QER for Schools

QER Experiment – Year 5

Plant growth in processed shale experiment

BACKGROUND

QER is assessing the extent to which processed shale has potential as a soil conditioner given that total nitrogen and organic content would be beneficial to plant growth. QER has contacted the Centre for Mined Land Rehabilitation at the University of Queensland to conduct assessments and trials on material characterisation, glasshouse trials, refinement of trial design and field trials as well as design and implementation of a monitoring program. The trial findings and assessments will be incorporated into QER's land rehabilitation planning and management.

In this experiment, you will investigate for yourself the effectiveness of processed oil shale for plant growth.

AIM

To investigate the effectiveness of plant growth in processed shale.

EQUIPMENT

6 small flower pots

Plant seeds (choose a fast-growing species like beans, peas or tomatoes)

Potting mix (sufficient to fill three pots)

Processed shale (sufficient to fill three pots)

Fertiliser

Water

Ruler

NOTES

PROCEDURE

1. Place equal amounts of processed oil shale in three pots and potting mix in the other three.
2. Plant your seeds, fertilise them with equal amounts of fertiliser, water them with equal amounts of water and place them in a warm, well-lit location where each pot receives the same light. Randomise the grouping of the plants so as to minimise the effect of any environmental differences.
3. Water your plants with equal amounts of water daily.
4. Record on a daily basis the number of seeds that have germinated.
5. Measure the height of each plant each day and record it in a table like the one below.

Day Number	Shale 1	Shale 2	Shale 3	Potting mix 1	Potting mix 2	Potting mix 3

QUESTIONS

1. Calculate the average height of your three shale plants for each day.
2. Calculate the average height of your three potting mix plants for each day.
3. Plot a line graph of height against day for your two average heights.
4. Write a statement to answer the question: Do plants grow as well in processed shale as potting mix?
5. Provide possible reasons for your answer to question 4.
6. What is the reason for testing three plants in each soil type rather than one?

NOTES