

Food Waste Recycling Options for Smaller and Northern Communities

John Paul, PhD P.Ag



What is your community's vision for organic waste management and how does it fit into a circular economy?

- Value the organic matter and nutrients in food scraps and recycle them back to the soil
- Support and enhance local and sustainable food production



Options to Divert and Recycle Food Scraps and Other Organic Waste

- Compost at home
- Weekly organics collection
- Self drop off locations
- Food cycler – drying and grinding



Composting at Home

- Usually always encouraged
- Can be worm composting or backyard bins
- Limited in what can be composted – i.e. meat and dairy discouraged
- Need to manage rodents and other wildlife
- Not everyone can do this



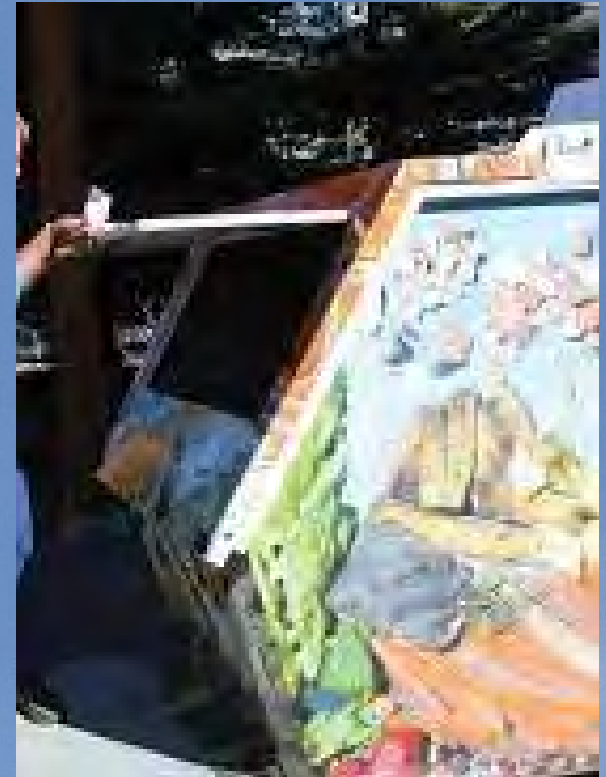
Weekly Organics Collection

- Food scraps only, or collected with yard waste?
- Weekly or biweekly?
- Compostable plastic or no compostable plastic?
- Is wildlife going to be a concern?
- What is cost and greenhouse gas implications for separate collection?



Self Drop Off Locations

- Where do we locate these in our community?
- Who manages them?
- Is it just a drop off, or is it a composter?
- How do we manage wildlife, and not so wild life?



Town of Canmore Community
Organics Collection Bin

Food Cycler – Drying and Grinding at Home

- Stabilizes food scraps by drying and grinding
- Allows for longer storage – no weekly or bi-weekly pickups required
- Can be recycled in the garden, or composted at a central location



Community Composting



- Understanding what is required to compost food scraps
- Options available for various sized communities



What is Required for Composting?

- Composting is more than just a composting machine
- Food scraps do not compost on their own – they need to be blended with bulking agent
- Composting takes time, it's a biological process
- Compost needs to be cured
- Compost needs to be screened, and contaminants removed



Food Scraps Need to Be Blended with Bulking Agent

- Composting microbes need to breathe – they need oxygen
- Ideal moisture content is 50-60%
- Air-filled porosity should be 30-50%
- Food scraps need to be blended with woody material
- Mixing can be with a loader, a mixer or a shredder



Compost mixer at the Forks

Composting Takes Time

- Although we can alter the food scraps and virtually eliminate odour in a few days, a longer time is required to stabilize the compost
- Temperatures > 55 C and time is required to kill pathogens
- Storing improperly composted food scraps can become anaerobic and develop odour
- Improperly composted food scraps may be phytotoxic



Output from rotary drum at the Forks

Compost Needs to be Screened

- The compost is going to contain larger pieces of woody material and possibly some non-compostable material.
- Compost is usually screened to $\frac{1}{4}$ " to $\frac{1}{2}$ ".
- The smaller the screen size, the longer the process takes, but more likely to be clean.
- Screening takes longer if the compost is wet.



Screener at the Forks

Food Scraps Contain Non-Compostable Material

- Removing non-compostable material is one of our greatest challenges
- Plastics are present with organics collection, particularly with ICI collection
- Microplastics are a concern for the environment, and not aesthetically pleasing



Contaminant Removal Unit at the Forks

Food Scraps Composting Options

- Compost year-round
- Collect all year, compost only in summer – allow the food scraps to freeze during winter
- Collect all year in community composters
- Dry and grind food scraps all year, compost during the summer



Composting Year-Round

- Works in larger communities that produce enough material to keep a pile hot during cold periods
- More challenging for smaller communities and communities further north



Aerated windrow composting at City of Whitehorse

Collect All Year – Compost in Summer

- An option for smaller communities
- Collect food waste and store in containers during winter
- Compost the food waste starting in June when material thaws
- Alternative is to dry and grind food waste in winter, compost in summer



Composting in summer Hamlet of Tulita, NWT

Collect Year-Round in Composting Vessels

- Residents place food scraps in composter bin year round
- Bin aerated, partially composts during the winter
- Composting process completed during the summer



Mt Lorne transfer station, Yukon

Active Composting of Food Scraps

- Food scraps compost best with both aeration and mixing
- Many options available for small and large communities
- Regardless of technology option, food scrap composting still requires bulking agent, need time, and need to be screened



Composting in a rotary drum at the Forks

Aerated Windrow Composting

- Most common composting for larger volumes of food scraps
- Aeration pipes under windrow
- Aeration blowers have timers and may have temperature feedback
- Material needs to be premixed and mixed at least once during process



Aerated Bin Composting

- Contained and aerated bins work well for smaller quantities
- Can be aerated with a small blower
- Material needs to be preblended, and mixed during composting process
- Insulated bins help in colder climates



Aerated Bin Composting

- Aerated bins can be various sizes, and can be home made or premanufactured by others
- Must allow for easy loading and unloading
- Good option for smaller communities



Thank you for joining the journey

