

***Semiothisa (Macaria) pervolgata* Wlk. a Geometrid pest of
*Daincha (Sesbania aculeata)***

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Introduction. The members of the family Geometridae commonly known as 'span worms' or 'measuring worms' are serious pests of orchards in western countries, while most of the species, occurring in the Indian region, according to Lefroy, are hill and forest forms. Even the few forms found on the plains have not been observed as serious pests. One species—*Semiothisa (Macaria) pervolgata* has, however, been noted for the first time in 1936 in Coimbatore doing severe damage to *Daincha (Sesbania aculeata)* one of the important green manure plants in the Madras Presidency. The paper deals with the life history and habits of the pest together with information on its natural enemies and control methods tried.

Description of the Moth. *Semiothisa pervolgata* belongs to sub family *Boarmiinae*. The moth is described in the Fauna of British India, Moths Vol. III, p. 205, as follows:—

"Whitish, slightly suffused with brown and striated with fuscous. Forewing with obliquely-waved antemedial, medial and postmedial dark lines angled below the costa; a black spot at end of cell; some fuscous suffusion beyond the postmedial line; a dark patch on costa and spot below vein 5; a series of marginal black specks. Hind wing with black spot at end of cell; ante- and postmedial waved lines, the latter with fuscous suffusion beyond it and a black spot or spots at vein 2; a marginal crenulate black line. Underside the marginal area largely suffused with rufous and with white patches on it.

Hab. Bengal; Poona. *Exp.*, Male 26, Female 28 millim".

Life History. The female lays eggs singly on leaves and tender shoots of the food crop. The eggs are oval in shape and of blue green color with a depression in the middle and measure 0.5 mm. by 0.3 mm. A day before hatching, the eggs turn pale or light green in color. The egg period is 3 to 4 days. A single female moth laid as many as 283 eggs under laboratory conditions while four others laid 259, 226, 212 and 156 eggs respectively.

The newly hatched caterpillar has tiny white hairs all over the body and measures 1.5 mm. in length. The head capsule is orange or orange yellow and the thorax and abdomen dark green in color. Two black dots are prominent one on each side of the 2nd abdominal segment. The sixth and the last abdominal segments bear a pair of sucker feet. The

caterpillar undergoes four moults before pupation. After the first moult the larva measures 5-6 mm. and is light green in color. After the 2nd moult it is 8-9 mm. long and green in color. It is about 15 mm. and dark green in color after the third moult and after the final fourth moult it is of pink color and measures about 22-25 mm. when the black dots on the second abdominal segment disappear. The full grown larva just before entering the soil for pupation is about 30 mm. The larval period varies from 8-12 days.

Pupation takes place in the soil or sometimes on the surface of the soil, the pupae being found within slight webbings of soil. In fields where the soil is hard naked pupae have been collected from cracks and crevices also. The pupa is reddish brown in color and measures about 12 mm. long. The pupal period is 6-8 days.

Total Life Cycle. The total life cycle is about 17-24 days, the egg, the larval and the pupal periods being, 3-4, 8-12 and 6-8 days respectively.

Longevity of Moths. In captivity, when fed with honey solution, the moths lived up to 12 days.

Status of the Pest. The Daincha crop was sown in the middle of February and by the middle of May the pest had increased in enormous numbers and almost the whole of the two acre plot was completely defoliated. The attack was so serious that only very few leaves were left on the plants. The pest began to invade the adjoining areas also. By June, however, Braconid parasites appeared in large numbers and checked their progress.

Natural Enemies. A Braconid—*Apanteles hypsipylae* Wlkn., has been noticed attacking the caterpillar. By June, these appeared in large numbers so that almost every other plant had one or two clusters of parasite cocoons. Each cluster had about 6 to 20 cocoons. Medium sized caterpillars seem to be preferred by the parasite. The parasitised caterpillars are greenish yellow in color and appear active and continue feeding till the full grown grubs come out. The full grown grubs are pale yellow in color and measure 3.5 mm. They generally arrange themselves under the shrunken body of the caterpillar and spin cocoons which are dirty white in color and pupate inside them. The total life cycle from egg to adult is 14 days. Parasites when fed with sugar solution lived upto 14 days.

Two kinds of hyper parasites were noted and these have been sent for identification.

Control Methods. 1. *Light traps.* Light trap was tried with encouraging results. A 300 candle power Petromax light was put up in the affected area between 7 and 10 P. M. for about a week and the following table gives the records of catches.

Light Trap Catches.

Date.	Females		Males.	Total.
	Gravid.	Spent.		
6-6-36	69	28	41	38
7-6-36	52	31	56	39
8-6-36	18	15	106	39
9-6-36	22	10	78	10
10-6-36	9	6	25	40
11-6-36	0	21	53	74
12-6-36	0	22	43	65
13-6-36	0	7	9	16
Total	170	140	411	721

2. *Insecticidal trials.* As an experimental measure, Calcium arsenate mixed with lime (1:6) was applied to the plants on a small scale, both as dust and as spray. The results were not very encouraging. The spray or dust when applied do not adhere to the leaves properly as they are small and a good amount is wasted. This is not economical also as the crop is not a money crop, being grown only for green manure purposes.

3. *Jays.* Daincha pod extract mixed with molasses, and the same scented with a few drops of Citronella oil were left separately in shallow dishes on the bunds but did not attract the moths.

4. *Handnetting.* In a serious outbreak of this kind moths can be disturbed in large numbers, handnetted easily and destroyed.

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GLEANNING

Soya Bean Cultivation in England. A year ago the Soya Bean Cultivation and By-Products, Ltd. sowed 23 acres of land near Oxford with soya bean. The crop has now been threshed, and it is reported that the Company proposes to plant this year about one thousand acres. (*Chemistry and Industry*, March 26, 1938.)