

EFFECTIVENESS OF DD-136, AN ENTOMO-
PHILIC NEMATODE AGAINST INSECT PESTS
OF AGRICULTURAL IMPORTANCE

THE potential use of nematodes in biological control of insects was discussed by Glaser and Wilcox². It has now been established that DD-136 *Neoplectana carpocapse* Weiser offers scope for the natural control of insect populations in India (Yadava and Rao⁸ and Mathur *et al.*¹). Srivastava and Mathur⁷, Israel *et al.*³ and Rao and Manju Nath⁶ also tested the effectiveness of this parasitic nematode against some lepidopterous insect pests.

In the present work pathogenicity of the nematode on some agriculturally important insect pests has been tested under laboratory conditions (Table I). Nematode suspension was sprayed on

TABLE I

Population level of DD-136 from different insects after 9-10 days of trapping

Insects	Stage	Frequency (popula- tion size)	Corrected % mortality
<i>Athalia proxima</i> Klug	Larva	+	53.3
<i>Aulacophora foveicollis</i> Lucas	Adult	+++	66.6
<i>Dacus cucurbitae</i> Coquillet	Larva	-	..
<i>Diacrisia obliqua</i> Walker	"	+	53.3
<i>Dysdercus cingulatus</i> Fab.	Adult	++	58.2
<i>Epilachna vigintiocto- punctata</i> (F.)	"	-	..
<i>Heliothis armigera</i> (Hb.)	Larva	++	58.2
<i>Leucinodes orbonalis</i> (Guen.)	"	++++	73.3
<i>Spodoptera litura</i> (Fabricius)	"	+++	66.6

Key to symbols: ++++ = Very high;
+++ = High; ++ = Moderate;
+ = Low; - = Absent.

five insects of about the same age with atomizer at the rate of 125 nema per petridish. There were three replicates, the fourth being control sprayed with distilled water. The insects were allowed to feed on their natural host. The mortality of insects was counted after 24, 48 and 72 hr. The corrected mortality was calculated by Abbot's formula (Abbot¹). Dead insects, if any, were removed after every count and kept for trapping of nematodes in 0.1% formalin solution. The population of nematodes was recorded in each host after 9-10 days of trapping. Dead insects from the control were also examined for the presence of nematode.

The highest mortality (73.3%) was recorded in *Leucinodes orbonalis* Guen., a new host for DD-136 nematode. It also produced the largest

numbers of nematodes. All test insects except *Dacus cucurbitae* Coq. and *Epilachna vigintiocto-
punctata* Fab. facilitated multiplication of nema-
todes (Table I).

The laboratory observations have confirmed that non-lepidopterous insects such as *Athalia proxima* Klug, *Aulacophora foveicollis*, Lucas and *Dysdercus cingulatus* Fab. are also susceptible to DD-136 nematode. Poinar⁵ also listed some beetles as its hosts. Although it has been reported that DD-136 nematodes prefer lepidopterous insects but it is clear from the present investigation that this nematode can to some extent attack other orders of insects also which needs thorough checking for their pathogenicity. Mathur *et al.*⁴ recorded *Diacrisia obliqua* Wlk. as a host of DD-136 nematode. However, in the present investigations, only low population levels were recorded.

The authors thank Dr. S. P. Mukharji for going through the manuscript and making useful sugges-
tions. Thanks are also due to Mr. P. Israel of the
Central Rice Research Institute, Cuttack, for supply
of culture of the nematode and to Mr. C. P.
Yadava of the same Institute for his useful sug-
gestions.

Department of Entomology,
Banaras Hindu University,
Varanasi, India, June 26, 1974.

JANARDAN SINGH.
A. K. BARDHAN.

1. Abbot, W. S., *Jour. econ. Entomol.*, 1925, 18, 265.
2. Glaser, R. W. and Wilcox, A. M., *Psyche*, 1918, 25, 12.
3. Israel, P., Rao, Y. R. V. J., Prakasa Rao, P. S. and Varma, A., *Abs. All Ind. Nemat. Symp.*, 1969, p. 70.
4. Mathur, S. B., Srivastava, R. P. and Srivastava, K. L., *Proc. Nat. Acad. Sci. (India)*, 1971, 41, 325.
5. Poinar, G. O. Jr., In: *Microbial Control of Insects and Mites* (H. D. Burges and N. W. Hussey, Eds.), Academic Press, London and New York, 1971, p. 173.
6. Rao, V. P. and Manju Nath, T. M., *Ind. Farming*, 1966, 16 (2), 43.
7. Srivastava, R. P. and Mathur, S. B., *Abs. All Ind. Nemat. Symp.*, 1969, p. 32.
8. Yadava, C. P. and Rao, Y. S., *Oryza*, 1970, 7 (2), 131.

ADDITIONAL HOSTS OF THE ROOT-KNOT
NEMATODE, *MELOIDOGYNE JAVANICA*

AMONG the phytonematodes the root-knot nema-
todes rank first for their notoriety with regard to
the widest host range and worldwide distribution.
These nematodes are predominant in areas where
multiple cropping and intensive cultivation are
practised. They produce galls, swellings, or knots
on the roots of plants, giving a very unsightly look.