

Introduction to Composting - It's Types and Importance

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SUMMARY

By means of natural decomposition, composting is an aerobic process that uses oxygen to convert organic materials into a mulch or soil enhancer rich in nutrients. Compost is a dark, crumbly substance with an earthy smell that is produced when microorganisms break down materials in the compost pile. They do this by using carbon and nitrogen for growth, water for digestion, and oxygen for respiration. Composting is the natural recycling process used by nature, which also helps to improve soil quality, reduce waste, and fight climate change. The largest benefit is that food scraps from the kitchen, dry leaves, and woody debris from your yard can all be composted at home.

INTRODUCTION

Composting enables more sustainable waste management and the recycling of food scraps. Composting produces high-quality soil amendments at a low cost and minimizes the need for fertilizers and pesticides. • Composting also produces nutrient-rich soil, reduces soil erosion, conserves water, and enhances plant growth. It helps reduce the volume of materials that may be disposed of in landfills or trash incinerators, thereby reducing the emission of powerful greenhouse gases.

Types of composting:

Vermicomposting and backyard composting are the two main categories of composting.

a. Composting in the Backyard

Greens like grass clippings and food scraps, as well as carbon-rich materials or browns like dry leaves, twigs, and plant stalks, are also included in backyard composting. Water and oxygen are necessary for composting, where materials high in carbon feed microorganisms and materials high in nitrogen produce heat in the process.

- The first step in backyard composting is to choose an outdoor method for collecting and storing browns. You can also gather fruit and vegetable scraps and store them in a sealed container on your kitchen counter, in your refrigerator, or freezer.
- Locate a compost pile in your yard that is easily accessible and has good drainage, then choose a type of bin that can be constructed from materials like wire, wood, cinder blocks, or enclosed options such as barrels and tumblers.
- To speed up the decomposition process, chop and break down the greens and browns into smaller pieces before adding them to the pile.
- Build the compost pile by adding four to six inches of substantial brown materials, such as wood chips and twigs, to absorb excess liquids, raise the pile, and allow air to circulate at the bottom of the pile. Then, arrange the greens in layers and moisten the pile with a small amount of water. Keep in mind that there should be at least three times as many browns as greens. The compost pile's center temperature first rises as it breaks down. Using a garden fork to turn and mix the pile will hasten decomposition and aeration. Keep an eye on the temperature, odour, and moisture and adjust as necessary. Adjust the compost by moistening and turning if it's too dry, adding browns and turning if there's an odour, mixing in greens, and turning if it's not heating up.
- After mixing, let your compost pile cure for at least four weeks, moving the oldest compost if you'd like. Once it stops heating up and has no visible food scraps. Keep in mind that the pile will shrink to around one-third after curing.
- Well-maintained compost has a smell similar to soil and appears crumbly, loose, and dark after three to five months. If you'd like, you can return undecomposed materials like fruit pits or twigs to the new or active pile after screening or sifting the finished compost.

- Whether in bins or out in the open, well-built and maintained compost piles shouldn't draw rodents or pests. If you're using a bin, make sure it has a floor and a lid, and that there aren't any holes or gaps bigger than ¼ inch. Cover and bury food scraps in the pile, and avoid adding meat, dairy, or greasy foods.

b. Vermicomposting

Vermicomposting is the process of converting organic waste into granular excrement called vermicompost, which is made possible by the consumption of organic materials by earthworms in a mesophilic environment. The process improves the biological, chemical, and physical properties of soil because the castings are enriched with readily available nutrients for plants by the earthworms' digestive tract secretions, which also help break down soil and organic matter.

Importance of Composting:

a. Waste Reduction: Composting diverts organic waste, such as kitchen scraps and yard trimmings, from landfills. Organic matter in landfills produces methane, a potent greenhouse gas. By composting, we can significantly reduce the volume of waste going to landfills and mitigate methane emissions.

b. Soil Enrichment: Compost is a nutrient-rich soil amendment that enhances soil structure and fertility. It improves water retention, aeration, and nutrient content in the soil. Healthy soil supports plant growth, reduces the need for chemical fertilizers, and promotes overall ecosystem health.

c. Reduction of Soil Erosion: Compost helps prevent soil erosion by stabilizing the soil structure. The improved soil structure allows better absorption of water, reducing runoff and erosion. This is especially important in areas prone to erosion and degradation.

d. Water Conservation: Compost-amended soil has increased water retention capacity, reducing the need for irrigation. This is crucial for water conservation, especially in regions facing water scarcity or drought conditions.

e. Carbon Sequestration: Composting helps sequester carbon in the soil. Organic matter in compost is converted into stable humus, a carbon-rich substance that remains in the soil for an extended period. This contributes to climate change mitigation by reducing the carbon footprint.

f. Biodiversity Support: Healthy soil resulting from composting supports diverse microbial life. A rich soil microbiome is essential for nutrient cycling, disease suppression, and overall ecosystem resilience. Composting contributes to the biodiversity of microorganisms in the soil.

g. Reduced Need for Chemical Fertilizers: Compost provides a natural and organic source of nutrients for plants. By using compost, farmers and gardeners can reduce their reliance on synthetic chemical fertilizers, which can have negative environmental impacts when overused.

h. Cost Savings: Composting can lead to cost savings for municipalities by reducing the amount of waste that needs to be transported and processed in landfills. Additionally, farmers and gardeners can save money on fertilizers and water when using compost.

i. Community Engagement: Composting promotes community involvement in sustainable practices. Community composting programs and shared composting facilities encourage people to work together toward environmental goals, fostering a sense of community and shared responsibility.

CONCLUSION

Composting is a valuable and sustainable practice with several environmental, economic, and societal benefits. Composting provides educational opportunities to raise awareness about waste management, sustainability, and environmental stewardship. Schools, community organizations, and individuals can use composting as a hands-on learning tool to teach about the natural cycles of decomposition and nutrient cycling. In summary, composting is a holistic and environmentally friendly approach to managing organic waste,

improving soil health, and contributing to sustainable practices. It addresses multiple environmental challenges while offering economic and societal benefits.

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