

## The slake test – a simple way to evaluate soil structure

The slake test demonstrates the stability of soil aggregates in water. When a chunk of topsoil is placed into water, the water is drawn into the soil and displaces air. If the large pores within the soil are stable, water can move into the soil without causing the aggregate to break apart (“slake”). Biological processes such as earthworm activity, root growth and decomposition, networks of root-associated fungal hyphae, and sticky exudates from other soil organisms including fungi and bacteria all contribute to soil aggregation and the stability of macropores. Stable macropores allow better infiltration of water into the soil, reducing water runoff, erosion and surface crusting.

Tillage has a major impact on soil quality, physically disrupting soil and causing decomposition of organic matter. Over time, tillage reduces soil biological activity and thus the ability of soil organisms to stabilize soil aggregates. Comparing soil aggregates from an untilled area such as a fencerow with a regularly tilled production area allows you to evaluate your soil’s structural integrity.

### To do the slake test, you will need:

- two clear glass or plastic containers
- mesh supports (eg made from hardware cloth) that will fit into the top of the container and hold the soil in the top half of the container
- soil aggregates collected from the surface layer of soil, from a tilled area and from a nearby untilled area such as a fencerow



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### Steps:

1. Insert the wire meshes into each jar and fill the jars with water to a depth that will submerge the soil aggregate samples.
2. Simultaneously place each soil aggregate sample into the separate jars.
3. Watch to see which soil holds together and which one falls apart. Aggregates from soil with poor structure will break apart in water.

### Helpful YouTube videos:

- Soil Aggregation and Water Infiltration <https://youtu.be/d1M7EFqqsMM>
- How to Conduct the Field Slake Test <https://www.youtube.com/watch?v=z8xj5EiNNRo>
- Slake and Infiltration Test [https://www.youtube.com/watch?v=CEOyC\\_tGH64](https://www.youtube.com/watch?v=CEOyC_tGH64)
- Slake Test and Capillary Flow of Soil Quality & Water Movement (kit) with USDA NRCS SD <https://www.youtube.com/watch?v=GOos10UyRwY>

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