



Introductory Plant Nematology

P. Parvatha Reddy



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P. PARVATHA REDDY

Former Director,
Indian Institute of Horticultural Research, Bengaluru, India



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Dedicated to all of my teachers, who took time to instill the knowledge of Nematology in me.

Dr. V.G. Perry, Univ. of Florida, Gainesville, USA

Dr. D.J. Raski, Univ. of California, Davis, USA

Dr. M. Oostenbrink, Intn. Agri. Centre, Wageningen, Netherlands

Dr. Abrar M. Khan, Aligarh Muslim Univ., Aligarh, India

Dr. A.R. Seshadri, Indian Agri. Res. Inst., Delhi, India

Dr. R. Mankau, Univ. of California, Davis, USA

Dr. G.C. Smart, Univ. of Florida, Gainesville, USA

Dr. M.S. Jairajpuri, Aligarh Muslim Univ., Aligarh, India

Dr. S.K. Saxena, Aligarh Muslim Univ., Aligarh, India

Dr. S.K. Prasad, Indian Agri. Res. Inst., Delhi, India

Mr. Van Berkum, Intn. Agri. Centre, Wageningen, Netherlands

PREFACE

Several species of nematodes are now recognized in India as parasites of agricultural crops which cause considerable damage. Some of these have been placed in quarantine (for example, potato cyst nematodes (*Globodera rostochiensis*, *G. pallida*) to prevent the free exchange of plant material from other countries. The farmers spend large sums of money on control measures against such pests as the root-knot (*Meloidogyne* sp.), cyst (*Heterodera* and *Globodera* sp.), burrowing (*Radopholus similis*), reniform (*Rotylenchulus reniformis*), lesion (*Pratylenchus* sp.), citrus (*Tylenchulus semipenetrans*), and other nematodes. Besides causing direct damage, the nematodes are involved in causing complex plant diseases in association with fungi, bacteria and viruses.

There has been a long felt need in India by the students and teachers for a comprehensive book on plant nematology. This book has been designed as a text and guide for students, teachers, researchers and extension workers in plant nematology and related fields.

This book, entitled "**Introductory Plant Nematology**" gives a comprehensive account of all aspects of plant nematology and should be of profound help to the students, teachers, researchers and extension workers alike. The syllabus of ARS Net – Nematology has also been fully covered in this book. Hence, persons appearing for ARS Net – Nematology can also refer to this book.

The book is divided into eight sections. The first section describes the importance of nematodes in agriculture, presents a historical review, records the contributions of great authorities, nematode as biological models, entomopathogenic nematodes, training of Nematologists, and lists the professional societies and their publications.

Information on the nematological techniques like microscopy, sampling nematode populations, extraction of eggs and nematodes from soil, plant material, culturing of nematodes, handling nematodes, staining, and microtome sectioning are outlined in section two.

The morphology of nematodes is described and presented in clear schematic drawings in section three. The taxonomic classification along with keys for identification of nematodes up to generic level is also provided. In addition,

monographic references have been included for the identification of species belonging to different genera.

In section four, the biology, physiology and ecology of nematodes are described and the influence of various factors on population dynamics are explored.

The mechanism of action of parasitic nematodes on plants is analyzed in section five of the book from the view point of the mutual physiological reaction of both organisms, i.e. host and parasite. The symptoms of aerial and under-ground infestation by different nematodes are described and depicted in many photographs.

In section six, the interrelationships between nematodes and fungi, bacteria and viruses are discussed.

Management of nematode diseases by host resistance and by suppression of nematode population through regulatory, physical, cultural, chemical, biological, and integrated methods have been presented in section seven.

The last section of the book discusses the most important nematode induced diseases of horticultural, plantation and spices, commercial and field crops and their management.

Quotable quotes, list of common names of nematodes together with the glossary of nematological terms is presented in Annexures. A comprehensive bibliography provides convenient entry to both current and older literature.

I earnestly hope that this book will provide students, researchers and extension workers with an overview of the entire field of plant nematology. I thank Mr. Tanay Sharma of Scientific Publishers, for extending his valuable help in processing the manuscript and getting the book published.

P. Parvatha Reddy

Bengaluru

January 25, 2018

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