Room for growth

Outstanding Science Year 3 - Plants - OS3A003

National Curriculum Statutory Requirements

3A2 - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant; **LKS2W2** - setting up simple practical enquiries, comparative and fair tests; **LKS2W3** - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; **LKS2W5** - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Learning Objective

I can investigate how competition for resources affects plant growth.

Me: Teacher:

Real-life scenario

Colin the farmer has a problem. He wants to grow onions in a container.

He needs to grow as many onions as he can in the space available, so he can sell them and make money.

However, he's not sure how much space they need to grow well.

Scientific question

How does the amount of space available affect the growth of onion sets over a 4-week period?

You will need:

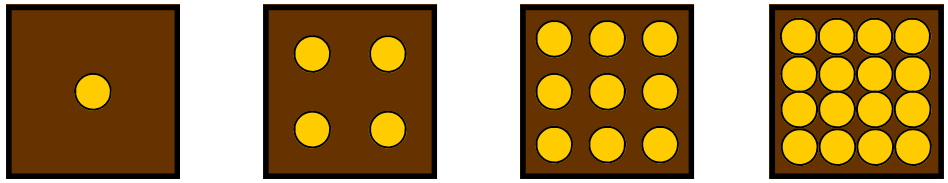
- 4 square plant pots (about 10cm x 10cm)
- Compost
- 30 onion sets
- A sunny outdoor place to put your plant pots
- A measuring jug
- A watering can
- A ruler

Method

Fill the containers with compost. Make sure that there is the same amount in each plant pot.

Place the onion sets in the plant pot as shown (see fig. 1). The onion sets will have different amounts of space in each plant pot. Make sure that you put the onion sets in the right way up.

Figure 1: How to set up the experiment



Pot A	Pot B	Pot C	Pot D
1 onion set	4 onion sets	9 onion sets	16 onion sets

Place your plant pots outside. Make sure that you place them together so that they receive the same amount of sunlight and rain.

Decide how much water you are going to add to each plant pot and how often (e.g. 100ml every day). Use the measuring jug and plant pot to do this.

At the start of the experiment, and every week for the next 4 weeks, measure the height of the tallest plant and draw what you observe.

Outstanding Science

Plant pot A - 1 onion set

What do you think will happen?

Why?

Plant pot A after 1 week

Sketch

Height of plant: cm

Plant pot A after 2 weeks

Sketch

Height of plant: cm

Plant pot A after 3 weeks

Sketch

Height of plant: cm

Plant pot A after 4 weeks

Sketch

Height of plant: cm

Conclusions

Did this plant grow well?

Why?

Plant pot B - 4 onion sets

What do you think will happen?

Why?

Plant pot B after 1 week

Sketch

Height of tallest plant: cm

Plant pot B after 2 weeks

Sketch

Height of tallest plant: cm

Plant pot B after 3 weeks

Sketch

Height of tallest plant: cm

Plant pot B after 4 weeks

Sketch

Height of tallest plant: cm

Conclusions

Did these plants grow well?

Why?

Plant pot C - 9 onion sets

What do you think will happen?

Why?

Plant pot C after 1 week

Sketch

Height of tallest plant: cm

Plant pot C after 2 weeks

Sketch

Height of tallest plant: cm

Plant pot C after 3 weeks

Sketch

Height of tallest plant: cm

Plant pot C after 4 weeks

Sketch

Height of tallest plant: cm

Conclusions

Did these plants grow well?

Why?

Plant pot D - 16 onion sets

What do you think will happen?

Why?

Plant pot D after 1 week

Sketch

Height of tallest plant: cm

Plant pot D after 2 weeks

Sketch

Height of tallest plant: cm

Plant pot D after 3 weeks

Sketch

Height of tallest plant: cm

Plant pot D after 4 weeks

Sketch

Height of tallest plant: cm

Conclusions

Did these plants grow well?

Why?

The line graph

Line graphs are useful to show changes over time. Put your own scale on the y axis of the graph. Do you have enough room to count in 1s? Look at your results for Pot A after 1 week. Place a small cross on the graph at the correct point. Repeat for weeks 2-4. Join the crosses with straight red lines. Repeat for the other pots using the correct colours.

Results

In which pot did the plants grow the best? Why do you think this is?

Using our results to answer the question

How many onion sets should Colin the farmer plant in each pot? Why?