

healthy soil



THE IMPORTANCE OF HEALTHY SOIL



Hello.
I'm Bec

I am the urban hillbilly behind Growing Home. For almost 10 years I have been growing my own food, raising chickens + bees, cooking from the garden, and preserving the harvest.

I love growing some of my own vegetables, herbs and fruit, so having healthy soil is important. Let's discover why, and what we can do to keep our soil at it's best!



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ABOUT SOIL

Understanding soil, and keeping it healthy is an essential aspect required to be able to successfully grow your fresh produce.

The soil supplies the plants with nutrients, water, structure to support them and it can help protect them from pests, deficiencies and disease.

But what is soil? Soil is part of the crust of the earth, made from broken down rock and organic matter. Soil has minerals, air, water, humus and living organisms in it. (Dirt doesn't have the nutrients, structure and living organisms that soil has).

Good soil is about 24% air, which seems kind of strange to think there is so much air in that solid looking soil. But look more closely, feel the soil in your hands, and you should discover it feels quite light to touch and turn over. If not, then we need to work on that before planting into it.

What else is in healthy soil? The minerals make up 45% of soil. Plants need them to grow and thrive, just like we do. The minerals include nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg) and Sulfur (S) plus other trace elements.

Carbon (C) is an element found in soil which can be inorganic (from broken down rocks) or organic (from organic matter, relatively available, or charcoal, relatively inert). It gives healthy soil it's dark brown-black appearance.

The humus (pronounced like 'hue-mus') is only 5% but very important organic component of soil, formed by the decomposition of leaves and other plant material by soil microorganisms. It is like a sponge, able to hold water (which is about 25% of soil) and nutrients for a long time, and deliver them to the roots of the plants. It also helps keep the soil loose and friable, with good structure for plant roots to grow in.

The living organisms are about 1%, lots of bacteria and fungi, protozoa and nematodes, mites, springtails, earthworms and other tiny creatures. Soil organisms are essential to help the plants grow, because they help turn the organic matter and soil minerals into the vitamins, hormones, disease-suppressing compounds and nutrients that plants need to grow. Their poop and wee also make the soil loose and crumbly.

If you are setting up vegetable gardens in your backyard, you may be able to use existing dirt and turn it into healthy soil by adding compost, worm castings, organic fertiliser like aged manure and giving it a couple of weeks to rest before planting.

Depending on where you live, you may consider having your soil tested by a soil testing company or lab for heavy metals, such as lead, pesticides or other pollutants before using it to make your vegetable gardens.

Of course, there is also the option to buy soil that is suitable for vegetable gardens, whether raised garden beds, no-dig gardens, or pots.

ABOUT SOIL





KEEPING THE SOIL HEALTHY

To make sure our soil is healthy, with lots of nutrients and minerals available for the plants, we need to regularly do something called 'conditioning' the soil. We can

ADD HUMUS

- We can make humus by composting vegetable peels, some leftover food and scraps, fallen leaves, mowed grass and other stuff, that gets broken down into dark brown, soft and crumbly humus
- You can create this in a compost bin (good for food scraps), within a garden bed itself such as hügelkultur or no-dig garden bed methods, or buying bags of compost to add

MULCH

- Mulch the top of your garden beds or pots with sugar cane mulch, lucerne straw or even let leaves from surrounding deciduous trees lay where they fall, to protect the soil from moisture loss and reduce exposure of the living organisms to sun and wind

BALANCE WATER

- Balance water input and drainage to ensure enough moisture but make sure the soil isn't always saturated which can drain nutrients and compact the soil

BOOST THE SOIL

- Boost the soil by giving it some organic food, called fertiliser, on occasion to add and balance essential nutrients. You may do this between plantings
- You can use worm castings (poo) or diluted worm juice (wee), aged chicken poo or other animal manure (be careful of poo collected from under shearing sheds or horse stables that may have chemicals/ lime in it, or weed seed) or slow release pellets that you can buy.
- Rock minerals/ rock dust/ natural mineral fertiliser can also be used to add trace elements.

ROTATE CROPS

- Rotating which garden bed you plant different type of varieties in each year can reduce the depletion of certain nutrients, and help prevent a build up of disease pathogens.

GROW GREEN MANURES

- Certain varieties are grown, often in Winter, only to chop them down, then dig them into the soil, or even just chop and drop.
- This is done to improve the soil by adding nutrients back in, but also to reduce weeds, and soil compaction which improves drainage.

CHECK + ADJUST pH LEVELS

- Check, and adjust, the pH level – see next section (note: adjustments can take time to take effect)

KEEPING THE SOIL HEALTHY



amine colours
n natural light
NOT
fluorescent

INCREASING ACIDITY

NEUTRAL

7

6¹/₂



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THE pH OF SOIL FOR EDIBLE GARDENING

The pH scale is a way of expressing whether elements are:

- Acidic (or 'sour' is another way to think about it)
- Neutral (or we could think of it as 'plain')
- Alkaline (which is kind of like 'bitter')

The pH level of the soil determines how much nutrients are available for your plants who are growing in it, as well as how much of the nutrients they can soak up. If we have the right pH in our soil, it means our plants will be happier and grow more vegetables, fruit and herbs for us.

Some plants prefer a slightly alkaline soil, some prefer neutral, and some slightly acidic. It depends on what you are growing, but as backyard gardeners who grow a range of edibles, we generally aim for 6.5 to 7.5, where the most minerals and nutrients are available to the most varieties.

However, if the soil is too acidic or too alkaline, the nutrients will not be available, no matter how much fertiliser that you add! And the living organisms are not very fond of acidic soil either.

We can easily test the pH of the soil in our garden beds. You can buy an affordable 'dye and powder' soil testing kit from your local nursery or hardware store (AUD\$15 to \$20, but you can do many tests with it).

You can also buy a tool that simply gets poked in the garden bed to test the pH level (or a tool that tests pH levels, moisture and light levels) in soil from most nursery or hardware stores.

For vegetable gardening, we are aiming for a pH level of 6.5 to 7.5, the most minerals and nutrients are available to the most varieties.

If your soil is really very alkaline (higher than 8) or acidic (lower than 6), there are a few things you can try do about it, though it can take time for the changes to take effect.

- If your soil is too **alkaline**, you can make the soil more acidic, by adding garden sulphur, or naturally acidic organic materials, like conifer needles, sawdust, peat moss and oak leaves.
- If your soil is too **acidic**, you can make the soil more alkaline (less acidic), we can add garden lime. You can also use wood ash.

Be mindful of any manures or other soil amendments you may use, such as coffee grounds, as these may alter the pH of your soil over time.

THE pH OF SOIL FOR EDIBLE GARDENING



TESTING THE pH LEVEL OF SOIL

Follow the instructions that come with the kit to determine the pH level in your soil, taking samples from different areas.

step one

Gather equipment (gloves, trowel, test kit) and set it out

step two

Take a teaspoon of dry soil samples from three different areas of your garden bed, digging down at least 10cm, and place each on the plastic card away from each other

step three


Add a small amount of 'pH dye indicator' liquid to each soil sample, enough to make a paste, mixing it with the mixing stick.

step four


Dust or puff each sample with the white powder and carefully mix through each one with the mixing stick.

step five

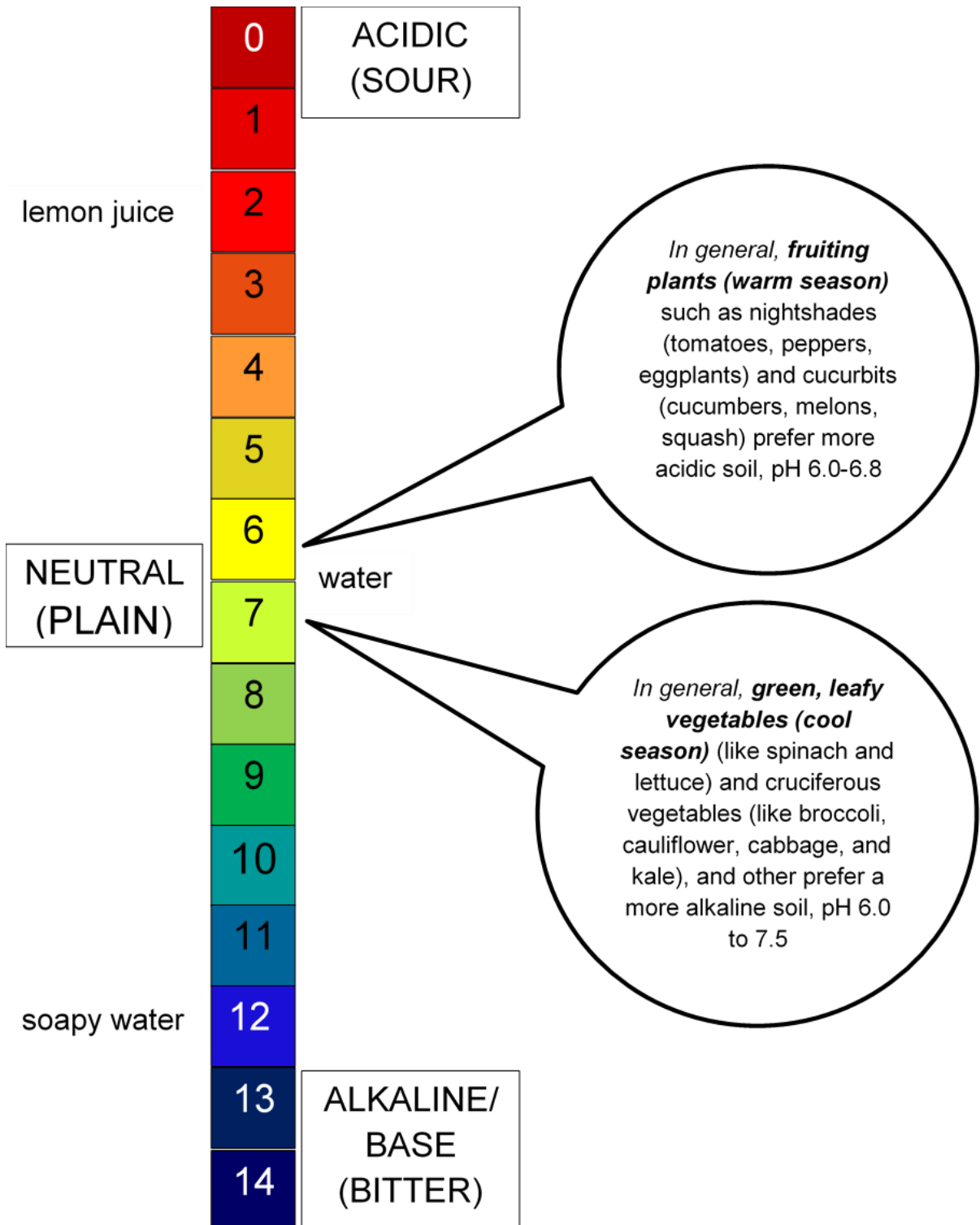
Wait a couple of minutes and then analyse by holding the testing card against each sample, matching the colour to see what the pH is.

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THE pH OF SOIL FOR EDIBLE GARDENING





TO DIG OR NOT TO DIG

In farming, you may see big tractors and equipment used to turn the soil over before planting, this is called tilling the soil, to loosen it, aerate it, kill weeds, and to add fertilisers/pesticides. Or perhaps like Mr MacGregor, you thought hoeing the rows of garden beds before planting was what gardening was all about. However, tilling the soil like this can deplete the nutrients and damage the living organisms in the soil.

It is for this reason that you may hear the sentiment, perhaps from permaculture influenced gardeners, to avoid digging the soil. It is also handy for those like me who are 'time poor' or unable to dig for whatever reason!

There may be times you can't avoid it, like digging in compost, green manure or to loosen compacted soil. This can be done with a garden fork to reduce the impact.

It is better to enhance your soil by top dressing with compost and natural fertilisers, by not overwatering and by making sure the water drains off adequately, and encouraging the living organisms. You can also 'chop and drop' green manures, and plant root vegetables which are known to break up the soil.

We can encourage or introduce worms (in worm towers or in compost), which help aerate the soil, and they can stop the soil from becoming compacted and depleted.

BUYING SOIL

If you are building raised garden beds, need layers of soil for no-dig garden beds, or simply don't have time to prepare and wait on conditioning existing dirt/ soil, you can buy vegetable garden soil. Look for the best organic soil that you can afford.

For smaller amounts you may be able to buy organic 'vege mix' from your local nursery or hardware store by the 25 to 30 litre bag full. Don't buy the 'potting mix' which is often coarser and has chunky bits of bark in it.

For buying larger amounts, you'll find it is usually better value from a wholesale landscape supplies for a trailer or truck load compared with buying bags (bags, however, may be easier to move around than shovelling soil and wheelbarrowing it to the garden beds, you call). If you get the soil delivered in advance, it can finish off any aging/ composting whilst it sits (under a tarp if you prefer), waiting for your garden beds to be ready.

Check the pH of soil you have bought. Although it should be neutral pH, sometimes bought vege soil tends to be alkaline and may need adjusting, though this can take time for it to work.

WHAT TO GROW IN





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find yourself in the dirt



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