

1. Content of the 'Topic Description' document

1.1. Topic area

Surveillance, diagnostics, field detection.

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-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

Melo-Survey: detection and distribution of *Meloidogyne chitwoodi* and *M. fallax* within Europe

1.4. Description of the problem the research should solve

Meloidogyne chitwoodi and *M. fallax* have been detected in various countries in Europe (Belgium, France, Germany, The Netherlands, Portugal, Spain, Sweden, Switzerland and Turkey) with different frequencies of occurrence reported, varying from 'few occurrences but eradicated or under eradication' to 'present in several fields'. These nematodes have a wide host range that includes important agricultural crops. It is challenging to detect these nematodes because of the rapid population decline in absence of host plants. At the same time, low numbers of remaining nematodes can rapidly increase in numbers once suitable host plants are grown. Therefore, to assess the current distribution in Europe and to prevent further spread, it is important to conduct reliable and sensitive surveys.

The aim of this project is to develop better and harmonized sampling strategies for the detection of *M. chitwoodi* and *M. fallax*. EU legislation prescribes that tubers should be checked for absence of these nematodes in case of seed potatoes. EPPO protocols describe how this can be done (PM 3/69 and PM 7/19). Furthermore, a diagnostic protocol PM 7/41 and an EFSA survey card (EFSA, 2019) are available. Improvement and harmonization can be achieved by knowledge sharing, so during a workshop we will compare and discuss sampling and diagnostic methods, develop a network, and identify knowledge gaps. The intention is to agree on a validated and harmonized approach for *M. chitwoodi* and *M. fallax* surveys. To design risk-based and statistically sound surveys it is essential to prioritize host plants for the survey area, to identify relevant risk-factors to be able to target those areas or fields that are most at risk of being infested, and to have a proper understanding of the sensitivity of the applied method. To this end, one needs to know both the sensitivity of the sampling and/or inspection strategy in the field, and the sensitivity of the detection and identification methods in the laboratory.

The project aims are:

- Surveillance of the main host crops outdoors and under protected conditions (potato, tomato, carrot, Lucerne, strawberries, cereals, sugar beet), and other possible host plants such as maize, peas, *Phaseolus vulgaris*, and *Scorzonera hispanica*, in order to create a distribution map of *M. chitwoodi* and *M. fallax* in the participating countries. For *M. fallax* the perennials *Dicentra spectabilis* and *Hemerocallis* can also be considered for inclusion in the survey
- Sharing knowledge during a workshop on sampling strategies and diagnostic methods for *M. chitwoodi* and *M. fallax*. Prior to the workshop a questionnaire will be prepared

- Depending on the outcome of the workshop: comparing extraction methods for *M. chitwoodi* and *M. fallax* from roots and tubers between labs
- Harmonizing protocols for performing surveillance, focussing on roots and tubers from host plants
- Contribute to the development a risk-based and statistically sound survey strategy.

1.5. Description of the expected results

The Melo-Survey project will:

- Gather data prior to the workshop by a questionnaire on performing surveys
- Develop a harmonized protocol for the surveillance of *M. chitwoodi* and *M. fallax* (with a focus on roots and tubers)
- Generate a map of the distribution of *M. chitwoodi* and *M. fallax* in the participating countries
- Build a network of nematologists to harmonize survey protocols and diagnostic methods to detect and identify *M. chitwoodi* and *M. fallax*.

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 agricultural and horticultural 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; -Survey in potato and other host plants; -Organizing a workshop on harmonizing sampling and detection of <i>M. chitwoodi</i> and <i>M. fallax</i> ; -Depending on the outcome of the workshop: Comparing extraction methods for <i>M. chitwoodi</i> and <i>M. fallax</i> from roots and tubers between labs; -Morphological 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 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) Department of Agroecology, Aarhus University, Denmark Mogens Nicolaisen	-Participation in the workshop; -Contribution to the discussions on survey strategies;



mn@agro.au.dk	Contact person: Mette Vestergård Madsen E.mail address: mvestergard@agro.au.dk
4) Ministry of Agriculture and Forestry, Finland Johanna Nykyri Johanna.Nykyri@gov.fi	-Participation in the workshop on harmonizing sampling and detection of <i>M. chitwoodi</i> and <i>M. fallax</i> ; -Providing information on results of (small) surveys on potato; -Participation in possible interlaboratory comparisons <i>etc.</i> ; Contact person: Johanna Santala E.mail address: johanna.santala@ruokavirasto.fi
5) Council for agronomic research and economic analysis, Italy Sauro Simoni sauro.simoni@crea.gov.it Pio Federico Roversi piofederico.roversi@crea.gov.it	-Survey in potato and other host plants; -Morphological and molecular identification; Contact person: Giulia Torrini E.mail address: giulia.torrini@crea.gov.it Contact person: Agostino Strangi E.mail address: agostino.strangi@crea.gov.it
6) Ministry of Agriculture Forestry and Food, Slovenia Erika Oresek erika.oresek@gov.si	-Survey in potato and other host plants; -Participating at a workshop on harmonizing sampling and detection of <i>M. chitwoodi</i> and <i>M. fallax</i> ; -Molecular identification; -Exchange of knowledge on molecular identification and extraction methods; Contact person: Barbara Gerič Stare E.mail address: barbara.geric@kis.si Contact person: Saša Širca E.mail address: sasa.sirca@kis.si
7) Murcian Institute of Agricultural and Food Research and Development, Spain Ana Isabel Tudela Paton economico-imida@carm.es	-Surveys; -Morphology and molecular identification; Contact person: Caridad Ros Ibáñez E.mail address: caridad.ros@carm.es
8) Swedish Board of Agriculture, Sweden Kristof Capieau Kristof.Capieau@jordbruksverket.se	-Contribution to be detailed; Contact person: E.mail address:
9) General Directorate of Agricultural Research and Policies, Turkey Suat Kaymak suatkaymak@tarimorman.gov.tr	-Survey in potato; -Participating in the workshop on harmonizing sampling and detection of <i>M. chitwoodi</i> and <i>M. fallax</i> ; -Morphological and molecular identification; Contact person: Gökhan YATKIN E.mail address: gokhan.yatkin@tarimorman.gov.tr



<p>10) Eskisehir Osmangazi Univeristy, Eskisehir, Turkey</p> <p>Refik Bozbuga refik.bozbuga@ogu.edu.tr refikbozbuga@gmail.com</p>	<p>Survey in host plants;</p> <p>Contact person: Refik Bozbuga E.mail address: refik.bozbuga@ogu.edu.tr refikbozbuga@gmail.com</p>
<p>11) Bolu Abant İzzet Baysal Univeristy, Turkey</p> <p>Mustafa İmren m.imren37@gmail.com</p>	<p>-Survey in host plants;</p> <p>Contact person: Mustafa İmren E.mail address: m.imren37@gmail.com</p>

1.8. Any other relevant information on content

None.

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. AU (DK)	NC	€
4. MMM (FI)	-	€
5. CREA (IT)	NC	€
6. MAFF (SL)	NC	€
7. IMIDA (ES)	-	€
8. SLU (SE)	NC	€
9. TARIMORMAN (TR)	NC	€
10. EOU (TR)	NC	€
11. BAIBU (TR)	NC	€

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

24 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.