

## SoildiverAgro project

Adoption of new management practices to increase crop production and quality



### THE WHAT AND WHY

#### European agricultural fields contain a diversity of economically important plant-parasitic nematodes

Research demonstrated that agro-ecological treatments can improve the biodiversity of nematode communities. However, nematode communities usually also contain economically harmful plant-parasitic nematodes (EH-PPN). From 188 soil samples, taken in conventional and organic wheat fields in nine EU-pedoclimatic regions, the presence of some EH-PPN genera was determined. Results revealed that almost all fields contained such PPN. Despite years of research to find ways to battle, even eradicate EH-PPN, they are still very commonly present and poses a threat to both sustainable conventional and organic farming. The genera *Pratylenchus* and *Paratylenchus*

turned out to be most wide-spread. Especially *Pratylenchus* is potentially harmful as these nematodes can induce secondary plant diseases by bacteria and fungi. None of the EU-regions were completely free of a root-knot (*Meloidogyne*) or cyst nematode (*Heterodera* and *Globodera*) infestation. These genera contain EU-quarantine species. Even low numbers can result in severe reduction of crop yield and quality. More EH-PPN genera, including virus-transmitters like *Xiphinema*, *Longidorus* and (*Para*-)*Trichodorus*, could be detected but mostly in lower numbers and less wide-spread.



1. *Pratylenchus penetrans*, a migratory, endo-parasitic, root-lesion nematode species (ILVO).



2. *Xiphinema* sp., a virus transmitting nematode species (ILVO).

### HOW IS THE CHALLENGE ADDRESSED

#### Plant-parasitic nematodes can be controlled by resistant varieties

An healthy soil ecosystem generally can control pests and diseases. However, agricultural fields many times have a degraded biodiversity due to the (intensive) management. It is recommended to keep track of the host status of each crop in the rotation system, especially in more diversified (agro-ecological) cropping systems with cover crops and/or mixed cropping systems. Resistant and preferably also tolerant plant varieties should be favoured in order to control these economically harmful plant-parasites efficiently. To avoid induction of nematode virulence, crop breeding companies should keep on screening for and eventually marketing new resistant and/or tolerant crop varieties.

3. A complex cover crop mixture with a variety of plants each potential hosts for plant-parasitic nematodes (ILVO).



### KEYWORDS

Control, host status, resistant varieties, plant-parasitic nematodes, rotation system.

### AUTHORSHIP

Lieven Waeyenberge, Flanders Research Institute for Agriculture, Fisheries and Food (ILVO) Merelbeke, Belgium.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817819

This factsheet is produced as part of the SoildiverAgro project. Although the author has worked on the best information available, neither the author nor the EU shall in any event be liable for any loss, damage or injury incurred directly or indirectly in relation to the project.