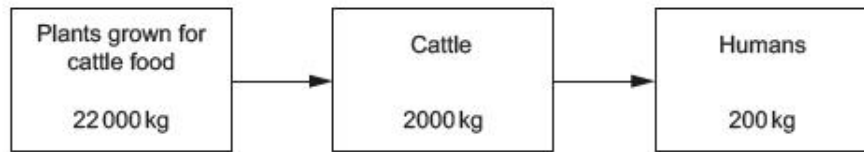


## **GCSE Biology A (Gateway)**

**J247/02** B4-B6 and B7 Foundation (Foundation Tier)

### **Question Set 16**

The diagram shows the flow of biomass through an agricultural food chain.



- (a) (i) Calculate how much biomass is lost between the plants and humans.

$$22,000 - 200 = \underline{\underline{21,800}} \quad \text{Answer} = \dots\dots\dots \text{ kg}$$

[1]

- (ii) One-way biomass is lost from the food chain is by insects eating the leaves of plants.

Write down **one** other way that biomass is lost from the food chain.

[1]

Excretion

- (b) The plants grown for cattle food often have their leaves eaten by insects.

Scientists have produced genetically modified (GM) plants that make insecticide in their leaves.

- (i)\* Explain why these GM plants would make more biomass available to humans.

In your answer use the diagram of the agricultural food chain and ideas about photosynthesis.

[6]

These GM plants would definitely increase biomass available to humans from cows. This is because the insecticides will kill insect pests, so less leaves will be eaten. This is crucial as leaves are the site of photosynthesis. This will therefore allow more photosynthesis to occur as there will be more light absorbing Chlorophyll available. This way more glucose is produced for growth of the crops. Now more crops will survive and grow as food for cows. Cattle therefore will receive more energy for growth and so will grow more. This way there will be more food for humans as more biomass passes through the food chain.

(ii) Suggest **two** reasons why some people are against this type of genetic engineering.

1. Concern that they may be harmful to humans if eaten.

2. Disrupt food chains

[2]

**Total Marks for Question Set 16: 10**

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