

NEMATODES OF KHAGARIA DISTRICT, BIHAR

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INTRODUCTION

Khagaria is a recently created district of Bihar. The part of old Munger district north of the river Ganga was carved out as Khagaria district. Present studies are part of a project on nematodes of Bihar.

The present communication deals with twentyfive species of nematodes mainly from the vegetable fields. Many of them are highly pathogenic. Besides the species dealt here, a number of other genera like *Dorylaimus*, *Leptonchus*, *Panagrolaimus*, *Diplogaster* etc. were also found. As very little is known about the nematodes of this state most of the species dealt in this paper constitute the first record from Bihar. Many hosts also are new. The locality and host records were checked from those given by Sitaramaiah (1984). Some of the specimens showed interesting variations. classification followed is mainly after Goodey (1963).

SYSTEMATIC ACCOUNT

Family TYLENCHIDAE Oreley, 1880

1. *Malenchus nobilis* Andrassy

Females (4) : L = 0.40 - 0.57mm, a = 29-38, b = 4.7-6.5, c = 4.2-6.3, c' = 9.3-11.6, V = ²⁸⁻⁴⁰ 61-67, stylet = 8-12 μ m.

Males (2) : L = 0.53 - 0.60mm, a = 33-36, b = 5.8-6.7, c = 5.9-6.4, c' = 6.9-8.3, stylet = 10-12 μ m, spicula = 15-18, μ m, gubernaculum = 3-6 μ m.

Remarks : The present specimens show some variations in deManian values mainly of a, c, V and size of gubernaculum. However, these difference are considered here as intraspecific variations between two widely seperated populations (original specimens from Bombay-Andrassy, 1981).

The species is recorded from Bihar for the first time and hosts are also new (type host -grass).

Host *Brassica oleracea* var. *capitata*, *lycopersicum esculentum*, *Solanum tuberosum*
Allium cepa.

Locality Bhadas, Mehsauri.

2. *Ditylenchus myceliophagus* Goodey

Females (2) : L = 0.50-0.82 mm, a= 39-41, b=5.3-6.8, c=11.2-11.7, c'=4.5-3.3, V= ²⁶⁻³⁰ 77-79, stylet =7-8 μ m.

Remarks : This is the first record of the species from Bihar and host is also new.

Host : *Brassica oleracea* var. *capitata*.

Locality : Bhadas.

3. *Pseudhalenchus anchilisposomus* Tarjan

Females (8) : L=0.53-0.80mm, a=33-45, b=4.2-6.2, c=10.0-14.8, c'=3.3-4.6, V= ²⁸⁻⁴⁹ 76-85, stylet = 8 - 12 μ m.

Males (3) : L=0.50-0.65 mm, a=29-34, b=4.2-5.2, c=11.2-16.8, c'=2.8-3.0, stylet = 7-8 μ m, spicula=17- 23 μ m, gubernaculum =7.0-10. μ m.

Remarks : The species has been repoted in India from guava (Siddiqi, 1964), jute (Chaturvedi & Khera, 1979 and pigeon pea Chaturvedi & Kansal, 1979). The present hosts are new record for the species.

Host : *Solanum melongena*, *S. tuberosum*, *Brassica oleracea* var. *capitata*, *B. oleracea* var. *botrytis*, *Lycopersicum esculentum*, *Capsicum annum*, *Coriandrum sativum*, *Allium cepa*, and *Ricinus communis*.

Locality : Kuttupur, Bhadas, Bachhota, Mehsauri, Sansarpur and Permanpur.

Family TYLENCHORHYNCHIDAE Eliava, 1964

4. *Tylenchorhynchus mashhoodi* Siddiqi & Basir

Females (5) : L =0. 54 - 0.66mm, a = 28-33, b = 4.4 - 5.0, c =14-17, c' = 2.8 - 3.6, V = ²¹⁻²⁶ 54-61 ²¹⁻²⁵, stylet =17-19, μ m.

Males (4) : L = 0.54 - 0.65mm, a = 24 - 30, b = 4.7-5.3, c=16 -18, c'=2.3 - 3.3, stylet =15-17 μ m, spicula = 17-20 μ m, gubernaculum=8-12 μ m.

Remarks : A large number of species were examined including juveniles . The specimens showed morphological variations as described by Baqri & Jairajpuri (1970). The species was recorded from several vegetable hosts from Patna district by the present authors (1984) and appears to be of wide occurrence in Khagaria district too. Except eggplant all hosts mentioned here are new.

Host: Solanum melongena, S. tuberosum, Brassica oleracea var. capitata, B. oleracea var. botryis, Capsicum annuum, Coriandrum sativum, Allium cepa and Lycopersicon esculentum.

Locality : Bhadas , Bachhota, Mehsauri, Sansarpur and Permanpur.

5. *Tylenchorhynchus divittatus* Siddiqi

Female (1juv.) : L =0.47mm , a=27,b=3.7, c=13.3, c'=2.7,V=? stylet =17 µm.

Male (1) :L =0.61mm, a=30, b=4.7, c=18, c'=2.3, stylet =16µm, spicula=17µm, gubernaculum =8µm.

Remarks : The present specimens constitute the new host and new locality record of the species.

Host : Solanum melongena.

Locality : Kuttupur.

Family PRATYLENCHIDAE (Thorne, 1949) Siddiqi, 1963

6. *Pratylenchus coffeae* (Zimmermann, 1898) Goodey

Females (2) : L = 0.50-0.58mm, a=28-32, b=5.6-6.7, b'=4.3-4.8,c=19.8-21.5, c'=2.0-2.1, V=²³⁻³⁵ 80-82, stylet= 17-18 µm.

Male (1) :L =0.59 mm, a=39, b=7.2, b'=5.2, c=21, c'=2.2, stylet = 15 µm, spicula = 17µm, gubernaculum = 7 µm.

Remarks : The species is being recorded for the first time from Bihar.

Host : Musa sp.

Locality : Bachhota.

7. *Pratylenchus penetrans* (Cobb, 1917) Chitwood & Oteifa

Females (4) : L =0.43-0.54mm, a=20-27, b=5.3-6.4, b'=4.0-4.3, c=16.6-21.0, c'=1.7-2.3, V=²⁹⁻³⁹ 75-79, stylet =16-17µm.

Remarks : While going through the literature authors came across P. capitatus Das & Sultana, 1979 which happens to be preoccupied (Ivanova, 1968) Moreover, figure shows oesophageal gland overlapping dorsally (excretory pore side being ventral) and vulva and anus situated on opposite sides. This necessitates re-examination of type material of P. capitatus Das & Sultana, 1979.

All the hosts mentioned here as well as the localities are new record.

Host : *Solanum tuberosum*, *S. melongena*, *Capsicum annum*, and *Ricinus communis*.

Locality : Mehsauri , Sansarpur and Permanpur.

Family HOPLOLAIMIDAE (Filipjev, 1934) Wieser, 1953

8. *Hoplolaimus dubius* Chaturvedi *et al.*

Females (9) : L=0.92-1.32mm, a=23-33, b=7.4-9.5, b'=6.4-8.8, c=35-47, c'=0.59-0.83, V=¹⁶⁻²⁹ 54-62 ¹⁷⁻²⁷, stylet=36-40 μ m, anterior phasmid =28-37%, posterior phasmid=80-86%.

Males (7) : L =0.97-1.47mm, a=30-32, b=8-12, b'=5.2-7.8, c=35-47, c'=1.3-1.6, stylet=33-38 μ m, spicula = 31.5-42.0 μ m, gubernaculum =17-22 μ m, bursa=45-65 μ m, anterior phasmid = 31-38%, posterior phasmid=77-87%.

Remarks : The position of excretory pore was found to be very much variable as mentioned in the original description of the species.

The species is being recorded from vegetable hosts for the first time.

Host : *Lycopersicum esculentum*, *Brassica oleracea var. capitata*, *Solanum melongena*, *Musa sp.*, *Coriandrum sativum*, *Capsicum annum*, and *Allium cepa*.

Locality : Kuttupur, Bhadas, Bachhota, Mehsauri, Sansarpur, and Permanpur.

9. *Helicotylenchus erythrinae* (Zimmermann, 1904) Golden

Females (8) : L =0.56-0.72mm, a=19-26, b=5.5-6.5, b'=3.5-5.3, c=24-44, c'=0.74-2.0, V=¹⁹⁻²⁸ 54-63 ¹⁵⁻²³, stylet =24-27 μ m, O=23-25.

Remarks : Rashid *et al.* (1973) recorded it from unspecified vegetable hosts. The present hosts except eggplant and banana are new.

This is the first record of the species from Bihar.

Host : *Lycopersicum esculentum*, *Capsicum annum*, *Solanum tuberosum*, *S. melongena*, *Brassica oleracea var. capitata*, *Ricinus communis* and *Musa sp.*

Locality : Kuttupur, Bachhota, Mehsauri

Family NACOBIDAE (Chitwood & Chitwood , 1950) Golden, 1971

10. *Rotylenchulus reniformis* Linford & Oliveira

Females (4 immature) : L=0.33-0.41 mm, a=23-27, b=3.6-4.0, b'=2.3-2.9, c=12-26, c'=1.8-2.7, V=¹³⁻¹⁵ 71-76¹²⁻¹⁴, stylet =16-20 μ m.

Males (3) : L = 0.38-0.42mm, a=26-28, b=3.6-4.0, c=17.0-19.7, c'1.9-2.3, stylet =13-14 μ m, spicula = 15-20 μ m, gubernaculum = 6-7 μ m.

Remarks : Mature females were not found although several roots were examined. Several larvae also found.

Host : *Solanum melongena*, *Lycopersicum esculentum*, *Capsicum annum*.

Locality : Bhadas, Bachhota, Kuttupur.

Family APHELENCHIDAE (Fuchs, 1937) Steiner, 1949

11. *Aphelenchus avenae* Bastian

Females (4) : L = 0.55-0.62mm, a=28-38, b=6.6-8.1, b'=3.4-3.9, c=24.8-27.5, c'=1.6-2.2, V=³¹⁻⁴⁵ 75-78, stylet = 15-20 μ m

Males (2) L= 0.57-0.65mm, a=37-38, b=7.5-7.6, b'=3.5-3.9, c=24.8-28.7, c'=2.0, stylet = 15-18 μ m, spicula = 20-25 μ m, gubernaculum = 5-10 μ m.

Remarks : Some variations in the shape of the median bulb as reported by Khera & Chaturvedi (1977) were observed. The species is recorded from eggplant, chilli, and coriander for the first time.

Host : *Brassica oleracea* var. *botrytis*, *Solanum melongena*, *Lycopersicum esculentum*, *Coriandrum sativum*, *Allium cepa*, *Capsicum annum*.

Locality : Bhadas, Bachhota, Mehsauri, Kuttupur, Sansarpur, Parmanpur.

Family APHELENCHOIDIDAE (Skarbilovich, 1947) Paramonov, 1953

12. *Aphelenchoides asterocaudatus* Däs

Female (1) : L = 0.57mm, a=29, b=8., b'=3.8, c=19, c'=2.5, V=³⁵ 69, stylet =12 μ m.

Remarks : Khera & Chaturvedi (1975) and Chaturvedi & Khera (1979) recorded the species from Orissa and West Bengal, respectively. Tail seems to be smaller (c=13-16 in W. Bengal, 15-17 in Orissa populations). The species is being recorded from Bihar for the first time.

Host *Capsicum annum*.

Locality Bachhota.

13. Aphelenchoides bicaudatus (Imamura, 1931) Filipjev & Sch. Stekhoven, 1941

Females (2) : L = 0.36-0.50mm, a=33, b=7.2-9.0, b'=4.0-4.4, c=14.2-16.4, c'=2.8-3.8, V=²⁸ 61-69, stylet = 9-12 μ m.

Remarks : The present specimens fit well in the description of the species by Imamura (1931) and Siddiqui and Taylor (1968). However, tail in present specimens is slightly smaller (c=9.4-12.6—Imamura; c=9.8-13.7-Siddiqui & Taylor). This is the first record of the species from Bihar.

All the hosts and localities are new for the species.

Host : *Coriandrum sativum*, *Lycopersicum esculentum*.

Locality : Bachhota, Mehsauri.

14. Aphelenchoides sanwali Chaturvedi *et al.*

Females (6) : L = 0.45-0.50mm, a=22-29, b=8.4-9.3, b'=4.1-4.7, c=15.2-23.8, c'=1.6-3.2, V=⁴⁶⁻⁵³ 71-72⁵⁻¹⁰, stylet = 10-15 μ m.

Remarks : The species was described from the rhizosphere of jute hence the vegetable hosts are new and distributional range is extended to Bihar.

Host : *Brassica oleracea* var. *capitata*, *Capsicum annum*, *Solanum tuberosum*, *Lycopersicum esculentum*.

Locality : Bachhota, Bhadas, Mehsauri, and Permanpur.

15. Seinura hecheriae Chaturvedi *et al.*

Female (1) : L = 0.46mm, a=26, b=8.4, b'=4, c=6.6, c'=7, V=³¹ 63, stylet -12 μ m.

Remarks : The specimen fits in the original description.

Hosts and Locality are new records.

Host : *capsicum annum*.

Locality : Mehsauri.

Order RHABDITIDA (Orley, 1880) Chitwood, 1933

Family CEPHALOBIDAE (Filipjev, 1934) Chitwood & Chitwood, 1934

16. Chiloplacus sp.

Females (2) : L = 0.46-0.51mm, a=25-29, b=3.0-3.4, c=16.4-18.4, c'=2.7-2.8, V=67-70.

Remarks : The genus is recorded for the first time from Bihar.

Host : *Capsicum annum*, *Solanum melongena*.

Locality : Kuttupur, Mehsauri.

17. *Acrobeles bustschlii* (de Man, 1884) Steiner & Buherer

Male (1) : L = 0.39mm, a=14, b=3.6, c=19.5, c'=1.3, V=66.

Remarks : The specimen fits well in the description of the species by Goodey (1963) and Khera & Chaturvedi (1977) Genus is recorded for the first time from Bihar.

Host : *Solanum melongena*.

Locality : Sansarpur.

18. *Acrobeles timmi* Chaturvedi & Khera

Females (4) : L = 0.64-0.69mm, a=14-20, b=4.2-4.4, c=10.7-11.6, c' = 2.3-2.7, V=59-60.

Males (2) : L = 0.47-0.54mm, a=20-21, b= 3.5-4.4, c=11.8-13.3, c'=1.7, spicula =25-32 μ m, gubernaculum =10-18 μ m.

Remarks : The specimens closely fit in the original description of the species except slight variation in deManian indices. The hosts are new and this is first record from Bihar.

Host : *Lycopersicum esculentum* , *Allium cepa*, *Coriandrum sativum*.

Locality : Bhadas, Bachhota, Mehsauri, and Sansarpur.

Order MONHYSTERIDA (Orley, 1880) Sch Stekhoven & De conink, 1933
Family MONHYSTERIDAE , 1880

19. *Prismatolaimus andrassyi* Khera & Chaturvedi

Female (1) : L = =0.52mm, a=52, b=3.7, c=3.2, c'=17.7, V=55.

Remarks : The specimen agrees in all respect with the original description (Khera & Chaturvedi, 1977) except slight difference in body length and the value of 'a' The genus is reported for the first time from Bihar and host is also new.

Host Solanum tuberosum.

Locality : Permanpur.

Order CHROMADORIDA (Filipjev, 1971) Chitwood, 1933

Family CYATHOLAIMIDAE (Micoletzky, 192) deConink & Sch. Stekhoven, 1933

20. Achromadora ruricola (deMan, 1880) Micoletzky

Female (1juv.) : L = 0.55mm, a=36, b=4, c=6.8, c'=6.6, V=?

Remarks Species is recorded for the first time from Bihar.

Host : *Brassica oleracea* var. *capitata*.

Locality : Mehsauri.

Order ENOPLIDA (Baird, 1853) Chitwood, 1933

Family IRONIDAE deMan, 1876

21. Ironus longicaudatus deMan

Females (3) L = 1.49-1.54mm, a=47-48, b=5.1-6.2, c=4.4-5.5, c' = 14.3-15.2, V=42-45.

Remarks : The specimens closely fit in the description of the species by andrassy (1968) and Khera (1976) The genus is recorded for the first time from Bihar

Host : *capsicum annuum*, *Musa* sp., *Lycopersicum esculentum*

Locality Bhadas, Bachhota, Sansarpur.

Order DORYLAIMIDA Pearse, 1942

Family DORYLAIMIDAE deMan, 1876

22. Thornenema mauritiana (Williams, 1959) Baqri & Jairajpuri

Females (3) : L = 1.43-1.57mm, a= 38-42, b=5.0-6.2, c=5.6-7.0, c' = 10-13, V=32-49^{6'}, stylet = 12-14 μ m, stylet extension = 16-18 μ m.

Remarks : The specimens tally with the description by Baqri & jairajpuri (1967) except some variations in the valu of 'V' and length of stylet. This is the first record from Bihar.

Host : *Lycopersicum esculentum*, *Ricinus communis*.

Locality Kuttupur, Bachhota.

Family DORYLAIMELLIDAE (Jairajpuri, 1964) Thorne , 1964

23. *Dorylaimellus parvulus* Thorne

Females (2) : L = 0.45-0.71mm, a=30-32, b=2.6-2.9, c=20-30, c'=1.3-2.3, V=53-59, odontostyle = 8-12 μ m, odontophore = 10 -12 μ m.

Remarks : The specimens show some variations in deManian values This is the first record from Bihar.

Host : *Solanum melongena* *Musa* sp.

Locality : Bachhota.

Family ALAIMIDAE Micoletzky, 1922

Amphidelus candidus Siddiqi & Basir

Female (1) : L = 0.88mm, a=59, b=4.7, c=4.5, c'=21.4, V=40.

Remarks : The specimen fits well in the description of the species by Siddiqi & Basir (1965) this is the first record of the genus from Bihar.

Host : *Brassica oleracea* var. *botrytis*.

Locality : Bhadas.

Order MONONCHIDA Jairajpuri, 1969
Family MYLONCHULIDAE Jairajpuri, 196925. *Mylonchulus lacustris* (N.A. Cobb in M.V Cobb, 1915) Andrassy

Females (3) L= 0.92-1.21mm, a=23-30, b=3.0-3.9, c=26.2-32.4, c' =1.3-1.7, V=62-65.

Remarks : Jairajpuri & Khan (1982) recorded the species from many places in U.P. earlier Chaturvedi & Khera (1979) has recorded it from West Bengal The present record from Bihar shows that the species is widely distributed in the Gangetic plains.

Host : *Lycopersicon esculentum*, *Musa* sp., *Brassica oleracea* var. *botrytis*

Locality : Kuttupur, Bhadas, Bachhota.

SUMMARY

Twentyfive species of plant parasitic and soil nematodes have been recorded mainly from the vegetable fields in Khagaria district, Bihar. Most of the species reported constitute new locality records. Some new hosts and interesting variations are also reported.

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