

# HEVEA THRIPS

NOTE ON A NEW PEST OF RUBBER TREES

BY

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## HISTORY

In March 1935 what was thought to be a severe outbreak of *Oidium Heveae* was observed to be causing a serious loss of the young leaf of rubber trees on the Institute's Experiment Station at Sungei Buloh. On investigation, however, the leaf-fall proved to be due to a very tiny insect of the genus *Thysanoptera* and for convenience has been called Hevea Thrips. The occurrence of a similar insect on mature rubber in many other districts was confirmed and it was obvious that the leaf-fall in the coastal districts which had been attributed to mites was in reality due to *Thrips* sp. These insects are so small—when full grown they are little more than 1 millimetre in length—that they are at first easily confused with the common rubber-leaf mite *Tarsonemus translucens* which by sucking the cells of the leaf-vein gives rise to symptoms very similar to those of Thrips damage.

Hevea Thrips was found to be particularly active on the very young leaves produced immediately after wintering. According to Dammerman (1) several species of Thrips are known to cause more or less serious damage to crops such as maize, sugar cane, tea, rice, tobacco and vegetables in the Malayan Archipelago.

## DESCRIPTION OF THE INSECT

The insect is of typical Thrips structure varying in size from one half to a little over one millimetre in length. An average winged specimen had the following measurements: Length of body only 0.96 mm., length of body + antennæ 1.1 mm., wing span 1.2 mm., antennæ joints 5. In colour they are pale, brownish-red to flesh-coloured or buff. The winged forms are comparatively rare, considering the large numbers of nymphs which may be found on a single leaf.

A diagrammatic illustration in Plate I shows the winged insect and nymph.

Insects of this type have specially modified mouth-parts which enable them to puncture the cells of the leaf and thus suck up the fluid cell-contents. The veins are, naturally, the chief object of attack and with continual puncturing the cells of the veins of a

leaf which recovers from the attack appear to become meristematic and a new vein is developed alongside the old one. If the attack continues the veins become wide and flattened, having a fasciated appearance.

#### SYMPTOMS OF ATTACK

The method of attack results in symptoms somewhat like those of Hevea leaf mildew; indeed the two may often be found together. *Oidium* spores may often be found adhering to the legs and body of these insects. The young leaf, only a few days old, is strongly favoured by these insects and, as in the case of attack by *Oidium*, the young leaves may fall before they attain a length of two to three inches. The leaf-fall appears to be accomplished naturally by the tree which, owing to the excessive evaporation of water from the leaf, is induced to form an abscission layer across the base of the leaf petiole, after which it is only a matter of a few days before the leaf falls off.

Thrips-infested leaves which have fallen to the ground may be distinguished by the prominent brown or blackish veins, the colour being due to early decomposition of the punctured cells of the veins.

The insect appears to feed chiefly in the region of the veins on the underside of the very young leaf. In so doing growth of the lower side of the leaf appears to be checked while the upper side continues to grow at nearly normal rate which causes the leaf, should it survive, to become concave on the underside or in cross section like an inverted 'u'. If the leaf survives for three weeks or more it assumes the shape of a scoop or elongated spoon, the concavity being below, which is exactly the reverse of a leaf surviving an attack of *Oidium Heveae*, where a strong cork phellogen is developed over the wounded veins on the underside of the leaf which, as growth proceeds, bends the leaf lamina on each side of the central vein sharply upwards or in section thus 'V'. The patch of cork developed on the veins of leaves attacked by *Oidium* is distinctly reddish-brown; on leaves attacked by Thrips there appears to be no cork formation, a new vascular system being developed alongside the old, giving the fasciated appearance mentioned above.

#### GENERAL OBSERVATIONS

The intensity of attack appears to depend upon the number of young leaves present and the state of wintering and refoilation. The pest is more serious in young rubber than in old, though a few trees of over 20 years of age, which have been kept under

observation from March to July this year, have still failed to set a satisfactory foliage, each burst of new leaf having been severely attacked by Thrips.

On the Experiment Station areas were observed where three- and four-acre groups of trees, wintering simultaneously, had suffered a very heavy attack resulting in complete defoliation of the trees such as is rarely seen, except in individual trees, in the case of trees attacked by *Oidium Heveae*.

The insects appear to be most active in fine weather, or in bright showery weather following a fine spell such as is experienced in Malaya before the wintering season. During such weather hundreds of the wingless nymphs may be observed feeding on a single leaf; on several leaves examined the veins on the underside were obscured by masses of these insects.

Plates III, IV and V illustrate the extent of damage which can be caused by this insect.

#### CONTROL

Control may be accomplished by the use of copper or sulphur dusts. Two rounds of sulphur dusting, by means of a motor duster at the rate of 5 to 6 lb. per acre checked the activities of the pest on the Experiment Station to an extent which enabled the trees to develop a satisfactory foliage.

The use of liquid sprays would be out of the question owing to the high cost and practical difficulties such as power and water supplies.

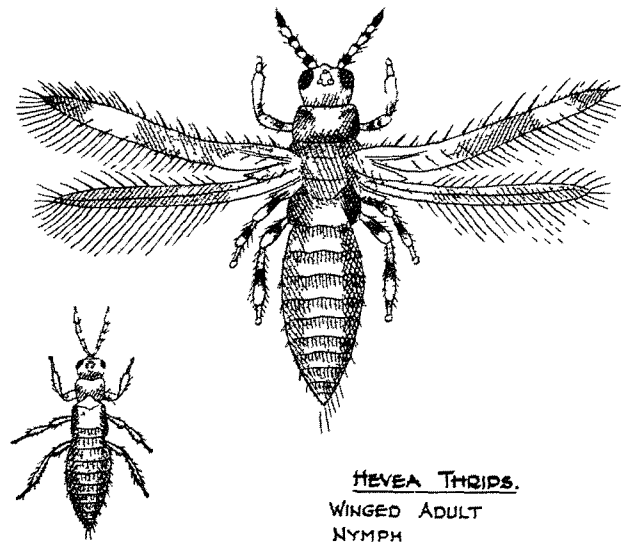
#### Summary

An account is given of a new Thysanopterous pest of rubber trees in Malaya which is provisionally called Hevea Thrips. Under favourable conditions Hevea Thrips may cause a serious leaf-fall similar to that caused by *Oidium Heveae*. The general appearance of the insect and symptoms of attack are described.

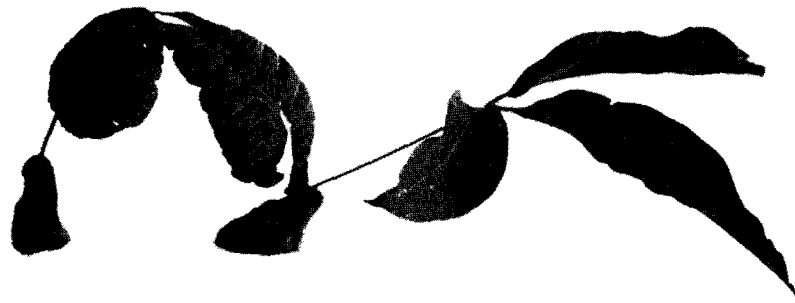
The pest may be controlled satisfactorily by the use of insecticidal dusts applied by means of a motor duster.

#### Description of Plates

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| Plate | I. Upper: Line drawing of the nymph and adult insect $\times 45$<br>Lower: Hevea leaf following attack by Thrips (left), and by <i>Oidium</i> (right) |
| Plate | II. Leaves attacked by Thrips. Note the inward curling of the leaves and the fasciation of the leaf veins   |



Hevea Thrips—The Winged Adult and Nymph



Hevea leaves following attack by Thrips (left) and by Oidium (right)



Leaves attacked by Thrips  
*(Note the inward curling of the leaves and the fasciation of the leaf-stems)*



Five-years-old Rubber Trees defoliated by Thrips



Five years-old Rubber Trees defoliated by Thrips



Five-years-old Rubber Tree defoliated by Thrips



Plates III, IV & V. Photographs of five-years-old rubber trees defoliated by Thrips

**Literature**

- (1) K. W. Dammerman *The Agricultural Zoology of the Malay Archipelago* 215

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