LIFE CYCLE ASSESSMENT OF OIL PALM SEEDLINGS

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574

MPOB INFORMATION SERIES • ISSN 1511-7871 • JUNE 2011 MPOB TS No. 93

Life cycle assessment (LCA) is a process tool for evaluating the environmental impacts associated with a product, process or activity by identifying and quantifying the energy and materials used as well as the wastes released to the environment. LCA subsequently evaluates opportunities to effect improvements to the environment. The Malaysian palm oil industry is a very important industry which contributes immensely to the nation's economy and accounts for 70% of the agriculture gross domestic product. In order to maintain its competitiveness, the environmental impacts from the oil palm industry must be determined, and this can be carried out using the life cycle approach.

The oil palm nursery is the first link in the palm oil supply chain: this is where the oil palm seedlings are produced for the cultivation of palms in plantations. LCA of the production of oil palm seedlings is a gate-to-gate study which starts at the nursery where the germinated seeds are sown and the seedlings grown in small polybags (15 cm x 23 cm) for approximately three to four months before the seedlings are transferred to larger polybags (30 cm x 38 cm). They are then left to grow for another 10-12 months before subsequent transplanting into the plantation.

MPOB offers LCA consultation services to stakeholders of the oil palm industry. The services include conducting LCA of various aspects of the oil palm supply chain, starting from the nursery right up to the production of palm biodiesel.

METHODOLOGY

A life cycle inventory (LCI) will be quantified using the inflows and outflows built into the SimaPro Version 7.1 LCA software. The Eco-Indicator 99 methodology will be used for the life cycle impact assessment (LCIA), which is based on 11 impact categories. LCA studies are carried out following ISO 14040/14044 requirements.

BENEFITS

- Identification of the processing stage(s) that contributes to negative environmental impacts.
- Information for the improvement of the environmental performance of the oil palm nursery.

OBJECTIVES

- To identify and assess the environmental impacts associated with the production of oil palm seedlings in the nursery.
- To evaluate and implement steps to improve the environmental performance of the oil palm nursery.

TYPES OF SERVICES

- Setting up the system boundary and functional unit for the study of the oil palm nursery (double- and single-stage nurseries, *Figures 1* and 2, respectively).
- Collecting life cycle inventory data and site-specific data.
- Conducting life cycle impact assessment

Figure 1. Double-stage nursery using small polybags at the pre-nursery stage.

ISSN 1511-7871
9 771511 787001

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Figure 2. Single-stage nursery before arrangement of the large polybags into a triangular spacing.

(LCIA) for the production of oil palm seedlings.
- Interpreting LCIA results, and suggesting mitigation measures.
- Calculating the carbon footprint or greenhouse gas (GHG) emissions associated with the production of oil palm seedlings.

WHERE SERVICES ARE OFFERED

In Peninsular Malaysia, Sabah and Sarawak.

COST

Depends on the scope of services required.

CLIENTS

Stakeholders of the oil palm nursery.

For more information, kindly contact:

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