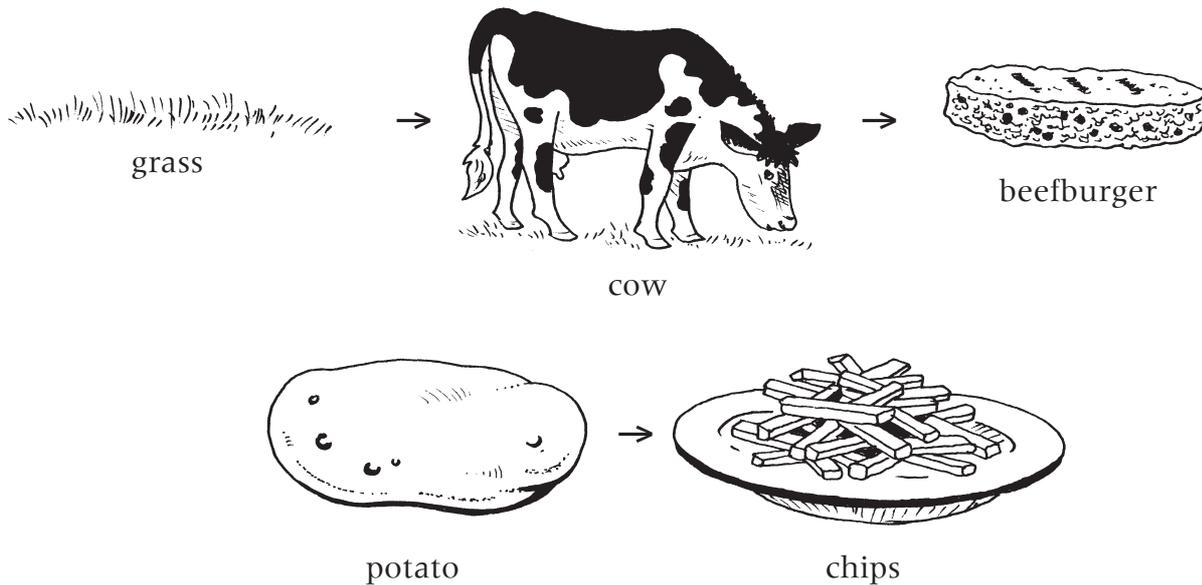


## Plants as food

When green plants carry out **photosynthesis** they use carbon dioxide and water to produce glucose and oxygen. Some of the glucose is used by the plants to release energy through **respiration**. Plants can also convert glucose into **starch** to act as a store of energy. Humans can eat these stores of starch to gain energy. Plants also use glucose to make other substances such as **protein** and **cellulose**. Human **food chains** are short so that more of the energy originally stored by plants is available as food.



## Improving plant growth

When growing crop plants for food, farmers want to produce the largest amount of useful material (**yield**) possible. They use **fertilisers** to add important **mineral salts** to the soil so that the crops have a constant supply of these important nutrients. This is necessary because the plants are removed from the soil taking the mineral salts with them. The crop plants do not **decompose** in the field, which would allow the mineral salts to get back into the soil. Farmers can use manufactured or natural, **organic** fertilisers to improve the quality of the soil.



Manufactured fertiliser.



Manure is an organic fertiliser.

A problem can arise when other plants start growing in the fields as well as the crops. These are called **weeds** and **compete** with the crop plants for the resources needed for healthy growth. Weeds reduce the growth of crops so farmers use chemicals called **weedkillers** or **herbicides** to remove them from fields. Some weedkillers are **selective**, and only kill weeds, not crops.

### *Pests and pesticides*

Animals which eat crops to gain the stored energy are called **pests**. Farmers use chemicals called **pesticides** to kill them. One problem with using pesticides is that they might kill harmless wild animals as well or disrupt **food webs** in the environment. **Specific** pesticides can be used that are only harmful to particular types of pests. Another problem with pesticides is that the poison can build up in food chains and have unexpected and unwanted effects on larger predators. Modern farming techniques now often take into account the possible harmful effects on the surrounding environment.

### *Controlling environments to increase crop yields*

The growth of crops in open fields is often affected by changes in the weather or season. Sometimes crops are grown in carefully controlled conditions inside **greenhouses**. Here the plants can be provided with the **optimum temperature**, light intensity, carbon dioxide concentration and supply of water and mineral salts to ensure the best possible growth despite the changing conditions outside.