Non-Cereal Crops as Hosts for Root Lesion Nematodes

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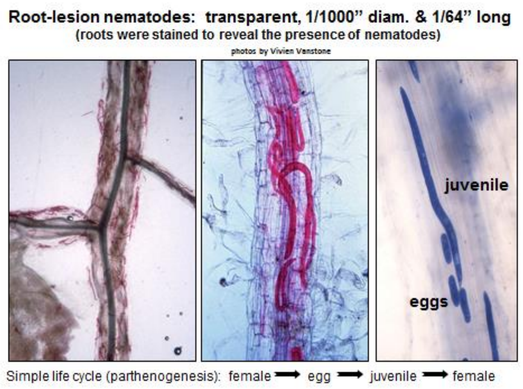
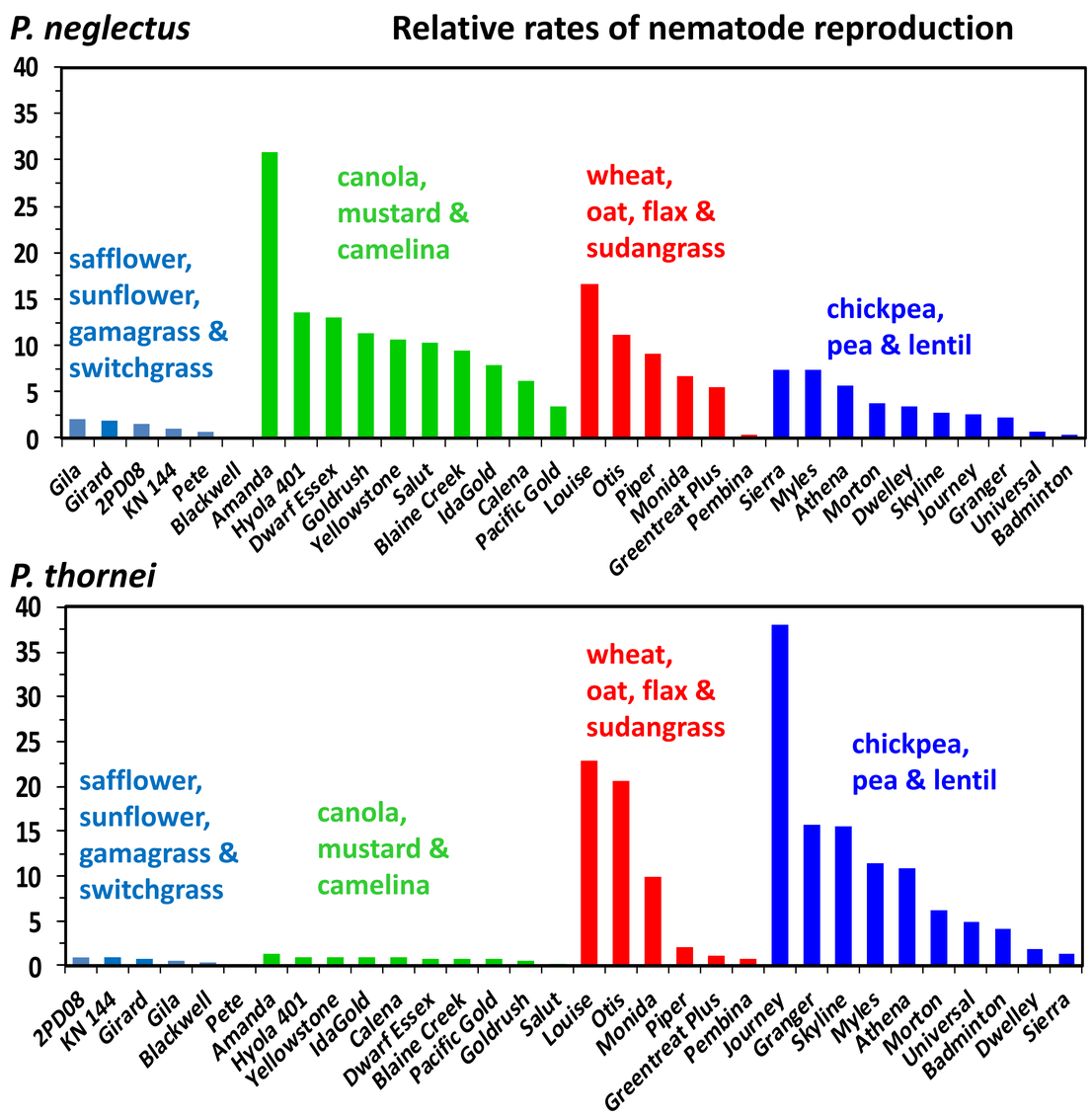


- Root lesion nematodes (RLN; *Pratylenchus neglectus* and *Pratylenchus thornei*) reduce wheat production efficiency by at least $51 million annually in the Pacific Northwest states of Idaho, Oregon and Washington.
- Most wheat varieties increase the population density of these nematodes.
- We previously screened wheat and barley varieties in the greenhouse and in the field to determine their levels of resistance or tolerance to these nematodes.
- Field research on cropping systems in Oregon and abroad have shown that crops such as yellow mustard, chickpea and Austrian winter pea can also increase RLN density in soil.
- We conducted greenhouse assays over a period of two years to quantify the abilities of selected crops to serve as hosts for these nematodes; two varieties of wheat (Louise and Otis) were included for comparison.

- 30 crop species & varieties were assayed in soils inoculated with either *P. neglectus* or *P. thornei*.
- Rates of nematode multiplication were determined for each plant entry.

Gila	Spring safflower	Carthamus tinctorius
Girard	Spring safflower	Carthamus tinctorius
KN 144	Winter safflower	Carthamus tinctorius
2PD08	Sunflower	Helianthus annuus
Goldrush	Canola (spring rape)	Brassica campestris
Hyola 401	Canola (spring rape)	Brassica campestris
Pacific Gold	Brown mustard	Brassica juncea
Amanda	Canola (winter rape)	Brassica napus
Dwarf Essex	Canola (winter rape)	Brassica napus
Salut	Canola (winter rape)	Brassica napus
Blaine Creek	Camelina	Camelina sativa
Calena	Camelina	Camelina sativa
Yellowstone	Camelina	Camelina sativa
IdaGold	Yellow mustard	Sinapsis alba
Dwelley	Chickpea	Cicer arietinum
Myles	Chickpea	Cicer arietinum
Sierra	Chickpea	Cicer arietinum
Badminton	Yellow pea	Lathyrus aphaca
Universal	Yellow pea	Lathyrus aphaca
Granger	Austrian winter field pea	Pisum sativum
Journey	Spring field pea	Pisum sativum
Athena	Lentil	Lens culinaris
Morton	Winter lentil	Lens culinaris
Skyline	Lentil	Lens culinaris
Pembina	Flax	Linum usitatissimum
Monida	Oat	Avena sativa
Piper	Sudangrass	Sorghum bicolor
Greentreat Plus	Sudangrass/sorghum hybrid	Sorghum x drummondii
Blackwell	Switchgrass	Panicum virgatum
Pete	Eastern gamagrass	Tripsacum dactyloides



RESULTS:

- Good hosts of both nematode species included Myles chickpea, Athena lentil ,and Monida oat.
- Good hosts of *P. neglectus* but not *P. thornei* included six canola and yellow mustard cultivars, plus Sierra chickpea and Piper sudangrass.
- Good hosts of *P. thornei* but not *P. neglectus* included Skyline lentil, and Granger and Journey pea.
- Poor or minor hosts of both species included Dwelley chickpea, Universal and Badminton pea, Gila, Girard and KN 144 safflower, 2PD08 sunflower, Pembina flax, Pacific Gold brown mustard, Pete eastern gamagrass, and Blackwell switchgrass.
- Results of these tests will provide guidance for improving the efficiency of crop rotation and of varietal selection on fields infested with one or both of these species of root-lesion nematode.
- Specific data are being published; see publication #1 below.

Selected publications:

1. Smiley et al. 2014. Selected Pacific Northwest crops as hosts of *Pratylenchus neglectus* and *P. thornei*. Plant Disease 98: (submitted).
2. Smiley. 2010. Root-lesion nematodes reduce yield of intolerant wheat and barley. Agronomy Journal 101:1322-1335.
3. Smiley. 2010. Root-lesion nematodes: Biology and management in Pacific Northwest wheat cropping systems. PNW Extension Bulletin 617. OSU

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