

A PRELIMINARY REPORT ON THE FUNGI INFESTING THRIPS (THYSANOPTERA, THIRIPIDAE)

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The paper presents the findings on three species of fungi infecting thrips.

INTRODUCTION

There are records of various types of entomogenous fungi occurring on several types of insects and their epizootic outbreaks cause heavy mortality at various developmental stages. Such an epidemic, when severe, can eradicate an insect population completely from a habitat. If such a situation occurs in an important pest it would be worthy of exploitation as a means of biological control. There has been only one report of a fungus from thrips (WILLIAMS, 1915). During the present investigation, it was observed that some species of thrips, which cause considerable damage to their host plants especially in young seedling stage were attacked by fungi. These fungi were identified as *Alternaria alternata* (FR.) KESSLER, *Cladosporium cladosporioides* (FRESNER) DE VRIES and *Trichothecium roseum* LINK. The thrips attacked by above fungi were *Thrips flavus* SCHRANK, *Scirtothrips dorsalis* HOOD and *Microcephalothrips abdominalis* (CRAWFORD).

MATERIALS AND METHODS

Thrips specimens were collected from nursery of Zoology Department, University of Delhi, Nursery and Botanical Garden, University of Delhi. They were dissected in RINGER's solution and were

stained by cotton blue stain. Smears of the various stages were also air dried, fixed in absolute methanol and stained overnight in GIEMSA stain. Thrips specimens before being studied had been previously surface sterilized by 95% ethanol and washed in distilled water. The paraffin sections of the alcoholic Bouin fixed material were also studied. The stain used for sections was HEIDENHAIN'S iron haematoxylin and eosin.

OBSERVATIONS AND DISCUSSION

Fungi imperfecti are very common parasites in insects. *Alternaria alternata* (FR.) KESSLER of this group (Dematiaceae) is known as plant pathogen causing leaf spot or blight. This species is also found as a contaminant in fungus cultures (Figs. 1 & 2). During the present studies a moderate to heavy infection of this form was observed in *Thrips flavus* SCHRANK (Host plant : *Gossypium hirsutum*). Several free conidia of fungus were seen in the smears (25-30 per larva, when infection was heavy). The period of infestation noted was from December to March. Usually the host cells with several developing stages of *Alternaria* species were observed (Figs. 3 & 4). Mostly the haemocytes were damaged by this fungus. A certain degree of damage was also caused to adipose tissue and gonads. So far no species of *Alternaria* has been reported as insect pathogen or saprophyte, although a related genus *Stemphylium botryosum* WALLR. has been found to infest coccids (STEINHAUS, 1949).

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Cladosporium cladosporioides (FRESNER) DE VRIES (Dematiaceae) was found to attack *Thrips flavus* SCHRANK (host plant : cotton) and *Microcephalothrips abdominalis* CRAWFORD (Host plant: *Tagetes erecta* and *zinnia*) (Figs. 5, 6 & 7). The period of infestation noted was from November 1975 to April 1976. Earlier *Cladosporium aphidis theum* was reported from aphids (STEINHAUS, 1949). The present studies showed a large number of small and big conidia of *C. cladosporioides* and worn out host tissue cells in smears and sections.

Trichothecium roseum LINK (Monilia-ceae) is another fungus commonly observed in *Thrips flavus* SCHRANK (host plant : cotton), *Scirtothrips dorsalis* (HOOD) (host plant : castor) and *Microcephalothrips abdominalis* (CRAWFORD). JOLLY (1959) described *Trichothecium roseum* infesting the silkworm larvae heavily and reported the entry of fungus through the integumental wounds. MADELIN (1968) also enlisted *T. roseum* as casual invader of insects gaining entry through ruptured integument. Another species of the same genus *T. acridiorum* has been found to cause damage to red locusts (MADELIN, 1966). The present studies revealed a heavy invasion of the larval stages of thrips by the conidia of *T. roseum*.

The conidia were seen on the external surface and were even observed in the haemocoel. *T. roseum* disrupted various organs of the thrips (Fig. 8).

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- Fig. 1. *Alternaria alternata* conidium from smears of *Thrips flavus*.
Fig. 2. The conidium of *A. alternata* from *Microcephalothrips abdominalis*.
Fig. 3. Developmental stages of *A. alternata* in the host cell (*Thrips flavus*).
Fig. 4. Developmental stages of *A. alternata* from aphid (*Aphis gossypi*).
Fig. 5. *Cladosporium cladosporioides* conidia from *Thrips flavus*.
Fig. 6. *C. cladosporioides* and *A. alternata* from aphid.
Fig. 7. *C. cladosporioides* from *Thrips flavus*.
Fig. 8. *Trichothecium roseum* conidia from *Thrips flavus* larvae.