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Extended Abstract

Genetic Diversity and Population Structure of Field Isolates of Ganoderma Boninense from Oil Palm Plantation in Solomon Islands †

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Oil palm (*Elaeis guineensis* Jacq.) is a long-term perennial crop of great economic importance to many countries in tropical Asia/Oceania, providing export revenue and much needed income to both large plantations and smallholders. Oil palm is the most efficient oil producing plant, with an annual production per hectare more than five times that of any other vegetable crop. Unfortunately basal stem rot (BSR), caused by fungus *Ganoderma boninense*, poses a major threat to the oil palm industry and hence to farmers' livelihoods. The only long-term control for this disease is through improving cultural practices and the use of more resistant planting material. Ganoderma causes white rot in both felled palm logs and in living palms. It has been suspected that Ganoderma found on logs is an inoculum source for infection of living palms. In this study we used >13,000 GBS markers, to analyse a population of 300 isolates from an oil palm plantation in Solomon Islands (SI). The isolates were collected from fruiting bodies found on felled logs (saprophytes) and on living palms (pathogens). Isolates from Australia and Papua New Guinea (PNG) were included for comparison. Phylogenetic analysis revealed that overall there is large genetic variability among the isolates, as expected of a sexually reproducing organism. The SI isolates fell into two clades. A third of the SI isolates clustered with Australian and PNG isolates, indicating some gene flow between the counties. Our results confirm the suspicion that Ganoderma on felled logs is indeed a source of inoculum for BSR infection of living palms, which in turn has implications for disease management.