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Indian Journal of Helminthology Vol. XXII No. 2, September, 1970 pp. 136—138

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OF PEARL MILLET (*PENNISETUM TYPHOIDES*) IN
RAJASTHAN

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Pennisetum typhoides Stapf & Hubb., a rain-fed crop of semi-arid regions, is a staple cereal food in Rajasthan. Hardly any information is available about the nematode pests of this crop, although fungal diseases like green-ear, smut and rust are well known. Therefore, an intensive state-wide survey was conducted during the years 1965-67. Attempt was made to represent almost all the major pearl millet growing tracts of Rajasthan. 310 sample of 76 fields from 21 localities (from various districts) were examined (Fig. 1).

MATERIALS AND METHODS

Random sampling was made throughout the State of Rajasthan. Two reserved plots, one in Central Arid Zone Research Institute, Jodhpur and the other in Agricultural Research Farm at Mandore were intensively examined. Approximately 500 c. c. of soil including the roots were collected every time. After thorough mixing, the samples were processed in SEINHORST's elutriator and concentrated by using a cotton filter. 250 c. c. of soil was processed every time and population counted. The roots were examined for endoparasitic nematodes.

THORNE's (1961) method was usually used for making permanent preparations of nematodes. Specimens fixed and mounted in 4% formalin + calcium carbonate (Baker, 1945) were the best for temporary studies.

RESULTS

Quantitative data are presented only for genera considered to be plant parasitic (Table 1). All samples yielded at least one genus, and

The research has been financed in part by a grant made by the United States Department of Agriculture under P.L. 480.

TABLE 1

ANALYSIS OF PLANT PARASITIC NEMATODES RECOVERED FROM THE RHIZOSPHERE OF PEARL MILLET IN RAJASTHAN

Locality :	Masooria	Mandore	Banar	Bilara	Lamba	Merta City	Nagaur	Pali	Sumerpur	Sirohi	Abu Rd.	Reodar	Ajmer	Nasirabad	Mehlan	Durgapura	Gobindgarh	Bassi	Bundi	Kota	Localities examined = 21												
	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields	No. of samples	No. of fields										
	4	56	5	48	2	4	1	2	1	8	5	6	12	15	10	18	8	2	9	12	3	16	15	2	6	4	4	Fields examined = 76					
																						Samples examined = 310											
Nematodes recovered	NUMBER OF SAMPLES INFESTED																					No. of infested samples	% of infested samples	No. of infested localities	% of infested localities	*Grade of infestation							
<i>Hoplolaimus indicus</i>	20	8	6	8	42	13.5	4	19.0	B
<i>Scutellonema</i> sp.	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1.6	2	9.5	A
<i>Helicotylenchus indicus</i>	..	..	..	..	3	1	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	7	2.3	4	19.0	A
<i>Helicotylenchus</i> sp.	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	3	0.9	2	9.5	A
<i>Heterodera avenae</i> (larvae)	..	..	..	..	..	..	..	3	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	6	1.9	3	14.3	B
<i>Pratylenchus zaeae</i>	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1.9	3	14.3	B
<i>Pratylenchus mulchandi</i>	..	..	..	..	37	4	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	50	16.1	4	19.0	C
<i>Tylenchorhynchus indicus</i>	9	7	..	..	2	..	1	3	..	2	3	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	31	10	11	52.4	C
<i>Tylenchorhynchus</i> sp.	4	3	..	..	2	..	..	..	1	..	..	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	17	5.5	9	43.0	C
<i>Ditylenchus myceliophagus</i>	43	27	..	1	15	5	5	7	2	10	2	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	124	40	15	71.4	E
<i>Ditylenchus</i> sp.	2	..	..	..	3	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2.3	4	19.0	D
<i>Telotylenchus indicus</i>	6	5	..	1	3	..	..	2	..	4	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	7.7	9	43.0	D
<i>Telotylenchus paaloofi</i>	52	38	1	2	32	4	6	4	2	6	3	2	2	..	3	2	..	..	..	..	..	..	..	..	..	..	..	16.3	52.6	18	85.7	D
<i>Pseudhalenchus anchilispomus</i>	4	2	..	..	6	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	15	4.8	4	19.0	A
<i>Psilenchus</i> sp.	3	2	..	..	4	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	11	3.5	4	19.0	A
<i>Tylenchus</i> sp.	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	0.9	2	9.5	A
<i>Paurodontus</i> sp.	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0.6	1	4.8	A
<i>Nothotylenchus</i> sp.	21	18	1	1	13	..	3	2	4	3	6	1	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	84	27	18	85.7	B
<i>Basiliophora</i> sp.	6	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	10	3.2	4	19.0	B
<i>Paratylenchus</i> sp.	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2.3	1	4.8	A
<i>Aphelenchus avenae</i>	53	45	3	1	39	9	7	12	6	11	6	2	6	7	3	6	8	..	3	4	4	..	..	..	..	..	..	237	76.4	21	100.0	E
<i>Aphelenchus radicolus</i>	12	7	..	..	..	..	2	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	8.0	5	23.8	D
<i>Paraphelenchus myceliophthorus</i>	..	3	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1.9	3	14.3	B
<i>Aphelenchoides subtennis</i>	4	2	..	..	..	1	1	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	4.5	6	28.6	C
<i>Aphelenchoides asterocephalus</i>	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1.3	2	9.5	B

*No. of Nematodes recovered per 250 c. c. of soil
 Grade A = 1-10 nematodes Grade B = 11-100 nematodes Grade C = 101-200 nematodes.
 Grade D = 201-500 nematodes Grade E = 501 and above

often more than one genus, of known plant pathogenic nematodes. Genera belonging to families Neotylenchidae and Aphelenchidae, although not proven to be phytoparasitic, have been taken into consideration. They occurred widely in large numbers.

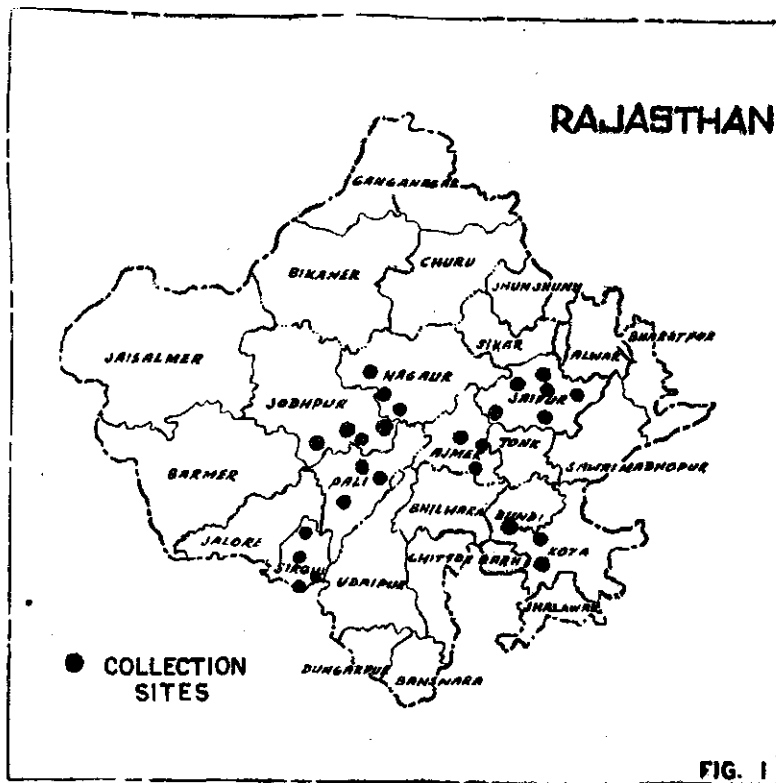


Fig. 1. Map depicting collection sites.

Telotylenchus paatoofi T., Kyani & Khera was present in 85% of the localities surveyed, *Tylenchorhynchus indicus* Siddiqi in 52% *Telotylenchus indicus* Siddiqi in 43%, *Hoplotaimus indicus*, *Helicotylenchus indicus* Sher and *Pratylenchus mulchandi* Nandakumar & Khera in 19%.

Although larvae of *Heterodera avenae* were obtained from few places, cysts have not yet been recovered from the roots. Root-knot and other

endoparasitic nematodes were also not found. To date, nematodes have not been observed on the aerial parts of pearl millet plants.

DISCUSSION

Telotylenchus paaloofi, *T. indicus*, and *Tylenchorhynchus indicus* were widely distributed in pearl millet fields. Species of *Scutellonema* and *Paratylenchus* were restricted to one locality and were scarce in number. *Hoplolaimus indicus* and *Helicotylenchus* sp. were sparse and sporadic in distribution. *Pratylenchus muli* n. sp was localised to certain places.

Since these parasitic nematodes have to depend on plant roots for their subsistence, it is reasonable to think that they have an adverse effect upon the health and productivity of the millet plants without causing obvious symptoms. Experiments are in progress to assess the pathogenic role of certain selected nematode parasites on pearl millet.

ACKNOWLEDGEMENTS

The authors are thankful to the Head of Zoology Department, Jodhpur University for providing facilities and to the Director, Central Arid Zone Research Institute for permission to collect soil samples from pearl millet fields.

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