

Maintenance of nematode collections at ILVO, Belgium



Nicole Viaene
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ILVO
Institute for Agricultural
and Fisheries Research

Living collections at ILVO

- PCN: *Globodera rostochiensis* and *G. pallida*
- RKN: *Meloidogyne* spp.
- *Bursaphelenchus* spp., incl. PWN
- *Ditylenchus destructor* and *D. dipsaci*
- *Radopholus similis*
- *Pratylenchus* spp.

Potato cyst nematodes

Globodera pallida

- 16 populations from Belgian fields, multiplied on Désirée, Innovator ^(Pa2/3), Santé ^(Pa2)
- Chavornay

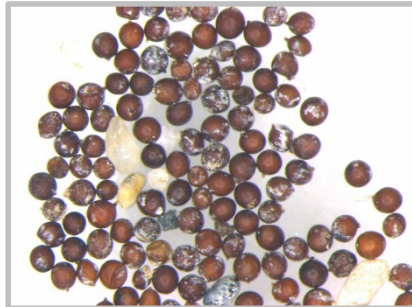
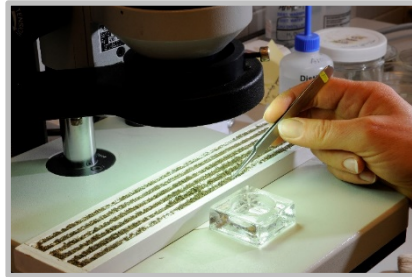
Globodera rostochiensis

- 19 populations from Belgian fields, multiplied on Désirée, Nicola ^(R1/4)
- Harmerz
- Ecosse



- 100s-1000s of cysts in refrigerator (4°C)
- left-over from research project on virulence groups (pathotypes) 2013-2016

Multiplying cysts: according to resistance testing procedure
see EUPHRESCO project PCN (2008-2009)



Multiplying cysts previously: in closed containers



- 500 ml plastic pot
- 200 g sand
- 30 ml water
- 1 germinating tuber (disinfested)
- low maintenance

Potato cyst nematodes

all potato cysts are stored at this moment, no culturing

- about 40 populations: many cysts in sealed petri-dishes/staining glasses at 4°C



- about 20 older populations retrieved from countries in and outside Europe, : very few cysts, kept at room temperature, now at 4°C, in eppendorf tubes
- 2 microplots: 1 *G. pallida* and 1 *G. rostochiensis*, no potato since 2014

Root-knot nematodes

8 species of *Meloidogyne* are reared on tomato cvs. Marmande/Dirk/Moneymaker

* also on potato (cv. Bintje) in closed container

*M. chitwoodi** (Smakt NL, Catherine BE, HdS BE),

*M. fallax** (Baexem NL),

*M. minor** (Hasselt, NL pop)

M. hapla (HZPC NL)

M. mali (Mierenbos NL)

M. enterolobii (E7314.1 NL)

M. javanica (Nepal), *M. incognita* (Nepal)



Meloidogyne mali on elm roots

Root-knot nematodes

Rearing on tomato

- 1:3 potting soil/sterilized sandy soil or 100 % sandy soil
- weekly liquid fertilizer
- watering when needed
- +22°C day/15°C night
- inoculum:
previous soil +
juveniles (J2)(2x/year)
- identity check:
aim for 1/year, depends on species



Root-knot nematodes

most root-knot nematodes are reared, few are kept in storage

- Reference material (positive controls) for the diagnostic lab (NRL): soil and potato tubers infected with *M. chitwoodi* or *M. fallax* 4°C, 1 year



- Back-up of old roots and soils, in between tomato cultures 10°C -14°C (tropical nematodes)

Test:

*20-45 % of *M. chitwoodi* and *M. fallax* populations in soil survived after 8 months at 14°C.*

Bursaphelenchus spp.

B. doui (South Korea, Zhejiang, China)

B. chengi (packaging wood from Taiwan)

B. mucronatus (Mexico, Hong Kong)

B. xylophilus (Shangdong, China; Lianyungang, China; Japan)

*all Bursaphelenchus populations are for storage
(reference material)*

- on *Botryotinia fuckeliana* (syn. *Botrytis cinerea*) on PDA
- incubated at 25°C
- kept at 4°C
- renewed every 4-5 months



Ditylenchus destructor and *D. dipsaci*

D. dipsaci (Belgium, Germany)

D. destructor (Ukraine, Russia, Germany)



Ditylenchus spp. are reared now (research project)
normally not kept in culture nor storage

Burrowing nematode *Radopholus similis* & Root-lesion nematodes *Pratylenchus spp.*

Radopholus similis (Uganda)*

P. crenatus (Gottent)

P. penetrans (Kerkom, PSKW, Kinrooi, HZPC)

P. thornei (Turkey)

P. coffeae (Ghana)*

P. pseudocoffeae (Iran)



Radopholus & Pratylenchus populations: storage and rearing

on carrot discs: incubated and kept at 21°C or 25°C (tropical*), rewed every 3-4 months
+ rearing on maize plants in pots (*Pratylenchus*)

Thank you

Flanders Research Institute for
Agriculture, Fisheries and Food
Burg. Van Gansberghelaan 96
9820 Merelbeke – Belgium
T + 32 (0)9 272 24 00
F +32 (0)9 272 24 29

plant@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be