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Urban Farming - Lesson 4
Figuring out your Soil

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Does it look like chocolate cake?

The rule of thumb is: if it looks like chocolate cake it will likely be good for your plants!

Soil ideally needs to be dark in colour, crumbly and fluffy.

Soil can be bettered by balancing clay, sand and organic matter

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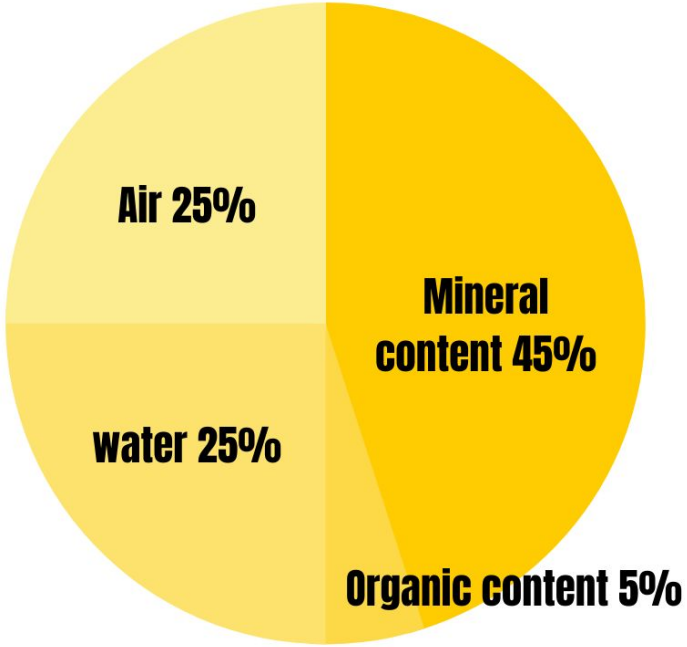
What is soil made of?

Soil is made up of weathered rock (sand, silt, clay) organic content (dead plant and animal matter as well as microorganisms) water and air.

It is important to consider the water and the air as part of the soil itself.



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Soil types

There will be three types of mineral powder sizes present in the soil

- Coarse = sand
- Medium = silt
- Fine = clay

A soil with a balanced proportion of sand and clay is called loam and is the best.

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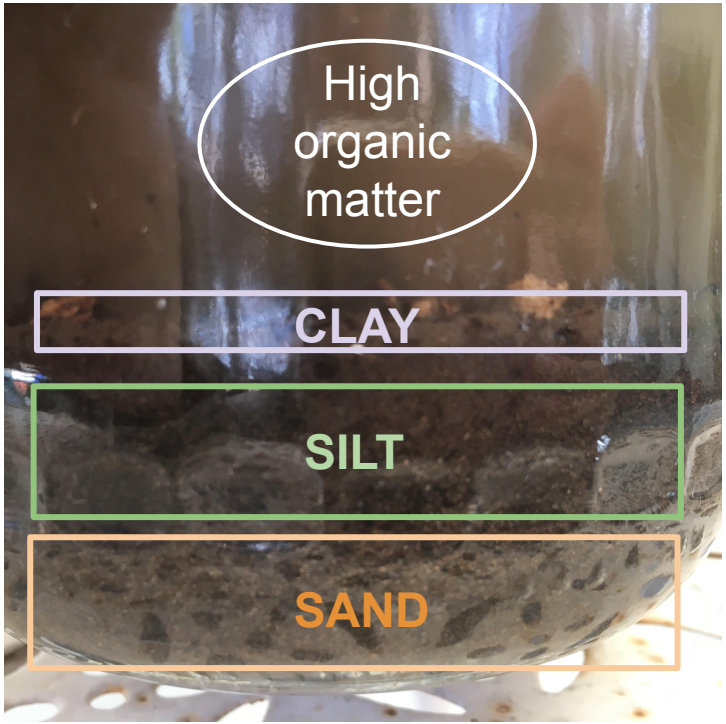
Soil Test

Shake up water and soil in a mason jar. Let is settle. The sand will deposit at the bottom, the silt in the middle and the clay on top. Soil with equal amounts of clay and sand is preferred.

The darker the water, the higher the organic content and that is a good thing.



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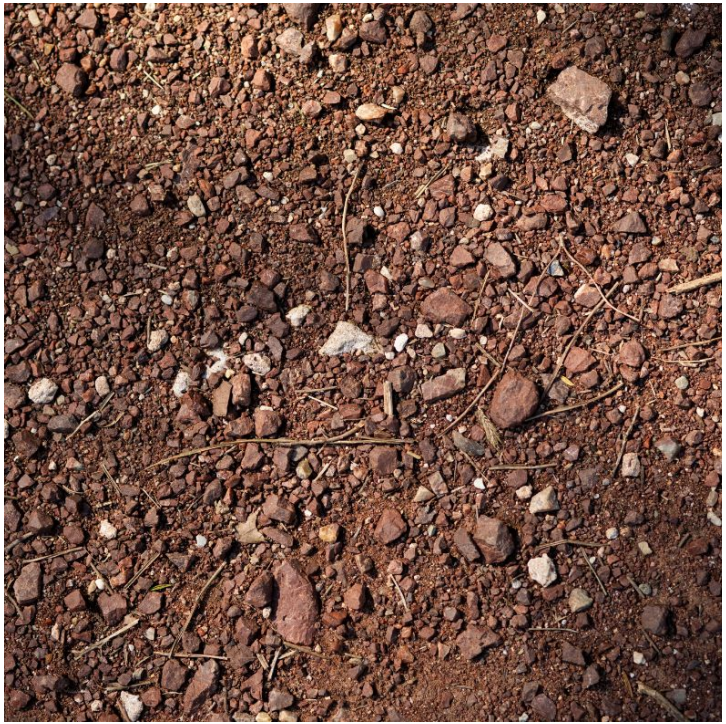
SOM - Soil Organic Matter

SOM can vary from 1% in desert soil to 6% in upland dry soil, to 90% wet lowland soil. SOM improves nutrient cycling, soil structure, water retention and cation exchange capacity.

SOM is made up of living creatures (microorganisms), decaying plant and animal matter and humus.



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SOC - Soil Organic Carbon

The world's largest carbon storage is not in the sea nor in the air, it is in the soil. It returns to the atmosphere at different speeds 58% of SOM is SOC.

- Fast pool - 1-2 years
- Medium pool 10-100 years
- Slow pool - 100 -1000 years

Biochar/charcoal (pyrogenic) is slow

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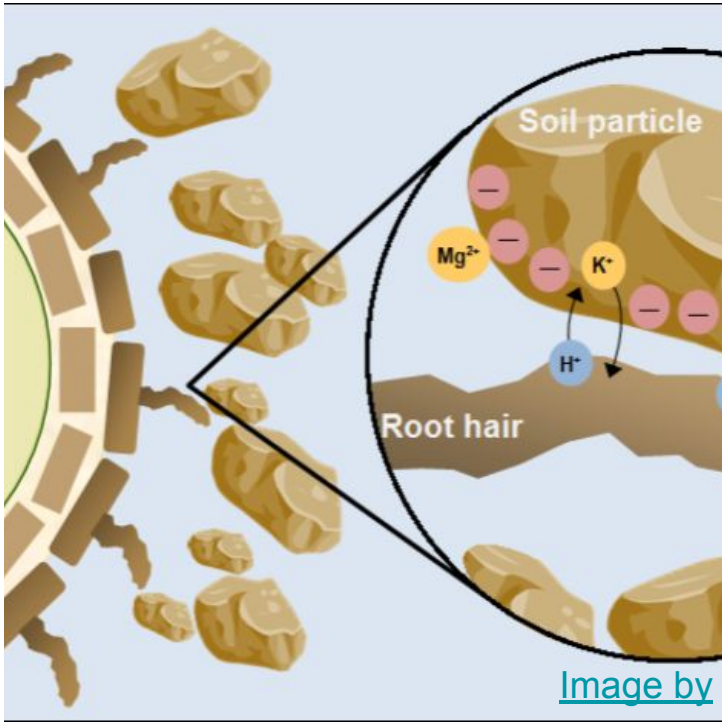
CEC - Cation exchange capacity

All plant nutrients contain ions with positive charges (cations) or negative charges (anions). Soil, plants and microrganisms use the exchange of ions for nutrient cycling.

High temperature biochar, SOM and clay content increase CEC. Soil PH effects CEC.



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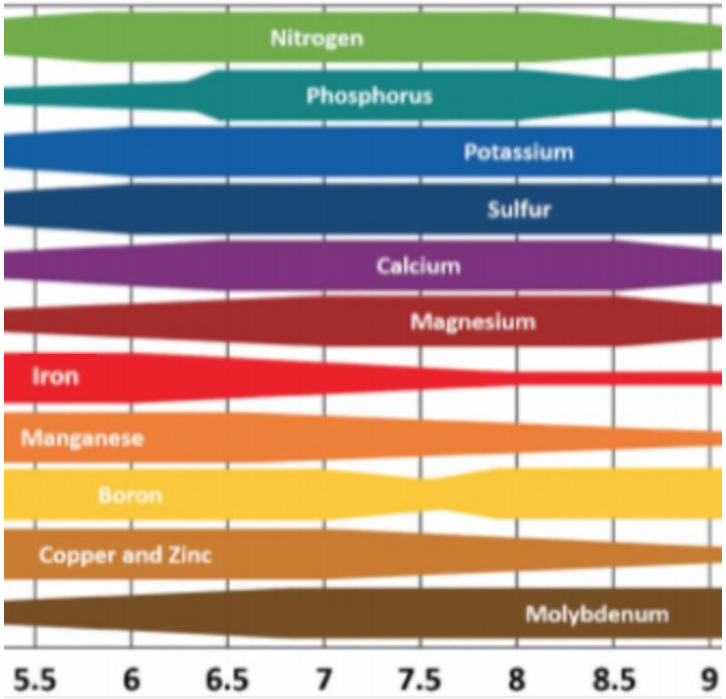
Soil PH

Plant nutrients are variably available to plants according to the PH of the soil.

Each plant has a preferred PH but it is never very far from 7 which is neutral. Test your soil PH with litmus paper and correct it adding wood ash, biochar or calcium carbonate if it is acidic or lower it with sulfur or urea if it is too alkaline.

Image from



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Planting in compost

Planting in compost is very new and still being fully explored, but generally okay.

If used as growing medium in pots it needs to be mature (6-12 months)

Biochar addition during composting is absolutely necessary to increase the water holding capacity of the growing medium. Salt may need rinsing.

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The next lesson explains the soil food web, in other words the living biology in the soil...

If you have any questions please write to us in the Facebook Group

https://www.facebook.com/groups/LocalCarbonNetwork

or keep an eye out for our newsletter as we often arrange free online Q&A sessions on ZOOM

or see our FAQ, Articles and videos on the website https://localcarbon.net/

Thanks!