



## Turn Waste into Fertilizer – Simple Composting Techniques for Farmers

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### INTRODUCTION

Compost manure is becoming increasingly popular in agriculture due to its eco-friendly nature and cost-effectiveness. It is produced through the decomposition and recycling of organic waste, including household waste, crop residues, and animal dung. Typically, compost takes 3-4 months to prepare and is considered a key component of organic farming.

What makes compost particularly valuable is its dual role: it not only recycles organic matter that would otherwise go to waste but also revitalizes tired soils. The process transforms everyday agricultural residues, kitchen scraps, and livestock manure into a nutrient-dense soil conditioner packed with beneficial microorganisms. Unlike synthetic inputs that provide quick but short-lived nutrient boosts, compost works gradually to build long-term soil health while improving water retention and soil structure.

The growing adoption of compost manure reflects a broader shift toward regenerative agriculture. Farmers worldwide are recognizing its potential to reduce input costs while maintaining—and often increasing—crop productivity. Perhaps most importantly, compost application helps break the vicious cycle of chemical dependency, allowing farming systems to become more self-sufficient and resilient. As we face the challenges of climate change and soil depletion, this ancient yet innovative practice is proving to be surprisingly relevant for 21st-century agriculture.

There are several techniques to prepare compost manure. Below are the most common and effective methods that farmers can use at home:

#### 1. Traditional Pit Methods

**Select a shaded, well-ventilated area with minimal direct sunlight**

Choose a place that receives minimal direct sunlight, preferably under a tree or beside a wall. Shade helps maintain adequate moisture levels in the compost pit and prevents the pile from drying out too quickly. Proper ventilation ensures the compost doesn't emit foul odors and supports healthy microbial activity.

### **Dig a pit (size depends on waste quantity)**

Once the location is selected, dig a pit based on the quantity of organic waste you expect to generate. For a small household, a pit about 3 feet deep and 3–4 feet wide is generally sufficient. Larger pits can be made for farms or communities. The pit helps contain the compost materials and maintain the necessary temperature and moisture levels.

### **Lightly sprinkle water in the pit**

After digging, lightly moisten the bottom of the pit by sprinkling water. This step helps prepare the base for composting and encourages the growth of beneficial microorganisms that aid in breaking down the waste.

### **Add a base layer of dry cow dung (avoid fresh dung)**

Place a layer of dry cow dung at the bottom of the pit. Dry dung is preferred over fresh dung because it has less odor and is already partially decomposed. It acts as a natural compost activator, providing essential microbes and nutrients to start the composting process.

### **Add dry neem leaves (rich in nitrogen) as the second layer**

Add a layer of dry neem leaves on top of the cow dung. Neem leaves are rich in nitrogen, which helps balance the carbon-rich materials like dry leaves and straw. They also have antimicrobial properties and help prevent pests and harmful bacteria in the compost.

### **Alternate between dry and wet waste layers (kitchen scraps, green leaves, crop residues)**

Start building the compost by adding alternating layers of dry and wet organic waste. Dry waste includes leaves, straw, and sawdust, while wet waste includes vegetable peels, fruit scraps, green leaves, and other kitchen waste. This layering creates the right carbon-to-nitrogen ratio needed for efficient decomposition.

### **Press the layers tightly to remove air gaps**

After adding each layer, gently press it down to remove large air gaps. Compacting the waste helps maintain warmth and supports uniform microbial activity throughout the pile. However, avoid pressing too hard, as the compost also needs a little aeration.

### **Cover the top with cow dung**

Once the pit is filled with alternate waste layers, cover the top with a mixture of cow dung and about 15 centimetres of soil. This acts as a protective seal that traps heat and moisture inside, prevents odors from escaping, and discourages flies and pests. Lightly moisten the top to maintain the required moisture level.

### **Leave it for 3 months—the compost will be ready for field application**

Let the compost sit undisturbed for about 3 months. During this time, the organic material will naturally decompose due to microbial activity. After 90 days, the compost will turn dark brown or black, be crumbly in texture, and have an earthy smell. It will be rich in nutrients and ready to be applied to agricultural fields to improve soil fertility and crop growth.



While disposing of vegetable waste



After 3 months, the material will naturally decompose due to microbial activity

## 2. Surface Composting Site Preparation

Clear a 3x3 feet area of land, removing all weeds, stones, and debris. Level the ground properly to create a flat working surface. Ensure the location has partial shade and protection from heavy winds.

### Base Layer Formation

Spread a 1-inch uniform layer of garden soil or previously made compost. This inoculates the pile with beneficial microorganisms. The soil layer also helps absorb excess moisture and prevents nutrient leaching during decomposition.

### Waste Layering Technique

Begin adding organic materials in alternating 4–6-inch layers of dry/brown materials (fallen leaves, straw, paper) and wet/green materials (vegetable peels, grass clippings). Maintain a 2:1 ratio of brown to green materials for the proper carbon-nitrogen balance.

### Moisture Management

Lightly sprinkle water using a watering can after every 2-3 layers. The pile should be moist like a wrung-out sponge (about 40-50% moisture). Avoid overwatering, as this can cause anaerobic conditions.

### Protective Covering

Cover the entire pile with breathable jute cloth or a 6-inch layer of dry straw. This maintains humidity while allowing air circulation. Secure the covering with stones or weights to prevent wind disturbance.

### Aeration Process

After 10 days, thoroughly turn the pile using a fork to introduce oxygen. Remix all materials evenly and reshape the pile into a

mound. Replace the covering immediately after turning to retain heat and moisture.

### Maturation and Harvest

After 8 weeks, the compost will transform into dark, crumbly humus with an earthy smell. Screen through a ½-inch mesh to remove any uncomposted fragments before use in gardens or fields.

## 3. Fast Composting (Ready in 1-1.5 Months)

- **Ingredients:** Old cow dung, rice husk ash, and mustard cake.
- Grind mustard cake into a fine powder.
- Mix in a 1:2:4 ratio (1 kg mustard cake + 2 kg rice husk ash + 4 kg cow dung).
- Add water and mix well.
- Cover with a cloth and leave for 10 days.
- Break the mixture into small pieces, remix, and cover again.
- After 1 month, the compost will be ready.

### Benefits of Using Compost Manure

Compost manure offers numerous benefits that make it an invaluable resource for sustainable agriculture. As a cost-effective solution, farmers can easily prepare it at home using readily available organic waste materials, eliminating the need for expensive inputs. Its rich nutrient content provides plants with immediate nourishment, significantly boosting crop yields and enhancing overall plant growth. Beyond productivity, compost works wonders for soil health by improving water retention capacity and stimulating beneficial microbial activity in the soil ecosystem. By incorporating compost into their farming practices, agriculturists can substantially reduce their reliance on synthetic

fertilizers, thereby minimizing soil pollution and environmental degradation. This eco-friendly alternative not only protects the environment but also safeguards human health by reducing exposure to harmful chemical residues in food. The widespread adoption of compost manure represents a crucial step toward sustainable farming that benefits both the ecosystem and farming communities, creating a harmonious balance between agricultural productivity and environmental conservation.

#### **Commercial Potential of Compost**

Farmers can produce compost on a large scale and sell it to other farmers. It can be marketed online or offline, providing an additional income source.

#### **CONCLUSION**

Compost manure is a sustainable, low-cost, and highly effective alternative to chemical fertilizers. Compost manure is a cost-effective, eco-friendly alternative to chemical fertilizers that improves soil fertility, enhances crop yields, and supports sustainable farming. By adopting simple composting methods using readily available organic waste, farmers can reduce input costs, promote soil health, and contribute to environmental conservation. Composting not only recycles farm and household waste but also offers income opportunities through commercial production, making it a practical solution for resilient and self-reliant agriculture.