



Morphological and molecular characterization of *Aphelenchoides fujianensis* n. sp. (Nematoda: Aphelenchoididae) from *Pinus massoniana* in China

KAN ZHUO^{1,5}, RUQIANG CUI^{1,2,5}, WEIMIN YE³, MEI LUO^{1,4}, HONGHONG WANG¹,
XUENAN HU² & JINLING LIAO^{1,6}

¹Laboratory of Plant Nematology, South China Agricultural University, Guangzhou 510642, China

²Guangdong Entry-Exit Inspection and Quarantine Bureau, Guangzhou, China

³Nematode Assay Section, Agronomic Division, North Carolina Department of Agriculture & Consumer Services, 4300 Reedy Creek Road, NC 27607, USA

⁴Zhongkai University of Agriculture and Engineering, Guangzhou, China

⁵These authors contributed equally to this work

⁶Corresponding author. E-mail: jlliao@scau.edu.cn

Abstract

Aphelenchoides fujianensis n. sp. is described and illustrated from a dead *Pinus massoniana* based on morphology and molecular analyses of the near-full-length small subunit rDNA gene and partial cytochrome oxidase subunit I of mitochondrial DNA. This new species belongs to the Group 3 of *Aphelenchoides* species *sensu* Shahina with star-shaped tail terminus and is characterised by a relatively long body (653–843 µm in the male and 803–941 µm in the female) and four lateral incisures in the lateral field. The male has relatively large spicules (24–30 µm). The female has elongate postvulval uterine sac (extending *ca* 32–44% of vulva-anus distance), usually with sperms. Both male and female have star-shaped mucro. It is distinguished from other species by postvulval uterine sac length, *a* and *c* ratios, and spicule size and shape. Molecular analysis reveals that this species has unique 18S and mt-DNA sequences, and is closest to *Aphelenchoides besseyi* in dendrograms inferred using both markers. The identification codes of OEPP/EPPO for *A. fujianensis* n. sp. are: A1-B2-C1-D1/3-E1-F1/2.

Key words: Aphelenchoididae, *Aphelenchoides fujianensis* n. sp., China, description, DNA sequencing, molecular phylogeny, morphology, SEM, taxonomy

Introduction

In China, *Bursaphelenchus xylophilus* (Steiner & Buhner, 1934) Nickle, 1970 was first found in 1983 from *Pinus thunbergii* Parl. in Nanjing (Cheng *et al.* 1983). Since then, numerous surveys for pinewood nematode in China have been conducted for the purpose of managing this introduced and devastating nematode. From these surveys, many wood-dwelling nematode species have been detected, especially aphelenchids. In addition to *Bursaphelenchus*, five other genera belonging to Aphelenchoididae have been reported from conifers in China, including: *Cryptaphelenchoides* (Yang 1985); *Aphelenchoides* (Zhou and Cheng 1993); *Ektaphelenchoides* (Fang and Yin 1996); *Ektaphelenchus* (Qin and Pan 2003) and *Seinura* (Huang and Ye 2006). Species in the genus *Aphelenchoides* currently reported from pine woods in China include *A. besseyi* Christie, 1942 from *P. massoniana* Lamb. and *P. taeda* L., *A. bicaudatus* (Imamura, 1931) Filipjev & Schuurmans Stekhoven, 1941 from *P. thunbergii* (Zhou and Cheng 1993); *A. composticola* Franklin, 1957 from *P. elliotii* Engelm, *A. dubitus* Ebsary, 1991, *A. fragariae* (Ritzema Bos, 1890) Christie, 1932 and *A. parasaprophilus* Sanwal, 1965 from *P. massoniana* (Fang and Yin 1999); *A. menthae* Lisetskaya, 1971 from *P. massoniana* and *A. macronucleatus* Baranovskaya, 1963 from *P. thunbergii* (Tang *et al.* 2008) and *A. resinosi* Kaisa, Harman & Harman, 1995 from *P. massoniana* (Wang *et al.* 2008).