

Bakanae disease of rice in Malaysia and Indonesia: etiology of the causal agent based on morphological, physiological and pathogenicity characteristics

ABSTRACT

Bakanae disease on rice has been recorded almost in all countries where paddy is grown commercially, especially in Asian countries, including Malaysia and Indonesia. Bakanae disease was widespread in Peninsular Malaysia and three provinces of Indonesia with the range of disease severity from scale 1 to 5 and disease incidence from 0.5 to 12.5% during 2004-2005 main growing seasons. A total of five *Fusarium* species belonging to section *Liseola* and their allied i.e. *Fusarium fujikuroi*, *F. proliferatum*, *F. sacchari*, *F. subglutinans* and *F. verticillioides* were isolated and identified on the basis of their morphological characteristics. Literature data showed that the bakanae disease of rice all over the world is caused by *F. fujikuroi* and probably some other *Fusarium* species from section *Liseola* or allied. However, from pathogenicity tests that have been carried out by using variety MR 211 of rice it was evident that *F. fujikuroi* was highly virulent and the only species involved in causing bakanae disease. Therefore, this species was the only one detected to be able to produce gibberellic acid - (GA3) with Rf value 0.40 and 0.62, developed in solvent systems isopropanol:ammonia: water (10 : 1 : 1), v/v/ v and chloroform:ethyl acetate: formic acid (5 : 4 : 1), v/v/v, respectively. This knowledge would be invaluable in developing our understanding on the interaction between *F. fujikuroi* and the host plants.

Keyword: *Fusarium fujikuroi*; Section *liseola*; Rice; Bakanae disease; Gibberellic acid