
Oral sessions | Field Crop Production | O13: Current Issues on Tropical Crops

[O13] Current Issues on Tropical Crops

*Sponsored by the Japanese Society for Tropical Agriculture / The Society of Sago Palm Studies

Chair: Hiroshi Ehara (Nagoya University, Japan)

Chair: Hitoshi Naito (Kurashiki University of Science and The Arts, Japan)

Chair: Rosa Rolle (Food and Agriculture Organization of the United Nations, Italy)

2021年9月9日(木) 17:00 ~ 19:00 Room 1 (Oral) (Field Crop Production)

18:25 ~ 18:40

[O13-06] The Abundance and Diversity of Arbuscular Mycorrhizal Fungi Colonized in Roots of Sago Palm in Mineral Soil and Shallow Peat Soil

*Nominated for Presentation Awards

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Arbuscular mycorrhizal fungi (AMF) play an essential role in host plants' nutrient uptakes. In Sarawak, Malaysia, farmers generally cultivate sago palm (*Metroxylon sagu*) in peat soils without applying chemical fertilizer, expecting natural fertility of the soil. Through such experience, the growth contribution of AMF to sago palm had been suggested. In this study, we collected soils and roots in mineral soil (MS) and shallow peat soil (SPS) in Sarawak to understand the characteristics of AMF symbiosis under different soil environments. As a result, SPS showed a higher moisture content (MS, 38.1; SPS, 79.8%), lower pH (H₂O) (MS, 4.6; SPS, 4.1), soil bulk density (MS, 1.03; SPS, 0.20 g cm⁻³), and N content (MS, 16.9; SPS, 2.7 kg m⁻³) than MS at the same soil depth, while the P content (Bray II) (MS, 1.6; SPS, 1.9 g P₂O₅ m⁻³) was similar. The abundance of AMF was significantly lower in SPS (39.2 ± 12.5 %) than in MS (73.2 ± 4.6 %). 122 AMF operational taxonomic units (OTUs) belonging to Acaulosporaceae, Ambisporaceae, Claroideoglomeraceae, Gigasporaceae, and Glomeraceae were detected by amplicon sequencing of the small-subunit rRNA gene. Phylogenetic analysis revealed that OTUs in MS belonged to more clades than in shallow peat soil. It seems that the soil physicochemical properties influenced the abundance and diversity of AMF in SPS. It was suggested that *Glomus* and *Acaulospora* species obtained from SPS could survive in acidic and high moisture soil conditions and help the growth of sago palms in shallow peat soil.