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Morphological and Biological Identification of Fusarium Species Associated with Ear Rot Disease of Maize in Indonesia and Malaysia

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Abstract : Fusarium ear rot disease is one of the most important diseases of maize and not only causes significant losses but also produced harmful mycotoxins to animals and humans. A total of 141 strains of Fusarium species were isolated from maize plants showing typical ear rot symptoms in Indonesia, and Malaysia by using the semi-selective medium (peptone pentachloronitrobenzene agar, PPA). These strains were identified morphologically. For strains in Gibberella fujikuroi species complex (Gfsc), the identification was continued by using biological identification. Three species of Fusarium were morphologically identified as Fusarium in Gibberella species complex (105 strains, 74.5%), F. verticillioides (78 strains), F. proliferatum (24 strains) and F. subglutinans (3 strains) and five species from other section (36 strains, 25.5%), F. graminearum (14 strains), F. oxysporum (8 strains), F. solani (1 strain), and F. semitectum (13 strains). Out of 105 Fusarium species in Gfsc, 63 strains were identified as MAT-1, 25 strains as MAT-2 and 17 strains could not be identified and in crosses with nine standard testers, three mating populations of Fusarium were identified as MP-A, G. moniliformis (68 strains, 64.76%), MP-D, G. intermedia (21 strains, 20%) and MP-E, G. subglutinans (3 strains, 2.9%), and 13 strains (12.38%) could not be identified. All trains biologically identified as MP-A, MP-D, and MP-E, were identified morphologically as F. verticillioides, F. proliferatum, and F. subglutinans, respectively. Thus, the results of this study indicated that identification based on biological identification were consistent with those of morphological identification. This is the first report on the presence of MP-A, MP-D, and MP-E on ear rot-infected maize in Indonesia; MP-A and MP-E in Malaysia.

Keywords : Fusarium, MAT-1, MAT-2, MP-A, MP-D, MP-E
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