Proposal for a Collective training

Title : Characterization of the physiological profiles of the soil microbial community"

Date : 23rd to 25th February 2016

Participants: 15 (to be confirmed)
6 from LDD, 2 from KKU, 1 from KU, 3 from Nuol (Laos) , 2 from SFRI (Vietnam), 1 (IRD)

Trainers:

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

Localization: LMI-LDD platform of microbiology

Funded by: LMI LUSES, UMR ECO&SOLS, French Rubber association, LDD Biotechnology Dept.

Cost of the training: 6000 € (~265000 baht)

Context of this training

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 soil microbial compartment of the soil subject to different perturbations (land uses, farmers practices, organic matter management such as biochar etc..). Why this focus on soil microrganisms, because, there are more microbes in a teaspoon of soil than there are people on the earth. Soils contain about 8 to 15 tons of bacteria, fungi, protozoa, nematodes, earthworms, and arthropods. They (microorganisms) are the main driver of the nutrient cycling (90%) their characterization is thus critical to better assess the soil functioning. This platform will allow to determine what kind of agricultural practices or organic matter management are more sustainable for the farmer. However, most of the measurements today are related to the characterization of the molecular diversity of microorganisms. But if it's important to determine who is there? (diversity), its even more essential to understand what do they do (metabolic activities)? This will be the aim of this training

Methodology: the microrespTM method

To assess the metabolic profiles of the soil microbial community, we choose the microrespTM method developed by Campbell et al. (2003) which combines the advantages of BiologTM (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 to determine the profile of catabolic a microbial community It also allows to estimate the soil microbial biomass by measuring the respiration induced by glucose.

Short description of the training (see the program attached)

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