

INTRODUCTION

The nematodes are a primitive groups of invertebrate animals, placed at very low level of taxonomic hierarchy in the animal kingdom. They are evolutionarily a very successful group of organism, ubiquitous in all habitats that provide available organic carbon sources. They are the planets most abundant metazoa. Though only about 20,000 species of this group are known, this fact is not indicative of the numbers that actually exists. Most conservative estimate put the number of nematode species to around 500,000.

In soil, the nematodes dominate in number as well as species over all other soil inhabiting animals collectively. Several group of nematodes inhabit soil. Wasilewska (1971) classified them into five trophic groups viz., bacteriovores, fungivores, plant parasites, predators and omnivores; while Yeates *et al.* (1993) grouped these nematodes under eight categories depending on feeding types viz., plant feeding, bacterial feeding, substrate ingestion, animal predation, unicellular eucaryote feeding, dispersal or infective stage of animal parasite and omnivorous.

The nematodes of the superfamily Dorylaimoidea, order Dorylaimida, constitute an important group of soil inhabiting nematodes occurring in all kind of soil in a wide range of habitat. These nematodes possess a highly diversified type of feeding apparatus which is indicative of their varied feeding habits and occurrence in diverse habitats. They are either predatory or omnivorous, few being suspected plant parasites. The predatory forms have received attention quite recently after their role as potential bio-control agent was understood. Recent studies have also shown the importance of dorylaim nematodes as bio-indicator of soil ecosystem.

The oldest description of dorylaim nematode dates back to the year 1845, when Dujardin described a species and named it *Dorylaimus stagnalis*. De Man (1876) proposed the family Dorylaimidae for the genus *Dorylaimus*. Orley (1880), De Man (1880), Cobb (1913, 20) added several genera to this family. Filipjev (1918, 28, 34) classified these genera under four sub-families, viz., Alaiminae, Ironinae, Dorylaiminae and Tylencholaiminae. Thorne (1934) raised Dorylaimidae to the rank of a superfamily Dorylaimoidea with families Dorylaimidae and Alaimidae. Under Dorylaimidae he proposed the subfamilies Nygolaiminae and Longidorinae. In 1935, Thorne added the families Leptonchidae and Diptherophoridae to Dorylaimoidea.

In the classical monographs by Thorne & Swanger (1936) and Thorne (1939), the dorylaims were grouped under five families viz., Dorylaimidae, Leptonchidae, Diptherophoridae, Alaimidae and a new family Belondiridae. Pearse (1942) gave full ordinal rank to Dorylaimoidea. Andrassy (1959, '60) split the genus *Dorylaimus* into nine genera. Clark (1961) while classifying Enoplida proposed a new suborder Alaimina; raised Diptherophoridae to the rank of a superfamily and added several families and subfamilies under Dorylaimoidea. Goodey (1963) revised the classification of the order Dorylaimida and included two suborders, Dorylaimina and Alaimina under it. He considered only two superfamilies, Dorylaimoidea and Mononchoidea under Dorylaimina. Jairajpuri (1964) revised the classification of Dorylaimoidea and included nine families under it, viz., Dorylaimidae, Logidoridae, Actinolaimidae, Leptonchidae, Nygolaimidae, Nygellidae, Belondiridae, Compydoridae and Aulolaimoididae. Thorne (1964), De Coninck (1965) and Thorne (1967)

raised the families Belonchilidae, Nygolaimidae and Actinolaimidae respectively to superfamilial ranks. Heyns (1965) proposed the family Aporcelaimidae under Dorylaimoidea and placed the genera *Aporcelaimus*, *Aporcelaimellus*, *Makatinus*, *Aporcelaimoides*, *Scapidens* and *Sectonema* under it. Yeates (1967) described several new genera and species of Dorylaimoidea from New Zealand. Siddiqi (1969) revised the classification of superfamily Dorylaimoidea and included 17 families, viz., Dorylaimidae, Chrysonematidae, Miranematidae, Nordiidae, Tylencholaimidae, Longidoridae, Thorniidae, Dorylaimoididae, Leptonchidae, Tylencholaimellidae, Aulolaimoididae, Belonenchidae, Aporcelaimidae, Discolaimidae, Crateronematidae, Thornenematidae and Qudsianematidae and also proposed several new subfamilies and genera. Andr assy (1969) established the family Prodorylaimidae under Dorylaimoidea and also proposed five new genera viz., *Ischiodorylaimus*, *Idiodorylaimus*, *Prodorylaimium*, *Calodorylaimus* and *Paradorylaimus*. Thorne (1974) in a monograph dealing with the nematodes of Northern Great plains described large number of species and genera of Dorylaimoidea. He included five families under Dorylaimoidea, viz., Dorylaimidae, Aporcelaimidae, Nygolaimidae, Tylencholaimidae and Longidoridae. Khan & Ahmad (1975) raised the family Longidoridae to superfamilial rank. Jairajpuri *et al.* (1976) proposed Campydoroidea for *Campydora* Cobb, 1920. Andr assy (1976) considered ten families, viz., Dorylaimidae, Prodorylaimidae, Thornenematidae, Qudsianematidae, Nordiidae, Aporcelaimidae, Crateronematidae, Thorniidae, Longidoridae and Dorylaimoididae under Dorylaimoidea. Mulvey & Anderson (1979) proposed the family Arctidorylaimidae for the genus

Arctidorylaimus. Darekar & Khan (1979) established Kochinematidae for *Kochinema* and *Indokochinema*. Baqri & Jana (1980) revised the family Thornenematidae and proposed the subfamily Medalinematinae under it. Ahmad & Jairajpuri (1982) proposed the genus *Opisthodorylaimus*. Jairajpuri & Ahmad (1983) proposed an interesting genus *Aporcedorus* with features of the family Aporcelaimidae and Dorylaimidae. Siddiqi (1982, '82 a) established the genera *Fuscheila*, *Moshajia* and *Sicorinema* and in 1983 erected the genera *Pachydorylaimus* and *Tylenchodorus*. Carbonell & Coomans (1985-87) in an excellent series of papers revised the family Thornenematidae and finally accepted only a subfamilial status for the group. Andr assy (1986, '86 a) revised the genera *Mesodorylaimus* Andr assy, 1959 and *Eudorylaimus* Andrassy, 1959; proposed the genera *Miodorylaimus* and *Calcaridorylaimus* close to *Mesodorylaimus* and the genera *Epidorylaimus*, *Microdorylaimus* and *Allodorylaimus* close to *Eudorylaimus*. Ahmad & Jairajpuri (1986) described the genus *Sivallis* and in 1989, '89a described the genera *Coomansinema* and *Baqriella*. Loof & Coomans (1986) synonymized the genus *Paradorylaimus* Andrassy, 1969 with *Laimydorus*. Andr assy (1987) revised the families Thorniidae and Thornenematidae and accepted two subfamilies each under both these families. The subfamily Thorniinae De Coninck, 1965 and a new subfamily Thorneellinae under Thorniidae and the subfamily Thornenematinae Siddiqi, 1969 and a new subfamily Willinematinae under Thornenematidae. Andr assy (1988) in his review of the family Dorylaimidae recognized five subfamilies viz., Amphidorylaiminae Andr assy, 1976; Prodorylaiminae Andr assy, 1969; Dorylaiminae De Man, 1876; Laimydorinae Andr assy, 1969 and Afrodorylaiminae

Andrássy, 1969 under Dorylaimidae. He (l.c) also proposed four new genera viz; *Apodorylaimus* (Amphidorylaiminae), *Protodorylaimus* (Prodorylaiminae), *Crocodylaimus* and *Halodorylaimus* (Laimydorinae) and described several new species. Andrássy (1990-91) revised the family Qudsianematidae and recognized four subfamilies viz; Chrysonematinae Siddiqi, 1969; Discolaiminae Siddiqi, 1969; Carcharolaiminae Thorne, 1967 and Qudsianematinae Jairajpuri, 1965. Jairajpuri & Ahmad (1992) in their monumental book on Dorylaimida accepted only four families viz., Dorylaimidae, Aporcelaimidae, Qudsianematidae and Nordiidae under Dorylaimoidea. The family Dorylaimidae was divided into the subfamilies, Dorylaiminae, Laimydorinae, Thornenematinae and Arctidorylaiminae; the family Aporcelaimidae into Aporcelaiminae, Sectonematinae and Paraxonchinae; the family Qudsianematidae into Qudsianematinae, Thorniinae, Discolaiminae, Lordellonematinae, Crateronematinae and Halqinae and the family Nordiidae included the subfamilies Nordiinae, Cephalodorylaiminae, Pungentiane, Helmabinae and a new subfamily Actinolaimoidinae. Siddiqi (1995) described several genera and species from tropical rain forests. Loof (1996) provided dichotomous and polychotomous keys for the identification of genera *Prodorylaimus* and *Laimydorus* and considered the genera *Paradorylaimus*, *Calodorylaimus* and *Chrysodorus* as synonyms of *Laimydorus* while the genera *Prodorylaimium* and *Apodorylaimus* were considered as synonyms of *Prodorylaimus*. Andrássy (1998, '98 a) described the genera *Kittydorylaimus* and *Kolodorylaimus* from Africa and *Boreolaimus* from European Arctic. Recently, Ahmad and Sturhan

(2000, '00a) described two interesting new genera under Qudsianematidae viz., *Spheroamphis* and *Cricodorylaimus*.

During course of present study large number of soil samples were collected from various parts of India. Major emphasis has been on south India with special reference of Western Ghats. Some permanent slides were also received from German Nematode Collection (courtesy: Dr. Dieter Sturhan, Institut für Nematologie, Munster) and Chinese Nematode collection (courtesy: Dr. Jihua Wu, Institute of Biodiversity, Fudan University, China). In all, 44 species of the superfamily Dorylaimoidea have been described which include 16 new and 28 known species. These are grouped under 4 families, 8 subfamilies and 18 genera. Diagnosis of all the familial groups and genera of which species have been included is provided. Identification keys to the familial groups and genera have also been added. The genus *Mesodorylaimus* constituted the most commonly distributed group among Dorylaimoidea representing five new and four known species, followed by *Laimydorus* with four known and three new species and *Thornenema* with three known and a new species. A new species each belonging to the genera *Indodorylaimus*, *Sicaguttur*, *Makatinus*, *Labronema* and *Oriverutus* is described. A new species each from Nicaragua and China representing the genus *Prodorylaimus* is also described. Redescription of large number of species are provided based on material collected from different localities in India. SEM observations are made on *Thornenema mauritianum*, *Aporcelaimellus baqrii*, *Discolaimus tenax* and *Laimydorus multialaeus*. A single male specimen of *Aporcelaimellus indicus* is being reported for the first time. *Laimydorus conurus*, *Thornenema elegans* and *Moshajia*

cultristyla and *Discolaimus silvivolus* are reported for the first time from India and *Afrodorylaimus beaumonti* is being reported for the first time from China.