Delivering a sustainable potato industry for Scotland through management of PCN

JOHN T. JONES[1,2], JAMES PRICE[1], THOMAS M. ADAMS[1], INGO HEIN[1], XINWEI CHEN[1], ERIC ANDERSON[3], JON PICKUP[4], JIM WILSON[5], CATRIONA MCLEAN[5] PHIL BURGESS[6] & IAN K. TOTH[1]

[1]Cell & Molecular Sciences Department, The James Hutton Institute, Invergowrie, Dundee, DD2 5DA, UK; [2]School of Biology, University of St Andrews, North Haugh, St Andrews, KY16 9ST, UK; [3]Scottish Agronomy Ltd, Arlary Farm, Milnathort, KY13 9SJ, UK; SASA, Roddinglaw Road, Edinburgh, EH12 9FJ; [5]Soil Essentials, Hilton of Fern, By Brechin, Angus, DD9 6SB, UK; [6]Scottishpotatoes.org, West Mains Road, Edinburgh EH9 3JG, UK.

In 2020 a Scottish Government ministerial meeting was held to discuss a report entitled 'Potato cyst nematode (PCN) and the future of potato production in Scotland' produced as part of a working group led by Scotland's Plant Health Centre. This report made a series of practical recommendations to improve management of PCN, and the Scottish Government subsequently agreed to fund the recommended actions in full. This £2.5 million project aims to better understand the economic impacts of PCN to Scotland, develop markers for resistance that can be used in breeding programmes, investigate the use of diploid breeding as a tool to improve breeding of new PCN resistant varieties, provide information on the mechanisms of tolerance in potato, understand management of groundkeepers in fields, investigate novel IPM tools for PCN management and to develop a decision support tool for growers in Scotland. An underpinning work package focused on knowledge exchange will ensure that interaction with stakeholders across the supply chain continues throughout the project.

Work in the first year of the project has led to the development of markers linked to key resistance sources and identification of a panel of candidate genes that underpin the *H1*, *H3* and *GpaV* sources. Improved sampling methods have demonstrated the importance of groundkeepers in promoting continued population build up. We have also examined links between various growth traits and tolerance. A summary of the findings in each of these areas will be presented. During the first year of the project, a series of KE events have also taken place focused on farmer demonstrations of resistant and/or tolerant varieties in the field.