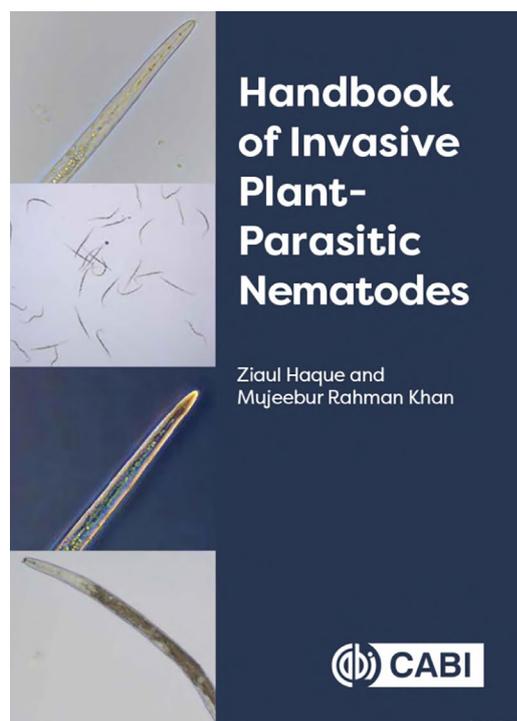


## Book review



**Ziaul Haque and Mujeebur Rahman Khan. 2021. *Handbook of Invasive Plant-parasitic Nematodes*. CABI, Wallingford, UK, ePDF 9781789247374, ePub 9781789247381, November 2021, Hardback, 544 pp.**

Plant-parasitic nematodes are major crop pests and can cause huge yield losses. There is very high risk of nematode spread from one country to another, when moving plants and planting materials. Presently more than four thousand nematode species have been described, but considering the wide range of habitats and hosts, nematode diversity is likely to be frequently underestimated. As a result, nematodes remain largely unexplored as invasive species, despite their impact on ecosystems. The authors of this book note that substantial academic and research efforts are required for systematic documentation of invasive nematode species. This book is the first comprehensive compendium, which presents relevant information on suspected invasive plant-parasitic nematodes. For many plant-parasitic species, because of uncertainty about many of the

features related to invasiveness, it is difficult to assess properly or predict their invasiveness. Several criteria assessing for nematodes as invasive organisms are included and discussed: adaptability to soil edaphic factors, survival adaptation, host range, life cycle and fecundity, dispersal rate and persistence. The invasiveness rating or scores (low, medium, and high) are given for nematodes based on pest rating profiles. Final rating is given in points (5-8 – low invasive nematodes; 9-11 – medium invasive nematodes, 12-15 highly invasive nematodes). The authors examined over 120 plant-parasitic nematodes for their invasiveness. Information from the database of the **Invasive Species Compendium (CABI)**, CIH descriptions of plant-parasitic nematodes (CABI), EPPO publications on regulated quarantine pests and other sources were used for characterisation of plant-parasitic nematodes.

The book contains 16 chapters, the first 14 dealing with descriptions and characterisations of nematode species from several families: Anguinidae (7 species), Aphelenchidae (6), Belonolaimidae (1), Criconematidae (2), Hemicycliophoridae (1), Heteroderidae (16), Hoplolaimidae (11), Longidoridae (10), Meloidogynidae (20), Pratylenchidae (21), Rotylenchulidae (3), Telotylenchidae (1), Trichodoridae (3) and Tylenchulidae (1). Description of each species includes: Latin name, common name, synonyms, EPPO code, diagnosis, morphological description with morphometrics, biochemical and cytogenetic diagnosis, molecular diagnostics, geographical distribution, hosts, vectors, symptoms, biology and life cycle, interactions with other pathogens, economic importance, movements and means of dispersal, pest risk analysis, invasiveness rating, region-wise status of invasiveness and management measures, which is subdivided into prevention, chemical control, biological control and phytosanitary measures. Each description is illustrated by figures with nematodes and symptoms of infection.

Chapter 15 describes techniques and tools used for the study and identification of nematodes. It includes sampling methods, extraction of different nematode groups from soil and plant materials, fixing and mounting in temporary and permanent slides. The authors also describe principles of morphological examinations and biochemical and molecular diagnostics. Application of molecular techniques are discussed and explained. Protocols for different methods of DNA extraction with worm lysis buffer, phenol and chloroform extraction are also given. Principles of conventional and real-time PCR, RAPD-PCR and Sanger sequencing are briefly described

The last Chapter 16 provides a valuable and comprehensive introduction into principal documents on international regulations including the Sanitary and Phytosanitary measures agreements of World Trade Organisation, International Plant Protection Convention (IPPC) and International Standards of Phytosanitary measures (ISPMs). The ISPMs provides guidance to member countries in implementing national programs and fulfilling the requirements of the IPPC. References to forty-five ISPMs documents are also given. Details of ISPMs related to plant-parasitic nematodes, and how to determine their invasiveness are summarised in this chapter.

The book gives extensive information on invasive nematodes with a global perspective and could be recommended as a reference book for practitioners, professionals, scientists, researchers, students, and government officials working in plant quarantine and biosecurity.

**Sergei A. Subbotin.**