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POPULATION DYNAMICS OF PLANT PARASITIC NEMATODES AROUND CROPS ROOT IN JALNA DISTRICT

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ABSTRACT

The present study is based on the survey accompanied and assessment made by the frequencies of occurrence of economically important plant nematodes in different region of Jalna district. Samples were collected from roots and soil from eighth places of Jalna district. The frequency of occurence and populations varied from place to place which is simply indicative of the fact that the studied area is highly infested with different varieties of nematode genus i.e. Hoplolaimus, Helicotylenchus, Mylonchulus, Longidorus, Xiphinema, Dorylaimus Acrobeles, Monohystera

KEYWORDS

Hoplolaimus, Jalna, sugarcane

RESEARCH PAPER

INTRODUCTION

Nematode is known to attack more than 3,000 separate host plants. In the vegetables crops 33 % loss in Bihar and 60% loss in Delhi. Reddy (1981) reported that *Meloidogyne incognita* caused 39.7 % loss in tomato yield at per –plant nematode population density of 20 larvae per gram of soil. Nematode overall damage is about one percent, but sometimes the damage is as high as 80%. Annual loss due to this nematode in north India is about 10,000 tons of wheat, costing 70 million rupees. The golden nematode of potato, *Globodera rostonchiensis* is a serious problem in Nilgiri Hills. About 2,800 hectares are infested by this nematode. The root- lesion nematode population is a serious pest of coffee in south India. About 1,000 hectares are infected by this nematode (P. P. Reddy et.al.1983).

The imbalance between the birth rate and death rate responsible for population changes, which is determined by the characteristics of the nematode and host plant and the environmental influences (M. R. Khan 2008).

The annual worldwide losses caused by nematodes on the life sustaining crops, which include all grains and legumes, banana, cassava, coconut, potato, sugar beet, sugarcane and sweet potato. Soil nematodes major pests of high valued agricultural crops are the phytonematodes which are highly diversified organisms exhibiting variations in distributing patterns. Damage depend upon pathogenic potential and population growth of nematodes, which are generally influenced by soil texture, crop cycle and anthropogenic factors (chir, chir, et.al. 2008).

The analysis of plant parasitic nematode associated with rhizosphere of chi pine nurseries and pine trees in natural forests of Himachal Pradesh by (Sapna Negi et.al.2009). Population dynamics of plant parasitic nematodes in chickpea- groundnut – cropping system by (S.M. Yadav et.al 2010). Biodiversity of plant parasitic nematode in tea nurseries by (C. Bhattacharya, 2013). Nematode population dynamics in the soil sown with okra in Nigeria by (Olabiyi, T.I. and Oladeji, O.O. 2014). Assessment of Nematode Distribution and Yield losses in vegetable crops by (Rajendra Singh, and Umesh Kumar 2015). Community structure of soil inhabiting nematodes in an apple orchard at Bandipore, Kashmir reported by (A. Rashid Mir S. Tanveer 2016). R. Surega and S. Ramakrishnan also studied comparison of nematode population and their seasonal fluctuation in turmeric crops Under Conventional and drip Irrigation methods.

MATERIALS AND METHODS

Sample collection

The present investigation was carried out on the occurrence of important plant parasitic nematodes associated with sugarcane crops during 2019- 2021. Nematode samples from 8 localities of around Jalna city were collected from around the roots of Sugarcane and soil up to the depth of 0-15 cm. The samples were mixed to make a composite sample. From the composite soil sample 250 gm of soil was taken or further processing.

Parasite collection

Extracting the nematodes by Cobb's sieving and decanting method (1918) followed by Bearmann's funnel technique (Schindler, 1961). Extracted sample was observed under stereoscopic binocular microscope for collection and Syracuse counting disc. Isolated nematodes were killed in hot water and fixed in FAA (Formal acetic acid) solution and mounted on permanent slide in dehydrated glycerin for further anatomical studies. Based on morphological characteristics of adult and juvenile forms the nematodes were identified up to generic level. (Mai and Lyon,1975).

Calculation The absolute frequency, absolute density, relative frequency and prominence value were calculated by following Norton's formulae (Nortan, 1978).

$$\text{Absolute density} = \frac{\text{(no. of individual of a species)}}{\text{Volume of the sample}} \times 100$$

$$\text{Absolute frequency} = \frac{\text{(no. of samples containing species)}}{\text{no. of samples collected}} \times 100$$

$$\text{Relative frequency} = \frac{\text{(Absolute frequency of a species)}}{\text{Sum of absolute frequency of all species}} \times 100$$

$$\text{Prominence value (PV)} = \text{Density} \surd \text{absolute frequency} /100$$

RESULT AND DISCUSSION

During the investigation period, from June 2019 to May 2021, in Jalna district, 91 samples were collected from different eight sites of Sugarcane crops field in which 10 species of different eighth genera from five orders were collected.

The population dynamic study of plant parasitic nematode from eight sites of Jalna district such as follow:

1) Jalna
2) Ambad
3) Bhokardan
4) Badnapur
5) Ghansavangi
6) Partur
7) Mantha
8) Jafrabad

Observation table no. 1. shows mean population of plant parasitic nematodes around crops roots during June 2019 to May 2021, from different eight sites of Jalna district; the genus *Hoplolaimus* have highest population which is followed by

Helicotylenchus, Mylonchulus, Longidorus, Xiphinema, Dorylaimus Acrobeles, Monohystera.

The *Hoplolaimus* found in sugarcane have highest population value of 5908.84 and the genus *Monhystera* found in sugarcane has lowest population value i.e. 2132.08. Most of the soil sample contains 6 to 7 genera and some contain five genera. *Hoplolaimus* found in more soil sample but *Dorylaimus, Longidorus, Xiphinema,* found in very few soil samples.

The genus *Hoplolaimus* found in sugarcane has highest mean population (94.18) in month of November and lowest value in the month of May (18.89). *Helicotylenchus* found in sugarcane has highest value in January (74.66) and lowest value in month of May (12.08). The genus *Mylonchulus* found in sugarcane has a highest mean value in month of October (75.66) and low in the month of May (15.16). *Longidorus* found in sugarcane crops; the highest mean value in month of September (42.83) and low in month of May (12.16). *Xiphinema* found in sugarcane crops; the highest mean value observed in month of December (71.16) and lowest value in month of May (22.16). *Dorylaimus* occurred in sugarcane crops; the highest mean value in month of December (52.05) and lowest mean value of May (74.05). The *Acrobeles* found in sugarcane crops, the highest value shows in month of November (94.99) and lowest value in month of May (11.03). The last value from this order is genus *Monhystera* found in sugarcane crops, highest value shows (67.62) in the month of September and it shows lowest mean values (12.25) in the month of May. The last value from this order is genus

Observation table no. 2. Shows mean population of plant parasitic nematodes around crops roots during June 2019 to 2021, from different eight sites of Jalna District. The absolute frequency highest value shows in *Hoplolaimus* has (AF = 87.50%) and the *Helicotylenchus, Mylonchulus,* and *Acrobeles* found same values of absolute frequency such as (AF = 75%), then in the *Monhystera* has value of absolute frequency is (AF = 50%), Then the *Longidorus, Xiphinema,* has also same values is (37.50 %). Lastly the genus *Dorylaimus* has the lowest and same value of absolute frequency of (AF =25%).

The relative frequency of highest value observed in genus *Hoplolaimus* (RF = 11.34), and next with their values of relative frequency are *Helicotylenchus, Mylonchulus*, and *Acrobeles* has a same values of relative frequency is (RF = 10.90), in *Monhystera* relative frequency is (RF = 7.27), the *Longidorus*, and *Xiphinema* genus same relative frequency is (RF = 5.45), *Dorylaimus,* has the lowest and same value as (RF = 3.63).

The absolute density has highest value shows of *Hoplolaimus* (14.06). The lowest value shows in genus *Monhystera* is (4.44) respectively. In the *Helicotylencus* has absolute density shows, (AD = 9.10), in the *Mylonchulus* shows value of absolute density is (AD = 6.61), in the *Longidorus* shows values of absolute density is (AD = 2.41), in *Xiphinema* shows values of absolute density has (AD = 3.61), in the *Dorylaimus* values shows of absolute density is (AD = 1.67), in the *Acrobeles* value shows of absolute density is (AD = 859), in the *Monhystera* absolute density shows value has (AD = 4.44).

The prominence value of *Hoplolaimus* is highest (PV = 1.40). in the *Helicotylencus* shows prominence average value is (PV = 0. 78), the prominence lowest value shows in *Monhystera* is (PV = 031).

The present study in this investigation, more number of females of each genus was found but the males are found in few numbers. The same result is found to Tiasi, Jana et. al. (2010).

Table no. 1: - Mean population of plant parasitic nematodes (8 genera) around crop roots during the year June 2019 to May 2021. From eight different sites of Jalna District.

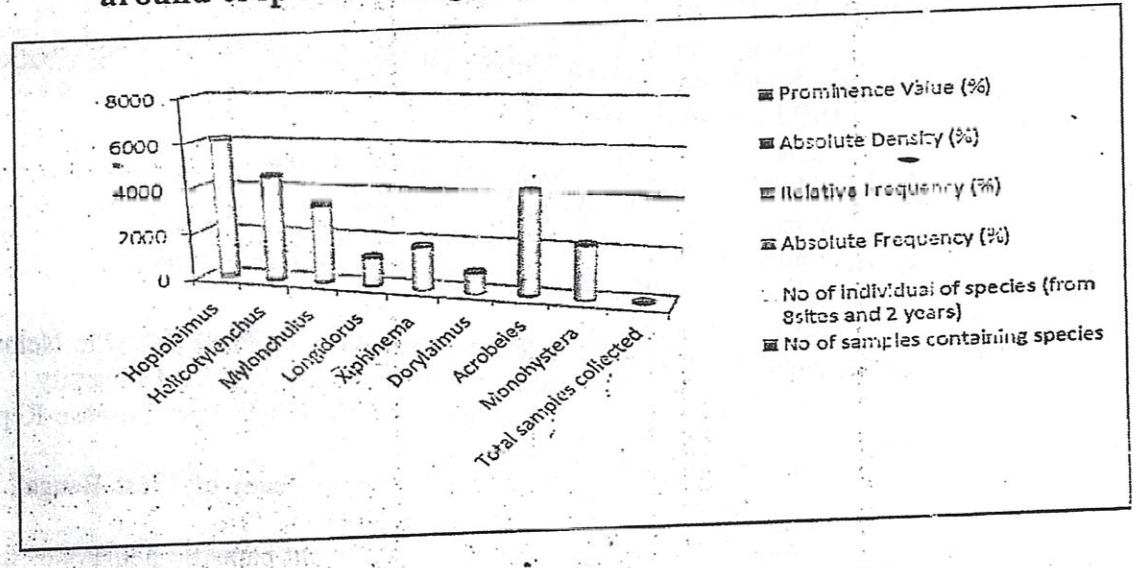
Order	Tylenchida		Monhysterida	Dorylaimida			Rhabditida	Monhysterida
Genus	Hoplo.	Helico.	Mylo.	Longi.	Xiphi.	Dory.	Acro.	Mon.
Month								
Jun	75.62	71.16	23	42.33	45.66	33.75	30.67	47.28
Jul	76.56	54.91	35.75	33.66	29.16	25.00	36.99	47.12
Aug	81.37	57.99	39.91	37.33	42.33	28.5	41.83	64.87
Sep	93.87	62.74	64.08	42.83	51.99	50.75	41.74	67.62
Oct	92.05	67.24	75.66	29.41	69.99	31.25	77.91	66.5
Nov	94.18	71.16	58.46	40.83	34.66	43.25	94.99	45.00
Dec	86.93	69.99	46.33	33.99	71.16	52.05	92.00	33.75
Jan	61.25	74.66	48.83	24.33	69.33	38.00	94.33	26.05
Feb	62.99	70.33	43.24	31.49	62.16	40.05	75.49	34.05
Mar	57.36	63.05	56.16	30.33	47.33	25.05	54.16	33.87
Apr	42.06	52.83	23.00	28.33	30.33	25.00	36.49	53.76
May	18.89	12.08	15.16	12.16	22.16	9.25	11.03	12.25
Total mean	844.12	728.59	529.58	387.02	578.26	403.25	687.71	533.2
Found Site	7	6	6	3	3	2	6	4
Total Count	5908.84	4371.54	3177.48	1161.00	1734.78	806.05	4126.26	2132.08

Abbreviations: - Hoplo- *Hoplolaimus*, Helico- *Helicotylencus;* Mylo- *Mylonchulus;* Longi- *Longidorus*, Xiphi- *Xiphinema;* Dory- *Dorylaimus;* Acro – *Acrobeles* Mon- *Monhystera.*

Table no 2: - Population dynamics of plant parasitic nematodes around crops root of eight different sites from Jalna District during June 2019 to May 2021.

Plant parasitic Nematode	No of samples containing species	No of individual of species (from 8sites and 2 years)	Absolute Frequency (%)	Relative Frequency (%)	Absolute Density (%)	Prominence Value (%)
Hoplolaimus	168	5908.84	87.50	11.34	14.06	1.31
Helicotylenchus	144	4371.54	75.00	10.90	9.10	0.78
Mylonchulus	141	3177.48	75.00	10.90	6.61	0.57
Longidorus	72	1161.00	37.50	5.45	2.41	0.14
Xiphinema	72	1734.78	37.50	5.45	3.61	0.22
Dorylaimus	48	806.05	25.00	3.63	1.67	0.083
Acrobeles	144	4126.26	75.00	10.90	8.59	0.74
Monohystera	96	2132.08	50.00	7.27	4.44	0.31
Total samples collected	91					

Showing graph, the population dynamics of plant parasitic nematode around crop roots of eight different sites from Jalna District.



CONCLUSION

From the above observation, it is concluded that the various villages of Jalna have a heavy infection of various species of plant nematodes. Their occurrence may cause serious threats to affect the Sugarcane, Soybean, crops. Highest population observed the genus *Hoplolaimus* species in Sugarcane crops. Lowest population observed the genus *Monhystera* species in maize crops. As India is an agricultural country, there is need to check and control, growth of nematodes.

REFERENCES

A. Rashid Mir and S Tanveer, (2016). Community structure of soil inhabiting nematodes in an apple orchard at Bandipore, Kashmir, India Journal of Entomology and Zoology Studies E-ISSN: 2320-7078.

C. Bhattacharya, (2013). Biodiversity of Plant Parasitic Nematodes in Tea Nurseries and Plantations in Tripura. Indian Journal of Nematology. Vol. 43, No. 1, pp. 74-81.

Chir chir, (2008). Abundance and distribution of plant parasitic nematodes associated with sugarcane in Western Kenya. Asian J. Plant Pathol., 2: 48-53.

Cobb's (1918). Estimating the nema population of the soil. Agricultural Technology Circular I. Bureau of Plant Industry, Uni.

M.R. Khan (2008). A book on "plant nematodes."

Mai, and Lyon, (1975). Pictorial key to genera of plant parasitic nematodes. Ithica, Comella University Press, 220pp.

Norton, D.C. (1978). Ecology of Plant Parasitic Nematodes. John Willey and Sons. New York. 268 pp.

Olabiyi T. I. and Odadeji, O. O., (2014). Assessment of four compost types on the nematode population dynamics in the soil sown with Okra P. M. B. 4000, Ogbomoso, Nigeria.

P. P. Reddy, (1983). A book on Phytonemes. Plant nematology. Agricole Publishing Academic, New Delhi India.

Rajendra Singh and Umesh Kumar (2015). Assessment of Nematod Distribution and Yield Losses in Vegetable Crops of western Utter pradash in India. ISSN: 2319-7064.

Reddy, (1981). Analysis of crops losses in tomato due to *Meloidogyne incognita* (Abstr). *Nematol Sac India Symp, Coimbatore, p* 60.

S. M. Yadav et.al (2010). Population Dynamics of Plant Parasitic Nematodes In Chickpea-Groundnut Cropping System. Indian Journal of Nematology, Vol. 40 No.1. 109.

Sapna Negi et.al, (2007). Describe Taxonomic Studies On Plant Parasitic Nematodes Associated with Pines theses submission in Himachal Pradesh Univarsity.

Schindler, (1961) a simple substitute for a Baermann funnel. Plant Disease Reported, 45,747-748.

Tiasi, Jana et. al (2010). Thesis of Mononchida (Nematoda) of West Bengal, India: Taxonomy and Ecology. Zoological serve of India.

Yadav. S.M and Sehgal M, (2010). management of plant parasitic nematodes through chick pea- groundnut cropping system. Pakistan jauranal of nematology 28,361 – 362.

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ON A NEW SPECIES OF THE GENUS *Dorylaimus* (NEMATODA: DORYLAIMIDAE) FROM JALNA DISTRICT (MS) INDIA

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AUTHORS' CONTRIBUTIONS
This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

A Specimen of the genus *Dorylaimus* was found in soil around the root of the soybean crop in Jalna district (M.S) India. The species is characterized by the body being circular. The body is ventrally curved upon fixation tapering toward both sides, cuticle thick at mid-body. Lip is separated angular, lateral chord about 1/4th to 1/3rd of the body. Guiding is ring single, pharynx odontostylet, length is long. The female genital system is amphidelphic, both the sexual branches are equally developed. Oviduct was joined ovary sub terminally, sphincter present in oviduct uterus junction. The tail is straight and long.

Keywords: *Dorylaimus;* jalna; nematode.

1. INTRODUCTION

The nematodes population was affected economically by agriculture. The plant-parasitic nematodes were found in soybean crops. The Soybean cyst nematode can cause yield loss of up to 30% without showing any visible symptoms in the soybeans. Yield loss can go up to 75% in the heavily infested fields Wang et al. [1]. Nematode constitutes the largest and the most ubiquitous group of the animal kingdom. In India, about 10 to 20% of crops losses occurred due to the plant nematode. Nematodes were doing cause considerable crop losses Mujeebur Rahman khan [2]. The nematode is infecting different crops such as Sugarcane, Maize, Wheat, Rice, Soybean, Cotton, etc. Soybean was occupied 42% of India's total oilseeds and 25% of edible oil production soybean crops economically important in India A.N. Sharma and G.K. Gupta [3]. After that, many scientists worked on this genus worldwide like Andrassy [4] also included this species under *Dorylaimus* in his review of the family *Dorylaimidae*. *Dorylaimus bengalensis* added new species *Dorylaimus proximus* reported new

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species by Vladimir A. Gusakov and Vladimir G. Gagarin [5].

2. MATERIALS AND METHODS

2.1 Sample Collection

The present investigation was carried out on the occurrence of plant-parasitic nematode species associated with soybean crops up to the depth of 0-15 cm. the samples were mixed to make a composite sample from the composite soil sample 250 gm of soil was taken for further processing.

2.2 Plant Nematodes Collection

Extracting the nematodes by Cobb's sieving and decanting method, Cobb [6]. Followed by Bearmann's funnel technique, Schindler [7]. Extracted sample was observed under a stereoscopic binocular microscope for collection and Syracuse counting disc. Isolated nomatodes were killed in hot water and fixed in FAA (formalin acetic acid) solution. Based on morphological characteristics of adult and juvenile forms the nematodes were identified up to generic level. Mai and Lyon [8].

2.3 Description

105 Specimens of The plant nematode were collected from the soil around the sugarcane crops, at Partur, Dist. Jalna, (M.S). India. Collected specimens were observed and identified.

Collected plant nematodes are preserved in hot (90^{0}C - 100^{0}C), diluted FA solution. Mounted in glycerine, drawings are made with the aid of camera lucida. All measurements are in 'µm' except 'L' in mm.

Nematodes body is elongate, spindle-shaped, tapering towered both bodies end. The buccal cavity lies between the mouth and pharynx. The stylet is spear-like, the pharynx is muscular. The intestine is complete mouth to anus. Sexes are separate.

Male – Not found.

Females – The body is ventrally curved upon fixation, tapering regularly towards extremities. The inner layer was a cutiele with fine longitudinal ridges. The thickness of the cuticle is 6.13 µm at the anterior end at the level of odontostyle. Body pores are numerous and distinct. The Lip region is slightly set off by depression, the lip region hemispherical, Amphids is stirrup-shaped. Odontostyle is 221µm lip region – width long, nerve ring is located 520 µm of pharyngeal length from anterior end. The expanded portion of the pharynx is 3.56 times the neck base width or 53.84 % of the pharyngeal length. The very thin cardiac disc is present, cardia elongate conoid, 26µm long. Pharyngeal gland nuclei are inconspicuous and cannot be located.

Vulva is transverse, pre- equatorial, A vulval region is without any papillae, Reproductive system is amphidelphic, ovaries reflexed, prerectum 5.10 µm, rectum 1.07µm anal body widths long. Tail is attenuated and elongate–conoid with finely rounded terminus 224 µm long.

Table 1. Morphometric data of female – *Dorylaimus baball Sp. Nov.*, All measurements are in 'µm' except 'L' in mm)

Body Part	Measurements
L	4.57mm
A	35.16
B	5.02
C	10.05
V %	41.21
Width of Head region	39
Width of mid-region	130
Cuticle thickness	6.13
Osophagus length	910
Odontostylet length	221
Cardia length	26
Egg length	910
Egg width	390
Osophagus length	221
Nerve ring from the anterior end	52
Tail length	224

3. DISCUSSION

The worm under discussion has some special characteristics like the vulval region without any papillae.

The worm under discussion came closer to *Dorylaimus gigas* Kleynhans [9]; *Dorylaimus thornei* Andrassy, [10], in some characters but after detailed examination, it shows the following differences.

The present worm was differing from *Dorylaimus gigas* Kleynhans, [9]; in body, length is about 6.5-7.5mm against 4.57mm. the lip is amalgamated against lip hemispherical. Tail is conoid and short, against tail is straight, long.

It also differs from *Dorylaimus tepidus* Andrassy [11] in body length is about 5mm against 4.57mm and the value of 'a' = 22.70µm against the value of 'a'= 35.16 and cuticle unusually thick against cuticle thin.

It differs from *Dorylaimus thornei* Andrassy [10] in body length about 5.8mm against 4.57mm and head distinctly set off; longitudinal ridges 32 against lip region slightly set of by depression.

Given the above distinguishing differences, it is regarded as a new species and it is named *Dorylaimus babaii, Sp. Nov.* This species is named in the honor of well-known helminthology, Late Prof. B. V. Jadhav.

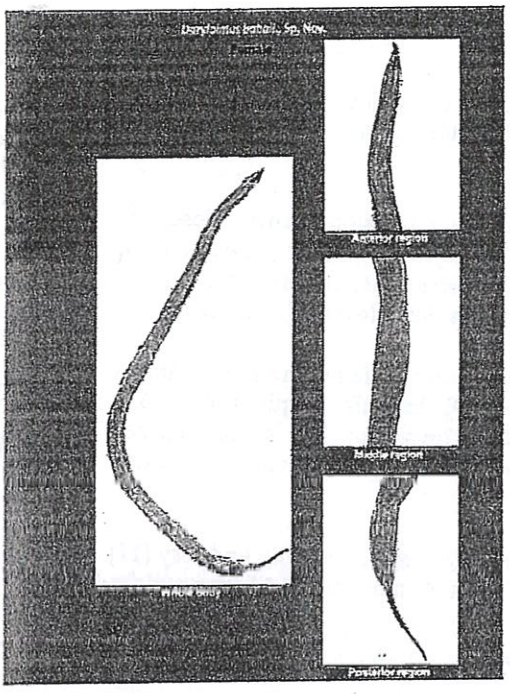
4. CONCLUSION

From the above observation, it is concluded that the various villages of Jalna have a heavy infection of various species of plant nematodes. Their occurrence may cause serious threats to affect the Soybean, crops. As India is an agricultural country, there is need to check and control, growth of nematodes.

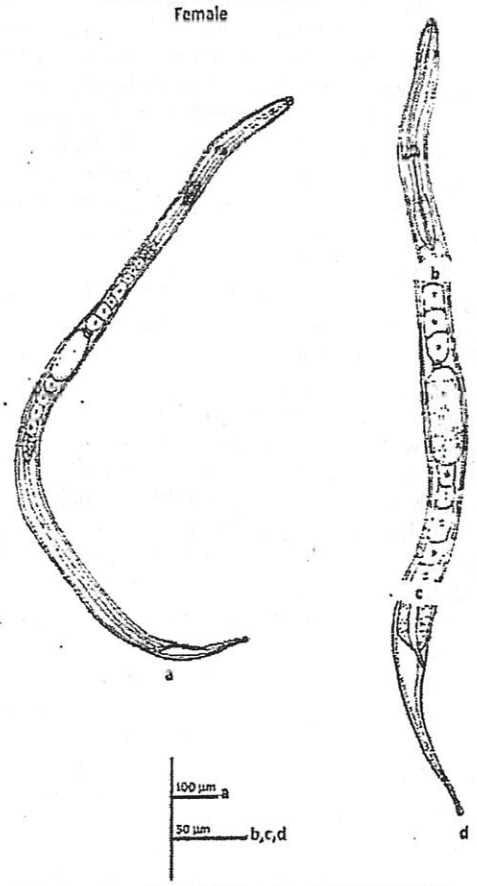
Key to the species of the Genus *Dorylaimus*, Dujardin, 1845 [12]

(Modified after Andrassy, 1988)

1. Number of longitudinal ridges ranges between 50-60.....2
- Number of longitudinal ridges less than 45.....4
2. Cuticle unusually thick, 14 - 18µm on mid-body; spear 60 - 63 µm Long.....*D. pachys* Andrassy 1970
- Cuticle much thinner, mostly 5 µm on mid-body; spear 50 µm or shorter.....3
3. Female tail conoid, 4 anal body-widths long.....*D. alaeus* Thome, 1939
- Female tail attenuated, 6-7 anal body-widths long.....*D. stenus* Andrassy, 1970
4. Female tail conoid and short, 2-3 anal diameter.....*D. conicus* Andrassy, 1970
- Female tail attenuated to filiform, not less than 4 anal body-widths long.....5
5. Body exceptionally slender (a = 60 or more).....6
- Body much stout (a < 60).....7
6. The longest species of the genus (L = 6.5 - 7.5mm); spicules 130 µm Long.....*D. gigas* Kleynhans, 1970
- Body around 5 mm long; spicules 100µm long.....*D. tepidus* Andrassy, 1959
7. Spear shorter, 35 - 46.5 µm long.....8
- Spear longer, 50 - 60 µm.....16
8. Vulval region with 4-5 ventral papillae.....***D. babaii* Sp. Nov.**
-Vulval region without any papillae.....9
9. Head distinctly set off; Longitudinal ridges 32.....*D. thornei* Andrassy, 1969
- Head not at all set-off or slightly set off; longitudinal ridges 38 - 42.....*D. lineatus* Altherr *et al.*, 1972
10. Spear three lip region-widths long; spicules 50µm.....*D. siddiqil Ahmad et.al.*, 1982
- Spear less than three lip region-widths long; spicules 73.5 - 90 µm long.....11
11. Body about 2 mm; supplements 55.....*D. carinatus* Thorne & Swanger, 1936
- Body length 2.67 - 4.2 mm; supplements fewer.....12
12.Supplements 35 -46.....13
- Supplements less in number than above.....14
13. Supplements 46; Body length 3.6 -4.2mm.....*D.fodori* Andrassy, 1988
- Supplements 35 - 38; Body length 2.8 - 3.5.....*D. geraerti* Baqri & Jana, 1986
14. Supplements 32 - 36; Body length 2.67 - 3.54mm.....*D. chatterjeei* De babrata Sen 2010
- Supplements 22 - 27; minimum body length above 3.1mm.....15
15. Vulva pre-equatorial, at 36 -39% of body length.....*D. numidicus* Andrassy, 1988
- Vulva towards the equatorial region, at 44 - 49% of body.....*D, popus* Gagarin, 1981
16. Cuticle very thick, 12-14 µm on mid-body; spicules 140µ.....*D. crassus* de Man, 1884
- Cuticle much thinner, 8-10 µm; spicules at most 120 µm long.....17
17. Lips well separate, angular, head deeply offset.....*D. stephani* Andrassy, 1970



Dorylaimus babaii., Sp. Nov.
Female



a. Whole body, b. Anterior region, c. Middle region, d. Posterior region

- Lips not separate, rounded, head not offset.....18
18. Supplements 55- 62; spicules around 120µm long .....*D. stekhoveni* Baqri and Coomans, 1973
- Supplements 25 - 35; spicules around 80 µm.....*D. montanus* Stefanski, 1923
19. Spear three times as long as labial width.....20
- Spear not more than two and half times as long as labial width.....21
20. Longitudinal ridges 28 - 29, unequally spaced (on both sides of the body more densely arranged); V = 37 - 38%.....*D. unicus* Andrassy, 1970
- Longitudinal ridges 32-35, equally spaced; V = 46%..... *D. helveticus* Steiner, 1919
21. Spear 57 - 60µm long; a small papilla presents on both sides of vulva.....*D.macroproctus* Altherr, 1963
- Spear shorter, 46 - 53 µm long; papillae absent at vulva.....22
22. Aperture occupying half of the spear length; spear with a dorsal fissure; supplements 28.....*D. asymphydorus* Andrassy, 1969
- Aperture occupying one-third of the spear length; spear without dorsal fissure; supplements 36-52.....23
23.Spear conspicuously thicker than cuticle at the same level; vulva at 37 - 39% of the body; supplement 52.....*D. afghanicus* Andrassy, 1960
-Spear as thick as or thinner than cuticle at the same level, vulva at 42 - 47% of the body; supplements 36-45 .....*D. stagnalis,* Dujardin, 1885

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Wang et. al. Soybean cyst nematode reduces soybean yield without causing obvious above ground symptoms. Plant Dis.2003 87:623- 628.
2. Mujeebur Rahman Khan. A book on "plant Nematodes"; 2008.
3. Sharma AN, Gupta GK. Directorate of plant protection, Quarantine, and storage CGO Complex, NHIV, Faridabad-121001; 2014.
4. Andrassy. The superfamily Dorylaimoidea (Nematoda) – a review family Dorylaimidae. Opusc. Zool. Budapest. 1988;XXIII:3-63.
5. Vladimir A Gusakov, Vladimir G Gagarin. Two new species of free-living nematodes of the family dorylaimidae (Nematoda, Dorylaimida) from Small freshwater bodies of vietnam ISSN 1995-0829, Inland Water Biology; 2015.
6. Cobb NA. Estimating the nema population of the soil. Agricultural Technology Circular I. Bureau of Plant Industry, Uni; 1918.
7. Schindler AF. A simple substitute for a Baermann funnel. Plant Disease Reported, sss. 1961;45:747-748.
8. Mai Lyon. Pictorial key to genera of plant-parasitic nematodes. Ithica, Comella University Press. 1975;220.
9. Kleynhans. New records and species of Dorylaimoidea (Neraatoda) from south Africa ID84544737; 1970.
10. Andrassy. Taxonomosche ubersicht der familier prodorylaimidae n. fam. and Dorylaimidae de Man 1876. Opscula Zoologica, Budapest. 1969;9:187-233.
11. Andrassy. Taxonomische ubersichtder dorylaimen (Nematoda). I. Acta Zoologica Academiae Scientiarum Hungaricae. 1959; 5:191–240.
12. Dujardin. Histoire naturelle des helminthes ou vers intestinaux, Paris. 1845;645.