

## NEWLY-RECORDED FOOD PLANTS OF SOME PESTS OF TEA AND GREEN MANURES.

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During the past two years, observations have been made on the food plants of certain pests of tea and shade trees, and a number of new records have resulted. The present article deals with these records, and also includes notes of interest on the relations of certain pests to host plants already recorded.

Scarlet Mite (*Brevipalpus obovatus* Donn.) has been newly observed on a variety of plants,—*Acacia Melanoxylon*, *Salvia coccinea*, and several Composites, viz., *Bidens chinensis*, *Sonchus arvensis*, *Galinsoga parviflora* and *Gynura lycopersicifolia*. On young *Grevillea* trees, 5-7 ft. in height, growing in a field badly attacked by this mite, it was observed that many of the leaves showed very noticeable browning. On closer inspection it was found that this appearance was due largely to the presence of Red Spider on the upper surface of the leaves, but Scarlet Mite was also present in some abundance on the reverse side, producing a blackish, somewhat shrunken effect. No mites were observed on seedling *Grevilleas* planted out in the field, or on full-grown trees.

In the case of *Acacia Melanoxylon*, a slight infestation was observed on young trees bordering the field referred to above. Scarlet Mite was also found on *Bidens chinensis* and *Sonchus arvensis* in scrub land adjoining the same field; on the former the mite is sometimes abundant and eggs appear to be laid freely. The remaining records were made on an abandoned estate in the process of reclamation. Weeds, including again *Bidens chinensis*, growing profusely around several small nurseries, were found to be attacked. Many of the seedlings in the nurseries had been killed out by the mites, which probably migrated from the surrounding weeds. In Java, Scarlet Mite has been recorded from a number of weeds, including *Bidens pilosa*.

Caterpillars of the Geometrid moth, *Boarmia acaciaria* Boisd., which is allied to the Tea Looper (*Boarmia bhurmitra* Wlk.), have lately been taken on tea bushes. In the laboratory the caterpillars fed readily on tea, and the moth was bred out without difficulty. The full-grown caterpillar is coloured a dull olive-green, and attains a length of about 2 inches. The pupa is brown, and about  $\frac{3}{4}$  inch in length. The moth is greyish white, marked with grey-brown wavy lines, and is  $1\frac{1}{2}$ - $1\frac{3}{4}$  inches across the outspread wings.

*Psyche vitrea* Hmps. and *Chalia doubledayi* Westw., both of which are bag-worms (Psychidae), were recorded on *Albizzia* for the first time in 1927. They are normally pests of tea, while *Psyche vitrea* has been recorded also on rubber.

As regards *Psyche vitrea*, the curious thing about the attack was that although the bag-worms spread to the tea, they did little damage there, while many of the *Albizzias* were completely defoliated. The caterpillars were said to be present in millions. Amongst the *Psyche vitrea* were found a number of specimens of similar appearance but of much greater size; these are apparently a species of *Acanthopsyche*. *Chalia doubledayi* was described as feeding on the leaves and bark of the *Albizzia* trees.

These new records of attacks on *Albizzia* and tea, as Dr. J. C. Hutson has pointed out (*Tropical Agriculturist*, April, 1927), seem to indicate an interchange of the pests of tea and shade trees, i.e., the insects show a regrettable tendency to widen the range of their food-plants.

The mealy bug found on the roots of *Albizzia lophantha*, referred to in the Annual Report for 1926, has since been identified as *Pseudococcus maritimus* Ehrh. As described in that report, the plants were said to be dying out from a cause unknown; owing, however, to the small number of the insects occurring on the roots, their presence could not be associated with the death of the plants. The finding of mealy bugs on the roots of various green manure plants is a matter of frequent occurrence, but although on some occasions it seems difficult to attribute the death of the plant to any other cause, no evidence has as yet appeared to show that the insects are the prime factor in this event. In some cases where the mealy bugs are found on a stem just below soil level, it is discovered that they have evidently been attracted by a wound (such as splitting of the stem) in that region, where, as in the case of Woolly Aphis, so commonly found on apple trees in Europe, the bugs congregate around the wound as a ready source of the plant sap on which they feed. In such instances the insects may have migrated from the foliage.

On the roots of plants that have died, in addition to the bugs, various fungi are often found, but even these are not necessarily the primary cause of death. Where the leaves are infested with mealy bugs, the continued feeding of the insects on the foliage of the plant may induce a weakened and unhealthy condition of the roots, which are then readily attacked by different fungi. In the majority of cases mealy bugs found on the roots have little effect on the health of the plant.

Few pests of *Acrocarpus fraxinifolius* have at any time been sent in for report. Probably the most serious insect enemy of this green manure is the caterpillar of the common *Terias* spp. Two reports

have been received during the last fifteen months, the only previous record being that of an outbreak in Dimbula in 1924. One of the recent reports is from the same estate as the original record, the other being from Maskeliya. In the latter instance, the attack spread over practically the whole estate, so that every *Acrocarpus* tree was affected. Here, as in similar severe attacks on Albizzia, the caterpillars were found to drop down on to the tea, causing a certain amount of damage (*vide* Terias on Albizzia, Annual Report for 1926).

Branches of Boga medeloa (*Tephrosia candida*) were received in May, 1927 suffering from the attacks of a boring beetle, *Xyleborus discolor* Blfd., closely allied to the Shot-hole Borer of tea. The male beetle is much smaller than the female, and the elytra are lighter in colour.

In this instance the older plants (two years old) only were found to be infested. The beetle apparently bores only into the younger shoots, for the galleries in the older portions of the stems had all been abandoned. This fact points to a ready method of control,—lopping the shoots, with subsequent burning, should rid the plants of the living beetles. A few of the galleries were seen to be healed over; thus, as in the case of Shot-hole Borer, manuring might prove of benefit in combating the pest, although this method would probably not be feasible in practice with a green manure crop.

It is curious to note that in many of the older galleries small fly maggots were discovered, 5 or 6 in each gallery; these, however, are not connected with the injury to the plant, but are merely feeding on the decaying tissues surrounding the cavity of the boring. In this connection Mr. F. P. Jepson, of the Department of Agriculture, informs me that a Drosophilid fly, *Phorbia xyleboriphaga*, is frequently found in the galleries of *X. formicatus*.

A species of Aphid, not yet identified, has been recorded on *Gliricidia*. The trees in question were 2-3 years old, and the insects collected on the young shoots, producing a wilted appearance. Most of the shoots, however, suffered little harm.

Shot-hole Borer attacking the green manure plant, *Derris robusta*, forms another new record. This outbreak was reported in July, 1927 on an estate in Uva, where the Derris plants had evidently become infected from the tea, which already contained the Borer.