

## **FUNCTIONAL DIVERSITY OF MICROBES IN GANODERMA AND NON-GANODERMA INFECTED OIL PALM CULTIVATED SOILS**

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Microbes present in soils have been utilized as bio-indicators for assessing soil health and sustainable productivity in cropping systems. Soil microbes are good indicators for soil health due to their fast turn over and they are the first organisms to react to changes in the environment. This research compared microbial community profiles in Ganoderma areas with those in non-Ganoderma infected areas. Soil sampling activities were conducted at FELDA Jengka oil palm plantation in Pahang adjacent to a virgin forest. Samplings at six months interval were done on virgin forest soils. On cultivated sites these were fixed in 20 year-old palms which were uninfected or infected by Ganoderma. The estimated percentage of the disease incidence was 30%. Screening of functional microbes in the Ganoderma and non-Ganoderma areas were carried out using Community Level Physiological Profiles (BIOLOG EcoPlate) and plate count microbial enumeration methods. General plate count media used were Tryptic Soy Agar (TSA) and Potato Dextrose Agar (PDA). Specific media for Nitrogen fixers, Phosphate solubiliser, Lignin, Cellulose and Chitin degraders were used for functional microbes isolation and enumeration. Data obtained from the BIOLoG EcoPlates showed significant differences between the microbial communities in the Ganoderma and non-Ganoderma areas. Results showed that the microbial count was higher in the Ganoderma area as compared to non-Ganoderma area on TSA medium. This was similarly observed on PDA medium. The presence of functional microbes on specific media were observed and counted. Observations showed that microbial count was averagely higher in non-Ganoderma infected area for three specific media including Phosphate solubiliser medium, Nitrogen fixers medium and Lignin medium. Functional microbes were not observed on Chitin and Cellulose media. Isolated functional microbes will be further characterized, identified and investigated for the trends shown.

Key words:

Oil palm, Ganoderma, microbial diversity, community level physiological profiles (CLPP), plate count.

No extended abstract received yet