

EFFECT OF THIABENDAZOLE AND HYDROGEN PEROXIDE ON THE PATHOGEN OF DRY ROT OF POTATO

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ABSTRACT

Potato is an important food crop produced all around the world but its susceptibility to a number of post-harvest and storage diseases, including dry rot caused by *Fusarium* species, has caused a noticeable yield loss. This study was conducted to examine the effect of two chemicals, thiabendazole and hydrogen peroxide on a *Fusarium* sp., isolated from diseased potato tubers and proved to be pathogenic. The effectiveness of the chemicals was first evaluated *in vitro* on potato dextrose agar plates amended with the chemicals, and then *in vivo* on artificially inoculated potato tubers by dipping method. Colony diameters of the pathogen on chemicals amended plates were measured and compared with those on chemicals-free PDA plates (Control) while disease incidence and disease severity were assessed for the chemicals-treated tubers in comparison with non-treated ones. The results showed successful inhibition of the pathogen growth by both chemicals *in vitro* at concentrations of 7.5 mg L⁻¹ of thiabendazole in potato dextrose agar and 1:111 v/v or 9 ml of hydrogen peroxide in 1 L of medium. However, the two chemicals did not prove to successfully suppress the growth of the pathogenic *Fusarium* and the development of dry rot on the potato over 21 days of incubation. Further studies on method to apply the chemicals are warranted to prove the efficacy of the two chemicals in controlling the pathogen growth and development on potato tubers.

Key words: Potato, dry rot, *Fusarium* sp., thiabendazole, hydrogen peroxide

INTRODUCTION

Potato (*Solanum tuberosum* L.) belongs to the family Solanaceae, and is the third most important food crop in the world after rice and wheat in terms of human consumption (CIP, 2017). More than a billion people worldwide eat potato (CIP, 2017), and global total potato production was approximately 376.83 million metric tons in 2016 (FAOSTAT, 2017). In Malaysia, potatoes are included in diets as side dishes, often found in curry, as rice serves as the basic staple of the diet for the majority population. Currently potato is being planted only in a small scale in Cameron Highlands, and

most of the potato available in the market either comes from China, Australia or the United States.

Fusarium dry rot is an economically important disease worldwide, affecting tubers in storage and seed tuber pieces in the field (Wharton *et al.*, 2007; Gachango *et al.*, 2012; Kirk *et al.*, 2013). Estimate of the losses associated with dry rot ranges from 6% to 25%, and occasionally reaches up to 60% with prolonged storage (Secor & Salas, 2001; Estrada *et al.*, 2010). Dry rot of potato might also exert negative impact on human and animal health as some *Fusarium* species associated with the