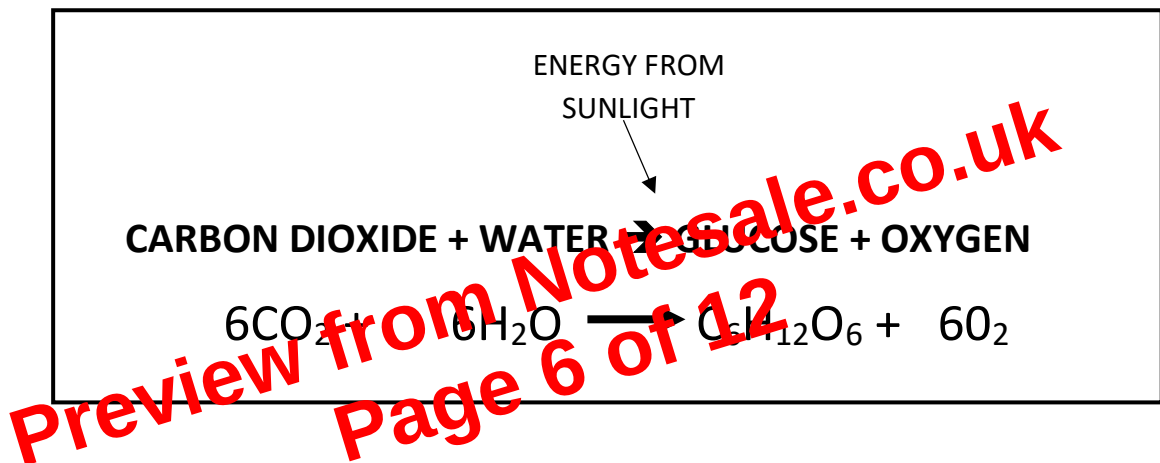


PHOTOSYNTHESIS

We saw above that we need glucose for respiration. We obtain the glucose from the food we eat.

Plants manufacture glucose by a chemical reaction which can be regarded as the *opposite* of respiration. Carbon dioxide and water are used to make glucose and oxygen - and - instead of producing energy, energy is needed for the reaction to take place. In this case the supply of energy is the energy from the sun - sunlight.

This reaction is called **photosynthesis**:



Because this reaction needs energy (takes in energy) it is **endothermic**

There are mechanisms within the plants to convert the glucose into more complicated compounds like starch and other carbohydrates. When we eat the potatoes, or wheat etc we have mechanisms to convert the carbohydrates back into glucose.

We have already seen that plant cells contain **chloroplasts**. Photosynthesis takes place in the chloroplasts. The chloroplasts contain a green chemical called **chlorophyll**. It is the chlorophyll which absorbs the energy in sunlight and converts it to the energy in glucose.

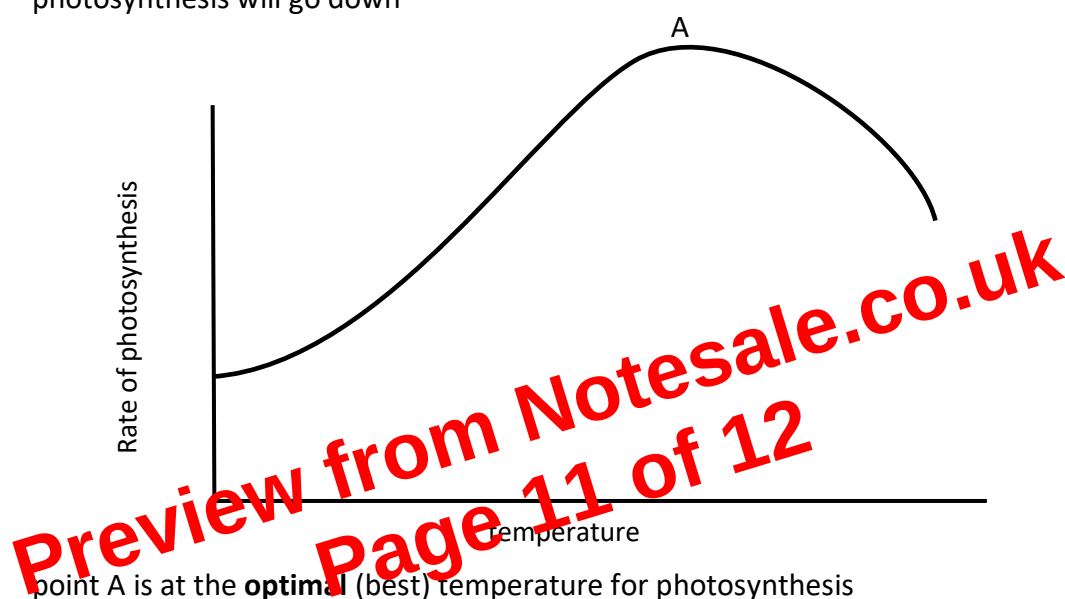
Part B of the dotted graph shows that

.....

Part C of the dotted graph shows that

.....

Of course if the temperature gets too high, then this will destroy any enzymes and photosynthesis will go down



Food production is an important industry in any country.

Farmers and crop growers will do as much as possible to maximise the yield of the crop.

They must ensure that growth is not limited by a limiting factor.

They maintain plants in greenhouses which allow them to:

be grown at the **optimum temperature**

have **extra carbon dioxide** in the air for optimal growth

(by burning fuels inside the greenhouse)

provide the plants with **maximum light** – using artificial light if necessary

Farmers must balance these conditions without making the crops too expensive to sell at a profit

END OF HIGHER}