

Selective breeding and genetic modification

Define selective breeding.

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Give two characteristics selected for in crop plants.

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Give two characteristics selected for in domesticated animals.

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Why must breeding be repeated over many generations?

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State a disadvantage of selective breeding.

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What does a restriction enzyme do?

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What does ligase do?

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What is a vector in genetic engineering?

Any two: disease resistance, larger fruit or grains, better taste, higher yield.

Humans choosing which organisms to breed so that desired characteristics are passed on to the next generation.

So the desired characteristic is gradually strengthened until it is strongly shown.

Any two: more milk, more meat, more eggs, gentle nature, wool quality.

Cuts DNA at a specific sequence of bases, often leaving sticky ends.

Reduced genetic variation, so one disease or environmental change may affect all individuals. Inbreeding can increase harmful inherited conditions.

A plasmid or virus that takes up a piece of DNA and inserts this recombinant DNA into other cells.

Joins pieces of DNA together.

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What are sticky ends?

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What does transgenic mean?

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Why are bacteria used to make human insulin?

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Name four conditions provided in a fermenter.

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What happens to the insulin after the bacteria have made it?

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How does Bt maize resist insect pests?

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Give two advantages of GM crops.

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Give two concerns about GM crops.

The transfer of genetic material from one species to a different species.

Short, unpaired DNA strands left at a cut, which pair with matching sticky ends.

Any four: aseptic precautions, nutrients, optimum temperature, optimum pH, oxygen, agitation.

They contain the human insulin gene after modification and reproduce quickly in a fermenter, giving large amounts of insulin.

It contains a bacterial gene for a toxin that kills many insect pests.

It is extracted and purified before use.

Any two: possible risk to health, genes spreading to wild plants, toxin harming other insects, ethical worries.

Any two: higher yields, less insecticide needed, extra characteristics such as nutritional value, more food produced.