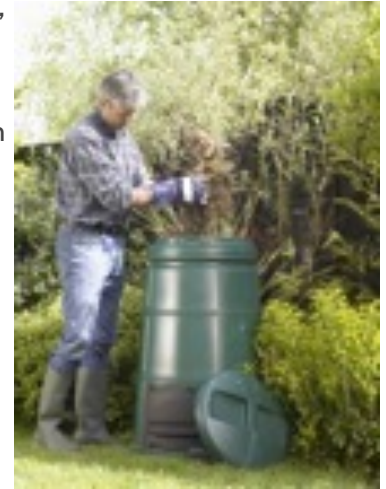


Composting Systems: Piles & Holding Bins



Composting, which harnesses the natural biological process of decomposition, turns landscape & garden materials and plant derived food scraps into a dark, crumbly and earthy smelling material. The compost produced has a pleasant earthy smell, is rich in nutrients and full of life. When used in your garden and on your plants, compost feeds the ecosystem of life in the soil and slowly releases nutrients that plants can easily absorb. Using compost is the foundation of maintaining healthy soil for stimulating plant growth and creating a beautiful garden or landscape.



How does a composting pile or holding bin work?

This is a passive, cool and slow method of composting. Garden materials and landscape trimmings are simply added to the pile or holding unit as they are generated. As they decompose, they shrink and settle down, allowing you to add more materials to your pile or bin.

If you fill your bin in 6 to 12 months and the materials are not settling down to allow you to add more materials, then there may be finished compost at the bottom that you can harvest for use in the school garden or in the landscape around your school. After removing the finished compost, there will be enough room to add fresh materials again.



If it takes less than six months to fill a bin, then you may need more than one bin. A second bin allows you to fill a new bin while the old pile continues composting. When the new bin is full, the first one should be ready for harvesting.

What materials can and should not be composted in piles and holding bins?

As always, it is important to balance the mixture of green and brown materials in your composter.



Good for the compost pile/bin	Not recommended for the compost pile/bin
Non-woody garden and landscape materials including grass cuttings, weeds, leaves, old flowers, plants, small twigs and bush trimmings	Meat, fish, bones, skins, guts or other high protein items (dairy products, eggs, cheese, grease, etc.);
Plant-derived food scraps – see the following sections	Weed seed heads and roots of invasive weeds such as ivy, bind weed scutch grass and bramble;
	Insect-infested or diseased plants;
	Cat or dog poop and ashes.



What sort of holding bins are there?

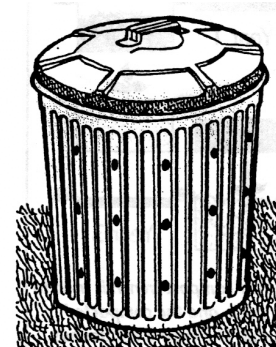
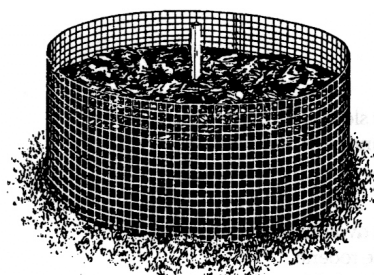
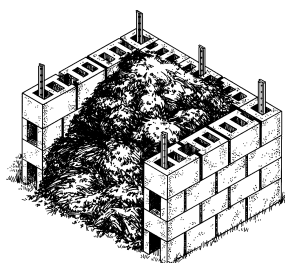
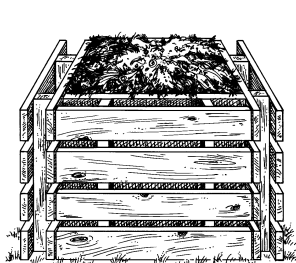


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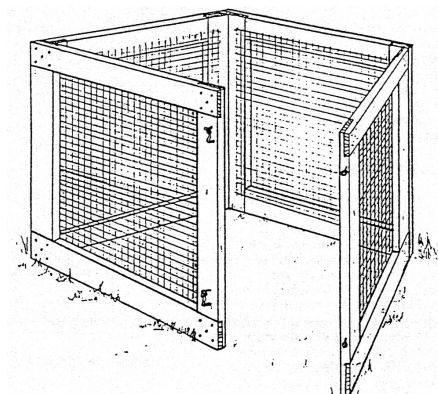
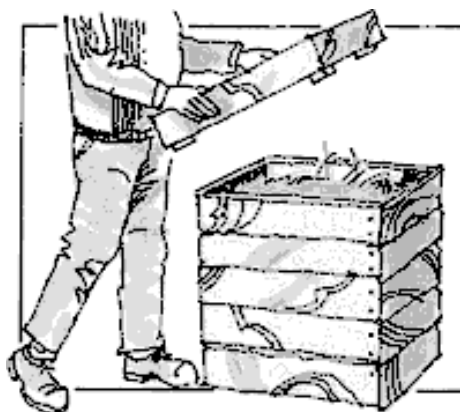
Commercially available bins: these can be purchased from a variety of retail outlets, garden centres and hardware shops. Many local authorities in Ireland sell plastic holding bins at reduced prices and often include a kitchen caddy as well. So be sure to check to see what is being offered in your area.



Build-your-own bins out of salvaged, surplus or waste materials: blocks, bricks, rocks, fencing, metal panels, pallets, wood and old rubbish bins can be used to build your own composting bin. Some examples are shown below:



Build-your-own bins from new materials: wood, wire mesh, fencing, concrete, blocks and bricks can all be used.



What are the good and bad points of these systems?



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Good Points - main benefits	Bad points - main drawbacks
Simplest way to compost	Slow: can take as long as 6-18 months to produce compost
Least labour intensive	Uncovered piles can easily become too wet or dry out in warmer/drier weather
Portable: once a pile is made, most bins can be taken apart and rebuilt in another part of the garden	Cooler temperatures may not fully destroy weed seeds and plant diseases
Flexible: one pile or holding unit is ideal for smaller schools while a series of piles or holding bins can be used on larger school properties	
Vegetative food scraps can be composted if they are buried into composting garden materials.	
Some holding units are good at excluding pests and holding moisture for efficient composting	
Holding units with lids or covers prevent excessive rain from soaking the pile.	

How do I compost using a pile or holding bin?

There are 5 main steps involved in using a pile or holding bin to compost your garden materials, landscape trimmings and plant-derived food scraps.

First of all, the following are the basic tools needed for maintaining your compost pile or holding bin:

- Pitch or spading fork to mix and place materials in the pile or bin
- Hose with spray nozzle or watering can with a rose head
- Homemade screen with 10-20mm openings (may not be necessary if compost is dug into garden or used as a mulch)



How do I compost using a pile or holding bin?



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1. Setting up your bin

Ideally, the spot you choose for your pile or holding unit should be on bare soil in a shady or partially sunny spot. It is best to have it on soil as this allows beneficial organisms, insects and worms to gain access to the rotting material, and promotes better aeration and drainage. Keeping your bin out of direct sunlight can help in keeping the materials from drying out in summer months.



To facilitate better aeration, you can add a layer of twigs, bush clippings, shredded tree trimmings or oversized materials from screening to the bottom. If your bin or pile is open to the elements, you might consider covering it with plastic, old carpet or a piece of plywood to keep rain from soaking the pile in winter months and encourage the larger composting organisms (insects and worms) to work the top of the pile as they like damp and dark conditions.

2. Add materials as they are generated

Composting starts when you are gardening or maintaining the landscape around your school. Using secateurs, cut up stalks or larger plants into smaller pieces (4-6") and place them into a bucket, tub, bin or reusable bag. Empty the trimmings on the ground in front of your bin or pile. If you have a lot of grass cuttings, be sure to add a source of carbon such as leaves or bush trimmings. Then mix and water the materials. Any excess water will simply drain into the ground instead of over soaking composting materials within the bin. Once watered, simply add the mix of materials to your composter or pile. The next time you garden, repeat these steps, but before adding more materials, use your pitch fork check existing materials for adequate moisture.



Always bury food scraps into the pile

Food scraps are classed as a green material and do not compost well on their own. Like grass on its own, food scraps are usually too wet and can become mucky and smelly on their own. So, food scraps should only be added to existing piles of landscape trimmings or holding bins that are at least a third full with garden materials. Plant derived food scraps can be added to a composting bin right before adding more garden and landscape materials as described in step 2 above.



Simply empty your food caddy into the bin and mix with the existing materials. Then cover with a fresh layer of mixed garden and landscape trimmings so the food is buried within the pile. If you don't have sufficient garden materials (in winter time) you can remove some materials from the top of the pile or bin, add and mix the food with existing materials and then replace the removed garden materials on top. If you have a leaf mould pile, then food scraps can be added and mixed with existing materials and then covered with a layer of leaves.

How do I compost using a pile or holding bin?



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4. Monitor the pile

Regular monitoring of your compost pile is the key to it working properly. To do this, simply dig into the pile with your pitch or spading fork and check out what's inside. Use your senses to tell you what is going on. Depending on the condition of the pile, the following steps should be taken:

- too dry - turn the pile and add moisture
- too wet - turn the pile and add drier materials. Think of covering the pile or bin if it is exposed to excessive rainfall.
- damp inside but is not composting, then mix in some "green" materials
- smells bad, then the pile might be too wet or contain too many grass cuttings or food scraps so mix in drier "brown" materials to balance it out
- swarming with insects, then it's likely that you are not burying food scraps deep enough into the pile.



Don't worry if the pile does not heat up. This cool and slower method doesn't need heat to make good compost.

Reap the benefits - Harvesting your compost

Since materials are added continuously, they decompose in stages. The finished compost is usually located inside and at the bottom of the pile or bin, while partially decomposed materials are nearer the top and sides. If conditions are right (good mixture of materials and proper moisture level), in six months to a year, you will get some finished compost. For piles, simply fork off the partially decomposed materials from the top and sides and start a new pile with this material. You are then left with finished compost for use in your garden or landscape.

Depending on the holding bin you have, harvesting your compost varies. Some will be designed with a trap door at the bottom or a side that opens for easy removal of the compost. Most require a bit more effort. If you have the space, then remove, disassemble or open up the bin and place it next to the existing pile of materials. Then fork off the fresh and partially decayed materials and place them directly into the empty bin until you get down to the finished compost.

Once you have removed the compost from the pile or holding unit, you can use the compost as a mulch or soil amendment. If there are a lot of woody materials in the compost or if you would like to make a potting mix, you can screen the compost using a homemade screen or by using a tray from the garden centre that holds potted plants. A homemade screen can be made by simply sandwiching some mesh or hardware cloth in between two squares made of 2" x 2s" or making a frame of 2" x 4" timber and attaching some mesh to the bottom similar to the one shown with the other tools at the start of this section. If you have no use for the sieved materials as a mulch you can add them back into your compost pile or bin.



How can I speed up the process?



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There are a number of ways you can help to speed up the composting process so you can make compost in 3-6 months instead of a year or more by:

- Using smaller pieces: Chop, cut up or shred the garden materials into smaller pieces.
- Mixing materials together before placing them in the bin: A good mix of green and brown materials keeps the composting creatures happy and working hard.
- Adding moisture when materials are dry: When materials dry out, composting stops or slows down.
- Turning piles: You can make compost faster by turning and aerating materials every 1-2 months. For piles, use a pitch fork to move materials from the old pile to build a new one. If you are using bins, you can turn materials from one bin to another. When using a single bin, you can take apart the bin, set it up next to the composting materials and use a pitch fork to turn it. If you don't want to turn the whole pile you can simply fork up the old materials before adding more. In smaller bins, a corkscrew type mixer can be used to fluff materials up and add air.



Is there anything else I need to know?

If you have a large property, you may need to set up more than one holding bin or pile. The number of piles or bins required depends on:

- The size of your property and the quantity of material you have
- How much space is available for composting
- The size of the bins or piles
- How fast you are able to make compost.

Luckily, you can easily add more bins or build more piles when you need them.

Remember that piles should not be built over 1.5m high because big piles compact easily which can squeeze air out of the pile, inhibit air flow and suffocate composting organisms. For larger piles, you can place vents into or underneath the pile to facilitate passive aeration. This can be a perforated pipe or a small bunch of branches.



What are the common problems?



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The following chart helps to troubleshoot common problems associated with piles and holding units

Symptoms	Cause	Solutions
Pile has foul odour	<ul style="list-style-type: none"> Not enough air Pile too wet Meat and fish added to pile 	<ul style="list-style-type: none"> Turn it. Add coarse dry "brown" materials such as stalks, hay, leaves or bush trimmings. Limit food scraps to vegetative ones and bury them into the pile.
Clumps of slimy grass, sharp ammonia smell	Too much fresh grass	<ul style="list-style-type: none"> Leave cuttings on lawn or allow them to dry for 1-2 days before collecting them for composting. Mix in "brown" leaves, hay, bush trimming, stems, or wood shavings. Remember to always mixing grass clippings with some brown materials.
Pile is dry throughout	<ul style="list-style-type: none"> Not enough water Too much woody material Pile is in sunny location Pile may be too small 	<ul style="list-style-type: none"> Turn it and moisten materials. Cover pile to hold in moisture. Add fresh green materials. Move bin to a more shady location. Add materials or combine with another pile.
Pile is damp, but woody and not composting	<ul style="list-style-type: none"> Materials are too big Lack of green materials 	<ul style="list-style-type: none"> Chop or shred materials. Turn and mix in a source of green materials such as grass cuttings or animal manure.
A swarm of flies greets you when you open the lid	<ul style="list-style-type: none"> Pile is too wet Food scraps are placed on top 	<ul style="list-style-type: none"> Mix in dry materials or add some on top. Bury food scraps within the pile. Cover pile with wet newspaper or a plastic sheet.
Rats live in the pile	<ul style="list-style-type: none"> High protein food waste in pile Food waste on top Warm and dry 	<ul style="list-style-type: none"> Stop adding animal products to bin, e.g. meat, dairy products. Bury food scraps into the pile. Turn pile frequently to disturb nesting. Place mesh under and/or around base of pile/bin. If necessary, set traps around pile.
Pile has shrunk, but looks undecomposed	Outside of pile is dry, inside probably composted	<ul style="list-style-type: none"> Check in pile for finished compost. If compost is not ready, turn pile, add water if necessary and allow it to finish. If compost is ready, harvest compost and use undecomposed material to start a new batch.

Are there any special uses for this type of composting?



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Sod or leaves can be composted on their own to produce a sod loam topsoil or leaf mould compost. These are great materials to have for your garden but need plenty of materials to start them off.

Sod composting

1. Sod can be stacked roots up to form a long pile.
2. Cover with black plastic to exclude light and prevent the grass from re-growing.
3. Let the pile sit for 1-2 years before harvesting.
4. To speed up the composting process, you can sprinkle water and add a little nitrogen fertiliser between the layers of sod before you cover them with the black plastic.
5. Check the pile periodically to make sure that the pile is moist enough
6. Sod loam is a great soil product that is high in organic matter.



Leaf Mould

1. Leaves can be stacked into a small or large pile or placed into a holding bin or cage.
2. Be sure to wet leaves thoroughly because dry leaves do not break down quickly.
3. Periodically monitor pile for moisture, adding water when the pile dries out.
4. Allow pile to compost for 1-2 years.
5. Harvest when leaves are crumbly and resemble a coarse compost like product.
6. Leaf mould is an outstanding mulch or soil amendment for acid loving plants.

