



guide to municipal yard waste composting

Composting reduces waste,
is easy to do and
produces valuable products.

a sensible solid waste
management option for
Pennsylvania municipalities

key program elements

- site selection & preparation
- collection
- processing
- finishing & storing
- markets & end-users

What is composting?

Composting is a method used to accelerate the natural decomposition of plant wastes to produce a usable product, such as mulch and soil conditioner.

Why "yard waste" composting?

Pennsylvania produces nearly two million tons of leaves, grass clippings, brush and other yard wastes each year. Until 1988, when the state passed Act 101, the *Waste Planning, Recycling and Waste Reduction Act*, much of this organic waste went into landfills. Act 101 prohibited landfills from accepting truckloads of yard waste for disposal and required more than 400 communities to collect yard waste for composting.

Composting is easy and produces valuable products. It is a sensible solid waste management alternative for Pennsylvania municipalities.

composting fundamentals

Organic materials: Compost leaves alone, or mix with one part grass clippings to two parts leaves.

Oxygen: Aerobic organisms compost most efficiently. By controlling oxygen levels, you can speed up the process and reduce odors.

Moisture: The moisture level in composting materials should be about 50 percent. During composting, materials should feel moist and emit a few drops of water when squeezed with one hand.

Temperature: Temperatures in the center of a compost pile, as organic materials begin to break down, should range from 90°F to 160°F

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getting started

First, find a site that can handle the amount of yard waste your community produces. Yard waste comprises about 18 percent (by weight) of the state's solid waste stream; however, local conditions will affect the quantity of yard waste available for composting in your community.

site selection criteria

size: Each acre of land will have a maximum processing capacity of 3,000 cubic yards of organic waste.

slope: Sites must have a slope of at least one percent, but not more than five percent.

hydrology: Sites cannot be located in wetlands, or within one-quarter mile upgradient or 300 feet downgradient of any water source.

buffer zone: Leave at least 50 feet around the site's perimeter to prevent nuisances to neighbors. Near a residential area, leave at least 300 feet.

erosion controls: Divert surface water around the composting site.

accessibility: The site should be centrally located, with access roads to accommodate collection vehicles and restrict site access.

collection alternatives

curbside collection

bulk: Pick up loose leaves using a front-end loader, vacuum equipment or leaf-loading systems.

bagged: Ask residents to bag yard waste in plastic garbage bags or degradable plastic or paper bags.

containerized: Residents also can use wheeled carts, large bins and other containers.

drop-off collection

Drop-off programs can reduce operating costs, but are not as convenient as curbside pick-up, so fewer residents may participate. Transfer points or central processing facilities make good drop-off points.

processing

The most common municipal composting method is windrow-and-turn. Windrows are compost piles, 6-8 feet high and 12-16 feet wide. The length is limited only by the size of the composting facility.

Yard waste should be formed into windrows within a day of receiving it. The material is fluffed to break up clumps. If both leaves and grass are com-posted, they are mixed together. Water is added to dry leaves (50 percent optimum moisture content) to aid composting. Then the material is mounded into windrows, perpendicular to the slope of the site to prevent water from ponding around the base.

Turning windrows regularly ensures proper oxygen levels in the piles and helps to control temperature and odors. Equipment used for turning includes:

- Front-end loaders that scoop and fluff materials in a cascading fashion;
- Windrow-turning attachments used with front-end loaders or tractors;
- Self-propelled windrow turners that straddle the windrows and turn materials.

Windrows should be turned after the first week or two. If grass is composted, turn more frequently to prevent odors. To avoid heat loss, which can slow the composting process, don't turn leaf windrows during frigid weather.

finishing & storing

Using the windrow-and-turn method, compost normally matures in about 10 months. The composting process is complete if:

- Windrows do not reheat after turning; and
- A sample of compost sealed in a plastic bag for 24-48 hours does not smell offensive when the bag is opened.

The compost then is moved to large curing and storage piles for at least 45 days to allow for final stabilization. Finished compost can be screened to remove large pieces and make the product more

uniform, but this is optional and depends on the end use of the compost.

end uses for marketing

Finished compost can be mixed with soil to improve its texture and retain moisture. Compost also adds valuable nutrients and micronutrients to soil to promote healthy plant growth. Potential uses include:

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|----------------|------------------------------|
| • home gardens | • topsoil substitutes |
| • greenhouses | • recreation facilities |
| • nurseries | • landfill cover |
| • cemeteries | • land and mine reclamation |
| • landscaping | • roadside and median strips |
| • golf courses | • office & industrial parks |
| • farm land | • sod & turfgrass |

technical assistance

For technical assistance to begin a yard waste composting operation, contact your local DEP regional office or county recycling coordinator. The Penn State Cooperative Extension Service and the Soil Conservation Service also can provide additional information.

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