



## Bursary

### **Australian Society of Soil Science Inc**

Soil Science Australia (Australian Society of Soil Science Inc) works towards the advancement of soil science in the professional, academic and technical fields.

### **Bursary Offer**

Up to \$150 (this may be shared with others)

### **Bursary Requirements**

Projects that demonstrate any aspect of soil properties, soil management, soil fertility, plant nutrition etc.

### **Category Eligibility**

Science Investigations, Classified Collections, Communicating Science, Environmental Action Projects

# Project Ideas for Schools

## Soil Projects

1. Does cover help to reduce erosion?
2. Do plants grow better in topsoil or subsoil?
3. How deep do plant roots grow to?
4. How quickly do acid sulfate soils produce acid?
5. Will plants grow in acid sulfate soils?
6. Does soil texture affect plant growth?
7. Does waterlogging affect plant growth?
8. Does compaction affect plant growth?
9. Does gypsum help sodic soils?
10. Does dispersion affect plant growth?
11. Do trees control soil erosion?
12. Do organic fertilisers work better than mineral fertilisers?
13. At what pH do plants grow best?
14. Does soil water content affect the total root mass of a plant?
15. What affect does adding lime to soil have on pH?
16. How much lime do I need to add to an acid soil to achieve plant growth?
17. Does growing a plant in soil change the soil's pH?
18. Is soil alive? What organisms can you find in soil?
19. How do surface mulches affect evaporation of water from soils?
20. How do surface mulches affect soil temperatures in the plant root zone?
21. What happens to the surface temperature of soils throughout the day and night in dry conditions and when it rains?
22. What is the temperature profile above a cultivated bare soil and a soil with a standing crop?

23. How deep does irrigation water penetrate into soils when the soil is dry and when it is wet?
24. How do you measure water tables in soils?
25. How can farmers manage erosion?
26. How can landholders manage waterlogging?
27. How can farmers maximise crop yield?

## Salinity Projects

1. How does salt affect the germination of plants?
2. How does salt affect the growth of plants—which plants are tolerant of salt?
3. Can you taste different salt levels in water?
4. How much salt is there in different types of water?
5. Does applying salty water to soil affect the salt content of soil?
6. Does salty water affect bricks and other infrastructure?

## Further information

For more information on soil project ideas for schools, please contact:

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# Project Ideas for Schools

## Water movement through soil

- look at water infiltration through different types of soil (sand, clay, potting mix etc)
- could use food dye in the water to make it easier to see where the water has moved
- time how long it takes for water to move through the soil
- measure how much water moves through a certain volume of soil
- what are the implications for plants growing in different soils (e.g. sands dry out quicker, need watering more often)
- have one pot as the control
- add differing amounts of nutrient solution (e.g. nitrogen, phosphorus, potassium, sulphur etc) to the pots
- grow something relatively fast growing e.g. wheat
- see which plants grow best at what rate of nutrients
- what are the implications for plant growth

## Soil erosion

- look at the effect that cover has on soil to protect it from erosion
- could have bare soil, soil with grass, soil with straw etc and add a certain amount of water to the soil
- measure the amount of sediment that runs off the soil
- see if any gullies or rills form in the soil
- what are the implications for farmers managing their cropping systems

## Soil pH

- could have different soil types
- measure pH (use litmus strips or indicator solutions available from pool shops or gardening shops, or borrow a pH meter from school or state government department)
- add different amounts of products such as lime and sulfur to the soil and see what impact that has on pH
- look at pH tolerance information for different plants and crops
- what are the implications for plant growth in acid and alkaline soils

## Soil fertility

- could set up a pot experiment with 5–10 pots
- use a low fertility soil (eg. sand) or vermiculite

## Soil texture

- soils are made up of varying amounts of sand, silt and clay
- students could get collect soil from different areas and do field texture tests (e.g. ribboning) on the soil to determine what type of soil it is
- what are the implications about different soil types (e.g. sands have a low moisture holding capacity and low nutrient holding capacity; clays have a high nutrient holding capacity)

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# Project Ideas for Schools

## How does salt affect the germination of plants?

- Gather a number of seeds from the same species, or from two different species
- Collect water with different salt levels
- Set up seeds to germinate, irrigate the seeds with water of varying salt levels
- Record germination results

## How does salt affect the growth of plants—which plants are tolerant of salt?

- Two plant species e.g. wheat (moderately tolerant) and strawberry (very sensitive)
- Establish the seedlings under normal conditions
- Irrigate the established seedlings with water of varying salt levels or stand them in a tray of salty water
- Record visual observations of any affects
- Harvest the plants; weigh, measure leaves, roots etc
- Record results

## Can you taste different salt levels in water?

- Make up different solutions of salty water (related to known electrical conductivity triggers)
- Taste the water
- Survey family/friends for their taste
- Record results

## How much salt is there in different types of water?

- Collect rainwater, tap water from different areas, washing machine water, dishwasher water, shower water, seawater
- Measure the electrical conductivity (EC)
- Record results

## Does applying salty water to soil affect the salt content of soil?

- Set up a range of soil types and measure the salt content by EC
- Collect a range of different water types (e.g. tap water, washing machine water, seawater) and measure their EC
- Irrigate containers of soil with salty water
- Measure EC of the soil
- Record results

## Does salty water affect bricks?

- Set up trays of water with different EC levels
- Stand brick (on it's end) in salty water
- Cover tray and brick, allow capillary rise of water (and salt) into the brick)
- Record any visual observations about the brick

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