

BRIEFING ON SOILS AND CROPS

LEADING IDEAS FOR AGRICULTURE

SEFARI

LEADING IDEAS
FOR BETTER LIVES



BIOMATHEMATICS AND STATISTICS SCOTLAND

THE JAMES HUTTON INSTITUTE

MOREDUN RESEARCH INSTITUTE

THE ROWETT INSTITUTE

THE ROYAL BOTANIC GARDEN EDINBURGH

SCOTLAND'S RURAL COLLEGE

SEFARI stands for Scottish Environment, Food and Agriculture Research Institutes – it is the collective of Moredun Research Institute; Scotland's Rural College; The James Hutton Institute; Royal Botanic Garden Edinburgh; The Rowett Institute; and Biomathematics and Statistics Scotland. These institutes work together to deliver unique and globally distinctive multi and inter-disciplinary research.

This collective delivers the Scottish Government funded 2016-2021 Strategic Research Programme on agriculture, environment, food and land. **SEFARI** improves the flow of research findings and expertise between the Programme and policy, commercial and public users. **SEFARI** works alongside the Scottish Centres of Expertise on climate, water and animal disease.

SEFARI aims to deliver 'Leading Ideas for Better Lives', reflecting that publicly funded research in Scotland must ultimately deliver positive impact for individuals, whether in Scotland or elsewhere. Whilst this work takes place across a number of sectors, this briefing focuses on examples of **Soils and Crops** research funded within the 2016-2021 Strategic Research Programme.



Scottish Government
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Optimising Crops

- Exploring Scottish plants for sustainable use in food, drink and non-food sectors;
- Recovering lost traits from wild cereal varieties to improve fertiliser use efficiency;
- Improve varieties of major Scottish crops to cope with climatic conditions and disease; threats through knowledge of their DNA;
- Improved food quality, determining which plant chemicals drive health benefits through our diets;
- Understanding changes in greenhouse gas emissions arising through microbial activity from differing barley varieties;
- The development of novel crops that can increase the economic and environmental sustainability of Scottish Agriculture;
- Developing new techniques to understand root and soil interactions for improved root performance and soil stabilisation;
- Understanding the causes of plant disease to provide insights which will highlight new plant breeding targets and drive long term plant disease resistance.



Farming practices, data and soils information

- Improved risk assessment and crop disease forecasting in a changing climate through the use of epidemiological data and innovative modelling approaches;
- Cut greenhouse gas emissions and fertiliser use through intercropping of legumes, such as peas, alongside cereal crops;
- Developing approaches to ensure full value is captured from crops across the supply chains thereby reducing waste;
- Understand the safe limits for the sustainable use of soils;
- Enhance and safeguard the multi-functional capacity of Scotland's soils in a changing climate and other drivers of change;
- Improved availability of soil maps and data through web interfaces;
- Development of Integrated Pest Management 'toolboxes' for effective disease control in important crops;
- Support policy through and directly link stakeholders, researchers and relevant policy departments.