

Investigations into the biology of *C. coccodes*

Developing effective integrated measures for the control of black dot

Jennie Brierley¹, Jenny Stewart¹, Alison Lees¹, Alex Hilton², Jeff Peters³, Peter Gladders⁴, Nick Bradshaw⁴ and Stuart Wale².

¹Scottish Crop Research Institute ²SAC Aberdeen ³Sutton Bridge Experimental Unit ⁴ADAS

Scottish Crop
Research Institute

ADAS

SAC



As part of a BPC funded project, which aims to develop effective integrated measures for the control of black dot, studies into the biology of *C. coccodes* are underway. These investigations consist of:

- Monitoring of commercial stocks and field and laboratory experiments to determine the effect of environmental and agronomic factors and the relative importance of soil and seed contamination on black dot development.
- Storage experiments investigating black dot development post harvest.

Real-time PCR assays to detect *C. coccodes* in both tubers and soil have recently been refined as part of the BPC Diagnostics project and are being utilised within this project



Monitoring crops and Field trials

A monitoring exercise on over 30 commercial crops was carried out in association with agronomists throughout GB. In addition, four intensively monitored field trials were carried out, two in England and two in Scotland. In each country,

one trial examined the effect of seed-borne inoculum on disease development in two varieties and the second trial examined the effect of soil-borne inoculum and various agronomic factors on disease development in three varieties.

The results of the monitoring exercise and the trials indicate that:-

- Soil-borne inoculum had a greater effect on disease development in progeny tubers than seed-borne inoculum.
- At sites planted with contaminated seed, delaying harvest by two weeks had little or no effect on disease development. However, at sites with contaminated soil, substantial increases in incidence and severity of disease were recorded where harvest was delayed.
- The resistance ratings of the varieties tested in the trials reflected the degree of progeny tuber contamination that developed. However, where inoculum pressure was high, the incidence of black dot on progeny tubers was high irrespective of resistance rating. However, differences in severity continued to reflect the resistance rating.
- The in-furrow fungicide treatment Amistar was effective in reducing the incidence and severity of black dot on progeny tubers.
- Results suggest that irrigation may increase the incidence and severity of black dot but that the effect of irrigation differs between varieties.



Storage experiments

Results of a post-harvest experiment carried out at SBEU to compare different post-lifting handling regimes, suggest that reducing the temperature immediately and omitting a curing period at store loading would have the greatest effect in minimising disease expression in an infected stock.

Laboratory experiments

Laboratory experiments to examine the effect of various levels of both seed and soil contamination on the development of black dot on progeny tubers under different temperatures and water regimes are underway.

