

# Potato Cyst Nematode (PCN) species - *Globodera pallida*

## Status

- There are two species of potato cyst nematode (PCN): *Globodera rostochiensis* and *G. pallida*
- Both species are present in Scotland.
- Potato varieties resistant to *G. rostochiensis* (50% of potatoes in Scotland) have largely halted its spread with soil infestations remaining constant. Resistance seems to be stable over last 10 years.
- There is little resistance to *G. pallida* and those that are available are found in processing varieties, which are not commonly grown (certainly for ware) in Scotland.
- Seed land is tested by the government for PCN before planting is allowed.
- There are 14,000 Ha of land that can't be used to grow seed.
- Ware production does not require testing and this has partly led to an increase in ware production. However, ware, especially susceptible varieties, can spread PCN and prevent that land being used in future for seed.
- **The land infected with *G. pallida* is doubling every 6-7 years.**



Figure. a). Potato Cyst Nematode *Globodera pallida* - Credit: Christopher Hogger, Swiss Federal Research Station for Agroecology and Agriculture, Bugwood.org; b) *G. rostochiensis* PCN cysts (golden) – Credit: Bayer Crop Science UK; *G. pallida* PCN cysts (white) – Credit: Central Science Laboratory, Harpenden, British Crown, Bugwood.org.

## Scottish-specific issues

- Scotland is particularly at risk as 80% of the UK's seed industry is here.
- Without action the Scottish seed potato industry could be severely restricted over the next 25-30 years, with a possibility of no viable industry at the end of this period.
- This will clearly have economic consequences for the sale of seed to the wider UK and for the 20% of seed that is currently exported.

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- This will also lead to the increase in ware production and inevitably a need to bring in seed from elsewhere, impacting on the Safe Havens Scheme (which aims to grow seed from known sources with the UK seed system).

## Knowledge Gaps

- An understanding of how other countries, both within and outside Europe, are handling the PCN issue.
- The future spread of PCN in Scotland based on no action versus different types of action.
- The economic consequences of no action versus different types of action.
- A better understanding of grower / industry attitudes to PCN.
- New information on resistance markers / genes and their movement into new (pre)breeding material.

## PHC Perspective

*G. pallida* has the potential to destroy the Scottish potato seed industry within 25-30 years unless steps are taken now to address the increased spread of *G. pallida* on seed land. While this is an issue for the industry to take action and for scientists within the SRP and elsewhere to help identify solutions, the PHC can assist by speaking to stakeholders, in close association with Scottish Government about the issue and ways to tackle it. In order to do this, some background information is required, including the first four bullets above (Knowledge gaps). These have already been included in a PHC-funded project entitled 'The future threat of PCN in Scotland', with results of the finding due in October 2019. In addition, while it may not be appropriate for the PHC to fund work associated with marker development for breeding, the PHC can play a key role in speaking with scientists from the SRP (and elsewhere where appropriate) about optimising efforts towards the generation of new *G. pallida* resistant breeding material suitable for Scotland and about other ideas for control.

## Key Priorities and Recommendations

- Understand better how other countries deal with PCN.
- Fast track the discovery of *G. pallida* resistant varieties for the fresh market suitable for growing in Scotland.
- Ensure a close link between Scottish Government, industry and scientists (including those on the SRP) to ensure close tie up towards potential solutions.
- Increase discussions on PCN at relevant stakeholder events.
- Identify and test other potential control methods.

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