

## The Banana Rust Thrips in Tamil Nadu, India

by

C. V. SIVAKUMAR<sup>1</sup> and M. MOHANASUNDARAM<sup>2</sup>

Insects causing lesions on the fruit peel of banana have been reported previously from Australia and Ecuador. The first report of such damage is probably that of Girault (1925) from Queensland, where *Scirtothrips signipennis* (Bagnall) was observed to cause rusty spots on the peel. The fruits attacked by this insect show a powdery blotching of the skin, which as it increases and ages become leathery and more or less cracked. The eggs are deposited under the epidermis of the stem or fruit and so injury due to oviposition is also common.

Yust (1959) reported that in Ecuador, fruit spotting in banana is caused by three species of thrips viz., *Palleucothrips musae* M., *Selenothrips rubrocinctus* G., and *Frankliniella parvula* Hood., the aphid, *Pentalonia nigronervosa* Coq., small bees of the genus *Trigona* and the scales, *Aspidictus destructor* S., *Selenaspidiotus* (Mask.).

Ramakrishna Ayyar (1938) reported the occurrence of *Caliothrips* (= *Heliiothrips*) *kadaliphila* R. on banana in South India and later Murthy (1958) described the damage caused by this insect to the banana leaf. However, this insect has not been reported to cause fruit spotting in banana.

Bhaktthavathsalu *et al.* (1968) observed pustule-like eruptions on the peel of 'Viruppakshi' banana fruits in Lower Palni Hills and reported that polyethylene covering to the bunches effectively prevented the appearance of these lesions. The authors made no attempt to diagnose the cause for this malady.

In July, 1969, severe fruit scarring of banana was observed at the Banana Research Sub-Station, Uyakondantirumalai, Trichy District. The bunches and flowers were examined for insect pests and two species of thrips were found constantly associated with the damage, at the time of examination. These insects were subsequently identified as *Thrips florum* Schm. and *Astrothrips parvilimbus* Stu and Mitri.

The banana crop at the Agricultural College and Research Institute, Coimbatore was also examined and a similar injury, but to a much lesser extent was observed with *T. florum* associated with it. It may be mentioned in this connection that Ramakrishna Ayyar and Margabandu (1939) reported the occurrence of these two species of thrips on various hosts from South India. Some preliminary studies were conducted to establish the role of thrips in causing the damage.

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<sup>1</sup> Assistant Lecturer in Entomology and <sup>2</sup> Lecturer in Entomology, Agricultural College and Research Institute, Coimbatore-3.

**Materials and Methods:** Six varieties of banana viz., Poovan, Monthan, Rasthali, Dwarf Cavendish, Lacatan and Nendran, which were in bearing at the Banana Research Sub-Station, in July, 1969, were examined for the presence of thrips and the insects from young fruits covered by bracts and older exposed fruits were separately collected from each variety.

Young banana fruits covered by bracts and older exposed fruits showing fresh oviposition injury were collected and put inside polyethylene bags and kept under observation to find out whether nymphs emerged from the inserted eggs. Care was taken to ensure that the fruits were absolutely free of any pest before putting in the bags. The attacked peel was also dissected to see whether the eggs were present in the tissue.

Free hand sections of the affected banana peel were taken and mounted in lactophenol tinted with aniline blue and examined to find out the extent of damage to the fruits.

**Results:** All the six varieties of banana examined showed the symptoms of damage. The thrips population from Poovan and Rasthali, mainly consisted of *T. florum* and the insects were found feeding only on the young banana fruits covered by the bracts. The other four varieties viz., Monthan, Dwarf Cavendish, Lacatan and Nendran were found attacked by only *A. parvilibus* and high populations were found feeding on the exposed fruits.

The feeding injury was characterised by greyish powdery blotching on the surface of the peel and was found to be severe in the case of attack by *A. parvilibus*, in the varieties Dwarf Cavendish, Lacatan, Monthan and Nendran (Fig. 2), while the oviposition injury characterised by brown eruptions was severe in the varieties Poovan and Rasthali attacked predominantly by *T. florum* (Figs. 1 and 3).

Nymphs of both *T. florum* and *A. parvilibus* emerged on the third or fourth day after removing the fruits from the bunches and were found actively crawling inside the bags. Each spot on the fruit contained a single egg.

The cross section of the peel at the site of oviposition showed that the eruption is caused by the proliferation of mesophyll cells (Figs. 4 and 5). The injury does not extend below the first few layers of mesophyll. The browning is mainly due to the secretion of latex through the point of injury. The punctures caused by the insertion of eggs first appear as small water soaked spots and later turn brown by the deposition of the latex which hardens. The injured spots become raised after about a day or two and several such spots coalesce and give a rusty appearance. The peel which is otherwise smooth becomes rough (Figs. 1 and 3).



FIG. 1

Photograph showing rusty eruptions on the peel of young fruits of 'Rasthali variety', caused due to oviposition by *Thrips florum*



FIG. 2

Photograph showing powdery blotching on the peel of fruits of 'Lacatan' variety, caused due to feeding by *Astrothrips parvilibus*

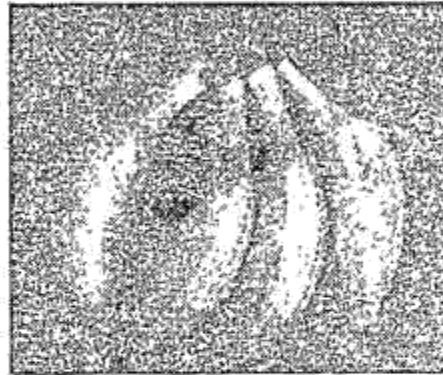


FIG. 3. Photograph showing rusty eruptions and powdery blotchings on the peel of fruits of 'Poovan' variety caused by *Thrips florum*



FIG. 4

Photomicrograph of a transverse section of a healthy banana peel



FIG. 5

Photomicrograph of a transverse section of 'Dwarf Cavendish' banana peel, at the site of oviposition. The arrow indicates the proliferation of cells at the site of oviposition

**Discussion:** The studies show clearly, that the powdery blotching and the rusty appearance on the banana peel is due to the attack by *T. florum* and *A. parvilimbus* and similar to that caused by *Scirtothrips signipennis* in Queensland (Girault, 1925). There is reason to suspect that the fruit blemishes described by Bhakthavatsalu *et al* (1968) on 'Virupakshi' banana may also be due to thrips attack. The pulp of the fruit is not affected, but since the insects mar the appearance of the fruits, the market value is greatly reduced and as such these two insects should be considered as severe pests of banana.

This is the first report of the association of *T. florum* and *A. parvilimbus* with damage to banana peel. The limited observations made indicate, that each of these species show preference to certain varieties and there are possibilities for varietal resistance to thrips in banana. Further studies in this line are in progress. Girault (1925) and Smith and Weddell (1949) have also noted difference in the susceptibility to the attack of *Scirtothrips signipennis* in Queensland.

**Summary:** The occurrence of two species of banana rust thrips viz. *Astrothrips parvilimbus* Stn. and Mitri and *Thrips florum* Schm. in Tamil Nadu is reported. The role of these insects in causing fruit spots in banana has been clearly established and the symptoms of damage are described in detail. The difference in the susceptibility of six banana varieties to these insects is also reported.

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