



**Fig. 1.** *Meloidogyne fallax*: Necrosis associated with females imbedded in cortex of potato tuber (a); galls on potato (b) and carrot (c); head of female nematode (d); galled tomato roots (e).  
Photo credits: VA Vanstone (a, b, e); Davis & Venette<sup>8</sup> (c); Karssen<sup>2</sup> (d).

**Common Name:** False Columbia Root Knot Nematode

**Classification:** K: Animalia, P: Nematoda, C: Secernentea, O: Tylenchida, F: Heteroderidae

The Root Knot Nematode (RKN) *Meloidogyne fallax* was first detected in 1992 in the Netherlands, and considered to be a deviant of *M. chitwoodi* (Columbia Root Knot Nematode). On the basis of isozyme patterns, a new race of *M. chitwoodi* was proposed in 1994<sup>1</sup>. Definition of significant taxonomic differences between *M. fallax* and *M. chitwoodi* led to the elevation of *M. fallax* to species status in 1996<sup>2</sup>. PCR amplification and RFLP of the rDNA ITS show distinct differences between the species<sup>3</sup>, and unique sequences occur in the ribosomal IGS<sup>4</sup>. Because *M. fallax* is difficult to distinguish from *M. chitwoodi*, and both have similar host ranges and symptoms, phytosanitary measures and quarantine significance are considered identical<sup>5</sup>. *M. fallax* was positively identified for the first time in Western Australia in May 2006 (Vanstone and Nobbs, unpublished).

**Host Range:**

*M. fallax* parasitises a wide range of dicotyledonous and monocotyledonous plants. Hosts of economic importance include<sup>8</sup>: potato (Fig 1a, b), carrot (Fig 1c), tomato (Fig 1e), asparagus, sugarbeet, alfalfa, artichoke, lettuce, oyster plant, some cereals and grasses, dahlia, white mustard, peanut, radish and daylily. Some weed species can also host *M. fallax*.

**Distribution:**

Netherlands, Belgium, France, Germany, South Africa, Australia<sup>6</sup>, New Zealand<sup>7</sup>.

**Symptoms and Impact:**

Above-ground symptoms are indistinct: stunting, yellowing, lack of vigour, wilting under water stress. The 'warty' galls formed by *M. fallax* (Fig 1b, c) can be more severe than those associated with other RKN species, and *M. fallax* penetrates the flesh of tubers more deeply (Fig 1a) than other RKN.

Crop yield may not be reduced, but marketable yield is affected. External damage to potato and carrot, and 'forking' in carrots, results in down-grading and loss of market value

The deep internal cortical blemishes in potato (Fig 1a) lower or negate marketability and processing value.

*M. fallax* may have a shorter life cycle than other RKN, with hatching occurring at lower temperature. This increases potential for crop damage.

**Species Identification:**

RKN are readily identified through symptoms and microscopic observation of nematodes. However, to positively identify the species, expert taxonomic analysis and/or molecular and biochemical<sup>9</sup> studies are required. Mixed populations of RKN species can occur in a single field.

**Management and Control:**

Fallow can reduce populations but often not below a threshold ensuring subsequent crops meet market quality standards. Many green manure crops (e.g. cereal, pasture) can host *M. fallax* so may not reduce populations. The wide host range obfuscates management through crop rotation. Since *M. fallax* hatches at lower temperature, manipulation of planting dates can have limited value. Nematicide will control *M. fallax* and other nematode species.

**References and Further Reading:**

- <sup>1</sup> Karssen (1995) *Nematologica* **41**, 314-315
- <sup>2</sup> Karssen (1996) *FAN* **19**, 593-599
- <sup>3</sup> Zijlstra *et al.* (1995) *Phytopathology* **85**, 1231-1237
- <sup>4</sup> Peterson *et al.* (1997) *FAN* **20**, 20, 619-626
- <sup>5</sup> EPPO/CABI (1997) Quarantine pests for Europe, 2<sup>nd</sup> edition, pp. 612-618, CAB International, Wallingford UK
- <sup>6</sup> Nobbs *et al.* (2001) *Australasian Plant Pathology* **30**, 373
- <sup>7</sup> Marshall *et al.* (2001) *Australasian Plant Pathology* **30**, 283-284
- <sup>8</sup> Davis & Venette (2004) [http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/pest\\_detection/downloads/pramfallaxpra.pdf](http://www.aphis.usda.gov/plant_health/plant_pest_info/pest_detection/downloads/pramfallaxpra.pdf)
- <sup>9</sup> OEPP/EPPO (2004) *OEPP/EPPO Bulletin* **34**, 315-320

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