RENEVIER Marie-Sophie (2017): “BIOFUNCTOOL”, an in-field package to assess soil quality based on soil functioning. Evaluation of the Biofunctool indicators

Résumé

Soil quality is an integrative property of soil that reflects its ability to function under management practices and to provide ecosystemic services. Although considerable effort has been made to develop evaluation tools that can assess soil quality, most of them are based on the measurement of a set of individual soil parameters. These approaches do not suffice to indicate the state of soil functioning in that they do not account for the complex pattern of interaction that takes place within soil, leading to emergent properties.

To address this lack of integrative methods to assess soil quality, “Biofunctool”, a set of easy, cost-, time-effective *in situ* measurements was developed. The selected indicators directly assess one of the three major soil functions; i.e. carbon transformation, nutrient cycling, and soil structure maintenance and give an overview of a maximum of soil interactions.

The objective of this study was to test the Biofunctool set of indicators in different pedoclimatic conditions in Thailand. For this, we chose to apply Biofunctool in rubber tree plantations since they are widely spread along a pedoclimatic gradient in Thailand.

This study permitted to validate Biofunctool set since it could easily determine the effect of management practices on soil functioning; the indicators were shown to be sensitive to management practices. Also, the non-correlation of the indicators justifies the inclusion of each of them in the Biofunctool set as they all provide complementary information.