

The Future Threat of PCN in Scotland

Policy Summary



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This work was commissioned by Scotland's Centre of Expertise for Plant Health Funded by Scottish Government through the Rural & Environment Science and Analytical Services (RESAS) Division under grant agreement No [PHC2018/16](#)

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Please cite this policy summary as follows: V. Blok, J. Pickup, K. Davie, H. Kettle, D. Ewing, A Roberts, L. Kuhfuss, A. Kleczkowski & B McDougall (2020). The Future Threat of PCN: Policy Summary. PHC2018/16. Scotland's Centre of Expertise for Plant Health (PHC). DOI: 10.5281/zenodo.3889965

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1 Policy Summary

1.1 Background

Potato cyst nematodes (PCN) are microscopic worms that can cause up to 70% yield losses in potato. Because of the damage they cause PCN have been regulated in Europe since the 1960s. Seed potatoes are prohibited from being grown in land which has been found to contain PCN. Sampling rates are either 1500ml or 400ml per hectare, which have a 90% or 50% chance, respectively, of finding one cyst in an infestation of 3.8 million cysts per ha. Approximately 19,000 ha or 13% of a potential 150,000ha of seed potato growing land is known to be infested with PCN in Scotland. The dominant species is changing from *G. rostochiensis* to *G. pallida*. Approximately 50% of potatoes planted in Scotland are resistant to *G. rostochiensis*, while less than 3% are resistant to *G. pallida*.

1.2 Key Research Questions

- What are the current control options in Scotland and other countries?
- What are the future risks of both *G. rostochiensis* and *G. pallida*?
- Why are resistant varieties not being utilised in Scotland?
- What are the potential economic impacts of PCN on the Scottish potato industry?

1.3 Research Undertaken

- Modelling to show spread of PCN to date.
- Modelling to predict future scenario for likely spread of PCN.
- Investigating control options and how resistant varieties are currently used in Scotland.
- Interviewing growers to understand their motivations with regards to the control of PCN.

1.4 Main Findings

- There are several options to control PCN including using resistant varieties, trap crops, biofumigants, nematicides, inundation, bio-controls and rotation length.
- Currently, the climate and cultural practices in Scotland allow only rotation length, resistant varieties and nematicides to be effective.
- The most effective way to control PCN is the use of resistant varieties.
- Resistant varieties to *G. pallida* tend to be processing varieties and processing varieties cannot be grown for ware in Scotland due to the climate
- Growers are tied in with producers and grow only what the market demands.
- More table varieties with resistance to *G. pallida* are required and especially free varieties. More *G. pallida* resistance markers are therefore required to assist breeders
- Work should be undertaken to develop novel control methods for PCN suitable to the Scottish climate.
- Current practices, particularly related to rental of potato land may be detrimental to the control of PCN.
- If nothing changes, we can expect an exponential rise in the amount of land recorded with *G. pallida*, potentially preventing the growing of seed potatoes within as little as 30 years.

1.5 Recommendations and next steps

- Encouraging the use of resistant varieties in control programmes and, where possible, identify an end market for these varieties.
- Potentially shifting rules within the legislation to benefit management of PCN. For example, relaxing the current statutory measures through: a) revising PCR thresholds for positive PCN tests; and b) revising the area of land on which seed potato

production is prohibited. However, such relaxations would be conditional on the availability and use of resistant varieties.

- The whole industry needs to work together to preserve the seed industry in Scotland.
- Working groups will scrutinise different suggestions for the way ahead.
- Knowledge transfer is critical for growers to understand the impact of their actions and to motivate end users (e.g. processors, producers and supermarkets) to increase uptake of *G. pallida* resistant varieties for the longevity of the potato industry in Great Britain.

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