



Transform Compost Systems

turning waste into an opportunity

Small Insulated Composter – An Innovative Teaching/Learning Tool

November 25, 2016

If you are developing a composting program in your community, you may have the following questions:

How do I develop and prove a composting recipe that without a lot of cost or effort?

How do I take these principles that I see on a small scale and apply them to a larger facility?

How do I understand and evaluate various technology options?

If you teach composting, or are learning about composting, you may have the following question:

How can we teach/learn the principles of composting in a hands-on and meaningful way?

Seeing large scale systems in operation or hiring experts to design a process for us help develop our composting programs, however, we have a new simple tool available that demonstrates the principles of composting that we can apply to the specific material that we are composting!

The small insulated bin composter was originally developed to teach/demonstrate the principles of composting animal mortalities with the British Columbia Ministry of Agriculture. It was used as a teaching tool in a recent Compost Facility Operator Course. It is now used to develop recipes for composting unique organic materials in a cost effective manner.

The insulated box or container is adapted with aeration holes and a mesh floor to facilitate airflow through the composting material. The process is enclosed so that



Figure 1. Using the small insulated composter as a teaching tool for a Compost Facility Operator Course.

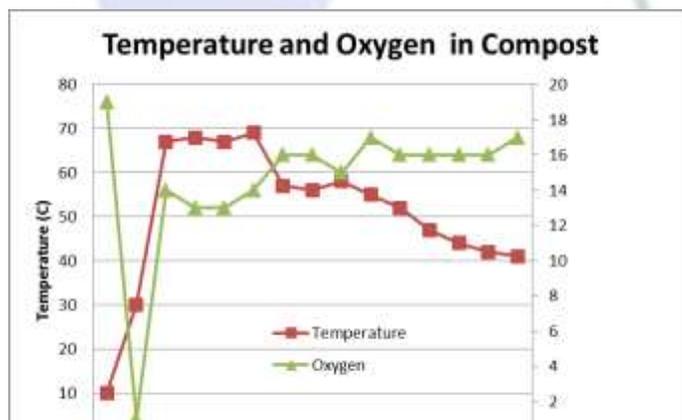


Figure 2. Temperature and oxygen in a blend of food waste and yardwaste composting in the insulated bin.

inputs and outputs can be easily measured.

In the example in Figure 2, the temperature and oxygen profile of a blend of 35% food waste and 65% yard waste can easily be measured and evaluated.

We can demonstrate how warm and cold air affect the composting process, and how moisture moves. In the example with food waste and yardwaste, the moisture content at the bottom of the bin was 45% after one week with a composting recipe that was 64%. The overall moisture content decreased from 64%

to 44% in a two week composting process with one mix after one week.

As a demonstration unit or for piloting a process with a new product or in a community, use of the small insulated bin can assist with answering question such as:

1. Does my combination of materials (recipe) meet the parameter requirements for optimal composting?
2. Can I make changes to this recipe to make it more efficient?
3. What is the odour impact of my recipe?
4. What happens to the moisture in my composting material?
5. How often should I be turning the compost?
6. What is the impact of natural or active aeration on the composting process?
7. What is the impact of natural or active aeration on the pH of the composting material?
8. How does lower pH in my compost affect odour?
9. How long do I need to keep composting my material to reduce the risk of odour and achieve potential pathogen kil?
10. Are there products that we can add to the composting recipe to make the process more efficient, or more environmentally sustainable.
11. Does recycling some of the screenings speed up the composting process?

These questions can be easily answered using the small insulated composting bin in combination with a temperature and oxygen probe, a scale for measuring the compost inputs and outputs, a pH meter for measuring pH, an EC meter for measuring electrical conductivity of the compost, and a postal scale and toaster oven for measuring moisture content.



Figure 3. Measuring temperature and oxygen are important for understanding the success of a compost recipe.

As a teaching tool for compost facility operators, use of the small insulated bin can assist with teaching important concepts of the compost process including the following:

1. The importance of moisture content, bulk density and air-filled porosity on the composting process.
2. The importance of air supply and oxygen for the composting process
3. How air and moisture moves through the composting material
4. Demonstrating use of temperature and oxygen probes
5. Importance of a consistent and thorough blend of materials

We would love to help you succeed in your composting program, or in your teaching of the composting process. The small insulated bin composter is another tool, along with others, such as the Compost Facility Operator Manual, which we first published in 2007.



Contact us for more details – John Paul, PhD PAg, 604-302-4367