



# **Composting Training Manual for Cocoa Farmers**

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**For Use by CSRL Agronomy Team**

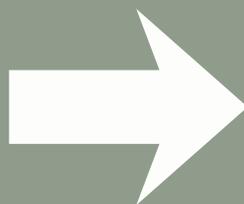
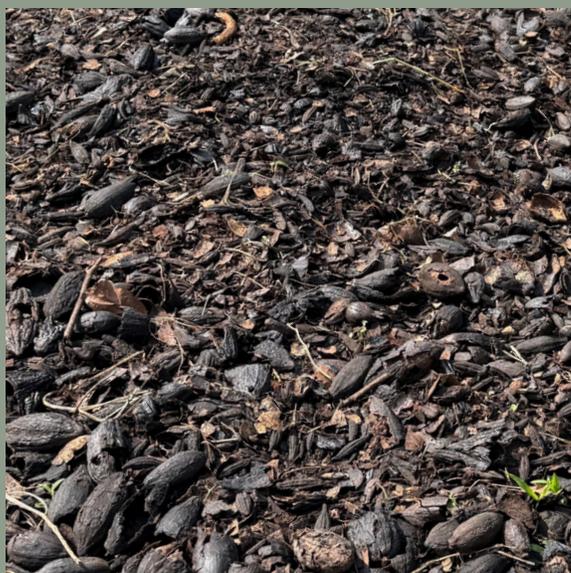


## Introduction

Composting is a practical and affordable way to turn agricultural waste into valuable organic fertilizer. In cocoa farming, pod husks often accumulate on farms, creating breeding grounds for mosquitoes and spreading crop diseases such as black pod rot. Proper composting reduces these risks, improves soil fertility, and supports sustainable farming practices.



This manual provides ISU-UP staff and extension workers with instructions for training farmers in composting cocoa pod husks and other common farm waste. It follows the principles of participatory learning and demonstration, ensuring farmers learn by doing.



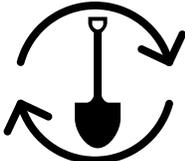
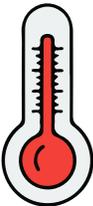
*With composting, farmers can turn dangerous waste product into a high value fertilizer that can improve yields.*



## Why Compost Cocoa Pod Husks?

Cocoa husks are abundant after harvest and often left to rot in the fields after harvest. As an alternative to slow decomposition, we recommend composting husks due their several benefits to farms and families

- 1.Reduces mosquito breeding sites, lowering risk of mosquito-borne infectious diseases.
- 2.Minimizes the spread of crop diseases.
- 3.Improves soil health and crop yields.
- 4.Cuts costs by reducing reliance on chemical fertilizers.
- 5.Converts waste into a resource, reducing environmental pollution

	<b>Carbon and Nitrogen Balance:</b> Cocoa husks are high in carbon; mix with nitrogen-rich materials like poultry manure or green leaves.
	<b>Moisture:</b> Keep the pile moist but not waterlogged.
	<b>Aeration:</b> Oxygen is essential; turn the pile regularly to ensure the pile can 'breathe'.
	<b>Temperature:</b> Heat indicates active decomposition. Ideal temperature is between 130 and 160 degrees (54 and 71 degrees Celsius), which means that when the hand is placed near the decomposing matter, heat can be felt without touching the material.
	<b>Time:</b> Proper composting takes 8–12 weeks under tropical conditions.

## Materials

- Cocoa pod husks are the primary material
- Green plant material such as banana leaves, grasses, or weeds
- Animal manure from goats, poultry, or cows, for example
- Water to ensure minimum level of moisture
- Bamboo sticks or wooden poles to let air in and out
- Black plastic sheet or banana leaves to cover an above ground compost pile or a layer of dirt to cover a compost pit.



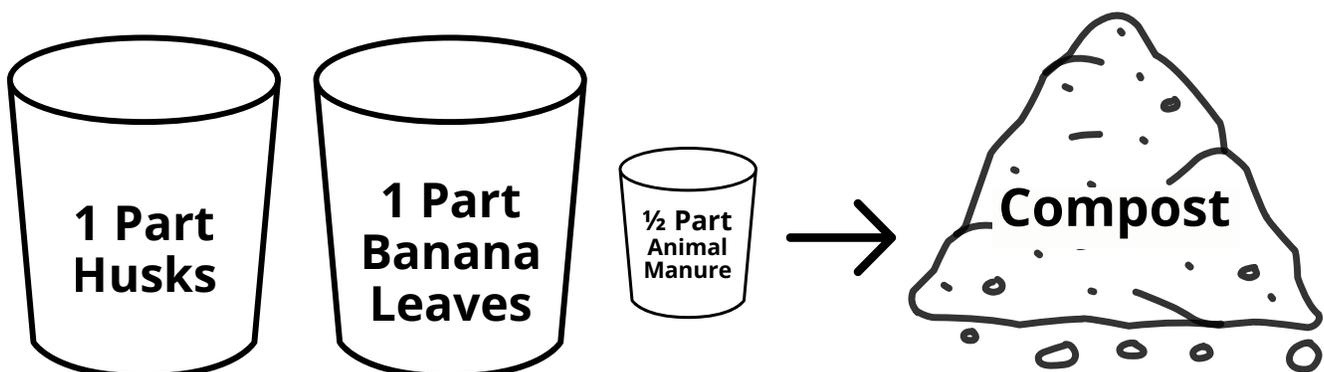
Chopped Banana Leaves



Crushed Cocoa Husks

## Step-by-Step Composting Process

The first step is site selection. Choose a shaded, well-drained area near the farm but away from water sources. The second step is to prepare the base. Here, you want to lay sticks or bamboo to allow air circulation at the bottom of the compost pile/pit. The third step is layering. It's helpful to think about composting as a three-layered cake. The first layer is cocoa husks (10–15 cm thick). The second layer is green material, and the third layer is the manure. The materials should be chopped or crushed into smaller pieces to speed up decomposition. These layers can be repeated until the pile is about three feet high/deep. As the layers are being assembled, sprinkle some water after each layer. The goal is to ensure that the pile feels like a wrung-out sponge





## Step-by-Step Composting Process

Once you have the layers assembled and watered, the final preparatory step is to cover the pit/pile to retain moisture and heat. For above ground pits, cover with a tarp, a large piece of plastic or banana leaves. For below ground soil can be used for the cover layer.

Now that the compost pit is built, you mostly get to sit back and let nature do its work. About every 2–3 weeks, you want to turn the pit to maintain aeration and speed decomposition. Mixing the soil and adding a bit of water as needed to maintain minimum moisture will speed the process and ensure complete decomposition. After 8–12 weeks, the compost should be dark, crumbly, and smell earthy and ready to be spread throughout the garden to improve soil health and crop yields.



*Covered Compost Pile. Photo Credit: Biocycle.net*

## Safety and Hygiene

When working with decomposing material, we recommend wearing gloves, especially when handling manure. If gloves are not available, take steps to avoid direct contact between manure and skin. Always wash hands after composting and manure handling, including after training sessions. Washing during training sessions is a valuable opportunity to model best practices. And finally, keep compost piles away from drinking water sources.

Another recommendation to prioritize safety and protection is to design and distribute educational interventions on the importance of wearing long sleeves and pants during peak malaria season to limit skin exposure for mosquito bites. This intervention is especially critical for rural families and subsistence farmers as they work with compost.



## Common Problems and Solutions

Below are some common problems that occur among inexperienced composters. Solutions are straightforward and reported beside the problems.

 <p><b>Pile Too Dry</b></p>	Add water and cover properly
 <p><b>Bad Odor</b></p>	Too much water or lack of air; turn pile
 <p><b>Slow Decomposition</b></p>	Add more nitrogen (manure) and turn pile

## Five Tips for Extension Trainers

1. Use demonstration pits/piles at the MRTC so farmers can see and practice.
2. Identify several model farms in the communities and set up a network of composting sites to improve modeling of best practices throughout the district.
3. Develop and deliver post-harvest husk disposal training as part of farmer education programming.
4. Encourage group participation for shared learning and be sure to discuss the health benefits and soil improvement benefits to motivate adoption. Emphasize low-cost methods using locally available materials.
5. Use visual aids such as printed flyers, an image-heavy PowerPoint, or short videos in local languages to maximize knowledge transfer and adoption.



# Additional Resources

## Infographic: Composting Instructions



<https://go.iastate.edu/KLPXUC>

**Turning and monitoring the compost heap**

- The composting should take between eight to twelve weeks.
- The first turning should be done after five days.
- The temperature in the heap will be high for the first days or weeks and will begin to drop as time goes by until the compost is ready.

*Turning of compost after 4 weeks*

- Turn weekly from 5-10 days until maturity. The frequency of turning can be reduced as temperature reduces.
- The bamboo stick reduces the need for frequent turning (turn every 2-3 days without this)
- Allow the compost to cure for about two weeks before use.

*Ready to use compost after 2-4 weeks curing*

Cocoa pod husk compost preparation guide created by Department of Horticulture, Kwame Ninsin University of Science and Technology (KNUST), Ghana in collaboration with University of Reading, UK by  
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**COMPOSTING GUIDE**  
**COCOA POD HUSK COMPOST**

**Introduction:**  
Composting speeds up the decomposition of organic materials. The decomposition is carried out by microorganisms which are active when there is oxygen in the environment (aerobic conditions). The microorganisms are everywhere but will become active when conditions are favourable. Such conditions are:

- Organic material in a heap (e.g. cocoa pod husks)
- Source of nitrogen
- Moisture
- Oxygen

**Materials needed:**

- Macerated cocoa pod husk,
- Nitrogen source: poultry manure OR ghicoda (cow dung) OR municipal sewage & stem OR wild turkfisher leaves & stem
- High density polyethylene sheet (black)
- Shovel
- 12 liter Bucket
- Cutlery & chopping board
- Hand gloves & long boot
- Whisking can
- 2.5m hollow side-sliced Bamboo sticks (optional)

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Africa Innovation Award

To Learn More Scan Here!

## Video: Cocoa Pod Husk Composting



<https://go.iastate.edu/KLPXUC>

**Cocoa pod husk composting**

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Contact Dr. Shawn Dorius (sdorius@iastate.edu) with questions.