

Scottish Government update on soil research within the Strategic Research Programme (SRP) – September 2026

The current SRP will conclude in March 2027. The Scottish Government is in the process of commissioning the next Strategic Research Programme for 2027-2032.

This update covers both research will conclude by March 2027 under the current SRP and the soil research questions that are within the commission for the future SRP which will commence in April 2027. Researchers from the Scottish Government's Main Research Providers are currently developing projects to answer these questions.

1. Soil biodiversity.

a) Current SRP

- The Healthy Soils for a Green Recovery project has developed biodiversity soil health indicators and improved understanding on the interactions between soil biodiversity and other soil processes.
- The Mountain Heights Hidden Depth project has used citizen science data to better understand soil biodiversity in Scotland's upland environment and
- a work package under the Habitat Management and Restoration projects is shedding light on changes in soil biodiversity following the restoration of Previously Ancient Woodland Sites (PAWS).

b) 2027-32 SRP

Within the commission there are three specific soil research questions that all relate to soil biodiversity:

RQ1: Which measurable indicators, and associated evidenced approaches to reference ranges or thresholds, can robustly define and assess healthy soil biodiversity and biological functioning across Scotland's main soil types, spanning the continuum from mineral soils to deep peat, and across different land uses?

This question specifically requests project ideas that improve understanding of the functional role of soil biodiversity and biological activity in underpinning wider ecosystem health, resilience and recovery, and identify indicators that are robust, practical and meaningful across contrasting soil types and land uses.

RQ2: What baseline data, sampling strategies and monitoring frameworks are needed to apply indicators consistently, assess soil condition and change over time, and support policy-relevant decision-making at national scale?

This question looks at how monitoring frameworks can be developed and applied consistently, including for soil biodiversity.

RQ3: How do key pressures affect soil condition, function and resilience across Scotland's soil continuum, and how can this evidence inform sustainable soil management?

Under this question researchers have been asked specifically to assess how various pressures on soils impact soil biodiversity and ecosystem functioning.

2. Impacts of land-spread wastes (including sewage sludge) on soils and water.

a) Current SRP

- An eight year plot experiment at the James Hutton Institutes Glensaugh farm has shown increases in soil Polyaromatic Hydrocarbon concentrations post-treatment in plots treated with sewage sludge and compost, however values remained below impact threshold values.
- A number of research projects commissioned via the Scottish Government's Centre of Expertise for Water (CREW) have also added to our understanding of the impacts of land-spread wastes including a project that assessed the opportunities and implications of applying drinking water treatment residuals to land.

b) 2027-2032 SRP

Within the Commission there are the following relevant soil research questions:

RQ3 How do key pressures affect soil condition, function and resilience across Scotland's soil continuum, and how can this evidence inform sustainable soil management?

How can Scotland identify, prioritise and respond to pollutants and emerging environmental risks to protect ecosystems and human health, strengthen regulation, and build confidence in long term environmental and economic resilience?

1. Effects of carbon sequestration measures, including tree planting, on soil carbon stocks.

a) Current SRP

- Current SRP work has strengthened baseline evidence on soil carbon stocks and sequestration potential, including analysis of around 3,500 soil samples and assessment of whether soils are carbon-depleted or carbon-saturated under different farming systems.
- ClimateXChange will translate the wider evidence base directly into policy-relevant information, helping to maximise the impact and uptake of evidence from the SRP and wider research landscape. A full list of publications can be found on the CXC website.
- An Evidence Statement on Soil Carbon, has also been jointly commissioned between SG and other DAs through the Land Use for Net Zero hub, which will provide a policy-facing synthesis of current evidence on Scotland's soil carbon stocks, pressures and land-use responses.

b) 2027–32 SRP

- there is a mission to restore nature and protect our environment, particularly the soils challenge, and through links to the missions on climate-positive and resilient landscapes and sustainable, regenerative agriculture and food systems.
- relevant challenges on soils, land use, forestry and agricultural reform will examine how climate change, land-use change and management interventions affect soil condition, carbon stability, biodiversity, ecosystem function and resilience across Scotland's soil continuum.

2. Wider soil monitoring and evidence-gathering activity that contributes to a national evidence base.

a) Current SRP

- The Scottish Government provides Underpinning National Capacity funding to the James Hutton Institute and Scotland's Rural College to maintain and update key soils records and databases.
- The Healthy Soils for a Green Recovering project in the ENRA Strategic Research Programme (SRP) is also developing soil indicators and future options for a soils monitoring framework.
- Through the Scottish Government's ClimateXChange Centre of Expertise a fellowship was commissioned to develop a soils route map for Scotland. Findings from this project are now being used to develop Scotland's next soils framework.

b) SRP 2027-32

- This work on soil monitoring indicators and a soil monitoring framework will continue under the future SRP