The present thesis incorporates results obtained by the present author on his research on the taxonomy of plant and soil nematodes since January, 1966. Though it is based mainly on the materials collected in India, studies on nematodes from other countries have also been included, especially from the Republic of Zaire. The contents of the thesis fall under three Orders: Tylenchida, Dorylaimida and Mononchida. However, a few species of other Orders have also been described. During the course of study, over one hundred new taxa have been described and 29 new combinations of species proposed. The descriptions of new taxa also include proposals of five new genera and two new subfamilies. The relationships of many closely related genera have been discussed and their diagnoses emended. Wherever necessary, identification keys to species have been provided. Allometric and morphometric variations of some commonly found species of economic importance have also been discussed. The study of variability of a number of species has led to the synonymy of many species.

The Order Tylenchida is represented in the thesis by 69 species belonging to 27 genera and 12 families, of which 12 species are described as new. A new genus Indoctylenechus has been proposed. Keys to genera of Tylenchorhynchaus Cobb, 1913 and Hoplolaimus Delaey, 1905 have been prepared. Intraspecific variations have been studied in the following species: Tylenchorhynchaus mashhoodi Siddiqi & Basir, 1959; Tylenchorhynchaus coffarti

A large number of species belonging to 16 families and 59 genera of Dorylaimida have been reported in the present thesis. Out of 201 species, 76 are described as new. In addition, the following four new genera and two new subfamilies have been proposed: *Willinema* Baqri & Jairajpuri, 1967; *Moresia* Baqri & Jairajpuri, 1969; *Jairajuria* Baqri & Jana, 1980; and *Medalinema* Baqri & Jana, 1980; *Neactonolaiminae Baqri, Coomans and van der Heiden, 1975; and *Medalinematinae Baqri & Jana, 1980*. The identification of dorylaim species described by Shuurmans Stekhoven & Teunissen (1938), Shuurmans Stekhoven (1944) and Khera (1970) have been revised and as a result many new combinations have been proposed. The males of the following four known species have been described for the first time: *Thornenema balium* (Thorne, 1939) Andrássy, 1959; *Laimydorus finalis* Thorne, 1975; *Dorylaimoides arcuatus* Siddiqi, 1964; and *Paralencidorus citri* (Siddiqi, 1959) Siddiqi, Hooper & Khan, 1963. Keys to the species of the following genera have been provided: *Pungentus* Thorne & Swanger, 1936; *Thornenema* Andrássy, 1959; *Discolaimium* Thorne, 1939; *Aporcalaimellus* Heyns, 1965; *Dorylaimoides* Thorne & Swanger, 1936; *Enchodelus* Thorne, 1939; and *Laimydorus* Siddiqi, 1969.
A paper discussing the various morphological characters of taxonomic importance was prepared so that it may serve as a guide line to those working on the taxonomy of dorylaims. During the revisionary study of the family Thorneematidae, the type species of the genus *Indoirylaimus* Ali & Prabha, 1974 was found misidentified. Hence, an application was sent to the Commission on the Zoological Nomenclature proposing a new name for the specimens described by Ali & Prabha. Despite objections raised by Siddiqi (1982), the majority opinion supported the present author.

The present thesis includes report on 22 species belonging to 11 genera and 6 families of the Order Mononchida. Four of these are new to science. The male of *Anatoniculus singlymodontus* Mulvey, 1961 has been recorded for the first time. A paper on the location of the oesophageal gland nuclei and their orifices in different species of Mononchida also was prepared and is added to this thesis.

The diagnosis of the genus *Tridontus* Khera, 1965 under the family Diplogastridae, Order Diplogastrida is amended and the genus *Syedella* Suryawanshi, 1971 is declared a synonym of the former. Two new species from the mangrove environment of the deltaic Sunderbans, West Bengal, India are described under the families Anaplostomatidae and Oxytomineidae.

The object of these surveys was to identify the nematodes and also to find out the key and potential pests of the crops
in West Bengal. The results of the qualitative and quantitative studies on the plant parasitic nematodes from different districts of West Bengal, India have revealed that *Hirschmanniella gracilis* (de Man, 1880) Luc & Goodey, 1963; *Meloidogyne graminicola* Golden & Birchfield, 1965; *Halicotylanchus* spp. and *Tylenchorhynchus* spp. are important pests of paddy in this region. After random survey conducted in three districts of Sikkim for the nematodes associated with citrus, it has been found that *Scutallonema brachyurus* (Steiner, 1938) Andrassy, 1958 is a key pest on this plant.

Since *Hirschmanniella gracilis* is reported as a key pest of paddy in West Bengal, the following three field experiments were conducted on this species: seasonal variations in the population, estimation of crop losses, and effect of different sources of nitrogen. The results obtained are appended as supplement to the present thesis.