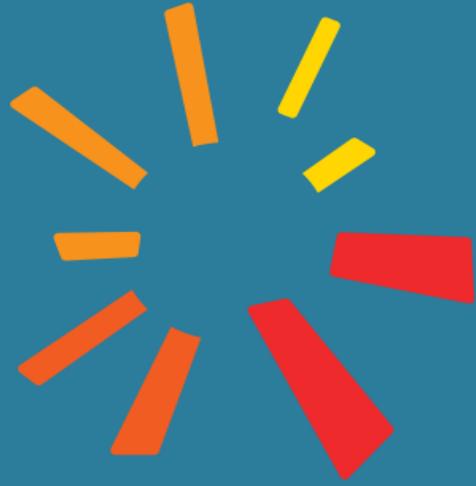


The Spark

SEFARI Gateway's
Newsletter



Welcome to the December 2023 edition of The Spark, [SEFARI Gateway's](#) (Centre of Expertise for Knowledge Exchange & Innovation) newsletter, a monthly update on the latest research developments from the Scottish Government's Environment, Natural Resources and Agriculture (ENRA) strategic research programme. The ENRA Research Portfolio provides evidence for policy and practice across environment, climate change, biodiversity, land use, agriculture, food, and rural community agendas.

Scottish innovation in Vertical Farming lands major deal at COP28



Figure 1 IGS Ltd Chief Executive David Farquhar and COO Andrew Llyod signing a major new deal in UAE at COP28 to supply Scottish designed and built vertical farming technology.

Climate change is already adding costs to price of food and we have an urgent need to find new ways of growing food that is resilient to climate extremes and reduces the impact on the environment.

Research in the Strategic Research Programme and Underpinning National Capacity support makes a major contribution to the Advanced Plant Growth Centre at Invergowrie at the James Hutton Institute who research ways to use protected and indoor farming to grow food more sustainably. The critical mass of research capability, skills and knowledge supported by the programme was a major reason Intelligent Growth solutions Ltd. co-located with the James Hutton Institute in Invergowrie to develop their novel vertical farming technology. Seven years later they have grown from 5 to 250 people and this week signed a [deal](#) to supply 200 IGS Growth Towers to the UAE as part of Giga Farm. The announcement was made at COP28.

This is a big success story for Scottish based innovation and an exemplar of the economic impact and stimulus a publicly funded programme provides.

ENRA Funded Scientists helping to tackle disease in sheep on Lewis and Harris



Picture above: ENRA Scientists coordinating sheep dipping with the crofting community on Lewis & Harris

The Scottish Government-funded [sheep scab control initiative](#) on Lewis & Harris involved collaboration with local stakeholders to tackle the disease. Sheep scab is caused by infestation with a parasitic mite, *Psoroptes ovis* and causes significant welfare and production losses, costing the UK industry £80-200 million per annum. Testing using the sheep scab blood test developed by Moredun scientists, identified twenty cases in four areas, prompting coordinated treatments in spring 2023. As resistance to other treatments has increased, reverting to more traditional dipping methods to quickly

get on top of the disease was timely. Discussions by ENRA scientists with crofters identified a desire to expand the control of the disease across the island. This led to co-designed, coordinated treatments, using a mobile sheep dipper and resulted in over 400 crofters collectively gathering and dipping nearly 30,000 sheep, covering 90% of the island flock.

Gathering and treating these dispersed sheep spread across hundreds of individual crofts and upland common grazing areas, required a massive collective effort. As well as the positive impact on disease control, by bringing people together and fostering a community-led approach, it also provided significant societal benefits, which is particularly important from a mental health perspective, with crofters often working in isolation with long, unsociable hours. This project has given the crofters a real focus and a boost at a time of year that can be very depressing, with long dark nights. It has helped to rebuild working relationships within villages and neighbouring townships, which wouldn't have been the norm in the past. At times, crofting can feel like a dying tradition, but all the crofters have felt a renewed energy and enthusiasm for their way of life.

This work was conducted by ENRA scientists from The Moredun Research Institute and the James Hutton Institute working together as part of the EPIC Centre of Expertise on Animal Disease Outbreaks.

A quote from one of the crofters: *“It was really encouraging to see both young and old working together in the fank again. The older generation had fond memories of big village fanks, which, in many areas of Lewis, aren't as common practice anymore. The younger generation was in awe of seeing everyone working together. In addition, it brought neighbouring villages together”.*

Managing flood extremes: Assessing how Nature-based Solutions functioned during Storm Babet

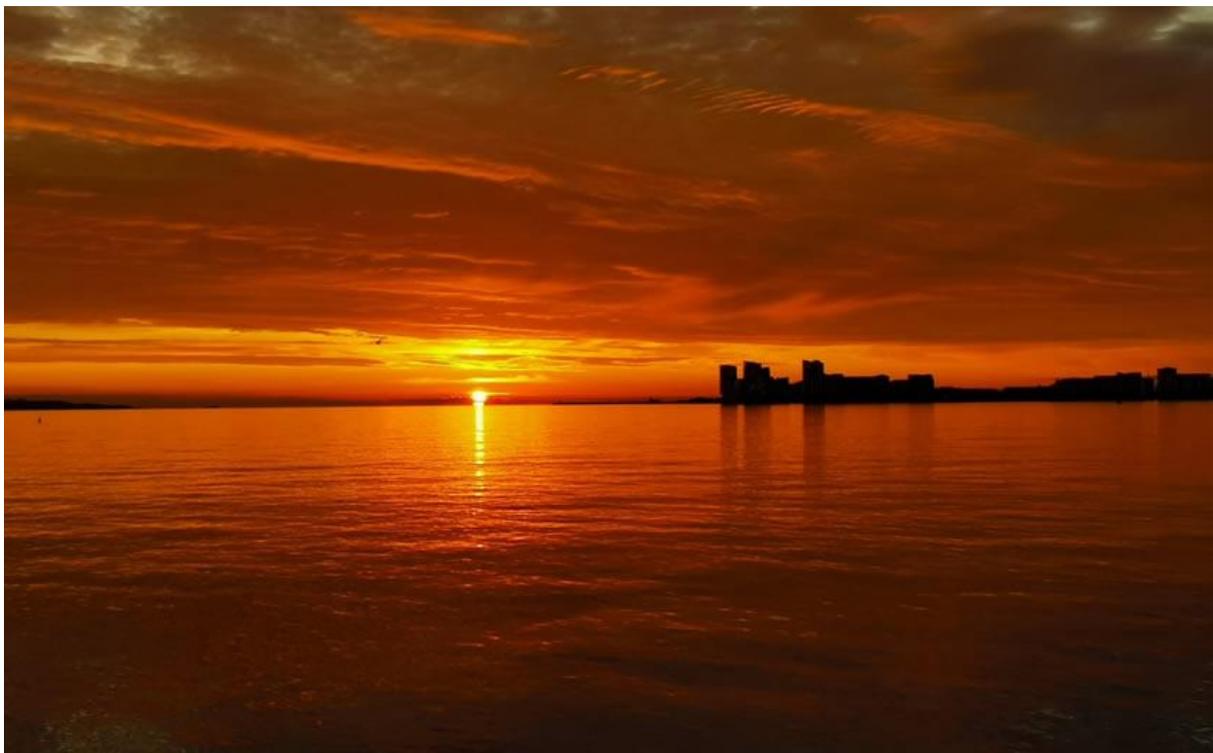


NE Scotland received extreme rainfall during Storm Babet (18th–21st Oct) and subsequent Storm Ciaran (29th Oct – 4th Nov). Areas in Aberdeenshire and Angus received over 200 mm of rainfall in 48

hours, which led to extensive flooding across the region. Nature-based Solutions are techniques that help to slow down, store and filter water within catchments, reducing and delaying a flood peak before it gets to towns and cities, as well as providing wider benefits such as improving the water quality. However, there are knowledge gaps on how such measures function during extreme events such as Storm Babet.

ENRA scientists in the [Achieving multi-purpose Nature-based Solutions](#) project are investigating how measures function to reduce flood peaks (of all sizes) and provide wider benefits such as mitigating low flows. They are looking at novel measure designs that aim to provide extra storage within catchments and make this storage available at the right time during a flood event. For example, novel wooden leaky barrier designs have been implemented at [Glensaugh Farm](#) which span both the channel and floodplain. Data is being collected from these measures and will shortly be assessed to see how well they functioned during the recent storms. Alongside this, we've been providing guidance to farmers on approaches to enhance the benefits of riparian buffer zones using a [3D buffer approach](#) for example, trapping sediments caused by soil erosion.

New lens on Rural Data



Within the Rural Futures theme of ENRA's strategic research programme the [2023 Rural and Islands Insight](#) report provided a new lens on socio-economic data in very remote rural mainland and island areas. The report is timely as it can help inform the development of the Scottish Government's [Rural Delivery Plan](#) and a [Remote, Rural and Island Housing Action Plan](#). A wide range of topics are covered in the report that are of policy interest including demographic change, housing affordability, second and vacant homes, sectoral employment and businesses, economic activity, covid impacts on businesses and transport. The report has been welcomed within the Scottish Government and wider stakeholder groups such as Highlands & Islands Enterprise and Scottish Rural Action

Helping Scottish growers to meet domestic demand for blueberries



Demand for blueberries (*Vaccinium* spp.) is at record levels but most of this domestic demand is met by imports. However, European wild blueberry occurs throughout Scotland, being most abundant in the Highlands, particularly in the north and west especially around spruce and pine dominated heath forests.

[SEFARI researchers](#) analysed the genetic diversity of 6 wild Scottish blueberry populations and discovered that there is local adaptation to different climates, pollinator abundance, and soil richness in Scotland, which in turn offers much potential to select more viable commercial variants.

In the UK, demand for blueberries has been fuelled, in part, by consumer interest in their health benefits. Blueberries remain one of the richest sources of antioxidants among the fresh fruits and are rich in compounds that have been linked to preventive and therapeutic effects on neurological, cardiovascular, metabolic and haematological disorders.

‘Ag of the middle’ fellowship will focus on the opportunities offered by agroecological, sustainable and regenerative farming



SEFARI Gateway is delighted to provide support for a new [Fellowship](#) with the Food Farming and Countryside Commission (FFCC) and the North Highland Initiative (NHI), Scottish Crofting Federation

(SCF) and Scottish Agricultural Organisation Society (SAOS) on quantifying 'Ag of the middle' in the North Highlands of Scotland.

'Ag of the middle' (AOTM) producers are small to medium sized producers that supply food to farmer's markets, but which are not large enough to be part of the global food system. To achieve an agricultural transition to more sustainable and regenerative farming practises, intensive farming systems need to change. Developing AOTM may offer the potential to carry out regenerative agriculture at scales that can supply local tourism outlets (hotels & restaurants), local shops and supermarkets with produce from more local sources.

Therefore, this project is seeking to evaluate the ways that crofts and small to medium sized farms and their markets can become more resilient through playing to their strengths – whether this is increasing their food outputs, increasing the quality of their produce to decommoditise their output, economies of scope & scale and routes to local and regional markets.

Gateway is delighted to announce this Fellowship has just been awarded to a team from Scotland's Rural College (SRUC) and Scottish Agricultural College (SAC) – Congratulations!

Latest publications from SEFARI Gateway:

- Our latest [booklet](#) provides recent examples of our research in food.
- Following on from our last newsletter our latest [case study](#) highlights how, and in collaboration with growers and processors, SEFARI researchers have conducted a farm survey to assess mycotoxin levels in oats grown across Scotland.
- Another recent [case study](#) focuses on the use of antimicrobials in livestock production and this project brought together experts from across the livestock sectors, policy and research to discuss the current mechanisms for measuring antimicrobial usage.
- Gateway's latest [blog](#) discusses a conference, hosted by the Royal Society of Arts, SEFARI Gateway and the Moredun Foundation (and with additional sponsorship from Scottish Land Commission and Nature Scot), which brought together the different perspectives of people working within and connected to the Food, Farming, Forestry and Fisheries industries.

We'd love to hear from you and receive your feedback on how we can improve our newsletter. Please contact us at info@sefari.scot with your suggestions.

Scotland is playing a central role in developing environmental solutions to the global climate and nature crises, and the Scottish Government response is based on the strongest possible scientific evidence. The Environment, Natural Resources and Agriculture research programme is key to achieving this.