The genus Xiphinema Cobb, 1913 (Nematoda: Longidoridae) in Western Malaysia

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A survey for Xiphinema species in Serdang, the Puchong area and the Cameron Highlands(Malaysia) yielded eleven species, of which one new, described hereunder as X.winotoi n.sp. It is close to X.radicicola,

Introduction

Plant parasitic nematode is one of the main pest of crop, which is increasing importance with crop diversification in Malaysian Agriculture. The damage caused by nematodes becomes more obvious with increasing expansion of land being utilized for commercial fruit crop production. Likewise, increasing number of rubber plantation being developed for golf courses have highlighted the damage caused by nematode on the closely managed and manicured turf grass on the green. However, plant parasitic nematode remained an obscure pests to many. Damages caused by nematode are often wrongly diagnosed and attributed to fungal pathogens, poor soil physical condition or nutrient deficiency. This project was undertaken to identify nematode species present in the vicinity of Serdang Agriculture complex (UPM, Department of Agriculture), Puchong (UPM forest reserved and MARDI station Cameron Highlands(representing highland crops). However, only a species is highlighted in this report.

Materials and Methods

Soil samples were collected around the root rhizosphere of fruit trees in Serdang Agriculture Complex and MARDI (Cameron Highlands), and tropical forest trees in Puchong. Samples were brought back to Plant Nematology Laboratory, for nematode extraction using the modified Baerman technique. Nematodes collected from the samples were separated under the dissecting microscope into the respective genus, fixed in formalin acetic acid, processed by Seinhorst method and mounted in glycerine on aluminium slides. The *Xiphinema* genus was gathered for morphometric measurements under the optical compound microscope for speciation. Slides of the paratype of the new species are deposited in the collection of Nematology department, Agriculture University, Wageningen, The Netherlands (WT 3212-3228), one each at U.S.D.A., Beltsville, MD, USA; University of California, Davis, CA, USA; Instituut voor Dierkunde, Rijkuniversiteit, Gent, Belgium; Biologische Budesanstalt fur Landund Forstwirtschaft, Munster, Germany; C.I.P, St. Albans, Herts., U.K.; Museum National d'Histoire Naturelle, Paris, France; Instituto di Nematologia agraria, Bari, Italy; Randse Afrikaanse Universiteit, Johannesburg, South Africa. The holotype is deposited at Department of Plant protection, Universiti Putra Malaysia, Serdang, Malaysia

Results and Discussion

Over 2000 slides of *Xiphinema* spp. were measured comprising of different stages of development, J1(juvenile stage 1) to adults. In total the samples contained 11 species of *Xiphinema, X. insignae* Loos, 1949, *X.radicicola*, Goodey,1936, *X.ensiculiferum*(Cobb,1893) Thorne,1937, *X.krugi* Lordello,1955, *X.elongatum* Schuurmans Stekhoven & Teunissen,1938, *X.brevicolle* Lordello & Da Costa,1961, *X.franci* Heyns & Coomans,1994, *X.cf. orthotenum*, Cohn & Sher,1972, *X.cf. brasiliense*, Lordello,1951, and *X.setariae*, Luc,1958, and one a new species X.winotoi Razak & Loof,1998. Four of these species, *X. insignae*, *X.radicicola*, *X.ensiculiferum* and *X.elongatum* already reported by Winoto and Sauer (1982) from different states in Malaysia. However, *X. orthotenum* and *X.riversi* listed by these authors were not found in our samples. Attempt to obtain slides of these species from Merbein, Australia, Davis, California, or UPM, Serdang, (where these slides were deposited by Winoto, *in litt.*) was not successful. There were only 3 specimens of *X.cf. orthotenum* found in our sample and insufficient to confirm it as X.orthotenum until more specimens are available. Furthermore, some variations were noted in the morphometrics when compared with

specimens sent from Riverside, California and Rothamsted, UK. Hence were identified it as *X.cf. orthotenum.* Of the three species reported by Ahmad & Baqri(1987) from Penang, only one is acceptable as correctly identified, *X. brevicolle*, which is also found in our sample. The other two species, *X.monohysterum* is considered as *X.radicicola*, which is present in abundance in this study. *X.basilgoodeyi* has an incomplete description of the morphometrics. Attempt to borrow the slides from the authors did not get a positive response.

The new species reported in this study, *X.winotoi*, Razak & Loof,1998, was extracted from the root zone of the old rubber area adjacent to the golf course of UPM, and a specimen was present in the extract from the soil of Dipterocarp of Puchong Forest Reserve. Likewise, *X.franci* was found in large number from a clump of banana in the Duku area, Field 5. Presently, the area has been leveled for a student hostel. However, we manage to complete the juvenile stages of the species, and confirmed the present of only, three juvenile stages, which differ from the original description of Heyns and Coomans. *X.cf brasiliense* is another interesting species found in this study. The species was found in abundance in the cempaka root zones, The species have not been found from the other 20 locations repoted in this study. The species closely resembles *X. brasiliense.* It is more likely, *X. brasiliense* which has not been reported in Malaysia yet.

Conclusions

The 11 species found in this study, together with two species reported by Winoto and Sauer, suggest that there are currently 13 species of *Xiphinema* identified in Peninsular Malaysia. These are by no mean an exhaustive list. The species present in Peninsular Malaysia, hitherto, is only a fraction of the 175 species of outside *X.americanum*-group verified by Loof & Luc (1990). Presently, *Xiphinema* species have been found in many of the samples from golf courses throughout Malaysia. Identification of the species are in progress.

Benefits from the study

This is the first attempt to catalogue nematode species, particularly *Xiphinema*, in Malaysia. Not only it is of academic importance, but also as a reference for the enforcement of the quarantine regulations on imported materials from abroad.

Patent(s), if applicable:

Nil

Stage of Commercialization, if applicable:

Nil

Project Publications in Refereed Journals

1 Razak, A.R. and Loof, P.A.A. (1998). The genus Xiphinema Cobb, 1913 (Nematode: longidoridae) in Western Malaysia. Fundam. Appl. Nematol., 21: 413-428.

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