

## Occurrence of *Fusarium coccophilum* (Desm.) Wollenw. & Reinking on sugarcane whitefly, *Aleurolobus barodensis* (Maskell) (Homoptera: Aleyrodidae)

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**ABSTRACT:** *Fusarium coccophilum* (Desm.) Wollenw. & Reinking was recorded as a fungal pathogen of the sugarcane whitefly, *Aleurolobus barodensis* (Maskell) from Dhule and Pune areas of Maharashtra. The infection level during rainy season varied from 2.2 to 12.8 per cent. Its pathogenicity both to nymphs and pupae was confirmed. This is the first report of *F. coccophilum* on sugarcane whitefly.

**KEY WORDS:** *Aleurolobus barodensis*, fungal pathogen, *Fusarium coccophilum*, sugarcane whitefly

The aleyrodid, *Aleurolobus barodensis* (Maskell) is a key pest of sugarcane grown in waterlogged and ill-drained soils of Navsari and Junagadh areas of Gujarat, Akhuj and Dhule districts of Maharashtra, Nizamabad of Andhra Pradesh and Chikmagalur and Shimoga districts of Karnataka. It causes economic losses to the crop by sucking the sap from the leaves and attracts sooty mould, which disturbs normal photosynthesis. In certain parts of Gujarat and Maharashtra, it has attained major pest status, causing severe setback to sugarcane production by causing reduction in yield, juice extraction and quality as well as sugar production (Patil *et al.*, 1992). A number of natural enemies have been recorded on the pest from Gujarat (Patel *et al.*, 1995; Kapadia and Butani, 1997) and Andhra Pradesh (Singh and Varma, 1995). Therefore, it was felt necessary to explore the possibility of presence of new natural enemies (particularly fungal pathogens) and their use as biocontrol agents in the management of *A. barodensis* in

peninsular India.

Surveys were undertaken in sugarcane-growing areas around Pune and Dhule in Maharashtra; Vijayawada and Vuyyuru in Andhra Pradesh; and Mandya and Gowribidanur in Karnataka from 1997 to 1999. Leaves of the plants infested with *A. barodensis* were collected along with different stages of natural enemies, if any, and reared in acrylic sheet cages (30 cm<sup>3</sup>) having moist sand at the bottom. The pathogens thus obtained were isolated and identified. Total number of healthy and infected whitefly nymphs and pupae were counted on fifteen randomly selected one cm<sup>2</sup> area on each leaf collected and per cent infection was worked out.

Samples of variety CoC 671 and Co 9161 collected from Shirpur, Talaner, Manjarad and Babhalaj areas of Dhule district and Walhe and Jejuri of Pune district revealed the presence of nymphs and pupae infected with a fungal

pathogen. The infection was more prevalent in the months of July and August. The nymphs and pupae were found sticking on the leaf sheath and were overgrown by the fungal mycelium bearing abundant spores. The average natural mortality of nymphs was 8.3 per cent with a range of 2.2 to 12.8 per cent during rainy season.

The associated fungus was isolated and purified on Sabouraud Dextrose Agar (SDA) (HiMedia Laboratories Ltd., Mumbai). In culture, the fungus produced fluffy mycelium and salmon-orange mass of multi-septate conidia. Conidiophores were branching irregularly, terminating in phialides. Conidia were thick-walled, falcate and tapering at both ends. More than 85 per cent of the conidia were 3-5 septate, with 3-septate ones predominant. The fungus was identified as the entomopathogenic hyphomycete, *Fusarium coccophilum* (Desm.) Wollenw. & Reinking.

Pathogenicity to healthy nymphs and pupae was proved on sugarcane plants (variety Co 9161), grown in cement pots in the net house, by giving a uniform spray application of the fungus suspension ( $10^6$  conidia/ml) on the leaf sheath. Mean nymphal mortality of 39.7 and 62.9 per cent, respectively, was recorded at 5 and 10 days after application and pupal mortality was 33.20 and 58.97 per cent at 5 and 10 days after application, respectively.

This is the first report of *F. coccophilum* on sugarcane whitefly from India. However, *F. coccophilum* is considered as a common pathogen on homopteran insects in the tropics and subtropics (Subramaniam, 1971). *F. subglutinans* is known to be highly pathogenic to sugarcane whitefly nymphs (Singh, 1994). Other pathogens such as *Aschersonia placenta* and *Cladosporium* sp. have been recorded and studied in detail by Thumar and Kapadia (1994) in Gujarat.

The degree of natural control offered by this fungal pathogen did not appear to be enough to significantly reduce the fast multiplication rate of whitefly. Therefore, the possibilities of utilizing *F. coccophilum* as a mycoinsecticide for inducing

artificial epizootics of suppressing proportions need to be explored.

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