

Agriculture and evaluating biotechnology **Triple only**

How do fertilisers increase crop yield?

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Give a disadvantage of using fertilisers.

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What is biological control?

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Advantage and disadvantage of biological control?

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Give a benefit of selective breeding in agriculture.

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Give a risk of genetic engineering in agriculture.

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Give an ethical implication of genetic engineering.

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Give a practical implication of genetic engineering or selective breeding.

They can be washed into rivers and lakes, causing pollution, and they cost money.

They add mineral ions, such as nitrates, that plants need for growth.

Advantage: no chemical residues.
Disadvantage: slow, may not remove all pests, or the control organism may become a pest.

Using living organisms to control pests, for example ladybirds eating aphids.

Unknown effects on the environment or health, or genes spreading to wild species.

Higher yields and better quality food, with no special technology needed.

Cost, time (selective breeding takes many generations), skill, and the method may not work.

Some people think it is wrong to alter the genes of organisms, especially animals.

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A yield rises from 4.0 to 5.0 tonnes per hectare. What is the percentage increase?

$$(5.0 - 4.0) \div 4.0 \times 100 = 25\%.$$