

# Organic amendments and composting

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# ORGANIC AMENDMENTS FOR SOIL HEALTH ENHANCEMENT

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# Presentation Outline

- Introduction
- Benefits of compost in soil
- Composting process
- Impact of Agrifood project
- Potential innovations



# Introduction

- Increased crop production and productivity has resulted in the phenomenon of nutrient mining.
- Inherent soil nutrients are diminishing, and sole application of mineral fertilizer has not augmented the imbalances.
- This is the situation of cocoa farming in Ghana.
- Cocoa is Ghana's second largest export commodity and a major cash crop and foreign exchange earner
- The production line with all the stakeholders are affected in economic terms by the nutrient imbalances in the soil.
- Use of Organic amendments is a potential option for a sustainable means of remediation of cocoa soils and agricultural soils in general

# Benefits of organic amendments

From an ongoing trial we will be assessing the impact of application of organic amendments ascertain the following

- Improves moisture holding capacity (***Farmers testifies to this***)
- Promotes soil aggregation
- Improves soil structure
- Fertility
- Increase microbial diversity and population
- Increase cation exchange capacity
- Yields

# Composting

The general principles:

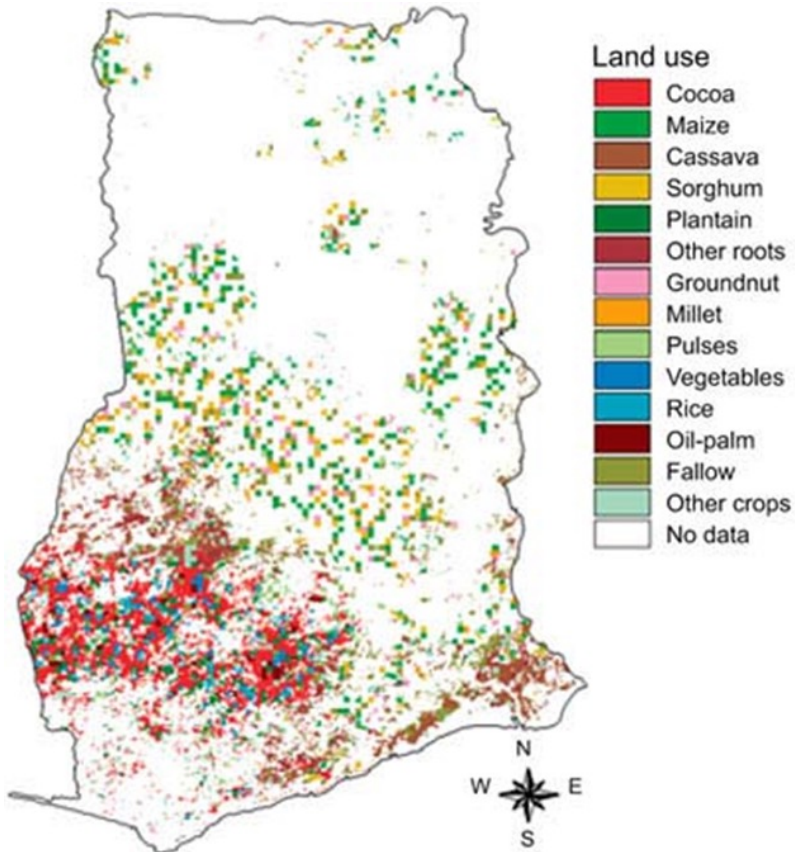
- ✓ Adequate organic matter in a heap
- ✓ Enough nutrient elements (poultry litter and *Gliricidia sepium*) for nitrogen.
- ✓ Aerobic conditions for microorganisms involved in decomposing cocoa pod husk.
- ✓ Moisture, not too much

For active composting, the conditions are optimized by managing aeration, water content, porosity, and composition of the organic material.

# Farmer on-farm composting



# Available source of biomass for composting



A simulated land use map for crop production in Ghana. (FAO 2004)

- Cocoa and oil palm farms dominate in the Southeastern side of Ghana
- These and many other crops are cultivated mainly by smallholder farmers
- The agricultural sector in Ghana is made up of over 70% of smallholder farmers
- **Not much is done with waste after harvest**
- The waste from harvested produce may either be burned or heaped on farms to rot.
- **Nutrient recycling through processes like composting or vermicomposting is the way forward for sustainability**



# AGRIFOOD Funds for training & more

- Further to seeing some positive response of old cocoa farms to organic amendment application, Agrifood provided funding for cocoa pod husk compost optimisation and training of small holder farmers
- A composting guide and video recording (English and Twi) of the step-by-step procedures in compost preparation has been made.

## Future studies (possibilities)

- Study for any synergistic effect of compost and biochar mixes with different feedstocks
- Repeated application of organic amendment on soil



THANK YOU

