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Research Note

First report of *Fusarium pallidoroseum* (Cooke) Sacc. on rice brown planthopper, *Nilaparvata lugens* (Stal) (Delphacidea: Homoptera) from Godavari zone of Andhra Pradesh

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ABSTRACT: ***Fusarium pallidoroseum*** **(Cooke) Sacc., a fungal pathogen, was recorded for the first time infecting the brown planthopper (BPH),** ***Nilaparvata lugens*** **(Stal) on the rice crop at Maruteru, West Godavari district, Andhra Pradesh. The extent of natural mortality of BPH ranged from 33.3 to 71.4% under field conditions.**

KEY WORDS: *Fusarium pallidoroseum*, natural incidence, rice brown planthopper

The Godavari delta is an important rice-growing tract in Andhra Pradesh. In this region, the planthoppers, *viz.*, brown planthopper (BPH), *Nilaparvata lugens* (Stal) and white backed planthopper (WBPH), *Sogatella furcifera* (Horvath) are some of the major biotic stresses limiting rice production (Katti *et al.*, 2004). The planthoppers damage the crop by sucking the sap leading to hopperburn and also transmit many virus diseases. Tirumala Rao (1950) reported 10 to 75 per cent yield loss due to BPH in rice, while Sidhu (1979) reported that WBPH alone caused 35 to 90 per cent yield loss. Injudicious use of some insecticides was reported to be responsible for BPH epidemics (Heinrichs *et al.*, 1981; Krishnaiah and Kalode, 1987).

In the present study, during the field observations, nymphs and adults of rice BPH were infected by a fungal organism in the rice fields at Andhra Pradesh Rice Research Institute and Regional Agricultural Research Institute, Maruteru, West Godavari District during March 2006 when the temperature was 31°C and relative humidity 92%. The infected cadavers were found sticking to the base of the rice hills covered by a white mass of fungal mycelium. The extent of natural mortality ranged from 33.3. to 71.4 per cent. To isolate and study the pathogen, the field collected cadavers were surface sterilized in 0.1% mercuric chloride and incubated in potato dextrose media at 25°C and 88% relative humidity. The mycelial and spore characteristics of the fungus were recorded under compound microscope. The colony colour was white initially and became cream to light brown later. The fungus produced both micro and macro conidia at the top of each conidiogenous cell. The macro conidia were septate (1-6), elongate, sickle shaped,

pointed towards tip and blunt at the base.

The pathogenicity tests were conducted by spraying spore suspension (10^4 spores ml^{-1}) on healthy nymphs and adults of BPH on caged rice plants (Srivastava and Nayak, 1979). The potted plants were kept at 29-30°C in trays filled with water to maintain humidity (Rao, 1989). There was 40 per cent mortality of BPH in ten days under laboratory conditions. The infection was observed irrespective of the development stages. The infected BPH exhibited symptoms of dull white fungus emerging from inter-segmental membrane, later covering the entire body with a dull white mass of spores. From these dead BPH, the fungus was re-isolated. On comparison, it was similar to the original culture and thus, the pathogenicity was confirmed. The pathogen isolated from the cadavers of BPH was maintained in pure culture on Richard's medium or potato dextrose agar media. It was identified as *Fusarium pallidoroseum* (Cooke) Sacc. at the Indian type culture collection, Division of Plant Pathology, IARI, New Delhi.

F. pallidoroseum has been observed for the first time as a pathogen of rice BPH in Godavari zone of Andhra Pradesh. Earlier, it has been recorded on BPH in Orissa (Srivastava and Nayak, 1979) and leaf folder, *Cnaphalocrocis medinalis* (Guenee) in Karaikal region (Manisegarane and Letchoumanane, 1995). The potential of *F. pallidoroseum* as a biocontrol agent against BPH of rice has to be tested under field conditions.

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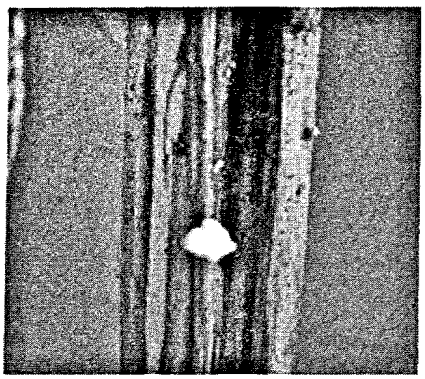

Fig. 1. BPH infected with *F. pallidoroseum*

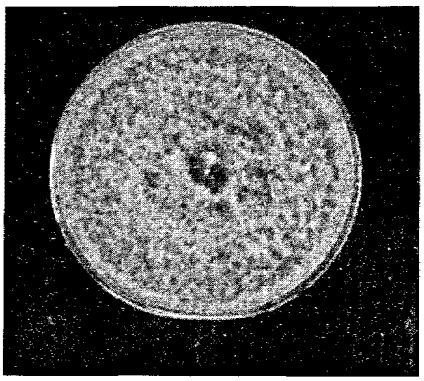

Fig. 2. *F. pallidoroseum* grown on PDA

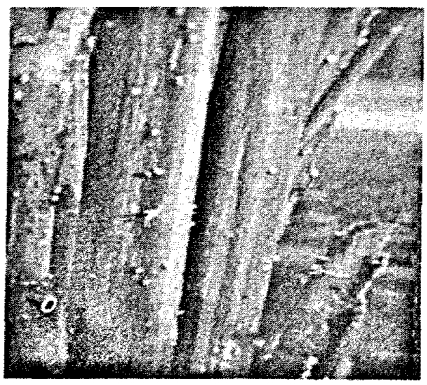

Fig. 3. Infection of BPH under artificial inoculated conditions

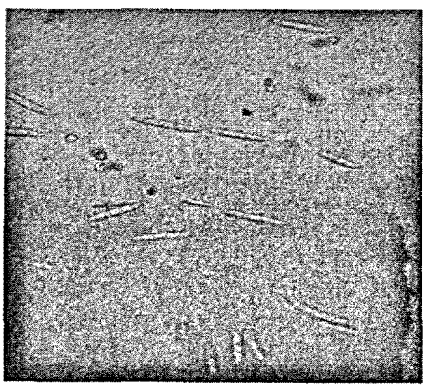

Fig. 4. Conidia of *F. pallidoroseum*

identification of the fungus and Acharya N. G. Ranga Agricultural University, Rajendranagar, for providing facility to carry out the study.

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