

Plants and how they grow

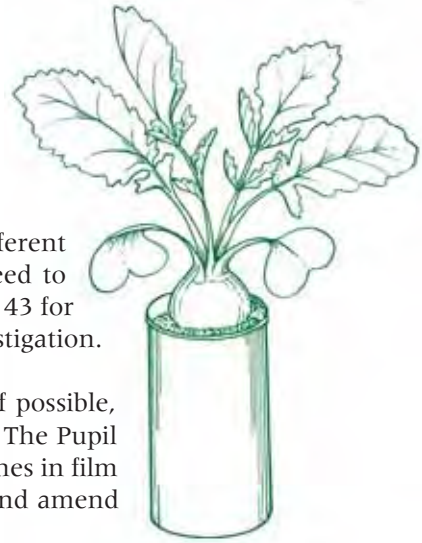
→ Teacher Guidance

Activity 5: Adding mineral salts – do radishes grow better?

As a start, discuss with the children why gardeners and farmers add 'fertiliser' to their plants and crops. The children may think that the plants are being 'fed'. This is an opportunity to introduce the need for mineral salts. (See note on 'Food' in plants in booklet 1, *Parts of a plant and their functions*, page 20.)

In this investigation, radishes are grown in film pots containing different numbers of fertiliser pellets. The growth (or 'crop') is compared. You need to explain to the children that fertiliser pellets contain mineral salts. See page 43 for further information on radishes and why they are good to use in this investigation.

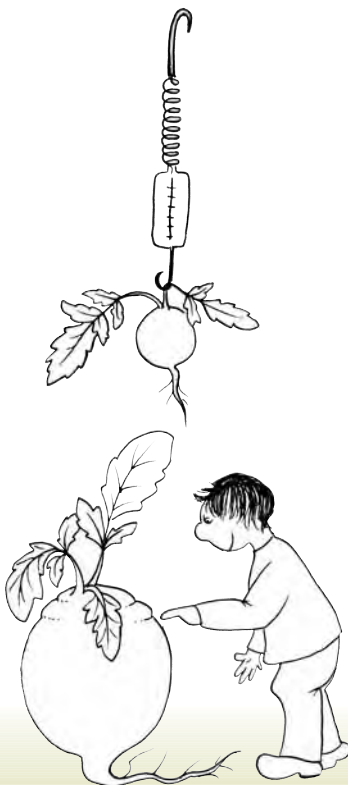
For details of the technique, see page 11 (Growing plants in film pots). If possible, you should use a light bank for growing the radishes in this investigation. The Pupil Sheet (page 13) can be used to help the children see how to grow the radishes in film pots. A Word file is provided on the SAPS website for you to download and amend to suit your class.



The activity

Following on from the title, ask the question 'Does adding mineral salts to radishes make them grow better?' Discuss what 'better' might mean. Does it mean a bigger radish – in terms of weight, diameter or circumference? Ask the children to make a prediction and work with them to plan the investigation.

Each child has a film pot and it is suggested that children work in groups of five. They need to use black film pots and fill them with an inert material so that there is no source of mineral salts in the growing medium. For this activity, the best results are obtained with a soil mix with very low mineral salt content (e.g. moss peat). Mineral salts can be provided by using fertiliser pellets. So in a group of five children, each child adds a different number of fertiliser pellets – say 0, 5, 10, 15 and 25 pellets.



Results

Children can make observations on any differences in growth at 2 or 3 day intervals and record their observations. They can harvest their radishes after three to four weeks. Explore with the children the differences they can see in the radishes and how these differences could be measured. They may find that plants with more leaf growth may not have the biggest radishes.

Various features can then be 'measured' depending on the ability of the class. For example, you can trim the leaves and separate them from the radishes and other parts of the root. Different parts of the plants obtained in the different fertiliser pellet treatments can be weighed. A good way of showing the 'yield' of radish is to use a 'radogram' in which the radish roots obtained for each mineral salt treatment are lined up side by side, like drawing a bar chart (see Figure 15).

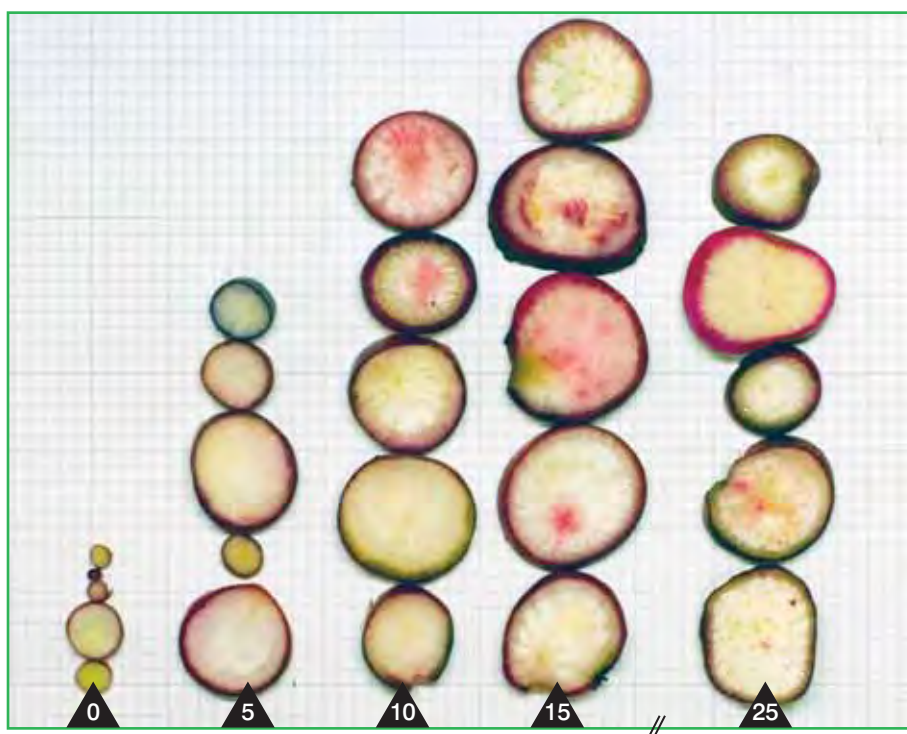


Figure 15. A 'radogram' - a slice was cut across the widest part of each of the five radishes grown in pots, with the number of fertiliser pellets shown. These slices have been built up into a bar chart, known as a 'radogram'.

What we have discovered

There is likely to be some variation in the results between the different groups. This provides an opportunity to discuss with the children the importance of doing replicates. The biggest radishes usually grow in the pots with 10 to 15 fertiliser pellets. With higher concentrations of mineral salts (25 fertiliser pellets), growth is inhibited. You may wish to discuss with the children whether the 'biggest' radish is necessarily the 'best' one. How important is taste and appearance?

Evaluation

Discuss with the children whether they think the test was fair. How might they improve it? Were all the fertiliser pellets the same size (or does that not matter)? What else could they investigate in relation to mineral salts and growth of the radishes?

Remember – you can use the Planning Plant (page 3) to help guide children in your class through the investigation.

Curriculum links

National Curriculum (Sc2)

KS2: 3c

QCA guidelines – Scheme of work

Unit 6A

Scottish ISE 5-14 framework/attainment targets

LT-C2.4