

NATURAL RESOURCES

Activity NR03

Theme

Class activity (CA). The class investigates other vegetables that can be grown in Ireland and the importance of crop rotation.

Objectives

Understanding crop rotation, learning more about growing vegetables and about chemicals in farming.

Curricular Strands

SESE, Science–Living things;
Plant and animal life

SESE, Geography–Natural environments;
Rocks and soil; Soil

SESE, Science and Geography–
Environmental awareness and care

SPHE–Myself and the wider world;
Environmental care

Skills

Questioning, observing, sorting,
identifying

Time

20 minutes to explain; 20 minutes
to complete worksheet

Links to Green Schools

Improving your school environment

Wait your turn!

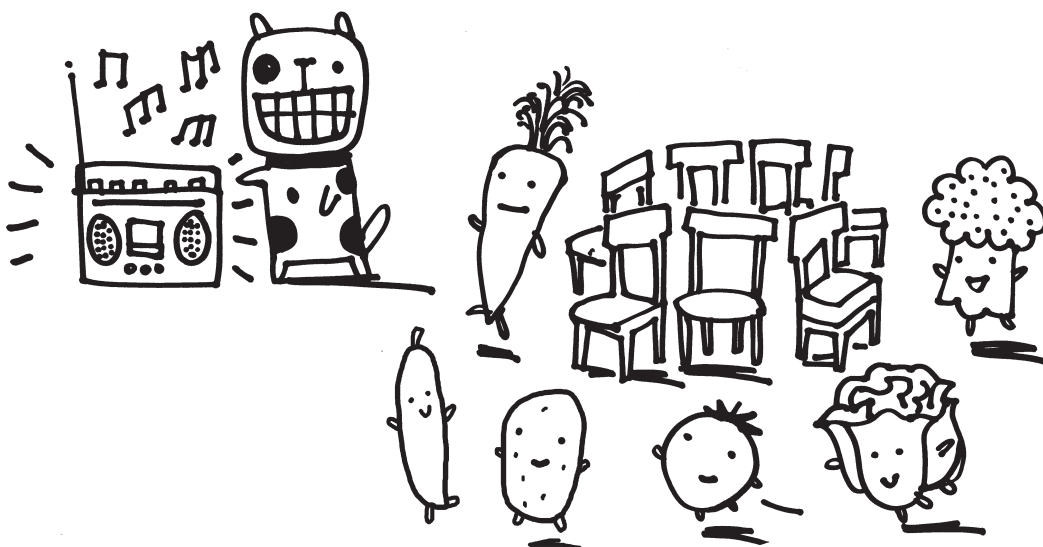
→ INVESTIGATING CROP ROTATION

WHAT YOU NEED

- Activity sheet (attached)
- Photos of potatoes, beans, cabbage and carrots
- Copies of the crop rotation chart attached

WHAT YOU DO

- 1 Explain to the class that you are going to look at some of the different crops that can be grown in Ireland and discuss how they are grown.
- 2 Chemical fertilisers are used by many farmers in Ireland. Fertilisers replace nutrients in the soil that the previous vegetable crops have used up. These chemical fertilisers can, when used too much, be harmful to the soil. Some of the fertilisers can end up in rivers and streams causing harm to fish and wildlife.
- 3 Manure is a natural fertiliser but it too can cause damage when used excessively.
- 4 One way of making sure that your soil is healthy is crop rotation. Crop rotation involves growing different vegetables in different plots each year.
- 5 Different vegetables need different nutrients. By changing the vegetable you grow in a plot every year, you can make sure that the soil stays healthy and the vegetables remain free from pests and diseases.



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- 6** The chart below shows a standard crop rotation.
- 7** Discuss the first three charts with students and see if they can fill in where each vegetable should be planted in the fourth year, and ask them to explain their answer.

Year 1

Potatoes like a lot of manure so they should be planted in a plot to which manure has been added.

Year 2

Legumes (beans) can be planted in the following year. These plants are unique because they fix nitrogen in the soil (i.e. take nitrogen from the air and bring it into the plant and the soil).

Year 3

Brassicas (cabbage) like nitrogen-rich soil and grow well after the legumes have fixed the nitrogen the previous year.

Year 4

Carrots do not like rich heavy soil. They are well suited to follow the brassicas (broccoli or cabbage) that have used up the nitrogen in the soil the previous year.

- 1** Over four years the vegetables can be moved around the four plots as illustrated.
- 2** Crop rotation allows the gardener to grow vegetables year after year and reduces the need for compost, manure or chemical fertilisers.

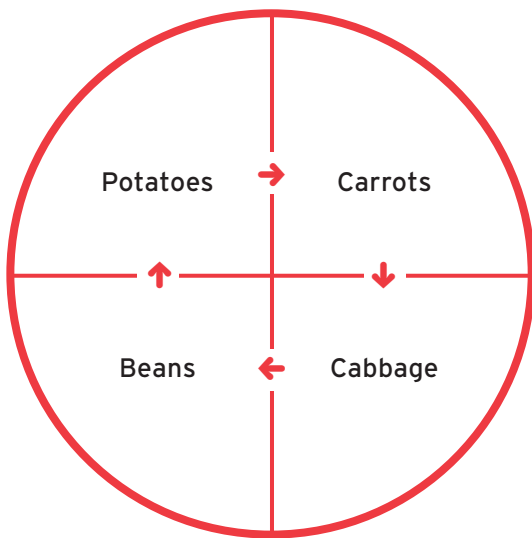
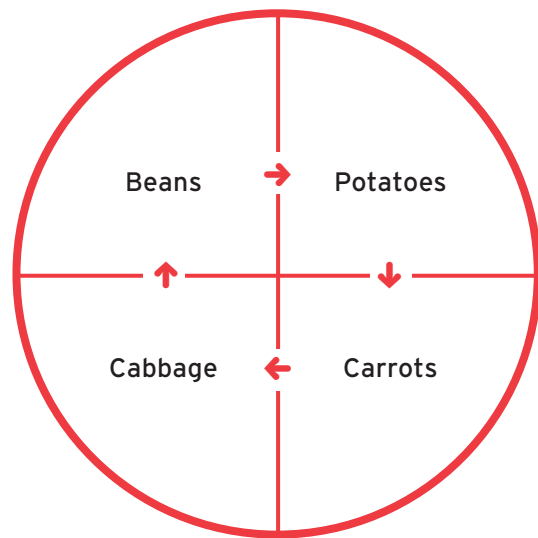
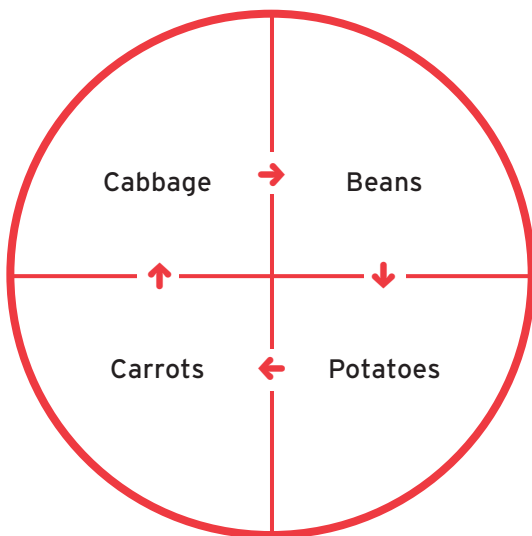
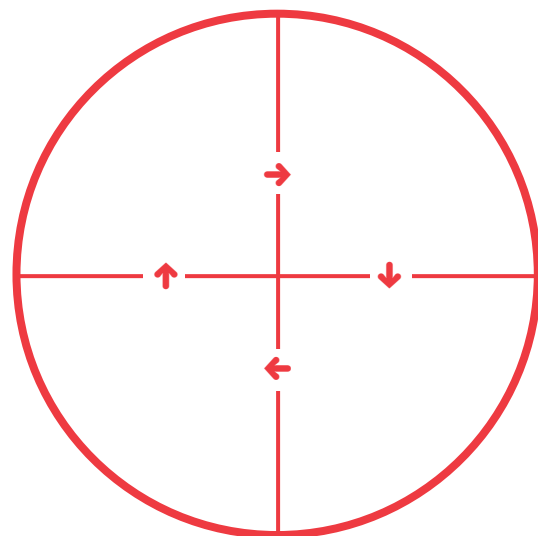
Go further

- 1** To help get a crop to harvest in June, polythene can be placed over the soil before sowing to help the soil warm up in preparation for germinating seeds. Seed can also be started in pots in the classroom, particularly beans and peas.
- 2** A plot 5m x 1.5m is big enough to plant the vegetables mentioned above and to put crop rotation into action in your school grounds.
- 3** The turf (grass sod) should be removed from the plot. This can be placed grass-side down and the soil used for pots or seed beds when the grass dies off.
- 4** Loosen the soil with a fork and add manure or compost, depending on the condition of the soil.
- 5** Each of the plots should measure 1m x 1.5m. Leave 50cm between each plot for paths to allow weeding, etc.
- 6** Potatoes can be planted in April as illustrated in Natural Resources Activity 2.
- 7** Carrots, cabbages, peas and beans can be planted out in mid-April following instructions on the packets. Check a gardening book to see what varieties will be ready at the right time for schools.

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CROP ROTATION CHART**Year 1****Year 2****Year 3****Year 4**