



# Thermophilic Aerobic Co-Composting Waste Disposal Methods with Sewage Sludge

Miriam Bencivenni\*

Department of Environmental Science, University of Sao Paulo, Sao Paulo, Brazil

## DESCRIPTION

When organic waste, such as food scraps and grass clippings, is composted, it naturally decomposes in an environment with plenty of oxygen. Compost or humus, the finished product, is a nutrient-rich fertilizer that can be used to raise the soil's quality. By preventing organic waste, such as food scraps and yard debris, from being transferred to landfills and incinerators, it lessens the quantity of waste that is disposed of at these facilities and improves the environment. These materials can be recycled into compost, a natural fertilizer that enriches the soil and helps plants grow. Composting also reduces greenhouse gas emissions from landfills, where organic waste decomposes anaerobically and produces methane, a potent greenhouse gas. Composting is a more environmentally friendly way of managing organic waste and returning nutrients to the earth.

Maintaining the right moisture level too much moisture can cause odors, flies, and anaerobic conditions that slow down decomposition. Too little moisture can also slow down decomposition and prevent microbial activity. Balancing of the carbon and nitrogen ratio too many greens (nitrogen-rich materials) can make the compost pile wet and smelly. Too many browns (carbon-rich materials) can make the compost pile dry and slow.

Controlling in temperature the compost pile should be hot enough to kill pathogens and weed seeds, but not too hot to kill beneficial microbes. The ideal temperature range is between 90°F and 140°F. Turning of pile regularly can help to regulate the temperature and distribute the heat evenly. Avoiding of pests and pathogens in some materials, such as meat, dairy, fats, oils, and diseased plants, should not be added to the compost pile because they can attract rodents, insects, and other pests, as well as spread diseases. Composting these materials requires special techniques and equipment to ensure safety and hygiene.

The benefits of composting for waste disposal are it reduces the amount of organic waste that goes to landfills or incinerators,

where it can cause greenhouse gas emissions, leachate, and odors. It produces compost, a natural fertilizer that improves soil quality and plant growth. Compost can reduce the dependence on chemical fertilizers, help recover soil fertility, and improve water retention and nutrient delivery. It saves money and resources by reducing the need for waste collection and disposal services, as well as fertilizers and pesticides. It supports local food production and community development by creating jobs, enhancing food security, and providing educational opportunities.

Composting requires a suitable location that has enough space, sunlight, air circulation, and drainage. It also requires regular monitoring and maintenance, such as turning, watering, and harvesting. Some people may not have access to a backyard or a community composting facility, or may not have enough time or motivation to compost. These challenges can be overcome by following some simple tips and best practices for composting, such as choosing the right materials, using a bin or a tumbler, adding bulking agents or inoculants, and checking the pile frequently for signs of problems. Composting can be rewarding and beneficial for both people and the environment if done properly.

## CONCLUSION

There are many factors that affect the composting process, but one of the most important parts of composting is providing enough oxygen for the aerobic bacteria that break down the organic waste. These bacteria require oxygen levels of at least 5 percent to survive and are the most efficient composting microorganisms. They consume the organic waste and excrete chemicals such as nitrogen, phosphorus, and magnesium, which are nutrients plants need to thrive. Oxygen can be supplied by turning or mixing the compost pile regularly, using a bin or a tumbler that allows air circulation, or adding bulking agents such as wood chips or straw that creates air pockets in the pile. Providing enough oxygen prevents anaerobic decomposition, which can cause odors, pests, and methane emissions.

**Correspondence to:** Miriam Bencivenni, Department of Environmental Science, University of Sao Paulo, Sao Paulo, Brazil, Email: venni@paulo.br

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