

TRAINING COURSE

«*Characterization of the Physiological Profiles of the Soil Microbial Community*»



From 23rd to 25th February 2016, a training course on «*Characterization of the physiological profiles of the soil microbial community*» was organized by the LMI LUSES and Land Development Department (LDD) at the Division of Soil biotechnology of LDD in Thailand. This training gathers a group of 16 participants originated from LMI LUSES regional partners (France, Laos, Vietnam and Thailand)

Trainers

- Pascal Alonso: Expert biological scientist, TICA temporal expert, UMR ECO&SOLS, France
- Monrawee Peerawat: LDD soil scientist, Biotechnology Dept., Thailand
- Dararat Hotaka: LDD soil scientist, Biotechnology Dept., Thailand

Organizer & Funders

This training was funded by LMI LUSES, UMR ECO&SOLS, French Rubber association, and LDD Biotechnology Dept.



Context

The LMI LUSES and its LDD Partners has developed since 2012 a common platform of microbiology within the Biotechnology department of LDD. The aim of this laboratory is to characterize the diversity and the activities of the soil biota subject to different perturbations (land uses changes, agricultural practices, new soil management such as agroforestry, vermicompost, biochar etc.).

Why this focus on soil microorganisms within the soil biota? Because soil fertility depends on microbial activity as 90% of the soil cycle are driven by the soil microbiota. There are more microbes in a teaspoon of soil than there are people on the earth! Their characterization is thus critical to better assess soil functioning! Nowadays, most of the studies focus on the characterization of their biodiversity using complex molecular techniques. But if it is important to determine who is there? it is even more essential to understand what they do (metabolic activities)? This is the goal of this training.

The Microresp[™] technique will help Asian soil scientist to characterize the metabolic activities of the microbial community. In short, they will be able to assess if one agricultural soil is metabolically active or not. This technic combine with classical soil parameters, will help to select the most suitable agricultural practices for soil sustainability

Methodology: The Microresp[™] Method

To assess the metabolic profiles of the soil microbial community, we choose the Microresp[™] method developed by Campbell et al. (2003) which combines the advantages of Biolog[™] (without the drawbacks) and those of the SIR (Substrate Induce Respiration). It consists of a miniaturized measuring device for measuring the CO₂ production of the total microbial community in soil, induced by the addition of various carbon substrates during a short incubation. This technique allows determining the profile of catabolic a microbial community. It also allows to estimate the soil microbial biomass by measuring the respiration induced by glucose.

Organization of training

The training last 3 days, the first day was devoted to the theoretical aspect of techniques for assessing the soil activities, the two others days was devoted to measurements and analyses of the data produced.



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