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Characterisation of *Phytophthora capsici* causing foot rot of black pepper (*Piper nigrum* L.) in Julau, Sarawak

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ABSTRACT

Phytophthora foot rot disease remains a deadly disease of black pepper in Sarawak, a major pepper producing state in Malaysia. This study characterised three *Phytophthora* isolates, recovered from diseased plant tissues of foot rot infected pepper vines from two farms in Julau district, Sarawak. The three isolates were confirmed to be *Phytophthora capsici* based on the distinct torulose hyphae characteristic and molecular analysis. The isolates exhibited various colony and sporangia morphologies and growth rates. Two mating types were detected among the isolates based on the formation of oogonia in pairing tests between the isolates - one type associated with isolate I4 and I5 recovered from one farm and the second type with isolate E3 from the other farm. Virulence test indicated that I5 isolate was relatively more virulent than E3 isolate. This study provides important information to assist in the development of effective management strategies for the disease.

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KEYWORDS

Black pepper; foot rot; morphology; *Phytophthora capsici*; virulence

Introduction

Piper nigrum L., or commonly known as black pepper, is one of the most important spices traded internationally (Entebang et al. 2020). Black pepper is also considered as ‘King of Spices’ due to its aromatic flavour and pungency characteristics (Buckle et al. 2007; Mamatha et al. 2008). The plant is a perennial climbing vine native to South India (Bagheri et al. 2014). It can grow up to about 3 meters in height within 1 to 3 years and may reach to 10 meters (Rosli et al. 2013). It was