Field incidence of bark-feeding caterpillar aetherastis circulata (Meyr) on different alternative host plants and its control

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INTRODUCTION

RUBBER is an important commercial crop in India which is subject to attacks of pests on a smaller scale when compared with other plantation crops. Among the insect pests of rubber, the bark-feeding caterpillar is currently emerging as the most serious pest of mature rubber trees in India.

During 1980, the bark-feeding caterpillar **Aetherastis circulata**, popularly known as gallery making caterpillar amongst the rubber planters, considered to be one of the minor pests of rubber (Radhakrishna Pillai, 1968), began to appear in an epidemic proportion on rubber, especially in the Quilon and Trivandrum Districts of Kerala State and K. K. District of Tamil Nadu.

It was generally observed that high rainfall had an adverse effect on the incidence of gallery making caterpillar and low rainfall always favoured the increase of pest population in those areas. **Aetherastis circulata** was found active round the year feeding on the bark of different alternative host plants such as **Macaranga** spp., **Michaelia champaca, Terminalia** spp., **Delonix regia Moringa oleifera, Mangifera indica** and **Cinnamomum** spp., but was most active on rubber from October-May (Nehru, 1983, Nehru, **et al.** 1984).

The caterpillars build galleries all over the trunk region with chewed bark, faeces and silk and live inside the gallery. They feed initially on the dead bark on all parts of the trunk and branches and later on the latex that oozes out from certain points where the final instar caterpillars feed deep. These points pave the way for the easy entrance of pathogens causing diseases of the rubber bark like canker and bark rot (Jayarathnam, 1980). Of the two common species of gallery making caterpillar infesting rubber viz. **Aetherastis circulata** and **Plochoryctis rosaria,** the former is more severe and abundant than the latter. The present report highlights the field incidence of **Aetherastis circulata** on its alternative host plants and its control.

MATERIALS AND METHODS

For population studies, the number of caterpillars at a height of 3 m from the ground was recorded at weekly intervals. In the case of **Macaranga peltata** observations were recorded during 1980-'83 and in the cases of other plants only during 1983.

RESULTS AND DISCUSSION

Relative incidence of Aetherastis circulata on Macaranga peltata in four years

The pest was observed to infest the bark of this plant at the Rubber Research Institute Experiment Station, Kottayam in 1980 for a short period during June-July with the maximum population of 54 per three plants.

In 1981, high incidence of caterpillar was observed and the number attained (66/3 plants) peak during the last week of July. High incidence of caterpillar was observed during the month of August in 1982 and September in 1983, during this period the maximum number of caterpillars recorded were 81 & 114 per three plants respectively. There was always an upward trend in larval population during July-September and after that it declined. Hence, in the alternative host **Macaranga peltata** the pest seems to survive better during the rainy months.

Field incidence of Aetherastis circulata on different alternative host plants

All the three observations were pooled on the peak population density of **Aetherastis circulata** during July-September and the mean population of caterpillars in each alternative host was worked out. Population sampling data indicated that in different alternative host plants of **Aetherastis circulata**, the mean population of caterpillars per tree ranged from 19.7 to 38.0 indicating that all the host plants were susceptible to the attack of this pest but their degree of susceptibility varied (Table 1).

Incidence was found to be significantly less on **Cinnamomum iners** in comparison with the other hosts. Highest incidence (38.0%) was recorded in **Macaranga peltata** and followed by **Terminalia catappa, Michaelia champaca, Delonix regia, Mangifera indica, Moringa oleifera** and **Cinnamomum iners.**

Thus it is revealed from the present investigation that some alternative host plants had comparatively high infestation of gallery making caterpillar.

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TABLE 1 — FIELD INCIDENCE OF A. CIRCULATA ON DIFFERENT ALTERNATIVE HOST PLANTS

Sl. No.	Host plants	Family	Mean population of caterpillars per tree during the peak period July-September*
1.	Cinnamomum iners, W.	Lauraceae	19.66
2.	Delonix regia, Raf.	Caesalpiniaceae	29.00
3.	Macaranga peltata, Muell Arg.	Euphorbiaceae	38.00
4.	Michaelia champaca, L.	Magnoliaceae	32.33
5.	Moringa oleifera, Lam.	Moringaceae	21.00
6.	Mangifera indica, L.	Anacardiaceae	25.33
7.	Terminalia catappa, Linn.	Combretaceae	36.00

* Mean of 3 replications.

Insecticidal control of gallery making caterpillar

Nehru (1983) and Nehru, et al. (1984) worked out the relative toxicity of some insecticides to the larvae of **Aetherastis circulata** infesting rubber plants. As a result of these efforts, a number of insecticides belonging to chlorinated hydrocarbons, organophosphates and carbamates were tested as sprays, fogs and dusts to control these pests. Insecticidal dusts were found more suitable because of cost effectiveness and ease of application especially in hilly terrains.

Results of field trial conducted at Shaliacary Estate, Punalur indicated that dusting of methyl parathion 2% dust @ 15 kg/ha proved to be most effective in controlling this pest followed by carbaryl 5% dust (Nehru, et al. 1984). Since methyl is comparatively toxic to human beings, carbaryl 5% D can be safely recommended for the control of **Aetherastis circulata** infesting rubber plantation in India.

With a host of food plants readily available for the **Aetherastis circulata** and favourable environmental parameters for the caterpillar, the pests would certainly warrant immediate control.

SUMMARY

In the present investigation, the field incidence of the bark-feeding caterpillar **Aetherastis circulata** Meyr. (Yponomeutidae : Lepidoptera) on different alternative host plants and its control measures are discussed.

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REFERENCES

1. Jayarathnam, K. 1980. Pests in rubber plantations. In **Handbook of Natural Rubber** 323. Ed. P.N. Radhakrishna **Production in India**. pp. 315-Pillai. The Rubber Research Institute of India, Rubber Board, Kottayam – 686 009.
2. Nehru, C.R. 1983. Highlights on the diseases and pests of rubber. **Rubb. Bd Bull., 18** (4) : 5-6.
3. Nehru, C.R., Jayarathnam, K. and Radhakrishna Pillai, P.N. 1984. Incidence of Bark-feeding caterpillar **Aetherastis circulata** (Meyr) on rubber (**Hevea brasiliensis** Muell. Arg.) **Indian J. Plant. Prot. 12** (1) (In press).
4. Radhakrishna Pillai, P.N. 1968. Pests of rubber in India **Pesticides** (Annual Number) p. 87.

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