

Creating organic sustainable fertilizer involves using natural materials and processes to enhance soil fertility and promote healthy plant growth. Here's a step-by-step guide to making various types of organic fertilizers:

1. **Compost**

Compost is made by decomposing organic matter such as kitchen scraps, garden waste, and manure.

Materials Needed:

- Green materials (nitrogen-rich): kitchen scraps, grass clippings, coffee grounds
- Brown materials (carbon-rich): dry leaves, straw, cardboard
- Water
- Compost bin or pile

Steps:

1. **Layer Materials**: Alternate layers of green and brown materials in the compost bin or pile.
2. **Moisten**: Keep the pile moist but not waterlogged.
3. **Turn**: Aerate the pile by turning it regularly (every 1-2 weeks) to speed up decomposition.
4. **Wait**: After 3-6 months, the compost should be dark, crumbly, and earthy-smelling, indicating it's ready to use.

2. **Vermicompost

Vermicomposting uses worms to break down organic matter into nutrient-rich castings.

Materials Needed:

- Red wigglers (*Eisenia fetida*)
- Worm bin (with ventilation and drainage)
- Bedding material (shredded newspaper, cardboard)
- Organic waste (vegetable scraps, coffee grounds)

Steps:

1. **Prepare Bin**: Add moist bedding to the worm bin.
2. **Add Worms**: Introduce worms to the bin.
3. **Feed Worms**: Bury small amounts of organic waste in the bedding.
4. **Maintain**: Keep the bin moist and at room temperature. Avoid adding too much waste at once.
5. **Harvest**: After a few months, harvest the worm castings and separate the worms to continue the process.

3. **Manure Tea

Manure tea is a liquid fertilizer made by steeping animal manure in water.

Materials Needed:

- Well-aged manure (from herbivores like cows, horses, chickens)
- Large container (bucket or barrel)
- Water
- Strainer or cloth

Steps:

1. **Fill Container**: Add aged manure to the container.
2. **Add Water**: Fill the container with water (ratio of 1 part manure to 5 parts water).
3. **Steep**: Let the mixture steep for 1-2 weeks, stirring occasionally.
4. **Strain**: Strain the liquid to remove solids.

5. **Dilute and Apply**: Dilute the tea (1 part tea to 4 parts water) and apply it to plants as a soil drench or foliar spray.

4. **Bone Meal**

Bone meal is a source of phosphorus and calcium, made from ground animal bones.

Materials Needed:

- Animal bones (from poultry, fish, or livestock)
- Oven or fire pit
- Grinder or mortar and pestle

Steps:

1. **Clean and Dry Bones**: Clean the bones and let them dry completely.
2. **Burn or Bake**: Burn the bones in a fire pit or bake them in an oven at high temperature until they become brittle.
3. **Grind**: Crush the bones into a fine powder using a grinder or mortar and pestle.
4. **Apply**: Mix the bone meal into the soil around plants or add it to compost.

5. **Fish Emulsion**

Fish emulsion is a nutrient-rich liquid fertilizer made from fish waste.

Materials Needed:

- Fish scraps (heads, guts, bones)
- Large container
- Water
- Molasses or brown sugar
- Strainer

Steps:

1. **Fill Container**: Place fish scraps in the container.
2. **Add Water**: Fill the container with water (enough to cover the fish scraps).
3. **Add Sugar**: Add a small amount of molasses or brown sugar to the mixture.
4. **Ferment**: Let the mixture ferment for 2-3 weeks, stirring occasionally to speed up the process.
5. **Strain**: Strain the liquid to remove solids.
6. **Dilute and Apply**: Dilute the fish emulsion (1 part emulsion to 4 parts water) and use it as a soil drench or foliar spray.

Tips for Sustainable Fertilizer Use:

- **Test Soil**: Regularly test your soil to understand its nutrient needs and avoid over-fertilization.
- **Rotate Crops**: Practice crop rotation to maintain soil fertility and reduce pest pressure.
- **Use Cover Crops**: Grow cover crops to add organic matter and nutrients to the soil.
- **Conserve Water**: Implement water-saving techniques like drip irrigation to reduce water usage and prevent nutrient leaching.

By using these methods, you can create organic, sustainable fertilizers that improve soil health, support plant growth, and contribute to a more sustainable farming system.

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