Question – Bioenergetics

Farmers depend on photosynthesis to enable their crops to grow. If the farmers can keep the conditions for photosynthesis at a perfect balance, then their crops will grow much faster and at a better quality which will enable them to be sold quicker for profit.

The most common way of achieving this is to use a greenhouse.



Explain how a greenhouse can be used to artificially create the ideal environment for plants to grow.

(Total 6 marks)

Mark Scheme

Level 3 (5-6 marks): Detailed and coherent explanation, which demonstrates an excellent understanding of the processes involved.
Level 2 (3–4 marks): Coherent explanation, which demonstrates a good understanding of the processes involved.
Level 1 (1–2 marks): Relevant information identified however the process may be unclear.
0 marks: No relevant content

Key points to include:

- Greenhouses help to trap the suns heat.
- Which ensures that the temperature doesn't become a limiting factor.
- In winter farmers can use artificial heating systems to maintain ideal temperatures.
- In summer farmers can use shade and ventilation systems to maintain ideal temperatures.
- Farmers can use artificial lighting systems when the sun goes down to provide more opportunities for photosynthesis.
- Farmers can increase the levels of carbon dioxide in the greenhouse by using paraffin heaters to heat the greenhouse, a by-product of this process is the production of carbon dioxide as the paraffin burns.
- Keeping plants in a greenhouse also enables them to be better protected against outside pests and diseases.

(Total 6 marks)