Preparing soil

Soil health is an extremely important and interesting aspect of gardening that unfortunately sounds extremely useless and boring. The more you learn about how important healthy soil is for healthy plants, the more you realize that dirt is a dirty word, and that soil is much more than dirt: a complex combination of **clay, silt, sand, and organic matter**. Knowing what kind of soil you have before you plant lets you know what crops will thrive and which will need things added to the soil (**amendments**) in order to do their best. The ideal soil is rich and black, high in organic material, with lots of insects and microbes aerating it and making nutrients available to plants. Luckily, even highly degraded soil can be greatly improved by mixing in **compost**, which aerates and adds nutrients and life to any soil.

An easy way to tell a lot about your soil is to dig a hole about one foot wide and one foot deep. If it's relatively easy to dig, that means your soil has low **compaction**, and it will be easy for plants to grow strong roots. Then there are three simple tests you can do to figure out the composition of your soil:

1) *Rub some dry soil between your fingers. The grainier it feels, the more sand in the soil*
2) *Squeeze a handful of moist soil in your palm so it forms a ball, then pass it between your hands. The longer it holds its shape, the higher the level of clay. If it crumbles immediately, you have little clay content*
3) *Roll moist soil into a thin cylinder shape. Squeeze soil tube to make into a ribbon. If the holds like a ribbon you have high clay content, if it flakes or peels, you have high silt content*

As you return the soil into the hole, count the number of earthworms you see. More than 5 indicates adequate fertility, while 10 or more implies extremely fertile soil. Less than 4 worms means your soil has either very low fertility, or that your **pH** (a measure of acidity) is too high or low.

If plants are generally growing well in the garden, you can assume your pH is adequate, around 7.0 on a scale of 0-14. If many plants are struggling, however, you may want to get a pH test kit from a garden centre and then amend soil accordingly, adding lime (calcium) if soil is too **acidic** (low pH) or sulphur if it is too **alkaline** (high pH). While you're adjusting it, you can grow plants that thrive in acidic

Acidic	Alkaline
Bayberry	Asparagus
Blueberry	Bean
Butterfly weed	Beet
Cardinal flower	Carnation
Lupine	Cauliflower
Lily	Cucumber
Marigold	Nasturtium
Raspberry	Onion
Sweet Potato	Squash
Watermelon	Sweet pea

or alkaline soil (*see box 1*). Figure 2 outlines other soil amendments that you may consider if certain problems present in your soil. Adding compost is always a good practice, and you can either make it yourself at home or use city compost, which is provided free in neighbourhoods across Toronto on Community Environment Days – check online for when there is one in your area!

Sources: Children's Garden and exploring Toronto Programs Training and Resource Binder

Nutrient	Deficiency Symptoms	Organic Amendment
Nitrogen	Lower leaves yellow; overall plant growth light green in colour; plant stunted	Blood meal, composted coffee grounds, cottonseed meal, fish emulsion/meal
Phosphorus	Foliage has a reddish or purple hue or is abnormally dark green, growth stunted	Bonemeal, colloidal phosphate, rock phosphate
Potassium	Tips and edges of leaves turn yellow, them brown; stems weak	Granite meal, greensand, kelp meal, Sul-Po-Mag, wood ashes
Magnesium	Leaves turn pale in between veins; growth is stunted	Epsom salts, dolomitic limestone, Sul-Po-Mag
Calcium	Buds and young leaves die back at tips; fruit develops blossom end rot	Crushed eggshells, gypsum, dolomitic limestone, calcitic limestone