1. Content of the 'Topic Description' document

1.1. Topic area

Pest/vector biology, epidemiology, taxonomy

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-2.1: to improve knowledge on emerging pathways of entry and means of spread for pests
☒ Objective 2017-R-2.2: to expand knowledge on transmission of disease and pathogens for healthy planting material
☒ Objective 2017-I-2.1: to support data exchange, data use and re-use for the benefit of plant health research activities
☒ Objective 2017-C-3.1: to favour knowledge exchange and support common initiatives with relevant players

1.3. Topic title

Meloidogyne enterolobii – Survival under temperate climate conditions and distribution within Europe.

1.4. Description of the problem the research should solve

The polyphagous tropical root-knot nematode *Meloidogyne enterolobii* has recently been added to the list of EU quarantine pests. *Meloidogyne enterolobii* is known to be present in several (sub)tropical countries in North, Central and South America, Africa and Asia, where most epidemiological studies have been carried out (Brito *et al*., 2007). However, this species was also detected on roses (plants for planting) originating from China (see EPPO Reporting Service article 2008/107), suggesting that it can also survive more temperate conditions. It is of great importance to generate knowledge about the survival and duration of the life cycle of *M. enterolobii* in order to assess its potential impact on agri- and horticulture in Europe's temperate climate zone. Moreover, recent reports of *M. enterolobii* in Portugal and the ongoing outbreak in glasshouses in Switzerland demonstrate that this tropical root-knot nematode has the potential to enter and establish in (the warmer parts of) the EU and in glasshouses throughout the EU (Santos *et al*., 2019). Furthermore, a recent study by Gopal *et al*. (2022) demonstrated that several populations of *M. enterolobii* are able to reproduce on crops previously reported as non-host (e.g. yellow mustard). This emphasizes the importance to assess the current distribution of *M. enterolobii* in Europe by conducting reliable surveys and (import) inspections to prevent introduction and further spread of this highly damaging species. By sharing knowledge, comparing sampling and identification methods, a harmonised and consistent approach for performing surveys for *M. enterolobii* can be achieved.
The project is expected to generate knowledge on the epidemiology of *M. enterolobii,* particularly focussing on the survival and duration of the life cycle of *M. enterolobii* and its current distribution by performing:

A. Life cycle experiments at various temperatures
B. Performing survival experiments in outdoor conditions during the winter
C. Performing infectivity experiments
D. Surveillance of host crops (such as tomato, pepper, sweet potato, potato, carrot and other vegetables, perennials) outdoor and under protected conditions to assess the occurrence/prevalence of *M. enterolobii*
E. Sharing knowledge on sampling and diagnostic methods for *M. enterolobii*.

1.5. Description of the expected results

The project will:

- Generate/collect data on epidemiology, focussing on the life cycle of *M. enterolobii* under temperate conditions
- Determine the survival and infectivity of *M. enterolobii* under temperate winter conditions
- Generate a map of the distribution of *M. enterolobii*
- Build a network of nematologists to move towards harmonizing survey protocols and diagnostic methods to detect and identify *M. enterolobii*

1.6. Beneficiaries of this research product

The intended users/stakeholders of the research are: nematological researchers, Plant Health Agencies, National Plant Protection Services, phytosanitary laboratories, farmers, and companies from the plant-protection sector and agri- and horticulture industry, national and EU policy makers.

1.7. Research funders and research contribution/ distribution

Funding organisation	Research activity and researchers involved
1. Netherlands Food and Consumer Products Safety Authority, The Netherlands Martijn Schenk M.Schenk1@nvwa.nl	-Project coordination; -Surveys in various host plants; -Life cycle experiments; -Survival experiments; -Morphological, biochemical and molecular identification; -Knowledge on (morphological) identification and extraction methods; Contact person: Evelyn van Heese E-mail address: e.y.j.vanheese@nwwa.nl Contact person: Anne Sophie van Bruggen E-mail address: a.s.vanbruggen@nvwa.nl
2. Austrian Agency for Health and Food Safety, Austria Sylvia Bluemel E-mail address: sylvia.bluemel@ages.at	-Survey (host plants outdoors and under protected conditions); -Morphological identification; -Extraction methods and sampling methods; Contact person: Ines Gabl E-mail address: Ines.gabl@ages.at
3. Federal Public Service of Health, Food Chain Safety and Environment, Belgium Ria Nouwen ria.nouwen@health.fgov.be	Activities to be confirmed after national VP-selection & peer review. Contribution to all tasks, with focus on: -Survival experiments as J2 or eggs under temperate conditions; -Survival experiments in absence of host plant; -Infectivity experiments; -Assessing adaption of *M. enterolobii* to temperate conditions;

	Researchers involved: to be confirmed after national VP-selection
4. Murcian Institute of Agricultural and Food Research and Development, Spain Ana Isabel Tudela Paton economico-imida@carm.es	Research activities will include: -Surveys; -Morphology and molecular identification; Contact person: Caridad Ros Ibáñez E-mail address: caridad.ros@carm.es
5. Department of Agriculture Food and the Marine, Ireland Maria Laura Destefanis maria.destefanis@agriculture.gov.ie	-Contribution to be detailed; Contact person: Pat Fitzgerald E-mail address: pat@beotanics.com
6. Norwegian Institute for Bioeconomy Research, Norway Hanne Skomedal Hanne.Skomedal@nibio.no	Research activities will include: -Surveys; -Survival experiments; -Morphological and molecular identification; -Improvement of identification methods; Contact person: Solveig Haukeland E-mail address: Solveig.haukeland@nibio.no
7. Ministry of Agriculture Forestry and Food, Slovenia Contact person: Erika Oresek E-mail address: Erika.oresek@gov.si	-Surveys in various host plants; -Life cycle experiments; -Survival experiments; -Morphological, biochemical and molecular identification; Contact person: Saša Širca E-mail address: sasa.sirca@kis.si Contact person: Barbara Gerič Stare E-mail address: Barbara.geric@kis.si

1.8. Any other relevant information on content

Brito JA, Desaeger J and Dickson DW (2020). Reproduction of *Meloidogyne enterolobii* on selected root-knot nematode resistant sweet potato *(Ipomoea batatas*) cultivars. *Journal of Nematology* 52:1-6.
Brito JA, Stanley JD, Mendes ML, Cetintas R and Dickson DW (2007). Host status of selected cultivated plants to *Meloidogyne mayaguensis* in Florida. *Nematropica* 37(1): 65-71.
Gopal H, Kiewnick S and Danchin EGJ (2022). Host status of crop plants to *Meloidogyne enterolobii* populations. Poster abstract S5-PF3 7th ICN 2022, p. 92.
Kiewnick S, Karssen G, Brito JA, Oggenfuss M, & Frey JE (2008). First report of root-knot nematode Meloidogyne enterolobii on tomato and cucumber in Switzerland. *Plant Disease* 92(9): 1370-1370.
Santos D, Abrantes I and Maleita C (2019). The quarantine root-knot nematode *Meloidogyne enterolobii* – a potential treat to Portugal and Europe. *Plant Pathology* 86(9): 1607-1615.

2. *Euphresco management aspects of the project*

2.1. Indication of the topic budget

Funding organisation	Mechanism	Total Budget
1. NVWA (NL)	NC	€
2. AGES (AT)	NC	€
3. FPS (BE)	NC/VP	€
4. IMIDA (ES)	NC	€
5. DAFM (IE)	NC	€
6. MAFF (SI)	NC	€
7. NIBIO (NO)	NC	€

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

36 months

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

None.