

Diagnostics and Monitoring

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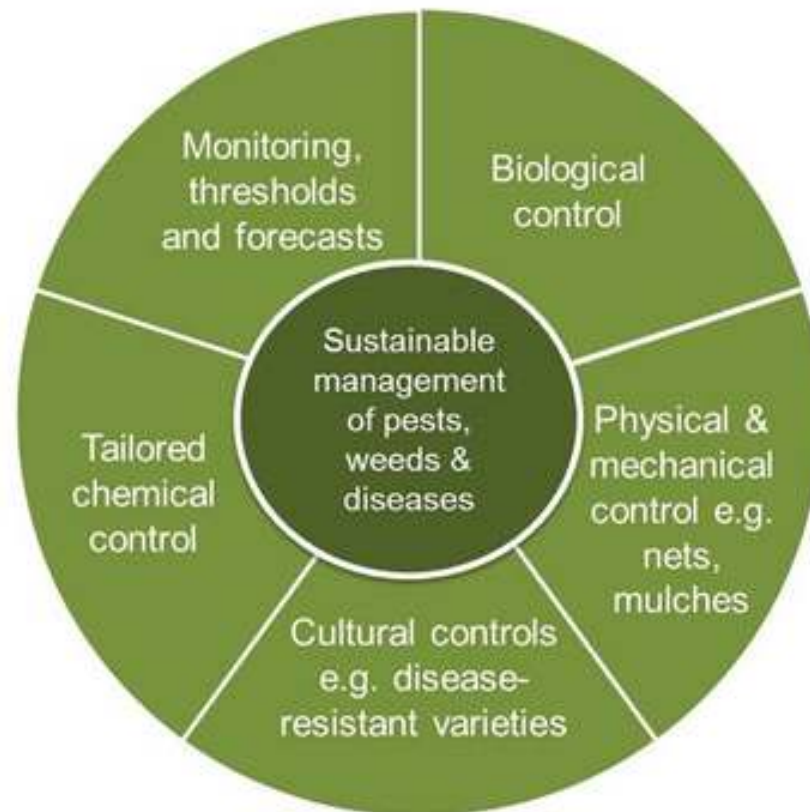


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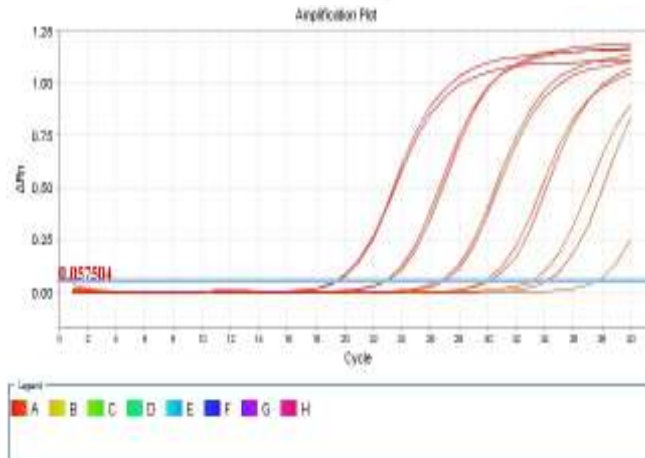
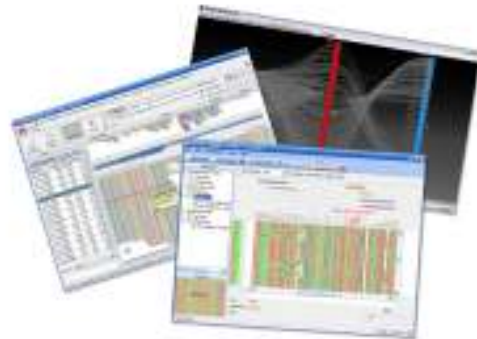
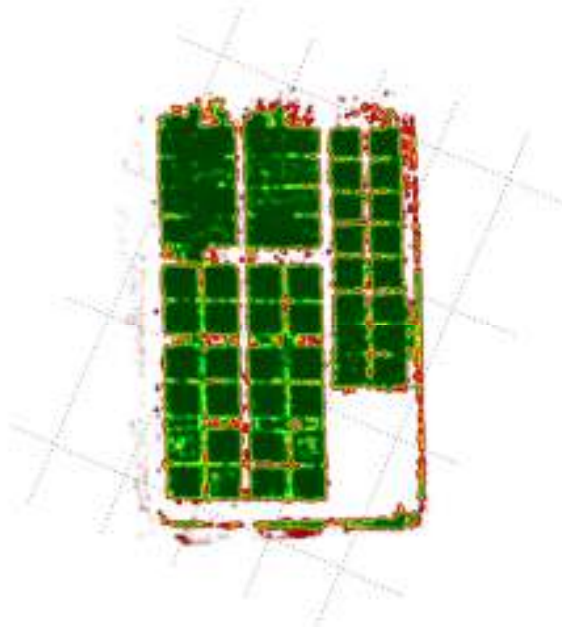
SEFARI



Diagnostics and Monitoring – Underpinning Integrated Pest Management



Diagnostics and monitoring – underpinning IPM



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ITS-Erth-FL	CCACACCTAAAAAACTTTCCACGTGAACCGTATCAACCTTTTAAATTGGGGGCTTCCGTCTGGC--CGGCCG-----GTTTTCGGCT

Free Living Nematodes (FLN)



The problem

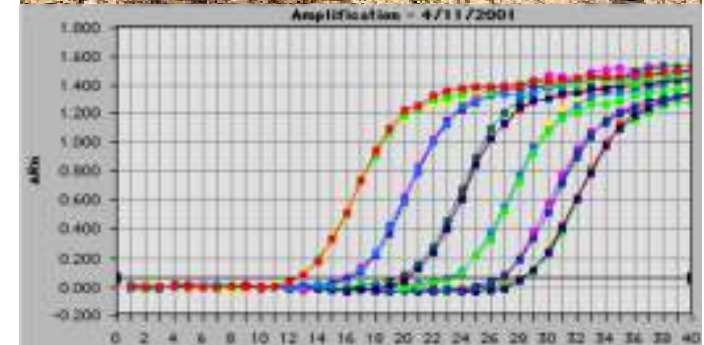
- Direct damage by feeding on potato roots reducing yields and quality
- Transmit Tobacco Rattle Virus (TRV) the cause of spraing in potato
- AHDB Potato estimates the total loss to the UK potato industry to be greater than £13m p.a.

FLN - diagnostics

Knowledge from SRP funded research has led to industry funded collaborations that have generated:

- Commercialised species-specific molecular diagnostics.
- Strategies for quantifying and controlling free-living nematode populations and consequent damage by Tobacco Rattle Virus to improve potato yield and quality.

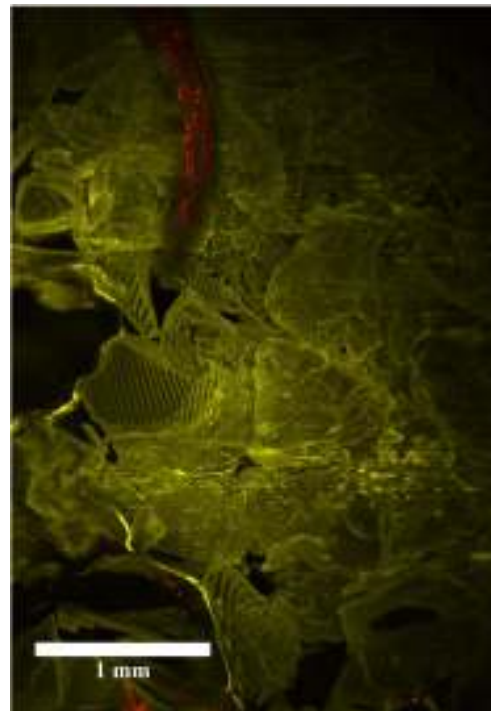
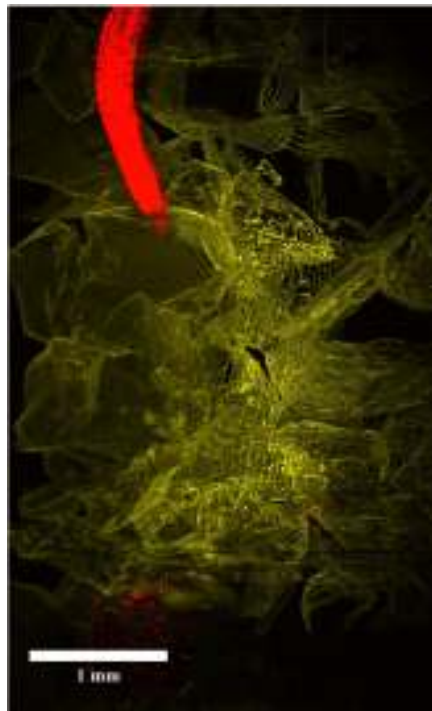
Knowledge exchange



FLN – Imaging techniques



Transparent soil and imaging techniques are being developed in the SRP. They are being used to identify the efficacy and to explore the mode of action of new chemical compounds for the control of free living nematodes.

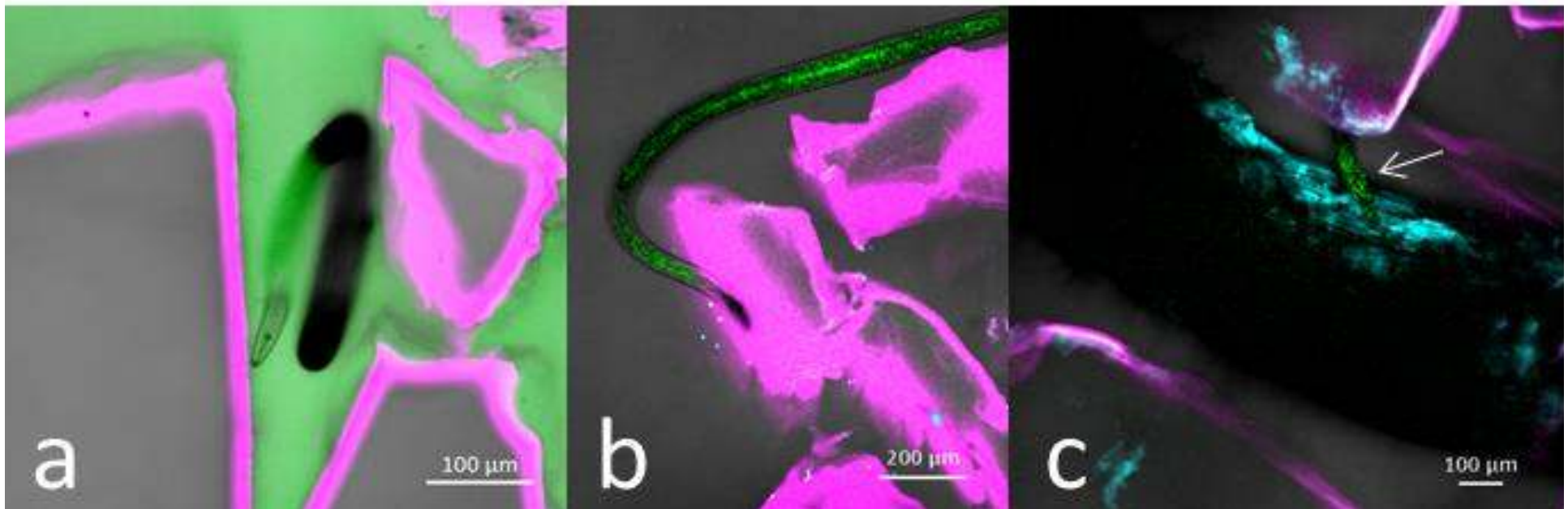


- High resolution
- Behavioural studies in whole microcosm chambers
- Response to new chemicals

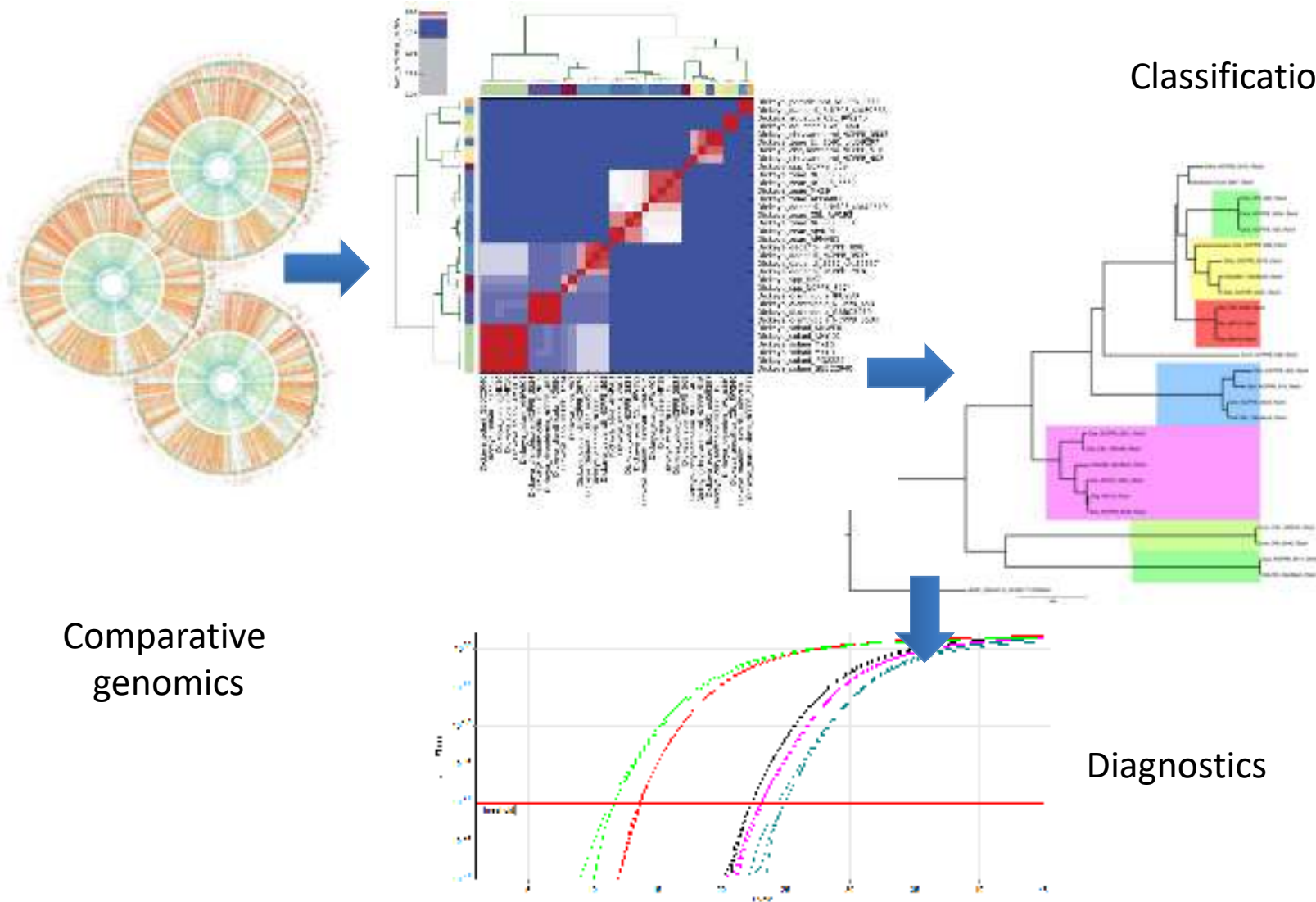
FLN – Imaging techniques



“The Centre Mondial de l’Innovation Roullier provide full support for the work on live screening of nematodes. New technologies and protocols are being developed, and these will greatly enhance our ability to identify the efficacy of novel products dedicated to the emerging market of Biocontrol Products”.



Improved classification and diagnostics blackleg – soft rot



Classification

Comparative
genomics

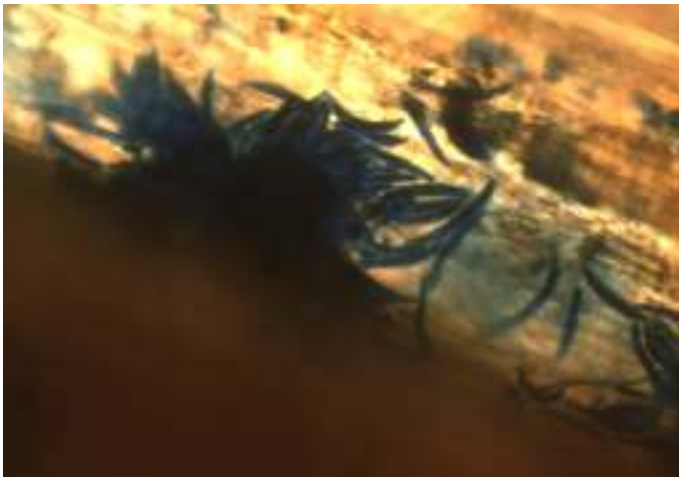
Diagnostics

Diagnostics to aid mycotoxin control



Increase in *Fusarium* in harvested grain and the associated risk of mycotoxins entering the human and animal food chain.

To facilitate rapid identification of *Fusarium* spp. in barley, wheat and oats, multiplexed diagnostics have been developed.



Diagnostics to improve mycotoxin control




PUBLICATION

25 May 2018

Workshop: Monitoring and Reporting Mycotoxin Contamination in Cereal Foods and Raw Materials

Summary

This workshop, jointly organised by Food Standards Scotland and the Rowett Institute and hosted by Science and Advice for Scottish Agriculture, was held on the 9th May 2018. The workshop brought together representatives from industry, science and government to discuss mycotoxin monitoring and consider potential areas of concern in a Scottish and UK context. This report summarises the presentations and discussion and identifies key areas as T2/HT2 toxins, ergot alkaloids and the challenge of imports monitoring following EU exit.

 [Mycotoxin Workshop Summary Report PDF \(355KB\)](#)

“FSS welcomes RESAS research into *Fusarium* mycotoxins which contributes to our:

‘Food is safe’ strategic outcome.

‘Reducing foodborne illness in Scotland’ strategy.”

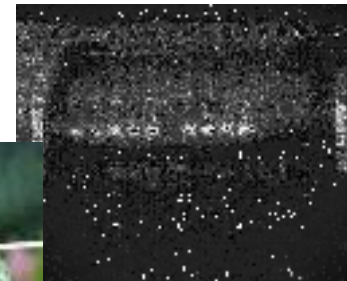


Soft fruit diagnostics

Raspberry high-health



- Sole source in the UK of pathogen-free planting material for entry in the UK Plant Health Certification Scheme
- Adhere to Scottish, UK and EPPO guidelines
- Provide fruit producers and propagators with planting material of a known health standard and purity
- Prevents the spread of pests and diseases



Soft fruit diagnostics



Virus detection in raspberry

- New virus RLBV discovered in 2008 in Scotland
- Widespread in UK and Northern Europe
- RLBV characterised using New Generation sequencing
- Diagnostic RT-PCR test developed to investigate the association between *P. gracilis* and RLBV
- Varietal differences in disease susceptibility identified



Virus testing in raspberry



Driscoll's Genetic Ltd– “As a company we have used the virus testing service for strawberry and raspberry samples and consulted with the research team at the Hutton for advice on virus diagnostics on a number of occasions in the last few years. The expert advice we received and the testing service have been excellent. This has helped us to maintain good plant hygiene within our breeding program and nursery operations, both of which are pivotal to our economic success as a company and has without doubt saved us both time and money.”

Soft fruit diagnostics



Virus detection in blueberry

- The aphid vector of Blueberry scorch virus first confirmed in Scotland in 2013 has now become widely established
- Diagnostics for Blueberry scorch virus have been developed and a suite of diagnostics for other viruses is under development
- Diagnostic tests have been used to screen imported commercial blueberry plants to prevent new viruses being introduced into Scotland



Spotted wing *Drosophila*



- Recent invasive pest of soft and stone fruit
- Improved detection and monitoring developed
- SWD clinic held for growers



Thank you



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