

Workshop report “Compost for Sustainable Agriculture – facts, myths, potentials and business opportunities”.

held at ICIPE Duduville Campus, Nairobi 12-13th of September, 2016

The Fertile Grounds Initiative (FGI), in collaboration with Food & Business Knowledge Platform (F&BKP), organizes a series of workshops on conditions for improved nutrient recycling in East-Africa. The overall ambition is to develop viable pathways of change towards more circular nutrient economies. In specific, we bring together actors in nutrient management and facilitate arrangements for nutrient trade at various level of scale. The first workshop organised by the FGI in collaboration with CIAT, and financed by the F&BKP, was held in Nairobi, September 2016. More than 50 participants from different sectors including research, NGO's, governmental organizations, private sector (mostly from the composting sector), networks and platforms with different expertise in nutrient management attended the workshop. The objective of the first day of the workshop was to enhance knowledge and raise awareness about uses, challenges and potentials of organic nutrient sources, quality and quantity issues linked to the use of such resources, and how and if they can make existing farming systems more sustainable. The main issues discussed include ongoing soil degradation and possible solutions, integrated soil fertility management, availability of organic sources for compost, processing of compost, compost and soil health, perception of farmers on compost use, and nutrient releases in compost, followed by the overview of quality aspects that need to be considered when using compost in agriculture.

A few key issues that were discussed during this session are:

- Current agricultural innovations (notably the availability of improved seed materials) have led to increased biomass production rates in various documented trials. The increase in biomass production, however also requires an increase amount of nutrients to be replenished to avoid future nutrient depletion from soil. In many places current nutrient balances are already negative, i.e. removal rates exceed supply rates. In order to avoid a further aggravation of nutrient mining to maintain or improve the soil nutrient status, integrated organic and mineral resource management at various spatial scales seems essential.
- There are different organic resources available e.g. manure, city waste, crop residues, waste of food markets, etc., but for some sources there are competing claims related to the use (cooking, heating, livestock feed for example).
- There is untouched potential regarding compost input material, e.g. in municipal waste or from agro-industrial areas, to produce compost, which needs to be further evaluated and tapped into.
- Results from field trials have documented the positive impact of compost on soil including improved physical, chemical and biological properties. However, when considering the potential of compost as a source of nutrients it has also been shown that release rates are slow in addition to the often high to excessive application rates that are necessary to meet the nutrient demand of the crops. Despite this apparent disadvantage, some farmers are willing to pay a relatively high price (when compared to regular fertilizers) for compost (45-60 Ksh/kg), which shows that they appreciate the, often poorly quantified functions of compost aside from the value of nutrients.
- Due to the variation in compost source materials (city waste, animal manure, plant residues) the quality of compost is an issue, in particular the presence of potentially harmful substances (metals, plant protection residues) and the salinity of compost. This can be addressed partially by good separation procedures when preparing source materials for compost in addition to good quality control of the composting process itself (especially to reduce pathogens). Aside from the final quality of compost, the quality of the soil to

which it will be applied, as well as the sensitivity of crops (towards uptake of metals for example) determine how suitable the application of various types of compost is in farming systems.

Participants were asked to send compost samples beforehand and the results were discussed. In general, samples were of an acceptable quality; the nutrient content of compost samples were similar to that of samples from the European Union. Due to the use of specific nitrogen (N)-rich crop species, the average N content was even higher than compost from the EU. However, the levels of potentially harmful metals, notably Cadmium was very high in some samples, which is the result of the input material (quality needs to be checked) in combination with poor separation of contaminated source material prior to composting. The first day ended in an excursion to the compost farm of Green Resource Exploration (Kenya) Ltd, where the Operational Manager, Martin Njunge, introduced their business model and operations.



Workshop participants visiting the compost farm of Green Resource Exploration (Kenya) Ltd.

On the second day, two existing business models from Wanda Organic and ECoH Holdings Limited were presented at the workshop, followed by the development of 5 business models for resource recovery by the workshop participants. These business concepts were pitched and arising issues include the adoption of compost use by farmers, the viability and profitability of business opportunities, and the enabling environment (e.g. policies, infrastructure). Additionally, this workshop intended to build networks between various stakeholders, and share existing knowledge and expertise in organic resource management.

After deliberations on multiple issues, the participants of the workshop made a number of recommendations and requirements for the further implementation of organic resource recovery.

Recommendation 1

A multi-stakeholder collaboration is necessary to address soil fertility challenges, which includes the collaboration between practitioner organisations, knowledge institutes and governmental organisations. More knowledge exchange on resource recovery and translating research into practice as well as enhanced sensitisation of farmers and the public about the role of organic sources in the soil and importance of solid waste management such as recycling, reuse and recovery are key. Further an enabling environment for organic resource recovery and management is required. Particular emphasis should be on establishing policy frameworks on organic resource

management, policy support for enhancing organic resource uptake in farming systems, and regulating standards for compost (quality labels) and other organic resources in terms of quality by governmental institutions.

Recommendation 2

Due to the somewhat limited capacity of compost to supply nutrients, it was suggested that compost perhaps can serve more as a soil “vitalizer” than just fertilizer. The main advantage of bringing organic resources back into farming systems is in terms of stabilizing and improving the physical and biological conditions of the soil (additional benefits) rather than in nutritional values. This needs further documented proof to better understand, which sort of organic resources in what quality can be used where. End-users need to understand the benefits and necessity of compost to help generate a market for it.

Recommendation 3

In general it seems challenging to reduce the costs of compost production (by companies) and therefore the costs of the product price, but more end-user education through marketing activities, creating awareness among customers of the potential and benefits of organic resources for the soil and agricultural intensification, and stressing the costs of inaction, can increase the acceptance of a higher product price among some of the end-users. Additionally, more attention should be paid to what smallholder farmers can do on their own farm to maintain or even increase soil fertility and health, e.g. through on-farm composting and manure management, managing and maintaining crop residues, growing cover crops, etc.

Recommendation 4

Besides the following two workshops of this series, CIAT an participants in this new compost network should consider organising regular meetings to share experiences and exchange ideas on business opportunities for resource recovery. Further, there were multiple requests to organise technical sessions or workshops to gain more in-depth knowledge on specific aspects, e.g. quality aspects and suitable applications of diverse types of compost for specific end-users, and training of technical skills on how to analyse and assess results of compost quality analyses (nutrients, metals, pathogens, etc.). Knowledge exchange could involve the establishment of website where information and contributions from different stakeholders such as organic fertilizer industry, NGO’s working on composting projects or knowledge institutes could be compiled that is accessible to experts in the field of organic resource management and to end-users of compost. An already existing platform could also be used for creating such an information hub. Participants reiterated their desire to keep this network, linkages and cooperation formed during the workshop going into the future.

One of the final comments of the workshop was that over 70% of the food supply in developing countries is produced by smallholder farmers and that compost produced should be returned to those farms that feed us.