

**BHARATHIAR UNIVERSITY : COIMBATORE**

**M.Phil. / Ph.D. Part I – Paper III : Advances in Nematology**

**Unit 1**

History and development of nematology in India and abroad – Position of nematode in animal kingdom – Importance of nematodes to plants and animals.

**Unit 2**

Structure of nematode cuticles, sense organs, digestive, reproductive and nervous system. General characters of class Secernentea. Tylenchoidea – General characters of Tylenchidae, Pratylenchidae, Hoplolaimidae, Heteroderidae, and Tylenchoidea with examples. Classification of plant parasitic nematodes based on feeding habits.

**Unit 3**

General characters of class Adenophorea. Nematodes of human and animals - Threadworms, Hookworms, Lungworms, Gape worms, Guinea worms, Eyeworms, Wuchereria, Heartworms, Ascaris and pinworms. Biology of Entomopathogenic nematodes.

**Unit 4**

Principle of nematode management – physical methods (soil solarisation, hot water treatment, seed cleaning), cultural methods (deep ploughing, fallowing, crop rotation), biological control (antagonistic crops), chemical control – soil fumigants and nematode management.

**Unit 5**

Major nematode parasites and their symptoms in Rice (*Aphelenchoides besseyi*, *Hirschmaniella oryzae*); Wheat (*Anguina tritici*, *Heterodera avenae*); Cotton (*Rotylenchulus reniformis*); Tomato (*Meloidogyne incognita* and *M. javanica*); potato (*Globodera rostochiensis*, *Globodera pallida*); Banana (*Pratylenchus coffeae*, *Radopholus similis*). Nematode sample collection – nematode extraction (Cobb's technique, centrifugal floatation, Cyst extraction).

**References**

1. Maggenti, A. 1981: General Nematology. Springer-Verlag, New York Heidelberg Berlin.
2. Swarup, G and Dasgupta. 1986: Plant Parasitic Nematodes of India, Problems and progress. Indian Agricultural Research Institute, New Delhi-110012.
3. Khan, M.R. 2008: Plant Nematode Methodology, Morphology, Systematics, Biology and Ecology. Science Publisher, Edenbridge Ltd.