

Indarbela tetraonis Moore — A new Bark Borer Pest on Curry Leaf Tree and its Control *

by

B. VASANTHARAJ DAVID¹, S. VIJAYARAGHAVAN² &
P. S. NARAYANASWAMY²

Synopsis: Spraying of BHC 0.2% or Endrin 0.04% after removing all the webs constructed by the caterpillars effectively controlled the bark borer pest, *Indarbela tetraonis* M. on Curry leaf trees. Considering the value of the produce that is saved by adopting the above method, the money spent by way of the cost of treatment is negligible and is within the reach of the grower.

Introduction: The bark borer, *Indarbela tetraonis* Moore (Lepidoptera: Metarbelidae), is known to affect commonly a number of avenue trees and plants and is distributed throughout India. It has been recorded on mango, guava (Isaac 1931), moringa, rose, orange, citrus, *Zizyphus jujuba*, *Eugenia jambolana*, *Phyllanthus emblica* and litchi (Fletcher 1921). Ramakrishna Ayyar (1940) recorded casuarina, rain-tree, *Peltaphorum*, *Poinciana*, Asoka, etc. as additional hosts of the insect. He recommended hooking out of the caterpillars from the holes with hooked wires or injection of a small quantity of a mixture of petrol and naphthalene into the holes by means of a syringe and in addition spraying Paris green mixture on the bark of infested trees for controlling the pest. Cherian (1942) has suggested application of kerosene and petrol (10:1) into the bore holes on citrus plants. Pumping in small quantities of petrol into the bore holes and plugging with a little earth, or applying BHC 5% dust has been recommended by Ramachandran (1954) for controlling the pest on oranges.

Recently, the occurrence of the insect on curry leaf (*Murraya koenigii* Spr.) trees in a severe form was reported from Udayampalayam village near Coimbatore. *Moringa oleifera* Lam. and *Thespesia populnea* Cav. trees found in the vicinity of the garden were also infested by the insect, the latter one being a new host record. The request of the owner combined with the absence of a proved remedial measure to combat the pest prompted the conduct of the following observational trial.

Life-history: The eggs are laid under the loose bark or in wounds on the tree surface. The caterpillars, on hatching, scrape and feed on the bark, constructing the characteristic galleries with frass and excreta

1. Assistant Lecturer in Entomology, 2. Assistant in Entomology and 3. Entomologist & Associate Professor of Entomology, Agricultural College and Research Institute, Coimbatore.

* Received on 20-9-1962.

(Plate 1) and also bore into the stem to about 6 to 9 inches. Only one caterpillar is found inside a bore hole which is used only as a shelter when the caterpillar does not feed. The full-grown caterpillars are about 60-64 mm. in length with a pale brown body colour and a darkish head. Thin hairs are sparsely distributed all over the body. They pupate inside the bore hole (Plate 2) and the pupae are stout and reddish brown in colour measuring about 18 mm. in length and 5 mm. broad. The pupa is provided with two rows of spines on each of the abdominal segments, arranged transversely on the anterior and posterior margins. Posteriorly

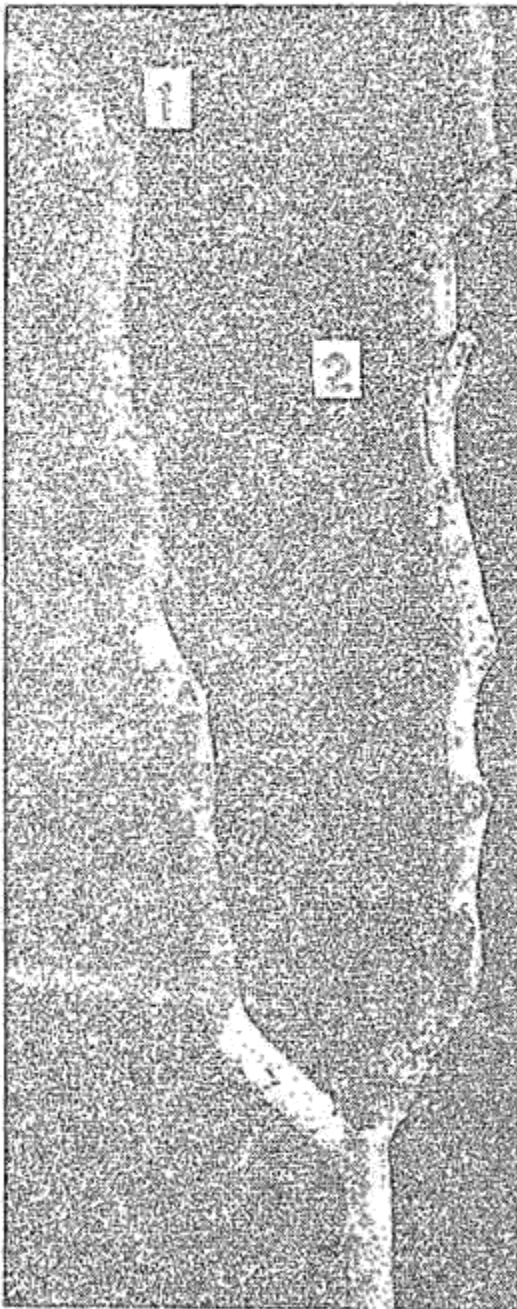


PLATE 1

1. Unaffected portion.
2. Affected portion of the stem showing the web.



PLATE 2

Pupa and caterpillar inside the bore hole.

the pupa is truncated. Anteriorly there are two sharp processes at the tip with sparsely distributed hairs on the ventral side. The pupa is capable of moving up and down inside the bore hole. At the time of emergence the pupa protrudes outside partially and the adult comes out. The adult moth is pale brown with wavy, grey marks on the wings (Plate 3). The life-history appears to extend over a fairly long period.

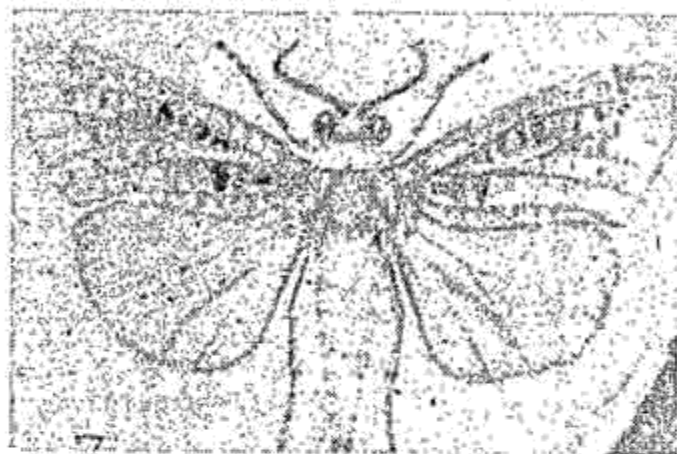


PLATE 3
Adult.

Damage caused: The caterpillars feed on the bark mostly during night under shelter of webs covering a considerable part of the stem. They eat through the bark into the wood and if the attack is severe movement of sap is stopped and the tree ceases to flush. Almost all the trees in the garden were infested by the pest and as many as 15 caterpillars were noted on a single tree. The incidence of the pest is easily made out by

the presence of the peculiar winding galleries, generally near the forks or angles on the stem and branches. Since the leaf of the plant is used for culinary purposes and fetches good income in the market the pest is reckoned to be a major one. Initially the infestation starts by July. It is noted to be severe during the months November to April.

Control: The control of the insect has been a problem since it lives concealed in webs and retreats into the bore hole at the slightest disturbance. To know the efficacy of the common insecticides readily available in the market and agricultural depots in controlling the pest the present instance was availed of.

A randomised replicated trial on an observational basis was laid out in the garden with four replications having two trees in each replication. The treatments were sprays of BHC 0.2%, DDT 0.2%, Endrin 0.04% and Malathion 0.2% and injection of petrol into the bore holes with a suitable control. Counts on the initial population of the larvae were recorded by noting the freshly eaten bark and newly constructed webs on the trees. The webs were removed immediately to facilitate further recording the population after treatment and by counting the number of reconstructed webs the subsequent population is assessed. Except for petrol, the other insecticides were sprayed on the stems so that it may get completely drenched and also were forced into the bore holes by directing the nozzle

at the opening of the bore hole. The quantity of spray fluid used per tree of average height of 10 to 12 feet was about one gallon. In the case of petrol, it was only injected into the bore holes with a syringe and plugged with mud. Observations were made a week, 15 days and a month after the treatments. Every time after recording the observations the webs present, if any, on the trees were removed. The observations made on the population level of the larvae initially, a week, 15 days and a month after the treatments are presented in table I.

TABLE I.

Population of Indarbela tetraonis Moore on Curry leaf trees before and after treatment

| Treatments | Initial population recorded on 15-2-1962 | | | | | Population recorded | | | | | | | | | | | | | | | Percentage of kill | |
|-------------------|--|----|-----|----|-------|---------------------|-----|-----|-----|-------|-------------|-----|-----|-----|-------|--------------|-----|-----|-----|-------|--------------------|------|
| | Replications | | | | | On 22-2-1962 | | | | | On 3-3-1962 | | | | | On 19-3-1962 | | | | | | |
| | I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total | | |
| 1. B. H. C. 0.2% | ... | 19 | 19 | 4 | 12 | 54 | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | 98.2 |
| 2. DDT. 0.2% | ... | 12 | 6 | 1 | 9 | 28 | 4 | 1 | ... | ... | 5 | 4 | 1 | ... | ... | 5 | 4 | 1 | ... | ... | 5 | 82.1 |
| 3. Endrin 0.04% | ... | 5 | 17 | 14 | 26 | 62 | ... | 4 | ... | 6 | 10 | ... | 4 | ... | 6 | 10 | ... | 4 | ... | 6 | 10 | 83.9 |
| 4. Malathion 0.2% | ... | 13 | 17 | 11 | 5 | 46 | 8 | 6 | 3 | 2 | 19 | 8 | 6 | 3 | 2 | 19 | 8 | 6 | 3 | 2 | 19 | 58.7 |
| 5. Petrol | ... | 9 | 5 | 6 | 10 | 30 | 4 | 3 | 2 | 7 | 16 | 4 | 3 | 2 | 7 | 16 | 4 | 3 | 2 | 7 | 16 | 46.7 |
| 6. Control | ... | 6 | 4 | 6 | 9 | 25 | 6 | 4 | 6 | 9 | 25 | 6 | 4 | 6 | 9 | 25* | 6 | 4 | 6 | 9 | 25† | ... |

* 1 pupated

† Three pupated

It is seen from the table that a week after treatment there is considerable reduction in the population of larvae in all the treated trees. The percentage of reduction is the highest being 98.2 in BHC 0.2% followed by 83.9 in Endrin 0.04%, 82.1 in DDT 0.2%, 58.7 in Malathion 0.2% and 46.7 in petrol. There is no reduction at all in control. The same trend is observed even after 15 days and a month after the treatment. It is worth mentioning here that in the case of BHC and Endrin treated trees a few minutes after the treatment the caterpillars are forced to work their way out of the bore holes, drop down on the ground and die in course of time. The leaves collected a month after treatment from the treated trees showed no off-flavour due to the insecticidal treatments.

Cost of treatment: The cost of treatment per tree was worked out in all the cases and the same is furnished below.

| S. No. | Treatment | Cost per treatment per tree in nP. |
|--------|----------------|------------------------------------|
| 1. | BHC 0.2% | 30 |
| 2. | DDT 0.2% | 15 |
| 3. | Endrin 0.04% | 19 |
| 4. | Petrol | 10 |
| 5. | Malathion 0.2% | 37 |

Conclusion: It has been observed from the above trial that the damage caused by the curry leaf bark borer can be effectively checked by spraying BHC 0.2% or Endrin 0.04% after removing all the webs constructed by the caterpillars. Special care has to be bestowed to see that the spray fluid is forced into the bore holes in order to obtain the maximum control. Considering the value of the produce that is saved by adopting the above method, the money spent by way of the cost of treatment is negligible and is within the reach of the grower.

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