

Plant-parasitic Nematodes of New Zealand Recorded by Host Association

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Abstract: A list of plant-parasitic nematodes associated with hosts in New Zealand is provided comprising 703 records, including 207 new associations for New Zealand.

Key words: new records, New Zealand, plant-parasitic nematodes, pasture nematodes.

Records of plant-parasitic nematodes in association with hosts in New Zealand have been reviewed previously (Clark, 1963d; Cottier, 1956; Dale, 1972a; Dingley, 1969). This paper incorporates New Zealand nematode-host associations published up to 1995; observations of the New Zealand Plant Protection Centre (NZPPC) up to June 1996; and unpublished records contributed by R. N. Watson, AgResearch, Ruakura, New Zealand; G. S. Grandison, Landcare Research, Auckland, New Zealand; W. M. Wouts, Landcare Research, Auckland, New Zealand; J. W. Marshall, Crop and Food Research, Lincoln, New Zealand, and W. Decraemer, Gent University, Brussels, Belgium. Nematode host association records lodged in university libraries in theses and dissertations have not been included.

Records are listed alphabetically by the scientific name of the host plant (Table 1). Edible fungi are included in the host list. Table 2 contains records of plant-parasitic nematodes known to be present in New Zealand but never recorded in association with a specific host. Three cases where first records were published without the host being specified have been superseded by a subsequent record that has established a host association. Sher (1968) made the first observation of *Radopholus natus*, Raski and Pinochet (1976) identified *Criconema pasticum*

(as *Nothocriconema pasticum*), and Raski (1975) identified *Paratylenchus nanus* in New Zealand, but they did not indicate a host association. *Radopholus natus* has been found subsequently on *Chionochloa macra* (Yeates, 1974) and *Raoulia hectori* (Yeates, 1983); *Criconema pasticum* is newly recorded on *Citrus* sp. and *Paratylenchus nanus* is newly recorded in association with *Hordeum vulgare* and *Triticum aestivum*. Table 3 contains records of plant-parasitic nematodes associated with grass, turf, and pasture, where a specific host has not been determined. Inclusion of this table reflects the amount of nematological work directed into this area, and the importance of pasture to the New Zealand economy. Pastoral agriculture accounts for 80% of land use and produces \$5.9 billion annually (Anonymous, 1995).

The term "plant-parasitic nematode" in this paper refers to nematodes in categories 1a–1d of Yeates et al. (1993). The only exceptions to this are *Blandicephalanema*, a subgenus of *Ogma* according to Siddiqi (Siddiqi, 1986); *Neodolichodorus*, a genus of Dolichodoridae (Siddiqi, 1986); and the parasitic nematodes listed in association with edible fungi. The criteria for accepting a new host association record follow those of Dale (1972a), with one addition: A parasite-host association occurs when records indicate that the nematodes have reproduced on or in these plants in New Zealand, or when they have been found in association with plants of which they are known parasites overseas. The additional criterion applies in cases of nematodes extracted from soil, when there have been multiple occurrences of significant numbers (greater than 50 nematodes/100 g soil for most species) of the nematode associated with a particular host.

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TABLE 1. New Zealand plant-parasitic nematode-host associations, listed alphabetically by host. NZPPC: New Zealand Plant Protection Centre.

Host association (common name)	Nematode	First record
<i>Actinidia deliciosa</i> (kiwifruit)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne hapla</i>	Dale, 1971a
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Helson, 1952
	<i>Xiphinema</i> sp. ^a	R. N. Watson, pers. comm.
<i>Adiantum</i> sp. (maidenhair fern)	<i>Aphelenchoïdes fragariae</i> (= <i>Aphelenchoïdes olesistus</i>)	Cottier, 1956
<i>Agaricus bisporus</i> (edible mushroom)	<i>Aphelenchoïdes composticola</i>	Dale et al., 1972
	<i>Aphelenchus avenae</i>	Dale, 1972a
	<i>Bursaphelenchus fungivorus</i>	Dale, 1971c
	<i>Ditylenchus myceliophagus</i>	Dale, 1971c
<i>Agathis australis</i> (kauri)	<i>Cephalenchus emarginatus</i> (= <i>Tylenchus emarginatus</i>)	Yeates et al., 1981
<i>Agrostis tenuis</i> (brown top)	<i>Anguina agrostis</i>	Healy, 1958
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus</i> sp. ^a	NZPPC
	<i>Meloidogyne naasi</i>	Grbavac et al., 1979
	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Alectryon excelsus</i> (titoki)	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Allium ascalonicum</i> (shallot)	<i>Ditylenchus dipsaci</i> ^a	NZPPC
<i>Allium cepa</i> (onion)	<i>Ditylenchus dipsaci</i> (= <i>Tylenchus devastatrix</i>)	Kirk, 1908
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne incognita</i>	Dale, 1971a
	<i>Meloidogyne incognita acrita</i>	Dale, 1972a
	<i>Meloidogyne</i> sp.	Cottier, 1956
	<i>Pratylenchus crenatus</i>	Dale, 1972a
	<i>Pratylenchus</i> sp.	Clark, 1963d
	<i>Ditylenchus dipsaci</i>	Dale, 1971b
	<i>Meloidogyne</i> sp.	Waters, 1965
	<i>Aphelenchoïdes blastophthorus</i>	Dale et al., 1972
	<i>Ditylenchus dipsaci</i>	Barber, 1977
	<i>Meloidogyne</i> sp. ^a	NZPPC
	<i>Ditylenchus dipsaci</i> ^a	NZPPC
	<i>Rotylenchus robustus</i> ^a	NZPPC
	<i>Aphelenchoïdes ritzemabosi</i>	Dale, 1972a
	<i>Meloidogyne</i> sp.	Dale, 1972a
<i>Allium cernuum</i> (wild onion)	<i>Hemicyclophora halophila</i>	Yeates, 1967c
<i>Allium porrum</i> (leek)	<i>Trichodorus lobatus</i> (= <i>Trichodorus clarki</i>)	Yeates, 1967b
<i>Allium sativum</i> (garlic)	<i>Morulaimus geniculatus</i> (= <i>Scutellonema magna</i>)	Yeates, 1967a
	<i>Pratylenchus</i> sp.	Clark, 1963d
<i>Allium schoenoprasum</i> (chive)		
<i>Alstroemeria</i> sp. (Peruvian lily)		
<i>Amaranthus</i> sp. (amaranthus)		
<i>Ammophila arenaria</i> (marram grass)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Anagallis arvensis</i> (scarlet pimpernel)		
<i>Anthoxanthum odoratum</i> (sweet vernal)		
<i>Apium graveolens</i> (celery)	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
	<i>Pratylenchus crenatus</i> ^a	NZPPC
	<i>Pratylenchus penetrans</i>	Boesewinkel, 1977
	<i>Trichodorus primitivus</i> ^a	W. M. Wouts, pers. comm.
	<i>Pratylenchus</i> sp.	Clark, 1963d
	<i>Tylenchorhynchus</i> sp.	Clark, 1963d
<i>Aphelandra squarrosa</i> (zebra plant)	<i>Aphelenchoïdes ritzemabosi</i>	Boesewinkel, 1980
<i>Aquilegia vulgaris</i> (garden columbine)		
<i>Araucaria bidwillii</i> (bunya bunya)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Arthropodium cirratum</i> (New Zealand rock lily)	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
<i>Asparagus officinalis</i> (asparagus)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956

TABLE 1. *Continued*

Host association (common name)	Nematode	First record
<i>Asplenium bulbiferum</i> (hen & chicken fern)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Asplenium lucidum</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Asplenium</i> sp.	<i>Aphelenchoides fragariae</i> (= <i>Aphelenchoides olesistus</i>)	Cottier, 1956
<i>Aster dumosus</i> (aster)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Aster</i> sp. (aster)	<i>Aphelechoides ritzemabosi</i>	Cottier, 1956
	<i>Criconemooides</i> sp. ^a	NZPPC
	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Meloidogyne</i> sp. ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Astilbe</i> × <i>arendsii</i>	<i>Heterodera avenae</i>	Harper, 1981
<i>Avena fatua</i> (wild oat)	<i>Ditylenchus dipsaci</i> (= <i>Tylenchus devastatrix</i>)	Krik, 1908
<i>Avena sativa</i> (oat)	<i>Heterodera avenae</i>	Grandison and Halliwell, 1975
	<i>Meloidogyne naasi</i>	Grbavac, 1979
	<i>Pratylenchus crenatus</i>	Yeates, 1988
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Beilschmiedia tawa</i> (tawa)	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
<i>Begonia</i> sp. (begonia)	<i>Aphelenchoides fragariae</i> (= <i>Aphelenchoides olesistus</i>)	Helson, 1952
	<i>Aphelenchoides ritzemabosi</i>	Clark, 1963d
<i>Bergenia cordifolia</i>	<i>Aphelenchoides fragariae</i> ^a	NZPCC
<i>Beta vulgaris</i> (mangold/ silverbeet/beetroot)	<i>Heterodera schachtii</i>	Barber, 1982
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne incognita</i>	Dale, 1972a
	<i>Meloidogyne javanica</i> ^a	NZPPC
	<i>Meloidogyne</i> sp.	Clark, 1963d
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Blechnum capense</i> (kiokio fern)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Blechnum pattersonii</i>	<i>Blandicephalanema pilatum</i>	Mehta and Raski, 1971
<i>Blechnum</i> sp.	<i>Meloidogyne hapla</i> ^a	NZPPC
<i>Boronia heterophylla</i> (boronia)	<i>Meloidogyne hapla</i> ^a	G. S. Grandison, pers. comm.
<i>Boronia megastigma</i> (scented boronia)	<i>Meloidogyne</i> sp. ^a	NZPPC
<i>Bowlesia longiflora</i>	<i>Aphelenchoides ritzemabosi</i>	Clark, 1963d
<i>Brachylottis repanda</i> (rangiora)	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Bromus mollis</i> (goose grass)	<i>Paratylenchus projectus</i>	Woods, 1973a
<i>Brassica oleracea</i> (cabbage/cauliflower)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Brassica rapa</i> (turnip)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
	<i>Ditylenchus dipsaci</i>	Ferro, 1976
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
<i>Calendula officinalis</i> (common marigold)	<i>Meloidogyne hapla</i>	Dale, 1971a
<i>Callistemon</i> sp. (bottle brush)	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Camellia japonica</i> (camellia)	<i>Paratrichodorus</i> sp. ^a	NZPPC
<i>Campanula raddeana</i> (bell flower)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Campanula pyramidalis</i> (chimney bellflower)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Capsicum annuum</i> (ornamental pepper)	<i>Meloidogyne hapla</i> ^a	NZPPC
<i>Carex</i> sp.	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Carica</i> × <i>heilbornii</i> nm. <i>pentagona</i> (babaco)	<i>Meloidogyne javanica</i> ^a	NZPPC
<i>Carica papaya</i> (pawpaw)	<i>Meloidogyne incognita</i>	Clark, 1963d
	<i>Meloidogyne javanica</i> ^a	Grandison, pers. comm.
<i>Carica pubescens</i> (mountain pawpaw)	<i>Meloidogyne incognita</i>	Dingley, 1969

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Carpodetus serratus</i> (putaputaweta/marblewood)	<i>Helicotylenchus digonicus</i> <i>Helicotylenchus lissocaudatus</i> <i>Helicotylenchus pseudorobustus</i> <i>Trichodorus cottieri</i> <i>Blandicephalnema pilatum</i> <i>Helicotylenchus labiatus</i> <i>Helicotylenchus minzi</i> <i>Helicotylenchus minzi</i> <i>Ditylenchus dipsaci</i>	Wouts and Yeates, 1994 Wouts and Yeates, 1994 Yeates and Wouts, 1992 Clark, 1963a Mehta and D. J. Raski, 1971 Yeates and Wouts, 1992 Wouts and Yeates, 1994 Wouts and Yeates, 1994 Dale, 1971b
<i>Carpodetus</i> sp.		
<i>Cassinia leptophylla</i> (tauhinu)		
<i>Celmisia allanii</i>		
<i>Celmisia traversi</i>		
<i>Cerastium glomeratum</i> (annual mouse ear chickweed)		
<i>Chenopodium album</i> (fat hen)	<i>Meloidogyne hapla</i>	Clark, 1963d
<i>Chionochloa flavescens</i>	<i>Macroposthonia</i> sp.	Yeates, 1974
<i>Chionochloa macra</i>	<i>Pratylenchus penetrans</i>	Yeates, 1974
<i>Chionochloa rigida</i>	<i>Macroposthonia</i> sp.	Yeates, 1974
<i>Chionochloa rubra</i>	<i>Paratylenchus</i> sp.	Yeates, 1974
<i>Chlorophytum elatum</i>	<i>Radopholus</i> <i>nativus</i>	Yeates, 1974
<i>Chrysanthemum maximum</i> (max daisy)	<i>Helicotylenchus</i> sp.	Yeates, 1974
<i>Chrysanthemum morifolium</i> (florist chrysanthemum)	<i>Macroposthonia</i> sp.	Yeates, 1974
<i>Chrysanthemum</i> sp.	<i>Paratylenchus</i> sp.	Yeates, 1974
<i>Chrysanthemum</i> sp.	<i>Macroposthonia</i> sp.	Yeates, 1974
<i>Cirsium arvense</i> (perennial thistle)	<i>Pratylenchus penetrans</i>	Yeates, 1974
<i>Cirsium vulgare</i> (spear thistle)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Citrus</i> sp.	<i>Aphelenchoides ritzemabosi</i>	Dale, 1972a
<i>Citrus limon</i> (lemon)	<i>Aphelenchoides ritzemabosi</i>	Helson, 1952
	<i>Pratylenchus vulnus</i> ^a	NZPPC
	<i>Aphelenchoides ritzemabosi</i>	Reid and Cottier, 1935
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Paratylenchus projectus</i> ^a	NZPPC
	<i>Pratylenchus vulnus</i> ^a	NZPPC
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne hapla</i>	Clark, 1963d
	<i>Trichodorus porosus</i>	Dale et al., 1972
	<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale, 1971d
	<i>Criconema (Nothocriconemella) pasticum</i> ^a	NZPPC
	<i>Criconema (Nothocriconemella) mutable</i> ^a	NZPPC
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Macroposthonia xenoplax</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale, 1971d
	<i>Tylenchulus semipenetrans</i>	Dale, 1972a
	<i>Criconema (Nothocriconemella) mutable</i> ^a	NZPPC
	<i>Criconema (Nothocriconemella) pasticum</i> ^a	NZPPC
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Tylenchulus semipenetrans</i> ^a	NZPPC
	<i>Criconema (Nothocriconemella) mutable</i> ^a	NZPPC
	<i>Tylenchulus semipenetrans</i> ^a	NZPPC
	<i>Criconema (Nothocriconemella) mutable</i> ^a	NZPPC
	<i>Macroposthonia xenoplax</i> ^a	NZPPC
	<i>Tylenchulus semipenetrans</i>	Clark, 1963d
	<i>Paratrichodorus minor</i> ^a	NZPPC
	<i>Paratylenchus</i> sp. ^a	NZPPC
	<i>Tylenchulus semipenetrans</i> ^a	NZPPC
	<i>Meloidogyne</i> sp. ^a	NZPPC
	<i>Meloidogyne</i> sp.	Dale, 1972a
	<i>Meloidogyne hapla</i>	Dale, 1971a
<i>Citrus × tangelo</i> (tangelo)	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Clematis</i> sp. (clematis)		
<i>Conium maculatum</i> (poison hemlock)		
<i>Convolvulus arvensis</i> (field bindweed)		
<i>Coprosma tenuifolia</i>		

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Coprosma</i> sp.	<i>Blandicephalanema pilatum</i> <i>Helicotylenchus labiatus</i> <i>Helicotylenchus minzi</i> <i>Helicotylenchus pseudorobustus</i> <i>Helicotylenchus dihystrera</i> <i>Helicotylenchus labiatus</i> <i>Helicotylenchus minzi</i>	Mehta and Raski, 1971 Yeates and Wouts, 1992 Wouts and Yeates, 1994 Yeates and Wouts, 1992 Wouts and Yeates, 1994 Yeates and Wouts, 1992 Wouts and Yeates, 1994
<i>Cordyline australis</i> (cabbage tree)		
<i>Coriaria arborea</i> (tutu)		
<i>Corynocarpus laevigatus</i> (karaka)		
<i>Cucumis sativus</i> (cucumber)	<i>Meliodogyne incognita</i> <i>Meloidogyne javanica</i> <i>Meloidogyne</i> sp. (= <i>Heterodera radicicola</i>) <i>Quinisulcius capitatus</i> (= <i>Tylenchorhynchus capitatus</i>) ^a	Dale, 1972a Dale, 1972a Kirk, 1908 NZPPC
<i>Cucurbita maxima</i> (squash)	<i>Quinisulcius capitatus</i> (= <i>Tylenchorhynchus capitatus</i>) ^a	NZPPC
<i>Cucurbita pepo</i> (marrow/courgette)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Helson, 1952
<i>Cyanthea dealbata</i> (ponga/tree fern)	<i>Meloidogyne javanica</i> ^a <i>Helicotylenchus erythrinae</i>	G. S. Grandison, pers. comm. Wouts and Yeates, 1994
<i>Cyanosurus cristatus</i> (crested dogstail)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Cyclamen</i> sp. (cyclamen)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Cymbidium</i> sp. (orchid)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Cottier, 1956
<i>Cyphomandra betacea</i> (tamarillo)	<i>Meloidogyne incognita</i> <i>Aphelenchoides fragariae</i> <i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) <i>Meloidogyne hapla</i> <i>Meloidogyne incognita</i> <i>Meloidogyne</i> sp. <i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>) <i>Trichodorus porosus</i> <i>Trichodorus</i> sp. <i>Xiphinema americanum</i> (sensu lato) ^a <i>Xiphinema diversicaudatum</i> <i>Xiphinema</i> sp.	Harrison, 1976 Barber, 1979 Helson, 1952 Dale, 1972a Sale, 1984 Dale, 1972a Dale, 1971d Dale, 1971d Dale, 1971c NZPPC Dale, 1971d Dale, 1971c
<i>Dacrydium cupressinum</i> (rimu/ New Zealand red pine)	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
<i>Dactylis glomerata</i> (cocksfoot)	<i>Paratylenchus projectus</i> <i>Pratylenchus</i> sp. ^a	Wood, 1973a NZPPC
<i>Dahlia</i> sp. (dahlia)	<i>Aphelenchoides ritzemabosi</i>	Cottier, 1956
<i>Daucus carota</i> (carrot)	<i>Helicotylenchus labiatus</i> <i>Meloidogyne arenaria</i> ^a <i>Meloidogyne hapla</i> <i>Meloidogyne incognita</i> <i>Meloidogyne javanica</i> ^a <i>Meloidogyne naasi</i> <i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) <i>Pratylenchus crenatus</i> <i>Pratylenchus</i> sp. ^a	Yeates and Wouts, 1992 NZPPC Clark, 1963d Harrison, 1976 NZPPC Knight, 1996 Helson, 1952 Dale, 1972a G. S. Grandison, pers. comm. G. S. Grandison, pers. comm.
<i>Davallia canariensis</i>	<i>Rotylenchus neorobustus</i> ^a	NZPPC
<i>Delphinium cultorum</i> (delphinium)	<i>Aphelenchoides fragariae</i> ^a <i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Cottier, 1956 Harrison, 1976
<i>Desmoschoenus spiralis</i> (pingao/golden sand sedge)	<i>Meloidogyne incognita</i> <i>Neodolichodorus arenarius</i> (= <i>Dolichodorus arenarius</i>) <i>Hemicyclophora halophila</i> <i>Helicotylenchus depressus</i>	Clark, 1963b
<i>Deutzia × hybrida</i> (deutzia)	<i>Meloidogyne hapla</i> ^a	Yeates, 1967c
<i>Dianella revolutum</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC NZPPC

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Dianthus caryophyllus</i> (carnation)	<i>Meloidogyne</i> sp. ^a	NZPPC
	<i>Meloidogyne javanica</i> ^a	NZPPC
	<i>Paratylenchus projectus</i> ^a	NZPPC
	<i>Pratylenchus penetrans</i> ^a	NZPPC
	<i>Trichodorus</i> sp. ^a	NZPPC
<i>Dichondra repens</i> (Mercury Bay weed)	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
<i>Digitalis purpurea</i> (fox glove)	<i>Meloidogyne</i> sp.	Dale, 1972a
<i>Dioscorea</i> sp. (yam)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Ellinghamia</i> sp.	<i>Anguina</i> sp.	Morrison, 1957
<i>Elymus rectisetus</i> (blue wheat grass)	<i>Ditylenchus dipsaci</i>	Cottier, 1956
<i>Endymion</i> sp. (bluebell)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1972a
<i>Epiphyllum</i> sp.	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Fatsia japonica</i> (fatsia)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Feijoa sellowiana</i> (feijoa)	<i>Cephalenchus tahuus</i>	Wood, 1973b
<i>Festuca novae-zelandiae</i> (tussock)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Festuca rubra</i> (chewings fescue)	<i>Anguina agrostis</i>	Clark, 1963d
<i>Ficus carica</i> (fig)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Ficus elastica</i> (India rubber plant)	<i>Heterodera fici</i>	Yeates, 1991
<i>Ficus</i> sp.	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Fragaria</i> sp. (strawberry)	<i>Meloidogyne arenaria</i>	Anonymous, 1967
	<i>Crossonema palmatum</i>	Mehta and Raski, 1971
	<i>Aphelenchoides fragariae</i>	Dale, 1971c
	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
	<i>Ditylenchus dipsaci</i>	Dale, 1971b
	<i>Longidorus elongatus</i>	Dale, 1971c
	<i>Longidorus</i> sp.	Dale, 1972a
	<i>Meloidogyne</i> sp. (= <i>Heterodera marionii</i>)	Cottier, 1956
	<i>Meloidogyne</i> sp.	Dale, 1972a
	<i>Meloidogyne incognita</i>	Harrison, 1976
	<i>Pratylenchus</i> sp.	Dale, 1971c
	<i>Pratylenchus crenatus</i>	Dale, 1972a
	<i>Pratylenchus penetrans</i>	Dale, 1972a
	<i>Rotylenchus robustus</i>	Dale, 1972a
	<i>Xiphinema diversicaudatum</i>	Dale, 1972a
	<i>Xiphinema</i> sp.	Clark, 1963d
<i>Fuchsia excorticata</i> (kotukutuku/tree fuchsia)	<i>Globodera zelandica</i>	Wouts, 1984
	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Gentiana</i> sp. (gentian)	<i>Meloidogyne</i> sp. ^a	NZPPC
<i>Geranium madeirensis</i> (cranesbill)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Gerbera jamesonii</i> (African daisy)	<i>Ditylenchus dipsaci</i> ^a	NZPPC
<i>Ginkgo biloba</i> (maidenhair tree)	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne incognita</i>	Clark, 1963d
	<i>Meloidogyne javanica</i>	Dale, 1972a
	<i>Helicotylenchus digonicus</i>	Wouts and Yeates, 1994
	<i>Trichodorus primitivus</i> ^a	W. M. Wouts, pers. comm.
<i>Gladiolus</i> sp. (gladiolus)	<i>Ditylenchus dipsaci</i>	Cottier, 1956
<i>Glyceria fluitans</i> (floating sweet grass)	<i>Meloidogyne naasi</i>	Grbavac et al., 1979
<i>Griselinia littoralis</i> (broad leaf)	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Gunnera</i> sp.	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Gymnocalycium</i> sp. (Chinese cactus)	<i>Heterodera cacti</i>	Boesewinkel, 1982
<i>Gypsophila paniculata</i>	<i>Paratylenchus projectus</i> ^a	NZPPC
<i>Hebe</i> sp.	<i>Helicotylenchus digonicus</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Trichodorus primitivus</i> ^a	W. Decraemer, pers. comm.
<i>Hedycarya arborea</i> (pigeonwood)	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
<i>Helianthus</i> sp.	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
<i>Helichrysum bracteatum</i> (straw flower)	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Pratylenchus crenatus</i> ^a	NZPPC
	<i>Pratylenchus penetrans</i> ^a	NZPPC

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Helleborus niger</i> (Christmas rose)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Helleborus</i> sp.	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Hemerocallis</i> sp. (day lily)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Meloidogyne</i> sp. ^a	<i>Meloidogyne</i> sp. ^a	NZPPC
<i>Hibiscus rosa-sinensis</i> (hibiscus)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Holcus lanatus</i> (Yorkshire fog)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Hordeum vulgare</i> (barley)	<i>Ditylenchus dipsaci</i>	Dale, 1972a
	<i>Heterodera avenae</i>	Harper, 1981
	<i>Meloidogyne naasi</i>	Sheridan et al., 1978
	<i>Paratylenchus nanus</i> ^a	NZPPC
	<i>Pratylenchus thornei</i> ^a	NZPPC
	<i>Ditylenchus destructor</i>	Foot and Wood, 1982
<i>Humulus lupulus</i> (hops)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Heterodera humuli</i>	Clark, 1963d
	<i>Xiphinema diversicaudatum</i>	Hay and Close, 1992
	<i>Ditylenchus dipsaci</i>	Cottier, 1956
<i>Hyacinthoides non-scripta</i> (bluebell)	<i>Ditylenchus dipsaci</i>	Blair and Morrison, 1949
<i>Hyacinthus orientalis</i> (common hyacinth)	<i>Helicotylenchus minizi</i>	Wouts and Yeates, 1994
<i>Hymenanthera chathamica</i>	<i>Helicotylenchus paxilli</i>	Wouts and Yeates, 1994
<i>Hymenanthera</i> sp.	<i>Meloidogyne hapla</i> ^a	NZPPC
<i>Hypericum</i> sp. (St. John's wort)	<i>Meloidogyne hapla</i>	Dale, 1971a
<i>Ipomoea batatas</i> (kumara)	<i>Meloidogyne incognita</i>	Dale, 1972a
	<i>Meloidogyne sp.</i>	Waters, 1965
<i>Iris</i> sp. (iris)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Ditylenchus dipsaci</i>	Cottier, 1956
<i>Isoplexis sceptrum</i>	<i>Ditylenchus dipsaci</i> ^a	NZPPC
<i>Jovellana sinclairii</i>	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
<i>Kniphofia</i> sp.	<i>Ditylenchus dipsaci</i>	Dale, 1972a
<i>Lactuca sativa</i> (lettuce)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Helson, 1952
	<i>Meloidogyne hapla</i>	Dale, 1971a
	<i>Meloidogyne incognita</i>	Harrison, 1976
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Lantana</i> sp.	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Lapageria rosea</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Lathyrus odoratus</i> (sweet pea)	<i>Meloidogyne hapla</i>	Dale, 1972a
<i>Lavandula angustifolia</i> (= <i>L. vera</i>) (Dutch lavender)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Lavandula dentata</i> (lavender)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Lens esculenta</i> (lentil)	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Leptinella dioica</i> (cotula/dioca)	<i>Ditylenchus dipsaci</i> ^a	NZPPC
	<i>Helicotylenchus</i> sp. ^a	NZPPC
	<i>Meloidogyne incognita</i> ^a	G. S. Grandison, pers. comm.
	<i>Meloidogyne</i> sp. ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Xiphinema diversicaudatum</i> ^a	G. S. Grandison, pers. comm.
<i>Leptinella maniototo</i> (cotula)	<i>Xiphinema diversicaudatum</i> ^a	NZPPC
<i>Leptinella</i> spp. (cotula)	<i>Criconemooides</i> sp.	Yeates, 1980
	<i>Ditylenchus dipsaci</i>	Knight, 1989
	<i>Ditylenchus</i> sp.	Yeates, 1980
	<i>Helicotylenchus dihystera</i> ^a	NZPPC
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus</i> sp.	Yeates, 1977
	<i>Heteroderidae</i>	Yeates, 1980
	<i>Macroposthonia</i> sp. ^a	NZPPC
	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Meloidogyne incognita</i> ^a	NZPPC
	<i>Meloidogyne</i> sp.	Yeates, 1977

TABLE 1. *Continued*

Host association (common name)	Nematode	First record
	<i>Longidorus elongatus</i> ^a	NZPPC
	<i>Longidorus</i> sp.	Yeates, 1980
	<i>Paratrichodorus minor</i> ^a	NZPPC
	<i>Pratylenchus</i> sp.	Vittum and Knight, 1988
	<i>Pratylenchus crenatus</i> ^a	NZPPC
	<i>Pratylenchus pratensis</i> ^a	NZPPC
	<i>Pratylenchus thornei</i> ^a	NZPPC
	<i>Pratylenchus</i> sp.	Yeates, 1977
	<i>Trichodorus</i> sp.	Yeates, 1977
	<i>Xiphinema americanum</i> (<i>sensu lato</i>) ^a	NZPPC
	<i>Xiphinema diversicaudatum</i> ^a	NZPPC
	<i>Xiphinema krugi</i> ^a	W. M. Wouts, pers. comm.
	<i>Xiphinema radicicola</i> ^a	NZPPC
	<i>Xiphinema</i> sp.	Yeates, 1977
<i>Lilium auratum</i> × <i>speciosum</i>	<i>Ditylenchus dipsaci</i>	Dale, 1972a
<i>Lilium regale</i> (regal lily)	<i>Pratylenchus</i> sp.	Dale, 1972a
<i>Lilium tigrinum</i> (tiger lily)	<i>Aphelenchoïdes fragariae</i>	Barber, 1979
	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
	<i>Aphelenchoïdes ritzemabosi</i>	Dale, 1972a
	<i>Pratylenchus</i> sp.	Dale, 1972a
<i>Lilium</i> sp.	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
	<i>Aphelenchoïdes ritzemabosi</i>	Clark, 1963d
	<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale, 1971d
<i>Limonium latifolium</i> (statice)	<i>Aphelenchoïdes ritzemabosi</i> ^a	NZPPC
<i>Limonium</i> sp.	<i>Meloidogyne</i> sp. ^a	NZPPC
<i>Liriope muscari</i> (lily-turf)	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
<i>Liriope spicata</i> (lily-turf)	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
<i>Lithospermum diffusum</i>	<i>Aphelenchoïdes fragariae</i> ^a	NZPPC
<i>Lolium perenne</i> (perennial ryegrass)	<i>Ditylenchus dipsaci</i>	Grandison, 1990
	<i>Helicotylenchus pseudorobustus</i>	Yeates, 1984
	<i>Meloidogyne naasi</i>	Grbavac et al., 1979
	<i>Paratylenchus projectus</i>	Wood, 1973a
	<i>Pratylenchus</i> spp.	Egunjobi, 1968a
<i>Lolium</i> sp.	<i>Heterodera avenae</i>	Harper, 1981
	<i>Meloidogyne naasi</i>	Sheridan and Grbavac, 1979
	<i>Pratylenchus thornei</i> ^a	NZPPC
	<i>Pratylenchus</i> sp.	Dale, 1971c
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Lophomyrtus obcordata</i> (myrtle)	<i>Aphelenchoïdes ritzemabosi</i>	Boesewinkel, 1982
<i>Lotus corniculatus</i> (bird's foot trefoil)	<i>Ditylenchus dipsaci</i>	Dale, 1972a
<i>Lotus pendunculatus</i> (lotus major)	<i>Meloidogyne hapla</i>	Yeates et al., 1973
<i>Lupinus</i> sp.	<i>Meloidogyne hapla</i> ^a	NZPPC
<i>Lycopersicon esculentum</i> (tomato)	<i>Aphelenchoïdes ritzemabosi</i>	Boesewinkel, 1982
	<i>Meloidogyne arenaria</i> ^a	NZPPC
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne incognita</i>	Clark, 1963d
	<i>Meloidogyne javanica</i> ^a	NZPPC
	<i>Meloidogyne</i> sp. (= <i>Heterodera radicicola</i>)	Kirk, 1908
	<i>Paratrichodorus minor</i> ^a	NZPPC
	<i>Paratrichodorus</i> sp.	NZPPC
	<i>Pratylenchus pratensis</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Rotylenchus</i> sp. ^a	NZPPC
	<i>Trichodorus</i> sp. ^a	NZPPC
	<i>Quinisulcius capitatus</i>	NZPPC
	(= <i>Tylenchorhynchus capitatus</i>) ^a	
	<i>Tylenchorhynchus</i> sp. ^a	NZPPC
<i>Macropiper excelsum</i> (kawakawa)	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
<i>Malus</i> × <i>domestica</i> (apple)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Longidorus elongatus</i>	Dale, 1971d

TABLE 1. *Continued*

Host association (common name)	Nematode	First record
	<i>Paratylenchus</i> spp. ^a	NZPPC
	<i>Pratylenchus penetrans</i>	Dale, 1972a
	<i>Pratylenchus vulnus</i>	Dale, 1972a
	<i>Pratylenchus</i> spp.	Egunjobi, 1968a
	<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale et al., 1972
	<i>Xiphinema diversicaudatum</i>	Dale, 1971d
	<i>Xiphinema</i> sp. ^a	NZPPC
	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Marattia salicifolia</i> (king fern)	<i>Aphelenchoides ritzemabosi</i>	Clark, 1963d
<i>Marattia salicina</i>	<i>Ditylenchus dipsaci</i>	Morrison, 1957
<i>Marchantia</i> sp.	<i>Longidorus elongatus</i>	Dale, 1972a
<i>Medicago polymorpha</i> (= <i>M. hispida</i>) (bur clover)	<i>Meloidogyne hapla</i>	Dale, 1971a
<i>Medicago sativa</i> (lucerne)	<i>Pratylenchus penetrans</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Medicago</i> sp. (bur medick)	<i>Aphelenchoides ritzemabosi</i>	Dale et al., 1972
<i>Melicoccus ramiflorus</i>	<i>Helicotylenchus dihystera</i>	Wouts and Yeates, 1994
<i>Metrosideros kermadecensis</i>	<i>Helicotylenchus dihystera</i>	Wouts and Yeates, 1994
<i>Metrosideros robusta</i> (northern rata)	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Metrosideros umbellata</i> (southern rata)	<i>Cryptodera coxi</i> (= <i>Zelandodera coxi</i>)	Wouts, 1973
<i>Microlaena stipoides</i> (meadow rice grass)	<i>Antarctylus humus</i> ^c	Sher, 1973
<i>Musa coccinea</i>	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Musa</i> sp.	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Myrsine</i> sp. (matipo)	<i>Heterodera aucklandica</i>	Wouts and Sturhan, 1995
<i>Narcissus</i> sp. (daffodil)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Aphelenchoides</i> sp. ^a	NZPPC
<i>Nemesia reptans</i>	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Nerine sarniensis</i> (Guernsey lily)	<i>Aphelenchoides subtenuis</i> ^a	NZPPC
<i>Nicotiana tabacum</i> (tobacco)	<i>Ditylenchus dipsaci</i>	Anonymous, 1920
	<i>Pratylenchus penetrans</i>	Wood and Foot, 1982
	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
	<i>Ditylenchus dipsaci</i>	Boesewinkel, 1982
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus varicaudatus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne incognita</i>	Clark, 1963d
	<i>Meloidogyne</i> sp. (= <i>Heterodera marionii</i>)	Cottier, 1956
	<i>Paratrichodorus minor</i> ^a	NZPPC
	<i>Pratylenchus penetrans</i>	Canter-Visscher, 1969
	<i>Pratylenchus</i> spp.	Clark, 1963d
	<i>Quinidius capitatus</i> (= <i>Tylenchorhynchus capitatus</i>)	Wouts, 1966b
<i>Nothofagus menziesii</i> (silver beech)	<i>Blandicephalanema</i> sp.	Yeates, 1993
	<i>Criconema</i> sp.	Yeates, 1993
	<i>Longidorus</i> sp.	Yeates, 1993
	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
	<i>Cryptodera nothophagi</i> (= <i>Zelandodera nothophagi</i>)	Wouts, 1973
<i>Nothofagus solandri</i> (black beech)	<i>Cephalenchus</i> sp.	Yeates, 1993
	<i>Criconema</i> sp.	Yeates, 1993
	<i>Criconemoides</i> sp.	Yeates and van Etteger, 1991
	<i>Ogma</i> sp.	Yeates, 1993
<i>Oxalis</i> sp.	<i>Meloidogyne incognita</i>	Dale et al., 1972
<i>Paeonia</i> sp. (peony rose)	<i>Meloidogyne hapla</i> ^a	NZPPC
<i>Panax</i> sp. (ginseng)	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Passiflora edulis</i> (passionfruit)	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977

TABLE I. Continued

Host association (common name)	Nematode	First record
<i>Passiflora mollissima</i> (banana passionfruit)	<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale, 1971d
<i>Passiflora</i> sp. (passionfruit)	<i>Trichodorus</i> sp.	Dale, 1971c
<i>Pastinaca sativa</i> (parsnip)	<i>Pararichodorus minor</i> (= <i>Trichodorus christiei</i>)	Dale et al., 1972
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Helson, 1952
	<i>Meloidogyne hapla</i>	Clark, 1963d
	<i>Meloidogyne incognita</i>	Dale, 1972a
	<i>Meloidogyne javanica</i> ^a	NZPPC
	<i>Meloidogyne hapla</i>	Dale, 1971a
	<i>Aphelenchoides ritzemabosi</i>	Clark, 1963d
	<i>Heterodera trifolii</i>	Dale, 1972a
	<i>Meloidogyne incognita</i>	Dale, 1972a
	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Phaseolus coccineus</i> (multiflora bean/scarlet runner)	<i>Meloidogyne</i> sp.	Dale, 1972a
<i>Phaseolus vulgaris</i> (kidney bean)	<i>Longidorus elongatus</i> ^a	NZPPC
<i>Phebalium spuameum</i> (= <i>P. billardieri</i>)	<i>Meloidogyne hapla</i>	Clark, 1963d
<i>Phleum pratense</i> (timothy)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Phlox</i> sp.	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
	<i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>)	Cottier, 1956
	<i>Meloidogyne hapla</i>	Dale et al., 1972
	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Pratylenchus vulnus</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Pratylenchus penetrans</i> ^a	G. S. Grandison, pers. comm.
	<i>Trichodorus primitivus</i> ^a	W. M. Wouts, pers. comm.
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1982
	<i>Meloidogyne incognita</i>	Dale, 1972a
	<i>Paratylenchus</i> sp.	Yeates, 1990
	<i>Pratylenchus</i> sp. ^b	Yeates, 1990
	<i>Rotylenchus robustus</i>	Yeates, 1990
	<i>Trichodorus</i> sp.	Yeates, 1990
	<i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>)	Helson, 1952
	<i>helicotylenchus varicaudatus</i>	Yeates and Wouts, 1992
	<i>Heterodera trifolii</i>	Dale, 1971c
	<i>Meloidogyne hapla</i>	Dale, 1971a
	<i>Meloidogyne</i> sp.	Waters, 1965
	<i>Pratylenchus crenatus</i>	Dale, 1972a
	<i>Pratylenchus neglectus</i> (= <i>Pratylenchus minyus</i>)	Dale, 1972a
	<i>Pratylenchus pratensis</i>	Dale et al., 1972
	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus minzi</i>	Wouts and Yeates, 1994
	<i>Ditylenchus dipsaci</i>	Cottier, 1956
	<i>Pratylenchus</i> sp.	Clark, 1963d
	<i>Ditylenchus dipsaci</i>	Cottier, 1956
	<i>Pratylenchus crenatus</i> ^a	NZPPC
	<i>Subanguina radicicola</i>	Mercer, 1986
	<i>Meloidogyne naasi</i> ^a	NZPPC
	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Cryptodera podocarpi</i> (= <i>Zelandodera podocarpi</i>)	Wouts, 1973

TABLE 1. *Continued*

Host association (common name)	Nematode	First record
<i>Polygonum persicaria</i> (willow weed)	<i>Meloidogyne naasi</i>	Grbavac et al., 1979
<i>Populus</i> sp. (poplar)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Potentilla fragiformis</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Primula nutans</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Prunnopitys taxifolia</i> (matai)	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
<i>Prunella vulgaris</i> (self heal)	<i>Meloidogyne hapla</i>	Dale, 1972a
<i>Prunus armeniaca</i> (apricot)	<i>Macroposthonia xenoplax</i>	Dale, 1972a
	<i>Xiphinema diversicaudatum</i>	Brown and Topham, 1985
<i>Prunus avium</i> (cherry)	<i>Macroposthonia xenoplax</i> ^a	G. S. Grandison, pers. comm.
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Prunus persica</i> (peach nectarine)	<i>Longidorus elongatus</i>	Dale, 1971d
	<i>Pratylenchus penetrans</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Xiphinema</i> sp. ^a	NZPPC
<i>Pseudopanax arboreus</i> (five finger)	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Pseudopanax</i> sp.	<i>Helicotylenchus labiatus</i>	Wouts and Yeates, 1992
<i>Pteris</i> sp.	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Pyrus communis</i> (pear)	<i>Aphelenchoides fragariae</i>	Cottier, 1956
<i>Pyrus</i> sp. (pear)	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Ranunculus acris</i> (buttercup)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
<i>Ranunculus repens</i> (creeping buttercup)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Ranunculus sardous</i> (pale hairy crowfoot)	<i>Aphelenchoides ritzemabosi</i>	NZPPC
	<i>Meloidogyne hapla</i>	Dale, 1972a
<i>Ranunculus</i> sp. (buttercup)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Raoulia hectori</i> (cushion plant)		
	<i>Aphelenchoides ritzemabosi</i>	Cottier, 1956
	<i>Macroposthonia</i> sp.	Yeates, 1983
	<i>Paratylenchus</i> sp.	Yeates, 1983
	<i>Radopholus</i> sp.	Yeates, 1983
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
<i>Raphanus sativus</i> (radish)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1977
<i>Rheum rhabonticum</i> (rhubarb)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
	<i>Heterodera schachtii</i> ^a	NZPPC
	<i>Paratrichidorus minor</i> (= <i>Trichodorus christiei</i>)	Dale, 1972a
<i>Rhododendron</i> sp.	<i>Helicotylenchus erythrinae</i>	Wouts and Yeates, 1994
<i>Rhopalostylis excelsus</i> (nikau palm)	<i>Aphelenchoides ritzemabosi</i>	Muggeridge and Cottier, 1937
<i>Ribes nigrum</i> (black currant)	(= <i>Aphelenchoides ribes</i>)	
	<i>Aphelenchoides ritzemabosi</i>	
<i>Ribes sylvestre</i> (red currant)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Scott, 1976
	<i>Meloidogyne</i> sp.	Dale, 1972a
<i>Ribes uva-crispa</i> (gooseberry)	<i>Aphelenchoides ritzemabosi</i>	Muggeridge and Cottier, 1937
	(== <i>Aphelenchoides ribes</i>)	
	<i>Meloidogyne</i> sp.	
<i>Robinia pseudacacia</i>	<i>Helicotylenchus pseudorobustus</i>	Dale, 1972a
<i>Rosa</i> sp. (rose)	<i>Meloidogyne hapla</i>	Yeates and Wouts, 1992
	<i>Pratylenchus vulnus</i> ^a	Dale, 1971a
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Meloidogyne</i> sp. ^a	NZPPC
<i>Rosemarinus officinalis</i> (rosemary)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Rubus fruticosus</i> (blackberry)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Rubus idaeus</i> (raspberry)	<i>Cricconema</i> sp. ^a	NZPPC
	<i>Ditylenchus</i> sp. ^a	NZPPC
	<i>Pratylenchus penetrans</i>	Dale, 1972a
	<i>Pratylenchus</i> sp.	Dale, 1972a
<i>Rubus ursinus</i> (boysenberry-loganberry)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
	<i>Pratylenchus vulnus</i> ^a	NZPPC
	<i>Pratylenchus</i> sp. ^a	NZPPC
<i>Rudbeckia</i> sp. (cone flower)	<i>Aphelenchoides ritzemabosi</i>	Cottier, 1956

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Rumex obtusifolius</i> (broad-leaved dock)	<i>Ditylenchus dipsaci</i>	Dale, 1972a
<i>Rumex</i> sp. (dock)	<i>Meloidogyne hapla</i>	Clark, 1963d
	<i>Ditylenchus dipsaci</i>	Dale, 1972a
	<i>Heterodera trifolii</i>	Dale, 1972a
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Meloidogyne</i> sp.	Dale, 1971a
<i>Saintpaulia</i> sp. (African violet)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
	<i>Aphelenchoides ritzemabosi</i> ^a	NZPPC
	<i>Meloidogyne incognita</i> ^a	NZPPC
	<i>Meloidogyne javanica</i> ^a	NZPPC
<i>Salix matsudana</i> (corkscrew willow)		
<i>Salix</i> sp. (willow)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Sansevieria</i> sp.	<i>Helicotylenchus exallus</i>	Wouts and Yeates, 1994
<i>Sarcocornia quinqueflora</i> (= <i>Salicornia australis</i>)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Paratylenchus halophilus</i> ^c	Wouts, 1966a
<i>Scabiosa</i> sp.	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Cottier, 1956
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Pratylenchus</i> sp. ^a	NZPPC
	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Anguina tritici</i>	Blair and Morrison, 1949
<i>Scorzonera hispanica</i> (black salsify)	<i>Ditylenchus dipsaci</i>	Cottier, 1956
<i>Secale cereale</i> (rye/ryecorn)	<i>Meloidogyne naasi</i>	Sheridan and Grbavac, 1979
	<i>Meloidogyne hapla</i>	Dale, 1972a
<i>Senecio jacobaea</i> (ragwort)	<i>Aphelenchoides ritzemabosi</i>	Boesewinkel, 1982
<i>Senecio petasitis</i> (velvet groundsel)	<i>Aphelenchoides ritzemabosi</i>	Cottier, 1956
<i>Senecio vulgaris</i> (groundsel)	<i>Aphelenchoides fragariae</i>	Dale, 1972a
<i>Sinningia speciosa</i> (gloxinia)	<i>Aphelenchoides ritzemabosi</i>	Clark, 1963d
	<i>Meloidogyne hapla</i>	Dale, 1972a
<i>Solanum aviculare</i> (poroporo)	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Solanum melongena</i> (egg plant)	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Solanum muricatum</i> (pepino)	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Solanum nigrum</i> (black nightshade)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1972a
	<i>Meloidogyne hapla</i>	Clark, 1963d
	<i>Meloidogyne javanica</i> ^a	NZPPC
	<i>Meloidogyne incognita</i> ^a	NZPPC
<i>Solanum physalifolium</i> (hairy nightshade)		
<i>Solanum tuberosum</i> (potato)	<i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>)	Helson, 1952
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>)	Helson, 1952
	<i>Meloidogyne hapla</i> ^a	NZPPC
	<i>Meloidogyne incognita</i>	Cottier, 1956
	<i>Globodera pallida</i> (= <i>Heterodera pallida</i>)	Wouts, 1976
	<i>Globodera rostochiensis</i> (= <i>Heterodera rostochiensis</i>)	Dale, 1972b
	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
	<i>Meloidogyne</i> sp.	Dale, 1972a
	<i>Globodera zelandica</i>	Wouts, 1984
<i>Sophora microphylla</i> (kowhai)	<i>Meloidogyne</i> sp. (= <i>Heterodera marioni</i>) ^b	Cottier, 1956
<i>Spinacia oleracea</i> (spinach)	<i>Aphelenchoides ritzemabosi</i>	Dale, 1971c
<i>Stellaria media</i> (chickweed)	<i>Ditylenchus dipsaci</i>	Dale, 1971b
	<i>Meloidogyne</i> sp.	Dale, 1972a
<i>Strelitzia regina</i> (bird of paradise)	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Taraxacum officinale</i> (dandelion)	<i>Heterodera trifolii</i>	Dale, 1972a
<i>Todea barbara</i>	<i>Aphelenchoides fragariae</i> ^a	NZPPC
<i>Trifolium dubium</i> (suckling clover)	<i>Paratylenchus projectus</i>	Wood, 1973a
<i>Trifolium pratense</i> (red clover)	<i>Ditylenchus dipsaci</i>	Grandison, 1965
	<i>Heterodera trifolii</i>	Dale, 1972a
	<i>Meloidogyne hapla</i>	Dale, 1972a
	<i>Pratylenchus</i> sp.	Dale, 1972a
	<i>Pratylenchus thornei</i>	Dale, 1972a

TABLE 1. Continued

Host association (common name)	Nematode	First record
<i>Trifolium repens</i> (white clover)	<i>Aphelenchoides ritzemabosi</i> <i>Ditylenchus dipsaci</i> <i>Helicotylenchus pseudorobustus</i> <i>Heterodera trifoliae</i> <i>Meloidogyne hapla</i> <i>Meloidogyne sp.</i> <i>Paratrichodorus minor</i> <i>Paratylenchus projectus</i> <i>Pratylenchus spp.</i> <i>Meloidogyne hapla</i> <i>Heterodera sp.^a</i> <i>Ditylenchus dipsaci</i> (= <i>Tylenchus devastatrix</i>) <i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>) <i>Meloidogyne javanica</i> ^a	Dale, 1971c Grandison, 1965 Yeates, 1984 Grandison, 1963 Dale, 1971a Clark, 1963d Yeates and Prestidge, 1986 Wood, 1973a Skipp and Christensen, 1983 Yeates et al., 1973 NZPPC Kirk, 1908 Helson, 1952 NZPPC Boesewinkel, 1982 Kirk, 1899 Kirk, 1908 Yeates and Wouts, 1992 Grandison and Halliwell, 1975 Grbavac et al., 1979 Blair and Morrison, 1949 NZPPC Dale, 1972a Dale, 1972a NZPPC Dale, 1972a NZPPC Xiphinema diversicaudatum ^a <i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>) <i>Longidorus elongatus</i> ^a
<i>Trifolium subterraneum</i> (subterranean clover)		
<i>Trifolium</i> sp. (clover)		
<i>Tristania conferta</i> (Brisbane box)	<i>Aphelenchoides ritzemabosi</i>	
<i>Triticum aestivum</i> (wheat)	<i>Anguina tritici</i> (= <i>Tylenchus scandens</i>) <i>Ditylenchus dipsaci</i> (= <i>Tylenchus devastatrix</i>) <i>Helicotylenchus canadensis</i> <i>Heterodera avenae</i> <i>Meloidogyne naasi</i> <i>Meloidogyne sp.</i> (= <i>Heterodera marionii</i>) <i>Paratylenchus nanus</i> <i>Pratylenchus crenatus</i> <i>Pratylenchus thornei</i> <i>Pratylenchus sp.^a</i> <i>Ditylenchus dipsaci</i> <i>Longidorus elongatus</i> ^a	
<i>Tulipa gesneriana</i> (tulip)		
<i>Tulipa greigii</i> (tulip)	<i>Xiphinema diversicaudatum</i> ^a	
<i>Tulipa</i> sp. (tulip)	<i>Ditylenchus dipsaci</i> (= <i>Anguillulina dipsaci</i>) <i>Longidorus elongatus</i> ^a	Cottier, 1956
<i>Ulex europaeus</i> (gorse)	<i>Aphelenchoides sp.^a</i> <i>Ditylenchus dipsaci</i> <i>Helicotylenchus labiatus</i> <i>Meloidogyne arenaria</i> <i>Helicotylenchus minzi</i> <i>Pratylenchus sp.^a</i> <i>Aphelenchoides ritzemabosi</i>	NZPPC J. W. Marshall, pers. comm. Hill and Gourlay, 1989 Yeates and Wouts, 1992 Dale, 1972a Wouts and Yeates, 1994
<i>Ulmus</i> sp. (elm)		
<i>Uncinia</i> sp.		
<i>Vaccinium</i> sp. (blueberry)		
<i>Veronica</i> sp. (speedwell)		
<i>Viburnum japonicum</i>		
<i>Vicia faba</i> (broad bean)		
<i>Vitis vinifera</i> (grape)		
<i>Weinmannia racemosa</i> (kamahi)	<i>Helicotylenchus labiatus</i> <i>Macroposthonia xenoplax</i> ^a <i>Meloidogyne hapla</i> ^a <i>Meloidogyne incognita</i> <i>Pratylenchus crenatus</i> ^a <i>Pratylenchus sp.^a</i> <i>Tylenchus semipenetrans</i> ^a <i>Xiphinema americanum</i> <i>Trichodorus colieri</i> <i>Aphelenchoides fragariae</i> ^a <i>Pratylenchus crenatus</i> ^a <i>Helicotylenchus sp.</i> <i>Meloidogyne sp.</i> (= <i>Heterodera marionii</i>) ^b <i>Pratylenchus sp.</i>	NZPPC NZPPC Dale, 1972a NZPPC NZPPC NZPPC NZPPC Dale, 1971d Clark, 1963a NZPPC NZPPC Yeates and Watson, 1989 Cottier, 1956
<i>Zantedeschia aethiopica</i> (calla lily)		
<i>Zea mays</i> (sweet corn/maize)		
<i>Zinnia elegans</i> (zinnia)	<i>Aphelenchoides ritzemabosi</i>	Yeates and Watson, 1989 Cottier, 1956

^a Indicates new record.^b Plant considered a poor host.^c Indicates association found on offshore locale and not on the three main islands (North Island, South Island, and Stewart Island).

TABLE 2. Plant-parasitic nematodes known to be present in New Zealand but not associated with a specific host.

Host	Nematode	First record
Grasses	<i>Blandicephalanema serratum</i>	Mehta and Raski, 1971
Unknown	<i>Crossonema latens</i> ^b	Mehta and Raski, 1971
Grass and willow	<i>Gracilacus straeleni</i> (= <i>Procriconema straeleni</i>)	Raski, 1976
Native vegetation	<i>Hemicyclophora chathamii</i> (2 subspecies) ^b	Yeates, 1978b
Native vegetation	<i>Longidorus taniwha</i>	Clark, 1963c
Conifer/broadleaf forest	<i>Longidorus orongorongensis</i>	Yeates et al., 1992
Unknown	<i>Nothocriconema macilentum</i> ^b	Raski and Pinchot, 1976
Unknown	<i>Nothocriconema spinicaudatum</i> ^b	Raski and Pinchot, 1976
Host unconfirmed (oat)	<i>Paratylenchus minutus</i> ^a	NZPPC
Host unconfirmed (ryegrass and brome)	<i>Paratylenchus tateae</i> ^a	NZPPC
Grassed orchard	<i>Pratylenchus coffeae</i>	Egunjobi, 1968c
Native forest	<i>Radopholus cavenessi</i>	Egunjobi, 1968b
Native habitats	<i>Radopholus</i> spp. (3 undescribed species)	Sher, 1968
Grassed orchard	<i>Scutellonema</i> sp.	Egunjobi, 1968c

^a Indicates new record.^b Indicates association found on offshore locale and not on the three main islands (North Island, South Island, and Stewart Island).

For the purposes of this paper, "New Zealand" is defined as the three main islands of North Island, South Island, and Stewart Island, whereas Chatam Islands,

Campbell Island, Auckland Islands, Bounty Islands, Antipodes Islands, and Kermadec Islands are grouped as "offshore records." New Zealand territories on continental Ant-

TABLE 3. Plant-parasitic nematodes from pastoral and grass species where the host is not specified.

Host	Nematode	First record
Grass (species unknown)	<i>Helicotylenchus lissocaudatus</i>	Wouts and Yeates, 1994
	<i>Helicotylenchus vulgaris</i>	Wouts and Knight, 1993
	<i>Trichodorus primitivus</i> ^a	W. M. Wouts, pers. comm.
Grasses (species unknown)	<i>Helicotylenchus erythrinae</i> ^b	Wouts and Yeates, 1994
Pasture: <i>Lolium perenne/Trifolium repens</i>	<i>Aphelenchoides</i> sp.	Yeates, 1975
	<i>Cephalenchus</i> sp.	Yeates, 1978a
	<i>Geocenamus nanus</i>	Yeates, 1992
	<i>Helicotylenchus canadensis</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus pseudorobustus</i>	Yeates, 1984
	<i>Helicotylenchus varicaudatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus</i> sp.	Yeates, 1975
	<i>Heterodera</i> sp.	Yeates, 1975
	<i>Macroposthonia</i> sp. ^a	NZPPC
	<i>Meloidogyne</i> sp.	Yeates, 1975
	<i>Paratylenchus</i> sp.	Yeates, 1975
	<i>Paratrichodorus</i> sp.	Yeates, 1989
	<i>Pratylenchus</i> sp.	Yeates, 1975
	<i>Tylenchorhynchus</i> sp.	Yeates, 1975
	<i>Bitylenchus maximus</i> (= <i>Tylenchorhynchus maximus</i>)	Yeates, 1992
Truf (mixed species or species unknown)	<i>Helicotylenchus labiatus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus pseudorobustus</i>	Yeates and Wouts, 1992
	<i>Helicotylenchus varicaudatus</i>	Yeates and Wouts, 1992
	<i>Paratylenchus projectus</i>	Yeates, 1980
	<i>Trichodorus</i> sp.	Yeates, 1980

^a Indicates new record.^b Indicates association found on offshore locale and not on the three main islands (North Island, South Island, and Stewart Island).

arctica and its outlying islands are not included in this paper.

Caution should be exercised when interpreting records for fruit crops such as citrus, pipfruit, and stonefruit, which may be grafted on root stocks of different species. In most cases, records from the literature and from the NZPPC are based on the crop species and not the root stock, which is usually unknown.

Nematode and host names are generally those used by the author who published the original record. Where the nematode name has been superseded, the name given in the reference cited has been relegated to a synonym. Host names have been updated where enough information has been provided to make a clear identification.

Readers are advised to consult the original reference to ensure the nematode-host relationship is sufficiently established for their purposes.

This paper provides a list of the earliest references of plant-parasitic nematodes with their hosts in New Zealand.

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