7.7 Strategies to Increase Food Supply: Technology and Sustainability: 10-minute Pack

AQA 8035 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Describe what is meant by an irrigation scheme in the context of increasing food supply on agricultural land in a drier region.

(Total for Question 1 is 2 marks)

2 Give two ways that drip irrigation saves water compared with traditional flood irrigation in a semi arid farming region.

(Total for Question 2 is 2 marks)

3 Describe briefly how hydroponics or aeroponics systems can increase food supply in urban or peri urban areas with limited land.

(Total for Question 3 is 2 marks)

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4 Suggest two ways in which appropriate technology can help small scale farmers increase food supply without large capital investment.

(Total for Question 4 is 2 marks)

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5 Explain how high yield variety (HYV) crops increase total food production on existing farmland when combined with suitable inputs.

(Total for Question 5 is 2 marks)

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Mark scheme · 7.7 Strategies to Increase Food Supply: Technology and Sustainability: 10-minute Pack

Question 1

a planned system to supply water to farmland where rainfall is insufficient or unreliable, oe **B1**

may include features such as canals, reservoirs, pipes, pumps, sprinklers or drip lines to deliver water to crops, oe **B1**

Answer: An irrigation scheme is a planned system to supply water to farmland where rainfall is insufficient, using canals, reservoirs, pumps, pipes, sprinklers or drip lines to deliver water to crops.

Question 2

water delivered directly to plant roots in small controlled amounts, reducing evaporation, oe **B1**

less surface runoff and deep seepage compared with flooding whole fields, so less water is wasted, oe **B1**

Answer: Drip irrigation delivers water directly to plant roots in small controlled amounts, reducing evaporation; and it produces less surface runoff and deep seepage than flooding whole fields, so less water is wasted.

Question 3

hydroponics grows plants in nutrient rich water without soil, aeroponics mists roots with nutrient solution while plants are suspended, oe **B1**

both reduce horizontal land use by allowing vertical stacking or indoor racks, enabling higher yields per square metre in urban settings, oe **B1**

Answer: Hydroponics grows plants in nutrient rich water without soil and aeroponics mists roots with nutrients while plants are suspended; both allow vertical stacking or indoor racks, producing higher yields per square metre in urban areas with limited land.

Question 4

example 1, e.g. simple treadle pumps or low cost drip kits to improve irrigation, oe **B1**

example 2, e.g. low cost post harvest storage or solar dryers to reduce losses and extend shelf life, oe **B1**

Answer: Examples include simple treadle pumps or low cost drip irrigation kits to provide reliable water without expensive engines, and low cost storage solutions or solar dryers to reduce post harvest losses and extend shelf life.

Question 5

HYV crops are bred to produce more edible output per plant and to respond well to fertilisers and irrigation, oe **B1**

linked detail, e.g. with adequate water and nutrients HYVs give higher yields per hectare, increasing total food production on the same land, oe **B1**

Answer: HYV crops are bred to give more edible output per plant and to respond well to fertiliser and irrigation; with adequate water and nutrients they produce higher yields per hectare, increasing total food production on the same farmland.

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