

2021

July

## A Short Report on Application of Acoustic Tomography for Basal Stem Rot Disease Severity Assessment in Oil Palm

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*Basal stem rot (BSR) disease caused by Ganoderma boninense remains as one of the most devastating diseases of the oil palm industry especially in South East Asia. Currently there is no remedy mainly due to inability to detect BSR disease at the early stage. Therefore, early diagnostic method is vital to detect the BSR disease effectively. This study examined the potential application of acoustic tomography method to observe the internal parts of the oil palm consisting of different levels of BSR disease severity: i) healthy, ii) moderate and iii) severe. Ten oil palm trees were selected for each level of BSR disease. The tomography data of the cross-section of the oil palm trunk was measured at one meter from the stem base for each palm using acoustic measurement system known as TomoSawit. The palm was then cut down at the tomography measurement height and compared with the acquired tomography image. The results showed that the method can provide tomography images of different BSR disease severity conditions. Detailed examination of the tomography results revealed the differences in acoustic wave speed while travelling across different densities of the cross-section of the palms that contribute to the differences in tomography image characteristics. The difference in the density could be associated with the severity of the BSR disease. All the generated tomography images have shown to be similar with the actual cross-section samples of the palm. In this study, the severely infected sample shows that an estimate of 33.3 per cent and 54.7 per cent of the cross-section was already degraded, respectively. The confirmation of BSR disease was conducted using ergosterol and Ganoderma Selective Medium (GSM) assessment. It can be concluded that the acoustic tomography could be a potential solution for early detection of BSR infection in oil palm especially for field application.*

**Keywords:** Acoustic tomography, basal stem rot, early detection, oil palm, Ganoderma boninense.

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