**procedure sheet 4**

**Measuring soil bulk density and soil moisture content**

**SAFETY**

**Handling soil and compost:** Always wear safety glasses. Do not ingest or smell the soil/ compost, and avoid inhaling its dust, since harmful bacteria and fungi could be present. Wash your hands thoroughly with soap and water afterwards.

1. Weigh an ovenproof dish with its lid, and record the mass [W1] in your record sheet overleaf.

1. Empty a soil sample (A4 or B4) into the dish, shaking out any loose bits left behind.
2. Re-weigh the dish, now with soil sample plus lid, and add its mass [W2] to the record sheet.
3. Now repeat with the second sample. Place the dishes into an oven, with their lids off to one side, and leave for 2 hours at 105°C until dry.
4. Replace the lid and allow the sample to cool outside the oven, or place in a desiccator.
5. Re-weigh the cooled dish with dried soil and lid [W3] and add to the record sheet.
6. Calculate dry soil mass.
7. Work out the volume of your soil sample.
8. Use this information to calculate the soil bulk density.

1. Calculate ‘wet’ soil mass, which is the soil’s mass before drying.
2. Use this information to determine the soil’s moisture content.
3. Transfer your results to the collected data sheet.

**record sheet**

**Soil bulk density & soil moisture**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | A4 | B4 |
| W1(g) | W1 = dish + lid |  |  |
| W2(g) | W2 = soil + dish + lid |  |  |
| Wet (g) | Wet soil mass = W2 – W1 |  |  |
| **DRY YOUR SOIL SAMPLE** |
| W3(g) | W3 = dry soil + dish + lid |  |  |
| Dry (g) | dry soil mass = W3 – W1 |  |  |
| V(cm3) | soil volume = (3.14 x radius2 x ring ht) |  |  |
| **soil bulk density (g/cm3)** | **soil bulk density = Dry / V** |  |  |
| moisture content (g) | moisture content = Wet - Dry |  |  |
| **soil moisture (% dry soil mass)** | **soil moisture =****(moisture content / Dry) x 100** |  |  |