

Research Article

**FIRST REPORT OF *ACREMONIUM ZEYLANICUM*, *CONIDIOBOLUS* SP.
AND *NEOZYGITES FLORIDANA* AS MYCOPATHOGENS OF TWO
SPOTTED SPIDER MITE *TETRANYCHUS URTICAE* KOCH ON BRINJAL
IN POLYHOUSE**

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ABSTRACT

The two-spotted spider mite (TSSM), *Tetranychus urticae* Koch is an important pest of vegetables grown under protected condition in Kerala. During June, 2012, large scale mycosis of *T. urticae* was observed on potted plants of brinjal maintained in polyhouse for culturing the mite. Three fungal pathogens viz., *N. floridana*, *A. zeylanicum* and *Conidiobolus* sp. were identified from these mycosed mites. Further, studies on the efficacy of these fungi against *T. urticae* are to be conducted under polyhouse and open field conditions to identify their suitability as potent candidates in biological control programme.

Keywords: *Acremonium zeylanicum*, *Conidiobolus* sp., *Neozygites floridana*, *Tetranychus urticae*

INTRODUCTION

The two spotted spider mite *Tetranychus urticae* Koch (Prostigmata: Tetranychidae), cause severe economic injury to vegetables grown under protected conditions. Crops are often cultivated in monoculture in polyhouses, which facilitate their dispersal among plants and rapid development of pest populations. Lack of natural enemies and rapid development of pesticide resistance are also important factors for the pest status of these mites. Hence there is a felt need for identifying suitable alternate strategies for the management of *T. urticae* in polyhouses. Fungal pathogens isolated recently from mycosed *T. urticae* infesting brinjal under polyhouse cultivation in Thrissur, Kerala could probably pave way to successful biological control of spider mites under protected condition.

MATERIALS AND METHODS

During June 2012, large scale mycosis of *T. urticae* was observed on potted plants of brinjal maintained for culturing the mites in polyhouse. Mycosed mites were collected and mounted on slides in lactophenol cotton blue and observed under phase contrast microscope equipped with a photomicrograph camera. Isolation of the fungi from moribund mites was also carried out in Sabouraud Dextrose Agar with the addition of 2 per cent Yeast extract medium (SDAY). The purified culture, photographs of the conidia observed under microscope and mycosed mite specimens were sent for identification to National Center for Fungal Taxonomy (NCFT), New Delhi.

RESULTS AND DISCUSSION

Three promising fungal pathogens viz., *Neozygites floridana*, *Acremonium zeylanicum* and *Conidiobolus* sp. were identified from the mycosed *T. urticae* mites infesting brinjal plants in polyhouse (Table 1).

Table 1: Fungal pathogens isolated from *T. urticae* on brinjal

Sl. No.	Pathogens	Order
1	<i>Acremonium zeylanicum</i>	Hypocreales
2	<i>Conidiobolus</i> sp.	Entomophthorales
3	<i>Neozygites floridana</i>	Entomophthorales

Research Article

Diagnoses and conidial characters of these entomopathogens were studied using phase contrast microscope (Leica DM 500). *Neozygites floridana* produced globose to pear shaped capilliconidia at the tip of slender capillary tubes. *Conidiobolus* sp. produced globose to pyriform conidia with rounded prominent papilla. Phialides of *Acremonium zeylanicum* were simple arising from aerial hyphae and conidia cohering in long chains, narrow oval in shape, both ends acute and truncate (Figure 1). However only *A. zeylanicum* could be sub cultured and maintained in the laboratory. The colonies of *Acremonium* were moderately rapid growing and maturing in four to seven days at 25⁰C. The colony was white in colour, compact and cottony due to over growth of fungi (Figure 2).

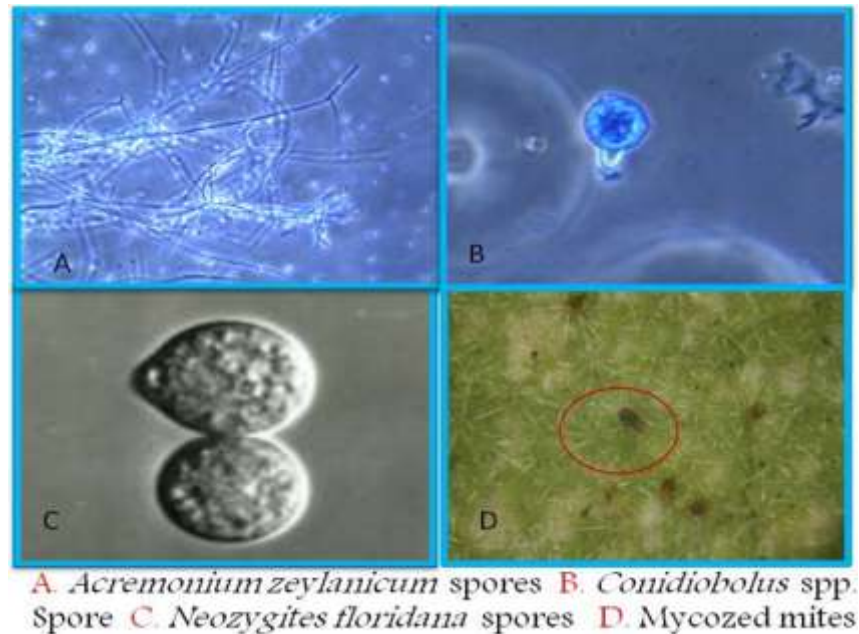


Figure 1: Spores of entomopathogens isolated from *T. urticae*



Figure 2: Colony of *Acremonium zeylanicum* subcultured in SDAY medium

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Further, extensive surveys have to be conducted to reisolate the other fungal pathogens. Natural incidence of the fungus *A. zeylanicum* was earlier reported on sugarcane woolly aphid from Karnataka (Tippannavar et al., 2006). A species of *Neozygites* was reported on two spotted spider mites infesting French beans from Eastern Plateau and Hill region of India (Maurya et al., 2013). Natural epizootic by *Conidiobolus* sp. in a population of phytophagous mites was observed in Poland (Mietkiewski et al., 2000).

Summary

This is the first report of natural epizootics of *A. zeylanicum*, *Conidiobolus* sp. and *Neozygites floridana* on *T. urticae* from India. Studies on the efficacy of these fungi against *T. urticae* are to be conducted under polyhouse and open field conditions to identify their suitability as potent candidates in biological control programme.

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