

CORNELL COMPOST FACILITY



Cornell's four-acre compost facility turns **8 million pounds** of organic waste annually into high quality compost. Instead of trucking the waste to a landfill, it is composted just one mile from campus – reducing the need for energy-intensive transportation. Finished compost provides a valuable resource for local agricultural and landscape plantings.

The organic waste collected from over 60 Cornell waste streams is piled in long heaps, called windrows – each about the length of a football field. **Windrows are turned almost weekly** from April through November. The consistent aeration and mixing of the organic materials speed the composting process and help to regulate moisture levels. Microbes feed on the decomposing waste, which heats the piles internally to 120-160°F during the process. These high temperatures aid in the destruction of pathogenic organisms and weed seeds. It takes about **nine months** to turn organic waste into mature compost.



Any surface water and nutrient runoff from the compost facility is captured in **two large collection ponds** and is either returned to windrows when they are too dry, or pumped to pasture land that serves as a bio-filter to uptake water and nutrients.

The facility offers broad opportunities for **research and teaching**: from studies on the viability of problematic weed seeds and the safety and feasibility of road-kill and livestock composting, to evaluating and modeling compost facility management techniques.

A case study by Mary Schwarz and Jean Bonhotal found that the compost facility substantially helps to **reduce Cornell's carbon footprint** (total carbon savings in 2013: 96.7 metric tons carbon equivalent).



The facility began operations in 1992, and received the **Environmental Quality Award** by the U.S. Environmental Protection Agency in 2009. It is operated by Farm Services, a unit of the Cornell University Agricultural Experiment Station.

Where does the compostable waste come from?

- 2,700 tons of animal bedding and manure from research and teaching facilities
- 800 tons of food scraps and organic kitchen waste from Cornell dining halls and small eateries
- 300 tons of plant debris from campus greenhouses, orchards and farms
- Other waste streams, such as building-specific compost collection programs and special events

Why do you have to turn the compost?

Turning provides oxygen for the microbe population, and keeps them active, happy and hungry for more organic waste. Mixing the organic materials by turning them weekly, assures a uniform finished compost.

Does it smell?

As long as the compost has enough airflow so that the process remains aerobic, it might have some earthy odor, but should not smell bad. Finished compost smells similar to the rich soil in the forest.

What about the green/brown balance?

Generally speaking, green organic material (e.g. plant clippings, kitchen scraps) provides nitrogen, and brown material provides carbon (e.g. wood chips, straw). The microbes in the compost pile need both to do their work. To keep a balanced carbon-to-nitrogen ratio, a compost pile needs the right mixture of different compostables.

Can you compost in winter?

We keep collecting organic waste throughout the winter. The microbes are less active in colder temperatures, but the compost process is still happening. The temperature in the center of an active compost pile is much greater than the ambient temperature, commonly above 120°F.

Will composting break down trace pesticide residues?

Yes. Microbial action, heat generated during the composting process, and time for compounds to decay, are all factors that help pesticide residues to degrade and break down into harmless chemicals during the composting process.

When is the compost 'done'?

After about 9 months the compost will no longer heat up, even after mixing. It has become dark, loose and crumbly, similar to the humus of a forest floor, and is ready to be used.

Where does the mature compost go?

Most of the compost is used by Cornell's nearby farms, gardens and greenhouses, and for landscape projects on campus. A small amount is sold to the public or donated to local charitable organizations.

What are the benefits of composting?

Composting diverts organic waste from landfills. Compost helps to build healthy soils and retain moisture, and provides a constant slow release of nutrients important for plant growth and health. It suppresses some plant diseases and pests and reduces the need for chemical fertilizers, herbicides and pesticides.