

ISOLATION AND AUTHENTICATION OF ENTOMOPATHOGENIC NEMATODES FROM ALLAHABAD REGION

Rajkumari Padamini¹ and Sobita Simon²

Deptt. of Plant Pathology, Rajasthan College of Agriculture, MPUAT Udaipur -313001, India
Deptt. of Plant Protection, Sam Higginbottom Institute of Agriculture Technology and Sciences,
Allahabad -211007, India

E-mail: padaminirajkumari@yahoo.com

Abstract: Random surveys were carried out for the detection of entomopathogenic nematodes from cultivated areas in different villages of Allahabad district, Uttar Pradesh, India. A total of 60 soil samples were processed for baiting using larvae of cabbage semi-looper, *Thysanopulsia orichalcea* (Lepidoptera: Noctuidae). Of these, only ten soil samples (16.67%) yielded EPNs. *Heterorhabditis sp.* was yielded from six soil samples (10%) collected from different villages, while *Steinernema sp.* was yielded from four samples (6.7%). However, no EPNs were recovered from soil samples of twelve villages. The nematodes were recovered from sandy, sandy loam and alluvial soils with soil pH ranging from 6.50 to 8.00. The isolated entomopathogenic nematodes were found to be *Steinernema sp.* and *Heterorhabditis sp.* The bioassay of the isolated EPNs was studied under laboratory condition on *Corcyra cephalonica* larvae in different inoculum level of 50, 100, 150, 200 and 250 IJs/ml. After 120 hours of inoculation the % mortality of the test insect with *Steinernema sp.* was found to be 97.5% with 250 IJs/ml while that of *Heterorhabditis sp.* was found to be 100%. And also the % net mortality after 120 hours of inoculation with 250 IJs/ml of *Steinernema sp.* was found to be 79.6% whereas that of *Heterorhabditis sp.* was found to be 81.6%. Hence it was found out that the dose mortality response on the test insect with isolated *Heterorhabditis sp.* was observed to be more effective than that of *Steinernema sp.*

Keywords: EPN, *Heterorhabditis sp.*, *Steinernema sp.*, *Corcyra cephalonica*

REFERENCES

- Adams, B.J., Burenell, A.M. and Powers, T.O. (2002). Taxonomy and Systematics .In: *Entomopathogenic Nematology* (Ed. R Gaugler) CAB International Publishing, U.K., 1-33pp.
- Akhurst, R.J. and Boemare, N.E. (1988). A numerical taxonomic study of the genus *Xenorhabdus* and proposed elevation of the subspecies of *X. Nematophilus* to species. *Journal of General Microbiology* 134 (7): 1835-1845.
- Ali, S.S., Ahamad, R.; Hussain, M.A. and Pervez, R. (2005). Pest management in pulses through entomopathogenic nematodes. *Indian Institute of Pulse Research, Kanpur*, pp58.
- Cabanillas, H.E., Poinar, G.O.Jr. and Raulston, J.R. (1994). *Steinernema riobrave sp.* (Rhabditidae: Steinernematidae) from Texas. *Fundamental and Applied Nematology* 17:123-131.
- Ganguly, S. (2006). Recent taxonomic status of entomopathogenic nematodes: A review. *Indian Journal of Nematology* 36(2):158-176.
- Gaugler, R. and Kaya, H.K. (1990). Entomopathogenic nematodes in Biological control. *Boca Roton, FL, USA: CRC Press*, pp365.
- Grewal, P.S., Selvan, S. and Gaugler, R. (1994). Thermal adaptation of entomopathogenic nematodes: niche breath for infection, establishment and reproduction. *Journal of Thermal Biology* 19: 245-253.
- Hominick, W.M., Briscoe, B.R.; Pino, F.G.Del.; Heng, J.; Hunt, D.J.; Kozodoy, E.; Mracek, Z.; Nguyen, K.B.; Reid, A.P.; Spiridonov, S.; Stock, P.; Sturhan, D.; Waturu, C. and Yoshida, M. (1997). Biosystematics of entomopathogenic nematodes. *Current status, protocols and definitions. Journal of Helminthology* 71: 271-298.
- Hussaini, S.S., Singh, S.P. and Nagesh, M. (2002). In vitro and field evaluation of some indigenous isolates of *Steinernema* and *Heterorhabditis indica* against shoot and fruit borer, *Leucinodes orbonalis*. *Indian Journal of Nematology* 32(1):63-65.
- Kaya, H.K. and Gaugler, R. (1993). Entomopathogenic nematodes. *Annual Review of Entomology* 38:181-206.
- Lacey, L.A., Frutos, R.; Kaya, H.K. and Vails, P. (2001). Biological control 21:230-248.
- Poinar, G.O.Jr. and Brooks, W.M. (1977). Recovery of the entomopathogenic nematodes, *Neoaplectana glaseri* Steiner, from a native insect in North Carolina .*IRCS Medical Science: Environmental Biology and Medicine; Experimental Animals; Microbiology, Parasitology and Infectious Diseases* 5: 473.
- Poinar, G.O.Jr. (1990). Taxonomy and biology of Steinernematidae and Heterorhabditidae. 23-62. In R. Gaugler and H.K. Kaya (eds), *Entomopathogenic nematodes in biological control* .CRC, Boca Raton, FL.
- Ricci, M., Glazer, I.; Campbell, J.F. and Gaugler, R. (1996). Comparison bioassay to measure virulence of different entomopathogenic nematodes. *Bio control Science and Technology* 6:235-245.
- Rishi, Pal., Hussain, M.A. and Prasad, C.S. (2008). Natural occurrence of entomopathogenic nematodes in Meerut district, North India. *International Journal of Nematology* 18 (2):198-202.
- Thomas, H.A. and Poinar, G.O. (1979). *Xenorhabdus* gen. nov., a genus of entomopathogenic nematophilic bacteria of the family Enterobacteriaceae. *International Journal of Systematics Bacteriology* 29(4): 352-360.
- White, G.F. (1927). A method for obtaining infective nematode larvae from cultures. *Science* 66, 302-303.