

4.5

Choices

HOW SCIENCE WORKS

Learn about  
• Food choices

**Cheap food?**

When Sai's family goes shopping they buy free range eggs produced by chickens that are allowed to roam freely out of doors. They also buy humanely reared meat from animals raised in conditions close to their natural way of life.

Humanely produced food is more expensive. The cheapest food comes from animals raised in crowded indoor sheds. They have been selectively bred to grow fast. Keeping them indoors stops them running around and makes them put on weight faster.

Pigs reared outdoors spend the day socialising and searching for food.



- 1 Why do farmers raise pigs indoors?
- 2 How does this affect their behaviour?

**How do we decide... whether farming is humane?**

The RSPCA sets out criteria for the **ethical** treatment of farm animals. They produce detailed guidelines for each type of animal. Farms that follow the guidelines can put a 'freedom food' label on the meat to show why it is more expensive.

**All farm animals deserve**  
**Freedom from hunger and thirst**  
**Freedom from discomfort**  
**Freedom from pain, injury or disease**  
**Freedom to express normal behaviour**  
**Freedom from fear and distress**

- 3 What does ethical farming involve?
- 4 Why is it important to label meat that has been produced ethically?

**Better animals?**

These cows have been selectively bred to give ten times as much milk as their ancestors would. They will give birth and start producing milk before they are two years old.

By milking time, each cow can be carrying 15 litres of milk, which makes it difficult for them to walk.



- 5 Why do dairy cattle produce far more milk than calves need?
- 6 What problems does that cause for the cows?

**Better crops?**

This is wheat – one of our main cereal crops. Its seeds are used to make bread and pasta.

Selective breeding has made the seeds bigger, but they contain less vitamins and minerals than older crops.

In the UK, vitamins, calcium and iron are added to bread and breakfast cereals to improve nutrition. In developing countries, many people lack vitamins and minerals. It would be cheaper to improve their crops than add these to their food.



- 7 What feature of wheat crops has selective breeding improved?
- 8 What negative effects has this had?

**Useful improvements?**

Rice is a common crop in developing countries. The golden rice shown here contains vitamins A and E. Half a bowl a day could stop undernourished children going blind. The rice plant produces extra vitamins because new genes have been added to it artificially. So it is a **genetically modified (GM) crop**.



- 9 What advantages does golden rice have?
- 10 Why is golden rice called a GM crop?

GM crops already grow in the US and many other countries. Most of the added genes make plants immune to pests, diseases or the chemicals used to kill weeds.

Many people are worried about GM crops because they think there might be risks to health or the environment. People who oppose GM crops in the UK have campaigned for many years to keep them out of the country. They think it best to wait for firm evidence that GM crops will do no harm.

- 11 What are the most common sorts of genes added to GM crops?
- 12 Why have so few GM plants been grown in the UK?

**Get this**

- Cheap meat can be produced by raising animals in crowded conditions.
- Selective breeding improves yields but can produce unhealthy animals and crops low in vitamins and minerals.
- GM crops can contain more nutrients and resist disease better, but many people are worried about them.