



## Aim

Collect soil samples from different areas and test for organic content using drying, weighing, and burning to understand carbon retention.

## Materials

- 3-4 soil samples (garden, bushland, urban park)
- Hand lenses
- 3-4 aluminium trays
- 3-4 crucibles/evaporation basins
- Scale
- Oven (set to ~105°C)
- Bunsen burner, tripod, gauze mat
- Heatproof mat
- Tongs
- Gloves and safety glasses



Figure 1: Collecting soil

## Method

1. Collect soil samples from different locations (garden, bushland, urban park).
2. Observe colour, texture and grainsize; record initial observations.
3. Weigh each sample (wet mass).
4. Dry samples in an oven at ~105°C for 24 hours.
5. Allow samples to cool; re-weigh (dry mass).
6. Put 10-20 g of the soil into a crucible, weigh
7. Burn samples over a Bunsen burner for 20–30 minutes. The soil should turn lighter in colour as it loses organic content.
8. Allow to cool; re-weigh (final mass).
9. Calculate:
  - Moisture Loss: Wet mass – Dry mass
  - Organic Matter Loss: Dry mass – Final mass
  - Organic Content (%):

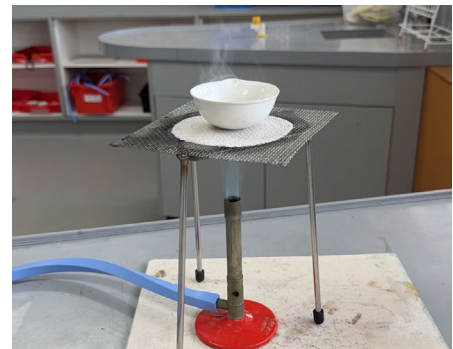


Figure 2: Burning off carbon content with Bunsen burner

$$\text{Organic Matter (\%)} = \frac{\text{Dry mass} - \text{Final mass}}{\text{Dry mass}} \times 100$$

Compare results and discuss how soil type and land use affect carbon retention.



## Results

### A) Whole-sample moisture content

Location	Colour	Texture	Wet Mass (g)	Dry Mass (g)	Moisture Loss (g) = Wet – Dry

### B) Subsample Organic Matter via Loss of Ignition

Location	Crucible ID	Dry Soil Mass (g)	Post-Ignition Mass (g)	Organic Matter Loss (g) = Dry Soil Mass – Post-Ignition Mass	Organic Matter (%) = (OM Loss / Dry Soil Mass) x 100

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Summarise your results

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### Discussion

1. Which soil had the highest organic content?

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2. How does land use affect soil carbon?

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3. Why is soil carbon important for environmental health?

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### Extension:

Research carbon sequestration techniques in agriculture and their role in climate change mitigation.

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