From	Key To Plant Parasitic Nematodes, Miai, Mullin (1975)	To
Start	Specimen	1
1	Stylet absent	Not a plant parasite
1	Stylet present	2
2	Two-part esophagus, no valvulated apparatus, anterior part slender, posterior part glandular and muscular; stylet usually without basal swellings [Order Dorylaimida]	3
2	Three-part esophagus usually with a valvulated metacorpus (median bulb) followed by a slender isthmus and basal glandular bulb; stylet usually with basal knobs (Orders Aphelenchida and Tylenchida	6
3	Stylet short, curved; body short and thick (0.45-1.5 mm long)	Paratrichodorus
3	Stylet long, straight, tapering to a long slender point with long extensions; body long and slender	4
3	Stylet straight, usually not very long (includes numerous genera of uncertain feeding habits; group contains no known plant pathogens)	A large number of genera [Order Dorylaimida]
4	Stylet extensions with sclerotized basal flanges; guiding ring near the base of stylet just anterior to junction of stylet and stylet extensions	Xiphinema
4	Stylet extensions without basal flanges; guiding ring near the apex of the stylet	5
5	Amphid openings are minute, slit like; amphids consisting of large pouches that almost encircle the head	Longidorus
5	Amphid openings wide, sublabial, extending at least halfway across the neck at that point; amphid pouches funnel- to stirrup-shaped	Paralongidorus
6	Dorsal esophageal gland outlet in metacorpus, anterior to the valve, or in that position when median bulb absent (usually difficult to see); metacorpus very large; often appears nearly as wide as the diameter of the body (Order Aphelenchida]	7
6	Dorsal esophageal gland outlet in procorpus (usually can be seen more readily in recently prepared water mounts than in glycerine mounts); metacorpus moderate to reduced in size (less than three-fourths body width) [Order Tylenchidaj	9
7	Vulva] flap absent; vagina normal; a (body length/ greatest body width) less than 80	8
7	Vulva with wide overlapping flap; vagina curved; a round 100	Bursaphelenchus

7	Vulva with overlapping flap; male with large spicules, arcuate, paired, with sharply pointed rostrum and disc-like expansions; a round 40	Bursaphelenchus
8	The tail of female blunt; lateral field with 6-14 incisures; male with bursa and gubernaculum	Aphelenchus
8	The tail of a female is usually conoid, often with one or more sharp points at the terminus (mucronate); lateral field with two to four incisures; male without bursa or gubernaculum	Aphelenchoides
9	Head with setae; no plant parasites	Eutylenchus
9	Head with setae; no plant parasites	Atylenchus
9	Head without setae; numerous plant parasites	10
10	Metacorpus absent or reduced; if reduced, no sclerotized valve	Nothanguina Nothotylenchus
10	Metacorpus with sclerotized valves present (usually can be seen more readily in recently prepared water mounts than in glycerine mounts)	11
11	Mature females greatly enlarged (pear-shaped, lemon-shaped, kidney-shaped, or saccate); found in roots of plants either embedded or attached by the neck; some occur as cysts in soil	12
11	Mature females vermiform; may be slender to slightly swollen	23
12	Mature females are soft, elongate-saccate, or kidney-shaped with a tail (except for Sphaeronema, which is spherical without a tail)	13
12	Mature females becoming cysts or remaining soft-bodied; pyriform-saccate, spheroid, or lemon-shaped, usually without a tail	18
13	Mature female with two ovaries	Rotylenchulus
13	Mature female with one ovary	14
14	Excretory pore located in normal position, near nerve ring	15
14	Excretory pore located posterior to nerve ring	16
15	Mature female subspherical; cuticle marked with a coarse reticulate pattern; may have a prominently protruding vulva, subterminal in	Sphaeronema
15	Mature female spiral, thickened; without protruding vulva	Trophonema
16	Circumoral elevation present in females and juveniles	Trophotylenchulus
16	Circumoral elevation absent	17
17	Excretory pore near vulva	Tylenchulus
17	Excretory pore located near the basal region of the esophagus	Nacobbus

18	Females with irregular body annules around the perineum (perineal pattern); excretory pore at level with a stylet or close behind it; lip region with two lateral lips wider than four sublateral lips; second-stage juvenile stylet <20 um; weakly developed labial framework; usually induces marked galling of host roots	Meloidogyne
18	Females without irregular body annules around perineum; excretory pore posterior to the median bulb; lip region with two lateral lips narrower than four sublateral lips; second-stage juvenile stylet usually >20um; well-developed labial framework; usually no galling of host	19
19	Vulva subequatorial; cuticle annulated	Meloidodera
19	Vulva terminal or subterminal; cuticle annulated or lacelike	20
20	Cuticle annulated	Cryphodera
20	Cuticle with lacelike pattern	21
21	Cyst stage present; vulva terminal, anus dorsal, not on vulval lip; or vulva sunken into terminal vulva cone with anus on upper inside of dorsal vulval lip	22
21	No cyst stage; vulva and anus terminal on prominence	Atalodera
21	No cyst stage; vulva sunken into a terminal vulval cone; anus on upper inside of dorsal vulval lip; second stage juvenile stylet > 38 um	Sarisodera
22	Cysts are generally lemon-shaped, rarely spherical and then with button like protrusions; vulva on a terminal cone, with fenestration (circumfenestrate, bifenestrate, or ambifenestrate); bullae present or absent; stylet <30 μm	Heterodera
22	Cyst spherical or subspherical; bullae absent; second-stage juveniles with four incisures in the lateral field	Globodera
23	Tail equal to or longer than six times the anal body diameter (tail filiform, with pointed or clavate terminus)	24
23	The tail is generally less than six times the anal body diameter; however, if t longer, the tail is cylindroid rather than filiform	28
24	Female with two ovaries	25
24	Female with one ovary	26
25	Stylet without basal knobs, no cephalic sclerotization; tail filiform, usually with a clavate terminus	Psilenchus
25	Stylet with basal knobs; heavy cephalic sclerotization; tail filiform, with a pointed terminus	Brachydorus
26	Esophagus criconematoid; thick cuticle, coarsely annulated	Caloosia
26	Esophagus tylenchoid; thin cuticle, not coarsely annulated	27
27	Stylet long; s (stylet length / body diameter measured at base of stylet) 2.5 or more	Tylodorus
27	Stylet short (s <2.5) (and other members of the subfamily Tylenchinae)	Tylenchus
28	One ovary (vulva usually located in the posterior third of the body)	29

28	One ovary (vulva located near the center of the body); lip region conical, not annulated; female tail tip rounded, the cuticle of tail	Trophurus
28	Two ovaries (vulva located near the center of the body)	44
29	Procorpus and metacorpus not swollen and combined into a sizeable valvular bulb	30
29	Procorpus and metacorpus swo11en and combined into a large valvular bulb [Suborder Criconematina]	37
30	Stylet delicate (<= 15 μm long); tail acute or subacute	31
30	Stylet strong (generally > 15 Î¼.m long); tail tapering or bluntly	33
31	Ovary with oocytes in one or two lines, not arranged around a rachis; mature female. Slender or stout	32
31	Ovary with multiple rows of oocytes arranged around a rachis; mature female usually obese; found in galls in leaves or flower parts	Anguina
32	Ovary with one or more flexures; moderately stout forms; found in root galls of Gramineae	Subanguina
32	Ovary outstretched; slender forms; found in bulbs, stems, leaves, and tubers	Ditylenchus
33	s >= 1.5; tail generally 1.5 times anal body diameter or shorter	Rotylenchoides
33	s < 1.5; tail generally longer than 1.5 times anal body diameter	34
34	The esophagus overlaps the intestine ventrally	Pratylenchus
34	The esophagus overlaps the intestine dorsally	35
35	Lip region low, generally rounded; stylet knobs flatten~ anteriorly; marked sexual dimorphism	Radopholoides
35	Lip region high, conoid; stylet knobs sloping anteriorly or indented; males present or absent	36
36	Female body swollen; posterior part of stylet knobs sloping anteriorly; marked sexual dimorphism	Acontylus
36	Female body slender; each stylet knob tapering anteriorly to a dentate tip; males unknown	Hoplotylus
37	Mature female without extra cuticle or sheath	38
37	Mature female with extra cuticle or sheath	40
38	Cuticle with prominent retrorse annules	39
38	Cuticle without prominent retrorse annules	41
39	Annules of a female with spines, scales, plates, or stalked appendages on posterior margins	Criconema
39	Annules of a female with smooth or crenate posterior margins	Criconemella
40	Stylet knobs rounded, sloping anteriorly; cuticle usually with more than 200 annules	Hemicycliophora
40	Stylet knobs anchor-shaped with posterior projection; cuticle usually with less than 200 annules	Hemicriconemoides

41	Annules of females without membranous structures on posterior	42
41	Annules of females with membranous structures on posterior margins	Bakernema
42	The cuticle of a female ornamented with minute tubercles	Cacopaurus
42	The cuticle of a female not ornamented with minute tubercles	43
43	Female stylet <= 36 um	Paratylenchus
43	Female stylet 45-120 um	Paratylenchus
44	s >= 2.5	45
44	s generally <2.5	49
45	Esophageal glands not enclosed within a bulb, usually unequal in length, overlapping intestine	46
45	Esophageal glands enclosed within a bulb, usually not overlapping intestine	47
46	Average body length is usually >= 1.75 mm	Belonolaimus
46	Average body length is usually <1.75 mm	48
47	Lip region continuous	Macrotrophurus
47	The Lip region set off by distinct constriction	Dolichodorus
48	Lateral field with four incisures	Morulaimus
48	Lateral field with two incisures	Carphodorus
49	Phasmids absent	Aphasmatylenchus
49	Phasmids present	50
50	Tail generally less than 1.5 times anal body diameter	61
50	Tail l.5 or more times anal body diameter	51
51	Esophageal glands are usually unequal in length, overlapping the intestine dorsally or lateroventrally	52
51	Esophageal glands are usually enclosed within a bulb; if not enclosed, then of about equal length, and therefore considered as not overlapping the intestine [Certain conditions may cause either the dorsal or sub ventral glands to lengthen, thereby giving the impression of overlapping. Several specimens should be observed concerning this character. Some confusion may arise even with careful observation of the esophagus because the extent of the variation of this and other morphological characters has not been properly studied in many of the nematode genera described.]	59

52	No cephalic framework or framework only moderately developed; female head not low or flattened	53
52	Well-developed cephalic framework; female head low, rounded or flattened	56
53	Well-developed stylet; lateral field with four incisures	54
53	Slender stylet with diverging basal knobs; lateral field with three incisures	Trichotylenchus
54	Female tail cylindroid with a round terminus	55
54	Female tail elongate-conoid with a blunt terminus	Telotylenchus
55	The anterior portion of the stylet is asymmetrical; the tail relatively short, with a broadly rounded terminus	Histotylenchus
55	The anterior portion of the stylet is symmetrical; the female tail with broadly rounded to a bulbous terminus, with a strongly thickened	Telotylenchoides
56	Esophagus overlapping intestine dorsally	57
56	Esophagus overlapping intestine ventrally	58
57	Short overlap; no marked sexual dimorphism	Pratylenchoides
57	Long overlap; marked sexual dimorphism	Radopholus
58	Tail tip mucronate	Hirschmanniella
58	Tail tip, not mucronate	Zygotylenchus
59	Lateral field with four lines; female tail not acute	60
59	Lateral field with six lines; female tail acute or subacute	Merlinius
60	Female tail conoid, with terminus usually bluntly rounded	Tylenchorhynchus
60	Female tail cylindroid, with the terminus, broadly rounded, and strongly thickened cuticle [Paratrophurus lobatus Loof, 1970 has overlapping glands, and for this reason, it was placed in Telotylenchoides by Siddiqi (1971). A more accurate decision about the correct placement of this species in either of these two genera can be made when the extent of the variation of the esophageal glands is adequately studied and its validity as a taxonomic character, in this	Paratrophurus
61	Phasmids are small, pore-like	62
61	Phasmids enlarged	63
62	Esophagus overlapping intestine typically dorsally and laterally; lip region with or without annulation or striation; dorsal esophageal gland opening usually less than one-fourth of the stylet length behind stylet	Rotylenchus
62	Esophagus overlapping intestine typically ventrally; lip region without longitudinal striation; dorsal esophageal gland usually opening one-fourth or more of the stylet length behind stylet knobs	Helicotylenchus

63	Both phasmids are located posterior to the vulva	64
63	One phasmid located anterior to vulva and one posterior to vulva	65
64	Phasmids opposite or nearly opposite each other in the region of the anus; lip region with transverse striae	Scutellonema
64	Phasmids not opposite each other, anterior to anus; lip region without striae	Peltamigratus
65	Spear knobs with distinct anterior projections; with four or fewer incisures areolated throughout the length of the lateral field	Hoplolaimus
65	Spear knobs rounded or without distinct anterior projections; with four incisures areolated at phasmids and anteriorly	Aorolaimus