Xiphinema bacaniboia Orton Williams, 1984, a member of the *X. americanum*-group (Nematoda: Longidoridae)

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In the original description of *Xiphinema bacaniboia* Orton Williams, 1984 the author underlined the peculiar structure of the female genital branches: "ovaries ... heavily infected with bacteria...Remainder of genital tract appearing as a thin tube linking ovejector and point of flexure, with no obvious differentiation into uterus and oviduct". These observations were confirmed by examination of female paratypes that showed that the uterus was short. In fact, each uterus forms a poorly defined ovejector which is connected to the oviduct by a small sphincter (Fig. 1 B). The structure of the female genital tract - with ovary filled of bacteria, thin oviduct without offset *pars dilatata*, and short uterus - is identical to the structure of all the species placed in the *X. americanum*-group, and is different from all other *Xiphinema* species. Consequently, *X. bacaniboia* is placed in that group despite the unusual great body and stylet lengths compared to other species in the group. Note that the lip area is perfectly continuous with the body contour (Fig. 1 A) and not "slightly marked off from body by expansion" as stated in the original description. Tail is not perfectly hemispherical, and it is more curved dorsally than ventrally (Fig. 1 C). They are four juvenile stages and males are absent (Orton Williams, 1984).

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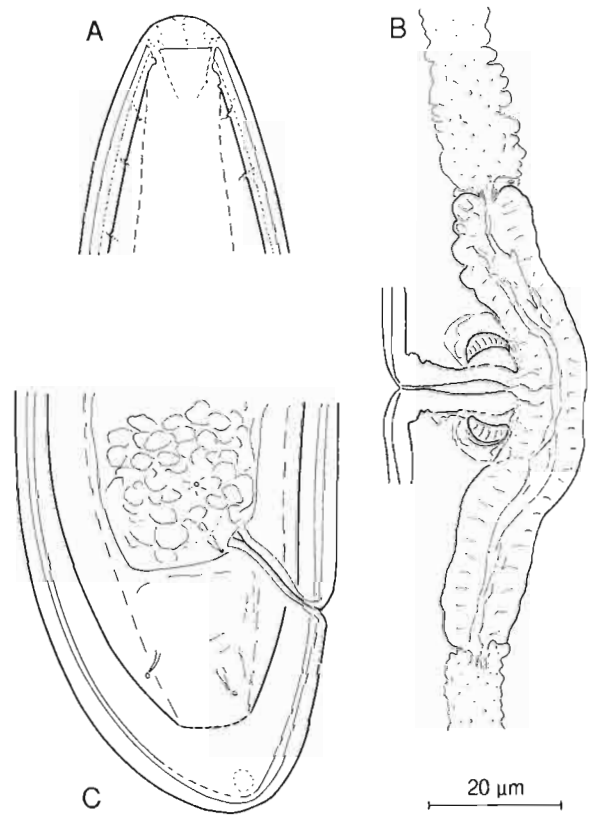

Fig. 1. Xiphinema bacaniboia *Orton Williams, 1984. Paratype female. A: Anterior end; B: Vulva-vagina area and ovejector-uteri; C: Tail.*

Reference

ORTON WILLIAMS, K.J. (1984). *Xiphinema bacaniboia* n. sp. (Nematoda: Dorylaimida) from Fiji. *Syst. Parasit.*, 6 : 207-211.

Book reviews

R. HALL (Ed.) – *Principles and practice of managing soilborne plant pathogens*. St Paul, MN, USA, APS Press, xii + 330 p. ISBN 0-89054-223-6. Price: 39 US dollars (USA), 49 US dollars (elsewhere).

Except for the last chapter, written by R. Hall as a conclusion to this book, the first thirteen chapters of the work are updated versions of communications made at the 6th International Congress of Plant Pathology of Montreal, in 1993.

The greater part of the book deals with bacteria and pathogenic and endomycorrhizic fungi, but there are also two chapters about nematodes.

Chapter 6, written by D.L. Trudgill, is entitled "A thermal time basis for understanding pest epidemiology and ecology." The author had published a previous article on this topic (*Fundam. appl. Nematol.*, 18(3): 407-417. 1995.) Definitions are given for the various values that need to be considered for explaining the population development dynamics in relation to thermal requirements of nematodes. Based on several examples, mostly in the *Globodera*, *Heterodera*, and *Meloidogyne* genera, the author suggests that the minimal temperature required for development (T_b) is inversely correlated to the value of the thermal constant (K), *i.e.*, the number of days/degrees required for optimal development. The author links the necessity and usefulness of a more detailed study of this aspect of nematode biology to its implications for the potential introduction of nematode pests, their reaction to climatic changes, and, on a more practical side, to control by early sowing and/or early cropping in temperate countries.

Chapter 7, written by B.R. Kerry and K. Evans, is entitled "New strategies for the management of plant parasitic nematodes." Contrary to the global point of view announced by its title, this chapter concerns mostly the potato cyst nematodes (PCN) in Great Britain, with some references to root knot nematodes. In an interesting historical review, it is explained how intensive use of the Maris Piper potato cultivar, which is partially resistant to *Globodera rostochiensis*, caused the spread of the other PCN species, *G. pallida*, to which this cultivar proved susceptible. This is a good illustration of the kind of problems facing biological control methods. The authors also reviewed advanced techniques (monoclonal antibodies, ELISA test, etc.) for the accurate differentiation of the two PCN species, which is essential for the study of the distribution of each species and the selection of appropriate resistant cultivars. The chapter also includes a review of transgenic plants and of current research for providing resistance against cyst and root knot nematodes via enzyme(s) that inhibit the formation of nurse cells. No definite results have yet been obtained. Also, such a method would control only the plant parasitic nematodes that form nurse cells, which excludes all of the ectoparasitic and migratory endoparasitic species. Bacteria and microfungi are promising control agents against several root knot and cyst nematodes. The difficulties in the use of such agents are emphasized. The bacterium *Pasteuria penetrans* is very efficient but *in vitro* culture is impossible and there are several strains of the bacterium that are active against a limited number of species, or even particular races of nematodes. Consequently, mass production of a strain of *P. penetrans* with a wide ranging activity is not possible at the moment. Fungi attacking *Globodera*/*Heterodera* cysts and root knot nematode females are efficient, but their permanent installation in the soil is difficult. Moreover, some fungi have some strains that are active against nematodes, some other strains being purely saprophytic.

This chapter is very interesting in that, contrary to many other publications, it does not try to hide the difficulties of biological control. This does not mean that biological control is unrealistic, but it will require a huge research effort. The author suggests guidelines for future research development.

He also insists on the need for a revival and development of taxonomic research in nematology. In the past, nematode control relied mostly on chemical nematicides – particularly fumigants– that killed any nematode present. The identification of the species responsible for a particular damage was not really needed. Now, the use of crop rotations including transgenic plants with resistance limited to some nematode species or even strains makes it essential to know what species are present in a particular field and what species or race/strain is responsible for damage to a particular crop. This is a preliminary requirement for successful and effective biological control of nematodes, and the same is true for some bacteria and fungi.

This chapter is a very objective update of current problems and hopes of biological control of plant parasitic nematodes, a major avenue of research for the future of nematology.

Apart from these two chapters, nematodes are occasionally mentioned in other parts of the book, particularly in the excellent update on solarization processes (Chapter 12, by J. Katan).

This book is a required reading for any nematologist involved in control research, and for those who are interested in more general aspects of the biology of plant parasitic nematodes.

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KLEYNHANS K. P. N., VAN DEN BERG E., SWART A., MARAIS M. & BUCKLEY N. H. *Plant nematodes in South-Africa*. VII + 165 p. (1996). ISBN 0-621-17327-4. Pretoria, South Africa, Plant Protection Research Institute . Handbook N° 8. Price: 20 US dollars (South Africa) and 50 US dollars (elsewhere).

This book is an updated version of Juan Heyns' *A guide to the plant and soil nematodes of South Africa*, first published in 1971. It brings together all known data on the records of plant parasitic nematodes, their hosts and their distribution areas. At the same time, it constitutes an excellent maunual for those South African nematologists and agronomists who are interested in the identification of nematoses of the main crops of this vast country, which is characterized by contrasting climates and crops.

The first part of the book (Chapters 1 to 5) gives simple, accurate and clear introduction to the anatomo-morphology of plant parasitic nematodes, bionomics, control, and techniques for sampling, extraction and mounting.

Chapter 5 (p. 16-108) deals with Tylenchida, for which the classification of Maggenti *et al.* (1988) is followed, with some exceptions. A diagnosis is given for each taxon, down to, and including the genus level. All families are considered, with the exception of Tylenchidae, of which the members are considered of minor economic importance. Each genus is illustrated with very good and precise drawings; numerous photographic plates – including SEM graphs of excellent quality – are also included. Lists of the species recorded in South Africa are given for each genus. For each species are given its world, distribution and main hosts (for the major parasites), South African distribution (by Provinces), and South African hosts. For the majority of the families, a key of the South African genera is proposed.

Chapters 6 (p. 109-130) deals with Trichodoridae and Longidoridae in the same manner as for Tylenchida.

A total of 50 genera is so treated.

The main part of the book is followed by a series of very useful data: map of South-Africa with Provinces, glossary (very complete and precise), list of main nematology books, references, list of South African crops and plants with associated nematode species, and index to families and genera of nematodes cited.

The only – minor – criticism concerns the plant list: plants are named by their common, and not Latin, names. In some cases, it is difficult for the non South African reader to know the identity of the "Bambara ground nut", or trees like "black wattle" and "bluegram"... and also the famous "rooibos".

Anyway, this book clearly and simply written, well printed, illustrated with numerous excellent plates, constitutes a very useful instrument for any southern African nematologist and a good example that should be followed in other parts of the world. The nematology team of the P.P.R.I. in Pretoria must be congratulated for having produced this high quality handbook.

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