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## ***Ganoderma boninense* in Oil Palm Plantations: Current Thinking on Epidemiology, Resistance and Pathology\***

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*This review addresses some key current issues concerning *Ganoderma boninense*, causal agent of basal stem rot (BSR) and upper stem rot (USR), as a continuing limiting factor in palm oil production. Spread and infection can occur through roots, yet genetic evidence shows considerable isolate diversity and reveals the major input of airborne basidiospores to spread and infection. This has implications for control measures, screening for resistance and choice and deployment of resistance. Where infective heterokaryotic mycelium resulting from spore matings establishes or infects is not understood, because *Ganoderma* is a weak saprophytic competitor in soil and palm debris. Spores do germinate on cut fronds (and on other wounded surfaces, as revealed by cryo-scanning electron microscopy) and are pulled into xylem vessels under negative tension and may colonise from that protected niche. Improved screening for resistance by attaching small inoculum to roots, along with shading seedlings to mimic canopy cover are described. Pathogenicity mechanisms of *G. boninense* revealed by light and transmission electron microscopy involves an initial biotrophic phase in root cortex and lower stem, rapid starch depletion then extensive, simultaneous host cell wall breakdown by its array of lignases and polysaccharidases.*

*Suggestions for future research are outlined.*

**Keywords:** Basidiospores, white rot, tetrapolar mating, DNA markers, cell wall degradation, hemibiotrophy, root infection, starch degradation, resistance.

