

REVIEW/REVISAR

CURRENT STATUS OF GENERA AND SPECIES OF PHYTOPARASITIC NEMATODES IN EGYPT

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ABSTRACT

Ibrahim, I. K. A., M. Kantor, and Z. A. Handoo. 2023. Current status of genera and species of phytoparasitic nematodes in Egypt. *Nematropica* 53:16-29.

In Egypt, phytoparasitic nematodes have been recognized as important plant pests and major constraints to agricultural production especially in sandy and coarse soils. A review of the historical nematode records indicate the occurrence of about 60 genera and 170 species of phytoparasitic nematodes found on crop plants, grasses, and weeds. Some of these nematode species such as *Heterodera goldeni* were described from Egypt, while others such as *H. rosii*, *Globodera rostochiensis*, and *Xiphinema rivesi* were recorded for the first time in Egypt and other African countries. Important phytoparasitic nematodes found in Egypt include species of *Tylenchulus*, *Globodera*, *Heterodera*, *Xiphinema*, *Hoplolaimus*, *Criconemella*, *Mesocriconema*, *Pratylenchus*, *Meloidogyne*, *Helicotylenchus*, and *Tylenchorhynchus*. Among these, *Tylenchulus*, *Heteroderidae*, *Pratylenchus*, *Meloidogyne*, and *Helicotylenchus* were the most frequently encountered nematode genera in Egypt.

Key words: Egypt, genera, phytoparasitic nematodes, species, survey

RESUMEN

Ibrahim, I. K. A., M. Kantor y Z. A. Handoo. 2023. Estado actual de géneros y especies de nematodos fitoparásitos en Egipto. *Nematropica* 53:16-29.

En Egipto, los nematodos fitoparásitos han sido reconocidos como plagas importantes de plantas y representan grandes limitaciones para la producción agrícola, especialmente en suelos arenosos y gruesos. Una revisión de los registros históricos de nematodos indica la ocurrencia de cerca de 60 géneros y 170 especies de nematodos fitoparásitos encontrados en plantas de cultivos, pastos y malezas. Algunas de estas especies de nematodos como *Heterodera goldeni* fueron descritas de Egipto, mientras otras como *H. rosii*, *Globodera rostochiensis* y *Xiphinema rivesi* fueron registradas por primera vez en Egipto y otros países africanos. Nematodos fitoparásitos importantes encontrados en Egipto incluyen especies de *Tylenchulus*, *Globodera*, *Heterodera*, *Xiphinema*, *Hoplolaimus*, *Criconemella*, *Mesocriconema*, *Pratylenchus*, *Meloidogyne*, *Helicotylenchus* y *Tylenchorhynchus*. Entre estos, *Tylenchulus*, *Heteroderidae*, *Pratylenchus*, *Meloidogyne* y *Helicotylenchus* fueron la familia/género de nematodos que se encontraron con mayor frecuencia en Egipto.

Palabras clave: Egipto, géneros, nematodos fitoparásitos, especies, estudio

INTRODUCTION

Phytoparasitic nematodes have been considered as important plant pests since 1901 when Preyer (1901) reported a nematode disease of banana in Alexandria, Egypt. In 1955, Oteifa (1955) reported the occurrence of citrus nematode (*Tylenchulus semipenetrans* Cobb, 1913). Early nematode studies were mainly concerned with the occurrence and identification of phytoparasitic nematodes in Egypt especially *Tylenchulus semipenetrans*, *Pratylenchus* spp., and *Meloidogyne arenaria*, *M. incognita* and *M. javanica* (Oteifa, 1955, 1962; Tarjan, 1964; Oteifa and Tarjan, 1965; Ibrahim *et al.*, 1972, 1976). Extensive surveys on phytoparasitic nematodes in Egypt were conducted by Abou-Elnaga (1979), Ibrahim (1990), Oteifa *et al.* (1997) and Ibrahim *et al.* (2010). These surveys showed the occurrence of large numbers of genera and species of phytoparasitic nematodes associated with many plant crops, grasses, and weeds. Many of these nematodes are considered a limiting factor in plant crop production in Egypt. Information concerning the occurrence and identification of phytoparasitic nematodes in Egypt is very important since nematodes such as citrus (*Tylenchulus* spp.), cyst (*Globodera* spp., *Heterodera* spp.), dagger (*Xiphinema* spp.), lance (*Hoplolaimus* spp.), ring (*Criconebella* spp., *Mesocriconebella* spp.) root-knot (*Meloidogyne* spp.), spiral (*Helicotylenchus* spp.) and stunt (*Tylenchorhynchus* spp.) may occur in large numbers and cause economic damage to many plant crops (Abou-Elnaga, 1979; Oteifa *et al.*, 1997, Ibrahim *et al.*, 2000, 2010; Ibrahim *et al.*, 2000, 2010).

Cumulative records of phytoparasitic nematodes in Egypt have been maintained in the Nematology Research Laboratory, Faculty of Agriculture, Alexandria University, Alexandria, Egypt and Nematology Laboratory, now Mycology and Nematology Genetic Diversity and Biology Laboratory (), USDA, ARS, Beltsville, MD, USA for the last 40 years. Previous nematode records and survey studies showed the occurrence of about 60 genera and 170 species of phytoparasitic nematodes in Egypt (Ibrahim, 1990; Ibrahim *et al.*, 2000, 2010, 2016; Oteifa *et al.*,

1997). The scientific cooperation between the faculty of Agriculture, Alexandria University and the MNGDBL has resulted in the identification and recording of many species of phytoparasitic nematodes in Egypt. Most of the identified nematode species were first records in Egypt and Africa (Handoo and Ibrahim, 2002; Handoo *et al.*, 2015; Ibrahim and Handoo, 2016; Ibrahim *et al.*, 2000, 2010, 2016, 2017). The most important achievements of this cooperation included the identification of 14 new species records in Egypt (Ibrahim *et al.*, 2000), and the description of *Heterodera goldeni* Handoo and Ibrahim 2002, as a new cyst nematode species. Other important first reports include *Xiphinema rivesi* Dalmaso, 1969 (Handoo *et al.*, 2015), *Globodera rostochiensis* Wollenweber, 1923 and *Heterodera* spp. (Ibrahim *et al.*, 2017, Haroon *et al.*, 2021), as well as *Aglenchus geraerti* Mizukubo, 1989, *Bitylenchus ventrosignatus* Tobar Jiménez, 1969, *Coslenchus capsica* Khurma 1988, *Helicotylenchus indicus* Siddiqi, 1963 and *Malenchus bryanti* Knobloch 1976 (Ibrahim and Handoo, 2016). The objective of the present work was to compile a list of nematode genera and species and associated host plants from previously published research in Egypt.

RESULTS AND DISCUSSION

Genera and species of phytoparasitic nematodes identified and previously reported in Egypt with corresponding host plants and references are presented in Tables 1 and 2. Table 1 provides the numbers of species and frequency of occurrence (FO) of phytoparasitic nematode genera found in soil samples collected from crop plants in Egypt. Table 2 provides the species of phytoparasitic nematodes reported and identified in Egypt, the associated host plants, and the corresponding references based on previous nematode surveys and reports published (Abou Elnaga, 1979; Oteifa *et al.*, 1997; Ibrahim and Handoo, 2016; Ibrahim *et al.*, 2000, 2010, 2017; Basyony *et al.*, 2020). A total of 180 species are listed in Table 2. *Helicotylenchus*, *Tylenchorhynchus*, and *Xiphinema* are represented by the highest numbers of species, 15-17 species,

Table 1. Numbers of species and frequency of occurrence (FO) of phytoparasitic nematode genera found in soil samples collected from crop plants in Egypt.

Genus	No. of species	FO index ^y	Genus	No. of species	FO index ^y
<i>Aglenchus</i>	1	1	<i>Malenchus</i>	1	1
<i>Anguina</i>	1	1	<i>Meloidogyne</i>	4	5
<i>Aphelenchoides</i>	2	3	<i>Merlinius</i>	3	2
<i>Aphelenchus</i> ^z	1	3	<i>Mesocriconema</i>	1	2
<i>Aporcelaimus</i> ^z	1	1			
<i>Basiria</i>	1	1	<i>Nacobbus</i>	1	1
<i>Belonolaimus</i>	1	1	<i>Neotylenchus</i>	1	1
<i>Bitylenchus</i>	1	1	<i>Nygolaimus</i> ^z	1	1
<i>Boleodorus</i>	1	1	<i>Paralongidorus</i>	2	1
<i>Cephalenchus</i>	1	1	<i>Paratrichodorus</i>	1	1
<i>Costlenchus</i>	1	1	<i>Paratylenchus</i>	1	1
<i>Criconema</i>	2	1	<i>Pratylenchoides</i>	2	2
<i>Criconemella</i>	1	2			
<i>Diphtherophora</i>	1	1	<i>Pratylenchus</i>	12	4
<i>Discocriconemella</i>	1	1	<i>Pseudhalenchus</i>	1	1
<i>Ditylenchus</i>	3	3	<i>Psilenchus</i>	5	5
<i>Dolichodorus</i>	1	1	<i>Radopholus</i>	1	1
<i>Dorylaimellus</i> ^z					
<i>Dorylaimus</i> ^z					
<i>Eutylenchus</i>	1	1	<i>Rotylenchoides</i>	1	1
<i>Filenchus</i>	1	1	<i>Rotylenchulus</i>	1	3
<i>Globodera</i>	1	1			
<i>Helicotylenchus</i>	15	5	<i>Rotylenchus</i>	2	2
<i>Hemicriconemoides</i>	3	2	<i>Scutellonema</i>	2	2
<i>Hemicycliophora</i>	3	2	<i>Telotylenchus</i>	1	1
<i>Heterodera</i>	12	3	<i>Trichodorus</i>	1	1
<i>Hirschmanniella</i>	2	3	<i>Tylenchorhynchus</i>	15	4
<i>Hoplolaimus</i>	7	4	<i>Tylenchulus</i>	1	3
<i>Irantylenchus</i>	1	1	<i>Tylenchus</i>	2	4
<i>Lelenchus</i>	1	1	<i>Xiphinema</i>	17	3
<i>Longidorus</i>	6	1	<i>Zygotylenchus</i>	1	1

^yFO index: 1=1-10%, 2=11-20%, 3=21-30%, 4=31-50% and 50% frequency of occurrence

^zSuspected plant-parasitic forms

followed by *Pratylenchus* and *Heterodera* with 12 species each. *Hoplolaimus* and *Longidorus* have 6-7 species, while other listed genera have only 1-5 species each. Some of the nematodes reported herein, especially of the genera *Aphelenchoides* and *Ditylenchus* may be feeding on fungi, algae, or other soil microorganisms present in the rhizosphere of the plants that were surveyed. Also, some of the nematodes may parasitize the roots of the previous crop in the rotation rather than the one

present at the time of sampling.

More research is needed to further identify other genera and species of phytoparasitic nematodes that might occur in Egypt, especially on grasses, weeds, and wild plants in desert areas and on the Sinai Peninsula. Results reported herein form a valuable database that should be consulted in designing crop rotations and nematode control programs to deal with phytoparasitic nematode problems in Egypt.

Table 2. Species of phytoparasitic nematodes reported and identified in Egypt, the associated host plants and pertinent references.

Nematode species	Host plants	References
<i>Aglenchus geraerti</i>	<i>Lantana camara</i>	Ibrahim and Handoo, 2016
<i>Anguina tritici</i>	<i>Triticum aestivum</i>	Abou-Elnaga, 1979; Oteifa <i>et al.</i> , 1997
<i>Aphelenchoides</i> sp.	<i>Brassica rapa</i> , <i>Cucumis sativus</i> , <i>Musa sapientum</i> , <i>Oryza sativa</i> , <i>Solanum tuberosum</i> and many other host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Aphelenchoides besseyi</i>	<i>Oryza sativa</i>	Amin, 2001; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Aphelenchoides parietinus</i>	<i>Gossypium barbadense</i> , <i>Lycopersicon esculentum</i> , <i>Solanum tuberosum</i> , <i>Solanum melongena</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Aphelenchus avenae</i>	<i>Beta vulgaris</i> , <i>Oryza sativa</i> and many other host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Aporcelaimus capitatus</i>	<i>Citrus</i> sp., <i>Musa sapientum</i> , <i>Vitis finifera</i>	Abou-Elnaga, 1985; Oteifa <i>et al.</i> , 1997
<i>Basiria graminophila</i>	<i>Solanum melongena</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Belonolaimus</i> sp.	<i>Gossypium barbadense</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Boleodorus pakistansis</i>	<i>Polypogon monspeliensis</i> , <i>Solanum nigrum</i>	Ibrahim <i>et al.</i> , 2010
<i>Boleodorus thylactus</i>	<i>Brassica oleracea</i> , <i>Capsium frutescens</i>	Abou-Elnaga, 1979; Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Bitylenchus ventrosignatus</i>	<i>Lantana camara</i>	Ibrahim and Handoo, 2016
<i>Coslenchus capsici</i>	<i>Lantana camara</i>	Ibrahim and Handoo, 2016
<i>Criconema</i> sp.	<i>Cynodon dactylon</i> , <i>Washingtonia filifera</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Criconema mutabile</i> (= <i>Nothocriconema mutabile</i>)	<i>Allium cepa</i> , <i>Cucumis sativus</i> , <i>Cynodon dactylon</i> , <i>Phoenix canariensis</i> , <i>Solanum tuberosum</i> and many other host plants	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Criconema sphaerocephala</i>	<i>Amaranthus caudatus</i> , <i>Carex festivella</i> , <i>Cynodon dactylon</i> , <i>Phoenix dactylifera</i> , <i>Setaria viridis</i> and many other host plants	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Diphtherophora</i> sp.	<i>Washingtonia filifera</i>	Ibrahim <i>et al.</i> , 2010; Ismail and Eissa, 1993
<i>Discocriconemella sphaerocephaloides</i>	<i>Cynodon dactylon</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Ditylenchus</i> sp.	<i>Allium cepa</i> and many other host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Ditylenchus angustus</i>	<i>Oryza sativa</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Ditylenchus intermedius</i>	<i>Cynara scolymus</i> , <i>Triticum sativum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997

Table 2. Continued

Nematode species	Host plants	References
<i>Ditylenchus myceliophagus</i>	<i>Beta vulgaris</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Dolichodoros</i> sp.	<i>Cynara scolymus</i>	Ibrahim <i>et al.</i> , 2010
<i>Eutylenchus</i> sp.	<i>Plantago major</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Filenchus filiformis</i>	<i>Colocasia esculenta</i> , <i>Cucurbita pepo</i> , <i>Solanum tuberosum</i> , <i>Vicia faba</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Globodera rostochiensis</i>	<i>Solanum tuberosum</i>	Ibrahim <i>et al.</i> , 2017; Haroon <i>et al.</i> , 2021
<i>Helicotylenchus</i> sp.	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Helicotylenchus agricola</i>	<i>Psidium guajava</i>	Abou-Elnaga, 1979; Elmiligy, 1970b; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus cavenessi</i>	<i>Zea mays</i>	Abou-Elnaga, 1979; Elmiligy, 1970a; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus digonicus</i>	<i>Gossypium barbadense</i> , <i>Washingtonia filifera</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010, Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus dihyстера</i>	<i>Beta vulgaris</i> , <i>Brassica oleracea</i> , <i>Citrus aurantium</i> , <i>Colocasia esculenta</i> , <i>Mangifera indica</i> , <i>Prunus amygdalus</i> , <i>Saccharum officinarum</i> and many other host plants	Abou-Elnaga, 1979; Elmiligy, 1970a; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus dihysteroides</i>	<i>Musa sapientum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus egyptiensis</i>	<i>Saccharum officinarum</i> , <i>Washingtonia filifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Helicotylenchus erythrinae</i>	<i>Zea mays</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus exallus</i>	<i>Musa sapientum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus hydrophilus</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i>	Abou-Elnaga, 1989; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus indicus</i>	<i>Lantana camara</i>	Ibrahim and Handoo, 2016
<i>Helicotylenchus mangiferensis</i>	<i>Mangifera indica</i>	Abou-Elnaga, 1979; Elmiligy, 1970b; Oteifa <i>et al.</i> , 1997
<i>Helicotylenchus microcephalus</i>	<i>Citrus aurantium</i> , <i>Cynodon dactylon</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1989; Elmiligy, 1970b; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Helicotylenchus microlobus</i>	<i>Gossypium barbadense</i>	Abou-Elnaga, 1979; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Helicotylenchus multicinctus</i>	<i>Citrus aurantium</i> , <i>Cynodon dactylon</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Elmiligy, 1970a; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964

Table 2. Continued

Nematode species	Host plants	References
<i>Helicotylenchus pseudorobustus</i>	<i>Cynodon dactylon</i> , <i>Lantana camara</i> , <i>Vitis vinifera</i> and many other host plants.	Ibrahim <i>et al.</i> 2010; Ibrahim and Handoo, 2016; Ibrahim <i>et al.</i> , 1994; Ibrahim <i>et al.</i> , 2000 Oteifa <i>et al.</i> , 1997
<i>Hemicriconemoides</i> sp.	<i>Allium cepa</i> , <i>Cucurbita pepo</i> , <i>Mangifera indica</i> , <i>Phoenix dactylifera</i> , <i>Solanum tuberosum</i> , <i>Zea mays</i>	Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hemicriconemoides affinis</i>	<i>Allium cepa</i> , <i>Cucumis sativus</i> , <i>Solanum tuberosum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hemicriconemoides cocophilus</i>	<i>Phoenix canariensis</i> , <i>Phoenix dactylifera</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Hemicriconemoides mangiferae</i>	<i>Agave sisalana</i> , <i>Angifera indica</i> , <i>Roystonea elata</i>	Abou-Elnaga, 1979; Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hemicycliophora</i> sp.	<i>Arachis hypogaea</i> , <i>Cynodon dactylon</i> , <i>Pyrus communis</i> , <i>Rosa</i> sp., <i>Zae mays</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Tarjan, 1964
<i>Hemicycliophora oostenbrinki</i>	<i>Cynodon dactylon</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Hemicycliophora similes</i>	<i>Citrus aurantium</i>	Abou-Elnaga, 1979; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Hemicycliophora thienemanni</i>	<i>Phoenix dactylifera</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Heterodera</i> sp.	Many host plants	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017; Oteifa <i>et al.</i> , 1997
<i>Heterodera avenae</i>	<i>Hordeum vulgare</i> , <i>Triticum aestivum</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017
<i>Heterodera cajani</i>	<i>Vigna cylindrical</i>	Aboul-Eid and Ghorab, 1974; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Heterodera daverti</i>	<i>Oryza sativa</i> , <i>Trifolium alexandrinum</i> , <i>Triticum aestivum</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017
<i>Heterodera glycines</i>	<i>Trifolium alexandrinum</i> , <i>Vigna cylindrical</i>	Elmiligy, 1968; Ibrahim <i>et al.</i> , 2017
<i>Heterodera goldeni</i>	<i>Oryza sativa</i> , <i>Panicum coloratum</i> , <i>Zea mays</i>	Handoo and Ibrahim, 2002; Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017
<i>Heterodera latipons</i>	<i>Hordeum vulgare</i> , <i>Triticum aestivum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997.
<i>Heterodera lespedezae</i>	<i>Trifolium alexandrinum</i>	Ibrahim <i>et al.</i> , 2017
<i>Heterodera leuceilyma</i>	<i>Cynodon dactylon</i>	Ibrahim <i>et al.</i> , 2017
<i>Heterodera rosii</i>	<i>Melilotus officinalis</i> , <i>Trifolium alexandrinum</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017

Table 2. Continued

Nematode species	Host plants	References
<i>Heterodera schachtii</i>	<i>Beta vulgaris</i> , <i>Brassica oleracea</i> var. <i>capitata</i> , <i>Brassica oleracea</i> var. <i>botrytis</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017
<i>Heterodera trifolii</i>	<i>Trifolium alexandrinum</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 2017; Oteifa <i>et al.</i> , 1997
<i>Heterodera zeae</i>	<i>Hordeum vulgare</i> , <i>Oryza sativa</i> , <i>Triticum aestivum</i> , <i>Zea mays</i>	Aboul-Eid and Ghorab, 1981; Ibrahim <i>et al.</i> 2010; Ibrahim <i>et al.</i> 2017; Oteifa <i>et al.</i> , 1997
<i>Hirschmanniella</i> sp.	<i>Gossypium barbadense</i> , <i>Oryza sativa</i> , <i>Zea mays</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Hirschmanniella gracilis</i>	<i>Oryza sativa</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hirschmanniella oryzae</i>	<i>Amaranthus caudatus</i> , <i>Chenopodium album</i> , <i>Oryza sativa</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Hoplolaimus</i> sp.	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Hoplolaimus aegypti</i>	<i>Agava sisalana</i> , <i>Ipomoea batatas</i> , <i>Phoenix dactylifera</i> , <i>Roystonea regia</i> , <i>Zea mays</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hoplolaimus clarissimus</i>	<i>Conyza aegyptiaca</i> , <i>Cynodon dactylon</i> , <i>Cyperus rotundus</i> , <i>Erigeron annuus</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Hoplolaimus columbus</i>	<i>Citrus aurantium</i> , <i>Gossypium barbadense</i> , <i>Musa sapientum</i> , <i>Sofficinarum</i> , <i>Zea mays</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Hoplolaimus galeatus</i>	<i>Citrus aurantium</i> , <i>Gossypium babadense</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1989; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1965
<i>Hoplolaimus pararobustus</i>	<i>Musa sapientum</i> , <i>Psidium guajava</i>	Elmiligy, 1970a; Ibrahim <i>et al.</i> , 2010
<i>Hoplolaimus seshadrii</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Hoplolaimus tylenchiformis</i>	<i>Arachis hypogaea</i> , <i>Glycine max</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Irantylenchus clavidorus</i>	<i>Amaranthus caudatus</i> , <i>Cynodon dactylon</i> , <i>Poa annuua</i> , <i>Portulaca oleracea</i> , <i>Setaria viridis</i> , <i>Urtica urens</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Longidorus</i> sp.	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964

Table 2. Continued

Nematode species	Host plants	References
<i>Longidorus africanus</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i> , <i>Prunus amygdalus</i> , <i>Saccharum officinarum</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Longidorus brevicaudatum</i> (= <i>L. siddiqii</i>)	<i>Gossybioium barbadense</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Longidorus elongatus</i>	<i>Citrus aurantium</i> , <i>Cynodon dactylon</i> , <i>Mangifera indica</i> , <i>Olea europaea</i> , <i>Saccharum officinarum</i> , <i>Vitis vinifera</i> , <i>Zea mays</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Longidorus laevicapitalus</i>	<i>Citrus aurantium</i> , <i>Glycine max</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Lamberti <i>et al.</i> , 1996; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Longidorus pisi</i> (= <i>L. latocephalus</i>)	<i>Glycine max</i> , <i>Vitis vinifera</i>	Ibrahim <i>et al.</i> , 2010; Lamberti <i>et al.</i> , 1996
<i>Longidorus taniwha</i>	<i>Citrus aurantium</i> , <i>Ficus carica</i> , <i>Musa sapientum</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Malenchus bryanti</i>	<i>Lantana camara</i>	Ibrahim and Handoo, 2016
<i>Meloidogyne</i> sp.	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Meloidogyne arenaria</i>	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Meloidogyne hapla</i>	<i>Lycopersicum esculentum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Meloidogyne incognita</i>	Many host plants	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Meloidogyne javanica</i>	Many host plants	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Merlinius brevidens</i>	<i>Lantana camara</i>	Elmiligy and Geraert, 1971; Ibrahim and Handoo, 2016; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Merlinus nanus</i>	<i>Cynodon dactylon</i>	Ibrahim <i>et al.</i> , 2010; Ibrahim <i>et al.</i> , 1994; Ibrahim <i>et al.</i> , 2000
<i>Merlinius nothus</i> (= <i>Tylenchorhynchus nothus</i>)	<i>Citrus aurantium</i> , <i>Morus alba</i> , <i>Solanum melongena</i>	Abou-Elnaga, 1979; Elmiligy and Geraert, 1971; Ibrahim, 1990; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Mesocriconema</i> sp. (= <i>Criconella</i> sp. <i>Criconemoides</i> sp.)	Many host plants	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Nacobbus</i> sp.	<i>Lycopersicum esculentum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Neotylenchus</i> sp.	<i>Prunus amygdalus</i>	Ibrahim, 1990; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Nygolaimus</i> sp.	<i>Citrus aurantium</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1989; Oteifa <i>et al.</i> , 1997
<i>Nygolaimus parasquaticus</i>	<i>Allium sativum</i> , <i>Citrullus vulgaris</i>	Abou-Elnaga, 1985; Oteifa <i>et al.</i> , 1997
<i>Paralongidorus erriae</i>	<i>Vitis vinifera</i>	Ibrahim <i>et al.</i> , 2010; Lamberti <i>et al.</i> , 1996

Table 2. Continued

Nematode species	Host plants	References
<i>Paralongidorus georgiensis</i> (= <i>Longidorus georgiensis</i>)	<i>Citrus aurantium</i>	Ibrahim, 1990; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Paratrichodorus minor</i> (= <i>Trichodorus christiei</i> , <i>Trichodorus minor</i>)	<i>Alopecurus geniculatus</i> , <i>Alopecurus partensis</i> , <i>Amaranthus caudatus</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1994; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965, Tarjan, 1964
<i>Paratylenchus</i> sp.	<i>Cyperus rotundus</i> , many other host plants	Ibrahim, 1990; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Paratylenchus minor</i>	<i>Cyperus rotundus</i> , <i>Phoenix dactylifera</i> , <i>Setaria verticillata</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Paratylenchus projectus</i>	<i>Phoenix canariensis</i> , <i>Washingtonia filifera</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Pratylenchoides</i> sp.	<i>Citrus aurantium</i> , <i>Pyrus communis</i>	Ibrahim <i>et al.</i> , 2010; Tarjan, 1964
<i>Pratylenchoides crenicauda</i>	<i>Citrus aurantium</i> , <i>Gossypium barbadense</i> , <i>Pyrus communis</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1989; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus</i> sp.	Many host plants	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Pratylenchus brachyurus</i>	<i>Arachis hypogaea</i> , <i>Citrus aurantium</i> , <i>Fragaria</i> sp., <i>Gossypium barbadense</i> , <i>Musa sapientum</i> , <i>Oryza sativa</i> , <i>Solanum tuberosum</i> , <i>Zea mays</i> and many other host plants.	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus coffeae</i>	<i>Arachis hypogaea</i> , <i>Citrus aurantium</i> , <i>Lycopersicon esculentum</i> , <i>Musa sapientum</i> , <i>Pisum sativum</i> , <i>Solanum tuberosum</i> , <i>Vicia faba</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus crenatus</i>	<i>Saccharum officinarum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Pratylenchus goodeyi</i>	<i>Citrullus vulgaris</i> , <i>Musa sapientum</i> , <i>Oryza sativa</i> , <i>Vicia faba</i> , <i>Vigna cylindrical</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus minyus</i>	<i>Arachis hypogaea</i> , <i>Gossypium barbadense</i> , <i>Lycopersicon esculentum</i> , <i>Musa sapientum</i> , <i>Vicia faba</i> and many other host plants	Ibrahim <i>et al.</i> 2010; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus musicola</i>	<i>Musa sapientum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus neglectus</i>	<i>Citrus aurantium</i> , <i>Mangifera indica</i> , <i>Vitis vinifera</i> , <i>Zea mays</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965
<i>Pratylenchus penetrans</i>	<i>Arachis hypogaea</i> , <i>Citrus aurantium</i> , <i>Cucumis sativus</i> , <i>Musa sapientum</i> , <i>Solanum tuberosum</i> , <i>Vitis vinifera</i> and many other host plants	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965

Table 2. Continued.

Nematode species	Host plants	References
<i>Pratylenchus pratensi</i>	<i>Citrullus vulgaris</i> , <i>Citrus aurantium</i> , <i>Cucumis sativus</i> , <i>Gossypium barbadense</i> , <i>Trifolium alexandrinum</i> , <i>Vitis vinifera</i> , <i>Zea mays</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus scribneri</i>	<i>Citrullus vulgaris</i> , <i>Fragaria sp.</i> , <i>Ipomoea batatas</i> , <i>Solanum tuberosum</i> , <i>Vigna cylindrical</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus thornei</i>	<i>Arachis hypogaea</i> , <i>Ficus carica</i> , <i>Gossypium barbadense</i> , <i>Lycopersicon esculentum</i> , <i>Oryza sativa</i> , <i>Lantana camaram</i> , <i>Zea mays</i>	Ibrahim and Handoo, 2016; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Pratylenchus vulnus</i>	<i>Citrus aurantium</i> , <i>Citrullus vulgaris</i> , <i>Cucumis sativus</i> , <i>Mangifera indica</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997
<i>Pratylenchus zeae</i>	<i>Arachis hypogaea</i> , <i>Citrus aurantium</i> , <i>Prunus persica</i> , <i>Vicia faba</i> , <i>Zea mays</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1962; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965
<i>Pseudhalenchus sp.</i>	<i>Cynodon dactylon</i>	Ibrahim, 2010; Tarjan, 1964
<i>Pseudhalenchus anchilispomus</i>	<i>Pyrus communis</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Psilenchus sp.</i>	<i>Cucurbita pepo</i> , <i>Gossypium barbadense</i> , <i>Solanum tuberosum</i> , <i>Washingtonia filifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Psilenchus aestuarius</i>	<i>Gossypium barbadense</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Tarjan, 1964
<i>Psilenchus hilarulus</i>	<i>Gossypium barbadense</i> , <i>Oryza sativa</i>	Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2010; Tarjan, 1964
<i>Psilenchus iranicus</i>	<i>Cucurbita pepo</i> , <i>Lycopersicon esculentum</i> , <i>Solanum tuberosum</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Psilenchus magnidens</i>	<i>Ficus carica</i> , <i>Gossypium barbadense</i>	Ibrahim <i>et al.</i> , 2010; Tarjan, 1964.
<i>Psilenchus striatus</i>	<i>Ipomoea batatas</i> , <i>Solanum tuberosum</i> , <i>Vicia faba</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Radopholus similis</i>	<i>Musa sapientum</i> , <i>Pyrus communis</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Tarjan, 1964
<i>Rotylenchoides variocaudatus</i>	<i>Gossypium barbadense</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Rotylenchulus sp.</i>	<i>Citrus aurantium</i> , <i>Cycas revolute</i> , <i>Gossypium barbadense</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i> , many other host plants	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Rotylenchulus reniformis</i>	<i>Gossypium barbadense</i> , many other host plants	Ibrahim and Handoo, 2016; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Rotylenchus sp.</i>	<i>Citrullus vulgaris</i> , <i>Citrus aurantium</i> , <i>Gossypium barbadense</i> , <i>Prunus amygdalus</i> , <i>Prunus persica</i> , <i>Vitis vinifera</i> , many other host plants	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965

Table 2. Continued

Nematode species	Host plants	References
<i>Rotylenchus robustus</i>	<i>Citrus aurantium</i> , <i>Mangifera indica</i>	Ibrahim <i>et al.</i> , 2010; Oteifa and Tarjan, 1965; Oteifa <i>et al.</i> , 1997
<i>Rotylenchus uniformis</i>	<i>Citrus aurantium</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997
<i>Scutellonema</i> sp.	<i>Mangifera indica</i> , <i>Musa sapientum</i> <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Scutellonema blaberum</i>	<i>Cynodon dactylon</i>	Abou-Elnaga, 1979; Ibrahim, 1990; Oteifa <i>et al.</i> , 1997
<i>Scutellonema brachyurum</i>	<i>Cynodon dactylon</i> , <i>Nerium oleander</i> , <i>Vitis vinifera</i>	Ibrahim, 1990; Ibrahim <i>et al.</i> , 2000; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Telotylenchus ventralis</i>	<i>Cynodon dactylon</i> , <i>Digitaria sanguinalis</i>	Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Trichodorus</i> sp.	Many host plants	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964.
<i>Trichodorus teres</i>	<i>Citrus aurantium</i> , <i>Vitis vinifera</i> , <i>Zea mays</i>	Ibrahim, 1990; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Tylencholaimu</i> sp.	<i>Brassica rapa</i> , <i>Brassica oleracea</i> var. <i>capitata</i>	Abou-Elnaga <i>et al.</i> , 1985; Oteifa <i>et al.</i> , 1997
<i>Tylencholaimu teres</i>	<i>Citrus aurantium</i>	Abou-Elnaga, 1989; Oteifa <i>et al.</i> , 1997
<i>Tylenchorhynchus</i> sp.	Many host plants	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964.
<i>Tylenchorhynchus annulatus</i>	<i>Myoporum pictum</i>	Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010
<i>Tylenchorhynchus besselatus</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i>	Abou-Elnaga, 1989; Oteifa <i>et al.</i> , 1997
<i>Tylenchorhynchus brassicae</i>	<i>Citrus aurantium</i> , <i>Cynodon dactylon</i> , <i>Pyrus communis</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1964
<i>Tylenchorhynchus capitatus</i>	<i>Alium cepa</i> , <i>Saccharum officinarum</i>	Abou-Elnaga, 1979; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Tylenchorhynchus clarus</i>	<i>Brassica rapa</i> , <i>Cucurbita pepo</i> , <i>Oryza sativa</i> , <i>Zea mays</i>	Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Tylenchorhynchus clavicaudatus</i>	<i>Citrus aurantium</i>	Ibrahim <i>et al.</i> , 1990; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Tylenchorhynchus cylindricus</i>	<i>Vitis vinifera</i>	Ibrahim <i>et al.</i> , 1990; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965
<i>Tylenchorhynchus dubius</i>	<i>Gossypium barbadense</i>	Abou-Elnaga, 1979; Ibrahim, 1990; Oteifa <i>et al.</i> , 1997
<i>Tylenchorhynchus ebriensis</i>	<i>Washingtonia filifera</i>	Ibrahim <i>et al.</i> 2000; Ibrahim <i>et al.</i> , 2010
<i>Tylenchorhynchus goffarti</i>	<i>Acalypha wilkesiana</i> , <i>Anabasis articulata</i> , <i>Capsicum frutescens</i> <i>Cucurbita pepo</i> , <i>Gossypium barbadense</i> , <i>Solanum tuberosum</i> , <i>Solanum melongena</i> , <i>Zea mays</i>	Elmiligy and Geraert, 1971; Ibrahim <i>et al.</i> , 2000; Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997
<i>Tylenchorhynchus kegenicus</i>	<i>Gossypium barbadense</i>	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Tarjan, 1965
<i>Tylenchorhynchus latus</i>	<i>Citrus aurantium</i> , <i>Ficus carica</i> , <i>Vitis vinifera</i> , and many other host plants	Ibrahim <i>et al.</i> , 2010; Oteifa <i>et al.</i> , 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Tylenchorhynchus martini</i>	<i>Oryza sativa</i>	Ibrahim <i>et al.</i> , 2010; Oteifa, 1964; Oteifa <i>et al.</i> , 1997

Table 2. Continued

Nematode species	Host plants	References
<i>Tylenchorhynchus mexicanus</i>	<i>Casuarina glauca</i>	El-Hamawi, 1993; Ibrahim et al., 2010, Oteifa et al., 1997
<i>Tylenchorhynchus phaseoli</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i>	Ibrahim et al., 2010; Oteifa et al., 1997
<i>Tylenchulus semipenetrans</i>	<i>Lantana camara</i> , <i>Citrus spp.</i> , <i>Olea europaea</i> , <i>Vitis vinifera</i>	Abou-Elnaga, 1979; Ibrahim and Handoo, 2016; Ibrahim et al., 2010; Ibrahim et al., 2022; Oteifa, 1964; Oteifa et al., 1997; Oteifa and Tarjan, 1965; Tarjan, 1964
<i>Tylenchus</i> sp.	Many host plants	Ibrahim et al., 2010; Oteifa et al., 1997; Tarjan, 1964
<i>Tylenchus afghanicus</i>	<i>Amaranthus caudatus</i> , <i>Portulaca oleracea</i>	Ibrahim et al., 2000; Ibrahim et al., 2010
<i>Tylenchus exiguous</i>	<i>Amaranthus caudatus</i> and many other host plants	Ibrahim et al., 2000; Ibrahim et al., 2010
<i>Xiphinema</i> sp.	Many host plants	Ibrahim et al., 2000; Ibrahim et al., 2010
<i>Xiphinema americanum</i>	<i>Citrus spp.</i> , <i>Citrus aurantium</i> , <i>Gossypium barbadense</i> , <i>Mangifera indica</i> , <i>Prunus amygdalus</i> , <i>Vitis vinifera</i>	Ibrahim et al., 2010, Oteifa et al., 1997; Tarjan, 1964
<i>Xiphinema arenarium</i>	<i>Citrus aurantium</i> , <i>Ficus carica</i>	Ibrahim et al., 2010; Oteifa et al., 1997
<i>Xiphinema basilgoodeyi</i>	<i>Acalypha wilkesiana</i> , <i>Rosytionia regia</i>	Ibrahim et al., 2000; Ibrahim et al., 2010
<i>Xiphinema elongatum</i>	<i>Allium cepa</i> , <i>Citrus aurantium</i> , <i>Olea europaea</i>	Ibrahim et al., 2010; Oteifa et al., 1997
<i>Xiphinema diversicaudatum</i>	<i>Fragaria spp.</i>	Ibrahim et al., 2010.
<i>Xiphinema ensiculiferum</i>	<i>Phoenix dactylifera</i>	Ibrahim et al., 2000; Ibrahim et al., 2010
<i>Xiphinema hygrophilum</i>	<i>Mangifera indica</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema imitator</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Ibrahim et al., 2010; Oteifa et al., 1997
<i>Xiphinema incognitum</i>	<i>Ficus carica</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema index</i>	<i>Vitis vinifera</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema insigne</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema ismailiensis</i>	<i>Medicago sativa</i>	Ibrahim et al., 2010; Oteifa et al., 1997
<i>Xiphinema italiae</i>	<i>Vitis vinifera</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema lamberti</i>	<i>Citrus aurantium</i> , <i>Musa sapientum</i> , <i>Vitis vinifera</i>	Ibrahim et al. 2010; Oteifa et al., 1997
<i>Xiphinema santos</i>	<i>Vitis vinifera</i>	Ibrahim et al., 2010; Lamberti et al., 1996
<i>Xiphinema simillimum</i>	<i>Ficus carica</i>	Ibrahim et al., 2010; Lamberti et al., 1996; Oteifa et al., 1997
<i>Xiphinema rivesi</i>	<i>Citrus aurantium</i>	Handoo et al., 2015
<i>Zygotylenhus guevarai</i>	<i>Zea mays</i>	El-Hamawi and Ali, 1992; Ibrahim et al., 2010; Oteifa et al., 1997

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