

Survey on incidence of coconut leaf eating caterpillar, *Opisina arenosella* Wlk. and its natural enemies in Goa

D. SUNDARARAJU

ICAR Research Complex for Goa [CPCRI], Ela, Old Goa - 403 402

and

ORLANDO F. RODRIGUES

Command Area Development Authority, Fatorda, Margao

In Goa coconut is grown in an area of 20,488 ha and the leaf eating caterpillar, *Opisina arenosella* Wlk. (*Nephantis serinopa* Meyr.) (Cryptophasidae : Lepidoptera) is one of the major pests of coconut in Goa (Sundararaju, 1979). The caterpillars live on the under surface of the leaflets inside silken galleries and feed voraciously on the chlorophyll containing tissue of leaves. In severe cases, the whole leaf will dry up which results in reduction of yield. The severity of the pest was marked during

summer months from February to June. With the onset of South West monsoon, the pest population declines.

The present studies were made to find out the intensity of infestation caused by this pest and also to evaluate the level of natural suppression of the pest by its natural enemies. A survey in all the coconut growing tracts of Goa was undertaken and the results of the survey form the subject matter of this short paper.

MATERIALS AND METHODS

The coconut gardens in the coastal and interior villages of Bardez, Tiswadi, Ponda, Mormugao, Salcete, Sanguem, Quepem and Canacona talukas were intensively surveyed from 2nd to 11th April, 1980. In the infested garden, five per cent of the palms were selected at random as sample palms for observations and the total and infested leaves were counted. Similarly total and infested leaflets were counted on 10% of the leaves selected at random in different

July 1985

due to the infections of certain microbial pathogens. Further studies on this aspect are also warranted.

As natural enemies exerting check on pest population to a great extent are prevalent in this tract, it is quite feasible to contain the pest in the early stages of outbreak through biological pest suppression with indigenous natural enemies. This method is also more advantageous than the other methods of pest control, particularly chemical control, which is quite expensive and impracticable in tall trees. Considering this aspect, setting up of a full-fledged Parasite Breeding Station in Goa was proposed.

SUMMARY

The coconut growing tracts of Goa in 112 villages of eight

talukas were surveyed for studying the intensity of incidence of coconut leaf eating caterpillar *Opisina arenosella* Wik (*Nephantis serinopa* Meyr.) (Lepidoptera : Cryptophasidae). The incidence of the pest was noticed in 21 villages of six talukas with leaf damage ranging from 13.0 to 85.7%.

With regard to the natural enemy complex, *Parasierola nephantidis* M. and *Apanteles* sp. were recorded as larval parasitoids and *Brachymeria* spp. as pupal parasitoids. The carabid beetle, *Perena nigrolineata* (Chaudoir) and certain unidentified spiders were also noticed as predators. The larval and pupal parasitism ranged from 5.0 to 22.0% and 3.7 to 30.0%, respectively. Besides this natural mortality of 2.5 to 24.3% and 6.9 to 23.1% in larval and pupal population,

respectively, was also noticed which may presumably be due to the infection of microbial pathogens.

ACKNOWLEDGEMENTS

The authors sincerely thank Dr. H. Y. Karapurkar, former Director of Agriculture, Government of Goa, Daman & Diu, for providing necessary vehicle facilities and to Dr. R. C. Mandal, former Joint Director, ICAR Research Complex for Goa, (CPCRI) for encouragement and laboratory facilities provided. They also thank Mr. G. B. Pillai, Senior Scientist (Ento.), CPCRI Regional Station, Kayangulam Kerala for the tentative identification of certain parasites and predators and for suggestions and critically going through the manuscript of the paper.

REFERENCE

Sundararaju, D 1979. A note on major pest problems of cashew, coconut and arecanut and their control in Goa. *Proc. PLACROSYM II* pp. 523-29.

NON - RECEIPT OF JOURNAL

Non - receipt of any particular issue of the "Indian Coconut Journal" should be intimated to the Chairman, Coconut Development Board, Cochin 11, Kerala within two months after the month to which the issue relates. Complaints received later will not be entertained. Subscribers may however, please note that ordinarily the responsibility of this office would cease when the copy is posted and that it cannot hold itself responsible for loss which might occur in transit. When addressing the Board, subscribers should quote their subscription number to ensure quick disposal of their complaints.

— Editor

whorls of crown. The larval and pupal population and the intensity of natural parasitism were recorded from five sample leaflets per leaf from all the 10% of leaves selected for population estimation.

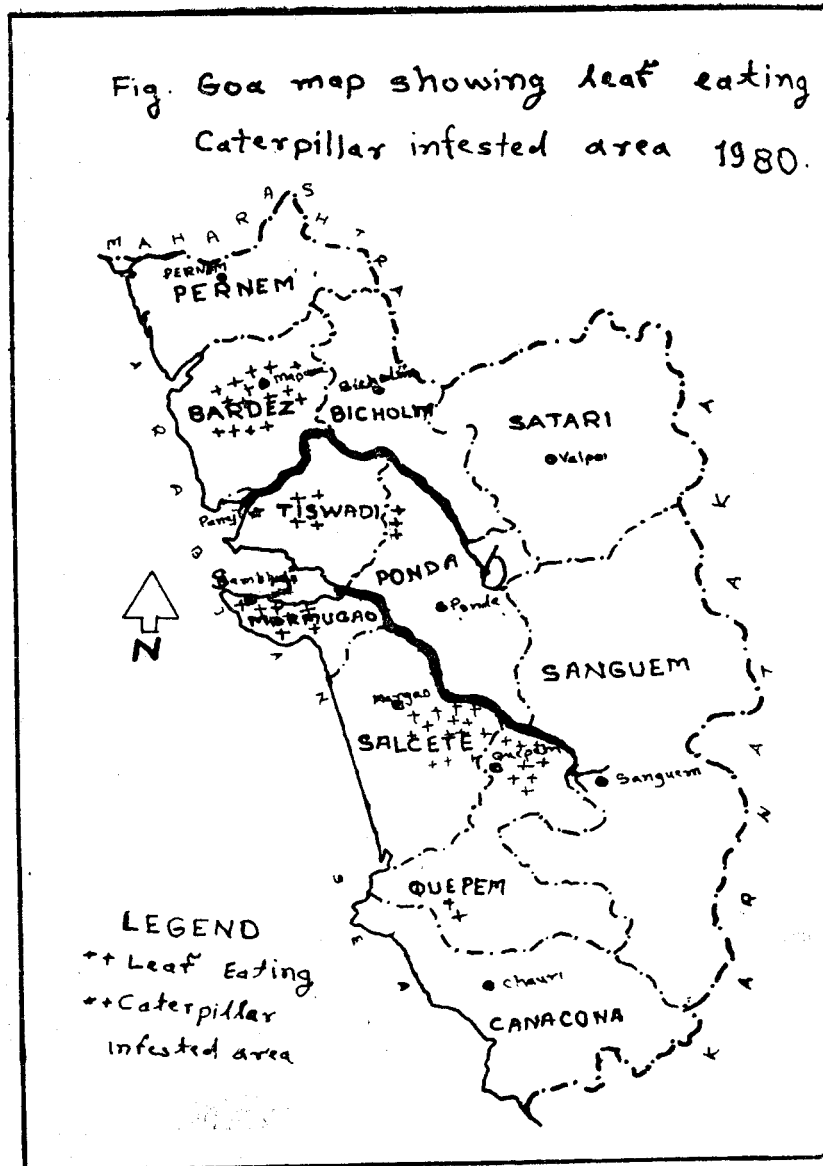
Simultaneously the field collected larvae and pupae were brought to the laboratory and kept under observation for emergence of parasitoids. Finally, percentage of infestation as well as intensity of parasitism were worked out.

RESULTS AND DISCUSSION

Out of the 112 villages surveyed, the pest incidence was noticed in 21 villages from six talukas, viz., Bardez, Tiswadi, Ponda, Mormugao, Salcete and Quepem (Figure) in varying intensities. Details of the data collected are presented in Table I.

It is obvious from the data that the incidence of *O. arenosella* was severe in Bardez (Mapusa & Bastora), Mormugao (Vasco da Gama) and Quepem talukas [Xeldona]. Since the pest is distributed in different pockets, an outbreak of the pest is likely to occur under favourable conditions.

Regarding the natural enemy complex, it is quite interesting to note that in almost all the talukas the activity of natural enemies was quite eminent. Among the larval parasitoids, *Parasierola niphantidis* Mues. [Bethyridae] and *Apanteles* sp. [Braconidae] were predominantly present in almost all locations except in Dharmapur, where another larval parasitoid *Bracon brevicornis* Wesm. [Braconidae]



was also observed. The larval parasitism ranged between 5.0 and 22.0%. The pupal parasitoids recorded were *Brachymeria* spp [Chalcididae] and parasitism ranged between 3.7% and 30.0%. But activities of hyperparasitoids on larval and pupal parasitoids of the pest were also noticed in all talukas. Therefore, the beneficial of primary parasitoids was hampered to a great extent. Detailed investigations on these

aspects are required. In addition to these, sizable population of the pest was controlled by predators like *Parena nigrolineata* [Chaudoir], [Carabidae] and a few unidentified species of spiders.

Besides these parasites and predators, natural mortality of 3.8 to 24.3% and 6.9 to 23.1% in caterpillars and pupae, respectively was noticed presumably

Table I.

DATA ON EXTENT OF DAMAGE BY THE COCONUT LEAF EATING CATERPILLAR, *Opisina arenosella* Wik.
AND ITS NATURAL PARASITISM IN DIFFERENT VILLAGES OF GOA

Name of the Village	Leaves damaged (%)	Leaflets damaged (%)	Live larval population per leaflet (no.)	Live pupal population per leaflet (no.)	Parasitism of larvae (%)	Natural mortality of larvae (%)	Pupal parasitism (%)	Natural mortality of pupae (%)
Bardez Taluka								
Mapusa	82.6	82.6	2.3	3.3	12.5	6.3	21.7	13.0
Bastora	79.0	65.0	3.0	2.2	13.0	8.7	15.2	12.1
Tiswadi Taluka								
Chimbel	52.3	20.8	2.4	Nil	16.7	3.8	Nil	Nil
Ponda Taluka								
Cumburjua	13.0	1.3	0.3	Nil	Nil	Nil	Nil	Nil
Marmagao Taluka								
Vasco-da-Gama [Sambhaji]	89.5	88.9	2.3	0.5	14.9	6.4	11.0	6.9
Salcete Taluka								
Guircolim	81.6	35.0	1.4	2.3	13.0	8.7	7.1	14.2
Chandor	65.2	23.2	1.4	1.2	5.0	15.0	Nil	23.1
Paroda	53.5	18.0	1.0	1.0	17.0	16.2	Nil	Nil
Darmapur	55.6	20.9	0.1	1.1	11.8	2.6	Nil	Nil
Quepem Taluka								
Xeidona	85.7	61.5	1.5	1.0	22.0	24.3	30.0	20.8
Kakoda	83.3	37.3	0.3	1.8	13.5	5.3	3.7	8.4
Fatorpa	45.5	7.4	1.1	Nil	12.0	4.7	Nil	Nil