help Scotland achieve one of the goals outlined in the Paris Agreement on climate change – net-zero emissions in the livestock sector.

Dr Gimona and his team simulated a scenario in which approximately 30,000 hectares of new woodland (an area larger than the city of Edinburgh) are planted per year in Scotland between 2020 and 2050, specifically selecting locations where trees would improve biodiversity and assist the local ecosystem. They also accounted for carbon released from soil while planting trees, an often-overlooked factor which can temporarily increase emissions.

In the simulation, they coupled the planting effort with a linear decrease in livestock numbers of approximately 50%.



Dr Alessandro Gimona

Their results showed that the amount of carbon absorbed by the new woodlands would only start to outweigh annual livestock emissions in 2045. Prior to this, livestock emissions would still exceed the carbon absorbed by new woodlands, meaning total emissions would continue to rise.

The model also predicted that the carbon absorbed by the newly planted forests would dwindle over time and level off as the forests matured.

Their findings imply that, if we only rely on tree planting to offset emissions, an even greater planting effort would be needed to balance emissions at present livestock levels.

Dr Gimona said,

**“This study shows that achieving and sustaining net zero emissions in the land use sector would require a transformation in patterns of land use.”**

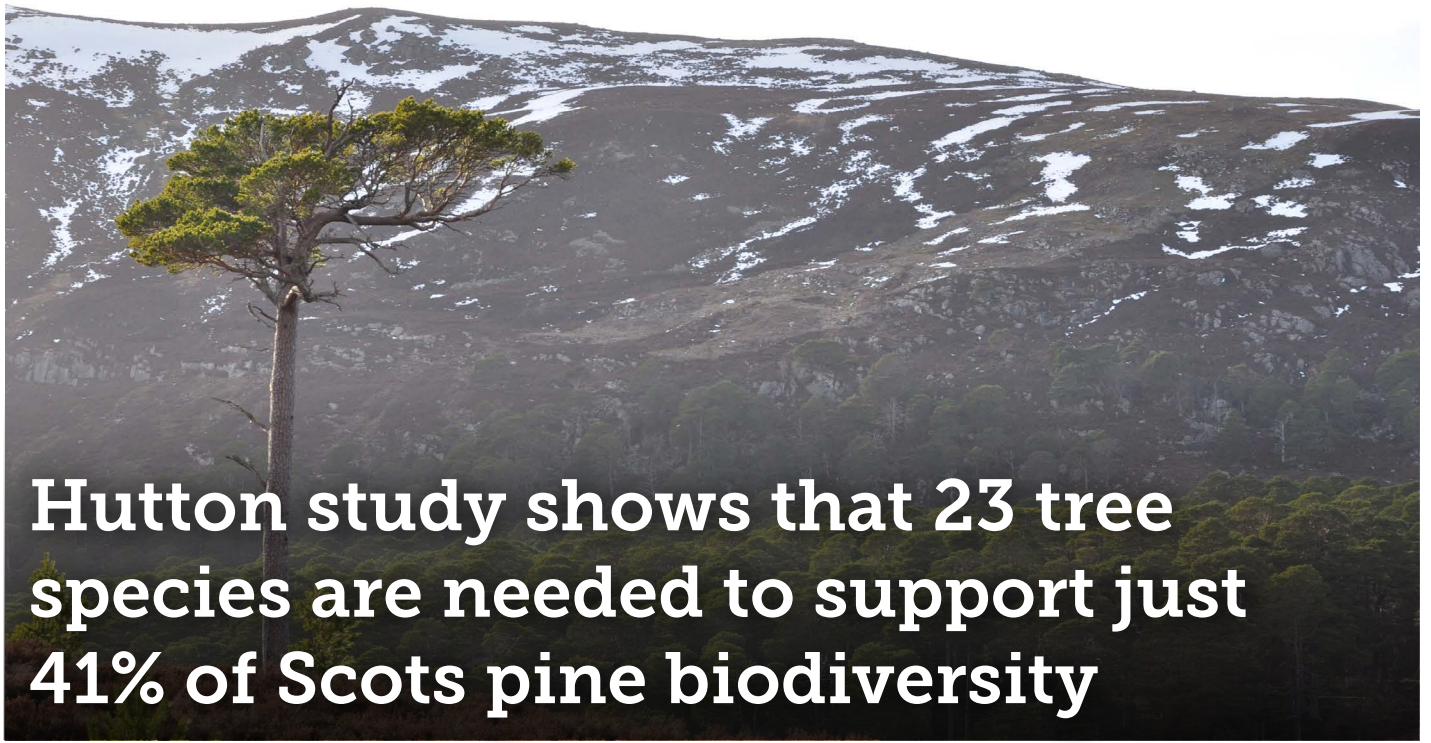
Hutton research has also shown that, to achieve multiple benefits from reforestation, tree planting efforts and

livestock numbers can't just be looked at in terms of greenhouse gas emissions. Long-term strategies for restoring Scotland's forests also need to account for other factors such as biodiversity, ecosystem health, and the role livestock plays in rural livelihoods, and we may need to find other ways to mitigate emissions.

Currently, the Hutton is testing how tree planting and livestock can work in harmony together at Glenshagh Research Farm. Here, researchers have doubled the tree-planted area without reducing livestock numbers, and have implemented agroforestry systems which allow animals to graze on pasture between spaced trees.

Together, these findings show that Scotland's path to net zero will require a mix of woodland expansion, changes in land use, and innovative approaches to farming.





# Hutton study shows that 23 tree species are needed to support just 41% of Scots pine biodiversity

**A new study from the Hutton has revealed the extraordinary ecological value of the UK's Scots pine woodland by showing that 23 separate tree species would be needed to support just 41% of the biodiversity associated with the evergreen.**

The study brought together experts from the Hutton, the RSPB, the Royal Botanic Garden Edinburgh and the Woodland Trust to assess whether diversifying tree species could strengthen the resilience of ecosystems currently dominated by Scots pine.

As the most widespread and commercially important of the UK's three native conifers, Scots pine is a staple of the nation's woodlands. It provides a keystone for biodiversity and softwood timber which is widely used in construction and joinery. However, like many other tree species, the Scots



pine is vulnerable to diseases and the changes brought by climate change.

To explore whether other tree species could help bolster the resilience of Scots pine dependent biodiversity, the team compiled the first comprehensive catalogue of every species associated with Scots pine.

The resulting list included 1,589 species that either live on or feed on Scots pine, including 17 birds, 130 bryophytes, 539 fungi, 420 invertebrates, 468 lichens and 15 mammals. Of these species, 199 fungi, 16 invertebrates and 12 lichens were identified as obligates, meaning they depend on Scots pine for survival.

Researchers then compared the non obligate species list with 47 alternative tree species to assess how much Scots pine associated biodiversity each could support. Their findings showed sessile/pedunculate oak, European beech, and silver/downy birch as the most promising alternatives, with each supporting 15% of the biodiversity associated with Scots pine. However, 11% of the species supported by Scots pine could survive on only one of the 47 alternative tree species assessed, and a total of 23 alternative species would be needed to support even 41% of Scots pine-associated biodiversity.

The findings suggest that while diversifying tree species can improve resilience, it would benefit only a

fraction of the biodiversity that depends on Scots pine—highlighting the critical importance of protecting this vital species.

Dr Ruth Mitchell, a woodland ecologist at the Hutton and the study's lead author, said, "We usually think of trees as good for biodiversity, but not all trees are equal, and not all tree associated biodiversity can use every tree.

"Generally, we are trying to promote tree species diversification of our forests to increase resilience. This study shows that if the aim is to provide resilience for tree associated biodiversity we need to think carefully about which trees we establish."



Dr Ruth Mitchell



# Seaweed dye start-up awarded £210,000 in funding



SeaDyes, a spin-in company of the Hutton based at the Invergowrie campus, was recently awarded a total of £210,000 in funding from Scottish Enterprise and Regional EDGE Tayside.

The two new funding awards will support the start-up as it continues to develop seaweed-based fabric dyes as a non-toxic alternative to petroleum-based colourants.

The first award, which totals £200,000, was secured after SeaDyes entered the Company Creation phase of Scottish Enterprise’s High Growth Spinout Programme in early March.



SeaDyes first joined the High Growth Spinout Programme at the beginning of 2025, when it became a spin-in company of The James Hutton Institute and gained an initial investment of £75,000 from Scottish Enterprise.

Since then, the start-up has used Scottish Enterprise funding along with scientific and commercial support provided by the Hutton through Hutton Scientific Services to develop an investable value proposition rooted in cutting-edge science, validated dye prototypes and existing commercial traction, with more than 100 potential customers engaged.

SeaDyes has also established multi-year research and development, and commercial partnerships with leading industry players and added two valuable new members to the team – Textile Innovation Technician, Isla Fowler, and Commercial Champion, Ian Laird.

The team plans to use the new funding from Scottish Enterprise to create a strong commercial proposition, ready the business for investment and drive more sustainable dyeing practices across the textile industry.

In addition to the Scottish Enterprise funding, SeaDyes was awarded a further £10,000 after being named joint winners of Regional EDGE Tayside competition.

The contest is the regional wing of Scottish EDGE, Scotland’s biggest business funding competition. It offers a chance for entrepreneurs and businesses to compete for a £100,000 funding prize, which is split between the winners.

After impressing judges with their concept and pitch, SeaDyes was selected as one of the competition’s five joint winners and awarded its share during an awards ceremony at the V&A in Dundee.

SeaDyes founder Jessica Giannotti said of the recent funding successes, “We joined the Hutton and applied for funding to develop the world’s leading regenerative colour technology platform, where dyeing textiles actively benefits the planet and everyone. We are grateful and encouraged by the generous support and vital funding offered, which is enabling us to achieve that.”



SeaDyes team - Ian, Isla, Jessica

## Work on anaerobic digestate testing continues

Hutton Scientific Services is progressing the development of its Publicly Available Specification (PAS110) digestate testing service, with submission to the REAL scheme planned for June/July 2026. A phased rollout is expected, beginning with a limited-service launch in October, followed by a fully accredited PAS110 offering by January 2027.

This work builds on insights from the Anaerobic Digestion and Bioresources Association (ADBA) Scottish Conference, where discussions highlighted the

growing role of anaerobic digestion in Scotland’s renewable energy and circular economy ambitions. Alongside biogas production, digestate is increasingly recognised as a valuable bioresource that can improve soil health and reduce reliance on synthetic fertilisers.

A key theme across the sector is the need to move digestate from a by-product to a trusted, marketable resource. Achieving this depends on robust testing, recognised standards, and clear certification pathways. PAS110

plays a critical role here, providing confidence to farmers, regulators, and markets that digestate is safe, consistent, and beneficial for agricultural use.

Hutton’s service will combine analytical testing with real-world crop trials, enabling anaerobic digestion operators not only to demonstrate compliance but also to better understand how digestate performs in practice. Based in Aberdeen, the service aims to support operators across Scotland and beyond as the sector continues to scale and mature.

# Hutton working with SSEN Distribution to benefit environment and transform local, low-voltage networks

Hutton Scientific Services is working alongside Scottish and Southern Electricity Networks (SSEN) Distribution on three projects to reduce the environmental impact of creosote, provide electricity infrastructure with natural protection and transform the way local, low-voltage networks are planned.

The first project, titled *CREOS-OUT*, focuses on decreasing the environmental impact of creosote, a tar-based substance used to protect the millions of wooden poles which carry overhead distribution networks. Although creosote is effective at protecting infrastructure from weathering, it can contaminate soil and water, posing risks to surrounding ecosystems.

Researchers from the Hutton and the University of Strathclyde are countering this negative environmental impact by developing a biological cleaning solution which can break down the harmful chemicals found in creosote in a way which is eco-friendly and cost-effective.

The second project, *Nature4Networks*, is exploring how natural solutions can be used to help protect electricity networks against an increasingly volatile climate.

At the moment, artificial barriers such as fences and flood defences are used to protect important electricity infrastructure. However, *Nature4Networks* is exploring how trees, targeted planting of specific species and natural troughs

(depressions in the landscape which slow and redirect surface water) can be used to as an alternative to these man-made structures. Replacing the artificial with the natural will reduce the environmental impact of energy networks and benefit biodiversity.

The new Ofgem funding has allowed the *Nature4Networks* project to begin large-scale trials, including planting native woodland corridors at two locations alongside 1.5km of overhead lines, deploying a variety of sustainable drainage systems around substations to protect against flooding and creating natural drainage channels to contain and remediate leaks from substations.

For this project, Hutton scientists are working alongside experts from Frontier Economics, GHD, Guidehouse and Great Yellow.

The third project, *Pathways to 2050*, is a three-year programme that will reshape how low-voltage electricity networks are planned, ensuring communities receive reliable support as the energy system decarbonises.

As more homes and businesses adopt heat pumps, rooftop solar panels and electric vehicles, the demand for clean power is increasing. Meeting this demand will require upgrades to tens of thousands of local substations and hundreds of thousands of feeder lines

that deliver electricity to homes and businesses.

*Pathways to 2050* uses a data-driven approach to forecast where and when investment will be needed, while also assessing alternative solutions that may offer better value or performance.

By combining local knowledge, customer insights and detailed network data, the project will help planners design tailored, future proof solutions for each community.

For this project, the Hutton is working alongside the National Farmers Union of Scotland, the Low Carbon Hub, Faculty, IFS Copperleaf, Sia and Energy Systems Catapult.

Antonia Boyce, the business development manager facilitating the projects, said, "*CREOS-OUT*, *Nature4Networks* and *Pathways to 2050* are three invaluable projects which will provide great benefit for Scotland's energy networks while aiding both communities and biodiversity."



"We're delighted to have been selected to work on these vital projects and look forward to making a significant contribution to our electricity networks and environment alongside our project partners."



## The first six months of the Hutton Hub

Six months on from opening its doors, the Hutton Hub (the Hub) is already proving itself to be a go-to space for collaboration, creativity and connection. It has quickly become a place where research, innovation and public engagement meet.

Bringing together state-of-the-art conference facilities, immersive technologies, digital collaboration spaces and welcoming public areas, the Hub has supported a growing programme of internal and external activity across a wide range of sectors.

It has hosted almost 200 events and welcomed close to 1,500 visitors, including researchers, government representatives, businesses, community groups, schools and international delegates for strategic workshops, stakeholder engagement sessions, public events, education programmes and commercial bookings. All connecting our research with real-world audiences.

One of the Hub's most distinctive features is the Immersive Suite, which has rapidly established itself as a powerful tool for communication and storytelling. Using 360-degree visualisation and interactive digital environments, the suite allows researchers and project teams to present complex scientific information in ways that are accessible, engaging and memorable.

The Immersive Suite has played host to a number of high-profile events and demonstrations, including the *TechFest* showcase, the *Triggering Change* landowner engagement event, and collaborative demonstrations with external organisations such as marketing company Fifth Ring.

The technology has also been used to showcase the Hutton's research and capabilities to government representatives, strategic partners and media organisations, including the Joint Nature Conservation Committee and NatureScot.

The Hub has provided a setting for several landmark events. The official opening, attended by First Minister, John Swinney, marked a significant moment, underscoring the Hub's role in Scotland's wider research and innovation landscape. Community open days and business breakfast events have further reinforced its position as a welcoming and accessible environment, one that encourages discussion, collaboration and the exchange of ideas across sectors.

Education and outreach have been a core part of the Hub's mission from the outset. In its first six months, the facilities have supported visits from school groups and hosted sessions for the HydroNation PhD Scholars programme, as well as engagement activities with Robert Gordon University BSc students. These sessions have helped introduce younger audiences and early career researchers to immersive technologies, environmental research and new approaches to digital visualisation, inspiring curiosity and opening up pathways into research and innovation.

By combining cutting-edge facilities with an open, collaborative ethos, the Hub is already enhancing how research is shared, partnerships are built and communities are engaged. Six months in, it is clear that the Hutton Hub is not just a space, but also a catalyst for connection, creativity and change.

Details of how to book the space can be found on our venue hire section on the Hutton website.



# JAMES HUTTON UNEARTHED

UNEARTHING THE SCIENCE  
THAT TOMORROW DEPENDS ON.

## Hutton launches first-ever public fundraising campaign

This spring, the Hutton launched its first-ever public fundraising campaign, inviting individuals, communities and businesses to contribute directly to groundbreaking scientific research that supports Scotland's land, water and natural environment.

Titled *James Hutton Unearthed*, the campaign aims to accelerate research into climate resilience, sustainable farming, biodiversity recovery and environmental justice.

It focuses on four key themes: Land, Food, Water and Energy. These themes are central to the Hutton's work, from the Climate Positive Farming Initiative and HydroGlen green energy project at our Glensaugh Research Farm; to the blueberry breeding at Invergowrie campus and peatland monitoring across Scotland.

Through *Hutton Unearthed*, the Hutton aims to expand research into some of the most pressing social and environmental challenges facing Scotland today. These include restoring biodiversity, safeguarding soils and water, developing sustainable and resilient farms and advancing forensic science to support public protection.

The campaign comes after an independent economic impact report found that the Hutton generates £15 of economic value for every £1 invested – highlighting just how much additional support could benefit both Scotland and the wider UK economy.

Support for *Hutton Unearthed* can take the form of individual donations, one-

off contributions from organisations, sponsorship or even long-term strategic partnerships. Every donation will go directly towards expanding scientific research that delivers measurable community, environmental and economic benefit.

The Hutton's CEO Professor Colin Campbell, said of the new campaign, "People trust Hutton science. The greatest gift to science is independence: the freedom to think boldly and to innovate and focus on where we can make the biggest difference. Through the *Hutton Unearthed* campaign, we can build on that independence – ensuring our researchers have the stability and support they need to tackle the urgent challenges facing our land, food, water and energy."

*Hutton Unearthed* was launched at a Burns Supper event attended by bestselling crime author Ian Rankin and the Hutton's Head of Soil Forensics, Professor Dame Lorna Dawson, where the two discussed their long-standing collaboration and the growing importance of forensic soil science in criminal investigations.

Ian Rankin said, "I was delighted to attend a dinner to celebrate the launch of James Hutton Unearthed in Edinburgh and to have the opportunity to reconnect with Lorna, who I'd consulted with for *In A House of Lies*. The character of Professor Lee Ann Inglis – a soil forensics expert – was based on my conversations with Lorna, so getting the science right was important. The James Hutton Institute plays such a key role in modern science, not just soil analysis but responding to the major environmental challenges of our age. The new campaign will help raise much needed funding for this important work."

Professor Dame Dawson added, "Being able to link objects or people to places – including crime scenes, wildlife crime, illegal mining, conflict minerals and the trade in fossils – is essential for a fair and just society. Investment in forensic soil science strengthens our ability to protect people, communities and the environment."

Further information about the campaign, including how to donate, is available at: [unearthed.hutton.ac.uk](http://unearthed.hutton.ac.uk)





## Study reveals that 99% of organofluorine pollution in Ganges river is going unidentified

**Flowing over 2,500km from the snow-capped Himalayas to the mangrove forests at the Bay of Bengal, the Ganges is the longest river in India and a vital lifeline to millions of people. It holds great cultural and religious significance in Hinduism and provides water for agriculture, industry and human habitation. However, the river faces severe pollution from industrial waste, sewage and agriculture – and a new study has revealed that much of this pollution may be going unidentified.**

The study, published by researchers from the Hutton, the University of Graz, Warsaw University of Technology and the Indian Institute of Technology, analysed sediment samples from a 58km stretch of the Ganges for 40 specific types of organofluorines typically

detected by standard monitoring.

They found that these known chemicals accounted for just 1% of the organofluorine content present in the sediment – meaning that 99% of organofluorines are going unidentified and unregulated.

Organofluorines are a broad category of organic chemicals that contain at least one carbon-fluorine bond. This chemical bond is exceptionally strong, which gives these substances unique thermal and chemical stability. While this makes them useful for industrial applications, it also makes them extremely difficult to break down once they enter the environment. The organofluorine class includes per- and polyfluoroalkyl substances (PFAS), a group of more than

12,000 synthetic chemicals which are used in everyday items such as frying pans, waterproof jackets, food packaging and cleaning products, and are also produced by industrial processes. Known for their ability to persist long-term in the environment, PFAS have also been linked to negative impacts on human and animal health, including cancer, fertility issues and liver damage.

Dr Viktoria Mueller, a researcher at the Hutton and one of the study's lead authors, said, "What's particularly concerning is that a large share of the total fluorine we detected cannot yet be linked to known PFAS. This suggests that we are only seeing part of the picture, and that improved analytical strategies are essential for effective environmental regulation and risk assessment."

## Study identifies classical contaminants as environmental priority in the Yangtze River

**While emerging contaminants such as per- and polyfluoroalkyl substances (PFAS) and antibiotics present real risks to waterways, a new study from the Hutton and collaborators in China has shown that environmental control in the Yangtze River should prioritise older contaminants.**

The study brought together experts from the Hutton, the Wuhan University of Technology, the Xianghu Laboratory and Northeast Agricultural University to analyse sediment samples from the river for a wide range of micropollutants.

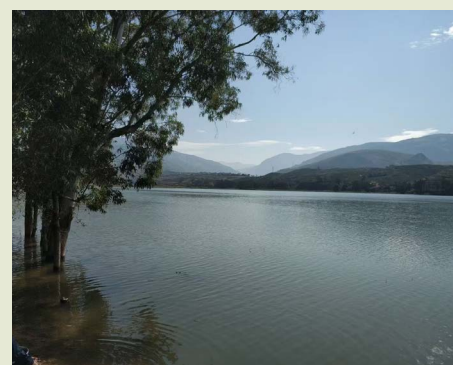
Stretching from Qinghai to Shanghai, the Yangtze River is the largest river in Asia and the third largest in the world. Roughly a third of China's population lives within the Yangtze River Basin, meaning that the health of its ecosystem has an impact on hundreds of millions of people.

The researchers found that classical contaminants, including Polycyclic aromatic hydrocarbons (PAHs) and Phthalate Esters (PAEs), presented a higher concern than emerging contaminants, and should therefore be the priority for environmental control.

These classical contaminants are produced by the burning of fossil fuels or the production of plastics and can persist for long periods of time in the sediments on the riverbed. They have been linked to health risks such as cancer and hormonal imbalances in both humans and animals and were highlighted as a priority due to their high concentrations and frequencies.

In addition to identifying priority contaminants, the study provided a detailed look at the distribution of pollution along all 6,300km of the river.

The research showed that downstream areas were more heavily polluted than upstream areas, and hotspots were identified in areas with high levels of industrial and agricultural activity. The city of Shanghai was ranked as the top priority for overall environmental health, while Jiangxi was found to have the highest total concentration of pollutants, and Jiangsu the highest variety.





## Hutton and collaborators launch new environmental monitoring and climate-smart farming network for African farmers

**A new network capable of providing real-time environmental monitoring and climate-smart farming across Africa has been launched by the Hutton and a team of international collaborators.**

The Monitoring, Analysis, Reporting and Verification for Effective Low carbon Climate Resilience and Mitigation Network (MARVEL NET) will provide farmers, researchers and policy makers with continuous, evidence-based data on soil health, carbon storage and greenhouse gas emissions, helping them optimise yields, improve climate resilience and compete in emerging markets.

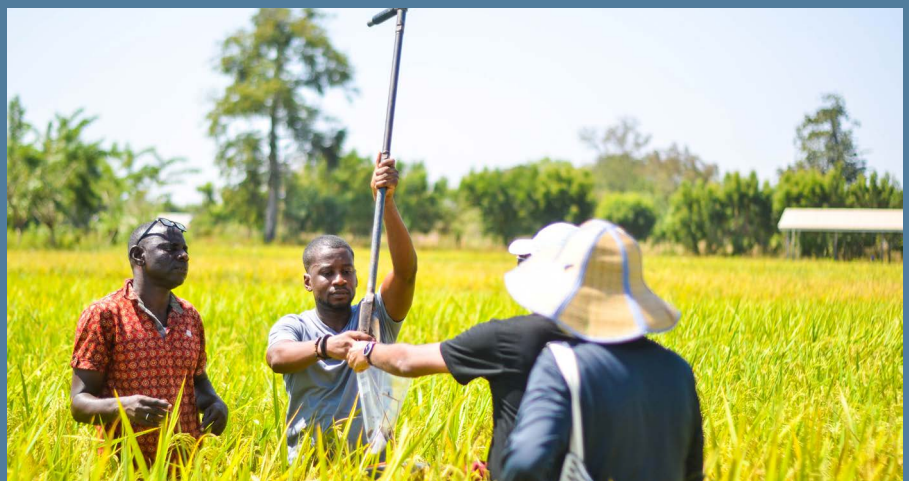
The new network will be piloted in Ghana before being rolled out to other African nations. It was launched in Accra as part of the second stakeholder workshop for CarbonXtras – an international collaboration which brings together technology developers and community organisations from across the UK, Ghana and Brazil to help farmers adopt climate-smart, regenerative practices.

The new network follows the success of the Dynamic Real Time Monitoring, Reporting and Verification system previously implemented in Ghana through CarbonXtras, which showed that low cost sensors, mobile technology and advanced modelling can deliver trustworthy environmental data in real farming conditions.

Using field sensors and a mobile app, farmers and field teams can record their observations and management practices

on to the network. These inputs are uploaded in real-time and combined with environmental measurements to track soil health, carbon stocks, greenhouse gas emissions and soil moisture.

Digital twin models tailored to ecological zones, such as the semi deciduous forest around Ejisu or the Guinea savanna near Tamale, help to ensure the system reflects real differences in soils, climate and farming systems.



## Study into roe deer livers over 25 years shows decline in overall PFAS but rise in ‘replacement chemicals’

**In recent years, the UK and EU have introduced targeted restrictions and legislation to curb the environmental impact of per- and polyfluoroalkyl substances (PFAS). However, a new study from the Hutton and the University of Graz suggests that broader bans may be needed to fully remove these “forever chemicals” from the environment.**

The study, which analysed roe deer livers collected from Bavarian Forest National Park between 1998 to 2022, found that, while concentrations of legislated PFAS declined over the 25-year span, concentrations of replacement chemicals rose.

PFAS, or per- and polyfluoroalkyl substances, are a group of more than 12,000 synthetic chemicals commonly used in everyday items such as frying pans, food packaging and cleaning products. Known as “forever chemicals”, these compounds are recognised for their ability to persist long-term in the environment and have been detected on plants, nectar, pollen and in the atmosphere.

However, it isn’t just their persistence that’s an issue. PFAS have also been linked to negative impacts on human and animal health, including cancer, fertility issues and liver damage.

To understand the effectiveness of historic EU restrictions, researchers tested the liver samples for a range of PFAS, including both regulated and unregulated PFAS.

They discovered that the total concentration of PFAS in the livers decreased from 64 nanograms per gram to 8 nanograms per gram between 1998 and 2022 – a drop of more than 87%. PFOS (a type of PFAS that was once widely used in products like stain resistant coatings and firefighting foams but is now heavily restricted in the EU) showed the biggest decline, falling by over 98% and staying at low levels from 2018 onwards. Between 1998 and 2003 alone, PFOS concentrations declined by 67%, reflecting the impact of voluntary industry-phase outs in the early 2000s.





# Here's to you...James Hutton at 300

The James Hutton Institute is marking the tercentenary of our namesake with a vibrant programme that reflects both the spirit of James Hutton's ideas and their enduring relevance today. Hutton, one of Scotland's most influential Enlightenment thinkers, transformed how we understand the Earth by recognising it as a dynamic, interconnected system shaped over deep time. This systems-thinking approach—linking rocks, soils, water, climate and crops—remains foundational to our work and underpins our framing of the anniversary.

We regard Hutton as greater than the traditional view of him, beyond geology and more as a radical, interdisciplinary innovator. His work ranged from pioneering theories of geological change to early insights into the water cycle and experimental approaches to agriculture. As an early earth systems scientist, his thinking anticipated today's global challenges, from climate change to sustainable food production.

Bringing this legacy to life, we have developed a creative and far-reaching programme combining science, culture and public engagement.

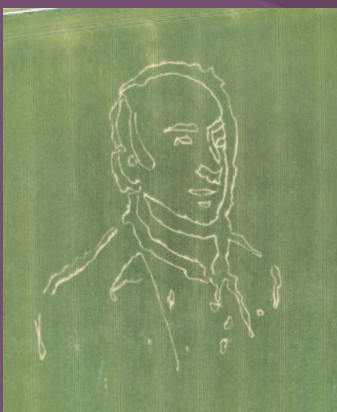
Among the most distinctive elements are our contribution to two nationally-important exhibitions: Earth Matters at the Royal Botanic Gardens Edinburgh' and Rain' at the National Library of

Scotland; commemorative products that celebrate Hutton's agricultural and geological heritage including specially-produced whiskies with Arran Distillery and Borders; and a distinctive gin with Holyrood Distillery; a new range of merchandise which is featured on our website and a bespoke Hutton tartan which we will launch later in the summer. A striking visual tribute has been created by our talented Farm Team where they have shaped Hutton's likeness from barley in our farm fields—symbolically linking land, science and innovation.

A new video introduces audiences to Hutton's life and ideas, while a wide range of events runs throughout June and into the summer. Highlights include Hutton 300 at Greyfriars Kirk, offering a focal point for public commemoration,

James Hutton as a focal point for our presence at the Royal Highland Show, and our support for "Whisky Under the Stars" at Dynamic Earth during the month of August will connect science with wider cultural audiences. Academic reflection is central too, with a symposium at the Royal Society of Edinburgh exploring Hutton's ongoing scientific influence. Full details of all events are available on our website.

By blending science with creative engagement, we are using the tercentenary to not only remind us of how important Hutton was as a historical figure, but as a thinker whose insights continue to shape how we understand and care for our planet today.





# Could oil-based cover crops provide an alternative aviation fuel?

**Hutton scientists recently collaborated with SRUC on a report for Scottish Government on the potential for oil seed cover crops, grown in Scotland, to be used as a feedstock for aviation fuel.**

The primary option is camelina, which is already grown in several other countries for aviation fuel and is also grown in the UK for the health food market. It is seen as a possible alternative, along with oil seed rape, due to the quality of its oil.

A further project will now investigate how camelina will grow in Scottish conditions and how it could fit into Scotland's agricultural rotations, as well as the potential impacts, positive and negative, on the environment through a series of small field trials.

One tonne of camelina seeds can be converted into approximately 200-230 litres of aviation fuel though this amount varies depending on factors like the seed's oil content, which is typically 38-47%. A light aircraft burns, on average, 22 to 45 litres of fuel per hour.

Dr Tracy Valentine, senior research scientist at the Hutton, who will lead the field trials project, said: "This work

will help to understand the potential for camelina to be grown as a biofuel crop in Scotland."

"Camelina is widely grown across north America and Europe and is used for sustainable aviation fuel (SAF) production due to its high oil content and ultra-low carbon intensity compared to other alternative crops."



# Hutton develops faecal contamination test that cuts wait for results from 24 hours to four

Hutton researchers have developed a new test which reduces the time required to analyse water samples for faecal contamination from 24 hours to four hours – allowing monitoring agencies to detect and react to contamination events much faster.

The new test, called a quantitative polymerase chain reaction (qPCR) assay, targets somatic coliphages – viruses that infect bacteria such as E. coli. These viruses are widely recognised as indicators of faecal pollution in water as they are only found in faeces.

Standard tests currently detect somatic coliphages by growing them on petri dishes containing E. coli. When the coliphages infect the E. coli, they leave clearings on the dish known as plaques. By counting these plaques, scientists can find out how many coliphages are in a water sample. However, this process is time-consuming and takes up to 24 hours to provide results.

The new test developed by the Hutton instead uses qPCR technology to measure DNA from the four most common somatic coliphage families.

This process involves extracting DNA from a water sample and detecting the four coliphage families using four different primers (short, single-stranded DNA molecules). Because there is no time involved in waiting for the coliphages to grow, this method gives results in just three to four hours.

Faster tests mean that water monitoring agencies can react to contamination more quickly – limiting risks to public health and the environment.

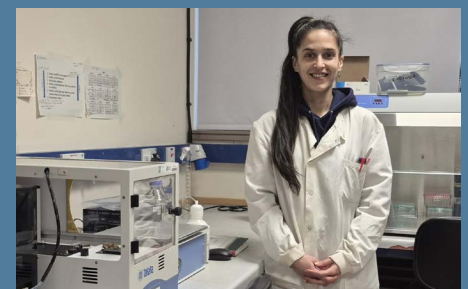
The qPCR method allows analysts to determine which coliphage families are present in the water. While coliphage detection does not directly identify the source of contamination, this additional genetic information may help in interpreting pollution events, such as human sewage spills or agricultural runoff, when used alongside other monitoring data.

The test also detects DNA from both living and dead coliphages, while current methods only detect live coliphages capable of infecting their host. This provides insight into recent or past contamination events and may help

identify water treatment inefficiencies missed by the current test method.

While the new test provides fast, accurate results, its creators don't believe it should replace current regulatory testing. Instead, they would like to see it used alongside culture-based methods as a rapid screening tool.

Dr Clara Benavent Celma, a catchment microbiologist at the Hutton and the lead author behind the qPCR assay study, said, "Catchments are dynamic systems where contamination events can occur rapidly. By developing a rapid qPCR assay for somatic coliphages, we can provide an additional layer of information that helps water managers monitor, interpret and manage water quality more effectively."





## Study reveals unseen impacts of furniture reuse in the circular economy

While most of us know that recycling our unwanted furniture has a positive impact on the environment (and the space in our homes), a new study from the Hutton and DePaul University in Chicago has shown that there are unseen benefits to donating second-hand furniture.

The study, which was authored by Dr Alice Hague, a Hutton social scientist, with colleagues from the Social, Economic & Geographical Sciences, and her brother, Chicago-based Professor Euan Hague, and colleagues from DePaul University, found that furniture reuse can also provide incredible social benefits.

By conducting more than 50 interviews across Chicago and Scotland, the pair uncovered how donated furniture supports people in need and creates valuable employment opportunities.

The researchers heard stories of how families were given a sense of stability after receiving used sofas, tables and beds. For households in need, these furnishings present the opportunity to unwind, eat together after a long day and enjoy a good night's sleep – and

provide an alternative to sitting, eating and sleeping on the floor.

Alice's team found that, in Scotland, furniture re-use shops offer jobs for those who find conventional employment difficult. The organisations behind these furniture banks often provide training in logistics, furniture removal, accountancy and business management, equipping employees with valuable career skills.

One employee at a furniture reuse centre in Scotland said, "We have an awful lot of people who perhaps would have struggled to get into the workforce, but only because of maybe anxiety or confidence. Very able people, our best members of staff now."

Meanwhile, in Chicago, Euan's team heard from a mother who had been able to provide her children with separate beds thanks to furniture donations.

She told researchers, "My kids are happy, they have beds, they each are happy they have their own bed. I'm

not in the bed with them. They're just happy."

A case manager for Chicago Furniture Bank added, "I think the furniture helps with overall stability of clients and them being able to feel like they've got things in order to be able to look for things like employment."



Dr Alice Hague

The study's findings show that the circular economy – the aim to keep products and materials in use and out of landfills for as long as possible – can offer more than just environmental benefits.

Alice said, "I was expecting barriers to furniture reuse to be about policy and lack of funding - I wasn't expecting to hear about families from Ukraine being helped with furniture in a moment of crisis. There's way more going on here than kilograms or tons of waste being avoided."

The study, titled 'The Social Benefits of Furniture Reuse in the Circular Economy', can be read in full on the [Journal of Circular Economy website](#).



## From seed to field: The Hutton's role in transforming UK agriculture

The Hutton is proud to be a partner in PhenomUK, a major new £35 million, six-year research infrastructure funded by the UK Research and Innovation (UKRI) Infrastructure Fund, and led by Biotechnology and Biological Sciences Research Council (BBSRC).

At the heart of the Hutton's contribution is the Advanced Plant Growth Centre (APGC), one of the UK's leading controlled-environment phenotyping platforms.

APGC Deputy Director, Dr Rob Hancock, said, "PhenomUK represents a fantastic opportunity to integrate and expand UK phenotyping infrastructure. Through the development of shared approaches and methodologies, the network will significantly alleviate the phenotyping bottleneck, which has been caused by the rapid development of genetic analysis techniques as well as the size of crop populations, and threatens to restrict crop breeding.

**"This new structure should accelerate the time to new cultivars required to mitigate increasing environmental challenges in crop production."**

By integrating APGC's controlled environment capabilities within PhenomUK's wider network of field

and mobile phenotyping platforms, the Hutton will help to deliver a seamless "seed-to-field" pipeline for crop evaluation, one of the key ambitions of the programme.

This investment comes at a critical time, as UK agriculture faces increasing pressure from climate variability, reduced natural resources, and the need for more sustainable production systems. By enabling more precise and scalable phenotyping (evaluation of crop traits), PhenomUK is expected to accelerate breeding programmes, support precision agriculture, reduce reliance on inputs such as pesticides, and ultimately underpin a stronger and more secure domestic food supply.

Through its role in PhenomUK, the Hutton reinforces its position at the forefront of UK crop science, driving innovation that supports resilient, productive and sustainable agricultural systems for the future.



Dr Rob Hancock



THE CLIMATE-POSITIVE FARMING INITIATIVE INTO THE FUTURE...

Our next exciting activity is showcasing whole farm integration of nature restoration and livestock harmony...

In 2025-6, Glensaugh received £44k from the Nature Restoration Fund to design a large-scale plan demonstrating "win-wins" for nature recovery and farming.

The plan covers a wide range of habitats, aiming to restore habitats, support biodiversity and improve water management using livestock management using li...

# The interview...with Alison Hester

**Professor Alison Hester is a senior research scientist at the Hutton and Director of the Climate Positive Farming Initiative (CPFI) at Glensaugh Research Farm. After successfully leading the project for six years, she's set to hand over the Director role to Dr Mark Wilkinson. However, before she moves on to new and exciting projects, she sat down for an interview reflecting on the initiative and her contribution.**

### What is the Climate-Positive Farming Initiative?

"The CPFI was set up in 2020 with Entrepreneurial Research Fellow funding from Baillie Gifford supporting me to scope and develop this exciting new initiative. The CPFI is testing and demonstrating transformations in land management and farm business operations; addressing the significant contribution that this sector can make towards climate and biodiversity targets and adapting to the impacts of climate change, through:

- Addressing critical and urgent gaps in our knowledge
- Combining robust science and demonstration
- Building strategic partnerships (multiple skills; multiple sites)
- Maximising 'multiple benefits' from land use transformations
- Scaling our findings up and down: local - regional - national - global.

Our core site for the CPFI is the Hutton's Glensaugh research farm, a 1000 ha upland livestock farm which has been a centre for research for over 80 years. Combining this core resource with networks of other sites (including our other Hutton research farms) gives a powerful platform to use for research, demonstration and wider outreach.

### Why is it needed?

Agriculture and other land-based industries are highly exposed to climate change and also have high potential and high pressure to act urgently to mitigate and adapt to the changing contexts in which they operate. The CPFI addresses these challenges, exploring and demonstrating opportunities for environmental, economic and societal transformations for this sector. Our work will help demonstrate the scale and nature of transformation required in farming to address these multiple challenges into the future.

### What has been achieved so far and what are you most proud of?

During our first 5-year set-up phase 2020-2025, around £45 million of new funding associated with the CPFI was secured from a diversity of sources, to support a suite of flagship environment and energy projects including peatland restoration, HydroGlen green hydrogen demonstrator, Climate Innovation Hub and Centre for Smart Natural Capital, near-real-time GHG emissions, nature-based water management and more.

Building a new initiative like this is both challenging and rewarding, and it has been a joy to see our funding and outreach efforts succeed so well and really put the CPFI "on the map". The strategic collaborations that we have built up along the way have added strength, additional skills and knowledge. I am proud of all the team who have helped to make this new initiative such a success and who continue to give their time, skills and enthusiasm to make things happen!



## What are you hoping to achieve going forward?

After a busy and successful five-year set-up phase, we are delighted that the CPFI is well-known and well-established. Our priorities for the next five years and beyond are big, bold and transformative. Our focus for this next phase is whole-farm regenerative management and nature-based approaches showcasing integrated multiple-benefits for environment, economy, society. Underpinning this approach will be whole-farm / whole upper-catchment land use transformations set up at Glensaugh and a network of other locations to facilitate big impacts, underpinning research and high-profile demonstration.

During this past year we secured funding for three linked projects



Professor Alison Hester

providing baseline data to inform this next phase:

- a. Nature Restoration Funded project: “Win-wins for livestock and nature”, to research and develop an action plan for restoration of the whole upper catchment (including Glensaugh and FLS land), using livestock as a tool to demonstrate synergies across farming and nature restoration
- b. Seedcorn project “MOOVE-OUT”, researching the economic, environmental and social benefits and disbenefits of extending the grazing season/outwintering cattle as part of a whole system transition
- c. a farm business consultancy review to inform transition towards a showcase environmentally-friendly, low-input farming system in line with the Hutton’s Climate-Positive Farming Initiative aims. This review focused on assessing current practices, identifying potential for alternative management approaches, and provided tailored recommendations to ensure a resilient and productive farming system into the future.

The power of developing a robust showcase farming enterprise at Glensaugh demonstrating sustainability and resilience, integrated within a multi-landholding network to apply and test different land use transformations, is compelling - working together with other land managers creates large and impactful “land units” to collectively achieve measurable impacts in the wider landscape. Examples include using nature-based solutions across whole upper catchments to reduce downstream flooding (e.g. North and South Esk catchments). Better water management is already a critical need, with the increased severity and frequency of extreme climatic events.

## Moving on

At this point, with the groundwork done for the next exciting phase for the CPFI, and ongoing funding in place, I have decided it is a good time to move on to new challenges. In the coming months, I will hand over to Dr Mark Wilkinson, the new Director of the CPFI and I wish him great success!”



## Earlier this year, Hutton colleagues were saddened to learn of the passing of Donald Barrie, Farm Manager at Glensaugh.

A dedicated farmer, husband and father, Donald served as Farm Manager of Glensaugh Research Farm for 25 years.

As part of his employment, Donald lived at the farm’s lodge with his wife, Sue, and their children, Eliza and Adam.

A creative and hard worker, he constantly improved the farm – rebuilding sheds, repairing water supplies, removing redundant fencing, testing soils, improving grasslands and planting countless trees. To many at the Hutton, Donald’s greatest legacy is the thousands of trees planted at Glensaugh by his hand and under his supervision – especially his beloved oaks.

Donald also had a great gift for storytelling and hosting visitors at the farm. All guests – from cabinet secretaries and trust chairs to international scientists and fellow farmers – were treated with the same respect, and Donald earned their respect in return. Even in wild weather, he could project his voice for everyone to hear clearly, and in quieter moments he spoke gently and kindly.

In addition to running the farm and engaging with visitors, Donald played a vital role in recording meteorological measurements at Glensaugh’s weather station. Each day, he noted the readings, measured rainfall and sent the data to the Met Office. While this work often goes unrecognised, Donald’s photograph and contribution will be featured in this year’s National Library of Scotland exhibition on Rain – a well-deserved acknowledgement of his efforts.

Donald was a cornerstone of day-to-day life at Glensaugh, and he had a profound impact on many of those he met. Though deeply saddened by his passing, colleagues across The James Hutton Institute will continue to honour and cherish Donald’s memory for years to come.

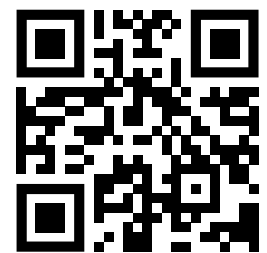
# ESSA Summer School 2026: Introduction to Agent-Based Modelling



The **ESSA Summer School 2026** will take place from **Monday 17 to Friday 21 August 2026** at the **James Hutton Institute, Aberdeen.**

Led by Gary Polhill, this one-week intensive course offers an in-depth exploration of large-scale agent-based modelling (ABM), connecting theories of complex systems with practical model design, programming, and experimentation in NetLogo.

Participants will learn how agent-based models can represent heterogeneous actors, dynamic environments, and emergent socio-ecological patterns. The course combines conceptual theory, coding exercises, and group projects to help participants understand the purpose, design, and implementation of ABMs for large-scale socio-environmental systems.



**SCAN HERE**

to find out more

## Contact

For updates or enquiries, please contact the organisers at: [abm.school@hutton.ac.uk](mailto:abm.school@hutton.ac.uk)



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Tel: +44 (0) 344 928 5428 [info@hutton.ac.uk](mailto:info@hutton.ac.uk) [www.hutton.ac.uk](http://www.hutton.ac.uk)

