For successful vegetable production year after year the soil should:
• be able to hold the plants
• be able to hold sufficient water
• provide a good medium for roots to grow in
• let enough air through
• be free of root diseases.

It is important to treat the soil to improve or maintain these characteristics.

**Soil composition**

Soil is made up of organic and inorganic matter.

• The organic matter is the rotting particles (small bits) of plants and animals.
• The inorganic matter is particles of weathered rock and minerals.
• The spaces between the small particles that make up the soil are filled with air or water.
• Plants such as algae and lichen, and animals such as earthworms, moles and termites live in the soil. They improve the movement of air (aeration) and remove water from the soil (drainage).
• Some organisms in the soil, such as bacteria, break down organic matter and other compounds into plant food (nutrients) which can be easily absorbed and used by plants.
Soil type

Soils are classified into three main types, namely sandy, clayey and loamy soils.

*Sandy soils*

Sandy soils
- feel gritty
- are not sticky when wet
- remain loose when dry.

**ADVANTAGES**

During moist periods roots can grow quickly.
Sandy soils are easy to cultivate.

**DISADVANTAGES**

These soils
- dry out quickly
- lose nutrients quickly in case of too much rain or irrigation
- are eroded easily by wind.

**HOW TO IMPROVE SANDY SOILS**

Add manure and compost as well as surface mulches if these materials are available, because they will help to conserve nutrients and water and will reduce erosion.

*Clayey soils*

Clayey soils
- feel sticky when wet
- form large, hard clods when dry.

**ADVANTAGES**

Clayey soils hold nutrients and water well.
**Disadvantages**

These soils
- need large quantities of water once dry
- are difficult to cultivate
- become waterlogged in case of too much rain or irrigation
- could form a hard surface crust on drying, which restricts seedling emergence
- restrict root growth.

**How to improve clayey soils**

Try not to cultivate when wet.

Add compost or manure if available to help soften up clay.

Surface mulches will reduce crusting and promote seedling emergence.

*Loamy soils*

These soils are better than sandy or clayey soils.

A loamy soil contains characteristics of both sandy and clayey soil types.

**Soil colour**

*Red, brown:* well drained.

*Grey:* poor drainage.

*Dark topsoil* (top layer where plants get their nutrients): high nutrient content.

*Dark subsoil* (layer under the topsoil): heavy clay, especially if also sticky when wet.

For further information contact your nearest extension officer.