

1. Content of the 'Topic Description' document

1.1. Topic area

A: Diagnostics, detection, surveillance

1.2. Links to the Euphresco Strategic Research Agenda

The topic addresses the following objective(s) of the 2017-2022 Euphresco Strategic Research Agenda:

- ☒ Objective 2017-R-1.1: to improve knowledge on the biology, epidemiology and ecology of priority invasive and (re)emerging pests
- ☒ Objective 2017-R-1.2: to support taxonomic research for the unambiguous identification of pests
- ☒ Objective 2017-R-2.1: to improve knowledge on emerging pathways of entry and means of spread for pests
- ☒ Objective 2017-R-5.2: to develop and validate high-throughput DNA extraction methods
- ☒ Objective 2017-I-1.2: to improve access to collections of phytosanitary importance
- ☒ Objective 2017-I-1.3: to build a network of collections that fulfil minimum quality standards
- ☒ Objective 2017-I-2.1: to support data exchange, data use and re-use for the benefit of plant health research activities
- ☒ Objective 2017-I-2.2: to contribute to databases for plant pest identification and diagnostics
- ☒ Objective 2017-C-1.1: to address plant health challenges through integrative approaches and support collaboration among disciplines
- ☒ Objective 2017-C-3.1: to favour knowledge exchange and support common initiatives with relevant players

1.3. Topic title

Characterisation of *Pratylenchus* nematodes within Europe and populations moving in trade.

1.4. Description of the problem the research should solve

Pratylenchus (root-lesion nematodes) are recognised worldwide as one of the major economically important nematode pests, causing severe root damage and facilitating the entry of disease to a wide range of crops. Species assigned to this genus are migratory endoparasites that can be transported in trade with bare rooted plants in addition to soil and growing substrates. As a consequence, it is vital for National Plant Protection Organisations (NPPOs) to be able to make informed decisions based upon whether non-native or pathogenic *Pratylenchus* spp. are found associated with import consignments.

Recent work (Janssen *et al.* 2017¹) has shown that many species described from Europe may be cryptic, and that traditional morphology must be supplemented with molecular confirmation for accurate identification. Accurate characterisation of commonly occurring European *Pratylenchus* species is lacking, with numerous sequences deposited in Genbank incorrectly assigned (Karssen, *pers. comm.*).

Many nematologists also have limited access to validated reference specimens, having to rely upon taxonomic descriptions of varying quality to confirm morphological identification.

1.5. Description of the expected results

The project will be structured in the following work-packages:

- WP1 - Collection of native and established European *Pratylenchus* species, with a focus on those of economic importance.

¹ Janssen, T *et al.* (2017). Molecular characterisation and species delimiting of plant-parasitic nematodes of the genus *Pratylenchus* from the *penetrans* group (Nematoda: Pratylenchidae). *Molecular phylogenetics and evolution* 117, 30 – 48.

- WP2 - Collection of *Pratylenchus* populations moving into, and within Europe, associated with trade.
- WP3 - Accurate characterisation of these populations, including production of morphometrics and photomicrographs.
- WP4 - Generation of DNA sequence data and design of PCR primers.
- WP5 - Production of slide reference material for distribution to collaborators and NCE nematode collections (www.nce.nu).

The following outputs are expected:

- A network of research and quarantine nematologists to advance taxonomic understanding and identification within the group.
- Harmonized and validated molecular protocols to support diagnosis of *Pratylenchus* species.
- Robust sequence data widely available through Q-bank and Genbank.
- Improved availability of reference specimens for morphological study through collaborator distribution and more widely through the NCE.
- Publication of taxonomic descriptions of *Pratylenchus* species new to science.
- Improved understanding of *Pratylenchus* epidemiology through accurate characterisation.
- Data regarding the movement of *Pratylenchus* species associated with trade.
- Reliable identification of *Pratylenchus* species moving into Europe with trade.

1.6. Beneficiaries of this research product

The outputs of this project will benefit EPPO member countries, NPPOs including policy decision, risk analysts and diagnosticians. The project will also benefit farmers and growers in addition to traders of ornamental plants.

1.7. Research funders and research contribution/ distribution

Funding organisation	Research activity and researchers involved
1. Department for Environment Food and Rural Affairs, United Kingdom Elspeth Steel, Defra Elspeth.Steel@defra.gov.uk	-Project coordination; -Contribution to WP 1, 2, 3, 4, 5; Contact person: Thomas Prior E-mail: thomas.prior@fera.co.uk Contact person: Margarida Correia E-mail: margarida.correia@fera.co.uk
2. Centre for Plant Protection, Croatian Agency for Agriculture and Food, Croatia Jelena Plavec jelena.plavec@hapih.hr	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Jelena Plavec E-mail: jelena.plavec@hapih.hr
3. Central Institute for Supervising and Testing in Agriculture, Czech Republic Michal Hnizdil michal.hnizdil@ukzuz.cz	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Vladimir Gaar E-mail: vladimir.gaar@ukzuz.cz Contact person: Vaclav Cermak E-mail: v.cermak@ukzuz.cz Contact person: Jakub Ondrej



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4. Benaki Phytopathological Institute, Greece Irene Vloutoglou i.vloutoglou@bpi.gr	-Contribution to WP 1, 4. Contact person: Maria Kormpi E-mail: m.kormpi@bpi.gr
5. National Food Chain Safety Office, Hungary George Melika MelikaG@nebih.gov.hu	-Contribution to WP 1, 2, 4. Contact person: Miklós Bozsó E-mail: BozsóM@nebih.gov.hu
6. National Institute of Agricultural and Food Research and Technology, Spain Elena Rodriguez rodriguez.elena@inia.es	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Lee Robertson E-mail: robertson.lee@inia.es Contact person: Sara Sánchez Moreno E-mail: sarasm@inia.es
7. Science and Advice for Scottish Agriculture, United Kingdom David Kenyon david.kenyon@sasa.gov.scot	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Kim Davie E-mail: kim.davie@sasa.gov.scot
8. ClearDetections, the Netherlands Marta Santos Paiva marta.santos@cleardetections.com	-Contribution to be detailed; Contact person: Marta Santos Paiva E-mail address: marta.santos@cleardetections.com
9. University of Coimbra, Portugal Isabel Conceição luci@zoo.uc.pt	-Contribution to WP 1, 3, 4, 5. Contact person: Isabel Conceição E-mail: luci@zoo.uc.pt Contact person: Ivânia Esteves E-mail: iesteves@uc.pt Contact person: Isabel Abrantes E-mail: isabel.abrantes@uc.pt
10. Agri-Food and Biosciences Institute Northern Ireland, United Kingdom Thomas Fleming Thomas.fleming@afbini.gov.uk	-Contribution to be detailed Contact person: Thomas Fleming E-mail: Thomas.fleming@afbini.gov.uk Contact person: Debora Cox E-mail: Deborah.cox@afbini.gov.uk
11. The James Hutton Institute, United Kingdom Roy Neilson Roy.Neilson@hutton.ac.uk	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Roy Neilson E-mail: Roy.Neilson@hutton.ac.uk



	Contact person: David Roberts E-mail: david.roberts@hutton.ac.uk
12. Institute of Plant Protection of National Academy of Agrarian Sciences of Ukraine, Ukraine Liliya Janse liliya.janse@gmail.com	-Contribution to WP 1, 2, 3, 4, 5. Contact person: Liliya Janse E-mail: liliya.janse@gmail.com

1.8. Research project partnership outside Euphresco

Euphresco funding ensures a certain level of transnational collaboration among Euphresco member countries. It is possible, if the funding consortium is interested, to contact funding organisations or research groups outside the geographical area covered by Euphresco members. The Euphresco coordinator could advertise the research topic in order to have an enlarged collaboration. If funders are interested in this possibility, please check the case below:

☐ The funding consortium of the topic mentioned in section 1.2 requires that the topic is advertised outside the Euphresco network

Additional collaboration from countries that export ornamental plants into the EPPO region would be useful, but not essential. Access to additional *Pratylenchus* populations originating from countries that are main exporters of ornamental plants would support objectives 2017-R-2.1 and 2017-I-2.1.

1.9. Any other relevant information on content

As validated sequences generated as part of this project should be made widely available, curators of Q-bank will be required to input relevant data.

2. Euphresco management aspects of the project

2.1. Indication of the topic budget

Funding organisation ^a	Mechanism ^b	Total Budget ^c
1. Defra (GB)	VP	€
2. HAPIH (HR)	TBC	€
3. UKZUZ (CZ)	NC	€
4. BPI (GR)	TBC	€
5. NEBIH (HU)	VP	€
6. INIA (ES)	TBC	€
7. SASA (GB)	TBC	€
8. ClearDetections (NL)	NC	€
9. UC (PT)	NC	€
10. AFBINI (GB)	NC	€
11. JHI (GB)	VP	€
12. NAAS (UA)	NC	€
total		€

2.2. Expected duration of the project (only for non-competitive topics)

24 months (commencing 01/04/2020).

2.3. Identification of project coordinator

Has the research project coordinator been identified?

- ☒ Yes
☐ No

2.4. Any other relevant information on topic organisation and management

In addition to a project co-ordinator, work-package leaders with the relevant expertise will be identified before the project's start.

^a First member is project coordinator. A minimum of two partners are necessary for each proposal. Add lines as needed.

^b Please indicate the preferred mechanism (e.g. real pot RP; virtual pot VP; non-competitive NC), or several mechanisms if there is flexibility.

^c Optional, as this amount can still change in the next phase. In-kind contribution should also be indicated in this column.