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DISTRIBUTION AND COMPARISON BETWEEN THE MONONCHS NEMATODES OF THREE HILL DISTRICTS (UKHRUL, CHANDEL AND CHURACHANDPUR) OF MANIPUR

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A comparison was made between the mononchs nematodes found in three hill districts of Manipur. The most commonly occurring nematode species are namely *Mylonchulus mulveyi*, *M. index*, *Parahadronchus shakili*, *P. andamanicus* and *Iotonchus parabasidontus*. *Mononchus truncatus*, *Prionchulus muscorum*, *P. ukhrum*, *Clarkus elongatus*, *Parahadronchus siroii*, *Mylonchulus indistinctus*, *M. japanicus* and *M. cassicus* are found only in Ukhrul district while *Coomansus conoidus*, *C. venezolanus*, *Actus baqrus*, *Mylonchulus dentatus*, *M. minor*, *Cobbonchus impositus*, *Iotonchus terminus*, *Parahadronchus andamanicus*, *P. subhonicus* and *Hadronchulus denticulus* in Chandel district and *Mononchus aquaticus*, *Parahadronchus kangbilus* n.sp. and *Prionchuloides denticulus* n.sp. in Churachandpur district respectively.

INTRODUCTION

A survey was conducted to determine the distribution and comparative account between the mononchid nematodes of three hill districts of Manipur. Distribution of nematodes are wide and different from one species to another. Some nematodes are however limited in their distribution. Some of which are found only in a specific habitat and locality. The predatory nematodes are soil inhabiting nematodes. The mononchid assemblage varied between semi and natural habitats (Arpin, 1979), they could also be used as pedological indicators (Arpin *et al.*, 1984; Dmowska, 2000). Surveys on the distribution of plant parasitic and soil nematodes have been made by many workers like Boag *et al.* (1992), Choudhury & Sivakumar (1996), Mohilal & Dhanachand (1998), Mohilal *et al.* (1998) and Peneva *et al.* (1998). As a further work in this field, the present study was taken up to identify the mononchid species in the three hill districts-Ukhrul, Chandel and Churachandpur in Manipur, and further to investigate the distribution and comparison between the mononchs species in them. Ukhrul has an average maximum temperature of 33^0C and average minimum 3^0C, Chandel has average maximum 34^0C and average minimum 4^0C and Churachandpur with average maximum 35.5^0C and average minimum 11^0C.

MATERIALS AND METHODS

A total of 252 soil samples were collected from various localities in the three hill districts. 82 soil samples were collected from Ukhrul district, 70 soil samples from Chandel and 100 soil samples were collected from Churachandpur district. The nematodes were extracted from 500gm of soil samples through Cobb's (1918) sieving and decanting technique followed by modified Baermann's funnel method. The collected nematodes were fixed and killed in warm F.A. (4 : 1); then dehydrated by Seinhorst's (1959) rapid glycerine method. The specimens were mounted and identified upto the species level and population of each species were estimated. Index of similarity were also worked out.

RESULTS AND DISCUSSION

Thirty-three species of mononchs were identified. The most often associated genera are *Mylonchulus*, *Parahadronchus* and *Iotonchus*. Among the nematode species recorded

Table I : Number of mononchs nematodes in the three hill districts.

S. No.	Nematode species	Ukhrual	Chandel	Churachandpur
1.	*Mononchus aquaticus*	-	-	5
2.	*M. truncatus*	3	-	-
3.	*Prionchulus muscorum*	4	-	-
4.	*P. ukhrum*	5	-	-
5.	*Clarkus sheri*	-	4	6
6.	*C. elongatus*	9	-	-
7.	*Coomansus conoidus*	-	1	-
8.	*C. venezolanus*	-	2	-
9.	*Actus baqrus*	-	3	-
10.	*Cobbonchus impositus*	-	4	-
11.	*Iotonchus parabasidontus*	16	6	49
12.	*I. trichurus*	-	5	15
13.	*I. indicus*	-	7	2
14.	*I. terminus*	-	6	-
15.	*Iotonchulus longicaudatus*	1	-	4
16.	*Parahadronchus shakili*	18	9	26
17.	*P. siroii*	15	-	3
18.	*P. andamanicus*	-	36	-
19.	*P. subhonicus*	-	9	-
20.	*P. kangbilus* n.sp.	-	-	4
21.	*Hadronchulus denticulus*	-	6	-
22.	*Prionchuloides denticulus* n. sp.	-	-	5
23.	*Mylonchulus hawaiiensis*	12	-	16
24.	*M. lacustris*	1	-	7
25.	*M. index*	18	23	5
26.	*M. mulveyi*	11	12	51
27.	*M. indistinctus*	4	-	-
28.	*M. japanicus*	5	-	-
29.	*M. cassicus*	8	-	-
30.	*M. sigmaturus*	-	2	12
31.	*M. dentatus*	-	10	-
32.	*M. contractus*	-	2	13
33.	*M. minor*	-	4	-
	Total	130	151	223

Mylonchulus mulveyi Jairajpuri 1970, was the most commonly occurring nematode species. Few nematode species were found to be restricted to specific area or locality or district. *Mononchus truncatus*, *Prionchulus muscorum*, *P. ukhrum*, *Clarkus elongatus*, *Parahadronchus siroii*, *Mylonchulus indistinctus*, *M. japanicus* and *M. cassicus* were found only in Ukhrul district while *Coomansus conoidus*, *C. venezolanus*, *Actus baqrus*, *Mylonchulus dentatus*, *M. minor*, *Cobbonchus impositus*, *Iotonchus terminus*, *Parahadronchus andamanicus*, *P. subhonicus*, *P. kangbilus* n. sp. and *Hadronchulus denticulus* in Chandel district and *Mononchus aquaticus*, *Prionchuloides denticulus* n.sp. in Churachandpur district only. Among the three districts Chandel district has the highest number of *Mononchus* species with 19 species, the next is Churachandpur district with 16 species and last and lowest one is Ukhrul district having 15 *Mononchs* species.

The index of similarity between Ukhrul and Chandel was 0.313, Ukhrul and Churachandpur was 0.379 and Chandel and Churachandpur was 0.251. There was low index of similarity in between Ukhrul, Chandel and Churachandpur. The highest index of similarity was found to be in between Ukhrul and Churachandpur districts and lowest index of similarity was between Chandel and Churachandpur districts.

Mohilal & Dhanachand (1998) and Mohilal *et al.* (1998) have reported the higher population of *Iotonchus* and *Parahadronchus* in the two hill districts-Chandel and Ukhrul in Manipur. In the present survey *Parahadronchus andamanicus* shows the highest population in Chandel district. *Parahadronchus shakili* and *Mylonchulus index* attained maximum population on comparison with other species in Ukhrul district. In Churachandpur the highest population is attained by *Mylonchulus mulveyi.* The mononchs species diversity as well as their population density were higher in undisturbed forest ecosystems having altitude above 600 m above MSL (Choudhury & Sivakumar, 1996) and this concept is in conformity with the present investigation. Boag (1974) and Popovici (1990) also recorded more mononchs from forest lands. But Boag *et al.* (1992) recorded *Anatonchus tridentatus* more frequently in agricultural lands with high population density. In contrast with their works, the present study shows more predominance of mononchs population in undistrubed forest lands.

From the above result it can be concluded that the distribution of mononchs nematodes were not the same in the three different hill districts (Ukhrul, Chandel and Churachandpur) of Manipur. There are some nematode species which are found only in one district and non in other districts. The index of similarity between Ukhrul, Chandel and Churachandpur districts were low. Differences in the ecological and geographical conditions may have led to the unequal distribution of the nematodes.

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