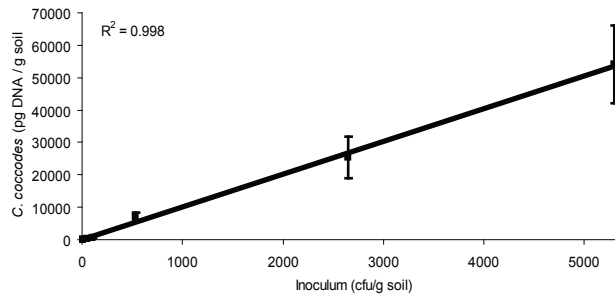
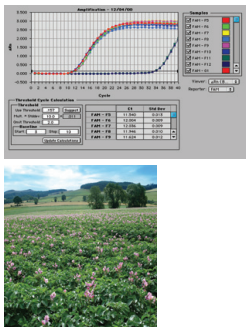


Jennie Brierley & Alison Lees, Plant Pathology, SCRI, Dundee, UK
 Stuart Wale & Alex Hilton, SAC Aberdeen, UK
 Jeff Peters & Giles Budge, CSL, York, UK

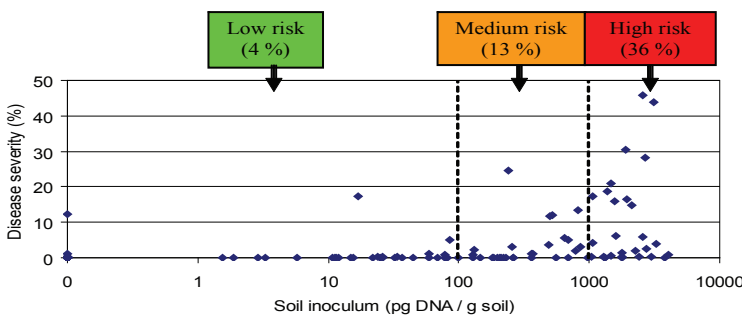
Email: Jennie.Brierley@scri.ac.uk; Alison.Lees@scri.ac.uk

Aim: To improve decision making for the management of potato diseases using predictive diagnostics, the deployment of relevant soil sampling techniques and knowledge of the epidemiology of pathogens of potato to establish disease risk assessments.

Real-time PCR assays have been shown to accurately quantify levels of pathogen inoculum in inoculated soils.



Work has focused on three tuber blemishing diseases of potato: black dot (*Colletotrichum coccodes*), powdery scab (*Spongospora subterranea*) and black scurf/stem canker (*Rhizoctonia solani* AG3).



Risk of disease severity greater than 10 % associated with increasing levels of soil inoculum

122 commercial potato fields were tested to determine the level of soil-borne inoculum prior to planting.

Disease incidence and severity on the progeny tubers was then related to soil inoculum level.

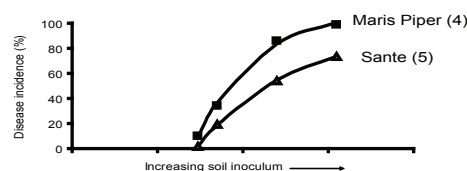
The ability of soil diagnostic tests to predict disease risk for soil-borne diseases of potato could then be assessed.

The example given is for *C. coccodes* (black dot).

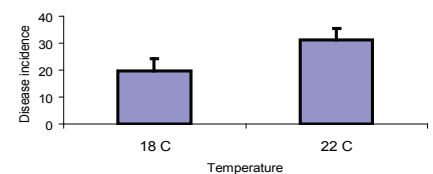
In extensive trials, a number of other factors were found to have a significant effect on the extent of black dot development:

- varietal resistance
- crop duration
- irrigation
- temperature
- use of Amistar

More resistant cultivars had less disease



Warmer temperatures favoured disease development



Can predictive diagnostics be used as a tool to assess disease risk?

- For *C. coccodes* a good relationship between soil inoculum and disease risk was found. Disease risk categories, which reflect the risk of disease occurring, based on the level of soil inoculum (pg DNA / g soil), have been set. Low (< 100 pg DNA / g soil), medium (100-1000 pg DNA / g soil) and high risk (> 1000 pg DNA / g soil).
- Work to develop robust predictive diagnostic testing strategies and interpretation guidelines for *R. solani* and *S. subterranea* is ongoing.