

Threshold levels

Resource sheet 4 (for teachers)

Using an electrical conductivity meter

Materials

- Electrical conductivity meter
- Distilled water and salt solutions of varying concentration (ranging up to 5 g/L)

Method

1. Use the electrical conductivity meter to calculate the electrical conductivity of the different salt solutions. Be sure to calibrate your meter using a sample of known electroconductivity.

Calculating threshold salinity in irrigation water

Materials

- Germinated seeds (rice, rye, wheat, barley etc.) Seeds should be at an advanced stage (1–2 weeks).
- 10 plant pots
- Coarse washed sand (culture medium)
- Salt solutions as in previous experiment
- Electrical conductivity meter

Method

1. Arrange plants in 10 pots of coarse sand (4 seedlings per pot) and label the pots carefully.
2. Repeat this for a range of crop varieties.
3. Water each pot initially and then every second day with one of the salt solutions you have prepared.
4. Observe the effects of using the salinated water on the plants over a 2–3 week period.
5. Measure the salinity of the soil in each pot periodically through the experiment and at the end of the 2–3 week period.
6. Determine which plants have been seriously affected by the salt in the soil, and at what concentration level.

Analysis and results

- Which plants were least tolerant to high levels of salt?
- Which plants were most tolerant?
- What were the threshold electrical conductivity levels for each plant species?
- Compare your results with the salinity threshold results given in the DNR Water Facts Sheet W55: Irrigation water quality. [www.nrm.qld.gov.au/factsheets]