



Short Communication

## INFESTATION OF AN ENDOPARASITIC MIGRATORY RICE ROOT NEMATODE, *HIRSCHMANNIELLA ORYZAE*- A SERIOUS THREAT TO THE PADDY GROWERS OF WESTERN U.P. – A FIRST REPORT

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During a series of systematic surveys of paddy fields in months of August and September 2015 in and around Gautam Budha Nagar known to be grown predominantly as *kharif* crop where out of total number of ten villages, heavily infested fields with endoparasitic migratory rice root nematode, *Hirschmanniella oryzae* (van Breda de Haan) Luc et Goodey (1964) was observed in standing crop var. Basmati-1509 distinctly in four villages (figs. 1, 2). The growers were disheartened to record unexpectedly poor tillering alongwith root and shoot growth on above rice variety.

The above heavily infested rice root nematode appeared most of the plants with highly retarded growth rate and reduced tillering in early growth stages in which flowering, in general, were observed to be delayed by 15-21 days. It was also observed that the infection by *H. oryzae*, in nurseries was not expressed by any recognizable symptoms. Following 30-45 days of transplantation the infected roots first showed a yellowish to brown colour lesions, which get darkened over time.

It was observed that population of rice root nematodes in root systems were lowest at post transplanting and highest at heading stage.

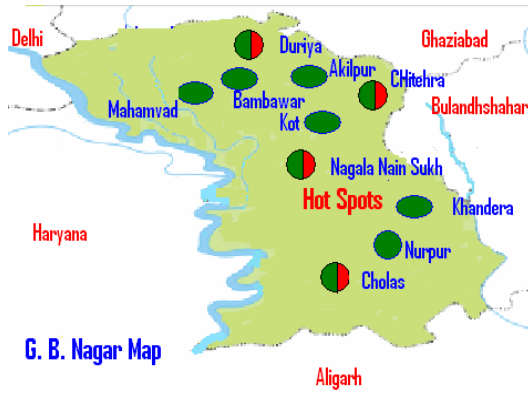
The rice root nematode belonging to Order Tylenchida and family Pratylenchidae are stylet bearing

endoparasitically migratory nematode. All stages of this including males being infective entering epidermis of the young roots behind the root tips through the air channels. Thereafter they colonize the cortical tissues, performing all biological activities with feeding, movement, development and oviposition, the life cycle being completed in 30 days *i.e.* one generation in Northern India. This nematode is known to kill cells of cortex, dissolve cell walls, thereby causing large cavities (Mathur and Prasad, 1972). Juveniles and adults thereafter come out in soil in search of new roots of several selected and perennial weeds for survival / overwintering.

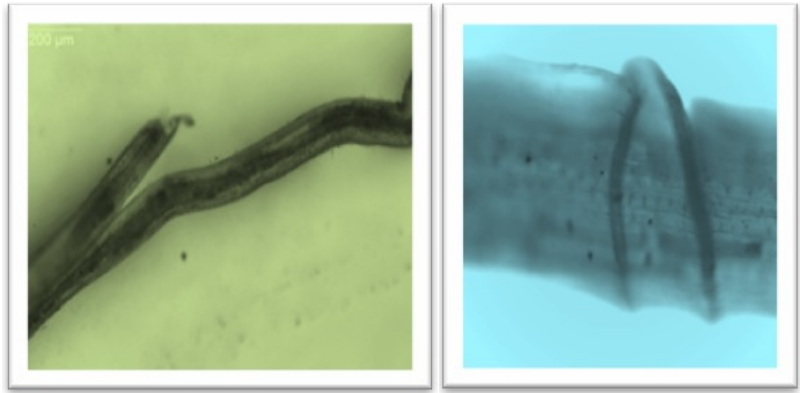
Several weeds grown in and around rice fields have also been reported to host *Hirshmanniella* spp specially from the family Cyperaceae and Graminae (Mohandas *et al.*, 1979). Yield losses due to rice root nematodes ranges from 25 to 42% (Hollis and Keoboonrueng, 1984; Fortuner, 1985; Prasad *et al.*, 1987).

This is the first report of rice root nematode, a devastating migratory endoparasitic one, on the staple crop rice, from Uttar Pradesh causing a serious threat to the farmers and need to be urgently managed against further spread of the menace causing great concern for the Plant Protectionists.

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**Fig. 1 :** Paddy fields highly infested with rice root nematode.



**Fig. 2 :** Migratory endoparasite RRN, *Hirschmanniella oryzae*.

## References

- Fortuner, R. (1985). Nematode damage assessment problems and solutions for a rice nematode : *Hirschmanniella oryzae*. *Calif. Pest. Dis. Rep.*, **4** : 2-7.
- Hollis, J. P. and S. Keoboonrueng (1984). Nematode parasites of rice. In: *Plant and Insect nematodes*, W. R. Nickle (ed.) New York and Basel, Marcel Dekker. pp. 95-146.
- Luc, M. and J. B. Goodey (1962). *Hirschmannia* n. g. differentiated from *Radopholus* Thorne, 1949 (Nematoda: Tylenchoidea). *Nematologica*, **7** : 197-202.
- Luc, M. and J.B. Goodey (1964). *Hirschmanniella* nom. nov. for *Hirschmannia*. *Nematologica*, **9** : (1963), 471.
- Mathur, V. K. and S. K. Prasad (1972). Embryonic development and morphology of larval stages of rice root nematode, *Hirschmanniella oryzae*. *Ind. J. Nematol.*, **2** : 146-157.
- Mohandas, C., N. K. C. Pattanaik and J. S. Prasad (1979). Host range of the rice root nematode *Hirschmanniella oryzae*. *Indian Journal of Nematology*, **9** : 177-178.
- Prasad, J. S. and Y. S. Rao (1984). The status of root nematodes (*Hirschmanniella* sp.) as pests of rice (*Oryza sativa*). *Beitrag trop. Landwirtschaft. Veterinarmed*, **22(3)** : 281-284.