

Backyard Composting Basics

Course Booklet 2020-2021



GET “THE DIRT” ON COMPOST: Learn how to build and maintain a compost pile in your own backyard or community garden.

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COMPOSTING 101

What is Compost?

Compost is a dark soil-like material created from decomposed organic waste. Compost is a valuable and nutrient rich soil amendment and can be created with relatively little effort.

What is Composting?

Composting is a natural process where organic material, such as kitchen and yard waste, decomposes and returns nutrients back into the soil. This decomposition process is accomplished by living organisms called decomposers, such as worms, insects, bacteria and fungi. These decomposers require air and moisture to eat and thrive in your compost pile. To successfully compost, you simply need to create the conditions needed for decomposers to do their job.

Benefits of Composting

Backyard composting provides the amazing satisfaction of knowing that the soil amendment you are adding to your garden is generated from your own garden and kitchen scraps.

Help Your Garden Grow

Adding compost to your vegetable or flower garden will add nutrients, such as nitrogen, phosphorous, and potassium, to the soil. Finished compost also improves soil structure, promoting drainage in heavy, clay soils and helping loose sandy soil retain water. Regulating and conserving soil moisture prevents surface crusting, which eases the emergence of seedlings. Compost also helps prevent soil compaction, making it easier for roots to penetrate the soil.

Environmental Responsibility

By using compost from a backyard or community-based compost system, you are using a natural material that is free from chemicals. Compost is a natural and healthy soil amendment that encourages healthy plants.

Waste Reduction

Much of our household waste by weight is kitchen scraps and leaf and yard waste from our gardens and lawns. Setting up a backyard or community-based compost system for organic waste will reduce your need for curbside pick-up. This can save on costs associated with the collection and processing of organic material on a large industrial scale at municipal composting facilities and reduce greenhouse gas emissions with fewer collection vehicles.

DID YOU KNOW...

IN 1998, THE GOVERNMENT OF NOVA SCOTIA BANNED THE DISPOSAL OF ORGANICS IN A LANDFILL.



HOW TO BUILD YOUR PILE

Greens and Browns

Most experts agree that when adding material to your compost pile, it should include both “green” type material, which is considered wet and soft material and an important source of nitrogen, and “brown” type material, which is considered dry and woody type material and an important source of carbon. “Greens” would include such items as fruit, green leaves, vegetables, coffee grounds, grass clippings and flowers. “Browns” would include such items as dried leaves, small twigs, straw, sawdust, hay, and paper.



Never put meat, fish, bones, fat, dairy, or pet waste in your backyard compost pile. These items take a long time to decompose and can attract rodents and create odours.

Layering Greens and Browns

Compost piles do not *have* to be built in alternating layers of “greens” and “browns” in order for decomposers to break down organic matter. Composting is a process that occurs naturally. However, layering is an effective way for the beginner composter to ensure that a pile does not become soggy, as “browns” can help absorb excess moisture from decomposing fruits and vegetables. Sprinkling layers of “browns” over your regular kitchen waste can help ensure a good mix of carbon and nitrogen and can also help protect your “greens” from attracting unwanted critters, including flies. Although flies are not often a problem associated with compost piles, you can control their numbers by

keeping a layer of dry leaves or grass clippings on top of the pile.

IMPORTANT

ADDING LAYERS OF “GREENS”, “BROWNS” AND SOIL/FINISHED COMPOST IS A LOOSE RECIPE RATHER THAN AN EXACT SCIENCE, BECAUSE EACH PILE IS UNIQUE. FIND OUT WHAT WORKS FOR YOUR PILE BY MONITORING MOISTURE AND TEMPERATURE LEVELS.

their way throughout your compost pile. However, the occasional layer of soil or finished compost will speed up the process by moving decomposers towards the middle and top of your pile.

Browns at the Bottom to Start

Putting a thick later of “browns” at the bottom of your pile can help prevent moisture accumulation. Try adding broken up twigs, straw and dead leaves (if available) as the bottom layer in your backyard composter. From there, you can build alternating layers of “greens” (kitchen scraps) and “browns”.

Mix in Soil/Compost to Spread Microbes

Microbes and decomposers will eventually work

WHAT NOT TO ADD

In a backyard composting system, adding pet waste, cooked or raw meat, bones, bacon grease and dairy products can create big problems.



Pet Waste

Pet waste can add harmful pathogens and parasites to your compost pile. Roundworms, for example, are a common parasite found in dog waste. These parasites can survive the high internal temperatures of your compost pile, causing them to persist in finished compost. In the Eastern Region, you are required to dispose of all pet waste in the garbage, not the municipal green cart program.

Animal By-Products

All animal by-products including meat, bones and dairy products are also not recommended for use in your backyard composting system. These items take much longer to decompose than organic fruit and vegetable waste, and may create strong odours which will make you unpopular with your neighbours. Decomposing animal by-products are likely to attract pests, including wildlife, flies and even neighbouring cats and dogs! However, in the county of Antigonish, district of Guysborough and the towns of Antigonish and Mulgrave, you can add meat, bones, dairy products and animal fat to your municipal green cart for curbside collection.

Separate Your Organics

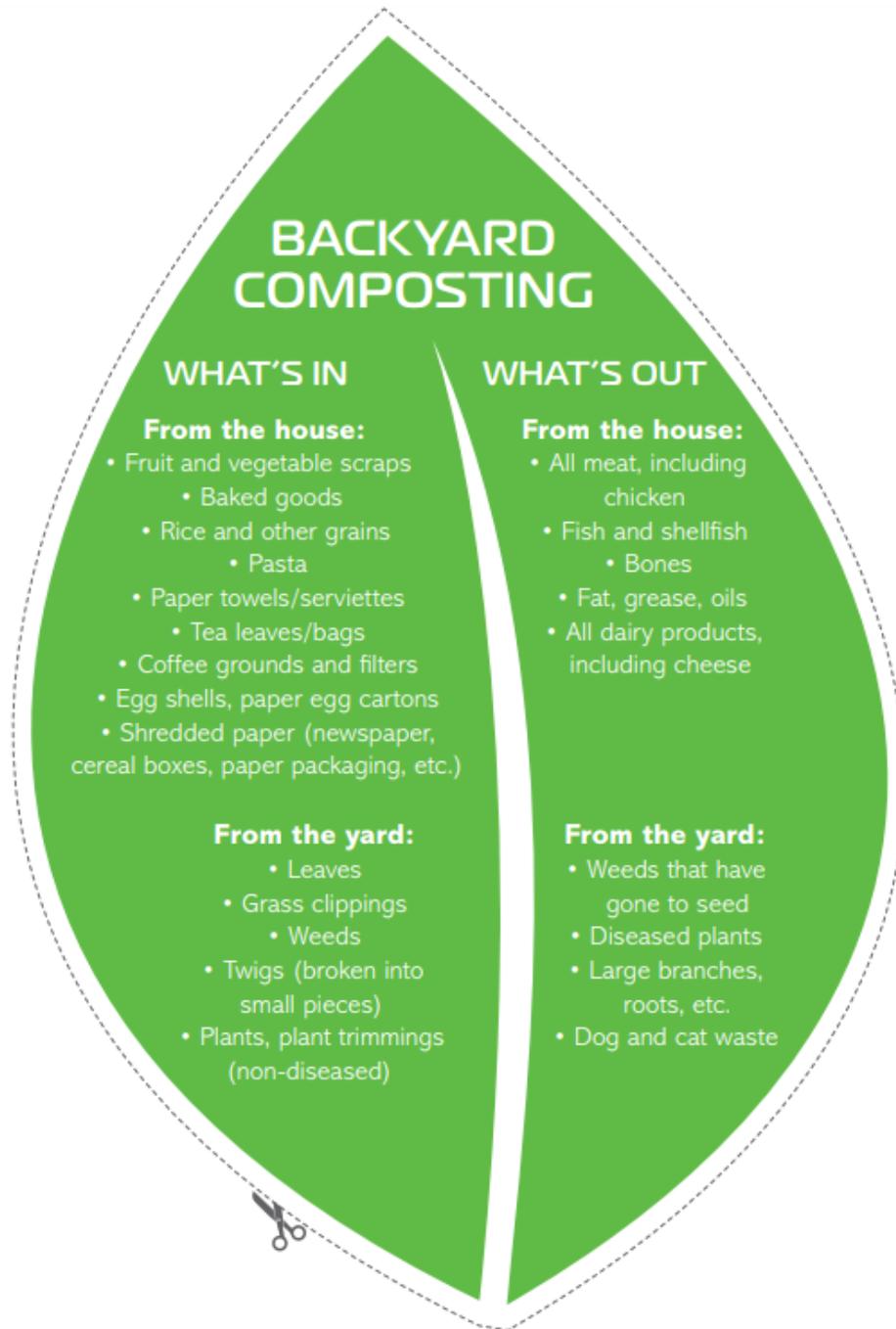
Keeping a separate bin in your kitchen can help ensure that no meat, bones or dairy end up in your backyard! In your designated “backyard compost” bin, add all your fruit and vegetable waste, including onion and garlic skins, fruit pits and citrus peels. You can also add your egg shells, left-over pasta and rice and shredded paper and boxboard. All your meat, bones, fat and dairy products can be placed in your municipal green cart for curbside collection.

IMPORTANT

NEVER ADD MEAT, DAIRY, GREASE, FISH, BONES OR CHEESE TO YOUR BACKYARD COMPOST PILE. INSTEAD, ADD THEM TO YOUR GREEN CART FOR CURBSIDE COLLECTION.

CUT IT OUT

CUT OUT THIS QUICK GUIDE AND HANG IT IN YOUR KITCHEN
AS A HELPFUL REMINDER



For more information about backyard composting, download the Eastern Region Waste Info App or visit erswm.ca and click on Organics Collection and Backyard Composting Basics

MAINTAINING YOUR PILE

Turning Your Pile

In any active compost pile, you will find various species of aerobic bacteria numbering in the billions. These bacteria require oxygen for their basic survival, growth and reproduction. When they are healthy and plentiful, aerobic bacteria break down organic matter into a rich and odor free soil amendment. Especially when your compost pile is new, you will need to aerate it at least once per week by turning the material. Simply stick a pitch fork or shovel into your compost pile and flip the material over. Once your compost pile matures and enters a later stage of decomposition, you can aerate it less frequently.

Turning your pile also helps combat moisture build up. Your pile should be damp, like a squeezed sponge, but not so wet that it's water logged and "soupy". In a compost pile that is too wet, the pockets in between particles are filled with water instead of air. Turning helps to drain away the water and reopen the necessary air pockets.

Maintaining Temperature

Aerobic bacteria produce heat when they break down organic matter. Thermophilic bacteria can heat up compost piles to a maximum temperature range of 45-70 degrees Celsius. This high temperature range typically lasts no more than three to five days. Thermophilic bacteria use up too much of the degradable materials to sustain their population for any length of time. This heat process has two main positive side effects:

Pathogen Kill

If you add diseased plant material to your compost pile or weeds that have gone to seed, a compost pile with an internal temperature of approximately 55 degrees Celsius will help ensure that you won't be spreading weeds and disease whenever you spread compost. Thermophilic temperatures kill fly larvae.

Quicker Results

Active Thermophilic bacteria producing high internal temperature will produce a quicker final product than decomposing insects such as worms, centipedes, snails, millipedes, springtails, spiders, slugs and beetles¹. These insects grind, bite, suck, tear, and chew materials into smaller pieces which is a very important function in decomposition, though the final product is produced more slowly if you *only* rely on these insects without the help of aerobic bacteria.



QUICK TIP

CHOP LARGER ITEMS, SUCH AS CITRUS PEELS, INTO SMALLER PIECES TO SPEED UP THE DECOMPOSITION PROCESS

¹ For more information on common macro-decomposers found in Nova Scotia, please see Appendix 1.

CHOOSING A COMPOSTING SYSTEM

Now that you're a savvy composter, the first decision to make before beginning to compost is to decide which system will be used: indoors or outdoors; aerobic or anaerobic; or will it be a single or multi-container system.

First off, **pick a location!** Place your composter in a convenient location where you will have easy access all year long.

TIP

DON'T PLACE THE COMPOST BIN TOO FAR FROM YOUR BACK DOOR. THE EASIER IT IS TO USE, THE MORE YOU'LL USE IT!

Where to put your bin:

- Choose a convenient, level and well-drained area in your backyard
- Place your bin on your lawn or on soil, as that will allow natural decomposers to more easily make their way into your pile. Use a base of wire mesh to prevent pests from accessing your organic waste
- Leave some space around the bin to store extra leaves, soil, and other materials
- Shelter the bin from wind to reduce maintenance.

Indoors versus Outdoors

When most people think of starting a compost system, they usually picture an outdoor back-yard compost pile that gets turned every so often. The outdoor composting systems described in this booklet are the most common used by home composting enthusiasts.



However, some do opt to have their compost systems indoors and do so with the help of worm colonies. This well-known and popular indoor composting system is known as vermicomposting, which uses a species of worms known as Red Wigglers. Vermicomposting occurs when cut up fruit and vegetable waste is added to soil in a plastic container with air holes poked in the top. Red

Wigglers are then added to the mixture. Worms can be purchased online or at local hardware or fishing supply stores.

Red Wigglers can also be added to outdoor composting systems, though earthworms will naturally make their way into outdoor compost piles.

Aerobic versus Anaerobic

Aerobic means “with oxygen” and anaerobic means “without oxygen”. As their name suggests, anaerobic bacteria do not require oxygen for their survival, growth or reproduction. This species of bacteria decomposes organic material much slower than their aerobic counterparts and tend to generate more odor and a slimier pile. Some choose an anaerobic composting system because it requires almost zero maintenance. If you never turn the material in your compost pile, then no oxygen will reach the centre and anaerobic decomposition will occur and emit

DID YOU KNOW...

When anaerobic bacteria break down organic matter, they produce methane gas (ch₄) as a by-product. Anaerobic systems built and used on an industrial scale are designed to process organic waste in an oxygen-free environment. The ch₄ is then collected, processed, and used as fuel.

enclosed? If so, will it be enclosed in a single container or in a multi-container system? Would you like your pile to be covered or uncovered? Please see Appendix 2 for a complete list of backyard composter options as well as building instructions and materials for each.

When choosing a single versus multi-container composting system, space is one of the big considerations to think about, along with amount of organic waste material expected to be generated and the aesthetics of the location.

For those living in densely populated urban locations, enclosed and covered backyard composters have many benefits. Enclosed container composting hides decomposing organic material and keeps your property tidy. More importantly, enclosed systems are less accessible to pests such as rodents, birds and even cats and dogs.

Using a single container or multi-container is a matter of preference, and as mentioned, depends also on the amount of material generated. Many backyard compost systems are very successful using just a single container that is either bought or home-made.

odors. To create an odor free backyard composter, you must turn the material to promote aerobic activity.

Aerobic decomposition requires air and water to feed micro-organisms and macro-organisms such as bacteria, fungi, worms, and other invertebrates, to break down the organic waste material and produce a usable soil amendment called compost. Done correctly, there is no smell.

Single versus Multi-Container

When it comes to deciding on the composting system you will use, there are several options to consider.

Will it be an open pile on the ground? Or will it be



The "Earth Machine" brand composter is a popular example of a covered, single enclosed container system.

I'VE MADE COMPOST. NOW WHAT?

How to Use the Finished Compost

Compost can be used as a soil amendment when it looks, feels and smells like rich, dark soil rather than rotting organic matter.

Finished compost will end up towards the bottom of the bin. To harvest your compost, remove the unfinished material from the top of the bin and take the finished compost out. Return any unfinished material back into the bin. To use it on your lawn or in a potting soil mix, sift finished compost through a 1cm square (1/2 inch) metal screen.

The finished compost can be added directly to the garden by working it into the soil, or simply adding compost on the surface and worked slightly into the top layer of soil around the plants.

In some cases, there is no need to dig the compost into the garden. Some garden plants have an established layer of delicate filaments that exist near the surface and branch out giving these plants easy access to nutrients and moisture. In this case, digging may disrupt this delicate balance. Simply add the compost to the surface. Rain, worm action, and other microbial action will help to mix the compost into the soil beneath it. Gardens containing rich garden soil can also have the finished compost just added to the surface without tilling it into the soil. Put materials that aren't done back into your bin.

QUICK TIP

**YOU CAN SIMPLY
SPRINKLE FINISHED
PRODUCT AT THE BASE
OF YOUR VEGETABLES
AND FLOWERS.**

FREQUENTLY ASKED QUESTIONS

▪ **How long does it take to make compost?**

The amount of time it takes to make compost varies depending on the size of the pile, the type and size of materials added, and the frequency at which the pile is turned to introduce oxygen. Making compost can take anywhere from three months to 24 months depending on these variables! A regularly turned and maintained backyard composter for a single-family home takes between 3 to 6 months to produce compost, on average.

▪ **How can I test whether my compost is ready to use?**

There are several ways to test whether your compost is ready to be added to your soil. The easiest test is to use your eyes, hands and nose! Finished compost at the bottom of your pile will appear dark brown and will feel and smell like regular soil. If you're still unsure whether your compost is ready to use, pH soil testing strips can be used to test the finished product. Simply take a small sample of compost from the bottom of your pile and immediately insert a pH strip. A pH reading of less than 6 means your compost is acidic. Acidity is an indication of an unfinished product, as organic acids are formed during earlier stages of decomposition. The organic acids become neutralized as the compost matures. Finished compost will have a neutral Ph of between 6-8.

▪ **Can I compost in the winter?**

Yes, you can compost during the winter. If the temperature of the pile goes below 10°C the pile may go dormant, but it will reactivate in the spring. You may choose to add a compost activator, something high in nitrogen, to help get your compost pile started.

▪ **Do I need to add worms to my bin?**

You do not need to add worms to your bin. Worms will naturally emerge from the soil into your compost later in the decomposition process.



▪ **Can I compost ashes?**

You may compost ashes derived from burning wood or paper. However, ashes should be used very sparingly as they are highly alkaline and will raise the pH levels. Wood ash can be a good source of lime, potassium, and trace elements. Do not use ashes from coal or barbeques.

▪ **What are some nitrogen rich materials?**

Nitrogen rich, or green materials, include kitchen scraps and grass clippings.

▪ **What are some carbon rich materials?**

Carbon rich materials tend to be brown, dry, tough, or fibrous. Examples include straw, dry leaves and twigs, shredded paper, cornstalks, and saw dust.

▪ **Can I compost bones and meat scrap?**

Do not compost bones and meat scraps, or any animal by-products, in your backyard composter. These will attract rodents and unwanted pests. Place these items in the municipal green cart.

▪ **Can I compost newspaper?**

Newspaper has no nutrients, but can serve as brown, carbon material. Shred and soak newspaper before adding it to your compost pile.

- **How can I get enough dry material, such as leaves, for my compost?**

It is a good idea to stockpile leaves so that you have a year-round supply of brown material. You can keep leaves in a bag or bin – but make sure to keep them dry!

- **How do I use my compost for houseplants?**

Use a 5mm (¼ inch) screen to sift through your final product and you can pasteurize it by baking it on a baking sheet for an hour at 90°C (200°F).

- **Are all leaves the same?**

All leaves are not the same. Use hemlock and castor bean leaves sparingly because they are poisonous and can harm soil life. Poplar, ash, and rhubarb leaves raise soil pH, making it more alkaline. Waxy and fibrous rhododendron and magnolia leaves take a while to break down and should be chopped or shredded. Maple leaves are an excellent source to add to a backyard composter.



TROUBLESHOOTING GUIDE

Symptom	Cause	Solution
Problem: Compost pile does not heat up		
Too wet	Soggy compost materials: there is not enough air	Turn the compost pile: add dry, carbon-rich absorbent materials (twigs, straw). If it is weather related, cover the pile with a tarp
Too Dry	Not enough moisture	Moisten the pile with a spray nozzle: don't saturate it. The pile should have the same consistency as a damp, wrung-out sponge
Moist pile but it is not decomposing	Too much carbon (brown) materials, not enough nitrogen (green) material	Turn the pile and add nitrogen rich materials to aid the decomposition process
Problem: Odour		
Ammonia smell	Excess of green, nitrogen rich material (i.e. grass clippings)	Turn pile and add more brown, carbon rich material
	Compost is too alkaline, the pH is too high	Turn the pile and add acidic material (i.e. sawdust, vegetable scraps, oakleaves)
Rotten egg smell	Pile is too wet, not enough oxygen	Turn the pile to aerate it and add dry, brown, carbon material to absorb moisture.
Problem: Pests and rodents		
Rodents, raccoons, scavengers, maggots	These pests are attracted to meat and fatty food scraps (cheese and dairy)	Remove all meat and fatty food scraps Turn pile to aerate Balance the C to N ratio Use a rodent-proof bin with lid
Fruit flies, gnats	These are attracted to uncovered wastes, especially fruits, melons, and vegetables.	Cover these scraps with carbon/brown material, finished compost, or soil.
Ants	The pile is too dry or has too much brown material.	Turn the pile and moisten it with a spray nozzle.

Appendix 1 – Macro Decomposers Found in Nova Scotia

The following is an overview of some of the larger macro-organisms you are likely to find in a compost pile.

Red Wigglers – These worms are the most important of the large physical decomposers in a compost pile. Red Wigglers ingest organic matter and digest it with the help of tiny stones in their gizzards. Their intestinal juices are rich in hormones, enzymes, and other fermenting substances that continue the breakdown process. The worms leave dark, fertile castings behind. A worm can produce its weight in castings each day. These castings are rich in plant nutrients such as nitrogen, calcium, magnesium, and phosphorus that might otherwise be unavailable to plants. Worms thrive on compost and contribute greatly to its quality. The presence of Red Wigglers in either compost or soil is evidence of good microbial activity.

Flies – Flies are two-wing insects that feed on almost any kind of organic material. They also act as airborne carriers of bacteria, depositing it wherever they land. Although flies are not often a problem associated with compost piles, you can control their numbers by keeping a layer of dry leaves or grass clippings on top of the pile. Also, bury food scraps at least eight to twelve inches deep into the pile. Thermophilic temperatures kill fly larvae. Mites help to keep fly larvae reduced in numbers.

Snails and slugs - Snails and slugs are mollusks that travel in a creeping movement. Snails have a spiral shell with a distinct head and retractable foot. Slugs do not have a shell and are somewhat bullet shaped with antennae on their front section. They feed primarily on living plant material, but they will also attack plant debris. Look for them in finished compost before using it, as they could do damage to your garden if they move in.

Ants - Ants feed on a variety of materials including fungi, seeds, sweets and other insects. They help the composting process by bringing fungi and other organisms into their nests. Ants can make compost richer in phosphorus and potassium by moving minerals around as they work.

Millipedes – Millipedes have wormlike segmented bodies, with each segment having two pairs of walking legs (except the front few segments). Millipedes help break down plant material by eating soft decaying vegetation. They will roll up in a ball when in danger.

Centipedes – Centipedes are flat, segmented worms with one pair of legs in each segment. They are third-level consumers that feed on soil invertebrates, especially insects and spiders.

Sow bugs – Sow bugs have a flat and oval body with distinct segments and ten pairs of legs. They are first-level consumers that feed on rotting woody materials and other decaying vegetation. Pill bugs look similar to sow bugs, but roll up in a ball when disturbed.

Springtails – Springtails are small insects distinguished by their ability to jump when disturbed. They rarely exceed one-quarter inch in length and vary in color from white to blue to black. Springtails are principally fungi feeders, although they also eat molds and chew on decomposing plants.

Spiders - Spiders are eight-legged creatures and third-level consumers that feed on insects and small invertebrates. They can be very helpful for controlling garden pests².

² Source: University of Illinois, "Composting for the Home Owner" <https://web.extension.illinois.edu/homecompost/science.cfm>

Appendix 2 – Build Your Own Backyard Composter Instructions, Courtesy of Divert NS

Compost Pile – No construction necessary. Find a sheltered spot in your backyard to begin your pile. That's it! Just keep in mind that items such as paper towels and napkins can blow around without an enclosure.

Single Wooden Unit – This is a simple and inexpensive composter to build but does require some minor carpentry know-how. A second unit may be used to mature compost while new items are added to the first box.

Wooden Pallet Unit – A wooden pallet holding unit can be built inexpensively using wooden pallets or lumber may be used to make a nicer looking bin. The costs will vary, depending on whether new lumber or pallets are used. Used pallets are often available from manufacturers and landfills.

Required Materials:

- 4 wooden pallets (5 pallets if you want a bottom in the container), sized to make a four-sided container at least 3' x 3' x 3'.
- Nails.
- Bailing wire.

OR

- 2 – 8' lengths of 2 x 4 lumber.
- Galvanized 8D nails (1 pound).

Tools:

- Saw.
- Sledgehammer.
- Claw hammer.
- Work gloves.

Building a Holding Unit Using Wooden Pallets:

1. Nail or wire four pallets together to make a four-sided bin at least 3' x 3' x 3'. The bin is ready to use.
2. A fifth pallet can be used as a base to allow more air to get into the pile and increase the stability of the bin.

Building a Holding Unit Using Lumber:

1. Saw the 8' lengths of 2 x 4 lumber into four pieces, each 4' long, to be used as corner posts.
2. Choose a 3' square site for your compost bin. Use the sledgehammer to pound the four posts into the ground 3' apart, at the corners of the square.
3. Saw each of the 12' boards into four 3' pieces. Allow five boards to a side and starting at the bottom, nail the boards to the posts to make a four-sided container. Leave 2" between the boards to allow air to get into the pile.

If you wish to decrease your composting time, build a second holding unit so that the in one can mature while you add new material to the other.

Snow Fence Bin – A snow-fence holding unit is simple and cheap to make. It works best with four posts pounded into the ground for support.

Required Materials:

- 4 – wooden or metal posts, 4 – 5 feet long (use naturally rot-resistant wood, such as cedar, for wooden posts).
- Heavy wire for ties.
- 1 – 13' length of snow fencing, at least 3' tall (16' if making the optional top).

OR

- 2 – 8' lengths of 2 x 4 lumber.
- Galvanized 8D nails (1 pound).

Tools:

- Tin snips for heavy-duty wire.
- Sledgehammer.
- Pliers.
- Work gloves.

Building a Snow-Fence Holding Unit:

1. Choose a 3-foot-square site for your holding unit and pound the four wooden or metal posts into the ground 3 feet apart at the corners of the square.
2. Cut the heavy wire into lengths for ties. Attach the snow fence to the outside of the posts with wire ties using pliers.
3. Attach the ends of the snow fence together in the same way, forming a 3-foot-square enclosure.

Wire-Mesh or Hardware Cloth Unit – A wire-mesh holding unit is inexpensive and easy to build out of either galvanized chicken wire or hardware cloth (non galvanized chicken wire can also be used but will not last very long). Posts provide more stability for a chicken wire bin but make the bin more difficult to move. A wire-mesh bin made without posts is easy to lift and provides access to the compost that is already “done” at the bottom of the pile while the compost at the top of the pile is still decomposing.

Required Materials:

- 4 – wooden or metal posts, 4 – 5 feet long (use naturally rot-resistant wood, such as cedar, for wooden posts).
- Heavy wire for ties.
- 1 – 13' length of snow fencing, at least 3' tall (16' for optional top).

OR

- 2 – 8' lengths of 2 x 4 lumber.
- Galvanized 8D nails (1 pound).

Tools:

- Heavy-duty wire or tin snips.
- Sledgehammer.
- Pliers.
- Work gloves.

Building a Wire-Mesh Holding Unit Using Chicken Wire:

1. Fold back 3 to 4 inches of the wire at each end of the cut piece to provide a strong, clean edge that will not poke or snag and that will be easy to latch.
2. Stand the wire in a circle and set it in place for the compost pile.
3. Cut the heavy wire into lengths for ties. Attach the ends of the chicken wire with the ties using pliers.
4. Space wood or metal posts around the inside of the chicken-wire circle. Holding the post tightly against the wire, pound them firmly into the ground to provide support.

Building a Wire-Mesh Holding Unit Using Hardware Cloth:

1. Trim the ends of the hardware cloth so that the wires are flush with a cross wire to get rid of the edges that could poke or scratch hands. Lightly file each wire along the cut edge to ensure safe handling when opening and closing the bin.
2. Bend the hardware cloth into a circle and stand it in place for the compost pile.
3. Cut the heavy wire into lengths for ties, using them to attach the ends of the hardware cloth with pliers.

Wood-and-Wire Three-Bin Turning Unit – A wood-and-wire three-bin turning unit can be used to compost large amounts of yard, garden, and kitchen wastes in a short time. Although relatively expensive to build, it is sturdy, attractive, and should last a long time. Construction requires basic carpentry skills and tools. With optional lids and bottom, this unit can be made rodent resistant.

Required Materials:

- 4 – 12' lengths of 2 x 4 lumber.
- 2 – 10' lengths of 2 x 4 lumber.
- 1 – 10' length of construction grade 2 x 4 lumber.
- 1 – 16' length of 2 x 6 lumber.
- 6 – 8' lengths of 1 x 6 lumber.
- 1 – 22' length of 36" wide 1/2" hardware cloth.
- 2 lbs – 16D galvanized nails.
- Poultry wire staples (250).
- 12 – 1/2" carriage bolts, 4" long, with washers and nuts.
- 1 – quart wood preservative (use wood preservative or stain suitable for vegetable garden compost or naturally rot-resistant lumber, such as cedar).

Optional Materials (for lids and bottom):

- 1 – 4 x 8' sheet of 1/2" exterior plywood.
- 1 – 4 x 4' sheet of 1" exterior plywood.
- 6 – 3" zinc-plated hinges.
- 24 – 3/16" galvanized steel bolts, with washers and nuts.
- Sufficient galvanized sheet metal to cover bottom of bins.

Tools:

- Tape measure.
- Hand saw or circular power saw.
- Hammer.
- Tin Snips.
- Carpenter's square.
- Drill with 3/16" and 1/2" bits.
- Screwdriver.
- Adjustable wrench.
- Pencil.
- Safety glasses, dust mask, ear protection, and work gloves.

Building a Wood-and-Wire Three-Bin Turning Unit:

1. Cut two 31 1/2" and two 36" pieces from a 12' length of 2 x 4 lumber. Butt-joint and nail the four pieces into a 35" x 36" "square". Repeat, building three more frames with the remaining 12' lengths of 2 x 4 lumber.

2. Cut four 37" lengths of hardware cloth. Fold back the edges of the wire 1". Stretch the pieces of the hardware cloth across each frame. Make sure the corners of each frame are square and then staple the screen tightly into place every 4" around the edge. The wood-and-wire frames will be dividers in your composter.
3. Set two dividers on end, 9' apart and parallel to one another. Position the other two dividers so that they are parallel to and evenly spaced between the end dividers. Place the 36" edges on the ground. Measure the position of the centres of the two inside dividers along each 9' edge.
4. Cut a 9' piece from each 10' length of 2 x 4 lumber. Place the two treated boards across the tops of the dividers so that each is flush against the outer edges. Measure and mark the center of each inside divider.
5. Line up the marks and through each junction board and divider, drill a 1/2" hole centered 1" from the edge. Secure the boards with carriage bolts, but do not tighten them yet. Turn the unit so that the treated boards are on the bottom.
6. Cut one 9' piece from the 10' length of construction-grade 2x4 lumber. Attach the board to the back of the top by repeating the process used to attach the base boards. Using the carpenter's square or measuring between opposing corners, make sure the bin is square. Tighten all bolts securely.
7. Fasten a 9' length of hardware cloth to the back side of the bin, with staples every 4" around the frame.
8. Cut four 36" long pieces from the 16' length of 2 x 6 lumber for front runners (save the remaining 4' length). Rip-cut two of these boards to two 4 3/4" wide strips (save the two remaining strips).
9. Nail the 4 3/4" wide strips to the front of the outside dividers and baseboard so that they are flush on the top and the outside edges. Centre the two remaining 6" wide boards on the front of the inside dividers flush with the top edge and nail securely.
10. Cut the remaining 4' length of 2 x 6 lumber into a 34" long piece and then rip cut this piece into four equal strips. Trim the two strips saved from step #8, to 34". Nail each 34" strip to the insides of the dividers so that they are parallel to, and 1" away from, the boards attached to the front. This creates a 1" vertical slot on the inside of each divider.
11. Cut the six 8' lengths of 1 x 6 lumber into eighteen slats, each 31 1/4" long. Insert the horizontal slats, six per bin, between the dividers and the vertical slots.
12. (Optional) Cut the 4 x 8' sheet of exterior plywood into 3 x 3' pieces. Cut the 4 x 4' sheet of the exterior plywood into one 3 x 3' piece on one of the three bins and attach each to the back, top board with two hinges.
13. (Optional) For complete rodent protection, cut sheet metal to fit bottoms of bins.
14. Treat all wood with products suitable for making vegetable garden compost or use naturally rot-resistant lumber.

Cement Block Bin – Cement blocks or bricks may be used to build a composter. It is easy to set up and can be constructed with two sections to facilitate the turning of the pile from one section to the next and can be built to suit your location.