

Environmental Change - Impacts on pests and Diseases

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Introduction

Over the next 75 years, Northern Britain will get warmer, with earlier springs, drier summers, wetter winters and less snow.

More extreme temperatures and rainfall events are expected.

Many factors can affect the incidence and emergence of new pests and pathogens, including climate change.

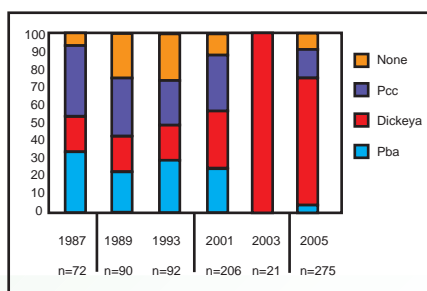
A recent RERAD-funded work package report highlights:

i) future threats to potato production resulting from changes in both the incidence and severity of indigenous and non-indigenous pests and pathogens, and ii) key areas of future research to cope with these threats.



Dickeya species

The bacterial pathogen *Dickeya* spp. is causing increasing problems for potato production in many European countries. Although not yet a problem in Scotland, uncontrolled imports combined with warmer, wetter springs makes the emergence of this new pathogen highly likely.



Van der Wolf PRI, Wageningen, The Netherlands



Dickeya in England

Late Blight

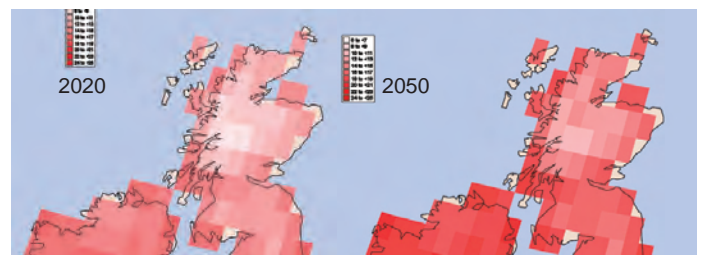
Late blight, caused by *Phytophthora infestans*, is the most damaging crop disease in UK (and world-wide). Increased temperature and the need to irrigate in summer may cause disease even in areas that experience reduced precipitation. This is a highly adaptable pathogen likely to respond quickly to a changing environment.



Aphids and aphid-borne viruses

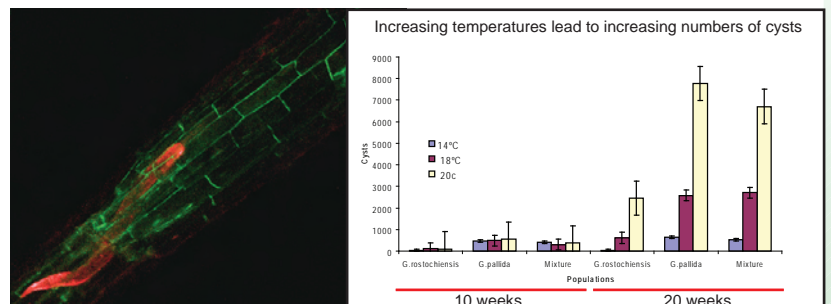
A changing climate will favour the survival and early development of aphids and other insects. Many of these act as vectors for viruses which cause disease on different crops. An increased spread of viruses could negate Scotland's natural advantage for seed potato production.

Climex software predicts that aphid populations will increase



Nematodes

Problems with managing potato cyst nematodes are expected to increase in the future due to rising temperatures. Other nematodes, such as the root knot nematode *Meloidogyne chitwoodi*, have already been intercepted in England on seed potatoes from Europe and in the future could become established in the UK.



Future Research

- Improved early detection of pests/pathogens.
- Understanding pest/pathogen populations and spread.
- Investigating climate change on pest/pathogen - host interactions.
- Improving host resistance.
- Developing predictive models of pest/disease risks.