

Organic waste, which includes leaf and yard waste, food waste and soiled paper products, can represent up to 50% of a community's waste stream. If organic waste is placed directly into the landfill, it leads to the production of methane which heavily contributes to climate change.

By diverting organic waste through composting, a natural occurring process by which organic materials slowly rot and decompose, harmful methane emissions can be reduced.

There are multiple ways to set up a successful composting system and those are dependent on the scale of material being diverted, type of organic material being diverted, and what the desired goal for the compost is. You can divide your methods into backyard composting, vermicomposting, school composting, and community/landfill composting.

There is no registration required with an industry stewardship organization for composting. However, there are multiple good resources available to help you and your community choose the right method for composting. Knowing the desired size of the composting operations, types of organic materials desired to be composted and what the compost will be used for can help you narrow which resources might be the most helpful. Long cold winters and animals that might be attracted to compost smells should also be an important factor when choosing composting methods in Northern Manitoba.

1. COMMUNITY / LANDFILL COMPOSTING

The Saskatchewan Waste Reduction Council's presentation for small scale community composting can help your landfill or community choose a composting method that best serves your organic waste streams. The methods described in this resource is meant for larger scale composting efforts happening at a landfill location or community wide centralized composting location. Find the methods in the presentation titled "Small Scale Composting" here: <https://www.saskwastereduction.ca/events/swrc/compost-field-day-2016/>

Composting done at a centralized community wide area such as a landfill can vary significantly in cost, space required, odour that may be generated, time necessary to create finished compost and the skills needed to operate the composting facility.

The table on the next page shows an overview of different composting methods, type of aeration required, starting costs, odour control, and relative time to compost. Here are resource links associated with each:

- **Static piles:** <https://www.o2compost.com/Userfiles/PDF/Walla-Walla-ASP-Pilot-Project-Final-Report-06-29-15.pdf>
- **Aerated static piles:** <https://www.biocycle.net/design-considerations-in-aerated-static-pile-composting/>
- **Windrows:** <https://www.saskwastereduction.ca/recycle/resources/composting/large-scale-composting/compost-case-studies-u-of-s-windrow-and-dehydrator>
- **Covered piles:** <https://www.saskwastereduction.ca/assets/upload/img/resources/Composting/CaseStudies/hop-casestudy-hotrot-58d1860f40e74.pdf>
- **Agitated beds:** <https://www.saskwastereduction.ca/assets/upload/img/resources/Composting/CaseStudies/hop-casestudy-hotrot-58d1860f40e74.pdf>

- **Channels:** <https://www.saskwastereduction.ca/assets/upload/img/resources/Composting/CaseStudies/tru-casestudy-jora-58d185ff1082e.pdf>
- **In-vessel systems:** <https://www.saskwastereduction.ca/assets/upload/img/resources/Composting/CaseStudies/malaspina-casestudy-rocket-58d1860b4a92f.pdf>

Composting Methods	Aeration	Relative Costs	Odour Control	Relative Time to Compost
Static Piles	Passive or mechanical turning	Low	Low	6 to 24 month
Aerated static Piles	Positive/negative aeration, passive	Mid	Low	4 to 12 months
Windrows	Turning and passive	Low to mid	Low	4 to 6 months
Covered Piles	Positive aeration, passive	Mid	Mid	2 to 4 months
Agitated beds	Agitation, mechanical turning, passive	High	High	2 to 4 months
Channels	Mechanical turning, passive	High	High	2 to 4 months
In-vessel systems	Mechanical turning, positive/negative aeration	High	High	2 to 4 months

2. BACKYARD COMPOSTING

Backyard composting has the benefit of requiring little equipment and many other benefits such as producing natural fertilizer for gardens. Composting North of 60 is a great resource to use in Northern Manitoba because it considers how compost is affected by cold winters (see link below).

Backyard Composting Guide:

https://greenactioncentre.ca/wp-content/uploads/2010/09/Backyard-Composting-Booklet-_1logo_WEB.pdf

Composting North of 60:

https://www.yellowknife.ca/en/living-here/resources/Composting/Composting_North_of_60.pdf

Backyard Composting Bins

A composting bin can be purchased or can be easy to build. It can be built out of wood, mesh or concrete blocks. One can always use a modified old barrel or garbage can. It is important to note that treated wood should not be used to build a composting bin because chemicals can leach out and get into your compost. However you choose to build your composting bin, it is important to ensure that the bin allows for easy access to the compost, has air gaps at the sides of the bin, and that the unit is open to the ground underneath to allow for drainage.

To collect your kitchen scraps, you can use an old margarine tub or ice cream pail. To keep scrap sticking to the bottom of your kitchen container, you can line your container with newspaper. When the container is full, it is time to throw it in your backyard composter!

What Can I Put in the Backyard Compost Bin?

Composting can be like baking because one needs to add the right amount of ingredients. When it comes to backyard composting, the goal is to add equal portions of 'greens' (materials that are high in nitrogen) and 'browns' (materials that are high in carbon). It is important to know that compost will freeze at constant -40 C temperatures, however, you can continue to collect organic greens and browns and place them outside your house in a garbage can so that they can freeze. To unfreeze your compost bin in early spring and get the microbes working again at decomposition, place a tarp or plastic sheet over your compost to trap the heat.

Greens	Browns	Avoid Including these materials in a backyard compost
Vegetables/ fruit peels & scraps	Dried leaves & brown grass clippings	Meat, fish and bones can attract animals
Coffee grounds, tea bags	Pine and spruce needles	Dairy products in large quantities make the compost smell bad
Green grass clippings	Paper, cardboard and newspaper	Fat, oil and grease in large quantities slow down the process
Green Garden Waste	Prunings & cuttings	Feces (kitty litter, dog, human) contain pathogens
Flowers	Sawdust from untreated wood	Weeds with seeds or persistent roots
	Straw	Diseased plants
		Ash and sawdust from chemically treated or painted wood

*Note: You can add eggshells to increase the amount of minerals in your compost.

How to Set Up Your Backyard Composter

1. Choose a convenient, level, well-drained and sunny area on soil in your yard for your composter. Make sure it is easy to access during winter.
2. Make a compost bin or buy a ready-made bin and set it up. Having a lid or cover can help keep animals and birds out.
3. Place a layer of 'brown' materials such as dry leaves or shredded paper in the bottom of your composter.
4. Add a layer of 'greens' such as kitchen scraps and yard trimmings.
5. Continue to add greens and browns in roughly equal proportions, while alternating layers.

Harvesting Finished Compost

In about two summer seasons, there should be a dark crumbly soil-like material at the bottom of your compost pile. You can access this rich fertilizer by digging it out of the bottom of your composter or by lifting up your bin.

3. VERMICOMPOSTING

Vermicomposting uses worms to compost food materials. One of the helpful benefits of vermicomposting in Manitoba is that this process can occur year-round. The worms used for vermicomposting are red wiggler worms, which survive at room temperature and eat the scraps that would normally be placed in a backyard composter.

Vermicomposting Guide: Worms Working for You! (Green Action Centre)

https://greenactioncentre.ca/wp-content/uploads/2020/06/Vermi_8pg_1logo_JUL2016_WEB.pdf

Vermicomposting Bin

You will need a shallow plastic container like a Rubbermaid tub. A storage container that is about 60cm x 40cm x 22cm or (36L) is a good size to begin with. You can always expand by adding other bins if needed. The bin should have holes for air circulation. In addition to holes for air circulation, it is important to make holes at the bottom of your container to help drain moisture or else worms will try to get out due to dampness. The container should be placed on a tray or a bigger container to catch the extra moisture which can be discarded when necessary. The bin should also include dry bedding for the worms which can include: shredded newspaper or cardboard, sawdust, leaf compost or peat moss. It is recommended that the bedding is kept as moist as a well-wrung sponge and that there is a constant supply of bedding replaced inside the container.

Feeding the Worms

You can use an old ice cream pail or a small container to collect food scraps for the worms. The worms do not need to be fed in any particular schedule. When you feed the worms make sure you add the food to one corner of the bin until you reach the other corner. Next time you feed the worms, make sure you begin at the corner where you added food the first time. By seeing how much food is left in that corner you can get a good sense of how much the worms have eaten. If there is a lot of uneaten food in your corner, make sure that you wait a couple of days before adding more food.

When adding more food, make sure that it is buried into the worm bed in order to prevent fruit flies.

Worm food can include:

- fruit and vegetable scraps
- plate scrapings
- spoiled food
- tea bags, coffee grounds and filters
- breads, rice and pastas

Do **not** include:

- meat, fish or bones
- dairy products
- greasy, fatty, or oily food
- egg shells
- lots of citrus

Harvesting Vermicompost

The compost in your bin will be ready to be harvested in about 4 to 6 months. The final product should resemble a rich black soil like substance. In order to get only the product and not the worms, move the compost to one side of the bin and place fresh bedding on the other side. By placing fresh food and bedding on one side the worms will slowly move to that side of the bin leaving the finished compost ready to be removed.

4. SCHOOL COMPOSTING

Involving your school in composting requires coordination but it is very rewarding to see students and school staff come together to reduce food waste. Involving key individuals from the start, such as students, cafeteria, janitorial staff, teachers and the principal, is key for a successful composting program. Understanding which method to use and how to involve individuals in the composting method could be a great way to begin developing a school composting program. Backyard composting and vermicomposting both work well for schools.

Check out these two videos for examples of school composting:

- **School Composting in Fisher River Cree Nation:**
<https://www.youtube.com/watch?v=0vG6LXGr8PY&t=2s>
- **Composting at Greenway School (Winnipeg):**
<https://www.youtube.com/watch?v=eDiQQe0GVa0>

Getting Buy-In from School Staff and Parents

The custodial and kitchen staff should be at the beginning of any sort of planning to move towards composting. It is key that they understand the process and are on board. They should have input on:

- Location of collection pails and bins
- Determining a system to collect waste in the cafeteria/kitchen

Communication Plan

Clear communication and having a plan are especially important, for example, organizing a lunch hour or after work meeting to go over the basics.

Other ideas to clearly communicate the plan include:

- Presenting in the classroom, with costumes and props, to explain the process needed to successfully compost
- Holding a daily draw prize to get students motivated to participate
- Connecting school composting with already existing celebrations
- Forming a school compost club

Compost Maintenance

Usually, schools deal with a large volume of organic materials, so having a rotation method with a multi-bin composting or multiple single bins is a simple yet effective way to manage the volume of materials. This method consists of creating layers of greens and browns and aerating in one bin before moving on to another. Once a bin is full, stop adding food but continue to aerate and check moisture so that decomposition is accelerated. You can call that pile the maturing pile. Meanwhile you can start a different bin and follow the same layering and aerating process. The third bin can be used to store brown materials such as dead leaves or sawdust. This method can be scaled up or down depending on the volume of organic materials being produced by your school.

Composting in Winter

During winter your compost pile will most likely freeze which means that there is no need to add browns. You can keep adding green materials on top of the frozen pile in the bin. Once the pile begins to thaw in the spring, materials will decompose faster which means that browns should begin to be added again to restart the process.

Summer Plans

During summer months the volume of organics at the school will slow down significantly and the required maintenance becomes less. However, to keep pests away and continue the composting process, have a designated volunteer such as custodial staff or a teacher continue turning the pile periodically and adding water if the summer is particularly dry.

- Discuss summer plans with students, staff
- Make sure volunteers have access to all necessary equipment
- Plan for one or two visits per month which should be sufficient depending on the weather. You can pre-schedule visits to ensure commitments.

Using Compost

If you are using the multi-bin rotating method, you should have finished compost approximately one year from the onset of the school composting program. You can also tell if the compost is ready to use if it has a rich dark brown color and smells earthy.

5. TRAINING AND GENERAL RESOURCES

- SWANA Composting Training: <https://swana.swoogo.com/composting-may>
- Green Action Centre Master Composter Training: <https://greenactioncentre.ca/module/composting-2/become-a-master-composter/>
- Composting North of 60: https://www.yellowknife.ca/en/living-here/resources/Composting/Composting_North_of_60.pdf
- Hot Damn Composters: <https://hotdamncomposter.wordpress.com/page/2/>
- Green Action Centre Composting: <https://greenactioncentre.ca/composting-resources/>