

Morphological and molecular characterization of phytophthora capsici, the causal agent of foot rot disease of black pepper in Sarawak, Malaysia

ABSTRACT

Sarawak is one of the largest exporters of black pepper (*Piper nigrum* L.) but the production of this crop is in the decline, because of the foot rot disease. The objective of this study was to determine the morphological and molecular characters of the *Phytophthora capsici* the causal agent of foot rot disease of black pepper in Sarawak. Thirteen major pepper growing areas were surveyed and confirmed for the incidence of foot rot disease. Ulu Sarikei (Sarikei) had the highest disease incidence (75%) followed by Pasai Siong (Sibu) (70%) and the lowest incidence at Tatau (Bintulu) (5%). The highest disease severity was at Ulu Sarikei (70%) followed by Pasai Siong (62%) and the lowest at Tatau (4%). Based on morphological characterization, the foot rot pathogen exhibited globose oogonia with paragynous antheridia, chlamydospore, torulose hyphae and lemon shaped sporangia with long pedicel. Molecular identification by using nested-PCR showed unique DNA fragment of c. 560 bp further confirmed that the causal agent of foot rot disease of black pepper in Sarawak was *P. capsici* Leonian.

Keyword: Disease incidence; Foot rot disease; Morphological characterization; Nested-PCR; *Phytophthora capsici*