A Garden Organic Factsheet

Soil Health

Healthy soils are the basis for healthy plants and the building block for any organic garden. The Food and Agriculture Organisation of the United Nations define soil health as "the continued capacity of the soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments, and maintain plant, animal and human health".

Lawrence Hills, founder of Garden Organic described fertile soil as being "one which will continue to produce good crops indefinitely" (Fertility Gardening, 1981).

Lawrence Hills with Comfrey Bocking 14

The importance of soil health

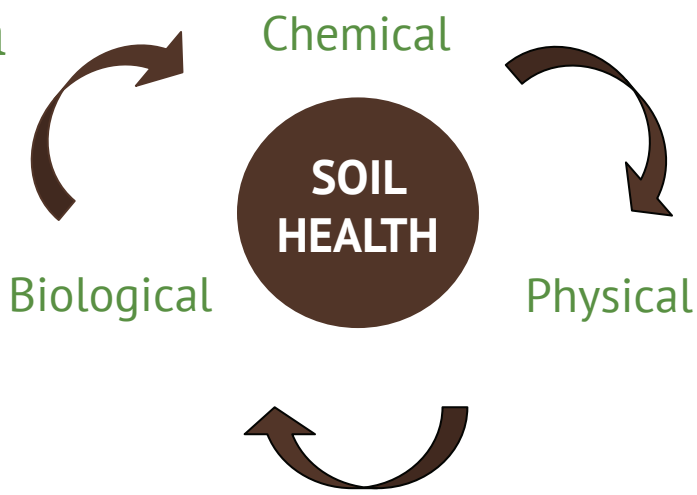
The health of our soils is fundamental to life as we know it on planet Earth.

- Our soils are home to around a quarter of our planets life forms.
- They provide us with the majority of our food supply.
- They give us both water and energy security.
- They store and filter water, improving our resilience to flood and drought.
- They help to combat climate change storing vast amounts of carbon, which would otherwise join atmospheric carbon.

Despite this, unsustainable land use practices are threatening this finite resource. Although new soil is being created all the time, the timescale is geological – it can take 1,000 years to create one centimetre of topsoil. Half the topsoil on our planet has been lost in the last 150 years[1]. Soil degradation is happening, from our own doorsteps as we pave over our front gardens to the dustbowls of America and expanding deserts of Africa. Erosion, salinization, compaction, acidification and chemical pollution all contribute to the degradation of soils around the world.

Components of soil health

The health of soils can be determined by the interactions that occur between the physical, chemical and biological components of the soil.



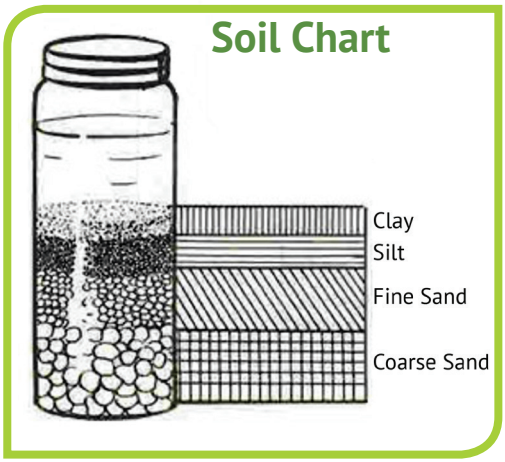
Physical components

This concerns the texture and structure of your soil;
Texture: Size of particles.
Structure: How the particles are arranged.

Soil mineral particles are classified into three types; sand, silt and clay according to the size of the particle. Soil is typically a mixture of these types with the most dominant particles giving the soil its physical characteristics. A sandy soil is made up of coarse particles which will allow air and water to easily pass through it, therefore these will drain easily, often washing valuable plant nutrients away and limiting microbial activity. In comparison a clay soil is made up of smaller particles and is less likely to allow air and water to pass through it. A clay soil is therefore much more likely to waterlog during periods of rain or conversely dry out and crack in periods of drought.

Chemical components

The chemical properties of soils are predominantly influenced by their underlying bedrock. Soils on a limestone bedrock for example are likely to be rich in calcium. The nutrient values of your soils are important as they will determine plant health. The nutrients required are nitrogen (N), phosphorous (P) and potassium (K). Soil pH varies according to local climate and bedrock, however pH 6.5 – 7 is optimum for nutrient availability.



Biological components

This concerns the decomposition of dead plant and animal residues to organic matter. The residues are a food source for a wealth of both micro and macro organisms. Organisms will move through the residues creating air and water channels as they go; building structure as well as leaving nutrient rich organic matter which is available to provide plant growth. Organic matter is able to bind together sand, silt and clay, increasing water retention and overall soil fertility.

What you can do...

There are simple steps that you can take in your own garden or allotment to protect and enhance the health of your soils;

- Regularly top up your beds with compost
- Avoid leaving your soils bare without vegetation cover by using green manures
- Try not to stand on your soil as this will compact it

More information can be found on each of these steps within the following factsheets; how to make compost, how to grow green manures, and managing your soil.

References

1. WWF (2015) Threats – soil erosion and degradation. Available at: www.worldwildlife.org/threats/soil-erosion-and-degradation