



green
calgary



Green Calgary Composting Guide

Contents

Part 1 - Basic Composting

What is compost?	3
Why should I compost?.....	3
Composting benefits:.....	3
The compost heap	3
What can be composted?	3
Do not compost.....	3
A basic approach to composting	3
How Do You Tell When compost is finished?	3
Screening the compost.....	4

Part 2 - Detailed Information

What is soil?	5
What is good, healthy soil?	5
How do I test the soil?.....	5
How do I interpret the results?.....	5
Common Organisms in the Compost Heap	6
Should I buy or build a composter?	7
How big should the composter be?	7
Bin placement	7
How to build a wooden compost bin	7
Compost tea	7
Making compost tea.....	7
How to build a wooden compost bin (Click for Link)	7
Leaf mould	8
Making leaf mould	8
Grasscycling	8
How to begin.....	8
Common questions about grasscycling.....	8
Green manure.....	9
The benefits of green manures	9
Mushroom compost	9
How is mushroom compost used?	9
Where can I get mushroom compost?.....	9
Frequently asked questions	10

PART 1 - BASIC COMPOSTING

What is compost?

Compost is a rich mix of organic matter such as kitchen waste, plant remains, leaves and grass clippings and animal manure piled together so that it rots down to a fine, crumbly consistency. Compost is a premium soil conditioner, replacing what has been stripped from the soil through cultivation. It provides vital nutrients, while improving soil texture and drainage. Organic matter will turn into a dark-coloured humus and eventually stabilize (or not breakdown further) after a period of time.

Why should I compost?

Organic materials are a valuable resource in the garden as either compost or mulch. Mulches and compost improve soil texture and plant health, prevent erosion and hold moisture and nutrients. Their production and use in this way can enable a typical household to reduce the amount of garbage they send to the landfill by one third to one half. Finished compost made from household wastes is free to the householder.

Waste diverted to composting or mulching saves the City of Calgary (and ultimately the taxpayer) the cost of collecting our organic material and disposing of it. Landfill space is conserved and climate change inducing greenhouse gases are reduced.

Composting benefits:

- Recycles organic waste
- Reduces pressure on landfill sites
- Saves the city (and ultimately the taxpayer) money
- Creates a free soil conditioner
- Saves money on other fertilizers
- Reduces the need for chemical use
- Reduces the need to use scarce resources like peat in the garden
- Suppresses plant disease
- Makes more nutrients available to plants
- Improves soil structure and texture (helps break down heavy clay soil)

The compost heap

Compost can be made in either a pile or in a bin. Bins or composters help keep a compost pile neat, provide some weather protection, and will keep out rodents and pests. They are recommended for a close urban

environment. Composters can be made or purchased.

What can be composted?

Greens (nitrogen-rich)

- Fruit and veggie scraps
- Banana peels and apple cores
- Corn cobs (chopped)
- Coffee grounds
- Tea bags
- Plant debris
- Weeds that have not gone to seed
- Tree fruit and evergreen needles
- Flowers

Browns (carbon-rich)

- Coffee filters
- Dried leaves or grass
- Dryer/vacuum lint
- Cat and dog hair
- Human hair
- Wood chips/shavings
- Straw
- Newspaper
- Wine corks (non-synthetic)
- Bird cage cleaning
- Peanut hulls

Other materials that can be added in moderation

Algae, blood meal, bone meal, cotton rags, feathers, felt waste, granite dust, hay, hops, leather waste & dust, leaf mould, manure, muck, peat moss, rope (non-synthetic), sawdust, seaweed, soil, straw, string (non-synthetic), wood ash, wool, rags (non-synthetic).

Do not compost

- Meat, bones, fish scraps: these materials attract dogs, cats, insects & rodents and take a long time to break down
- Oil, fatty material, dairy products: oils and greases take a long time to break down and they affect the breakdown of other materials too; they also attract insects
- Pet litter: may contain disease organisms harmful to humans
- Diseased plants: the heat of a home compost pile may not kill the diseased organisms or any insects or eggs infecting a plant
- Dishwater: most dishwashing soaps contain perfumes and greases
- Barbecue ashes/coals: highly resistant to decomposition and contain excessive amounts of sulphur

A basic approach to composting

Whether you use a DIY or a store-bought compost bin, these basic steps are important to ensure that your recipe of garden and kitchen wastes decomposes without offensive smells or attracting unwanted pests.

1. Mix greens and browns, around 50 percent of each by volume
2. Add several handfuls of garden soil or finished compost (rich with microorganisms)
3. Moisten the pile thoroughly with water
4. Aerate by turning the pile once a week
5. Add moisture and turn as needed. Keep the pile moist and aired.
6. Cover the pile to keep pests & kids out

For more information, read **The Composting Process in Part II** for more details.

How Do You Tell When compost is finished?

For home composting purposes, compost may be assumed to be fully “finished” when a number of indicators are obtained. Stable compost has been described as dark brown or greyish black in colour, with a sweet, earthy smell and a loose, crumbly texture that feels and looks like topsoil. Some large pieces remain but everything’s a relatively uniform dark brown/grey colour. The centre of the pile is no longer hot, and if you turn the pile it no longer heats up.



Finished, screened compost. Ready for mulching or digging into the garden.

PART 1 - BASIC COMPOSTING



This compost is almost finished. Screening will remove sticks, straw and any unfinished material.

Timing is everything. Be wary of using fresh compost too quickly, as it may rob plants of valuable nutrients if it is not fully decomposed. It is better to leave it for several weeks until you are sure the microbial life has died down completely. Alternatively, you may opt to do a “bag test” as described below.

The bag test. Compost readiness can also be tested through a “bag test”. Place a handful of compost in a zip-lock bag and leave it for a week. At this point open the bag and have a sniff. If it smells of ammonia or sourness, then the microbes are still at work and the compost still needs time to mature. Test the compost again in several weeks.

Screening the compost

If using compost for mulch, you may want to screen it. People planning to dig their compost into the soil do not need to be as concerned with screening, although it can help with removing large materials that haven't completely decomposed. Screens are commercially available but it is easy enough to make your own. Simply build a simple frame and stretch 1/2 inch wire mesh over it. Push finer material through the mesh, removing larger pieces that can be either dug into the garden or put back into the compost heap.



This homemade screen was built to fit on a wheelbarrow. With a little pressure, compost falls between the screen, ready for use.

Using finished compost

There are a variety of uses for finished compost. Its most beneficial use is as a soil conditioner incorporated into an ornamental or vegetable garden or spread on a lawn as a top dressing. Though low in nutrient value compared to chemical fertilizers, compost nutrients are in a slow release form due to their chemical bonding with organic matter. Mixed with garden soil, it will help to improve its water retention properties, its workability and pH buffering capacity. Materials in the compost that have not really broken down, such as woody twigs, may be screened out and put back into the compost pile.

Finished compost can also be used as a potting soil amendment for house plants. The caution here is that it should be completely sterilized first through heat treatment in order not to infect house plants with insects that migrate into the compost pile during its later cooler stages. These insects are useful in the further breakdown of organic material in a compost pile, but are a nuisance around house plants.

As previously stated, the volume of finished compost produced is very small in comparison to the volume of the original waste materials. It can be used virtually any place in the garden. The more usual problem with experienced home composters is an insufficient quantity of the material rather than an oversupply.

Use compost as mulch that can be spread on top of the garden in early spring and late fall.

PART 2 - DETAILED INFORMATION

What is soil?

Soil is made up of four main components: rock or mineral particles, organic matter, air and water. Rock and mineral makes up roughly 90% of the soil, while the other 10% is comprised of organic matter.

Although only comprising 10% of soil, the importance of organic matter cannot be understated. It is organic matter – the various stages of decomposing plant residues, leaves, animal manure, et cetera – that makes the soil work. Without it, a soil will quickly deteriorate, and unhealthy soil creates unhealthy plants and people.

The rock and mineral component is comprised of silt, sand and clay. All soils have varying proportions, influencing the soils ability to retain water, nutrients and air. Any extreme is undesirable. Sandy soils are prone to rapid drainage and nutrient loss, while clay soils suffer from poor drainage, excluding air, water and thus, nutrients.

What is good, healthy soil?

Good soil has equal parts of silt, sand and clay, often referred to as loam. In an ideal soil, the silt, sand and clay particles are grouped together with organic matter to form large particles called aggregates.

Healthy Soil = Healthy Plants. Healthy plants are dependent on good soil, carbon, hydrogen and oxygen (provided in the form of water and air) and a number of essential major nutrients and micronutrients. Major nutrients include nitrogen (N), phosphorus (P) and potassium (K), together known as N-P-K, as well as calcium, magnesium, and sulfur.

These are the macronutrients. Compost raises the level of organic matter and provides nitrogen, phosphorus and potassium. Compost increases the availability of existing soil nutrients while also supplying additional amounts already contained in the compost.

Micronutrients are also called trace elements because only a small amount is required for healthy plant growth. They include iron, boron, manganese, copper, zinc and molybdenum. Crops that are void or deficient in micronutrients may fail to provide humans with dietary needs, even if the plants don't appear to be suffering. Deficiencies can be avoided by routinely adding compost.

How do I test the soil?

Test 1: If you are unsure of the type of soil you have, a simple jar test will help. Take a wide-mouth jar and fill it half-full of the soil you are testing. This is best accomplished by taking a 15 cm (6inch) slice of soil from your garden, making sure that you have at least 2 cups of mixed soil. Now, fill the jar until it is nearly full. Remove any large pebbles, sticks, or plant parts. Add a teaspoon of salt to aid the clay in settling out and seal the jar. Shake the jar vigorously until the soil is well mixed in. Watch the different components settle out and get ready to mark the different layers with a marker. Sand is heaviest so it will settle out first, usually within 30 seconds. Make your mark. Silt will take up to 30 minutes to settle out and after marking it, leave the jar to settle overnight. After 24 hours you will have noticed that the final layer has been formed. This is the clay layer. To calculate the percentages of each component, measure the height of each layer and divide the total height into the height of one layer; multiply the result by 100.

Test 2: You can also test the soil by rubbing a sample between your fingers. If it feels gritty and crumbles in your hand, there is a lot of sand. If, on the other hand, the soil smears between your fingers and feels smooth, the soil has silt and clay. A moist sample will roll into a ball if there is a high proportion of clay.

How do I interpret the results?

Soil analysis is important if you wish to manage the nutrients in your soil to get the best results for your plants. The results can help you plan your garden by helping you choose the type and quantity of fertilizers and soil amendments that are best for the plants in your garden. The soil analysis may emphasize the physical, chemical, or biological properties of the soil sample that you analyze yourself or send to a soil lab.

Organic Matter

» Organic matter is important for the formation of soil structure, reducing compaction, and retaining plant nutrients. The more organic matter in the soil, the better. Hard and/or very light coloured soils usually mean it's low on organic matter.

» Compost is an example of organic matter because it “contains carbon” that comes from dead plant material. Manure, sawdust, or rice hulls are also organic matter. These materials, however, will take longer to breakdown and could reduce nitrogen availability in the short-term. You may also grow cover crops and incorporate them into the soil.

» Not all organic materials are of high quality. Compost is generally considered a high quality organic matter.

» When the results show that the soil has less than 2% organic matter, add more organic matter. When it is between 2 and 5%, add high quality organic matter. For example, add 50-100 lbs of compost per 100 sq. ft. of garden.

» The recommended amount to maintain organic levels is 25-50 lbs per 100 sq. ft. Adding small amounts (e.g., 25 lbs per 100 sq. ft.) can also promote biological activity (growth of beneficial microorganisms and fungi) in the soil that can help break organic matter into humus.

Food does not decompose into soil in the landfill.

pH or the acidity or alkalinity level

» The pH scale ranges from 0 to 14, where 7 is neutral (the pH of distilled water).

» Below 7 is acidic; lime your soil to increase its alkalinity. Above 7 is alkaline.

» Most crops make maximum use of fertilizers and soil amendments when pH is between 6.0 and 7.0. Most gardeners aim for 6.5.

» Learn what plants like highly acidic (such as azaleas) or alkaline soil and match the plants with the soil or vice versa.

PART 2 - DETAILED INFORMATION

Phosphorus, potassium, and nitrogen are the three major macronutrients required by crops.

- » Phosphorus is important for seed germination, root development, vegetable and fruit maturity and quality. It improves nitrogen absorption by the plant.
- » Potassium is important for the plants' over-wintering ability. Disease resistance, growth, and longevity. It is important especially for legumes because it helps soil bacteria around the roots to fix nitrogen for the legumes.
- » Nitrogen and Nitrate can be requested in a soil test because they may not be part of the typical test package.

Calcium and Magnesium

- » Calcium is important for cell nutrition. Magnesium is important for plant photosynthesis. If tests show that calcium is low compared to magnesium, calcitic lime is added to increase the soil pH. If magnesium is low, Dolomitic lime is added to increase the soil pH.
- » The pH rating will be high when calcium is high. The ability of the plant to absorb some nutrients will be impaired and you may have to add some sulfur – which is found in gypsum - to remedy the deficiency.

CEC or Cation Exchange Capacity

- » CEC refers to the soil's ability to hold and release positively charged nutrients called cation. These are atoms or molecules with a positive electric charge, such as potassium, calcium, magnesium, and sodium.
- » The soil type, pH levels, and the amount of organic matter (e.g., compost) in the soil determine the CEC level. The higher the clay and organic matter content, the higher the CEC. Sandy soil has a lower CEC level.
- » CEC can range from 0 to 100, where 100 represent the capacity of pure humus to hold and release cations.
- » In general, you will want to increase CEC by adding good quality compost or planting cover crops. Building up

the humus level will increase CEC and this process may take several years.

The Composting Process

- » Composting is a lot like cooking. If you have the right proportions of the right ingredients, you'll get fairly good results. Carbon and nitrogen are essential elements to the compost heap and getting the correct balance is necessary for making good compost. The joy, though, comes from using materials you have on hand and still getting pretty good results. We don't need to get hung up about not have the "perfect" mix because rarely does anyone have the perfect mix.
- » With good mix of carbon and nitrogen rich materials, along with sufficient moisture and the beneficial bacteria that thrive in these in environments, the compost process begins. Aerating (stirring, turning, poking) the pile and keeping the moisture levels right (see below) will ensure that the compost pile will work, as it should.
- » Moisture makes it happen. Keeping the compost pile moist is essential if composting is going to happen. Dry piles just sit there, while overly wet piles can begin to stink. Ideally, the compost pile should be able to "breathe" and this is best judged when the material feels like a wrung-out sponge. If dust kicks up when you stir the pile it is probably too dry. If the pile smells sour or like ammonia it is too wet.



Above: The Wingdigger is an easy to use compost aerator. A pitchfork, broken hockey stick or any garden implement may be used to stir or turn the compost heap.

Common Organisms in the Compost Heap

- **Psychrophiles** ("cold-loving"): low temperature bacteria that work during the frosty months from late fall to early spring.
- **Mesophiles** ("medium-temperature-loving"): mid-temperature bacteria that thrive at temperatures of 20-30 degrees Celsius.
- **Thermophiles** ("heat-loving"): the heat-lovers that work at temperatures of 40-70 degrees Celsius. They are the workhorses of biodegradation.
- **Fungi**: such as actinomycetes and streptomycetes, produce natural antibiotics.
- **Nematodes**: as the most numerous animals on the planet, nematodes prey upon bacteria, protozoa and fungal spores.
- **Mites**: feed on yeasts that are in fermenting material.
- **Springtails**: feed on fungi
- **Wolf spiders**: do not build webs but roam freely, feeding on arthropods.
- **Cenjtapedes**: commonly found in healthy soil communities.
- **Ground beetles**: feed on various organisms, seeds and vegetative matter.
- **Slugs and snails**: aid in the decomposition of organic matter.
- **Worms**: consume organic matter and pass on their worm castings (worm poop)

PART 2 - DETAILED INFORMATION

Should I buy or build a composter?

The correct decision as to what composter to build or buy will depend upon a careful consideration of a number of factors such as the amount of material to be composted, the amount of room available, the cost, its appearance and the amount of time and labour will be devoted to operating it. Home composters can be made of various combinations of wood, plastic, and metal.



Garden Gourmet Composter – commercially available compost bin made from 100% recycled plastic. These bins are available year-round at the Green Calgary Store.



A homemade bin made from wood from used wooden pallets.

How big should the composter be?

This will depend on the amount of material you have and the amount of room available for your bin(s). With an average Calgary lot, most of which is given over to lawn, one to two holding type bins should be adequate. As decomposition occurs in the compost bin, material shrinks to a large extent. Finished compost will only occupy from 10% to 40% of the original waste volume.

Bin placement

A composter should be placed on a well-drained site to prevent the material from becoming water logged. A sunny location will help it heat up and speed decomposition. In an urban setting, a composter should be sited in a yard so that its presence and operation is not a nuisance to the neighbours.

Convenience should be the number one consideration when selecting a site. If the sunniest place in your yard is 100 feet from the door, it might not get used, especially in winter. Try to pick the sunniest convenient spot for you bin. This way it will get used, even if decomposition isn't happening at the fastest rate.

How to build a wooden compost bin (Click for Link)

- > [Least expensive wood pallet instructions](#)
- > [Sturdy 3-bin system instructions](#)
- > [Wood & Wire bin instructions](#)
- > [Low impact wire mesh instructions](#)
- > [Concrete block bin instructions](#)

Compost tea

Compost tea is sprayed directly onto crop leaves, restoring beneficial microbes to the soil and plant. Beneficial microbes protect plants from fungal infections and other disease-causing organisms. Compost tea also improves nutrient uptake and retention, soil tilth and root depth.

Starting with rich compost, a compost tea brewer can grow and multiply the beneficial microbes by 1,000 times or more simply by feeding and protecting them for 72 hours under the right conditions.

Making compost tea

Step 1: Once you have fully mature, earthy-smelling compost, it is time to brew compost tea. You will need:

- A bucket (5-gallon plastic bucket works well)
- A few aquarium supplies
- A pump large enough to run three bubblers or air stones
- Several feet of tubing
- A gang valve which distributes the air from the pumps to the tubes that supply the bubblers
- Three bubblers
- A stick to stir the mixture
- Unsulphured molasses (pref. organic)
- An old pillow case, tea towel or stocking to strain the tea.
- An extra bucket is handy to decant the tea
- If you are using municipal water it is important to leave the water sitting out for several hours to evaporate off the chlorine. Chlorine will kill off the beneficial organism in the compost, so make sure the water is not straight from the tap.

Step 2: Once you have safe water, start by loosely filling the bucket half full with compost. Cut a length of tubing and attach one end to the pump and the other to the gang valve. Cut three more lengths of tubing, so that they easily reach from the rim to the bottom of the bucket. Connect each one to a port on the gang valve and connect a bubbler to each of the ends.

Step 3: Hang the gang valve on the lip of the bucket and bury the bubblers at the bottom, under the compost. Fill the bucket to within 7.5 cm (3 inches) of the rim with water, and start the pump.

PART 2 - DETAILED INFORMATION

Step 4: Once it's going, add 1 oz. of molasses, stirring vigorously. The molasses feeds the bacteria, helping the beneficial species get well established. After stirring, rearrange the bubblers so they're on the bottom and well spaced. If you can, stir the teas several times each day. Stirring moves more of the organisms from the compost and into the tea. The bubblers will have to be repositioned after each stirring.

Step 5: After 3 days remove the aerating equipment. Let the brew sit for 15 or 20 minutes until most of the compost is settled out, straining into the second bucket or into a sprayer. You'll have 2 gallons of tea. Use the tea within one hour if possible. You can put the soils back into the compost pile.

Step 6: If your garden is fairly healthy, spraying the plants with compost tea in the spring will carry the benefits throughout the season. If you've had problems, it may be worth spraying monthly to increase the number of beneficial organisms. To prevent damping-off, spray the soil with tea as soon as the ground is planted.

Note: aeration equipment is important to avoid the organisms from using up all of the oxygen and creating an anaerobic soup. Anaerobic tea may harm your plants. The tea must brew for two or three days and then used immediately. Rainwater is also best for the compost tea process.



The compost tea set up.

Leaf mould

Leaf mould is one of the longest lasting organic materials. It improves the physical structure of the soil, helping to improve soil fertility. Leaf mould can be dug into the garden or used as

moisture-retaining surface mulch. Using leaf mould can replace the need to use peat – a resource that takes thousands of years to form – or shredded bark to condition the soil. Using leaves that fall annually is a sustainable and free option for improving soil condition.

Making leaf mould

Piling leaves up in some form of a container and leaving them to rot down create leaf mould. The ideal container is at least 1 m X 1 m in size, and this can be done in a wire mesh cage, or even in a plastic garbage bag. Leaves are best collected after a rainfall, when the leaves are well soaked. Stuffing the moist leaves into the bin or bag and leaving them for a year, watching to make sure they don't dry out will yield a young leaf mould that will help to improve your soil.

Grasscycling

What is grasscycling?

Grasscycling is the simple practice of leaving grass clippings on the lawn when mowing. Once cut, grass clippings first dehydrate, and then decompose, quickly disappearing from view.

Grasscycling:

- » Encourages a healthier lawn by returning nutrients to the soil beneath the lawn.
- » Reduces work because you don't have to bag or rake and dispose of your clippings.
- » Saves you money because you don't have to pay for disposal of your clippings.
- » Benefits the environment by naturally recycling the clippings.
- » Simply put, grasscycling is good for your lawn and can help you reduce waste. Learn how easy it is for you to begin grasscycling.

How to begin

Proper mowing is required for successful grasscycling. Cut grass when the surface is dry, and keep mower blades sharp. Follow the "1/3 Rule": mow your

lawn often enough so that no more than 1/3 of the length of the grass blade is cut in any one mowing. Frequent mowing will produce short clippings that will not cover up the grass surface. You may have to cut the lawn every 7 days when the lawn is growing fast but only every 7 to 14 days when the lawn is growing slowly.

You can grasscycle with most any mower (push, electric or gas). The mower collection bag should be removed to allow clippings to drop on the lawn. However, if your mower does not have a safety flap covering the opening where the bag fits into the chute, it is important that you purchase a retrofit kit from your local retailer.

Most lawnmower manufacturers have developed "mulching" mowers which cut grass blades into small pieces and force them into the soil. These types of mowers are effective in grasscycling and have become very popular. They are sold at many yard and garden equipment retailers, nurseries, and home supply stores.

Common questions about grasscycling

Does Grasscycling Cause Thatch? No!

Research has shown that grass roots are the primary cause of thatch, not grass clippings. Thatch is composed primarily of roots, stems, rhizomes, and other plant materials. These plant materials contain large amounts of lignin (fibrous material) and decompose slowly. Grass clippings are approximately 80-85 percent water with only small amounts of lignin, and decompose rapidly.

Does Grasscycling Spread Lawn Disease? No!

Improper watering and fertilizing have a much greater impact on disease spread than grasscycling. If a desirable environment for turf grass disease is present, infestation will occur whether clippings are collected or not!

Will Grasscycling Make My Lawn Look Bad? No!

If a lawn is properly mowed, watered, and fertilized, grasscycling can actually produce a healthier looking lawn. It is important to cut the lawn frequently to produce small clippings that will decompose quickly. If a lawn is not cut frequently and clippings are left on the lawn, it will produce a "hay-like" look, which can be unsightly.

PART 2 - DETAILED INFORMATION

Green manure

» Green manures differ from compost in that they are plants, such as rye, buckwheat or clover. Their regular use can have a transformative effect on soil and the plants that grow in it. The process is straightforward – seeds are sown, plants are allowed to grow for a certain amount of time, and then they are dug into the soil. As they decompose, nutrients are added to the soil.

» Green manures are particularly useful when sown in late summer or early autumn. The ground is still warm and if it lays bare, nutrients may be simply washed away if nothing is there to take them up. Hardy plants like clovers, tares, and grazing rye are left to grow over winter, digging them into the soil the following year. If you have extra room in the garden, you may want to plant a crop in the spring and let it grow for an entire year. The soil that receives the nutrients will be much improved.

» Green manures are also useful when reclaiming poor land, or when creating a new garden. Depending on the seed type, they can either be planted in rows (larger seeds) or broadcast sowed (smaller seeds) – where seeds are broadcast over the ground and raked in.

» When plants are young, the plant matter will decompose quickly. Plants should be dug in before they get slightly woody and tough. Digging in is best done with a sharp spade. Plant material should be dug in 5 to 10 inches. Once a green manure has been dug in, some time must elapse before planting the desired crop. This can take several weeks but it depends on the maturity of plants, how much they have been shredded, and the temperature of the soil. A tender mustard crop in the height of summer can have a turn around time of one to two weeks.

The benefits of green manures

Green manures protect and enhance the soil. They protect the soil from nutrient loss by taking up nutrients that are otherwise carried away by rain. A bushy green layer is also great at suppressing

weeds. Structure is improved when organic material is added. Some green manures take up nitrogen from the air, improving the soil characteristics. Many have extensive root systems, improving drainage and bringing up minerals that other plants can't reach.

Mushroom compost

What is mushroom compost?

» Also called Spent Mushroom Substrate, mushroom compost is a by-product of the mushroom growing process. It is not compost made with rotted mushrooms. Rather, it is made from a combination of some of the following materials: hay, straw, straw horse bedding, poultry litter, cottonseed meal, cocoa shells, gypsum, and sphagnum peat moss.

» After mushrooms are harvested, the mushroom compost is removed and piled in large heaps outdoors where it continues to decompose for one or more years. It may be steam treated by the farmer prior to removal to eliminate any pest, pathogens and weed seeds as is the case in some American states (e.g., Pennsylvania) that require this procedure if the compost will be used in farms as a soil amendment.

» Like other composts, mushroom compost is an organic soil amendment rich in nutrients, has high water and nutrient holding capacity, and exhibits no nitrogen draw down problems.

» Mushroom compost is considered to have a high root-burning potential. Why? Because of its high salt content and acidity that can be harmful to young and tender plants as well as to some seeds. It should be used sparingly to avoid burning the plant roots to the point where they cannot absorb water easily.

How is mushroom compost used?

» According to the Calgary Horticultural Society, "let the mushroom compost sit for a few months to let it mellow."

» Jim Hole recommends blending no more than a 2 cm layer of spent

mushroom compost into the top 10-cm layer of the garden soil.

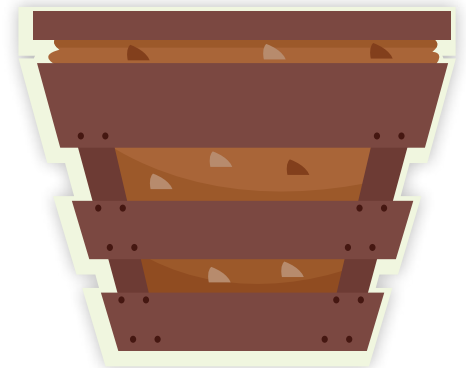
» It may be applied early spring and again in late fall before putting the garden to bed.

Where can I get mushroom compost?

» All Seasons Mushroom Inc. (formerly Rol-land Mushroom Farm), on the east side of the QEW (Hwy 2), half a miles south of the Crossfield overpass.

» For more information, call 403-946-4395. May is usually the month of its Customer Appreciation Week, when mushroom substrate is given away free if you load your own vehicle. It is available in bulk, in bags or you can bring your own containers.

Over 50% of household waste could be composted!



FREQUENTLY ASKED QUESTIONS

Frequently asked questions

Can I compost weeds or diseased plants?

Broad leaf weeds that have not gone to seed may be safely composted at home. Care must be taken with those that have. Weeds that spread by rhizomes (runners), such as crab grass, should not be placed into a compost pile fresh, even if shredded. They will be acceptable if they are first dried out thoroughly. Spreading them out in the sun can do this. Placing them on pavement is an effective method for quick drying.

Finally, diseased plants should not be added to a home compost pile because of the possibility of the disease organisms surviving the composting process and propagating further as the finished material is used throughout the garden.

Can I compost plant material treated with herbicides & pesticides?

This is not recommended, as these compounds may persist in the compost pile, spreading to the soil and affecting the beneficial organisms.

Can I compost paper?

Small amounts of certain types of paper, such as shredded newsprint pulp, coffee filters and tea bags

are acceptable in a compost pile. Paper has no structural strength when wet and will reduce the overall percentage of air voids in the composting mixture. Due to its cellulose content, it also takes longer to break down than other organic materials. Glossy magazines should not be composted because the clay coating on the stock inhibits decomposition and some of the printing inks used are toxic. Paper stock from newspapers (pulp) and magazines are best dealt with through the recycling depots.

Can I compost pet wastes?

Care must be taken when dealing with pet wastes. Wastes from dogs, cats and other carnivores may contain human pathogens that survive the home composting process. These materials should therefore not be used in food gardens.

A digester may be used to deal with pet waste though. This is a separate container from the compost bin and when used according to the directions, is very effective in dealing with pet waste. A hole is dug beneath the digester unit

and pet waste is added until the hole is full. The unit is designed to compost the waste anaerobically, releasing the nutrients into the surrounding soil. Once the bin is full, it is moved to another place in the yard to start the cycle over again. Note: this unit is NOT to be used in vegetable gardens!

Pet wastes from certain herbivores such as rabbits, guinea pigs and hamsters, however, are not pathogenic and may be composted in the usual manner.

What is the ideal size of the materials put into the compost pile?

Materials should be broken into small pieces and well mixed to evenly distribute the organic materials and create air voids. If materials are left too large, they will take an extremely long time to decompose.

Do I need a bin or container to compost?

No. The composting process is a natural one and will take place in an open pile as well as a compost bin. Bins or composters help keep a compost pile neat, provide some weather protection, and will keep out rodents and pests. They are recommended for a close urban environment. Composters can be made or purchased.

How long does it take to produce finished compost?

Under typical Calgary conditions, with a moderate amount of care and attention, it will take a growing season to produce stable, humus like, and "finished" compost. For people not overly diligent with their pile, compost can take up to two years to be produced.

How do I deal with sod?

Stack the sod upside down in a pile and cover with a tarp for several years.

Can I compost in winter?

Bacterial activity slows down drastically under typical Calgary winter conditions. Some heat may be generated in a home composting operation as quantities of fresh household waste are added to the pile. Any rise in pile temperature is very short lived however, and conditions will soon revert to ambient.

Materials may continue to be added to the pile over the winter. As the pile is in an essentially dormant state, there will be very little volume reduction associated with the new materials. If the

composter fills up, kitchen wastes may be stored outside in sealed containers or plastic bags and left to freeze. Odour is not a problem with these materials in a frozen state. In the spring, the wastes may undergo a number of freeze thaw cycles that will aid in the breakdown of their cell structure once they are placed in the compost pile.

A compost pile will become active again as ambient temperatures warm up. The kitchen wastes that were stored over the winter and added to the pile should be mixed with drier materials such as leaves or straw to absorb the excess water generated from freezing.

How do I prevent or solve an odour problem?

A compost heap that's too wet can cause some problems, such as foul smell. Aerating (stirring) the pile and allowing it to dry out will help with these problems. Adding dried leaves, small quantities of sawdust or shredded paper will help to reduce moisture. Dry topsoil sprinkled on top of a compost pile will also act as an absorbent for offensive odours.

Another possible reason for odours from a home compost pile is the addition of improper materials such as meat, grease and dairy products. In addition to being slow to break down, they also quickly turn rancid. The solution in this case is to not compost these materials or to remove them from the pile if already present.

What can be done with the ammonia smell?

There may be too many greens (too much nitrogen). Add more browns.

Are pets, rodents or other animals attracted to a compost pile?

Animals are typically attracted to a compost pile for two reasons: food and warmth. Cats, dogs and rodents will not be attracted if meat, bones, fish and other food products eaten by these animals are not placed in the compost pile. Maintaining a very hot compost pile will also aid in keeping animals away.

In the winter, small rodents, such as mice and voles, will be attracted by the insulating qualities of the pile. Keeping the pile moist (with a wrung out sponge) will deter small rodents from getting too comfortable. Turning the pile often will also help.

FREQUENTLY ASKED QUESTIONS

How do I prevent attracting flies and other insects?

Flying insects are attracted to kitchen wastes with high sugar content such as fruit and vegetable peelings. These materials should be buried immediately and covered inside a compost pile. The maintenance of a hot compost pile will also destroy insects at the larval stage.

How can I get rid of ants in the compost pile?

Ants are attracted to compost piles that are too dry. Add water and some fresh cucumber peels.

How can I get rid of pale green mold in the compost pile?

The pile needs more oxygen. Turning it will help get rid of pale green mould.

How can I control the temperature of my compost pile?

If it is cold, the pile may be too small; make the piles bigger. It may need more moisture; add water and cover the top. It may be poorly aerated; turn the pile. It may lack greens; mix in greens. If the pile is too hot, reduce the pile size.

Do I need to use a commercial compost starter or an accelerator?

No. Commercial compost starters or accelerators sold as such typically contain a source of nitrogen or protein or dehydrated bacteria. No commercial nutrient activator is required if care is taken to ensure that the composting mixture contains the proper C:N ratio. If an additional nitrogen source is required, high nitrogen "green" materials such as grass clippings may be added or a natural activator such as bloodmeal or bonemeal sprinkled in. On a weight basis, the latter are more economical than commercial nutrient starters.

It is also unlikely that any commercial bacterial based activator is any better adapted to decompose the waste materials than those already present. If required, garden topsoil or finished compost may be added to the composting mixture to introduce more of the composting microorganisms to the waste materials.



For info on Compost Workshops and a helpdesk to answer your composting questions call: 403.230.1443 ext 222.

greencalgary.org

Further reading

Compost

Clare Foster, Cassell
Illustrated, Great Britain, 2002

Compost This Book! The Art Of Composting For Your Yard, Your Community, And The Planet

Tom Christopher and Marty Asher, Sierra Club. 1994

Easy Compost: The Secret To Great Soil And Spectacular Plants

Beth Hanson, Brooklyn Botanic Garden Publications. 1997

Let it Rot! the gardener's guide to composting

Stu Campbell, Storey Communications, Inc. 1990.

Rodale Book of Composting

Deborah L. Martin and Grace Gershuny, editors, St. Martin's Press, New York, NY, 1992

The Real Dirt: the complete guide to backyard, balcony and apartment composting

Mark Cullen and Lorraine Johnson, Penguin Books USA Inc., New York, NY, 1992

Organic Gardener's Composting

Steve Solomon. Available as a free download from the Soil and Health Library, at soilandhealth.org.

The Intelligent Gardener: Growing nutrient-dense food

Steve Solomon with Erica Reinheimer, New Society Publisher, Gabriola Island, BC, Canada, 2013

Compost: The natural way to make food for your garden

Ken Thompson, DK Publishing, New York, NY, 2007



green calgary



Sponsored By:



**TD Friends of the
Environment
Foundation**



THE CITY OF
CALGARY
WASTE & RECYCLING
SERVICES

For more information or to sign up for workshops, or host your own presentation, contact Green Calgary's Help Desk. greencalgary.org or call us M-F from 9 am – 5 pm at 403.230.1443 ext. 222.

This guide was developed by the Green Calgary Association. Copyright 2015.