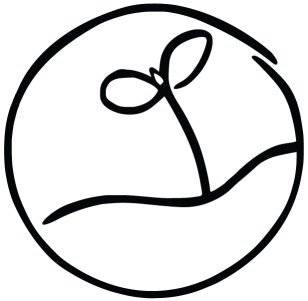
Neighborhood-scale Composting

An affordable system for individuals and neighborhoods

and more



Compost for Good

September 2024

ADKACTION

ANCA
Growing The New Economy

Compost for Good

- Three individuals, John, Jen, and Katie, who are passionate about organics recycling on the community scale
- A partner of ANCA Adirondack North Country Association (ANCA), a collaborator with many
- We work with individuals, businesses, and communities to turn waste into a resource
- While our focus is in NYS, we work with others throughout the US and other countries

Among other things we have designed open-sourced composting equipment

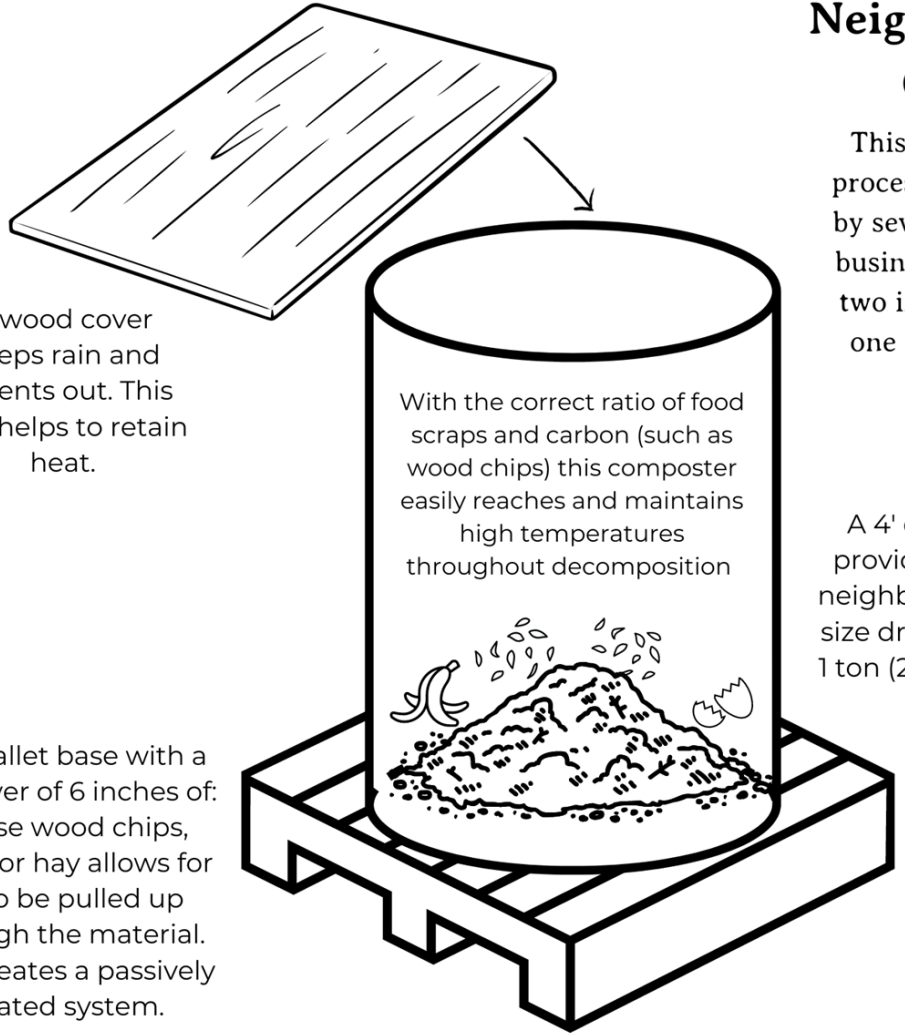
DIY neighborhood-scale batch composter

Why invent a new system when there are lots on the market already?

- Composting in colder climates or seasons requires a certain amount of thermal mass
- Many of the existing systems are
  - Too small to provide that thermal mass
  - Too expensive
  - Ineffective or inefficient

Neighborhood-scale Composter

This composter is capabale of processing food waste generated by several households, farms, or businesses. Best to have at least two in order to give compost in one time to break down while filling the second.



Plywood cover keeps rain and rodents out. This also helps to retain heat.

With the correct ratio of food scraps and carbon (such as wood chips) this composter easily reaches and maintains high temperatures throughout decomposition

A 4' diameter, 4' tall culvert provides the perfect space for neighborhood composting. This size drum can fit approximately 1 ton (2 cubic yards) of material!

The pallet base with a first layer of 6 inches of: coarse wood chips, straw, or hay allows for air to be pulled up through the material. This creates a passively aerated system.

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Neighborhood-scale composter

- Designed to be inexpensive
- Made from High Density Polyethylene (HDPE) highway culverts
  - Cut-offs can be sourced from engineering and construction firms, and highway departments, or purchased new
- We have lots of experience with 3-foot diameter and 4-foot diameter units

Drum sourcing

- Damaged and cutoff drums can sometimes be acquired for free because companies have to pay to have them landfilled
- One new, 20-foot long, four-foot diameter drum is around $2,200 w/o tax. The full-length drum can be cut into five, four-foot sections

What can be composted in this system?

- All food scraps (including meat and dairy products)
- Some amount of paper napkins
- Other organics (with caveats) like leaves, yard debris, and other organics

What should not be composted?

- Compostable flatware, plates, compostable containers and plastic bags
  - The retention time in the composter is usually not long enough to fully break down these materials
- Bones
  - Small bones (like chicken bones) are OK, but larger bones will not break down due to the short retention time
    - It won't hurt to put bones with meat scraps on them into the composter. The meat will compost but the large bones will not.
    - If you like, you can simply place the larger bones back into the next composting round. Eventually they will compost
- Regular plastics and other non biodegradable items

Health and safety

- If operated correctly, the material in these systems can reach up to 150 °F and higher
  - According to the US EPA, composted materials that are maintained at 131 °F for three consecutive days are safe from any potential human and plant pathogens
  - These conditions also destroy most all weed seeds
- Care should taken when using a high torque drill

Pros and cons of this system

- Pros (when operated properly)
  - Does not attract dogs, vermin, flies, bears, etc.
  - Very simple to operate
  - Can be operated year -round
  - Is inexpensive
  - Is scalable: more vertical drums can be added to increase capacity
- Cons
  - Takes some physical effort

Simple to operate

- The especially designed auger is placed into a ½ inch portable drill
- The auger is plunged up and down to mix and aerate the material
- When fully composted, the drum is pushed over and the material is allowed to mature

Component parts

- 4-foot long drum (either 3-foot or 4-foot diameter)
- Compost thermometer
- Compost auger that fits into a ½ inch portable drill
- Can also include
  - Covers
  - Wood base w/ landscape fabric or ¼ inch steel mesh

Who is operating them?

- Proven effective for
  - Backyard composters
  - Neighborhoods
  - Organizations
  - Those who want to get into small, commercial-scale composting

How does this system work?
Like making a layer cake

- Food scraps are combined with wood chips at a 1:1 or 1:2 ratio
- A base of wood chips are placed inside the drum and food scraps are added on top of the wood chips
- The food scraps and wood chips are blended together using a specially designed compost auger
- Wood chips are then added to the mix so that no food scraps can be seen
- Repeat the process

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- Camp Dudley
- Located on Lake Champlain in Upstate, NY
- Runs for a total of seven weeks each summer
- Composted about 27,000 pounds of food scraps for the past three summers
- Click here to see our case study

Vertical Drum Composting:

A Neighborhood-Scale System

2023
case study

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- Pitney Meadows Community Farm
- Part of a pilot for the town of Saratoga Springs, NY
- Composting run by interns
- Capable of composting tens of thousands of pounds of food scraps/year


Community Compost
Vertical Drum Composting
The method of composting you see on the Farm is a neighborhood-scale system called vertical drum composting. This system, designed by Compost for Good, is the most popular option at the organizational level for its capacity, scalability, and affordability.
Why is composting important?
40% of the food made each for human consumption in the US goes to waste, and over 80% of that ends up in the landfills. Composting is a natural process of recycling food waste into a nutrient-rich soil amendment. In landfills, food waste slowly decomposes in the absence of oxygen and produces methane, a powerful greenhouse gas with far more global warming potential than carbon dioxide.
Compost materials:
Green materials including food scraps, coffee grounds, grass clippings, and garden waste are high in nitrogen. Brown materials are high in carbon, such as dry leaves, straw, and wood chips.
How it works:
Compost is made through decomposition, a process where microorganisms in the soil consume organic matter, releasing heat as a byproduct. A successful compost pile consists of four key elements: organic materials (green and brown), water, oxygen, and microorganisms.
Composting at home:
You'll need a place in your yard, or a bin, and a kitchen container to collect food scraps. Add organic material as you collect it to your kitchen or yard, and aim for a 50/50 mix of green and brown materials. Stir the material periodically then be patient and let the composting begin.
Vertical Drum Composting
This system utilizes vertical drums with a glywood core to retain heat while keeping critters and rain out. Every 1-3 days, the piles are mixed with a compost auger to maintain proper air flow and encourage faster decomposition.

Thousand Island Park on Wellesley Island

- An island in the St. Lawrence River on the US/Canadian border
- Part of the New York State Parks system
- Approx 300 full time residents. More in the summer.

Burlington, Vermont–Soil Cycle BTV

Other locations

- Other places in New York State
- In and around Burlington, Vermont
- At our research facility in Jay, NY

Miscellaneous

- Can be operated in a variety of different ways
- We’ve had success with a variety of feedstocks
    - Food scraps
    - Diverted human urine
    - Spent brewery mash
    - Animal bedding
    - Etc.

It’s a little more effort but you can use a manual compost auger

- Instead of using an auger for mixing and aerating, you can create chimneys with an iron pipe
- Probably best used in an environment that creates natural convection w/in the composting material

For more information contact

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