

## **Morphological changes of *G. boninense* mycelia after being challenged with Thiram, ZnO NPs and Lucsin**

### **ABSTRACT**

Basal Stem Rot (BSR) disease is one of the major threats to the oil palm industry in South East Asia. This paper aims to find control to BSR using thiram, Zinc Oxide nanoparticles (ZnO NPs) and Lucsin. The study was carried out in vitro to assess the antifungal effect of these agents by percentage inhibition radius growth with the observation of their morphology under Scanning Electron Microscope (SEM) after treatment. From our observation, thiram could fully inhibit *G. boninense* radial growth, while ZnO NPs up to 80%. No inhibition was recorded with Lucsin. Observation under SEM confirmed *G. boninense* mycelia after treated with thiram shown abnormality, distorted and damaged hyphal which had resulted in less branches of the fungal mat. There are also evidences of less branches of fungal mat as well as malformation structures of *G. boninense* hyphae after being treated by ZnO NPs. Only minor ruptures was found on the hyphae, while the hyphal branch were shriveled, distorted and flattened when challenged with Lucsin. In summary, thiram shows potential for complete inhibition of *G. boninense* while ZnO NPs has slightly lower inhibition potential but Lucsin is incapable of providing significant control to the growth of *G. boninense*.