Landscaping

You have the power to make design, maintenance and material choices that will both improve water quality and look fantastic. This means moving away from conventional turf and paying more attention to grading and routing water. Still need your patch of lawn? There are alternatives that are actually easier to take care of — and so many more options for a more resilient future.

It all begins with respecting the soil

Traditional land development removes precious existing soil with heavy equipment, which compacts underlying subsoils. Usually only a few centimetres of topsoil is put back to sustain a shallow-rooted turf, which has little ability to soak in or treat rainfall. This topsoil is also often very low in micro-organisms, as it is stored in large stockpiles that destroy the living elements and structure of the soil.

In new construction and redevelopment, soil should be placed to a depth of at least 30 cm under turf, and deeper under planting beds — at least 60 cm if possible. This will significantly reduce runoff and support a healthy, vibrant, drought-tolerant landscape without watering and the use of fertilizers. As a bonus, plants grow substantially faster when they have room for their roots, which is a noticeable benefit in our short growing season.

ABOVE: Soil is alive! The soil on top is dark because of its carbon content, which indicates the presence of humus. Humus supports all kinds of beneficial processes that lead to healthy plants, healthy micro-organisms, and reduced pollution.

Preserve Natural Areas and Features First

Nature knows best. Protecting existing intact natural landscape features is the easiest and cheapest way to minimize runoff and maintain water quality. Rainfall on natural landscapes is absorbed quickly and more fully, since soil under natural areas is deeper and well-structured. The large number and variety of plants and roots help to minimize erosion and assist with removing excess moisture through *evapotranspiration* (the process of water moving through a plant's roots to its leaves and stems, where it evaporates back into the atmosphere).

Riparian areas are the parts of the landscape that are wetter-than-dry but drier-than-wet. It is critically important to protect these natural areas adjacent to water bodies. They provide so many functions, such as filtering and treating pollutants, preventing erosion, buffering water levels and flooding impacts, and providing habitat. Wet soils are particularly important for reducing nitrogen levels in surface water. Buffers around seasonal and small streams should not be overlooked, as these have the most land-water interaction and the most opportunities to accept and transport sediment.

ON THE COVER: This southern-Alberta homeowner got tired of mowing and replaced all his lawn with an alternative turf mix available from West Coast Seeds. The Clover will last from year-to-year. The annual Sweet Alyssum dominated in year one and is the white flower in the photo. Clover remains open around its base and other species should be added for the area to fill in densely and suppress weeds over the long-term. Add seed of flowers and/or grasses. If species are added that produce viable seed, it will eventually be self-sustaining.

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ABOVE: This riparian area next to a lake is gradually being restored. Mowing was stopped, and native shrubs and trees were added, including delicious Saskatoon bushes.

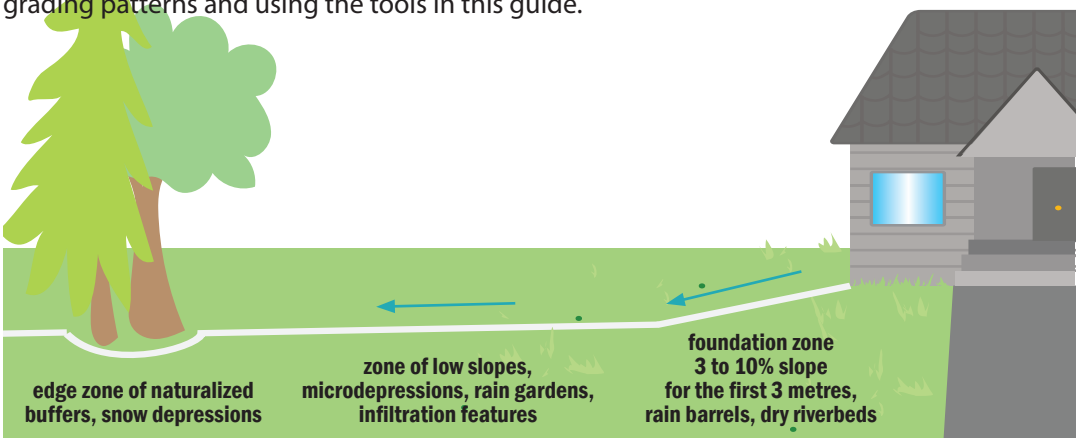
Riparian areas are also usually among the most attractive places to live. If you have a riparian area adjacent to or on your property, this is the first natural area you should strive to protect by maintaining its natural vegetation.

Grade to Drain and Retain

Runoff will flow wherever the land leads it. Grades should always slope away from building foundations and hard surfaces like patios and driveways. Traditionally, slopes away from buildings are a minimum of 3%, with a preferred slope of 10% within three metres of foundations, to prevent seepage. Further away from buildings though, a lower slope will give runoff more of an opportunity to sink in. Check requirements in your area, they do vary.

Within planting beds and natural areas, keep the areas rough, with dished areas for trapping water, even if they are only a few centimetres deep (*microdepressions*). New lawns can also be slightly depressed relative to surrounding grades. If you have the opportunity, add a depression to intercept winter snowmelt before it leaves your property.

As you think about tools to introduce on your property, observe where flows naturally go. Where grades create flow off your property into your neighbours', towards the road, or into water bodies, these locations present opportunities to intercept runoff by changing the grading patterns and using the tools in this guide.



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Lawn: Use It or Lose It

Next to hard surfaces, turf is the least absorbent surface on your property and requires the most intervention to look good. It's a lot of never-ending maintenance. It's bad for biodiversity and pollinators. Mowing compacts the soil and is an invitation for weeds like dandelions. It's the most likely thing to be over-fertilized and have pesticides applied, which end up in our water bodies.

What's good about turf? You have your reasons. Examine where you need it and where you don't. Especially in areas that were forested before land development, it's important to consider minimizing turf, as turf can't begin to make up for the lost performance of a forest.

Plant With Purpose

Landscapes with more biodiversity are better able to respond to stresses in the environment like floods, periods of drought, and pest outbreaks. They support more wildlife. They improve air quality. They provide a variety of niches for micro-organisms in the soil to treat pollutants. They don't need fertilizers and pesticides. In a healthy natural area there may be more than 100 species of plants within a small area, so when planning your landscape, go for diversity — nature does!

Practice Good Housekeeping

Cleaning up outside so pollutants don't make it to our waterways includes simple but important things like picking up after pets and maintaining vehicles to limit fluid leaks (did you know that motor oil and lubricants have phosphorus in them?) Take vehicles to a car wash rather than doing the job at home, so that soaps and sediments don't end up in our drainage system or have to be dealt with by treatment processes. For similar reasons, when you clean your driveway, sweep up the debris rather than hosing it down.

Skip the Chemicals

Pesticides, herbicides, and fertilizers may not completely break down or be used by plants and soil organisms before they wash off your property into the municipal drainage system, or pass through the topsoil and into subsurface flows where they will eventually end up in our water bodies. The chemicals are also harmful to beneficial soil micro-organisms and diminish the overall health of the landscape. If you follow the landscaping principles outlined here, you should find your need to use fertilizers and herbicides reduced or eliminated.

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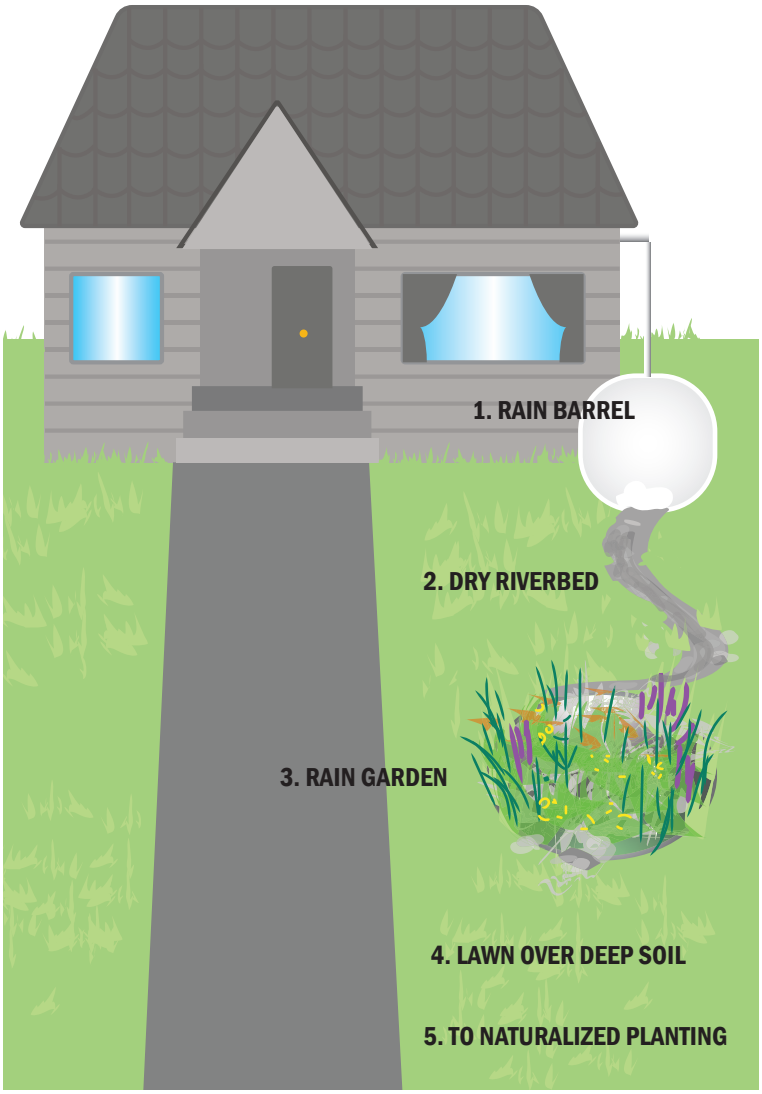
Get On the Treatment Train

This guide discusses several tools for capturing, treating, and using runoff. Not every method will be appropriate for every site, and it's rare that any one method can capture and treat all of the rainwater and runoff that is shed by roofs, driveways and other surfaces.

A number of methods can be connected to one another in a series. This is called the *treatment train*. When runoff has filled one feature it can move to another, and then another, so that there is no runoff from a property for typical summer thunderstorms. For example, a rain barrel could overflow into a dry riverbed, which leads to a rain garden, which overflows into a deep-soil lawn, which then drains into a naturalized planting with a depression to catch snow melt at the edge of the property.

By containing runoff on site, it can be returned to more natural recharge pathways, which reduces flooding potential. Runoff that flows downward through plant roots and soil before it enters subsurface systems will emerge cooler and cleaner, later in the season when water levels in receiving bodies are low and benefit from this natural supplement.



Be Fire Smart

FireSmart Alberta recommends tactics to reduce the risk and consequences of fire in communities in forested areas. Coniferous plants (those with cones and needles) contain flammable oils and resins. Avoid placing clusters of coniferous trees within ten metres of your home.

However, deciduous (leafy) trees are not so problematic. Lush, living plants are full of fire-suppressing moisture. Don't scalp a dry, brown lawn — replace or rejuvenate it with deep-rooted grasses in deep soil that will stay green and lush all summer long. Intact mulches around shrubs and trees help retain moisture too.

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Here's how to lose your turf.

You can transform your lawn to a planting bed in several ways. We like the lasagna method best.

Rototiller. Rototilling the area to be naturalized a few times will create gaps for planting. However, the grasses that were in your lawn will likely re-grow along with whatever you plant. And some plants will be multiplied if they were in your original lawn, such as quack-grass, dandelion, and creeping bellflower. Soil structure will be destroyed, but organics from the tilled-in grass will be retained.

Sod Cutter and Rototiller. If sod is cut off first, grass and weeds will be more effectively removed. Soil structure will still be destroyed. Add vegetable-based compost or amendments to bring the organic level back up. This method works well when you need to retain the height of the area at the original grade or lower it.

Lasagna Method. Cut the grass as short as possible. Lay down a layer of card-board or newspaper (about 10 pages thick), dampen it, and cover with your choice of soil or other organics, such as leaf mold, mulch, grass clippings, or compost. If you add soil on top, you can plant into it right away. If you add other organics in up to a 10-cm thick layer, you can cut holes through the cardboard or newspaper and old sod layer and plant into the old existing soil, but grass at the edge of the hole might also get enough light, moisture, and air to continue to grow. There are many variations on this method. It works well when adding height is not an issue.

Got time? Smother. Cut the grass as short as possible. Cover the grass with anything that will exclude light: cardboard, carpet, heavy landscape fabric. Secure the edges so your cover doesn't blow away. Add mulch to conceal. This method takes at least a season to work by depriving plants of one of their essential needs: light. This method also works well for spot weed control. Just throw down a piece of slate or flagstone over the offending plant. Quack grass takes longer, at least a year.

ABOVE: Smothering dandelions and weeds that have crept into a garden bed.

More Trees, Please!

Trees are like umbrellas--they reduce the impact of rain on the ground, and they increase how long it takes for rain to reach the ground. This results in less contaminant mobilization from soil-erosion processes and more time for rainfall to soak in to the ground, which means less runoff. Trees are also like pumps--they keep water and nutrients in balance in the soil.

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Create a naturalized area

ABOVE: Nature's Turf from Eagle Lake Landscape Supply is a sod-like option to attain a natural look.

https://eaglelakelandscape.com/products/grass-lawn-turf/natures-turf/

Once a landscape has been disturbed, it needs your help.

Imagine. Picture a forest, wetland, or meadow in place of manicured turf. What would you like to create? Native plants are usually chosen for naturalized areas. They are best adapted to climate stresses, thrive without fertilizers, and attract wildlife. They often spread or self-seed readily, giving quick results. See the next page for some tried-and-true possibilities. Don't be afraid to add some well-behaved ornamentals for show.

Where do you want to naturalize? If your lawn drains into a water body, ditch, or adjacent property, consider replacing a strip of your lawn with a naturalized area to provide a buffer. If your lawn borders on a natural area, consider pulling back the lawn to allow the natural space to expand further and provide a transition to the lawn area.

You are the gardener. Establishing a naturalized landscape can take some time. Because the landscape is disturbed, pioneer species, or as we all know them, weeds, can take hold. Pulling these weeds by hand before they go to seed is best. Keep some native seed available for overseeding bald spots. It may take a couple years for the natural area to become established, but monthly weeding sessions will eventually stop and you will have a beautiful, self-sustaining landscape.

Need to keep your lawn?

Here are some upgrades that will reduce water, fertilizer and maintenance needs.

Taller. Leave grass a minimum of 5 cm high, preferably 10 cm. Longer grass has fewer weeds because more light is excluded at ground level, reducing weed germination. Less mowing means less soil compaction. Since dandelions love compacted soil, less mowing can make your lawn less hospitable to dandelions. Another benefit is that some types of grasses send their roots deeper when they are allowed to grow taller, which improves the ability of rainfall to soak in and makes the grass more drought-tolerant.

Overseeding. Longer-rooted, more drought-tolerant species such as Sheep's Fescue can be added to an existing lawn. Mow the lawn short and rake it well so that new seed can make contact with the soil. Rake in the seed and stomp it with your feet or rent a roller. Water it daily until the grass is a good inch or two tall. Best done in spring or fall. If watering is reduced after the new grass is established (in a year or two), the Fescues will begin to dominate, since Kentucky Bluegrass needs more water.

TOP: Dutch Clover Seed. **BOTTOM:** Overseeding existing turf with a Nitrogen-fixing legume such as Dutch Clover will eliminate the need for fertilizer on established lawns. Nitrogen-fixers are plants that can take Nitrogen from the air and put it into the soil in a form that plants can use. Mowing will keep the clover short. Naturally it would be about 20 cm tall.

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A few native plant ideas to get you on your way to planning a healthier yard.

Trees and Shrubs (listed from larger to smaller)

Trembling Aspen†

Balsam Poplar†

White Spruce†

Lodgepole Pine†

Water Birch

Saskatoon†

Pincherry†

Chokecherry†

Nannyberry

Snowberry*†

Dogwood

Dwarf Birch

Golden Currant

Shrubby Cinquefoil†

Wild Rose*

Common Juniper†

* Aggressive spreading by roots can occur
Photo compliments of †TreeTime.ca — all rights reserved
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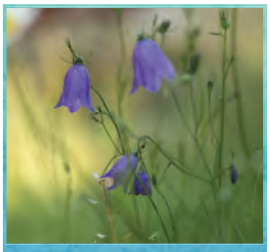
Wildflowers

Northern Bedstraw

Wild Bergamot


Harebell

Fleabane

Blazingstar

Western Wood Lily

Wild Blue Flax

Jacob's Ladder

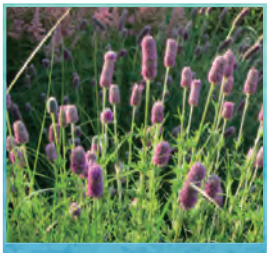
Smooth Aster

Goldenrod*

Blanket Flower

Blue-eyed Grass

Prairie Smoke


Purple Prairie Clover+

Spotted Joe Pye

Hedysarum

Grasses

Blue Grama Grass

Green Needle Grass

Tufted Hairgrass

Little Bluestem

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Ready to update your lawn?

Get away from the conventional and go high-performance.

Drought-tolerant and deep-rooted lawn-grass species are available as seed mixes. Happily, a number of suppliers now also offer sod alternatives to short-rooted, water-dependent conventional turf. Typically these are fescue-based sods, which need about half the nitrogen of conventional turf.

Newer species are sometimes branded as 'Water Saver' or similar, since they don't need irrigation. Sheep's Fescue has an added bonus of being shade tolerant. Grasses in these new blends are typically slower growing and shorter, so you can mow much less often or even not at all, if you accept a 'shaggy' lawn that grows about 20 cm high.

A lot of work has gone in to improving conventional grasses, and suppliers may indicate this with products identified as 'Turfgrass Water Conservation Alliance-qualified'.

ABOVE: Blue Grama Grass, established from seed, in a Lethbridge yard. Blue Grama sends out short rhizomes to form a manageable sod. Named for its bluish/purple seed heads, this grass is perfect for very dry/open sites in the southern part of the province. 25 cm tall, including seed head. Tickles.

ABOVE: Mixed fine fescue sod, including Creeping Red, Sheep, and Hard fescues. Shade-tolerant.

Rocky Mountain Fescue is another native option for a no-mow lawn. It is very fine-leaved and less than 20 cm tall, including seed heads. Since it is a clump grass and not a sod-forming grass (rhizomatous), the effect is more lumpy, It works well in a meadow with other short species like clover. Don't confuse the clumping fescues with Creeping Red Fescue, which is in almost every mix. It does not have the same properties as the clumping fescues.

You can overseed an existing lawn with improved species by mowing it very short, raking until bare soil is exposed in places, seeding, topdressing, rolling, and watering (same as for starting a lawn from seed). Once roots are well-established, in about 3 years, an unirrigated lawn will begin to be dominated by the species that need less water to thrive.

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Ready to get off grass?

Choose shorter plants that will knit into a carpet of low-maintenance beauty.

Natives

Bearberry†

Pussytoes

Wild Strawberry

Creeping Juniper†

Canada Anemone*

Star-flowered False Solomon's Seal

† Photos compliments of TreeTime.ca — all rights reserved *en.wikipedia.org

Ornamentals

Creeping Jenny

Cliffgreen

Barren Strawberry*

Russian Stonecrop & Mother of Thyme

Bugleweed

Lamb's Ears

Restoring the Balance

Don't declare war on unwanted plants and bugs. Instead, make your landscape more welcoming for the good guys. Pesticides, fungicides, and herbicides can harm or kill or helpful birds, insects, and soil and water organisms along with the problem species. Many popular chemicals also contain phosphorus, which directly contributes to toxic algae blooms in water bodies. These chemicals can also kill microorganisms that mediate the transfer of phosphorus from soil to plants. So even if you're applying fertilizer, the plants may not benefit from it because the uptake mechanism has been destroyed.

Numerous, healthy soil organisms are crucial to thriving landscapes. Using compost and compost tea, rather than chemical fertilizers, supports healthy soil, and healthy plants will follow.

Select a diverse array of colourful, flowering native plants to attract a wide range of helpers: pollinators (bees, butterflies, moths), parasitoids (wasps, ants, sawflies), and predators (birds, bats, ladybugs, spiders, damsel and dragonflies, ground beetles).

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Mulch

Mulch keeps soil cool, traps runoff and sediments, provides nutrients to plants, holds moisture in the soil, provides a good environment for micro-organisms and insects, provides a base for increased biodiversity, and keeps unwanted weeds from germinating.

RIGHT: Fresh hardwood arborist chips from Cottonwood trimmings arrive with some twigs and leaves intact. They take about six weeks to look like "regular" mulch, but the price is right (free).

In this case they were placed over about 10 sheets of wet newspaper in order to smother Creeping Bellflower and Quackgrass, which were threatening to invade this Saskatoon hedge.

Good mulches break down easily and don't dry out and blow away. Good types include tree waste or ground coniferous tree bark. Fir and cedar bark mulches are usually disease-free, however they aren't very compatible with the ecology of prairie plants. Mulch comes in a variety of forms, from coarse to fine, chipped or shredded. Mulch should be about 7.5 cm thick, with new layers of about 2.5 cm being added each year. Ideally, wood mulch is used merely as a placeholder when plants are new, before Mother Nature's mulch — leaf litter — has been generated. It is not necessary to continue to add mulch once beds are established if plant densities are high enough. Leaf litter slowly breaks down and provides the nutrients that plants need. While plants generally feed themselves in nature, densities are usually not sufficient in the built environment to forego additions.

On Trend: Naturalistic Planting

Especially in flowering perennial beds, people are catching on to the virtues of groundcovers as an alternative to mulch. Groundcovers (and cover crops in the short-term) provide a more natural environment for self-seeders and more closely mimic nature than woody mulch in the prairie setting. Many native plants only live a few years so they need to self-seed to persist. In a mulched bed it is difficult for these seeds to establish.

Nature's groundcover on the prairies is grass, and a new style of planting is dense and layered, frequently incorporating it. Known as ***New Perennialism***, plants are massed with a procession of bloom, as seen on the following page in this 3-year-old Calgary garden. In this example, Russian Stonecrop and Maiden Pinks, which both self-seed, provide a groundcover layer. Perennial Sage and Meadow Arnica (native) add mid-season interest, with Canada Goldenrod (native) blooming later on in the year. Not visible in the photo are spring Crocuses, followed through the year by Fleabane, Blanket Flower, Asters and Blazingstar. Other groundcovers in this garden include Creeping Jenny, Mother of Thyme, Dutch Clover and Johnny Jump-Ups. Shrubs and trees provide edible fruit. Perennials are left to stand over the winter to capture snow, provide food and shelter, and add aesthetic interest. A spring weed-whack signals a new season of bloom. This style of gardening seeks to maximize ecological benefits while reducing inputs like labour, machinery and chemicals. Plants are allowed to expand, move around, and find their own fit.

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RIGHT: Reverse view of the garden on the previous page. Mixing spire-shaped blooms with ovals and a groundcover layer of a different texture is usually an effective way to achieve a pleasing aesthetic. Planting in blocks and keeping densities high conveys intention and lushness.

LOWER LEFT: Pearly Everlasting (*Anaphalis margaritacea*, native) makes a great groundcover for hot, dry disturbed sites.

LOWER RIGHT: In shade to part-sun, Canada Anemone (*Anemone canadensis*, native) and Star-flowered False Solomon's Seal (*Maianthemum stellatum*, native) will spread by rhizomes to form a patch. Canada Anemone, the larger bloom, prefers moisture, so start if off at the end of a downspout and see where it goes.

More Information about New Perennialism

Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes. Rainer, Thomas and Claudia West. Available through online bookstores.

Gardenista article Oct. 28, 2019. Dream Landscapes: 10 Perennial Gardens Inspired by Piet Oudolf **https://gardenista.com/posts/dream-landscapes-10-perennial-gardens-garden-designs-inspired-by-piet-oudolf/**

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Compost

Adding compost to your soil feeds the beneficial soil organisms that create structure and spaces within the soil, so that runoff can easily soak into the ground. These soil organisms also break down pollutants and help move carbon dioxide from the atmosphere into long-term storage in the soil.

About once a year, if you are not grasscycling, your lawn may benefit from a light application of compost (topdressing). **Take care to ensure that the compost is not vulnerable to being washed off your property.** Rake it in slightly. Some plants, such as roses and vegetables, need rich soil, so you can add compost around these plants a few times each year. Getting the frequency and amounts right is a fine balance between too much and not enough. If in doubt, get your soil tested.

Good compost includes anything derived from plants and a few extras like feathers and eggshells. Avoid animal-based (manure) composts, as they tend to have a high phosphorus content, which can pass through soils and end up in water bodies, contributing to issues like algae blooms.

Your compost can be a simple pile in a corner of the back yard, a wooden bin, or something commercially available. Purchased composters often work faster. One cubic metre is large enough for a family's vegetable waste plus that of a small yard. For a larger yard that produces lots of waste, a bigger, multi-binned compost system may be necessary.

What should NOT go in: Meat, coal, charcoal, dairy products (milk, butter, eggs, sour cream, yogurt), diseased plant parts, insect-ridden plant parts, fats, grease, lard, pet wastes, yard wastes treated with pesticides.

Keep compost close but not too close. It should be easy to access but far away enough so any odors aren't noticeable.

Composting Grass and Managing Debris

The best way to deal with grass clippings is to mulch them right back into the grass while cutting it ("grasscycling"). If you have extra clumps of grass they can be raked up and placed in your compost. Grasses can form a thick layer that doesn't break down easily in compost bins, so be sure to mix grass clippings in with some other composting material. Grasscycling is **not recommended** in communities working to control nutrients associated with harmful algal blooms. In these communities, clippings should be bagged and disposed of according to local requirements. **Never blow leaves, clippings, soil or debris into roadways, ditches or water bodies. When these organics decompose, they add nutrients that contribute to algae blooms.**

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Products and Suppliers

ALCLA Native Plants (Calgary) sells native flowers, grasses, and shrub seedlings.
alclanativeplants.com

Bow Point Nursery (Calgary) sells field-grown woody native plants.
bowpointnursery.com

Wild About Flowers sells wildflower plants and seeds from the montane area southwest of Calgary online, and has a great plant selector tool.
wildaboutflowers.ca

The City of Edmonton keeps a list of area native plant suppliers and plants.
edmonton.ca/residential_neighbourhoods/PDF/NativePlants-Suppliers-AvailabilityList.pdf

TreeTime sells prairie-adapted and native tree, shrub and berry seedlings online.
treetime.ca

Eagle Lake Landscape Supply, Bluegrass Nursery, Bos Sod and others sell fescue-based sod**.**

Plant search tools are at Eagle Lake and Mill Creek Nurseries and on **perennials.com**

More Information

Alberta Low Impact Development Partnership
alidp.org

Pigeon Lake Watershed Association
plwa.ca

The Alberta Native Plant Council (ANPC) website offers a list of native plant growers as well as information about wildflower seed mixes, plant lists, and collection guidelines
anpc.ab.ca

Edmonton Native Plant Group has a Pollen and Nectar Plants download
edmontonnativeplantgroup.org

Eco-yards: guidance on eco-friendly landscaping and maintenance
eco-yards.com

Noxious weeds in Alberta (need to be controlled)
bit.ly/noxious_weeds

Prohibited noxious weeds in Alberta (need to be destroyed)
bit.ly/prohibited_weeds

Common Coulee Plants of Southern Alberta
bit.ly/coulee_plants

Riparian and Shoreline Plants: What's A Wildflower, What's A Weed?
bit.ly/whats-a-weed

PIGEON LAKE WATERSHED ASSOCIATION
ALIDP Alberta Low Impact Development Partnership
This project was undertaken with the financial support of:
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Environment Canada Environnement Canada
Land Stewardship Centre

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