







...some of the effects
of the chemicals used
in farming



Today we will:



- Discover what organic farming is all about
- Investigate the Advantages & Disadvantages of organic farming
- Determine any differences between organic and non-organic produce



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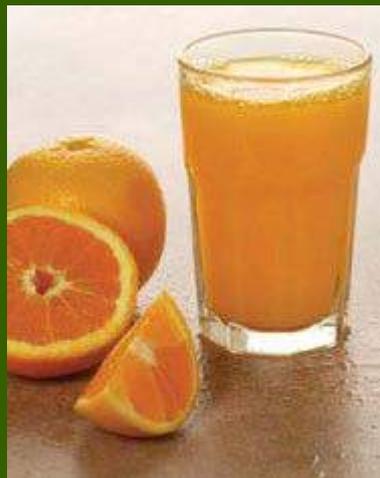


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- Discover what GMOs are
- Investigate the Advantages & Disadvantages of GMOs



Food, Glorious Food !



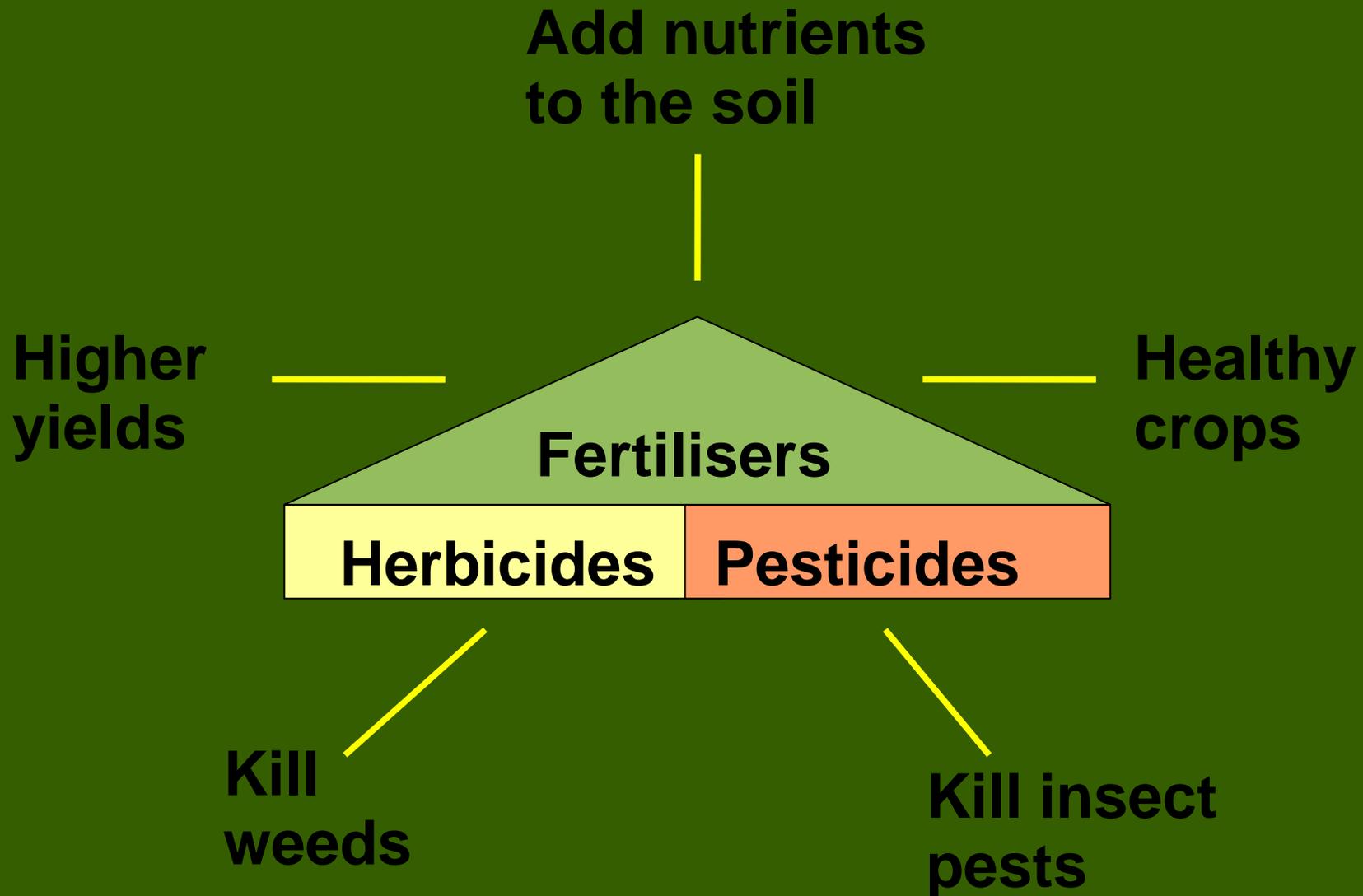


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What is Organic Farming?



Benefits of chemicals in farming



... but these
chemicals can
also damage the
environment...



...Kill
wildlife...

...and worsen
conditions such as
asthma



How it happens...

Fertiliser is sprayed on fields



Excess fertiliser washes into waterways



The algae and plants use up the oxygen in the water, depriving fish and other animals



This causes an algal bloom and the rapid growth of plants



If the bloom continues, the fish and other animals die off – a 'fish kill'

**Uses few, if any
chemicals.
It relies on animal &
organic waste
to fertilise
soils.**

Farmers must follow
strict guidelines to be
allowed to call
their produce
'organic'.

Organic Farming

Animals are reared
without
the routine use of drugs
such as antibiotics.

**Uses methods such
as crop rotation &
set-aside to maintain
soil fertility and
decrease weeds/pests.**

Ten Reasons to go Organic

1. No additives
2. No pesticides
3. No GM
4. No reliance on drugs
5. Farms inspected regularly
6. Healthy
7. Increased biodiversity
8. High standard of animal welfare
9. Good for the environment
10. 'Better' taste

Problems with Organic Farming

- Using no chemical fertiliser means that, initially, yields are lower
- Using no pesticides means more weeding must be done
- Farmers have to wait several years before they can market their food as 'organic'
- The extra work means organic produce is more expensive for the shopper to buy

Activity 1: Fill in the Blanks

Answers

Organic farming is farming with few, if any, **chemicals**. Additives such as **pesticides** and **fertilisers** are not sprayed on crops, meaning crop yields are **lower** at first and farmers must **weed** fields more. Animals are not given drugs like **antibiotics** and **genetic modification** is not used. Farms are inspected regularly to ensure that a high standard of **animal** welfare is maintained. Organic farming is **good** for the environment and supports **biodiversity**. It is also thought that organic produce tastes better and is **healthier**. However, farmers must wait **several** years before their produce is officially labelled 'organic', and organic produce is more **expensive** to buy.

Video: Food for Life Part 1

Answers

- a. Higher Hacknell farm has been organic for about 12 - 13 years.
- b. Crop rotation maintains fertility and controls pest problems.
- c. Clover rebuilds the nutrients in the soil.
- d. Antibiotics may be used on animals if there is no other way to cure them.

Produce your own food?

Buy an eglu !



Designed for town gardens.

Room for 2-4 chickens

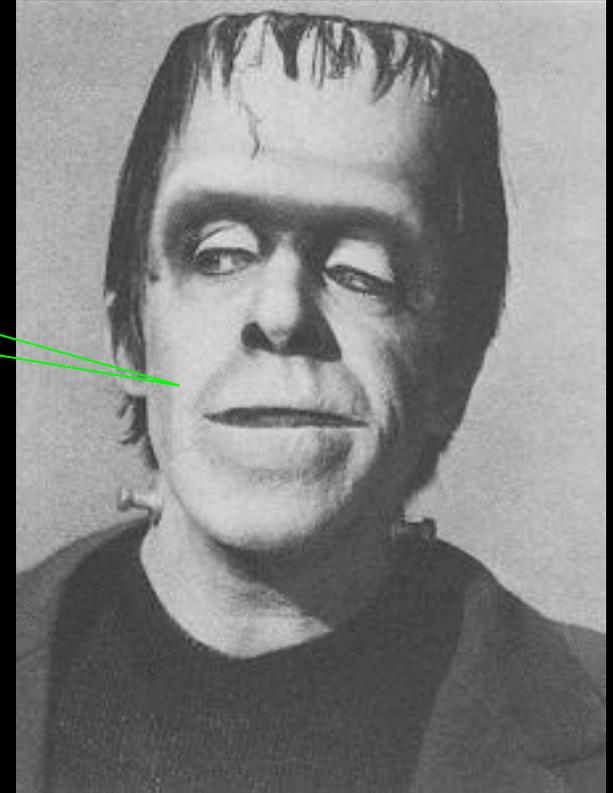
Easy to clean

Includes nesting box & roosting bars

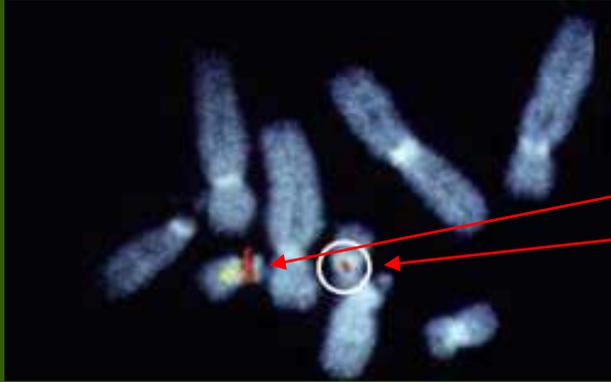


Frankenstein Foods?

Hmmm...maybe you really are
what you eat!



What does genetic modification mean?



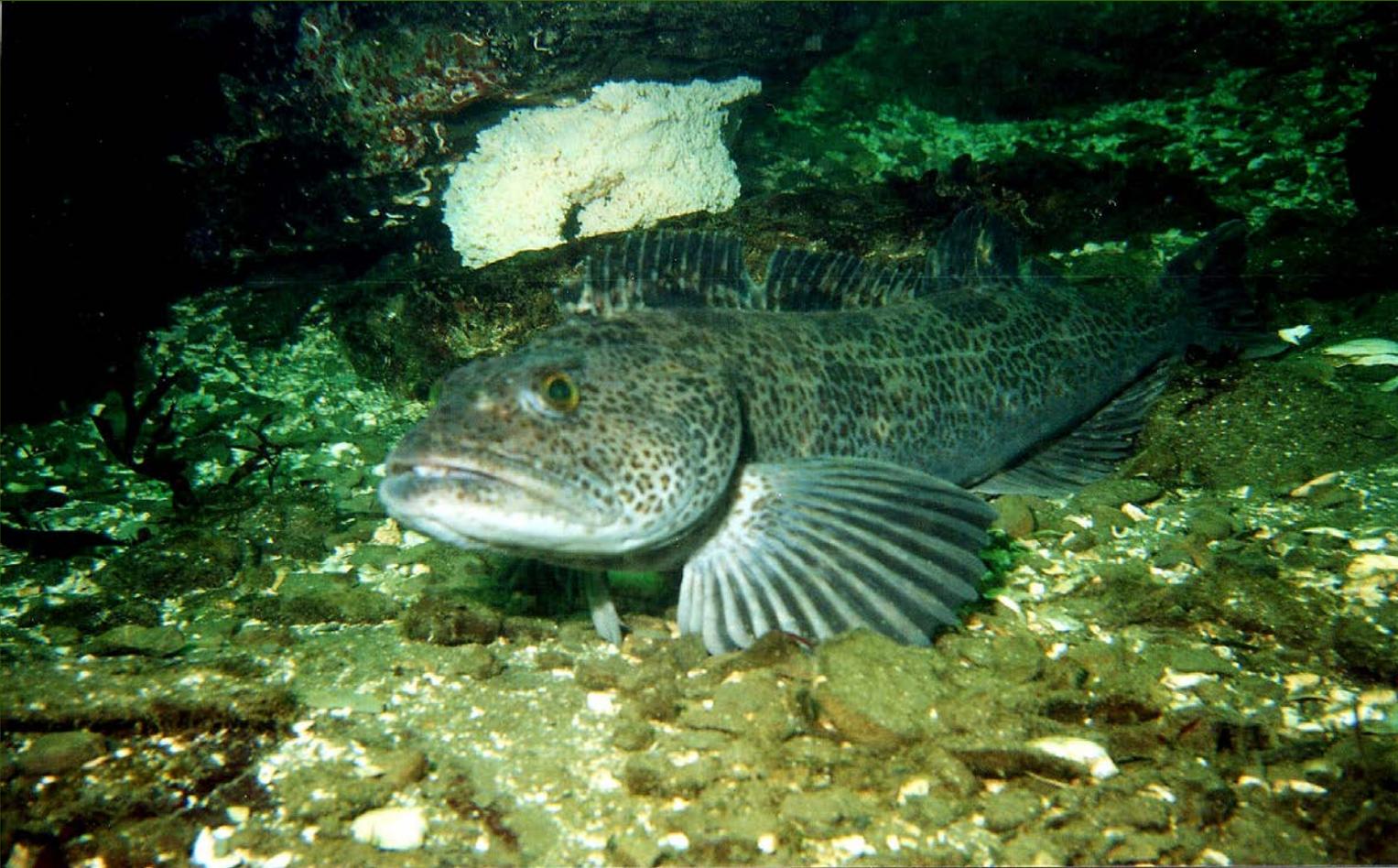
Genes on a chromosome.

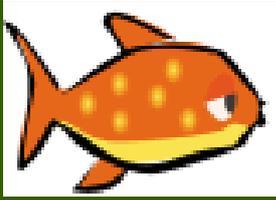
Chromosomes are made up of genes.
Genes are made up of DNA.

Individual genes determine the characteristics or traits of living things.

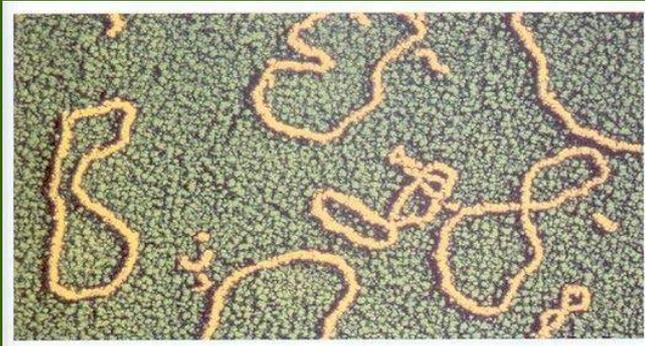
For example:

Cod contain an anti-freeze gene. This gene allows cod to produce a protein that keeps them from freezing to death in cold polar waters.





Anti-freeze gene
is extracted
from cod.



The gene is added
to a plasmid
(a small piece of DNA).



New frost-
resistant tomato



Infect tomato
plant cells with
new bacterium.
New tomato plant
cells are grown.



Allowed to
reproduce in a
bacterium.

What are the Advantages of GM crops?

- Higher yields
- Better quality food
- Fewer herbicides and pesticides
- Cheaper food
- Will help feed the world's hungry

A field of GM wheat in Idaho, USA



What are the Disadvantages of GM crops?

- Contaminate ordinary Crops
- Too expensive for LEDCs
- Decreases biodiversity
- Will cause 'superweeds'
- Might affect human health *e.g.*, allergies

Greenpeace activists have marked a GM field in France.



High Yield Variety (HYV) seeds were developed by scientists to improve food supplies and reduce famine in developing countries. These HYV or 'miracle' seeds can produce up to six times more crops than regular seeds on the same area of land. The advantages and disadvantages of HYV seeds are shown in the table below

Advantages and disadvantages of HYV seeds	
ADVANTAGES	DISADVANTAGES
Starvation and famine have been reduced	HYV crops need a lot of fertilisers and pesticides to grow increasing costs and pollution
HYV crops are shorter so are more able to withstand high winds and heavy rain	HYV crops require a more reliable source of water – irrigation increases costs
More food is grown on an area of land which increases farmers' profits	The poorest farmers have been unable to buy HYV seeds so they are of no benefit to them

Watch and take notes

<http://www.youtube.com/watch?v=oCnld7-maoE>

Advantages? Disadvantages?

Homework Exercise

Read the statements on your worksheet from the farmer who has decided to go for GMOs and the environmentalist.

Questions

- With whom do you agree?
- Do you agree that GM foods should be called 'Frankenstein Foods'?

Give reasons for your answers.