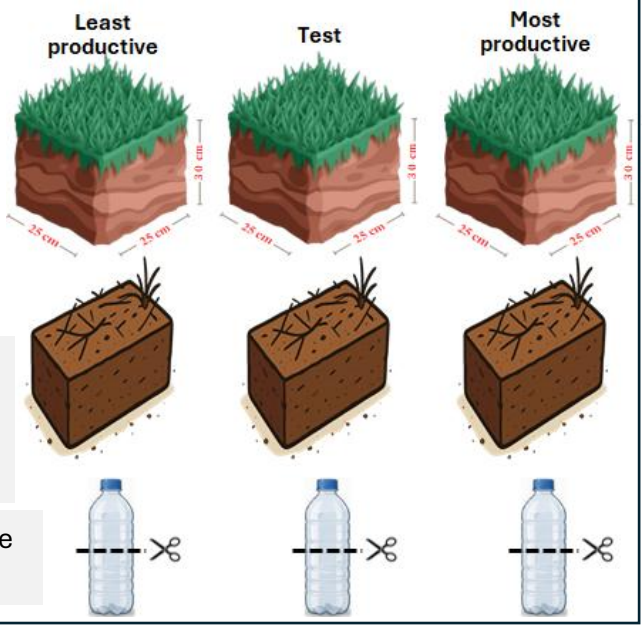
Soil Health Tests - Simple tools for farmers

A healthy soil is needed for crop production but understanding how healthy your soil really is can be difficult. These simple tests allow you to test the condition of your soils and make better management decisions for long-term improvements in crop production.

SETUP YOUR TEST

Each test begins by identifying the most productive and least productive areas on your farm. These provide reference points against which the productivity of other areas (Test) can be compared.



Step 1: Using a spade, **take a block of soil** from the most and least productive areas and the

Step 2: Remove any plants or debris from the top, taking great care to not crack the soil

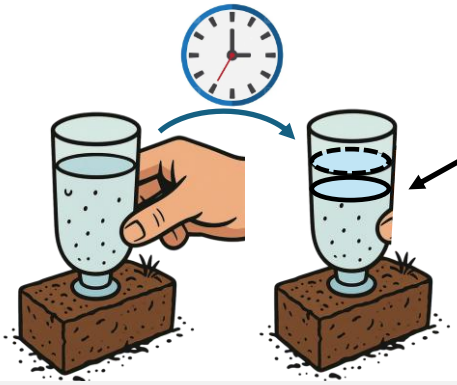
Step 3: Cut three bottles in half.

1. INFILTRATION (link to beerkan sheet)

This first test measures how easily water moves into the soil.



Step 1: Carefully press the bottle cap into the soil to **make a hole**



Step 2: Remove the bottle cap and push the top half of the plastic bottle into the soil surface. Fill with water. **Leave to drain for a set time.**

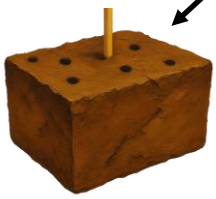
The **water level** at the end shows how well the soil absorbs water.

Soils rich in organic matter and with a healthy structure usually absorb more water. Their network of soil pores allows rainfall to move quickly into the ground rather than running off the surface.

2. COMPACTION (link to penetration sheet)

A simple stick can reveal soil compaction.

Step 1: Using the same amount of force, **push the stick** into the soil block.



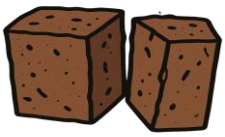
See how **easily** and how **deep** you can push the stick into the soil block

Organic matter helps keep soils loose and well structured. As a result, healthy soils usually offer less resistance when a stick is pushed into them.

3. ORGANIC MATTER (links to smell, colour and soil life sheets)

Healthy soils often look, smell and feel different. They are darker in colour, have a rich, earthy smell created by active biological processes and support more soil life.

The **colour, smell** and **number of living things** indicate the organic matter









Step 1: Break open each soil block to **expose a fresh surface.**

Step 2: Smell the freshly exposed soil

Step 3: Compare colour of the soil aggregates.

Step 4: Count the **number of different animals** in the soil

Earthworms, beetles and many other things break down organic matter, releasing nutrients that crops need to grow.

4. STRUCTURE (link to VESS sheet)

The structure of the soil can be tested by breaking it apart.

Does your soil **crumble** easily?

Step 1: Select a lump of soil and try to **break it up** using **just** your **fingers.** If it won't break, try using **your hands.**

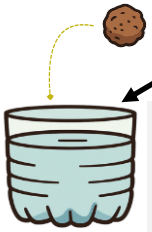


Healthy soils easily break into small, stable crumbs. This increases water movement, root growth and soil life.

5. AGGREGATE STABILITY (link to Slakes sheet)

Stability can be measured by dropping an aggregate of soil in water.

How quickly does the soil **colour the water**?



Step 1: Fill the bottom half of the bottle **with water.**

Step 2: Drop an aggregate of soil (about 1 cm across) **into the**

Organic matter acts like glue, binding particles together. Soils rich in organic matter break apart more slowly, making them more resistant to erosion.

WHAT DOES THIS TELL US?

Mark an X in each row to represent the soil in your test area.

Test	Measurement	UNPRODUCTIVE	TEST AREA	PRODUCTIVE
1. INFILTRATION	Water level	High		Low
2. COMPACTION	Pushing stick into soil	Difficult		Easy
		Shallow		Deep
3. ORGANIC MATTER	Colour	Light		Dark
	Smell	No smell or sour		Rich and earthy
	Soil life	Less		More
4. STRUCTURE	Crumbliness	Difficult		Easy
5. AGGREGATE STABILITY	Rate of water colouring	Fast		Slow

If the soil being tested is more like the **productive soil**, then it contains enough organic matter to

- catch and hold water for your crops,
- resist compaction so roots can grow,
- support soil life, which recycles nutrients back to your crops,
- resist erosion in heavy rains.

These things will help your crops to grow, capture water and nutrients, for similar yields to the productive area.

If it is more like the **unproductive soil**, then it will be difficult for the crop to capture enough water and nutrients

- **apply more organic manure**. *This provides both organic matter and nutrients.*
- **compost** manure with other organic matter from your farm – tree leaves, unused straw or grasses (link to composting recipe sheet).
- Improve compost using worms **(vermicomposting)** to increase the breakdown (link to vermicomposting sheet).

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