

Growing food at home series

What is soil

Pack C Notes 1

Gardeners talk about improving it, spend hours tending it and most of us will want to grow our plants in it. If you are interested in growing food and ornamental plants at home you will need to be familiar with your soil – its type and health. So, what is soil?

Soil is comprised of mineral particles, organic matter, water, air and living organisms. The mineral particles come from rock and sediments formed under the influence of natural elements – wind, water etc. This process of turning rock and sediment into mineral particles is called weathering. Weathering can occur through numerous means including under the influence of heat and cold temperature changes, water and air movement, microorganisms, plants and animals activities, and time. The rate of change is influenced by environmental factors of sunlight, wind and water. Human activities also have a tremendous impact.

Around the world can be see large variations of rocks, which affected by the natural elements of their region results in the different soils we see globally. Even in City of Salisbury there is variation of soil types.

Weathering process

The process of weathering can occur physically, chemically or through the actions living organisms. It's a continuous process that is either: adding to; removing from; transferring to or from; or transforming.

Physical weathering causes include:

- Breaking of rocks by heat or ice
- Blasting by wind driven sands
- Rasping by glaciers
- Grinding by water borne rocks

Chemical weathering process needs water and oxygen to occur and involves:

- Water movement dissolving minerals
- These minerals then often combine to form other minerals

Living organisms speed up this process, changing the types of products formed as they move through the layers, excrete, die and decompose in it.



sand

clay

loam with compost

Numerous environmental influences are continuously at play and under their affect soils are constantly changing. When thinking how old the planet is, we may think that process is slow, and sometimes it is, but even in the way we garden we are changing the soils in similar ways to the weathering processes that formed our soils in the first place. Natural occurrences that change soil include:

- **Additions:** This can be seen when organic matter, fallen leaves or mulch rot on the surface. Silt being washed in during a flood and settling in the flood plain is another example.
- **Removals:** Rain and watering moves water through the soils which take soluble salts and carbonates with it into lower parts of the soil profile. In bush fires when vegetation is burnt substances are removed.
- **Transfers:** Plant nutrients are transferred from the lower horizons to the surface through plants roots up-taking them. Comfrey leaves are said to add mineral when added into composts because their roots go very deep and are drawing up nutrients from levels below many other plants which is then in their leaves. Soil animals travel through different levels of soils moving nutrients up and around as they go.
- **Transformations:** Plants and animals die and decompose in and on soils causing changes in local soils and formation of humus. Water in floods and heavy downpours can move large amounts of soils rapidly. Similarly wind removes soil particles and changes composition of soil.

As gardener we are changing soils when we add organic materials and chemicals.

We need to be conscientious of the impact we have to the local environment, especially over use of fertilisers and chemicals as excess leach through the soils into the water ways

Soils vary because of variation of the rock they are formed from; and weathering processes, and because of different ratios of its components. Things that can be noticed in different soils include the:

- **Colour** - different colours indicating the different mineral composition
- **Feel** - related to their texture. Ranging from gritty to silky
- **Water absorption ability and behaviour when wet** - some get sticky when wet, others repel water

Plant's requirements

Plants need from soil a stable structure that air, water, nutrients, micro flora and fauna can enter and exit, and plant roots can move through.

As produce gardeners the changes we are making in our soils mainly concern drainage and fertility. As well as creating a stable environment that protects from weathering influences such as heavy downpours, high winds and excessive heat.



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