



SOILS STORE AND FILTER WATER

Soils improve food security and our resilience to floods and droughts



What is soil moisture?

Soil moisture content is the amount of water in the soil (by weight).

The maximum amount of water that a soil can retain depends on:

- the soil's **texture and structure**
- organic matter** content
- rooting** depth



Soil organic matter **can retain about 20 times its weight in water.**

Healthy soils with a high organic matter content can **store large amounts of water.** This is crucial for maintaining food production while also improving resilience to floods and droughts.



Soil moisture and food security



Water is the "lifeblood" of agriculture — improved soil moisture management is **critical for sustainable food production.**



Inhibiting a soil's capacity to accept, retain, release and transmit water **reduces its productivity.**

The great challenge for the future will be increasing food production with less water.

As most smallholder farmers in developing countries rely on rain-fed agriculture, improved soil moisture optimization and management is crucial.

Over cultivation, overgrazing and deforestation strain soil and water resources by reducing topsoil and vegetation cover, and **lead to dependence on irrigated cropping.**



Meeting food security targets requires sustainable agricultural policies that ensure improved soil quality and water retention.

Improving soil moisture

Many sustainable agricultural and land management practices can improve soil moisture retention:



Residue covers, cover crops and mulching



Conservation agriculture



Knowledge-based precision irrigation



Conservation tillage



Capture of runoff from adjacent lands

Efficient use of water, reduced use of pesticides and improvements in soil health can lead to average crop yield increases of

79% ↑



Zero-tillage



Rainwater harvesting

