# Soil water holding capacity

## Authorship

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# Notes

* Measurments are usually done in triplicate.

# Equipment and Reagents

1. completely dried soil (25 g per measurement)
   * Measurements usually done in triplicate.
   * Soils should be dried over night (or more) in the drying oven.
2. 125 ml flasks
   * 1 for weighing
   * 1 for each funnel
3. filter paper
   * Whatman 110mm diam; Cat No: 1001 110
4. funnels
   * big enough for the filter paper
5. DI water
6. gram scale

# Procedure concept

You are measuring soil that's completely dry, then remeasuring it after saturating it with DI water. The difference between saturated soil weight and dry soil weight is the soil water holding capacity.

# Procedure

1. Designate 1 flask (or beaker) as the 'weighing flask'.
   1. The 'weighing flask' is just used to hold the funnel on the scale.
   2. Place this weighing flask on the scale and tare (zero the scale).
2. Give the other funnels disctinct labels so you can keep track of soil samples.
3. For each funnel: place the funnel in a flask (not the weighing flask), and place a filter in the funnel.
4. Pre-moisten the filter paper with DI water.
   1. Allow the water to drip from the funnel into the flask for **5 minutes**.
   2. While waiting weigh out the soil (see below).
   3. After 5 minutes, weight the funnel and wet filter:
      1. Use a paper towel to remove moisture from the end of the funnel.
      2. Place the funnel (and filter paper) on the scale with the weighing flask.
      3. Recore the weight.
5. Weigh out >= 25 grams of each soil.
   1. Use at least 25 grams, but it can be slightly more than 25 grams.
6. For each funnel + wetted filter paper:
   1. Saturate the soil with DI water.
   2. Allow the water to drip from the funnel into the flask for **20 minutes**.
   3. Move the funnel with wetted soil to the weighing flask on the scale and record the weight.
   4. Water carrying capacity =
      1. Weight = **weight of water held** + weight of dry soil + filter paper + funnel
   5. Water holding capacity = (wet soil weight - dry soil weight) / dry soil weight
7. To increase accuracy, use the mean water holding capacity value for 3 replicates.