

SHORT COMMUNICATION

Qualitative Resistance of Sarawak Rice Landraces Against *Pyricularia oryzae*

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Received: 24 July 2019

Accepted: 09 December 2019

Published: 31 December 2019

ABSTRACT

Malaysia rice production is threatened by rice blast disease, caused by *Pyricularia oryzae*. Yield can be greatly reduced by this disease as it can attack all the aerial parts of rice including leaves, node, neck, and collar. The use of resistant cultivar, which can be produced from resistance breeding, can control the disease effectively. Sarawak, in Malaysian Borneo, has diverse rice landraces, which can be genetic resources for resistance breeding. Study on the resistance of Sarawak rice landraces against *P. oryzae*, is still limited. In this study, diseased leaf samples were collected from rice fields in Serian division, Sarawak. One isolate was successfully obtained and designated as B2PG. The morphological characteristics were documented. Six Sarawak rice landraces were challenged with isolate B2PG. Four of the rice landraces were resistant and might carry resistance gene(s), which can be utilised in future breeding program.

Keywords: Rice blast, Resistance, Sarawak rice

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Rice (*Oryza sativa*) is the third most important crop in Malaysia after oil palm and rubber with areas of cultivation accumulated up to 698,702 ha and acts as the main staple food in Malaysia (Harun, 2015). However, rice production in Malaysia is threatened by one of the most destructive diseases, rice blast. Yield reduction due to rice blast can reach up to 70% (Gieanessi, 2014). This disease is caused by an ascomycete fungus named *Pyricularia oryzae* (teleomorph: *Maganoportha oryzae*), which can strike any aerial parts of rice plant including leaves, node, neck, and collar, at all growth stages. The symptom of blast infection is typically observed on leaves and collar with elliptical shape of lesion with brownish or necrotic border and whitish grey area in centre. *P. oryzae* can evolve or adapt to dynamic environment, which resulted in high pathogenic variations (McDonald & Linde, 2002). The common way to control this disease is by using fungicides. The application of fungicides, however, only treats the disease temporarily by inhibiting the growth of fungi. Besides, the use of

chemical in large-scale farm is neither practical nor environmentally friendly (Chaudhary *et al.*, 2005). Planting resistant variety is a recommended strategy to control the disease.

Some local rice varieties and landraces in Malaysia might carry blast resistance or defence genes in their genome. Those unknown resistances or defence genes can be utilized in rice resistance breeding. One of the resistant local varieties is Pongsu Seribu 2 originated from Peninsular Malaysia, which has been reported as the most resistant variety against 22 blast pathotypes and was used extensively in resistant breeding in Peninsular Malaysia (Hasan *et al.*, 2015). Sarawak, in Malaysian Borneo, has diverse rice landraces (Yeo *et al.*, 2018), which also can be exploited for rice resistance breeding. The resistance characterisation of Sarawak rice landraces against *P. oryzae* is however, lacking. This study reports the preliminary finding of the effort to characterise the resistance.