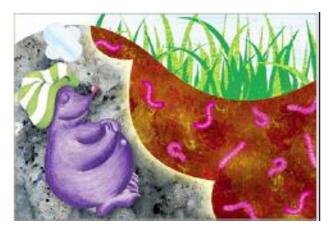
# **Organic Farming Activity two:**

## Healthy Soil - soil matters - give back what you take out





'That day Mole dreamed of worms...worms in a rich brown soil, more worms than he could possibly eat.'

And he dreamed of the day when he would find the soil alive with mini-beasts and wriggling worms.'

## **Curriculum links**

Geography 4b, 5a, 5b, 6e Science Sc2: 1a, 1b, 1c, 3c, 5a, 5f. Sc3: 1d

#### **Objectives**

- To understand how organic farming differs from conventional farming
- To appreciate how important maintaining good soil quality is to organic farming.

#### Resources

- 1. Bag of soil
- 2. A packet of garden fertiliser
- 3. TEACHING RESOURCE 8 "six crop rotation pictures" (<a href="www.farmtrails.org.uk/fflcurrpack/tr-sheet8.htm">www.farmtrails.org.uk/fflcurrpack/tr-sheet8.htm</a>).

#### What to do

Show the children the bag of soil. Ask some volunteers to come and feel it and describe what it is like. Ask the children what they know about soil. Where does it come from? What is it made of? Write ideas on the board. (If children have completed the Year 3 QCA Unit Rocks and soils they should have a good understanding already).

Ask the children to explain why plants need soil to grow. Their first idea may well be to do with needing somewhere for the roots to grow so that the plants are held up. Make sure that they also understand that plants need to get goodness from the soil in the form of nutrients.

Ask if any of the children know what a fertiliser is. Show them the packet of garden fertiliser and ask one of the children to come up and read the description.

Tell the children that they are going to find out how organic farmers build up soil fertility without adding chemicals to the soil. Explain that some plants build up soil

goodness and some take it away. If you plant a range of different crops over a period of years you can keep the soil in balance. This is called a crop rotation. You may want to discuss the meaning of the word 'rotation'.

Ask for six volunteers to come to the front. Give each of them a crop rotation picture and accompanying text and ask them to read it out. Make sure that the steps of the rotation are not in the right order.

On the board draw a set of arrows making a cycle, and in the gap between each arrow, write year 1, year 2, year 3, year 4, year 5 and year 6. Ask the children for suggestions of how they would order the crops if they were a farmer.

Assemble the crop rotation on the board. The correct order is shown below with accompanying teachers' notes on each crop and its role in the rotation:

### Year 1: Clover ley – adds soil nutrients

Clover works as a 'natural' fertiliser. It belongs to the family of plants known as 'legumes'. As it grows in the soil, it draws nitrogen from the atmosphere and makes it available to plants growing in the soil, or following crops.

*Year 2: Clover ley – adds soil nutrients*As above.

#### *Year 3: Wheat – withdraws soil nutrients*

Wheat is a demanding crop which takes up lots of nutrients from the soil. This is why it is important to have a good fertility building crop like clover before it.

## Year 4: Beans – keep soil nutrients in balance

Beans are an excellent break crop. This means they give the soil a chance to recover after the nutrient demanding wheat planted the year before, and 'break' potential pest and disease cycles. Beans take up soil nutrients as they grow but this is balanced by the fact that, as a legume, they add some nitrogen to the soil through the action of the bacteria in their root nodules.

#### Year 5: Oats - withdraw soil nutrients

Oats take up nutrients from the soil, but are not as demanding as wheat. They are a useful crop for low nutrient situations as their roots scavenge deeply looking for nutrients, and are therefore ideal towards the end of the crop rotation. They are also a good form of weed control as their leaf structure shades out light and prevents smaller weeds getting established.

## Year 6: Turnips – withdraw soil nutrients

Turnips act as a break crop after the oats grown the year before. While they do not add nutrients to the soil, they do not take as many nutrients out as the wheat and oats. Also, turnips will often be eaten by sheep and other animals which add manure to the soil as they are feeding.

The children could then draw their own version of a crop rotation.

## **Further activities**

If any of the teachers or parents has a compost heap in their garden, ask them to bring in a sample of compost. Collect together some organic matter in a bucket, and ask them to compare. Can they believe that the vegetable peeling, fruit skins and so on can turn into rich brown compost? Ask them what is good about composting, for example putting the nutrients back into the soil.