Your notes

GCSE Biology: revision notes

Food production and microorganisms

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Start here: growing more food

- Farmers grow crops and keep animals, and food makers use microorganisms. The aim is a high yield without harming the environment.

Crops in glasshouses

- **Glasshouses** and polythene tunnels trap heat, so crops grow faster and for more of the year.
- Growers can add carbon dioxide (for example by burning paraffin, which also gives heat) and use artificial light, to speed up photosynthesis.
- **Fertilisers** add minerals such as nitrates (to make proteins) and phosphates. Too much **fertiliser** washing into rivers and lakes causes **eutrophication**.

Pest control

- **Pesticides** kill pests quickly, but they can harm other organisms, build up along food chains, and pests can become resistant to them.
- **Biological control** uses a natural predator or parasite of the pest, such as ladybirds to eat aphids. It needs no chemicals, but the control animal can become a pest itself.

Microorganisms and food

- Yeast respires, making carbon dioxide; without oxygen it also makes ethanol. In bread, the carbon dioxide makes the dough rise. In beer and wine, the ethanol is the product.

- **Lactobacillus** bacteria turn the lactose in milk into lactic acid. The acid makes the milk thicken into yoghurt and stops other microbes growing.
- Industrial **fermenters** grow microorganisms in large amounts. They control temperature, pH, oxygen and nutrients, and everything is kept sterile, so the microbes grow as fast as possible.

Fish farming

- Fish are kept in cages or tanks, so their food, water quality and predators can be controlled, and they can be bred to grow fast.
- Problems include disease spreading quickly, waste polluting the water and too many antibiotics being used.

Exam tip

- For a **fermenter** question, link each condition to why it matters: the right temperature for enzymes, sterile so other microbes can't compete, air for aerobic respiration, and a water jacket to remove the heat the microbes make.

Common mistakes

- Saying bread rises because of oxygen. It's the carbon dioxide from the yeast's respiration.
- Saying **fertilisers** give plants energy. They supply minerals; the energy comes from photosynthesis.

Key terms

Biological control	Using a natural predator or parasite of a pest to control it.
Pesticide	A chemical that kills pests that damage crops.
Fertiliser	A substance that adds minerals such as nitrates and phosphates to the soil.
Fermenter	A large vessel in which conditions are controlled so microorganisms grow well.
Lactobacillus	A bacterium that turns lactose in milk into lactic acid, making yoghurt.
Eutrophication	When extra nutrients in water make algae grow, then die and decompose, using up the oxygen.
Glasshouse	A building that traps heat and lets in light, so crops grow faster.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

Your notes

1. Why do growers burn paraffin in glasshouses?
2. Which gas makes bread dough rise?
3. What does Lactobacillus turn lactose into?
4. What is biological control?
5. Why are fertilisers added to crops?
6. Why must an industrial fermenter be kept sterile?
7. What is one disadvantage of using pesticides?
8. Which product of yeast is wanted in brewing beer?

Answers

1. To increase carbon dioxide and warmth
2. Carbon dioxide
3. Lactic acid
4. Using a natural predator or parasite to control a pest
5. To supply minerals such as nitrates
6. So other microorganisms can't compete or spoil the product
7. They can harm other organisms and build up in food chains
8. Ethanol

What to do next

Practise 10 questions on this topic

Try 3 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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