

Mycorrhizas are symbiotic associations that are formed between the roots of most plant species and soil fungi (Bagyaraj, 1984). Benefits of arbuscular mycorrhiza (AM) associations include improved nutrient uptake by the fungi, extending their hyphae through the plant roots into the surrounding soil and transporting the nutrients directly into the plant. Numerous studies also suggest that uptake of water by plant roots can be enhanced when they are infected with AM fungi (Faber *et al.*, 1991). A study by Shamala (1999) showed AM also significantly promoted the growth of oil palm seedlings. However, not all species of AM are able to do this. Therefore, this article describes the necessary assessments for establishing the efficacy of AM-based products in increasing the vegetative growth of oil palm.

METHODOLOGY

The activities involved in establishing the efficacy of AM-based products are as follows:

- preparation of oil palm materials;
- application of the test AM inoculum during transplanting;
- recording of growth parameters: leaf area, height, girth and frond count;
- recording of nutrient uptake: macro and micronutrient analyses;
- recording of physiological parameters: photosynthesis, transpiration, stomatal conductance and chlorophyll content; and
- recording of AM propagation within the oil palm roots.

SERVICE OFFERED

MPOB offers the service of determining and verifying the potential of AM-based products in enhancing the vegetative growth of oil palm. This service is offered to anyone that might be interested in validating the efficacy of their AM-based product/s on oil palm. Once the *in vivo* trial

is completed, a full report along with the relevant data will be submitted to the relevant person/company.

ARBUSCULAR MYCORRHIZA AS A VEGETATIVE ENHANCER

AM efficacy can be determined through various methods of assessing vegetative parameters. However, the most crucial evaluation is within the root system of the plant whereby the presence of the hyphal system is detected via root staining as shown in *Figure 1*. Other parameters such as higher root dry weight in AM inoculated seedlings are shown in *Figure 2*.



Figure 1. AM root staining: AM propagation through hyphal extension (arrowed) within the root system of oil palm seedlings.



Figure 2. Growth assessment: the seedling on the right was applied with AM. Observe the clear difference in leaf number and root mass from the untreated seedling on the left.

BENEFITS AND COST

The service offered is a reliable method to validate claims of any AM-based product in the market. The cost will vary depending on the parameters/claims required to be validated.

REFERENCES

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For more information kindly contact:

Director-General
MPOB
P. O. Box 10620
50720 Kuala Lumpur, Malaysia.
Tel: 03-87694400
Website: www.mpob.gov.my
Telefax: 03-89259446