

# Food supply: Feeding my family

## Teacher notes

### Feeding my family

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How small scale farmers cope with climate change

### Food security

Food security is all about having enough food to eat throughout the year, or having enough money to be able to buy the food you need.

**Food security**

Having enough food to eat throughout the year is important for all of us. This is known as **food security**.

We all know how important it is to have a varied and nutritious diet.



In the UK, there is plenty of food available. Most of us buy our food from the supermarket or local markets.

Sadly, some people do not have enough food to eat.

Links to the 5 a day fruit and vegetables.

### What food do we rely on?

Out of 250,000 plant species, we rely on only 20 to provide most of our food

Maize, rice, wheat and potatoes are the most common food crops



There are many traditional food crops that only grow in a few places but which are important foods.

It is dangerous to only rely on these few crops for all our food needs. Changing climates affects the production of these crops

### What food do we rely on?

Wheat, rice and maize form the majority of the staple crops we consume. Others include cassava, soya bean, sweet potato, barley, oats, banana, millet, sorghum.

### Suggested activities:

Look at the centre of diversity of each of these main staple crops. See how they have spread throughout the world.

Wheat - Near East

Rice - South-East Asia

Maize - Central America

Potatoes - South/Central America

What kind of climate do they need to grow?

**Changing climates and food security**  
 With changing climates, farmers face many challenges

**Drought**  
**Extreme cold**  
**Unpredictable rainfall**  
**Flooding**  
**Freak storms - hurricane or tornado**  
**Warmer temperatures**

Farmers (and plants) need to adapt to the new climates to ensure the crops thrive

Changing climates and food security  
 What are the effects of these changes in climate on crops?

Drought and high temperatures - Crops do not grow, established plants stop growing and die  
 The time of year for sowing seeds and harvesting crops changes

Rain at the wrong time of year - seeds do not germinate, established plants stop growing and die, the harvest is ruined

**Climate change and onions in the UK**

In 2006, the UK had hot weather in July followed by heavy rainfall in August

This had a big impact on the quantity and quality of onions produced

The onions were smaller and the yields were reduced by 55,000 tonnes from the previous year

This will make onions more expensive to buy - think how many people this will affect

The UK (and Europe) may have to import onions so that there are enough available

<http://www.hrt.co.uk/Articles/2006/12/07/100169/uk-onion-crop-down-55000-tonnes-in-2006.html>

Climate change and onions in the UK  
 In 2005, annual yield was 380,000 tonnes  
 In 2006 the yield was 330,000 tonnes.  
 See the British Onion Producers Association website (BOPA) for more details.

Think of the impacts this will have on all people who use and eat onions.

**How can farmers increase their food security?**

Grow a range of crops - if one dies another may survive the climate

Grow local varieties of crops that are adapted to the climate

Save seed from one harvest to plant the following year

Growing a range of crops that are suitable for the climate helps to ensure food security

How can farmers improve their food security?  
 Move away from monoculture  
 Local and traditional varieties are often more resilient and require less water, fertiliser and pesticides than improved, GM and high yielding varieties of crops

**Why should you choose local varieties of seed and plants?**

Non-traditional or high-yielding varieties of plant are bred to produce large amounts of the edible part e.g. fruit, potatoes or grains

Monoculture - harvest of grain

Farmers can grow fewer plants to produce the same amount of food

These type of plants require a lot of water and fertiliser to produce the high yields. This is expensive for the farmer

Local varieties of plant are adapted to the local climate, will produce something even in extreme climates and contain important nutrients that contribute to a balanced diet

Why should you choose local?  
 Plant breeding has been happening for centuries. Plant breeders are generally concerned with increasing the yield of crops although they also try to introduce other positive traits.  
 Wild varieties of plants produce less grain or fruit, but they are resilient and can often survive extremes of climate

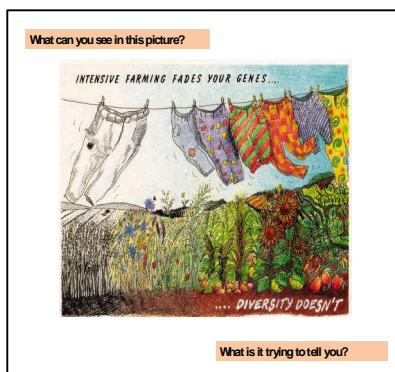
There is nothing wrong with this as we all need to eat food. However, for the poorer farmer, this leads to problems. The high yielding varieties generally need high amounts of water, fertiliser and pesticide to produce the high yields. This costs money.

Artificial selection has seen farmers cross plants with favourable characteristics (e.g. high yield, good taste, short stems, and good colour) to make new varieties that have a combination of good traits or characteristics.

All of this takes time – you need to wait for the plants to grow, produce seed and then cross the seeds to make new generations. Genetic modification (GM) of plants is one way of speeding up this selection. However, the process of GM is very controversial. Should 'foreign' genes be introduced into species? There are good and bad examples. For example, the genes of some deep sea fish are introduced into strawberry plants to try and prevent them from freezing in cold temperatures.

Genes for vitamin A (or carotene) are introduced into cassava to try and improve the nutritional value of this staple food.

Grow a range of crops – increase diversity. Move away from monoculture. Grow local varieties of crops that are adapted to the climate



What can you see in the picture?

Have a look at his image

What does it tell you?

All the crops grown are the same – the genetic pool becomes weakened or faded.

Where many varieties and species are grown together – intercropping/diversity in farming – the genetic make up of the plants is much stronger.

Growing a mixture of crops together (inter-cropping) is good for the crops and for the farmer.

This discussion about diversity may lead into Citizenship and discussions about the importance of ethnic diversity etc.





