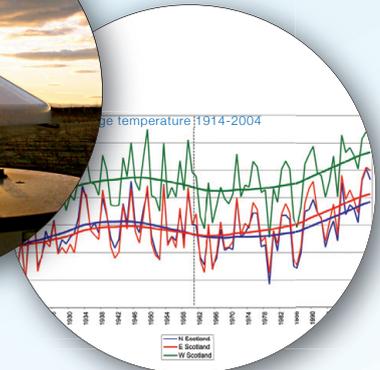


Adaptation of cropping systems in northern latitudes to environmental change: consequences for food security

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Over the next 75 years, if gaseous emissions continue unabated, the climate of northern Britain is likely to become up to:

- 3.5°C warmer in summer
- 50% drier in summer
- 40% wetter in winter
- 90% less snow
- 4 weeks earlier spring
- more extreme temperature and rainfall events
- 90% higher CO₂ levels
- higher UV-B and reduced ozone

This will affect the crops that can be grown, their yields and quality, and their susceptibility to pests and diseases. The efficiency with which plants acquire water, nutrients and radiation may change too.



Warmer wetter winters may increase the threat of raspberry root rot caused by *Phytophthora fragariae* var *rubi*

The composition of aphid populations on potato crops may reflect changes in climate and in turn this will alter virus levels.

Background

SCRI has a strong track record in responding to climate and environmental change, particularly in the development of appropriate management practices and the deployment of genetic resources to combat current and emerging pest and disease problems and abiotic stresses such as drought and frost tolerance.

SCRI's research is now focussing more sharply on opportunities to mitigate and adapt to climate change and some of the consequences for food security.

Mitigation research

Mitigation research includes:

- the use of plants to transfer carbon to soils
- modifying carbon and nitrogen cycling in soil/plant systems
- improving nutrient use efficiency to reduce gaseous and leaching losses



The climate change chambers at SCRI allow soil temperature profiles to be manipulated independently from the environment above ground, thereby creating conditions similar to those experienced by plants in the field.

Adaptation research

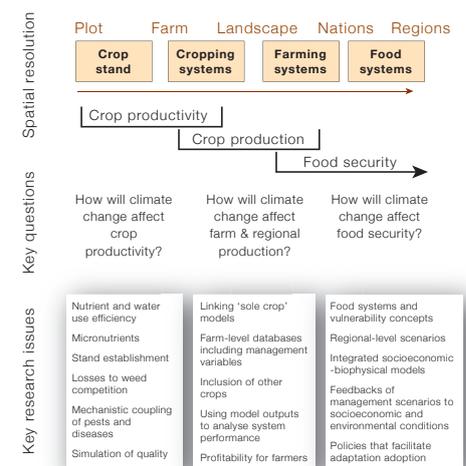
Adaptation research includes :

- identifying mechanisms and sources of durable resistance/resilience to diseases and abiotic stresses
- genetic enhancement to cope with variable growing conditions
- the development of new crops



Lady Balfour, bred at SCRI for Greenvale AP, is the UK's best selling organic potato. It combines excellent cooking characteristics with disease resistance to late blight and Potato cyst nematode.

Food security



Effects of scale on elements of food systems contributing to food security and the various questions and research issues appropriate to different scales.

To undertake this research, SCRI will continue to invest in high quality research facilities.

SCRI is involved in many international projects enabling us to identify and access germplasm that may have traits which enable crops to adapt to predicted climate change scenarios for Scotland.

SCRI is developing partnerships with universities to enhance knowledge that can inform mitigation policies and practices, and with commercial bodies to ensure that knowledge and innovation, that can benefit adaptation, finds its way to market expeditiously.