A Virtual Tour of Maine Compost Facilities Processing Organics

Mark A. King, Sustainability Division
mark.a.king@maine.gov
Systems Featured

• Turned windrow
  – Rainbow Valley Farms-Sidney
  – Sandy River Recycling-Farmington

• Static aerated pile
  – Tony Ramsey, “Living Acres”-New Sharon
  – Little River Compost-Lisbon Falls

• In-vessel
  – Sugarloaf USA-Carrabassett Valley
  – University of Maine-Orono
  – Casella Organics, “Hawk Ridge”-Unity Plantation
Turned Windrow

- Involves placing compost ingredients into long narrow piles (windrows) and then subsequently turning them at regular timed intervals.

- Typical dimension 3-6 feet high by 10-12 feet long.

- Turning provides aeration, rebuilds porosity, and aids in physical breakdown of ingredients.

- Windrows require temperature monitoring to measure compost activity levels and to help determine turning frequencies.
Rainbow Valley Farms - Sidney
Windrows Are Turned By Either A Tractor
Or Windrow Turner
With A Tractor Turned System, Materials Are Continuously Blended
With A Turner, They Are Layered
Front-End Loader vs. Turner

• Front-end loader works well for small scale operations (<500 cubic yd/yr).
  – >500 cubic yd/yr, loader tends to be time intensive, whereas turner can accomplish task in half the time.

• Turner physically agitates ingredients, loader tends to form balls of compost

• Turner represents additional cost, as it requires a tractor to run. Most facilities have front-end loader.
Sandy River Recycling-Farmington

Sandy River Recycling &
Town of Farmington
Food Residual Composting Project

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
www.maine.gov/dep
Food Collection
Transportation and Delivery
Weighing-In
Transferring Food to Compost Site
The Process
Farmington Food Compost Initiative 2005-2006
“A Cooperative Recycling Effort”
Aerated Static Pile

• Static pile of compost mixture built on top of a perforated and air is blown up through the pile.

• Aeration provided by supplemental blowers.
  • Time
  • Temperature

• Windrow is covered by a 4-6 inch layer of finished compost along its length.
  • Insulation and odor control
Aerated Static Pile (Cont.)

• Initial mixture critical, must be homogeneous with good porosity.

• Odor control
  – Outer layer
  – Positive vs. negative aeration.
  – Enclosed and exhausted through a biofilter

• Higher capital and operating costs than static pile and turned windrow systems due to blowers, monitoring, and man power needs.
Living Acres-New Sharon
Receiving/Mixing
Turned Aerated Pile Composting
Bulk Blending Finished Products
Screening
Bagged and Ready for Sale
Little River Compost-Lisbon Falls
Incoming/Receiving
Mixing
Setting-up Compost Bed and Aeration
Compost Piles Set-up and Going
In-Vessel

- Most expensive option for composting-both capital and operational.
- Allows all facets of operation to be enclosed.
- Odors are captured and treated in biofilter.
- Allows you to optimize the process through continuous monitoring feedback and process control.
- Fastest compost time.
- Required routine maintenance.
Sugarloaf USA
The Earth Tub
Earth Tub-Green Mountain Technology
Collected Food is Loaded Through Top
Compost Mixture
Odors Are Scrubbed Through Biofilter Unit
Finished Compost Is Used on Golf Course
University of Maine-Orono
Receiving/Mixing Area
Compost Recipe
Compost System
Finished Product
Casella Organics, “Hawk Ridge”
Receiving
Mixing
Gicom Composting Process
Aerated Curing
Screening and Blending
Ready for Sale
Picking The “Right” System

• Answer feedstock questions
  – Availability and handling issues
  – Tip fees
• Determine your annual processing capacity
• Develop a financial plan
  – Capital for equipment, labor, storage, feedstocks, marketing, etc.
• Determine the end-use for the finished product
• View as many real-life situations as you can