

Grow More Food Using Soil Science



A car runs on a road that divides desert and former desert that has undergone reforestation efforts. How is this possible?

How is this possible?

What questions do you have?

- What do you need for plants to grow?
- How did scientists choose which plants to use?
- How long does reforestation take?
- What effect do you think having vegetation has on the area?



Soil is crucial!

Although there are many factors that help plant growth in an area, one of the main things you need to consider is your soil. Soil provides nutrients to the plants and helps root formation keep plants in place. Water is necessary for growth too but soil helps control moisture to help plants absorb it over time.

A close-up photograph of a person's hand, palm up, holding a small amount of dark, rich soil. Several small, light-colored seeds are visible in the palm and falling from the fingers. The background is a blurred field of similar soil.

science
FRIDAY
EDUCATE

Let's get the dirt,
on dirt!

Drainage

Allows excess water to be removed from the soil and prevents root rot.

Aeration

Makes space for air to get into the soil and keeps the soil from compacting and being too hard.



Sand:
Drainage
and
Aeration



Humus:
Organic
Matter and
Nutrients

Soils you buy at the store are usually made up of different percentages of these materials based on the needs of the plants they are made for.



**Organic
Matter to
Decay:**
Moisture
Retention



**Perlite
and/or
Vermiculite:**
Drainage

Sand

Sand is used to promote drainage and aeration, allowing water and air to flow through the soil. Depending on the coarseness of the sand, it will allow more or less water and air to pass through it. Sand also helps soften the soil.

Humus

Humus is living things that have decomposed. This could be a mix of things such as plants or animals that have died and decayed to the point where they can't break down further. This compound carries many nutrients that plants need to grow healthy.




Organic Matter to Decay

Organic matter to decay are things that will break down given time. The most commonly used organic matter is sphagnum moss or pine bark. These are plant-based materials that will decay over time, allowing the soil to hold on to moisture.

Perlite and/or Vermiculite

science
FRIDAY
EDUCATE

Perlite and/or vermiculite are used to improve drainage in soil. This allows excess water to be removed from the soil and prevents root rot. Perlite is puffed-up pieces of volcanic glass, which allows space for water to flow. Vermiculite is an expanded mineral that is like small rocks, which allow less water to flow through. Perlite and vermiculite stop soil from compacting and becoming a solid mass.

The background of the slide is a photograph of a soil profile in a trench. The soil is divided into several distinct layers of different colors and textures, ranging from light brown to dark brown. The text is overlaid on a green background.

For each sample, think about the following questions.

- What color is the soil? Is it light or dark? Why do you think it is this color?
- Does the soil seem sandy? Is the soil very solid or soft?

- Are there pieces in the soil? What are the pieces made up of?
- If you put water in the soil, do you think it would absorb the water or would it flow through the soil easily?