

Exploring a soil pit: Aggregate test in soil samples



• EXPLORE
SOILS •

Summary:

Aggregates are the glue that binds soil together, it is this in conjunction with the mineralogical structure of the soil make-up of the soil that creates the structure of the soil. Structure is how the soil holds together, this is visible in situ at the face of a soil pit.

Aggregates are created by the organisms which inhabit the soil, it is the mucus left from their digestion or the secretions they use to break down starchy organic matter. Soils with more biological activity tend to have higher levels of aggregates. These aggregates hold the particles together but also create pores and air pockets which water can flow through. They make the soil more hospitable for a broader array of organisms and protect the soil from erosion.

Learning Objectives:

- The impact of biological activity upon soil structure
- Aggregation and soil structure impact upon erosional forces
- The role of organic matter on soil structure

Equipment:

- Pint glasses
- 2mm gauze (Isopon brand: www.flickr.com/photos/117667963@N07/12546031085)
- water

TExt

Preparation:

- 2-4 samples of soil gathered from sites, placed in sandwich bags with notes if being brought away from
- location
- Gauze shaped to fit top of pint glass

Time Required:

Introduction 5 minutes.

Gathering samples, 5-20 minutes.

Preparing samples, 5 minutes.

Aggregation tests, 5 minutes.

Total ranges from 20-35 minutes.

Background Learning Needs:

Some understanding of soil structure, hydrology and soil texture.

Risk Assessment:

Hazard	Likelihood	Severity	Mitigation
Injury from edges of aluminium gauze	High	Low	Use gloves where moulding gauze to fit pint glass
Injury from broken glass	Low	Medium/High	Clean away broken glass immediately
Site/local specific risks	Unknown	Unknown	Anyone running this activity is advised to conduct a risk assessment for the specific site and conditions

Description of Activities:

1. The gathered samples tend to work best if you select very different soils, ie. one with little organic matter that is light in colour and one that is rich in organic matter, so dark in colour.

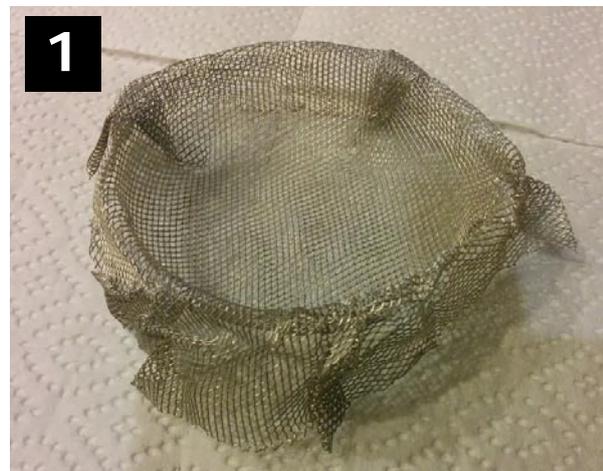
2. Place the samples in a bag and crush up the soil, so it is loose.

3. Mould the gauze around the top of the pint glass so it creates a basket that its ~3cm into the pint glass and holds on to the outside.

4. Place the crushed soil samples in the baskets.

5. Fill the pint glasses to the top with water.

6. Place the baskets into the pint glasses at the same time and watch the soil particles begin to drop to the bottom of the glass.



Interpretation:

Some soils will instantly disintegrate and create cloudy water, this demonstrates that there is little in the way of aggregates holding the soil particles together. It is also indicative of the texture of the soil, sandy soils tend to have weak aggregation due to their mineralogical content.

