

COMPOSTING

An idea whose
time has come



by Sustainable Jack

→ introduction

Composting is a natural process that turns organic waste, like food scraps and yard clippings, into nutrient-rich soil.



→ importance

Composting reduces waste,
cuts down greenhouse gases,
and enriches soil, supporting
healthier plants and
ecosystems.



benefits



Composting improves soil health, reduces the need for chemical fertilizers, conserves water, and helps combat climate change. Compost is a natural fertilizer for gardens, lawns, and even indoor plants, giving them essential nutrients.





starting a
composting
operation



Preparing the site



Clearing and putting down mulch for drainage.



We're using standard tractors with buckets

Skid loaders have shorter
cycling times between loads



With our frontend loader, we
spread a base of wood chips





Here the base is hay.

Spreading it to a uniform depth of
6-12" for drainage



Moving a 550 gallon tank into the compost pile to be filled with water to provide hot water. (In this case to process biodiesel.) The water will be about 155 degrees F.



The compost produces heat, carbon dioxide, and water vapor.

Useful for greenhouses because they need those elements.





This is active compost that has been breaking down for a year.



We continue adding compost to build a 40 cubic yard pile. (About the equivalent of 2 small dump trucks.)

That is about as small as you can make it and have it work all the time.

For this pile, we
continuously mixed in
fresh compost material.





Four-inch slotted drainage pipe is installed to suck air through the pile and keep it aerobic.

As long as it is aerobic, it won't stink.



Looping the perforated pipe around the pile.

I'm holding a T-joint to draw the air out of the pile.



Properly positioning the pipe in a trench so it doesn't move.

With the pipe joined and a solid pipe connected, coming out of the pile, we will now more than double the size of the pile.





A big
pile!



Adding to the pile

Dressing the pile

Compost piles should be dressed with a balance of moisture, browns, and greens to promote decomposition and create a nutrient-rich soil.





The finished pile. (Person for scale.)

Flat so it can catch rain and can also dispose of liquid waste on the top.

In this case, it was glycerine residue from a biodiesel processor. We pulled 165 degree water out of the barrel in the pile which was normally 155 degrees. It raised the compost temperature by 10 degrees F!



Completed compost
pile

More to consider

01



Up to 80% of our waste stream is organic and therefore can be composted. Disaster events spike the supply.

02



During the breakdown of compost, heat, water vapor, and carbon dioxide can be used in a greenhouse. Water can be heated from the compost and the carbon dioxide can be captured by being bubbled into a container of algae and used to grow animal feedstock.

03



Finished compost can be used to improve soils. Compost filled burlap sacks can be inoculated with fungi and placed in polluted drainage water to clean it up.

What you need to create your own:

- Site with enough space. Smallest would be 120 square feet, 8 feet high. plus some room to maneuver.
- Feed stock (anything organic that can break down) such as wood waste, mulch, biosolids, food waste, liquid waste, etc..
- Equipment: for a day you may need a frontend loader, or a skid loader, and possibly a shredder.
- Approximately 20 feet of 4" slotted drainage pipe.
- T-joint
- Solid length of pipe to get heat, water vapor, and carbon dioxide out of the pile.
- A blower. Usually a simple leaf blower will do the job.
- Dial thermometer that goes up to 180 degrees F.
- Time: you can set this up in less than a day. Finished compost can be available in a month or you can add materials to it for a couple of years and it will produce hot water, water vapor, carbon dioxide, and heat for a greenhouse.



thanks!

Sustainablejack.com