The contribution of the Fertile Grounds Initiative to Climate Smart Agriculture

Climate Smart Agriculture (CSA) integrates the need for increased food production with adaptation to climate change and mitigation of greenhouse gas emissions. Soils are the very basis of agriculture and therefore optimizing soil functions is more than ever crucial. Soils contain the highest terrestrial stock of carbon and sequestration of carbon in soil is generally considered as one of the most promising options to combat climate change as it contributes to mitigation and adaptation at the same time. Mitigation is achieved because sequestered carbon does not emit as CO_2 and adaptation is achieved because soil organic carbon increases the buffer capacity of the soil for water and nutrients. This results in more robust soils, resilient to climate change.

Still ongoing depletion of soil organic matter and nutrients - an example from Ethiopia

Recent evidence shows that in Ethiopia average annual depletion equals about 33 and 3200 kg ha^{-1} for N and C, respectively. More importantly, between 2012 and 2014 depletion rate increased with about 9 kg N ha^{-1} yr^{-1}.

Results obtained by the CASCAPE project using the MonQI toolbox for monitoring farm and field management. Data based on 5,717 fields.

However, about 12 million ha of land are still lost each year due to mismanagement and in large areas soil organic carbon contents decrease rather than increase. The situation is especially alarming in areas with a low soil fertility, i.e. in many parts of Sub-Saharan Africa (SSA) and some parts of Asia where farmers are trapped in a vicious chain of low soil fertility, low yields, and low amounts of organic residues for composting.

To revert such trends and move towards CSA, the productive capacity of the soil has to increase. One of the key components, and in fact one of the few things that can be actively managed, is the correct use of organic matter and nutrients from organic and mineral sources. Scientists have repeatedly shown that the integrated application of organic and mineral nutrients coupled with sound soil and water conservation measures is the best way to restore and recover fragile soils. However, true implementation of this Integrated Soil Fertility Management (ISFM) is hampered by fragmented activities and lack of collaboration between different stakeholders at different levels of scale within a given region.

The Fertile Grounds Initiative (FGI) contributes to the required improved soil fertility management and nutrient trade to increase sustainable CSA. Target clients range from smallholder farmers to agri-businesses in the different value chains. The paradigm behind the FGI is that there are more additional sources of organic nutrients available than currently being used and that use of inorganic nutrients can be further optimized. To make use of 'hidden' resources and optimize processes, FGI brings together various actors at different levels of scale in nutrient management to facilitate an optimal arrangement for nutrient management and trade. This will result in:

- Better use of organic and mineral nutrients to increase soil fertility.
- Higher yields and less (organic) wastes.
- Higher soil organic matter contents resulting in increased resilience.
- Reduced emissions of CO_2 and increased carbon sequestration.

FGI has developed a 8-component approach for better nutrient management based on a match-making approach (see text box). For components I to VI approaches, guidelines, and tools are developed that are geared towards local conditions. Components VII and VIII are tailored towards local contexts.

In short**, FGI is a coordinated strategy of collaboration between actors in nutrient management at various spatial scales**.

THE EIGHT FGI-COMPONENTS

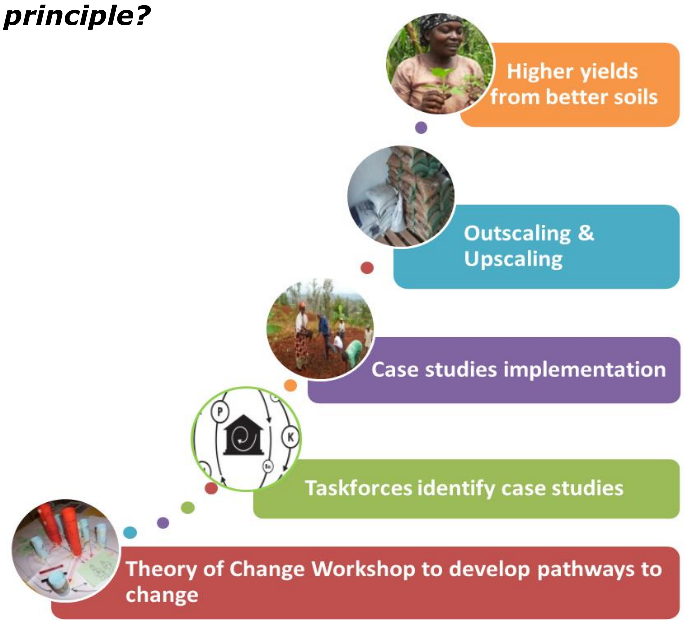
I: DETERMINATION OF NUTRIENT **DEMAND**
II: DETERMINATION OF NUTRIENT **AVAILABILITY**
III: **PROCESSING** OF ISFM PRODUCTS
IV: **BROKERING** BETWEEN DEMAND AND SUPPLY
V: NUTRIENT EXCHANGE FACILITY FOR NUTRIENT **TRADE**
VI: **CAPACITY BUILDING** OF DIFFERENT TARGET GROUPS
VII: **INSTITUTIONAL ARRANGEMENTS** FOR SCALING UP AND SCALING OUT.
VIII: CREATING AN **ENABLING ENVIRONMENT**

How to set up projects according to the FGI principle?

FGI specifically targets farming systems and areas prone or vulnerable to soil nutrient and organic matter depletion. To contribute significantly to CSA and value chains, areas with some economic diversity are considered most promising. Prior to setting up a FGI project some actions are carried out:

- A joint vision is developed on pathways towards change regarding food production and sustainable soil management through a theory-of-change workshop on agricultural productivity and soil fertility.
- Local task forces are in place to guide the project and to align FGI to national policies.
- An overview of existing activities on soil fertility is made to identify possible case studies to avoid duplication of efforts.
- Case studies are selected by the task-forces and work plans are developed to implement the 8 components of the FGI-approach.

In this way, FGI will generate sufficient additional sources of nutrients and organic matter, optimize their use and recycling, and enhance CSA.



FGI Package

Although each FGI project has its own characteristics, they also share similar functionalities, for instance:

- Training: setting up your own FGI project (10 days training).
- Toolboxes for determining nutrient requirements and farm management.
- Monitoring equipment and guidelines for environmental parameters.
- Approach for bottom-up sustainable agricultural development (including Train-the-Trainers workshop).
- Guidelines for implementation and backstopping.

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ALTERRA WAGENINGEN UR

Share your ideas on www.fertilegroundsinitiative.info