

## 1. CO<sub>2</sub> concentration

-if CO<sub>2</sub> increases, rate of photosynthesis increase

## 2. Temperature

-every 10°C increase, rate of photosynthesis is doubled

-optimum temperature is 25° to 30°C

-if temperature is too high, rate of photosynthesis decrease because photosynthetic enzymes are denatured

## 3. Light Intensity

-rate of photosynthesis increases when light intensity increases

## 4. Presence of H<sub>2</sub>O

-If H<sub>2</sub>O decreases, guard cells become less turgid, and stoma closes. Thus rate of photosynthesis decreases

The process in which chlorophyll in green plants absorbs light energy and changes carbon dioxide into glucose and releasing oxygen

### DEFINITION

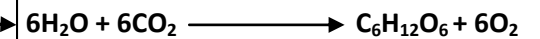
### OCCURS IN

chloroplasts

### PHOTOSYNTHESIS

### EQUATION

chlorophyll



sunlight

### DIVIDED INTO

#### 1. light reaction

- only occurs in the presence of light
- occurs in grana
- involves photolysis of water
- oxygen released

#### 2. dark reaction

- light is not used
- occurs in the stoma
- CO<sub>2</sub> used
- glucose formed
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### process

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-chlorophyll absorbs light energy

- this energy splits H<sub>2</sub>O ( photolysis )  $24\text{H}_2\text{O} \longrightarrow 24\text{H}^+ + 24\text{OH}^-$

-24e excited from chlorophyll, ATP energy released, thus chlorophyll not stable

-24H<sup>+</sup> receives 24e to become 24H atoms (  $24\text{H}^+ + 24\text{e} \longrightarrow 24\text{H atoms}$  )

-24OH<sup>-</sup> loses 24e to become 24OH groups (  $24\text{OH}^- \longrightarrow 24\text{OH group} + 24\text{e}$  )

-OH groups combine to form 6O<sub>2</sub> + 12H<sub>2</sub>O

-24e is received again by chlorophyll, thus chlorophyll becomes stable

-hydrogen atoms used to fix CO<sub>2</sub>

- glucose formed

- glucose undergoes condensation to become starch

- starch kept in stoma