Scale-N

Scaling-Up Nutrition: Implementing Potentials of nutrition-sensitive and diversified agriculture to increase food security

Factsheet 5

Implementation of composting and soil enrichment education strategies in rural Tanzanian farming communities

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Summary

Findings and recommendations on composting as an important input to successful school and home gardening are presented. Using the compost in bag gardens and/or flatbed school gardens improved nutrient supply to needy garden plants. However, successful compost production depended on the availability of key inputs (both carbon rich materials and the green nitrogen-rich materials). In the drier, semi-arid villages of Chinoje and Mzula, composting proved difficult and instead the use of farm yard manure was emphasized.

Objective

Incorporating composting skills into home and school gardening programs was designed to help improve soil nutrient enrichment education in rural communities. In turn, this will contribute to improving the nutrition of the target communities by exploring and engaging best agricultural production strategies leading to maximizing the nutritional content of the household plant-derived foodstuffs.

Key Lessons Learned

Key lessons learnt were as follows:

- Indigenous knowledge on soil mapping and fertility evaluations have a high degree of congruency with scientific approaches.
- Plant-derived foods identified by local communities as being nutrient-dense were confirmed to be truly nutrient-dense through laboratory based analytical results.
- Certain plant micronutrients (e.g. Zinc and Fe) can be traced from soils to foodstuff.

Constraints & Objectives Adressed

Issues with the composting intervention included:

- Unavailability of the raw materials for composting in the drier villages of Chinoje and Mzula and alternative to composting such as use of farm yard manure directly on seedbeds had to be adopted.
- Water scarcity made it challenging to keep the developing compost moist enough, thus leading to a poor final compost product. This was addressed by re-emphasizing the importance of observing all necessary steps to ensure quality production of compost.

Description of Innovation

The integration of the composting component to everyday gardening followed as step-wise implementation plan, segmented into 1) training to both school pupils and community families on the basics of pit composting. This was followed by 2) compost maturity management and, later, 3) application of matured compost to either bag or flatbed gardens. The application of mature, well managed compost to flatbed gardens at Kitunduweta school garden contributed to a boom in leafy vegetable production, which then catalysed the introduction of a school feeding program there.

Proven Success in TZ and Beyond

Adding composting to school gardening programmes yielded two major success stories. Firstly, school going children were able to capture the art and science behind composting and the importance of the practice in soil health and agricultural production.

Secondly were in regions where compost was successfully used, the outcome easily detectable in the quality of the vegetables grown. The quality of leafy vegetables that came out of flatbed gardens at Kitunduweta and Muhenda were strongly attributed to the positive contribution of quality compost to the soil, triggering as a result bumper harvest of vegetables leading to introduction of school feeding program at Kinduweta primary school.

Technical & Social Specifications

Apart from material inputs, specific requirements of this innovation are both environmental and social. Technically, for successful pit composting, the greens (plant-derived materials characteristically rich in nitrogen such as fresh leguminous plant leaves) and the browns (materials rich in carbon, such as chopped hay, straw or dry tree leaves) need to be available at a ratio of 2:1 green to brown matter. A supply of water is necessary to maintain the humid conditions. Environmentally very dry areas, such as Chinoje village, may find it more challenging to successful at composting than humid areas, like Kilosa.

Other necessities include simple pit digging equipment like a handhoe, spade and buckets.

Considerations & Criteria for Outscaling

Two major avenues may strongly be considered for outscaling:

1. The participatory approach to soil fertility mapping has been proven to be of high accuracy and its findings can easily be compared to e.g. soil mapping via taking samples. Furthermore, this approach was easily understood by the farmers and the local community.
2. The school garden program, which was a jointly implemented innovation, was probably the most successful initiatives under the biophysical subsection. The criteria for outscaling may be through the introduction of sensitization meetings and demonstration garden programmes at village and school compound.

Lessons Learned

Major lessons learned during the implementation are:

1. Indigenous knowledge on soils mapping and fertility evaluations have a high degree of congruency with scientific approaches.
2. Plant-derived foods identified by local communities as being nutrient-dense were confirmed to be truly nutrient-dense foods through laboratory based analytical results.
3. Certain plant micronutrients such as Zinc and Iron can be traced from soils to foodstuffs such that deficiencies in soils are reflected in the edible parts of the plants.
4. When carefully packaged, innovations such as compost making and their use in home gardening can have a high rate of adoption in rural communities.

Scientific References

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Further Reading & Websites

- Compost use and soil fertility: https://ag.umass.edu/vegetable/fact-sheets/compost-use-soil-fertility
- Compost and fertile soil building: https://www.motherearthnews.com/organic-gardening/gardening-techniques/compost-and-fertile-soil-building-for-better-garden-soil-zl0z0901zhun
- Basics of Pit (Trench) composting: https://www.dummies.com/home-garden/green-living/the-basics-of-pit-or-trench-composting/

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