

Uptake of zinc by plants

Teacher and technician sheet

This practical applies the analysis of zinc using zincon (see *Zinc by zincon assay*).

Treating and growing the plants

Equipment and materials

Each student or pair of students will require:

- Peat-free general purpose compost
- Plant pots and trays to stand them on
- 250 cm³ measuring cylinder (wash and re-use with different solutions)
- 1 dm³ volumetric flask x 2
- 24 to 40 seeds, either tomato or Indian mustard
- Zinc sulfate solution containing 0.01 g dm⁻³ Zn²⁺ (10 ppm) (800 cm³)
- Fertilizer solution (as required)
- Greenhouse

Make sure students wear eye protection.

Determining zinc ions remaining in the soil and in the plants

Equipment and materials

For each method a student or pair of students will require:

- Watch glass x 2
- Drying oven
- Electronic balance (weighing to 3 decimal places)
- 50 cm³ beaker x 2
- Sintered glass crucible x 2 or glass wool and filter funnel
- Mortar and pestle
- Concentrated hydrochloric acid (12 cm³)
- 1 mol dm⁻³ sodium hydroxide solution (2 cm³)
- Equipment and materials for zincon assay (see *Zinc by zincon assay*)

Make sure students wear eye protection. Concentrated hydrochloric acid is corrosive. 1 mol dm⁻³ sodium hydroxide solution is corrosive.

Standard solution

- Zinc sulfate solution: Weigh out 4.39 g zinc sulphate-7-water and make up to 100 cm³ in a volumetric flask. Then take 1 cm³ of the solution and dilute to 1 dm³.