

Clean Home and *Green Garden*



*Guide to healthy home maintenance
and ecological gardening*

New edition

Montréal 

Introduction



More and more, Montrealers are becoming aware of the dangers involved in using housekeeping products. In fact, several cleaning products contain toxic components that may contaminate the air inside the house and affect the health of its occupants. They may also pollute natural environments once they are discharged into wastewater. Fortunately, it is possible to keep a house clean without using such products. This guide provides useful information, practical tips and several recipes for ecological cleaning products.

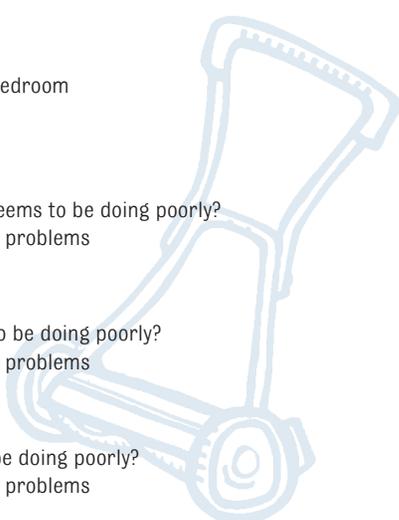
Moreover, the use of pesticides to maintain lawns and flower beds is also of concern to people. Considering the risks they represent for human health and the environment, Montréal has adopted a by-law that prohibits their use. Despite this prohibition, some products that are not considered very toxic may be used at all times. However, the use of low-impact pesticides is always a last-resort solution. Before applying such pesticides, other control methods may be used first.

This guide proposes several alternatives. Thus, you can use ecological household products to keep your house plants and outdoor plants healthy and enjoy a lush green lawn while protecting the environment.

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Ecological housekeeping

Every year, the average Canadian family uses between 20 and 40 litres of cleaning products. A good number of these products contain harmful substances that may affect the nervous system or even provoke allergies and respiratory problems. They may also contain ingredients that are potentially carcinogenic. Moreover, these substances make their way into the environment.

Here are some simple recipes that you can use instead of toxic cleaning products to clean your house in an ecological manner. Not only are these formulas efficient, they can also save you money!



If you do not want to make your own housekeeping products, ecological cleaning products are available on the market. You can purchase such products from natural food stores, certain grocery and drug stores, as well as specialty stores.



Ecological cleaning kit

Baking soda (sodium bicarbonate) is a slightly abrasive powder that cleans, deodorizes, whitens and softens fabrics. You can buy it in grocery, drug or other stores.

Borax, a mineral of natural origin, has cleaning, deodorizing and disinfecting properties. This product is available in natural product stores and drug stores.

Washing soda (sodium carbonate) effectively dislodges dirt and grease, and removes stains. This product is available in certain natural food stores.

Essential oils are aromatic substances extracted from several plants. A large variety of fragrances (citrus fruits, lavender, pine, mint, etc.) is available in drug stores and natural food stores. **Warning: Essential oils can dissolve certain plastics.**

Vegetable oil-based liquid soap contains natural oils that are easily biodegradable. You can purchase this product in natural food stores, drug stores or certain grocery stores.

White vinegar cleans, disinfects, deodorizes, removes grease, dissolves calcium deposits, and eliminates and prevents the development of mould. Moreover, it removes stains, whitens clothing, eliminates static electricity and softens fabrics. It is available in grocery stores.

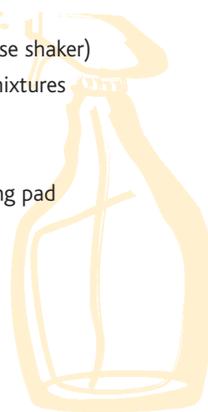


Warning

Wear rubber gloves when you use recipes containing borax and washing soda since they can irritate your skin. Also be careful when handling these products since they may irritate your eyes and respiratory passages. Note that borax and washing soda are toxic if ingested. Identify your mixes clearly and keep them out of the reach of children.

Additional material:

- ▶ two spray bottles (suggested sizes: one 250 mL and one 500 mL)
- ▶ a flexible squeeze bottle
- ▶ a shaker (such as a cheese shaker)
- ▶ labels to identify your mixtures
- ▶ cleaning cloths
- ▶ sponges
- ▶ cleaning brushes, scouring pad
- ▶ rubber gloves



Tips and recipes for the bathroom

Sink, tub and ceramic tiles

Prepare an effective **scouring cream** that is pleasant to use by combining 60 mL (1/4 cup) of sodium bicarbonate, 30 mL (2 tablespoons) of borax and 30 mL (2 tablespoons) of washing soda. Add enough liquid soap to make a creamy paste. Mix well. Scent mixture with about 10 drops of essential oil. Transfer mixture to a squeeze bottle. Place some of the scouring cream on a damp sponge or cloth. Clean and rinse generously.

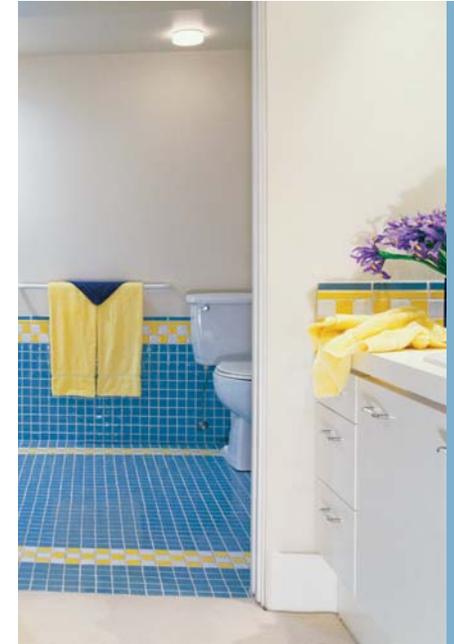
Note: The scouring cream may thicken over time. To return it to its original consistency, simply add a little water.

You prefer using a **scouring powder**? Combine 250 mL (1 cup) of sodium bicarbonate with 60 mL (1/4 cup) of borax. Store this mixture in a shaker. Shake some of the mixture on the dirty surfaces and rub with a damp sponge or cloth. Rinse.

Shower

Remove dirt, traces of soap and calcium build-up from your glass shower doors using a damp sponge or cloth dipped in vinegar, then rinse.

To remove calcium deposits from the shower head, use an old toothbrush dipped in vinegar. If needed, soak the shower head several hours in vinegar that has been diluted slightly with hot water.



Acrylic surfaces

Clean acrylic bathtubs and showers regularly with liquid dish soap. If needed, scrub stains with a soft brush.

Antimould treatment

Eliminate mould by scrubbing surfaces with a damp sponge soaked with vinegar, then dry.

Did you know that ...



The excess interior humidity may cause mould and mildew. Solvents to rid homes of these moulds contain chemical products that could be harmful if absorbed through the skin or inhaled.





Drains

Install filters in the bathtub and sinks to prevent hair from blocking drains. If the drain seems to be blocked, first try to unclog it with a toilet plunger. If this does not work, pour 60 mL (1/4 cup) of sodium bicarbonate into the drain, followed by 60 mL (1/4 cup) of vinegar. Let stand for 15 minutes, and then pour a full kettle of boiling water into the drain. This technique is very effective!

Did you know that ...



Products for drains are very corrosive and are dangerous poisons to be kept in the home. Moreover, they may have very harmful consequences for the environment.

Toilets

Use the **scouring cream** (p. 3) to clean your toilets. Rinse well.

To remove dirt from the basin, place some of the scouring cream on the brush and scrub.

Did you know that ...



Deodorizers may contain several chemical products that could pollute the air in your home. Scented products, once inhaled, could cause dry mouth, headaches, dizziness, irritated sinuses and sore throat, nausea and drowsiness. They may even cause asthma attacks or skin and eye irritations. Sensitive people should choose unscented household cleaners and deodorizers or make their own unscented cleaning products.



Deodorizers

Prepare a **spray deodorizer** by dissolving 1 mL (1/4 teaspoon) of sodium bicarbonate in 125 mL (1/2 cup) of hot water. Add a few drops of lemon juice and about 10 drops of essential oil to this mixture. Mix well and store in a spray bottle. Spray this mixture in a room to eliminate bad odours. This home recipe is an economical substitute for commonly sold deodorizers.

Prepare your own pot-pourri by placing dried flowers in a dish and adding a few drops of essential oil.

Mirrors and windows

Prepare a **cleanser for mirrors and windows** by diluting 45 mL (3 tablespoons) of vinegar in 500 mL (2 cups) of hot water. Keep this product in a spray bottle. Spray on dirty surfaces. Use a cotton cloth or newspaper to clean surfaces and make them shine.

For heavy cleaning, use half water, half vinegar.

Floor

Pour 60 mL (1/4 cup) of vinegar into a bucket containing 4 litres (1 gallon) of warm water. Clean the floor with a well wrung mop.

Tips and recipes for the kitchen



Microwave oven

To clean the microwave oven, heat water in a cup for about 2 minutes. If you want, add a slice of citrus fruit. The steam will dislodge the dirt. Simply wipe with a damp cloth.

To remove difficult stains, use a **sodium bicarbonate paste**. To prepare this paste, combine 45 mL (3 tablespoons) of sodium bicarbonate with 15 mL (1 tablespoon) of water. Rinse with a damp cloth soaked in vinegar.

Stove

Did you know that ...



Oven cleaners contain several toxic products that may burn your skin and seriously irritate your eyes and lungs.

Wash the outside of the stove with a **sodium bicarbonate paste** (see above). Use the same product to clean the sides, top and inside of the oven door. Rinse with a damp cloth soaked in vinegar.

To clean the bottom of the oven, prepare a mixture of 250 mL (1 cup) of sodium bicarbonate and 60 mL (1/4 cup) of washing soda. Spray the bottom of the oven generously with water, and then cover spots with the powder mixture. Spray



again and let stand overnight. The next morning, remove the mixture with a spatula. Rinse with a damp cloth soaked in vinegar. Baked-on spots may require the use of a scouring pad.

Sink

Clean the kitchen sink with a **sodium bicarbonate paste** (see above). Rinse thoroughly.

Practical tip



Is cleaning the oven a real chore for you? Make this task easier by placing an aluminum sheet under the heating element (taking care not to block the air vents).





Kitchen items

Automatic coffee machine and kettle

To clean the coffee machine, pour 250 mL (1 cup) of vinegar into the water container and turn the machine on. Rinse the machine by running it through a new cycle using only water. Rinse several times. Clean the kettle by pouring 250 mL (1 cup) of vinegar into it and boiling for a few minutes. Rinse thoroughly.

Baked-on casseroles

Pour 125 mL (1/2 cup) of vinegar into the dirty casserole. Add a little water, 5 mL (1 teaspoon) of sodium bicarbonate and 5 mL (1 teaspoon) of salt. Bring to a boil. Repeat as needed. This method is not suitable for cleaning aluminum pans since sodium bicarbonate may discolour them.

Cutting boards (plastic)

Rub the cutting board with a **sodium bicarbonate paste** (p. 5). Let stand for 15 minutes. Wash the cutting board with water to remove the paste.

Silverware

Place a sheet of aluminum foil in the bottom of the sink and place the items to be cleaned on it. Fill sink with very hot water until the silver items are covered.

Add about 15 mL (1 tablespoon) of salt and 15 mL (1 tablespoon) of sodium bicarbonate per litre of water. Leave items in water for several minutes (5 at most). You may smell sulphur. Rinse with hot water and let dry.

Note: In order for this method to be effective, the silver surfaces must be in contact with the aluminum foil. This cleaning technique is not suitable for silver plated items.

Copper and brass

Prepare a paste of 15 mL (1 tablespoon) of each of the following ingredients: flour, salt and vinegar. Rub with a soft cloth. Rinse with hot water and dry with a cloth.

Walls

Pour 60 mL (1/4 cup) of vinegar into a bucket containing 4 litres (1 gallon) of warm water. Wash the walls with this solution.

To remove stains, prepare a paste by combining 7 mL (1 1/2 teaspoons) of cornstarch and 2 mL (1/2 teaspoon) of water. Apply the mixture to the wall and rub with a damp cloth. Rinse.

Windows

Use the **cleanser for mirrors and windows** (p. 4).

Washing dishes (by hand and in the dishwasher)

Wash dishes by hand with a vegetable oil-based liquid soap. If you use a dishwasher, choose a detergent that is biodegradable and contains no chlorine or phosphates.

Rinse the dirty dish mop in a mixture of 250 mL (1 cup) of cold water and 30 mL (2 tablespoons) of vinegar.

Refrigerator

Place one box of sodium bicarbonate in the refrigerator and another in the freezer to absorb odours. Wash the exterior, the

Warning



If you do not wish to use certain cleaning products, do not throw them into the garbage, and never pour them down the sink. Instead, contact your borough office to find out where you can dispose of them safely.

interior walls, the shelves and the storage drawers regularly with a **sodium bicarbonate paste** (p. 5). Rinse with a damp cloth soaked in vinegar. Wash the tray under the refrigerator with the **scouring cream** (p. 3). Rinse well.

Floor

See page 4.

Drains

See page 4.



Tips and recipes for the living room and the bedroom

Carpets

In order to eliminate unpleasant odours, sprinkle the carpets generously with sodium bicarbonate. Let stand overnight, then vacuum.

Make your own **carpet foam** by combining 60 mL (1/4 cup) of liquid soap with 45 mL (3 tablespoons) of water. Beat the ingredients to produce a foam. Rub the carpet with the foam, then rinse thoroughly.

Upholstery

Use the **carpet foam** to clean upholstery. Rinse thoroughly.

Warning

Several cleaners have symbols indicating that the product is corrosive, reagent explosive, flammable or toxic. Public Health Agency of Canada suggests that you consider switching to products bearing no warning signs.



Removing stains from carpets and upholstery

Here are a few recommendations on how to remove stains.

- ▶ Clean stains before they become imbedded.
- ▶ Sponge liquids, without rubbing them.
- ▶ Rub stains from the outside in so as not to spread them.
- ▶ Use cold or warm water. Hot water sets stains.

Walls

See page 6.

Floor

See page 4.

Tips and recipes for the laundry room

Washing

Wash your clothes and towels with a vegetable oil-based liquid soap. Ideally, choose a soap that does not contain the following:

- ▶ EDTA (ethylenediamine tetra-acetic acid), which combines with heavy metals in water
- ▶ NTA (nitrilotriacetic acid), which may be carcinogenic for humans
- ▶ phosphates, which encourage the proliferation of algae in water
- ▶ chlorine, which combines with organic materials to form chlorinated organic compounds

Sodium bicarbonate and washing soda are excellent laundry conditioners. They soften water, deodorize and enhance the effect of the soap. Add between 60 and 125 mL (1/4 to 1/2 cup) of one of these products during the washing cycle.

Whitening agents

Whitening agents based on liquid hydrogen peroxide (oxygenated water) can

Did you know that ...

When the chlorine contained in bleach gets into wastewater, it combines with organic molecules and forms chlorinated organic compounds. These compounds, which are potentially carcinogenic, can end up in the food chain.



serve as an ecological substitute for the chlorine in bleach. You can purchase these agents in natural food stores or specialty stores that offer ecological cleaning agents.

Fabric softeners

- ▶ Add 60 mL (1/4 cup) of sodium bicarbonate to the washing cycle to make fabrics soft and supple.
- ▶ Add 60 to 125 mL (1/4 to 1/2 cup) of vinegar to the rinse cycle. In addition to softening fabrics, the vinegar removes soap residues and helps eliminate static electricity in the dryer. Don't worry! Your clothes will not smell like vinegar!

Removing stains

There is a specific tip or home recipe for each type of stain. Nevertheless, here are some basic tips.

- ▶ Clean stains immediately.
- ▶ Sponge liquid stains. Don't rub them or you may spread them.
- ▶ Remove stains by rubbing gently from the outside in.
- ▶ It is preferable to use cold water since hot water may set stains.
- ▶ Do not place stained fabric in the dryer since the heat may set the stain.



Ecological house plant care

Pests and diseases generally attack house plants that are stressed by poor growing conditions or by inappropriate care. Therefore, it is important for you to be familiar with the specific needs of each plant so that you can care for them adequately. Keeping this in mind, the use of low-impact pesticides is a last-resort solution.



Principles of ecological plant care



Tips for keeping house plants healthy:

- ▶ Respect the plants' need for light.
- ▶ Maintain temperatures that are appropriate for their growth; avoid placing plants too close to heat sources or in cold air currents.
- ▶ Make sure that the ambient air is humid enough (most plants grow better when the relative humidity is between 40% and 60%).
- ▶ Water thoroughly and as needed. Use warm water (ideally, it should stand for 24 hours to let the chlorine evaporate).
- ▶ Fertilize only during the active growing seasons, generally from March to October.
- ▶ Repot plants or replace the surface dirt every year (this applies for most plants), ideally at the start of the growing season.

Practical tip

Use a humidifier to increase humidity in the air. You can also place the pot on a large saucer filled with gravel and water (making sure that the base of the pot is not standing in the water).



What should you do when a house plant seems to be doing poorly?

- ▶ Make sure that the plant enjoys good growing conditions and receives adequate care. Several factors, such as a lack of light, irregular watering and insufficient humidity may affect the appearance and growth of plants.
- ▶ Isolate the plant for a while if the damage appears to be caused by pests or disease.
- ▶ If possible, limit the proliferation of pests or the spread of disease by pruning parts that are seriously affected; disinfect cutting tools regularly with rubbing alcohol.
- ▶ Consider cutting or dividing a plant when there are portions of it that are still healthy.
- ▶ Use a low-impact pesticide (read the product label carefully) or a home recipe as a last resort.



Practical tip

Before bringing plants that have spent the summer outside back indoors, spray them with warm water to dislodge any pests.



Ecological solutions for the most common problems

Pests

Spider mites

Spider mites often spin fine whitish webs. Feeding on sap, they cause leaves to yellow.

- ▶ Spray the leaves of infested plants frequently with warm water since spider mites prefer dry conditions.
- ▶ As a last resort, use an insecticidal soap home recipe (see p. 27).

Scale insects

Scale insects, which frequently remain motionless, may look like tiny, swelled scales, flat disks or small balls of cotton. By sucking on the sap, they cause leaves to turn yellow and fall off. Leaves and stems are often covered with a sticky substance (honeydew).

- ▶ Using a cotton swab, apply rubbing alcohol directly to the scale insect; inspect the plant regularly and repeat the treatment as needed.

Whiteflies

By sucking the sap of the plants, whiteflies cause small yellow or pale spots on the tops of leaves. A sticky substance (honeydew) is often found on the plant.

- ▶ Use a small hand-held vacuum to remove the insects.
- ▶ Apply an insecticidal soap home recipe (see p. 27) as a last resort.

Aphids

Aphids, which come in various colors, live in colonies under leaves and on young sprouts from which they suck the sap. They cause the leaves to discolour, change shape and roll. They excrete a sticky substance (honeydew).

- ▶ Spray the plants with warm water to dislodge the insects.
- ▶ Apply an insecticidal soap home recipe (see p. 27) as a last resort.

Sciarid flies (fungus gnats)

The adults are small black flies. The white larvae observed on the surface of wet potting soil may harm the growth of young plants by feeding off the roots.

- ▶ Place sand on top of the soil to prevent the flies from laying eggs.
- ▶ Allow the soil to dry more between watering, if possible.

Thrips

By feeding off the sap of plants, thrips cause white or silver spots on the leaves and make the tissues change shape. These insects leave shiny, black deposits (excrement) on the leaves.

- ▶ Spray the plants with warm water to dislodge the insects.
- ▶ Spray the leaves of infested plants frequently with warm water since thrips do not like humid environments.
- ▶ Apply an insecticidal soap home recipe (see p. 27) as a last resort.

Practical tip

You can use yellow sticky traps to capture whiteflies, aphids and sciarid flies and blue traps to capture thrips. They are available at most garden centres.



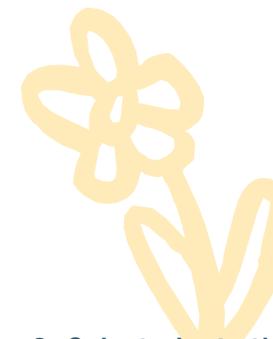
Ecological garden care

In the past, pesticides were often used to solve problems involving pests, plant diseases and weeds. Today, this practice is generally no longer recommended since it upsets the balance of the environment. Moreover, it poses serious risks for human health. For this reason, Montréal has adopted a by-law concerning the use of pesticides outdoors.

From now on, the objective is to prevent gardening problems by adopting good growing habits so as to support the health and vitality of plants. In this way, plants will be able to deal with various stress factors better. If a problem persists, ecological solutions may be used to control undesirables.



Principles of ecological plant care



1. Place the plant in the appropriate location

A plant that is suitable for the conditions of the site generally grows more vigorously and is better able to resist pests and diseases.

- ▶ Select plants that are suitable for the sunlight available at the site (full sun, partial shade, shade).
- ▶ Select plants that are suitable for the soil conditions (rich or poor, acidic or alkaline, moist or well-drained, etc.).
- ▶ Opt for cold-resistant perennials, trees and shrubs.
- ▶ Take the size of the mature plants into consideration (height and width) so that they have enough space in which to grow properly.



2. Select plants that are resistant to pests and diseases

- ▶ Find out how resistant the plants are before you buy them. For example, certain decorative apple trees are more resistant to scabs, while some hostas are less vulnerable to slugs, and certain tomatoes are less sensitive to mildew, etc.

3. Create a diversified environment

By growing a wide range of plants, you will attract useful organisms (birds, insects, mites, etc.) that will feed off or serve as parasites for the undesirables.

- ▶ Include trees, shrubs, perennials and annuals in your landscaping.
- ▶ Plan to have some plants in bloom at all times in order to attract beneficial insects.
- ▶ Grow ornamental plants that produce seeds and fruits to encourage the presence of birds.

Practical tip



The soil is poorly drained in certain locations? Select plants that like moist soil or raise the planting bed to facilitate drainage.

4. Feed the soil with compost

To grow and stay healthy, plants need numerous nutrients. Some of these nutrients come from the water and the air while others come from the soil, through the work of micro-organisms. Therefore, the objective is to feed the soil and its living organisms which, in turn, will provide minerals for the plants.

- ▶ Use different types of compost from year to year (shrimp compost, sheep manure, forest compost, domestic

compost, etc.) so that the plants will have access to a complete and varied source of nutrients.

- ▶ Apply a layer of compost measuring 0.5 to 5 cm thick on the ground (depending on the needs of the plants and the fertility of the soil) and mix it in the top layer. This can be done each year, either in the spring or late in the fall.
- ▶ Add 1/3 of compost to the potting soil of your potted plants.



DOMESTIC COMPOST

Composting serves to transform garden and kitchen waste into a valuable product for the garden.

Here are the rules for successful composting:

- ▶ Place the composter in a site that is lightly shaded and sheltered from the wind; protect the compost pile from rain.
- ▶ Mix green materials (containing nitrogen)* and brown materials (containing carbon)* or arrange them in successive layers (like a lasagna). Use two parts of brown materials for each part of green materials.
- ▶ Mix the compost pile from time to time in order to aerate it.
- ▶ Check the humidity of the compost on a regular basis: it must have the texture of a damp sponge that has been wrung. Water it or add green materials if it is too dry; add soil or brown materials when it is too wet.

Compost is ready after several months (from 4 months to a year). Ripe compost has a homogeneous appearance, a dark colour and smells pleasantly like undergrowth.

Several boroughs encourage domestic composting by making composters available at reasonable prices. Moreover, a small, practical domestic composting guide is available free of charge. For more information, contact your borough or visit Montréal Web site at: ville.montreal.qc.ca/environnement

❖ *Green materials (containing nitrogen): weeds (without seeds), wilted flowers, fruit and vegetable remains), etc.*

❖ *Brown materials (containing carbon): shredded dead leaves, straw, wood chips (untreated), etc.*

❖ *Materials to be avoided: bones, dairy products, oils, meat, fish, plants that are diseased or pest-infested, materials that have been treated with pesticides, animal litter.*

5. Fertilize with 100% natural fertilizers

Natural fertilizers complement compost. They are essentially used to restore mineral balance and to complement the needs of demanding plants or plants that are grown in pots.

6. Cover the soil

Soil that is left bare is much more vulnerable to weeds. It also tends to dry out faster and remains more vulnerable to erosion.

- ▶ Spread a layer of organic mulch (dead leaves that have been shredded, wood chips, cedar mulch, etc.) between the plants. In the case of alpine plants, use an inorganic mulch such as fine gravel.
- ▶ Grow ground covers, (plants that form a thick carpet on the ground as they grow), under trees, along flower beds, between rocks or sidewalk slabs, etc.

7. Water deeply and as needed

Plants that have been planted recently should not lack water as they establish their roots. Once they are firmly imbedded, most plants that are adapted to their growing environment will satisfy their needs through natural rain. Nevertheless, potted plants need to be watered on a regular basis throughout the season.

- ▶ Do not hesitate to dig a hole and check the humidity of the soil to determine if a plant needs watering.
- ▶ Always water plants thoroughly to ensure that the roots develop well. If your plants are in pots, make sure there are drainage holes in the bottom of the container.

▶ Irrigate the soil or the mulch rather than the plant since moisture on leaves often encourages the development of disease. In flower beds, using a porous hose installed under the soil ensures good results.

▶ It is preferable to water at the start of the day (make sure you take the watering restrictions imposed by the boroughs into consideration).

8. Prune trees and shrubs adequately

Pruning is intended to keep plants healthy. Proper pruning requires an excellent knowledge of plants and cutting techniques. In fact, poor pruning is often worse than no pruning at all. If needed, call on professionals for help.

- ▶ Remove dead, broken or damaged wood as quickly as possible.
- ▶ Always prune in dry weather.
- ▶ Use a sharp tool so as to make a clean cut. As a precaution, sterilize the blade with rubbing alcohol between each cut.
- ▶ Do not apply any products to the cuts.



9. Keep an eye on your plants

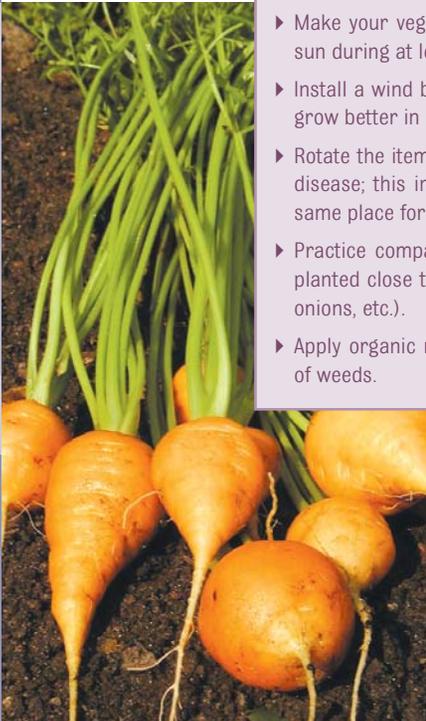
You must be on the look-out for the first signs of pests, disease or poor growing conditions. These signs allow you to react before the problems become uncontrollable. Moreover, most control methods are effective when they are used at the beginning of an infestation.

Make it a habit to stroll through your garden on a regular basis, ideally once a day. Examine your plants carefully to detect any differences (leaves that have been eaten, spots or discolourations, curled sprouts, etc.).



THE VEGETABLE GARDEN

- ▶ Make your vegetable garden in a location that receives direct sun during at least six hours of the day.
- ▶ Install a wind barrier (shrubs, trellis, etc.), if necessary; plants grow better in a protected location.
- ▶ Rotate the items you grow to prevent problems with pests and disease; this involves not growing the same vegetables in the same place for more than two consecutive years.
- ▶ Practice companion planting; some plants benefit from being planted close to one another (tomatoes and basil, carrots and onions, etc.).
- ▶ Apply organic mulch between the rows to prevent the growth of weeds.



What should you do when a plant seems to be doing poorly?



- ▶ Make sure the plant enjoys good growing conditions and receives proper care (see the principles of ecological garden care, p. 15). If the garden is obviously not located in the right spot, consider moving it to a location that is better suited for its needs.
- ▶ Opt for ecological solutions for controlling undesirables:
 - Cut off portions of plants that are diseased or infested with pests.
 - Shake insects off into a container filled with soapy water.
 - Use a vacuum to capture undesirable pests.
 - Spray insects forcefully to dislodge them.
 - Set out bait and traps.
 - Install physical barriers around plants.
- ▶ Identify the organism at fault if the damage appears to be caused by a pest or disease. Do not hesitate to consult books or specialists to obtain a precise diagnosis. To find a lasting solution for a problem, you must search for the cause.

PESTICIDES: A LAST-RESORT SOLUTION!

In Montréal, the use of pesticides is prohibited outside buildings. Despite this prohibition, certain products that are not toxic for human health and the environment (low-impact pesticides) are authorized at all times. These are biopesticides recognized by the Pest Management Regulatory Agency (PMRA), mineral oils and active ingredients authorized in Appendix II of the Pest Management Code.

For details about the by-law and its local application, contact your borough office or consult the Montréal Web site at: ville.montreal.qc.ca/pesticides

**Pesticide-Free
Montréal
Naturally!**



Ecological solutions for the most common problems

Pests

Aphids



Aphids of various colours live in colonies under leaves and on young sprouts. They suck on the sap of plants, slowing their growth and causing the leaves to change colour, change shape and curl up. These insects excrete a sweet, sticky substance (honeydew) that attracts ants, wasps and bees and promotes the development of a black fungus (sooty mould).

Solutions:

- ▶ Use a powerful spray of water to dislodge the aphids.
- ▶ Cut off the parts of the plant that are too infested and throw them out.
- ▶ Wrap a piece of sticky tape (this product is available in gardening centres) around the trunks of sensitive trees. As a result, ants, which protect aphids, will not be able to climb up the tree.
- ▶ As a last resort, use a home garlic recipe (see p. 27) or a low-impact pesticide in which the active ingredient is insecticidal soap. Read the product label carefully.

Slugs



Slugs are nocturnal molluscs that look like snails without shells. They pierce the leaves of plants and eat fruit. They leave a viscous trail on leaves and the ground behind them.

Solutions:

- ▶ Surround the base of vulnerable plants with a barrier made of abrasive materials such as broken egg shells or coarse sand (and renew this barrier regularly).
- ▶ Install a strip of copper around sensitive plants to ward off the slugs (these copper strips are available in gardening centres).
- ▶ Place traps containing beer near the plants that are under attack and empty them every morning.
- ▶ Pick the slugs up at night, when it is dark, using a flashlight.
- ▶ As a last resort, use a low-impact pesticide in which the active ingredient is ferrous phosphate. Read the product label carefully.



Earwigs



Earwigs are easy to recognize as their abdomens end with two claw-like limbs. These nocturnal insects are only harmful when they occur in large numbers. They nibble on leaves, flowers, ripe fruits and vegetables.

Solutions:

- ▶ Set traps out at night near the plants that are under attack (rolled newspapers covered with peanut butter, containers filled with water and fish oil, etc.). Remove the traps in the morning and drown the insects in soapy water.
- ▶ As a last resort, use a low-impact pesticide in which the active ingredient is insecticidal soap or silicon dioxide (diatomaceous earth). Read the product label carefully.

Lily leaf beetles



Adult lily leaf beetles are small, bright red beetles that fall to the ground when disturbed. The larvae, which are orange, are often hidden under a layer of black mucous and excrement. These insects primarily attack lilies. They perforate or devour leaves and nibble on buds and flowers.



Solutions:

- ▶ Remove vegetable debris in the fall.
- ▶ Cover young plants with a floating row cover (white cloth that lets water and sunlight through) during the period when these beetles lay their eggs, namely from the end of April to the beginning of June.
- ▶ Shake the adult beetles and the larvae off the plants into a container of soapy water or suck them up with a hand vacuum.

Spider mites

Spider mites suck the sap from plants, cause leaves to discolour, dry up and fall off prematurely. Small, white webs may indicate their presence.

Solutions:

- ▶ Spray the leaves of the plants that are under attack during the hot season on a regular basis (ideally early in the morning) since spider mites prefer dry conditions.
- ▶ Cut off and throw out portions of the plants that are too infested.
- ▶ Clean up plant debris in the fall to limit sources of infestation.
- ▶ As a last resort, use a home garlic recipe (see p. 27) or a low-impact pesticide in which the active ingredient is insecticidal soap. Horticultural oil may be used on trees and shrubs. Read the product label carefully.

Scale insects

Scale insects look like tiny, swelled scales, miniature shells, flat disks or small balls of cotton. These insects attach themselves to the leaves and stems of several types of trees and shrubs (deciduous and coniferous) and suck their sap. The plants under attack are weakened; their leaves turn yellow and may fall off prematurely. Certain types of scale insects excrete a sweet, sticky substance



(honeydew) that attracts ants, wasps and bees and encourages the development of a black fungus (sooty mould).

Solutions:

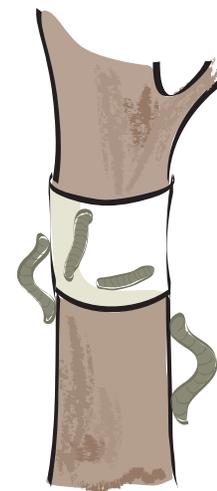
- ▶ Cut off and throw out the parts that are too infested; disinfect the cutting tools regularly with rubbing alcohol.
- ▶ Dislodge any scale insects that have attached themselves to the trunk and large branches with a soft brush soaked in soapy water; use a toothbrush for leaves and young sprouts or swab the insects with a cotton swab soaked in rubbing alcohol.
- ▶ As a last resort, use horticultural oil on trees and shrubs. Read the product label carefully.

Caterpillars

Butterfly larvae devour leaves, leaving them filled with holes or "skeletonized." Large numbers of larvae can even defoliate a plant. Blackish excrement and silk webs (tent caterpillars) are signs of their presence.

Solutions:

- ▶ Pick up the caterpillars by hand and drown them in soapy water; wear gloves since their hair can be irritating.
- ▶ Wrap a piece of sticky tape (this product is available in gardening centres) around the trunks of sensitive trees. This barrier will prevent the caterpillars from climbing up the tree.
- ▶ Cut off and throw out branches with tents when the larvae are inside.
- ▶ As a last resort, use Btk, a biopesticide that contains the *Bacillus thuringiensis* ssp. *kurstaki* bacteria. Read the product label carefully.





Cutworms

Cutworms are the larvae of several nocturnal butterflies. These insects, which are generally brownish or greyish in colour, roll up when disturbed. Cutworms feed at night and hide in the ground, at the base of the plants under attack, during the day. They cut the stems of herbaceous plants (ornamental or vegetable) off at the ground and may devour their leaves. They cause their damage in May and June.

Solutions:

- ▶ Pick the cutworms up at night, when it is dark, using a flashlight.
- ▶ Dig into the ground at the foot of the damaged plants early in the morning and destroy the caterpillars.
- ▶ Surround the base of the sensitive plants with a tin can or a plastic container, from which the bottom has been removed (for example, a yogurt container) and which is at least 10 cm high; push the container 5 cm down into the soil.

Striped and spotted cucumber beetles

These small beetles essentially eat the leaves, stems, flowers and fruit of plants in the gourd family (cucumbers, melons, pumpkins, cantaloupes, etc.). They can transmit viral and bacterial diseases (bacterial wilt, cucumber wilt, cucumber mosaic).

Solutions:

- ▶ Pick the insects up by hand and drown them in a container of soapy water.
- ▶ Protect plants with a floating row cover (white material that lets water and light through); install the cover after sowing or planting and remove it when the first flowers appear; for varieties that do not need to be pollinated by insects, leave the cover in place for the entire season.



AN UNWELCOME VISITOR

Are squirrels digging up your freshly planted tulip bulbs? Are they uprooting your young seedlings and snacking on the fruit and vegetables in your garden?

- ▶ It is preferable to grow bulbs that do not appeal to these small rodents, such as ornamental onions, hyacinths, grape hyacinths, daffodils and scillas.
- ▶ Protect your flower beds and bulbs by covering them with a metal grate.
- ▶ Sprinkle chicken manure fertilizer on the ground (respect the quantities indicated on the product label).
- ▶ Spread human, dog or cat hair, which repels squirrels (renew this material regularly).



WASPS

Wasps are very useful: they take part in pollinating flowers and feed off several harmful insects. They can, however, be disruptive, particularly when they settle near your home. Moreover, their sting can sometimes result in a serious allergic reaction.

Avoid attracting them

- ▶ Keep meat and sweet foods in closed containers.
- ▶ Use a garbage can with a sealed lid.
- ▶ Avoid using wasp traps since these devices attract them.

Don't touch their nests!

Removing a wasp nest or blocking the entrance to it involves serious risks. Leave this task to a professional exterminator.

For more information, consult the brochure *Don't Get Stung!* It can be downloaded at: ville.montreal.qc.ca/insectarium or you can contact the Hôpital Sainte-Justine's publications department at 514 345-4671.





SPIDERS-ALLIES IN YOUR GARDEN

Spiders are voracious predators that feed off numerous harmful insects. Moreover, they are inoffensive for the most part. However, if they inconvenience you, here are a few tips for limiting their presence near your home:

- ▶ Limit night lighting around your home. Use yellow light bulbs, which attract fewer insects that serve as food for spiders.
- ▶ Dislodge spiders with a broom or vacuum.

Diseases

White (powdery mildew)

This disease, which is caused by a fungus, causes dusty white spots on the tops of leaves. It rarely causes plants to die.

Solutions:

- ▶ Cut off and throw out the infected parts of annuals and perennials; disinfect cutting tools regularly with rubbing alcohol.
- ▶ In case of a serious infection in previous years, use a sodium bicarbonate home recipe (see p. 27) or a low-impact pesticide in which the active ingredient is sulphur as a preventive treatment. Read the product label carefully.

Apple and pear scab

Scab, which is a fungal disease, causes the appearance of circular, brownish spots on leaves, fruit and young shoots. The leaves of the plants that are under attack turn yellow; the leaves and the fruits fall off prematurely. This disease does not generally kill the trees, but it does weaken them and make them more vulnerable to other harmful organisms.



Solutions:

- ▶ Pick off and throw out the infected parts.
- ▶ In case of a serious infection in previous years, use a low-impact pesticide in which the active ingredient is sulphur, calcium sulphide or calcium polysulphide (lime sulphur). Read the product label carefully.

Black knot

This fungal disease affects plum and cherry trees in particular. The infected sprouts and branches have cylindrical, black excrescences that look rough and coal-like (knots). Once the sprout or branch has been completely encircled, the sections located above the knots die. Trees that are seriously infected may die.

Solutions:

- ▶ Cut the infected branches at about 10 cm below the knots and throw them away; disinfect your cutting tools with rubbing alcohol after each cut.



Warning

The city recommends caution when preparing, using and storing home recipes. Avoid applying these treatments in windy weather, on very hot days or during droughts. Before treating any plant, apply the product to a few leaves and wait 24 to 48 hours to observe how the plant reacts.

HOME RECIPES WITH INSECTICIDE AND FUNGICIDE PROPERTIES

Insecticidal soap

Dilute 5 mL (1 teaspoon) of liquid dish soap in 1 L (4 cups) of water. It should be noted that using liquid dish soap instead of insecticidal soap that has been specifically formulated for plants increases the risk of damage to the plants (phytotoxicity).

Steeped garlic

Allow 2 cloves of finely chopped garlic to steep in a litre of water for 24 hours, then filter.

Sodium bicarbonate solution

Dissolve 15 mL (1 tablespoon) of sodium bicarbonate in 1 L (4 cups) of water and add a few drops of liquid dish soap to make the mixture adhere to plant leaves. Use the product as a preventive treatment, spraying it on plants once a week or every two weeks. Start applications early in the season.

Ecological lawn care

Using pesticides on lawns poses serious risk for human health. People who use a treated lawn may be poisoned by absorbing pesticides (through the skin, mouth or respiratory passages). The symptoms of poisoning may appear anytime from shortly after exposure to many years later. Children are particularly vulnerable since they often play on lawns. Moreover, their immune system is not fully developed and their skin is more permeable.

Pesticides also have negative impacts on the environment. Often, products that are applied to grass make their way into the water table and waterways. They can also contaminate the air and soil. Finally, using pesticides upsets the natural balance of the environment.

For these reasons, Montréal has adopted a by-law prohibiting the use of pesticides outdoors. In order to obtain healthy grass, residents must now focus on prevention by offering their lawns the best growing conditions possible and giving them proper care. It is possible to apply ecological solutions if a problem occurs.



Principles of ecological care



1. Cut without shaving

Cutting lawns high increases the density and strength of the grass. It encourages the grass to develop deep roots, which enables the lawn to tolerate occasional droughts. Moreover, long grass is more resistant to pests and disease and is less likely to be invaded by weeds.

- ▶ Cut your lawn to a height of about 7.5 cm in the summer; do not remove more than 1/3 of the total height at a time.
- ▶ However, you should cut your grass to a height of 5 cm during the first and last cuts of the year. Cutting grass short in the spring increases growth; at the end of the season this helps prevent the development of disease.
- ▶ Sharpen the blades of your lawn mower once a year. Sharp blades cut the grass rather than tearing it, limiting the onset of disease.
- ▶ Always cut the grass in dry weather.

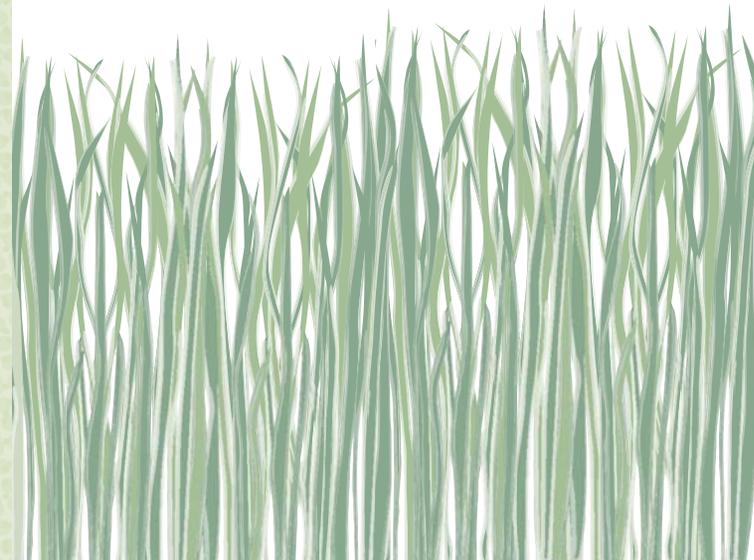
Did you know that ...



Using an ordinary gas lawn mower produces 48 kilograms of greenhouse gases during the course of a season, namely as much air pollution as a car that travels a distance of 550 km?*

When purchasing a new lawn mower, opt for a mechanical or electric model.

*Source: climatechange.gc.ca/onetonne



8 cm

7 cm

6 cm

5 cm

4 cm

3 cm

2 cm

1 cm

0 cm



2. Recycle your grass by leaving grass clippings on the ground

Grass clippings that are left on the ground decompose quickly and free up the nutrients they contain. They can reduce the need for fertilizer by at least 30%. Moreover, this practice also saves you time and energy!

3. Water thoroughly as needed

In the absence of rain, a lawn needs 2.5 cm of water per week in order to remain green throughout the summer. This generally corresponds to watering over a few hours.

- ▶ Water your grass early in the morning or early in the evening. Always respect the watering restrictions imposed by the boroughs.
- ▶ Avoid watering too often or too lightly, which encourages the development of surface roots and makes the lawn vulnerable to drought.

A lawn that has been well-maintained in an ecological manner can tolerate a few weeks without water. It will go dormant and turn yellow, but will turn green once again when the rain returns.

- ▶ Avoid walking on the lawn during this period.

Practical tip



To determine how long you should water your lawn, place four or five containers of the same size at different spots on the grass. Stop the sprinkler when 2.5 cm of water has accumulated in the containers.



4. Aerate your lawn

Aerating the soil facilitates the growth of roots, enhances water penetration and stimulates life in the soil.

- ▶ Push a pencil into wet grass to a depth of 10-15 cm to determine if the lawn needs to be aerated. Is this difficult? Your lawn needs air!
- ▶ Use a manual aerator or rent a motorized machine to remove small plugs of earth. The spring and the end of the summer (mid-August to mid-September) are the best times for aerating a lawn.
- ▶ Aerate when the soil is moist, but not wet.

THATCH

Thatch is essentially a layer of partially decomposed stems and roots. Too much thatch (more than 1 cm) may hamper the circulation of water and air in the soil. It also provides shelter for certain insects. Dethatching causes considerable damage to lawns. Improve the progressive decomposition of the thatch through aeration or top dressing with compost.

5. Nourish your lawn with compost

Compost provides nutrients that are essential for the growth of your lawn. It aerates the soil and enables it to retain water and minerals better. It also provides shelter and food for a number of organisms that live in the soil.

- ▶ Spread a thin layer of compost on the grass, namely about 0.5 cm, in the spring or fall. Top dressing with compost is ideal after aerating.
- ▶ Use a leaf rake to spread the compost uniformly.

6. Check soil acidity

In order to grow properly, the lawn needs soil with a pH between 6.5 and 7.

- ▶ Have the acidity level of your soil measured. Most garden centres offer this service and make recommendations.
- ▶ Add horticultural lime in the spring or fall if the soil is too acidic (pH less than 6.5).

7. Fertilize moderately, using natural fertilizers

Most natural fertilizers degrade slowly through the action of the organisms that live in the soil. As a result, they provide nutrients throughout the season, limiting the risk of mineral leaching and burning the roots.

- ▶ Fertilize with 100% natural fertilizers in the spring (May or June) or at the end of the summer (August or September), using one or two applications.

Did you know that ...



The three figures indicated on fertilizer bags indicate, in order, the percentages of nitrogen (N), phosphorous (P) and potassium (K) contained in the fertilizer? In the case of natural fertilizers, the figures rarely exceed 10.



8. Sow grass seed in sparse areas

Weeds move into sparse areas of a lawn quickly.

- ▶ Reseed your lawn in the spring (May) or at the end of the summer (mid-August to mid-September).
- ▶ Choose a mix of certified seed (Canada No. 1), which is suitable for the lighting conditions of the site (sun or partial shade).
- ▶ Take the opportunity to introduce plants other than grasses, such as white dwarf clover. A diversified lawn is more resistant to pests, diseases and drought.

Practical tip

Do not keep seeds from one year to the next since they quickly lose their ability to germinate.

What should you do when the lawn seems to be doing poorly?

- ▶ Make sure that the lawn enjoys good growing conditions and receives adequate care (see the Principles of ecological lawn care, p. 29). Unfavourable growing conditions (heavy shade, compact soil, etc.) or inappropriate care (cutting too short, excessive fertilization, etc.) encourage the proliferation of weeds and problems with pests and diseases.
- ▶ Consider replacing your lawn with more suitable plants (ground cover, flowers beds and shrubs, etc.) if the conditions of the site are not suitable for growing a lawn. You can also replace certain sections of the lawn with inert materials (mulch, paving stones, etc.).
- ▶ Properly identify the organism, if you suspect the presence of a pest or disease, so as to be able to apply appropriate solutions. Do not hesitate to consult books or specialists.

Ecological solutions for the most common problems

Pests

White grubs

White grubs are the larvae of common June bugs, European chafers and Japanese beetles. They measure between 1 and 4 cm long and are curved like the letter C. These larvae live in the ground and feed off grass roots. The damaged areas turn yellow or brown and may be raised like a carpet. The damage is essentially visible in the spring and fall. Skunks, raccoons and other small mammals like to eat white grubs and will dig holes in the lawn to find them.

Solutions:

- ▶ Limit outdoor lighting during the egg-laying period (June, July) since light attracts these insects.
- ▶ Apply entomophagus nematodes, which act as parasites for white grubs, between mid-August and mid-September. Read the product label carefully.
- ▶ Replace the damaged section of lawn in the case of a major infestation. Rake up the dead grass, work the soil and pick up any larvae and pupae (stage in the insect's development before the adult stage). Sow grass seed or lay sod.



Hairy chinch bugs

These small insects (3 to 5 mm long in the adult stage) damage your lawn by perforating the leaves of the grass and sucking out the sap. The zones that are affected turn yellow then brown, but the dead grass remains firmly attached to the soil. The first signs of infestation usually appear between mid-July and mid-August. Lawns growing on sandy soil and in full sun are particularly vulnerable.

Since drought causes the same kind of damage, perform the following test to determine if the brown sections are truly caused by hairy chinch bugs.

Float test: Open a large can at both ends and push it 3-5 cm into the soil along the damaged zone. Fill the container with water and scrape the grass inside it. If your lawn is infested with hairy chinch bugs, these little insects, red when nymphs, black as adults, will float to the surface of the water after a few minutes. Do the test several times in the various zones affected.



Solutions:

- ▶ Reseed your lawn with grass seeds enriched with endophytes (types of fungus that repel or kill hairy chinch bugs). Also sow clover, which these insects do not feed off.
- ▶ Use a commercial vacuum (such as a "Shop-Vac") on the damaged zone and for a 60-cm-wide perimeter around it. In the event that the infestation occurred during the previous year, start vacuuming at the end of May in order to trap the females before they lay their eggs.
- ▶ Replace the grass with ground cover or flower beds in the zones that are seriously affected.



CARPENTER ANTS



These large black ants usually live outside buildings, in wood that is either moist or decomposing. Although they cause relatively little damage in their natural habitat, the same cannot be said if they attack the wood in a house. In the event of an infestation, do not hesitate to call on an extermination specialist.

For more information about carpenter ants, visit Montréal Insectarium Web site at: ville.montreal.qc.ca/insectarium

Ants

Ants can be very useful in a lawn. They aerate the soil and feed off the eggs of harmful insects (like white grubs). However, when they build anthills in the lawn, they may destroy the grass around them. If you find the presence of ants inconvenient, here are a few tips for reducing their numbers.

- ▶ Destroy the ant hills with a rake.
- ▶ Pour boiling water or lemon juice directly on the nests, several times.
- ▶ As a last resort, use a low-impact pesticide in which the active ingredient is borax or boric acid. Apply this near the nests. Read the product label carefully.



MUSHROOMS IN YOUR LAWN

If mushrooms grow in your grass, it is likely that woody material is decomposing under the surface of the soil (roots of a tree that has been cut down, pieces of wood, etc.). These mushrooms, which are harmless for the lawn, disappear on their own once the material has fully decomposed. However, if their presence disturbs you, you can either pull them out or dig up the dead wood.





Diseases

Lawn diseases may appear in several manners: spots on blades of grass, powdery white coating, brown sections, etc. Nevertheless, diseases are not common in the case of lawns that enjoy good growing conditions and proper care.

In the case of infection, consult a specialist in order to identify the disease and determine the appropriate solutions. In these situations, it is recommended that you pick up the lawn clippings in order to limit the spread of the disease.

Weeds

- ▶ Keep your lawn lush and strong by applying the principles of ecological care (p. 29). This will limit the spread of weeds.
- ▶ Tear weeds out by hand or with a dandelion weeder as soon as they appear. Try to remove the entire root. It is easier to uproot weeds if the soil is moist.
- ▶ Pour boiling water on weeds along pavement or a sidewalk. You can also burn them with a propane torch.
- ▶ As needed, use corn gluten meal to control weeds in your lawn. This product prevents seeds from germinating, but has no impact on weeds that are already growing. The products available

in garden centres contain either only corn gluten meal or a mixture of meal and fertilizer. Follow the manufacturer's recommendations.

Warning: Corn gluten meal inhibits the germination of all seeds. Do not use it if you plan to reseed your lawn. Since the meal contains nitrogen (about 10%), you must take this into consideration when you fertilize your lawn.

- ▶ As a last resort, use a low-impact pesticide in which the active ingredient is acetic acid or a mixture of capric and pelargonic acids. Apply the herbicide only to the weeds. Read the product label carefully.



USEFUL REFERENCES

A few good books

Harris, Marjorie. "Ecological Gardening: Your Path to a Healthy Garden." Toronto, Random House, 1991.

Hill, Nancy and Lewis, George. "Rodale's Successful Organic Gardening: Lawns, Grasses and Groundcovers." Emmaus, Pennsylvania, Rodale Press, 1995.

Nancarrow, Loren and Taylor, Janet Hogan. "Dead Daisies Make Me Crazy: Garden Solutions without Chemical Pollution." Ten Speed Press, 2000.

Olkowski, W. "Common Sense Pest Control - Least-toxic solutions for your home, garden, pets and community." The Taunton Press, 715 pp., 1996.

Rubin, Carole. "How to get your lawn & garden off drugs: Pesticide-free gardening for a healthier environment." Ottawa, Friends of the Earth, 1989.

On the Web

Ville de Montréal (By-law concerning pesticide use, tables indicating the low-impact pesticides allowed at all times, etc.)
ville.montreal.qc.ca/pesticides

Montréal Botanical Garden (fact sheets about pests and diseases, organic lawn care guide, etc.)
ville.montreal.qc.ca/jardin/biblio/carnet

Ministère du Développement durable, de l'Environnement et des Parcs (pesticides management code, alternatives to pesticides, etc.)
www.mddep.gouv.qc.ca/pesticides/inter_en.htm

Pest Management Regulatory Agency (certification of pesticides recognized in Canada)
www.pmr-arla.gc.ca

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