The Spark

SEFARI Gateway's Newsletter

Oct/Nov 2024 edition

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Welcome to the October/November 2024 edition of The Spark, your monthly update from SEFARI Gateway (Centre of Expertise for Knowledge Exchange & Innovation) 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.

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.

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.

ENRA research leading the world on Peatland Restoration Costs

Peatland restoration is a vital part of Scotland's strategy in moving towards net zero emissions. Until recently, there was limited available information on the monetary costs and benefits of peatland restoration which is needed to inform project appraisals and policy development.

ENRA-funded research provides a first analysis of what represents the largest existing database on peatland restoration costs in the UK, and possibly internationally. The Peatland Action Programme (PAP) database can be used to inform planning and policy regarding the management of upland peatlands and assist with climate change mitigation.

The analysis of restoration costs support conclusions from an earlier study. Overall, peatland restoration in Scotland will provide a range of benefits to society through storing carbon, regulating water flows and enhancing people's connection to nature. The great degree of variation in restoration costs reinforces the need for a case-by-case evaluation of restoration in practice, and, in terms of research, the need for refined analysis based on a growing database.

This unique database was built thanks to the collaboration between Scotland's Rural College (SRUC), the James Hutton Institute, the University of Leeds and the Nature Scot Peatland Action coordination and data management team.

SRP Research tackling poor air quality from ammonia emissions

Poor air quality continues to harm public health and the natural environment in Scotland. Ammonia emissions adversely affect air quality and lead to indirect emissions of nitrous oxide when redeposited on soils from the atmosphere; nitrogen deposition leads to soil and water acidification and can affect plant biodiversity. As well as binding with other gases that can damage health when inhaled, ammonia emissions from beef are a significant agricultural contributor to deaths caused by poor air quality.

In Scotland, ammonia emissions have only reduced by 16% since the 1970s, with agriculture currently responsible for 92%, and ruminants contributing 52% from agriculture. Good practice measures to reduce emissions from ruminant farming are well established, but uptake is low.

SEFARI scientists are **developing tools** to help farmers, land managers and decision-makers. This includes a farm-level scenario-based ammonia footprinting and decision support model to drive uptake of ammonia mitigation strategies in ruminant production systems. While using the tool, farmers will see the impact on sensitive environments and how mitigation measures will reduce that impact. In other words, the results are not just a total ammonia emission figure, but also an indication of the consequences for the wider environment.

In future, the dispersion tool will be online and free to use by farmers. Agrecalc will offer it as an additional service for their customers and the UK Centre for Ecology and Hydrology will make it part of their wider ammonia dispersion service.

More details on the research are at this **link.**

Gemma Miller,
Project Lead

Ensuring future resilience to pests and diseases - a multi-disciplinary approach

The cereal, fruit and potato sectors, valued at over £1 billion in 2019 by Scottish Government statistics, contribute significantly to the Scottish economy. However, between 15% and 20% of the crops are lost to pests and diseases annually with an economic value loss of close to £200 million (Plant Health Centre, 2024). Environmental stresses such as climate change and soil degradation are contributing to the impact of pests and diseases.

Farmers, agronomists and other stakeholders have created a **list of recommendations** to help combat future pest and disease issues following collaborative scenario planning facilitated by SEFARI scientists at the James Hutton Institute.

Recommendations include increasing support for farmers to monitor for pests and diseases and to diversify cropping systems, improving controls and inspections on imported plants (a major route of pest and pathogen ingress), and research into cropping practices that buffer against crop losses and tools that support targeted control.

Four plausible future scenarios on a 10-year time frame were co-developed and assessed for their robustness to pests and diseases predicted to become established in Scotland from modelling work by the University of Exeter. The final report is now being disseminated to audiences in farming, policy, and research while SEFARI scientists continue to work with growers on combatting new pests and diseases.

Alison Karley is part of the Integrated Disease and Pest Management Research at the James Hutton Institute.

ENRA Scientist contributed to DEFRA's Nutrient Management Group

Recognising the importance of holistic approaches needed in nutrient management to achieve multiple policy goals, Defra set up a Nutrient Management Expert Group (NMEG). ENRA funded researcher, Vera Eory from SRUC has contributed to the report. The NMEG report (available **here**) contains detailed assessment of the key policy areas and 15 recommendations which include the following:

- The development of a national Nutrient Management Strategy
- Nutrient budgeting at farm, catchment, regional and national scales
- Long-term, regular soil monitoring on all farms (e.g. part of a soil health passport scheme)
- Spatial targeting, with limits, to reduce excessive nutrient loads to areas with sensitive terrestrial, freshwater and marine habitats

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