



Cereals and grasses

Curriculum links:

- **Science** Living things
Environmental awareness and care
- **Geography** Human environments
- **SPHE** Myself and the wider world

Lesson objectives:

To make students aware of the cereal growing process and the importance of grass and cereals in the food chain.

Teacher guidelines

It is suggested that teachers ensure that students are familiar with the vocabulary and concepts introduced in the previous module before starting this lesson.

Keywords and concepts introduced in previous modules:

grass hay silage cereals grains wheat oats barley rice maize (corn)

Cereals are types of grass with grains that can be used as food for humans and animals. The main cereals grown in Ireland are wheat; used to make bread, flour and pasta; oats; used to make porridge, muesli and biscuits and barley; used in the production of beer. Two other cereals we eat in Ireland are rice and maize (corn) which can be eaten on their own or used to make many other products. All cereals have an ear, a stalk, grains and leaves. Grass does not grow very well in winter, so farmers make hay (dried grass) and silage (pickled grass) in summer to feed to animals. Silage, made in pits or bales, is made by covering the grass tightly in plastic so no air is allowed in.

Keywords for this lesson:

tillage ploughing sowing harvesting combine harvester threshing processing

Fun fact!

Grass is the most common plant in the world! Over 60% of Ireland is covered by agricultural grassland of one type or another. This does not include areas covered by annual crops, golf courses or lawns.

Tillage

Tillage is the name given to the preparation of land to receive seeds. Tillage farming involves the **ploughing, sowing** and the raising of crops like cereals.

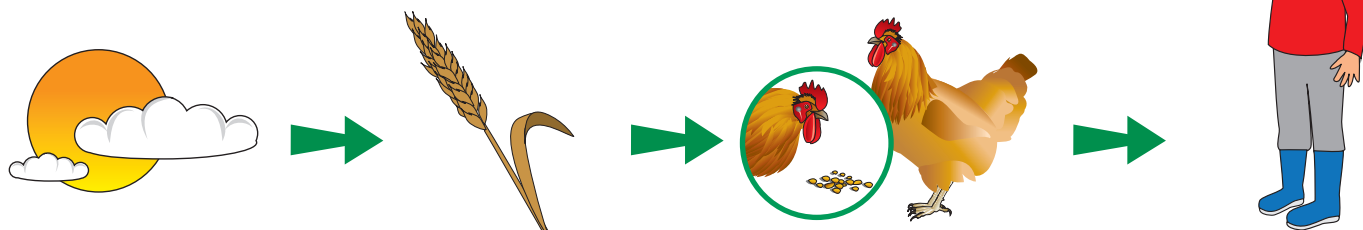
The growth cycle

1. **Ploughing:** The farmer must firstly plough the land to break down large clumps of soil and prepare the ground for seed. This was done by horse in the past, but is carried out by tractor and mechanical plough today.
2. **Sowing:** The health of the soil is key to successful and sustainable food production. Before crops are sown, fertilisers are sometimes used to ensure the soil has all the right nutrients for the crop to grow. Then the seed is sown (planted). The seed is sown (planted). As the crop grows, fertilisers are sometimes used to ensure that the cereal has the right nutrients to grow.
3. **Growing:** As the crop sprouts and grows, it is often sprayed to kill weeds and prevent disease.
4. **Harvesting:** When the crop has fully grown and the seeds ripen, it is harvested. Harvesting is the gathering of the crops.



Harvesting and processing

The **combine harvester** is a machine that cuts the crop, separates the grains from the stalks and cleans the grains. Separating the grains from the stalks is called **threshing**. When the crop is harvested, it is the grain that is used for food. Some of this grain is fed to animals and some is processed to be used in our food. The stalks or straw is sometimes used as bedding for livestock and in the past, was used for thatching.



Grass and cereals in the food chain

Both grasses and cereals play an important role in the food chain. The above food chain shows how cereals use energy from the sun to grow. This energy is passed on to the chicken which eats the cereal grain and then to the child who eats the egg or meat from the chicken. Grass plays a similar role in the food chain (see Cattle, page 7). Without cereals and grasses, we could not feed the animals that provide us with milk, meat and eggs.

Suggested activities

- Photocopy the activity sheet on page 47
- Examine the packaging of breakfast cereals and discuss which cereal plants these are made from e.g. Weetabix (wheat), Cornflakes (maize), and Rice Krispies (rice). Discuss what other grains do we eat in our diet (quinoa, bulgar wheat, barley)?
- Students could make posters showing the stages in the growth and harvesting of the cereal crop. Words such as ploughing, sowing, fertilising, spraying, harvesting could be included
- Create a display of cereal products, grouped according to which cereal they contain
- Research the story of bread. Set a challenge to list 10 people involved in the processing of wheat into bread. Remind students of issues such as harvesting, transport, milling of flour
- Students could make illustrated diagrams of the many food chains that contain grass or cereals. They could be challenged to imagine a world without cereals and grasses and the implications of this for humans
- Where possible grow cereals such as wheat, oats and barley in the school grounds. They can be harvested in autumn and ground using a simple quern – a flat stone and a round stone
- Make rice crispy cakes using chocolate. Remind students that chocolate comes from milk
- A link to SPHE and history would be to research the history of the 'Meitheal', where neighbours gathered together to harvest crops before the invention of modern machinery
- Discuss the interrelationship and interdependence between people, animals and plants and the fact that we rely on farming for food (see 'The Irish Farmer', page 2)
- Make your own silage. Fill a plastic drain pipe (or Ziploc bag) with cut grass. Seal the pipe/bag tightly and compress to remove excess air. Use weights on top of lid/bag to compact the grass which will drop as the grass ferments. Fermentation should take 14-45 days. Discuss your results against fresh grass. Discuss what conditions are necessary for fermentation? Why do farmers make silage?

Learning outcomes:

At the end of this lesson, students should be aware of the process of growing and harvesting cereals and the importance of cereals and grasses in the food chain.

Additional resources:

- www.agriaware.ie



Cereals and grasses

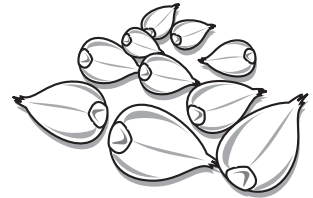
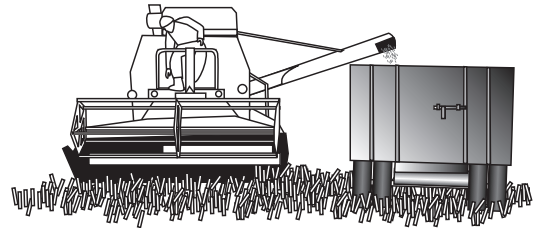
Name: _____

Date: _____

1 Use the words below to fill in the blanks:

grains, sown, fertilised, processed, ploughs, combine harvester

The farmer _____ the land to prepare the soil. The seeds are _____. Sometimes the crop is _____ to make sure it has the correct nutrients to grow. The _____ cuts the crop, separates the _____ from the stalks and cleans them. The grains can then be _____ as animal feed or various products for humans.



2 Use these words below to solve the crossword:

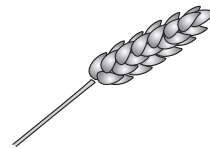
barley, wheat, animals, rice, corn, oats, breakfast

Across:

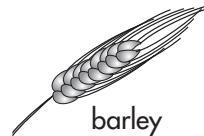
- 4. Many of us eat cereal for this meal. (9)
- 6. Type of cereal served with curry (4)
- 7. Cereal used in the production of beer, whiskey and malt vinegar. (6)

Down

- 1. A cereal that is used to make flour, bread biscuits, cake, pastry and pizza. (5)
- 2. Cereal that can be eaten on the cob. (4)
- 3. Porridge is made from this cereal. (4)
- 5. Cereals not processed for human food can feed. (7)



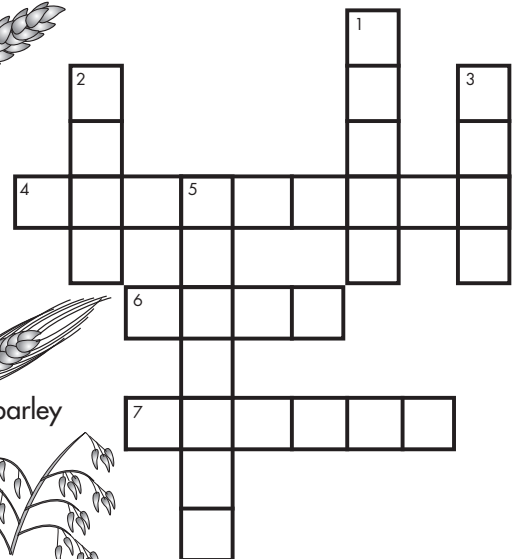
wheat



barley



oats



* To be used with teacher guidelines, page 14