



Everything that slows us down and forces patience, everything that sets us back into the slow circles of nature, is a help. Gardening is an instrument of grace. — May Sarton (1912 – 1995), American poet, novelist and memoirist.

The glory of gardening: hands in the dirt, head in the sun, heart with nature. To nurture a garden is to feed not just on the body, but the soul.- Alfred Austin (1835 – 1913) English poet

Correction Notice... in the last newsletter the photo identified as the Ontario native plant *Corydalis sempervirens* is actually the European woodland native plant *Corydalis solida* – thanks to Glen's expert eagle eye for noting the error.

The Real Dirt – Soils, Amendments and Mixes

This is the time of year when new plans for this year's garden percolate in the minds of many a seasoned gardener and new gardener. But a garden will not thrive if the soil conditions are not suitable.

According to OMAFRA land maps, the soils in Millbrook and surrounding area north to the southern border of Peterborough and south to Port Hope are class 1 to 3 agricultural lands combined mainly of different kinds of loams. There are pockets of exceptions with some areas known as the Pontypool sands, areas of clay, wetland gley soils where drainage is poor and the gravelly sandy terrain of the Oak Ridges Moraine.

Knowing what kind of soil is in your backyard is key to knowing whether the soil needs to be amended or instead, what kind of plants the soil will support. Soil is a combination of minerals, air, water, teeny animal organisms and other living matter and their wastes or decaying bodies.

Here's a quick way to tell what kind of soil you have using the squeeze test. To determine your soil type, take a handful of moist (but not wet) soil from your garden, and give it a firm squeeze. Then, open your hand. One of three things will happen:



1. It will hold its shape, and when you poke it lightly, it crumbles. This means luxurious loam – the preferred soil!



2. It will hold its shape, and, when poked, sits stubbornly in your hand. This means you have clay soil.



3. It will fall apart as soon as you open your hand. This means you have sandy soil. Sandy loam will not break apart as quickly.

UCCE Master Gardeners of Orange County – photo credit (shareablewebsite) <http://mgorange.ucanr.edu/>

Loam, the ideal soil for gardens, is 40 percent sand, 40 percent silt, and 20 percent clay. It is composed in proportion of the best from each soil particle type. It has good water drainage and allows air to infiltrate the soil like sand, but it also holds moisture well like clay and is fertile like silt. Adding organic matter is the best way to make soil more loam-like and improve its structure, but this sometimes can be an expensive venture when commercial amendments are required on a large scale. Adding organic matter to any soil through composting is the least expensive and safest way to feed the soil. Leave those leaves on garden beds or dig into vegetable beds!

One can also take the alternative approach by growing plants that do well in the soil type in your garden, like choosing drought-tolerant plants for sandy soils or plants that can tolerate clay soils such as many of our native plants. One can grow a garden successfully in any soil, as long as the plant's roots are accustomed to the conditions.

The Drainage Test

Besides knowing what kind of soil is in your backyard, it is also important to determine whether there are drainage problems or not. Some plants will eventually die if their roots stay too wet. To test the drainage of the soil, first dig a hole about six inches wide and one foot deep then fill the hole with water and let it drain completely. Keep track of the time it drains. Fill the hole with water again. Keep track of how long it takes the water to drain completely the second time around. If this two-step process takes more than four hours to drain, this

indicates poor drainage. If this is the case, the installation of a rain garden with water-loving plants can help as well as other measures such as re-routing water flow away from the garden area, adding compost, creating raised beds, installation of gravel channels or a French drain.

The PH test

Just as important to know the soil type in your garden and how land drains, it is also important to know the pH of your soil. Soil pH is a measurement of the alkalinity or acidity of soil. Soil pH is measured on a scale of 1-14, with 7 as the neutral mark – the lower the number, the more acid the soil; the higher the number more alkaline. A pH of 5.5 to 7.0 is just about right for most home gardens, since most plants thrive in this slightly acidic to neutral range. According to OMAFRA maps, the soils in our area range between this desirable pH level of neutral to slightly acidic. However, some plants such as blueberries, azaleas, rhododendrons, heathers etc. prefer more acidic soil.

Soil test kits are available at hardware and garden centres, but one can undertake easy, these easy homemade tests to see if the soil in your garden is alkaline or acid.

The Home pH Test:

1. Scoop some soil into a container. Add 1/2 cup of white vinegar to the soil. *If it fizzes, you have alkaline soil*, with a pH between 7 and 8.
2. If no reaction occurs, scoop a fresh soil sample into a second container. Add half a cup of water, and mix. Then, add 1/2 cup of baking soda. If the soil bubbles or fizzes, *the soil is highly acidic*.
3. If your soil does not react to either test, it has a neutral pH . Keep adding organic materials such as compost and leaf mold to maintain that balance.

If necessary, one can amend soil with wood ash or lime if it tested acidic and with sulfur if it tested alkaline.

One option to deal with poor soil conditions, drainage problems or unsuitable pH levels is to build a raised garden bed and fill it with a well-balanced soil mix. At this time of year, garden centres, hardware stores and even grocery stores offer a plethora of all kinds of soil amendments and mixes for raised beds, garden beds and container planting – enough to make one’s head spin, composted manure, super soil, black earth, topsoil, triple mix etc. etc. etc. What to choose?

A cautionary note!

Most soil blends and composts are labelled as being made from “organic” materials. “Organic” materials can be anything that is biodegradable. And, the plant based organic matter in these soils does not necessarily mean the materials are ‘chemical free’. ‘Chemical free’ means free of pesticides, insecticides and chemical fertilizers and other pollution. While Canada and the United States have strict criteria for foods labelled as ‘organic’ and thus chemical-free, those labelling standards do not necessarily apply to those bagged soil amendments found in almost every grocery store, hardware store and most garden centres. Ontario has a set of standards for the commercial composting of organic matter, but the guidelines are voluntary. At the federal level, there is also a national voluntary industry standard for compost. Pro Cert Canada (more information further along) does certify some manufactured soil amendments as being ‘chemical-free’ and ‘organic’.

Some local gardeners as well as gardeners across Canada and United States using some commercial soil amendments have, on occasion, had very disturbing results. Seedlings planted in some of these amendments failed to germinate or died shortly after emerging. Beans which are such easy germinators, failed to germinate. Plants where these amendments have been added to became whitish, developed cupped or fernlike leaves, with twisted stems - especially on tomatoes - and perennials and annuals became stunted, flower buds never opened, were deformed and/or died. There are many online blogs about this from gardeners who don’t understand why their gardens are in such trouble or dying. Some years ago, several Millbrook area gardeners experienced this problem too.

Research has pinpointed a disturbing link between farm herbicides used to treat and control weeds, and commercial compost and fertilizers.

Herbicides such as clopyralid, picloram and aminopyralid often are used to control certain broadleaf weeds on commercial farms. These herbicides are a systemic, which means when applied, the chemical is soluble in water and moves through the plant’s vascular system. The chemical is a specific plant growth regulator.

There are many articles online about this serious problem. The following is information from *The Compost Gardener* ([shareable website](#)):

Residues of Picloram, Clopyralid or Aminopyralid Herbicide Create Killer Compost

Minute concentrations of picloram, clopyralid and aminopyralid, as low as 1 ppb (parts per billion), can be lethal to sensitive garden plants such as peas, beans, lettuce, spinach, tomatoes and potatoes.

Most pesticides, including herbicides, break down quickly in the composting process. Picloram, Clopyralid and Aminopyralid do not. These chemicals are

- Easily absorbed by plants.
- Remain chemically stable and intact in both live and dead plants.
- Do not breakdown substantially in animal digestive tracts so contaminate manure, urine and bedding with residues.
- Breakdown very slowly in composts and soils with an estimated half life of 1 - 2 years.
- Affect sensitive crops at very low concentrations - 1-3 ppb.

The only way to handle this potential threat is to keep materials contaminated with picloram, clopyralid and aminopyralid out of your garden in the first place.

Trade Names Please

When you're talking to a farmer supplying hay, straw or manure asking about picloram, clopyralid and aminopyralid is probably not enough. You'll need to ask about specific trade names of the herbicides.

These herbicides are sold under the following trade names.

- Picloram - sold as Tordon, Access, Surmount, Grazon, and Pathway.
- Clopyralid - sold as Curtail, Confront, Clopyr AG, Lontrel, Stinger, Millennium Ultra, Millennium Ultra Plus, Reclaim, Redeem, Transline.
- Aminopyralid - sold as Milestone, Forefront, Pharaoh, Banish.

Where and Why are Picloram, Clopyralid and Aminopyralid Used?

These herbicides are used to control broadleaf weeds such as Canada thistle in the following situations

- Turf such as golf courses.
- Pastures for animals such as cattle, horses and other animals.
- Grass family crops such as wheat, barley, grass hay.
- Transmission line rights of way.
- Ditches along roads.

Two things make these herbicides a popular choice. First, they are persistent so do not need to be applied often. Second, they appear to have little to no effect on the health of animals and people.

How Do Picloram, Clopyralid and Aminopyralid End Up in your Garden?

There are three main paths that could bring these herbicides to your garden.

- Contaminated Mulch materials - hay, straw and grass clippings.
- Contaminated Manure and Bedding from livestock fed crops treated with these herbicides. **Ask whether animals have been fed hay harvested from ditches or transmission lines. Avoid those that have.**
- Contaminated Composts made from contaminated hay, bedding, grass clippings and manure.

Ironically, the people most likely to wind up with these materials in their gardens are organic gardeners.

What Crops are Affected?

Even very small amounts of picloram, clopyralid and aminopyralid - as little as 1 ppb - can negatively affect sensitive plants. Dow, the manufacturer of these herbicides, claims that only a few plants are affected. The average home gardener may beg to differ. Sensitive plants include:

- Legume family - including lupines, peas, beans and clover.
- Compositae family - including daisy, aster, sunflower and lettuces.
- Nightshade family - including tomatoes, potatoes, peppers and eggplants.
- Umbelliferae family - including carrots.
- Many other vegetables and flowers.

Sensitive plants are exposed to these herbicides develop cupped or fern like leaves and twisted stems. They do not produce well, though in theory the crop is safe for you to eat.

What to do if Your Garden is Contaminated

This will pass. It may take a long time but eventually the herbicides will disappear. In the meantime you can grow grass family crops including corn, wheat and barley. Yippee!

You can grow a lawn. If you have contaminated material left use it on your lawn and grasscycle. Do not use these clippings for compost or mulch.

Some crops such as the squash and mint family are less sensitive - they can handle concentrations of about 300 ppb before succumbing.

Keeping testing using the bioassay method developed by Washington State University until your soil tests clear.

How to test Compost, Soil and Materials for Picloram, Clopyralid and Aminopyralid residues

Lab tests are very expensive and slow for these residues in large part because they need to detect extremely low levels of pesticides. However, you can do a fairly accurate test yourself using these methods.

To test manure, compost or soil you think might be contaminated.

1. **Thoroughly mix 1-2 parts manure, compost or soil with 1 part commercial potting soil in a clean bucket. Prepare enough to fill three 4-inch pots.**
2. **Fill another three clean pots solely with commercial potting soil. These will be the untreated comparisons.**
3. **Place each of the pots in a separate saucer to prevent water from on pot reaching another.**
4. **Water the pots and leave to stand for 24 hours.**
5. **Plant each pot with three pea or bean seeds.**
6. **Observe subsequent growth for four-week period and note any ill effects in the pots containing the possibly contaminated mix, such as cupped leaves, fern like growth on new shoots or twisted stems. These symptoms may indicate picloram, clopyralid or aminopyralid residue in the manure, compost or soil. Signs of other kinds of damage will most likely indicate other issues such as damping off or bacteria-infected soil, etc.**

This link will give you more details on this [bioassay method](#) including photos of herbicide damaged plants.

To screen grass clippings, hay and straw you are thinking of using as a compost or mulch material

1. **Fill 6 clean pots with commercial potting mix. Three will be for your tests and three will be controls.**
2. **Place each of the pots in a separate saucer to prevent water from on pot reaching another.**
3. **Water the pots and leave to stand for 24 hours.**
4. **Plant each pot with three pea or bean seeds.**
5. **Soak the clippings, hay or straw in a clean bucket making a tea colored brew. Use this brew to water your three test pots and regular water for your control pots.**
6. **Observe subsequent growth for four-week period and note any ill effects in the pots containing the possibly contaminated mix, such as cupped leaves, fern like growth on new shoots or twisted stems. These symptoms may indicate picloram, clopyralid or aminopyralid residue in the hay, grass or straw. Signs of other kinds of damage will most likely indicate other issues such as damping off or bacteria-infected soil, etc.**

<https://www.the-compost-gardener.com/picloram.html>

Although commercial soil amendments available locally seem to be free of herbicide residue, this has not always been the case. It is impossible to know if amendments are currently free of contaminants, so testing them out before applying makes good preventative sense. One should also carefully read the label of materials contained in amendments. Some contain worm castings, composted chicken and rabbit manure, sawdust, mycorrhizal fungi, worm castings, alfalfa and/or kelp meal, feather meal, mushroom compost, gypsum and bat guano, all which are herbicide-free.

Local NOTE: Millbrook Farm Supply carries some organic “*Certified for Organic Agriculture by Pro Cert Canada*” soil amendments under the label “Delicious Dirt” produced by the Pefferlaw.com soil company in nearby Cannington: <http://pefferlaw.com/>

A list of other Pro Cert Canada certified ‘organic’ soil amendments can be found here:

<https://www.pro-cert.org/inputs/>

And sad to say, potting mixes can also create serious problems. This is a link to complaints submitted to Consumer Affairs about the very popular *Miracle Gro* potting

mix. https://www.consumeraffairs.com/homeowners/miracle_gro.html

Well then - what about those bags of Black Earth sold everywhere – surely this must be a suitable growing medium and amendment??

Black Earth: Not What You Think – Larry Hodgson – The Laid Back Gardener (shareable website)

Gardeners seem to believe that the darker a soil is, the better it is. And that does tend to be true in many cases. But not always.

In my part of the world (Northeastern North America), there is a product widely sold as “black earth” that is very popular with gardeners. It is also very cheap. I’d like to say dirt cheap, but it’s actually cheaper than “dirt” (topsoil). It’s sold by the bagful in garden centers, hardware stores and even supermarkets where people load up their trunks with what they think is top-quality soil at rock-bottom prices. They’re very unlikely to be happy with the results.

Of course, this product isn’t black earth. Black earth (the real stuff) is a type of soil officially called chernozem. It’s very rich in humus, chock full of NPK and ideal for growing most nutrient-dependent plants, including vegetables. It’s usually found in what were originally low-lying, marshy areas, now mostly

drained and being used for agriculture. If you really could get your hands on true black earth at a reasonable price, it would be wonderful: pretty much the ideal garden soil!

But the stuff sold as black earth is not chernozem, at least not in the eastern part of the continent (I'm sorry I can't generalize: the term "black earth" can mean different things in different areas). In fact, it isn't soil at all, but black peat, a very dark-colored type of peat found at the bottom of sphagnum peat bogs, under the more widely used blond peat (the top layer) used in most quality potting mixes and the somewhat decomposed brown peat moss (middle layer), a lesser quality peat used mostly in soil mixes for outdoor gardens.

Black peat, also called peat humus, is the lowest quality peat. It contains no fiber and, unlike other peats, compacts readily and doesn't hold nutrients well. It needs to be amended with limestone for most garden uses, as its pH is much too low for most plants. It can be useful for amending clay soils (if you can get it to mix with clay: good luck with that!) and sandy soils, but its effects don't last. Blond or brown peat are much better choices for this use.

Other "black earth" products do contain topsoil and may be labeled "black earth soil", "black garden soil" or "black earth topsoil." They're slightly better, but again, you'd probably be better off with regular topsoil, which is usually amended with higher quality brown peat.

But "black earth" (black peat or peat humus) remains popular in the soil packaging industry ... essentially as a colorant. No, packaging people will never say that, but that's pretty much the case. They know gardeners associate a dark soil color with good quality soils, so ... give the people what they want.

The problem is, you never know what you're getting with a product labeled "black earth." Hopefully, the manufacturer added some limestone to the product to bring the pH up to an acceptable level and if so, that would be listed on the package. You should never try growing plants in this. Yet the label says "earth" in big letters and many people assume that means they can use it directly from the bag for containers, vegetable gardens, etc. And that will lead to disaster. Very few plants will survive for long in black earth if it's just limed decomposed peat moss.

In a nutshell, "black earth," unless you are certain you are really getting true chernozem (and that may be possible in certain parts of the world) is at best a lower quality product, certainly not the quality product many gardeners think it is. At worst, it's strictly a soil amendment and not "earth" that you should try growing plants in. Personally, I avoid it like the plague.

But black earth will probably continue to be a big seller because people remain convinced dark soils are the best. But if black earth really were the best product, why is it always the cheapest “soil” on the market? And why is it always on sale?

I know your mama told you this, but it’s worth reminding you from time to time: you get what you pay for!

<https://laidbackgardener.blog/2019/04/27/black-earth-not-what-you-think/>

On a positive note! Those Pussy Willows!



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The spring blooms are so delightful because they signal the last throes of winter! The species known as ‘pussy willow’ here in Ontario, *Salix discolor*, is a small, shrubby species of willow that can be found around wetlands and moist woods. However, they are adaptable to a range of conditions. From experience in this garden on the hilly Oak Ridges Moraine, this shrubby tree surprisingly will also survive and even thrive in dry conditions. The first grey fuzzy nubs appear around Easter. These soft silver tufts resemble tiny cats’ paws – hence the common name ‘pussy willow’.

These silver nubs are expanding into full bloom right now. Even though the flowers lack petals or showy colors or any fragrance, they are very striking especially in masses moving in a slight breeze. Only the male plants produce the larger fuzzy flowers because pussy willows are ‘dioecious’, meaning there are both male plants and female plants. As indicated in the above photo, the female plant produces less spectacular catkins that look somewhat like fuzzy green caterpillars. The flowers are called ‘catkins’, for the tails of cats (from the old Dutch word for kitten - katteken).

Pussy willows can be easily started from early spring stem cuttings rooted in water. Branches at this time of year can also be simply stuck into damp ground and will set root! These native willows can grow to about 20 feet tall, but can be kept more compact through pruning. Deer like to browse on young branches so they often do some natural pruning. The plant often will produce basal shoots when old or diseased trunks die back or are cut down. They are a good choice for poorly drained sites but they do have invasive roots so they must be kept far away from septic tank fields, as well as sewer and water lines. They do best in full sun and they have a life-span ranging from 20 to 50 years.

In the Czech Republic, Slovakia and parts of Hungary, branches are braided into whips decorated with ribbons as part of their Easter tradition.

These trees play a crucial role in the natural world but are often overlooked or looked down upon. They provide an early food source for honey bees, mason bees, mining bees, solitary bees and other early pollinators such as mourning cloak butterflies that are attracted to its pollen rich blooms. If the native pussy willow is not an attractive option, there are early blooming non-native species of pussy willows that have unusual forms such as dragon's claw willow (*Salix babylonica* 'Tortuosa') and Japanese fantail willow (*Salix sachalinensis* sekka) which, from experience, will grow in our area, attract pollinators, and are also adaptable to not the most ideal growing conditions.

Mother's Day is approaching and traditionally many would head out to garden centres looking for plants or garden accessories for oneself or as gifts for mothers, grandmothers and mothers-in-law, but current conditions have put a damper on that experience. The government has just announced it will allow garden centres to open because they are therapeutic, but only with curbside pick-up which some argue is really not workable. One can order plants from retailers online or by phone but most gardeners do prefer to browse and select their own plants. Johnston's Greenhouse in Peterborough has announced it will be opening a webstore today on May 4th. The Premier has said he hopes that in the near future people will be able to look at and purchase annuals and perennials and garden accessories in person.

Some retailers are bringing in plants that can be picked up along with groceries like Farm Boy in Peterborough and Foodland in Millbrook. The Loblaw consortium which operates the Supercentre grocery store in Peterborough and the Independent grocery store in Port Hope has indicated their garden centres will be open with social distancing and other safety measures in place. It has been indicated online that one can come and browse the plant selection at the at the Millbrook Farm Supply. The Garden Hill Store as well as the Garden Hill Farmers Market usually has an outdoor selection of plants.

Thanks to local gardener Andy Harjula, catalogues from Richters have been left for anyone to pick up at the Pastry Peddler in Millbrook. They are located by the window on the left as you go in. The catalogue is also available online – but do note many of the plants have already been sold out. https://www.richters.com/Web_store/web_store.cgi?show=list&prodclass=Herb_and_Vegetable_Plants

While there are restraints on obtaining plant material on Mother's Day (which according to the latest weather models will be very cold with possible snow showers!), Mother Nature, on the other hand, is becoming less restrained experiencing benefits from our current discomfort with cleaner air, less noise pollution - so more audible bird song and thus successful bird mating, nature trails free of human traffic including noisy ORVs (except for some spoilers who think restrictions and prohibited trails don't apply to them) so animals can feel safe to move along these pathways, foxes and rabbits roaming around Millbrook, a black bear wandering the streets of Port Hope, and fish allowed to spawn freely in the Ganaraska River as well as other nearby streams and ponds...

“To find the universal elements enough; to find the air and the water exhilarating; to be refreshed by a morning walk or an evening saunter... to be thrilled by the stars at night; to be elated over a bird's nest or a wildflower in spring—these are some of the rewards of the simple life.” — John Burroughs (1837-1921 – notable American naturalist and leader in the conservation movement)