

## Aggressiveness of *Ganoderma boninense* and *G. zonatum* isolated from upper- and basal stem rot of oil palm (*Elaeis guineensis*) in Malaysia

### Abstract

Currently, the most known devastating oil palm disease throughout South-east Asia is basal stem rot (BSR) caused by *Ganoderma boninense*. However, there is insufficient information on *G. zonatum* which also has been associated with the BSR, and upper stem rot (USR). Thus, this study reports pathological symptoms and degree of aggressiveness amongst *G. zonatum* and *G. boninense* of USR and BSR on oil palm seedlings. All the *Ganoderma* isolates tested showed positive signs of infection on the seedlings at 12 and up to 24 weeks after inoculation. However, the symptoms of infection on the seedlings were indistinguishable amongst the *Ganoderma* species tested. In fact, they showed significantly different degree of aggressiveness in terms of area under disease progress curve (AUDPC), epidemic rate, severity of foliar symptoms (SFS), disease severity index (DSI), stem bole necrosis and primary roots necrosis. The present findings suggested that *G. zonatum* of USR was the most aggressive, followed by *G. zonatum* and *G. boninense* of BSR, and *G. boninense* of USR was the least aggressive. Hence, a new mechanism of control strategies is urgently required to contain the disease from spreading especially for USR and also for *G. zonatum* in Malaysia.

**Keyword:** Basal stem rot; *Ganoderma boninense*; *Ganoderma zonatum*; Pathogenicity; Upper stem rot